Application for Low Impact Hydropower Institute Recertification

Bear River Hydroelectric Project
(FERC No. P-20: LIHI Certificate No. 53)
Caribou and Franklin Counties, Idaho

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ACRONYMS AND ABBREVIATIONS

BCT—Bonneville cutthroat trout
BLM—Bureau of Land Management
cfs—cubic feet per second
Commission—Federal Energy Regulatory Commission
DO—dissolved oxygen
EA—environmental assessment
ECC—Environmental Coordination Committee
EIS—Environmental Impact Statement
EPA—Environmental Protection Agency
FERC—Federal Energy Regulatory Commission
fps—feet per second
ft.—feet
HAER—Historic American Engineering Record
hp—horse-power
HPMP—Historic Properties Management Plan
HUC—Hydrologic Unit Code
IDEQ—Idaho Department of Environmental Quality
IDFG—Idaho Department of Fish and Game
kVA—kilovolt amps
kW—kilowatts
kWh—kilowatt hours
L—liters
LIHI—Low Impact Hydropower Institute
LMP—PacifiCorp's Land Management Plan
m.—meters
m3—cubic meters
mi.—miles
MOA—Memorandum of Agreement
MW—megawatts
MWh—megawatt hours
NEPA—National Environmental Policy Act
RM—river mile
SCADA—Supervisory Control and Data Acquisition
SHPO—State Historic Preservation Office
TMDL—Total Maximum Daily Load
UPL—Utah Power and Light Company
USDA—United States Department of Agriculture
USFWS—United States Fish and Wildlife Service
USGS—United States Geological Survey
WQC—water quality certification
WSE—water surface elevation
ZoE—Zone of Effect

1.0 PROJECT DESCRIPTION

The Bear River Hydroelectric Project (Project) is certified by the Low Impact Hydropower Institute (LIHI) with Certificate Number 53. The current LIHI certification, issued on December 31, 2014, expires on December 31, 2022. This recertification application includes information on the Project facilities, history, setting, operations, compliance during the certification term, and zones of effect.

PacifiCorp operates five hydroelectric developments in the Bear River Basin. Three of the developments—Soda, Grace, and Oneida—are operated under the Federal Energy Regulatory Commission (FERC) license for the Bear River Hydroelectric Project (FERC Project No. 20) and are the focus of this application. PacifiCorp also owns and operates the Cutler and Last Chance hydroelectric projects. The Cutler hydroelectric project is operated under FERC license No. 2420. FERC granted the Last Chance development an exemption from licensing in 1981 due to the project's small size. A sixth facility on the Bear River, the Cove development, was decommissioned in 2006.

The Soda development is located the farthest upstream on the Bear River, five miles west of the city of Soda Springs in Caribou County, Idaho. The Last Chance development is located on the Last Chance Canal, a diversion from the Bear River that is located four miles downstream of the Soda powerhouse. The Grace development is the next facility downstream and it is also located in Caribou County, Idaho. The Oneida development is located in Franklin County, Idaho, approximately 6 miles south of Cleveland, Idaho. The Cutler development is located 44 miles downstream of the Oneida project in Utah, near the confluence of several major tributaries. Figure 1 provides a map of the project locations and Table 1.b summarizes information about the facilities that are the subject of this application.

1.1 PROJECT FACILITIES

A summary of Project facilities is provided below in Table 1.b. Additional narrative descriptions of the facilities are provided in the following sub-sections. Project Facilities are depicted spatially in Figure 1 and Figures 4a – 4h (Section 1.5). Photos of the Project facilities are provided in Appendix B.

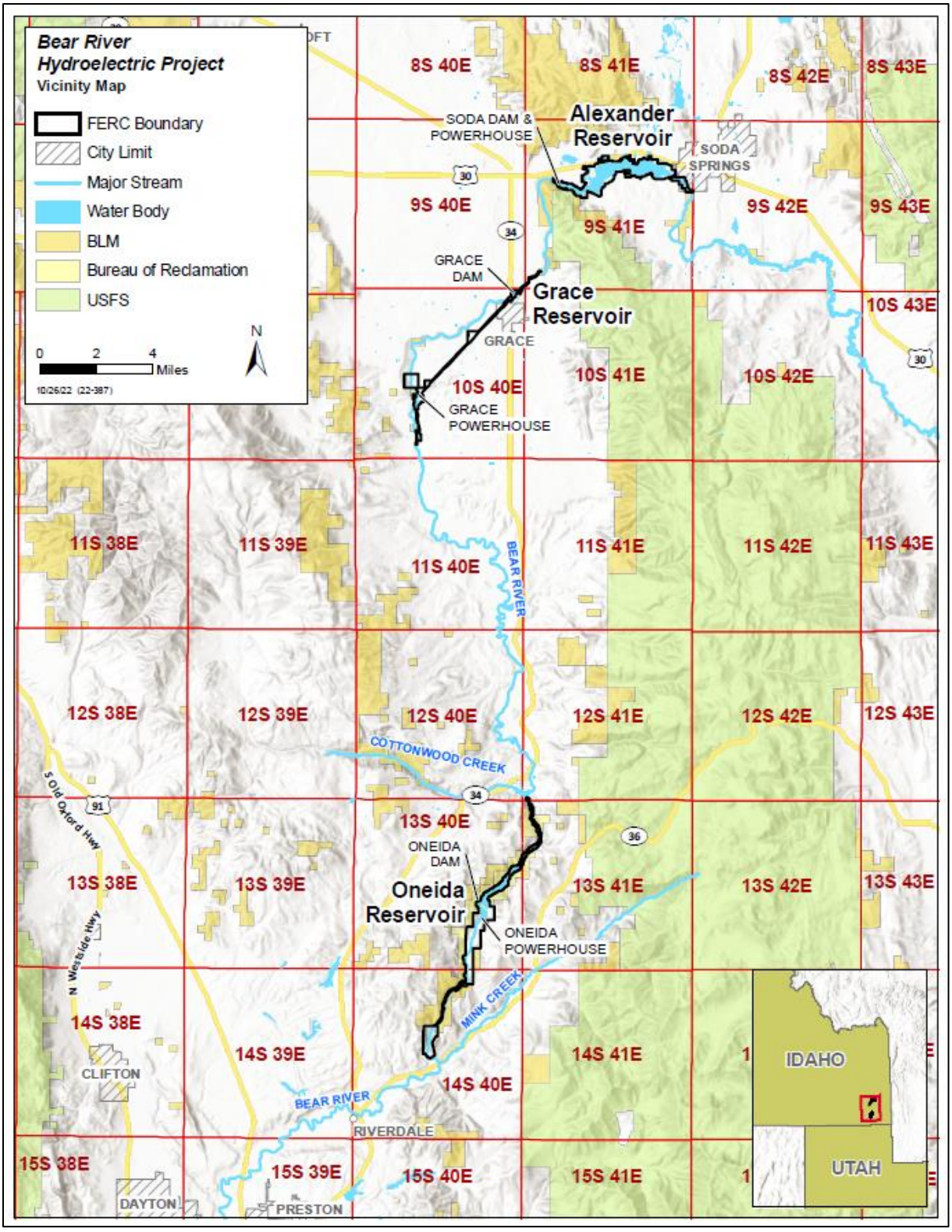

Figure 1. Project facilities and vicinity map.

Table 1.b - Alternate Facility Information Table for Multiple Facilities

Item	*Information Requested*	*Response*		
		Facility 1	*Facility 2*	*Facility 3*
Name of the Facility	Facility name (use FERC project name or other legal name)	Bear River Hydroelectric Project (FERC Project No. P-20) Soda Development	Bear River Hydroelectric Project (FERC Project No. P-20) Grace Development	Bear River Hydroelectric Project (FERC Project No. P-20) Oneida Development
Reason for applying for LIHI Certification	1. To participate in state RPS program 2. To participate in voluntary REC market (e.g., Green-e) 3. To satisfy a direct energy buyer's purchasing requirement 4. To satisfy the facility's own corporate sustainability goals 5. For the facility's corporate marketing purposes 6. Other (describe)	1. To participate in state RPS program	1. To participate in state RPS program	1. To participate in state RPS program
	If applicable, amount of annual generation (MWh and % of total generation) for which RECs are currently received or are expected to be received upon LIHI Certification			
Location	River name (USGS proper name)	Bear River	Bear River	Bear River
	Watershed name - Select region, click on the area of interest until the 8-digit HUC number appears. Then identify watershed name and HUC-8 number from the map at: https://water.usgs.gov/wsc/map_index.html	Upstream of Soda Dam: Bear River Watershed - Bear Lake HUC-8: 16010201	Downstream of Soda Dam: Bear River Watershed - Middle Bear HUC-8: 16010202	Bear River Watershed - Middle Bear HUC-8: 16010202
	Nearest town(s), county(ies), and state(s) to dam	Soda Springs, Caribou Co., Idaho	Grace, Caribou Co., Idaho	Preston, Franklin Co., Idaho
	River mile of dam above mouth	RM 185	RM 179	RM 143
	Geographic latitude and longitude of dam	42.64489, -111.69633	42.58726, -111.72816	42.27579, -111.74950
Facility Owner	Application contact names (Complete the Contact Form in Section B-4 also)	Mark Stenberg, Bear River License Program Manager Todd Olson, Director of Compliance	Mark Stenberg, Bear River License Program Manager Todd Olson, Director of Compliance	Mark Stenberg, Bear River License Program Manager Todd Olson, Director of Compliance
	Facility owner company and authorized owner representative name. **For recertifications: If ownership has changed since last certification, provide the effective date of the change.**	PacifiCorp Will Shallenberger, Vice President, Renewable Resources No changes in ownership	PacifiCorp Will Shallenberger, Vice President, Renewable Resources No changes in ownership	PacifiCorp Will Shallenberger, Vice President, Renewable Resources No changes in ownership
	FERC licensee company name (if different from owner)			

Item	***Information Requested***	***Response***		
		Facility 1	***Facility 2***	***Facility 3***
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption	FERC Project No. P-20 30-year term issued December 22, 2003	FERC Project No. P-20 30-year term issued December 22, 2003	FERC Project No. P-20 30-year term issued December 22, 2003
	FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional")	Major	Major	Major
	Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments. Include links or copies.	The §401 water quality certification was issued On June 23, 2003 by the Idaho Department of Environmental Quality and is attached to the FERC Order accepting settlement agreement and issuing new license: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CD9DE5-66E2-5005-8110-C31FAFC91712	The §401 water quality certification was issued On June 23, 2003 by the Idaho Department of Environmental Quality and is attached to the FERC Order accepting settlement agreement and issuing new license: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01D9DE5-66E2-5005-8110-C31FAFC91712	The §401 water quality certification was issued On June 23, 2003 by the Idaho Department of Environmental Quality and is attached to the FERC Order accepting settlement agreement and issuing new license: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CD9DE5-66E2-5005-8110-C31FAFC91712
	Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories *(or provide a separate list)*	2003 Order approving Settlement and issuing License: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CD9DE5-66E2-5005-8110-C31FAFC91712 Settlement Agreement: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=001C44C2-66E2-5005-8110-C31FAFC91712 2006 Order Amending License for Cove decommissioning: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CF305B-66E2-5005-8110-C31FAFC91712 See Section 5.0 References for additional links	2003 Order approving Settlement and issuing License: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CD9DE5-66E2-5005-8110-C31FAFC91712 Settlement Agreement: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=001C44C2-66E2-5005-8110-C31FAFC91712 2006 Order Amending License for Cove decommissioning: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CF305B-66E2-5005-8110-C31FAFC91712 See Section 5.0 References for additional links	2003 Order approving Settlement and issuing License: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CD9DE5-66E2-5005-8110-C31FAFC91712 Settlement Agreement: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=001C44C2-66E2-5005-8110-C31FAFC91712 2006 Order Amending License for Cove decommissioning: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CF305B-66E2-5005-8110-C31FAFC91712 See Section 5.0 References for additional links

Item	*Information Requested*	*Response*		
		Facility 1	***Facility 2***	***Facility 3***
Powerhouse	Date of initial operation (past or future for pre-operational applications)	1923-1925	1908-1910	1915-1920
	Total installed capacity (MW) **For recertifications: Indicate if installed capacity has changed since last certification**	14.45 MW May 28, 2014 FERC order increased authorized installed capacity by 0.45 MW following rewind of Unit 1 in 2010	33 MW No changes since last certification	30 MW No changes since last certification
	Average annual generation (MWh) and period of record used **For recertifications: Indicate if average annual generation has changed since last certification**	21,128 MWh 1992-2021 Average annual generation is less than the last certification period: 25,070 MWh for 1984-2013	102,671 MWh 1992-2021 Average annual generation is less than the last certification period: 122,110 MWh for 1984-2013	46,4511 MWh 1992-2021 Average annual generation is less than the last certification period: 52,660 MWh for 1984-2013
	Mode of operation (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.) **For recertifications: Indicate if mode of operation has changed since last certification**	Modified run-of-river mode during the irrigation season (Apr-Oct) No changes since last certification	Modified run-of-river mode during the irrigation season (Apr-Oct) No changes since last certification	Modified run-of-river mode during the irrigation season (Apr-Oct) No changes since last certification
	Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit	Two (2) vertical Francis turbine-type generator units with combined installed capacity of 14.45 megawatts and maximum hydraulic capacities of 1,827 and 1,337 cfs	Three 10 megawatt vertical Francis turbine-type generator units 960 cubic feet per second (each) at normal reservoir level Elevation 5,557.6	Three vertical Francis turbine-type generator units with combined installed capacity of 30 megawatts (10 megawatts each at 0.9 power factor) 3,000 cubic feet per second (combined) at normal reservoir level Elevation 4,881.9
	Trashrack clear spacing (inches) for each trashrack			
	Approach water velocity (ft/s) at each intake if known			
	Dates and types of major equipment upgrades **For recertifications: Indicate only those since last certification**	No major upgrades since last certification	No major upgrades since last certification	No major upgrades since last certification
	Dates, purpose, and type of any recent operational changes *(or provide a separate list)* **For recertifications: Indicate only those since last certification**			
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments *(or provide a separate list)*			

Item	*Information Requested*	*Response*		
		Facility 1	*Facility 2*	*Facility 3*
Dam or Diversion	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	1922-1925 Original Construction 1985 - Francis Turbine Runner Replacement Before 1950 - Shotcrete Face 1990 - Removal of shotcrete face 1985-1987, 1991 - Drainage Gallery 1990 - Spillway pier reconstruction 1990 - Ice chute bulk head 1991 - Post Tension Anchors Installed 1993 - Piezometer Installation 1995 - Powerhouse repairs 2008 - Hoist motor replacement 2010 - Johnson valve replacement 2015 - Tainter Gate Replacement	1907-1910 Original Construction; Crib Dam, embankment dam, 3 flowlines, 2 surge tank, five penstocks (1, 2, 3, 4, and 5), Powerhouse, two switch yards 1937-1939 Saddle supports for No. 2 wood-stave flowline rebuilt 1947 No. 2 wood-stave flowline rebuilt 1949-1951 New (existing) timber crib dam was built downstream to replace the original dam 1951-1952 Steel flowline (no. 2) section and bridge over Bear River were constructed 1965 Tank No. 3 steel regulator riser constructed 1972 1.3 miles of No. 2 flowline replaced with welded steel 1976 wing wall added to right intake structure 1981 Penstocks 1 and 2 removed 1988-1993 No. 1 wood-stave flowline removed. 2005 and 2015 cathodic protection system installed and upgraded (2015) 2008 slide gates installed in the flash boards 2010-2011 bypass valve installed at left intake 2011 pump back system installed 2014 embankment dam rehabilitated 2019-2020 surge tank insulation shell replaced with insulated aluminum panels 2021-2022 expansion to the pump-back system	1913-1917 Original Construction 1918 - Concrete apron Circa 1918 Seepage remediation 1920 - 3rd Francis turbine generator installed 1956 - Downstream face removal and flash board removal with raising of aux spillway crest 1968 - Post-tensioned anchors 1977 - Bulkhead of right flowline 1977-1993 Crack grouting 1985 - Penstock section replacement 1988 - bulge repair 1992 - Parapet wall installed 1992 - TIV replacement, new hoists, emergency power 1999 - Foundation drains 2014 - Spillway rehabilitation 2020 - Bulge repair
	Dam or diversion structure length, height including separately the height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards and the like	Length - 433 feet Max Height - 103 feet	Timber Crib Length - 180 feet Max Height - 52 feet Embankment Dam Length - 250 feet Max Height - 10 feet	Length - 381 feet Max Height - 111 feet
	Spillway maximum hydraulic capacity	35,600 cfs	12,500 cfs at elevation 5,561.6	Gated Spillway Min Pool - 4,280 cfs at elev 4,876.9 feet Normal Pool - 11,400 cfs at elev 4,881.9 feet Max Pool - 13,150 cfs at elev 4,882.9 feet Max Pool +2' - 16,900 cfs at elev 4,884.9 feet PMF - 33,000 cfs at elev 4,898.51 feet Auxiliary Spillway Max Pool - 0 cfs at elev 4,882.9 feet Max Pool +2' - 1,067 cfs at elev 4,884.9 feet PMF - 23,000 cfs at elev 4,898.51 feet
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	Low-level outlet - 110" dia. steel Penstocks (2) - 12' dia. steel (Length = 75 ft)	Flowline - 3.9 miles long 11-foot Diameter Wood-stave Section - 2.6 mile Steel section - 1.3 miles Penstocks (3) Diameter - 6 feet Length - 2,500 feet Tank 3 - Steel Height - 38 feet Diameter - 10 feet Main Surge Tank Height - 130 feet Diameter - 30 feet	Penstocks (3) - Riveted Steel Diameter - 12 feet Length - 150 feet Flowline No. 1 - Riveted Steel Diameter - 16 feet Length - 2250 feet Flowline No. 2 (Unused and bulkheaded off) Diameter - 16 feet Length - 234 feet Surge Tank - Riveted Steel Height - 117 feet Diameter - 40 feet
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power	Power	Power

Item	*Information Requested*	*Response*		
		Facility 1	***Facility 2***	***Facility 3***
Impoundment and Watershed	Authorized maximum and minimum impoundment water surface elevations **For recertifications: Indicate if these values have changed since last certification**	None specified No changes since last certification	None specified No changes since last certification	None specified No changes since last certification
	Normal operating elevations and normal fluctuation range **For recertifications: Indicate if these values have changed since last certification**	Normal: 5,719 (USGS datum) Full pool: 5,720 feet (USGS datum) No changes since last certification	Normal range: 5,555.2 to 5,554.4 feet (USGS datum) Full pool: 5,554.8 feet (USGS datum) No changes since last certification	Normal: 4,882.4 feet (USGS datum) Full pool: 4,882.9 feet (USGS datum) No changes since last certification
	Gross storage volume and surface area at full pool **For recertifications: Indicate if these values have changed since last certification**	Volume (total storage capacity) = 16,300 acre-feet Surface area = 1,100 acres No changes since last certification	Volume (total storage capacity) = 320 acre-feet Surface area = 38 acres No changes since last certification	Volume (total storage capacity) = 11,500 acre-feet Surface area = 480 acres No changes since last certification
	Usable storage volume and surface area **For recertifications: Indicate if these values have changed since last certification**	Volume (active storage capacity) = 16,300 acre-feet Surface area = 1,100 acres No changes since last certification	Volume (active storage capacity) = 250 acre-feet Surface area = 38 acres No changes since last certification	Volume (active storage capacity) = 10,880 acre-feet Surface area = 480 acres No changes since last certification
	Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	Impoundment requirements are not specified in the license, however, the revised Operations and Compliance plan (approved by FERC September 16, 2014) provides reservoir elevation band thresholds that are held during low flow periods to ensure that inflow to the reservoir is passed downstream. When inflow becomes less than 170 cfs, Soda reservoir is held within an elevation band of baseline +/- 0.25 feet (target) with a maximum threshold of baseline +/-0.5 feet.	Impoundment requirements are not specified in the license..	Impoundment requirements are not specified in the license. The revised Operations and Compliance plan (approved by FERC September 16, 2014) provides reservoir elevation band thresholds that are held during low flow periods to ensure that inflow to the reservoir is passed downstream. When inflow becomes less than 275 cfs, Oneida reservoir is held within an elevation band of baseline +/- 1.5 feet (target) with a maximum threshold of baseline +/-2.0 feet.
	Upstream dams by name, ownership ***(including if owned by an affiliate of the applicant's company)*** and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage.		Last Chance dam (FERC No. P-4580), RM 181, owned by PacifiCorp, is on a diversion of the Bear River, approximately 4 miles downstream of Soda dam.	
	Downstream dams by name, ownership ***(including if owned by an affiliate of the applicant's company)*** , river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage			Cutler dam (FERC No. P-2420), RM 65.9, is owned by PacifiCorp. Cutler development is located approximately 44 miles downstream of the Oneida dam. Cutler does not have upstream fish passage.
	Operating agreements with upstream or downstream facilities that affect water availability and facility operation	See Sections 1.2.1 and 1.2.2 and the Settlement Agreement for summaries of agreements and legal obligations that affect the Project: Sugar Company Contract Last Chance Canal Company Contract Other irrigation contracts Judicial decrees Amended Bear River Compact Flood control responsibility Agreements with Wyoming, Idaho, and Utah	Same as Soda	Same as Soda
	Area of land (acres) and area of water (acres) inside FERC project boundary or under facility control. Indicate locations and acres of flowage rights versus fee-owned property.	FERC project boundary: 1667.7 ac Land: 600.4 acres Water: 1067.3 acres See Appendix B - Exhibit G for land rights locations	FERC project boundary: 596.5 acres Land: 525.6 acres Water: 70.8 acres See Appendix B - Exhibit G for land rights locations	FERC project boundary: 1595.3 acres Land: 1062.8 acres Water: 532.4 acres See Appendix B - Exhibit G for land rights locations

Item	*Information Requested*	*Response*		
		Facility 1	***Facility 2***	***Facility 3***
Hydrologic Setting	Average annual flow at the dam, and period of record used	639 cfs Water Years 1997-2022	544 cfs Water Years 1997-2022	775 cfs Water Years 1997-2022
	Average monthly flows and period of record used	Water Years 1997-2022 Month Avg Flow (cfs) 1 337 2 362 3 514 4 587 5 687 6 1001 7 1257 8 1054 9 634 10 399 11 447 12 371	Water Years 1997-2022 Month Avg Flow (cfs) 1 300 2 325 3 483 4 531 5 1104 6 653 7 848 8 787 9 434 10 330 11 377 12 327	Water Years 1997-2022 Month Avg Flow (cfs) 1 517 2 556 3 782 4 932 5 876 6 951 7 1135 8 1077 9 711 10 582 11 611 12 548
	Location and name of closest stream gaging stations above and below the facility	Upstream: USGS gage number 10075000 BEAR RIVER AT SODA SPRINGS, ID Downstream: USGS gage number 10079500 BEAR RIVER AT ALEXANDER, ID	Upstream: USGS gage number 10079500 BEAR RIVER AT ALEXANDER, ID Downstream: None within any reasonable distance	Upstream: None within any reasonable distance Downstream: USGS gage number 10086500 BEAR RIVER BELOW UP&L CO. TAILRACE, AT ONEIDA, ID
	Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations and provide the basis for proration calculation.	Drainage area 4,093 square miles per United States Geological Survey for downstream gage.	Drainage area 4,093 square miles per United States Geological Survey for upstream gage (same watershed area as Soda development).	Drainage area 4,456 square miles per United States Geological Survey for downstream gage.
	Other facility specific hydrologic information (e.g., average hydrograph)	None, see monthly average flows above.	None, see monthly average flows above.	None, see monthly average flows above.
Designated Zones of Effect	Numbers and names of each zone of effect (e.g., "Zone 1: Impoundment")	ZoE 1: Soda - impoundment ZoE 2: Soda - regulated riverine reach	ZoE 3: Grace - impoundment ZoE 4: Grace - bypassed reach ZoE 5: Grace - regulated riverine reach	ZoE 6: Oneida - impoundment ZoE 7: Oneida - bypass reach ZoE 8: Oneida - regulated downstream reach
	River mile of upstream and downstream limits of each zone of effect (e.g., "Zone 1: RM 6.3 - 5.1")	ZoE 1: RM 190 - 185 Soda Reservoir from east end near Big Springs Creek to Soda Dam. ZoE 2: RM 185 - 180 from Soda Dam Tailwater to Grace Reservoir.	ZoE 3: RM 180 - 179 from the upstream end of Grace Reservoir to Grace Dam. ZoE 4: RM 179 - 172 from the Grace Dam tailwater to Grace Powerhouse. ZoE 5: RM 172 - 148 from Grace powerhouse to north end of Oneida Reservoir.	ZoE 6: RM - 148 - 143 from north end of Oneida Reservoir to Oneida Dam. ZoE 7: RM 143 -142 from Oneida Dam to Oneida powerhouse. ZoE 8: RM 142 - 66 from Oneida powerhouse tailwater to north end of Cutler Reservoir.

1.1.1 Soda Development

The Soda development consists of the Soda reservoir, commonly known as the Alexander Reservoir, and Soda dam and integral powerhouse. The Soda development does not contain a bypassed reach, diversion, or conduit.

The Soda dam is a 103-foot-high by 433-foot-long concrete gravity dam with a 109-foot-long integral powerhouse section containing five headgates that supply water to the generating unit penstocks and to a 900-cubic feet per second (cfs)-capacity low-level discharge (Johnson valve). The concrete dam also has a 210-foot-long non-overflow gravity section and a 114-foot-long gated overflow spillway section containing three, 30-foot by 14-foot Taintor gates. A 55-foot-long by 19-foot-high earth fill dam also forms parts of the development. The Soda development's 41-foot by 109-foot powerhouse contains two vertical Francis units: Unit 1 with an installed capacity of 7.45 MW and Unit 2 with an installed capacity of 7 MW, and maximum hydraulic capacities of 1,827 and 1,337 cfs, respectively. The development includes a tailrace immediately downstream of the powerhouse with a normal tailwater elevation of 5,641 feet.

The Soda reservoir has a surface area of 1,100 acres and a maximum full pool elevation of 5,720 feet. The 4.5-mile long reservoir extends upstream to just downstream of the Big Spring Creek confluence with the Bear River. Approximately 16,300 acre-feet of storage are available in Soda reservoir. However, increased recreational use of the reservoir, combined with the coordinated control now required to operate the system, have reduced its usable capacity. The reservoir low water elevation cannot fall below the low-level discharge penstock elevation of 5,670.00. The combined authorized discharge for the Soda Plant is 2,624 cfs. The low-level discharge is capable of passing 900 cfs at a normal operating pool of 5,719.00. The maximum water surface level, due to the Probable Maximum Flood (PMF), is elevation 5,735.80.

1.1.2 Grace Development

The Grace development consists of the Grace reservoir, a diversion dam, flow line, powerhouse and a bypassed reach.

Grace Dam is a rock-filled, timber-crib structure with a concrete core at the base of the structure. The structure stands approximately 51 feet high including the flashboards. The crest length is 180 feet 5.5 inches. A 52-foot-wide intake structure containing eighteen 5-foot by 10-foot screen sections is housed within a concrete stucco building, adjacent to the earth embankment section of the dam. A 26,000-foot-long 11-foot-diameter flowline consisting of 15,000 feet of steel and 11,000 feet of wood stave pipeline conveys water from the intake structure to the surge tanks. There are two surge tanks, one 10 feet in diameter and 38 feet high, located approximately 2.6 miles downstream of the diversion, and the other 30 feet in diameter and 132 feet high, located directly above the powerhouse. Three 90-inch-diameter steel penstocks, equipped with two butterfly valves carry water from the surge tanks to the powerhouse. The powerhouse has three turbine generators rated at 11 MW each for a total plant capacity of 33 MW. Their total hydraulic capacity is 960 cfs. The Grace tailrace includes a short concrete-lined section that transitions to an unlined open channel section approximately 350 feet from its confluence with the Bear River.

The Grace reservoir covers 38 surface acres and has a total storage capacity of 320 acre-feet with 250 acre-feet of usable storage. At full pool, the forebay has an average depth of about 14 feet, and the surface elevation varies by about 0.3 foot in any one day and about eight feet over a typical operating year.

The Grace bypass reach, also known as the Black Canyon, is approximately 6.8-mile in length. An irrigation diversion owned by the Gentile Valley Irrigation Company is located approximately 300 feet upstream of Grace powerhouse.

1.1.3 Oneida Development

The Oneida development consists of the Oneida reservoir, a gravity dam and earth embankment, a spillway, three penstocks, a powerhouse, and a short bypass reach between the gravity dam and powerhouse.

The Oneida development includes a 111-foot-high by 381-foot-long concrete gravity dam that includes a 118-foot-long uncontrolled auxiliary spillway, a 66-foot-long non-overflow gravity section, a 99-foot-long gated spillway containing five Taintor gates, and an 86-foot-long gravity section with ice sluices. The earth embankment dam portion is 40-foot-high and 1,100-foot-long.

Oneida reservoir has a surface area of 480 acres at an elevation of 4,882.40 feet with a total storage of approximately 11,500 acre-feet and 10,880 acre-feet of active storage. A 50-foot-wide by 50-foot-high intake structure in the reservoir, contains six openings fitted with trashracks, that transitions to two, 16-foot-diameter circular outlets. A 16-foot-diameter, 2,240-foot-long steel flowline conveys water from the intake structure to a 40-foot-diameter, 142-foot-high surge tank. Three 12-foot-diameter, 120-foot-long steel penstocks extend from the surge tank to the powerhouse. The Oneida powerhouse is 52-feet by 162-feet and contains three vertical Francis units, each with an installed capacity of 10 MW and hydraulic capacities of 1,161, 1,161, and 968 cfs, respectively. The development has a 64-foot-wide by 118-feet-long rectangular channel tailrace.

Substations containing step-up transformers and circuit breakers are located adjacent to the powerhouses at Soda, Oneida, and Grace. The substations serve as the point of interconnection to the transmission grid system.

1.2 PROJECT HISTORY

Construction of the Bear River Project was authorized by the U.S. Secretary of Interior in 1907 for irrigation, flood control and hydroelectric generation. Construction of the dams began in 1909 and was completed in 1927. Utah Power acquired water rights from various holders during these years in exchange for perpetual contracts to deliver certain amounts of irrigation water released from Bear Lake. Water rights were further defined by court decrees, the Bear River Compact (as revised), and other subsequent agreements.

The original Grace Dam and the existing power facilities and other appurtenant structures were constructed by 1908. A new Grace dam was constructed in 1951 and the original rock-filled, timber-crib dam is now submerged in the forebay just upstream of the 1951 dam. Utah Power purchased the Grace facilities in 1912 and completed the Cove expansion by 1917. The Oneida development was constructed by 1915. Soda dam was completed in 1923.

1.2.1 Settlement Agreement

PacifiCorp and stakeholders to the FERC relicensing of the Bear River Project signed a Settlement Agreement on August 28, 2002, resolving all issues pertaining to relicensing. The Commission approved the Settlement Agreement and issued a new 30-year license for the Bear River Project on December 22, 2003. The Settlement Agreement and new license require the provision of recreational enhancements, instream flows to benefit aquatic resources, and various funds to conserve and benefit natural resources near the Project. The Environmental Coordination Committee (ECC), a stakeholder group comprised of signatories to the Settlement Agreement, was formed to consult and make decisions regarding the use of funding and other license requirements for the Bear River Project.

2003-12-22 Order approving Settlement Agreement and issuing new License:
https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CD9DE5-66E2-5005-8110-C31FAFC91712

Settlement Agreement explanatory statement (available on PacifiCorp website):
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/Bear_River_Settlement_Agreement_Explanatory_Statement.pdf

Settlement Agreement (available on PacifiCorp website):
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/Bear_River_Final_Settlement_Agreement.pdf

1.2.2 Bear River inflows to the Soda Reservoir (Alexander Reservoir).

Inflows to the Soda Reservoir from the Bear River are largely dependent on releases of water from the Bear Lake Irrigation Project. Inflows are not regulated by the Bear River Hydroelectric Project license but the Project is obligated to pass certain flows to meet downstream irrigation demands. The irrigation project that is furthest downstream, draws water from Cutler reservoir and is guaranteed 900 cfs during the irrigation season and 150 cfs during the non-irrigation season even if these amounts exceed natural flows. That transaction is referred to as the 1912 Sugar Company Conveyance and Agreement. Water stored in Bear Lake is used to meet that demand by essentially capturing water during winter and from spring snowmelt and releasing that water over the summer irrigation season. As stated in the Settlement Agreement, a critical component underlying the Settlement Agreement was the Parties' recognition that PacifiCorp's ability to manipulate reservoir levels and provide flows at the Projects is restricted by and subject to water rights and flood control responsibilities that are memorialized in part in water contracts and agreements, judicial decrees, and interstate compacts. These constraints arise in part out of historic practices that evolved over years of operating to satisfy the vested rights of irrigators and

avoid court-imposed flooding liability. The Settlement Agreement stipulates that in no event shall PacifiCorp be required to breach or take any action inconsistent with such constraints, each of which are best summarized in the explanatory statement for the Settlement Agreement (https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/Bear_River_Settlement_Agreement_Explanatory_Statement.pdf). During drought cycles, the natural flow in the Bear River is very low. It must be supplemented during the irrigation season by Bear Lake storage water releases for the irrigation contracts. After the irrigation season, all water at Stewart Dam is diverted into Bear Lake and stored to recover the lake and provide for the following year's irrigation supply. During high water cycles, natural flow in Bear River is high, and often Bear Lake is at a high elevation and must be evacuated. This makes flows in the river even higher. These conditions, together with the water contracts, agreements, Compact and judicial decrees discussed above, significantly constrain PacifiCorp's operation of the Projects. In developing the Settlement Agreement, the Parties considered these constraints and crafted provisions which maximize the benefits that can be provided to the important resources of the Bear River watershed, without requiring PacifiCorp to breach or otherwise act inconsistently with the constraints described therein.

1.2.3 Cove Decommissioning

The Cove development was decommissioned in 2006. Removal of this dam and reclamation of the site was completed during a three month period from August through October 2006.

The former Cove forebay covered about 10 surface acres and storage capacity of 60 acre-feet. At full pool, the forebay had an average depth of about seven feet and varied by about 0.1 foot in any one day and about four feet over a typical operating year. The Cove bypass was a 1.3-mile long section of the Bear River that extended between the former Cove dam and powerhouse. Flows in the bypass reaches were provided by leakage from the dams and natural springs in the lower end of the Grace bypass reach.

The Cove project removal consisted of removing and burring the concrete dam on site, excavating pond sediments from above the dam, demolishing the concrete and wood flume, recycling the super structure, and mothballing the powerhouse. The removal project also included establishing landform characteristics of the area and reclaiming disturbed areas with native plant material.

1.3 PROJECT OPERATIONS

Operation of the Bear River Project is closely tied to the operations of the Bear Lake Irrigation Project and water availability. The Bear Lake Irrigation Project stores spring runoff in Bear Lake, then as runoff subsides and irrigation demands downstream of Bear Lake exceed the existing natural river flows, water is pumped from Bear Lake into the Bear River to supply downstream irrigators. This requires considerable planning since it takes approximately 34 hours for Bear Lake releases to reach the Soda reservoir and approximately four additional days to reach Cutler reservoir in Utah where the largest irrigation withdrawal occurs (PacifiCorp 1999a, Soda License Application, page E2-5).

PacifiCorp operates the hydroelectric developments on the Bear River in a coordinated manner to meet the required irrigation demands and to generate power. During a normal irrigation season (April through October), when river flows reaching the hydroelectric project are generally higher than the natural conditions due to irrigation releases from Bear Lake, the Soda, Grace, and Oneida developments are usually operated in a modified run-of-river mode whereas water stored in Soda and Oneida reservoirs may be used to satisfy short-term irrigation demand or to maintain reservoir levels in Cutler reservoir. The Cutler reservoir level must be maintained for environmental protection purposes even when the Cutler facility normally ceases to generate power during the summer low-flow period. During drought years the Bear River Project may generate at less than full capacity due to lack of water in the river.

In general, reservoir levels are managed for consistency of elevation and do not fluctuate greatly. Drawdowns during major maintenance may affect reservoir levels. Flood control management creates the largest change in reservoir levels. The average winter pool level of the Soda reservoir is approximately 3 feet below the full pool. The Grace reservoir/forebay typically operates at full pool year-round, though irrigation demands can create short-term fluctuations of up to 4 feet. The Oneida reservoir is typically operated at the near full pool elevation year-round, though irrigation or power demands can result in a reduction in pool level up to 4 feet.

Article 415 required development of an Operations and Compliance Plan to implement and monitor flows and ramping rates in accordance with Articles 408 and 412 (as revised by order revised by FERC order dated July 7, 2004). The most recent Operations and Compliance Plan was revised in 2013 and approved by FERC order dated September 16, 2014. The operational regime is designed to minimize the frequency of river level fluctuations below the Oneida powerhouse to improve water quality. The revised Operations and Compliance Plan (PacifiCorp 2013), included updates on new stream flow gaging equipment, a change in compliance point at Grace Dam, operations directions for transition from minimum stream flow at Grace Dam to inflow, and publication of USGS stream flow data.

Operations and Compliance Plan (PacifiCorp 2013):
https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01B2C0DA-66E2-5005-8110-C31FAFC91712

Downstream of Oneida, pursuant to Article 420 and the Operations and Compliance Plan, PacifiCorp maintains an operational regime that minimizes the frequency of river level fluctuations from the Oneida powerhouse and provides flows greater than 900 cfs between Memorial Day and Labor Day, if available.

1.4 PROJECT WATERSHED

The Bear River Basin is located in northeastern Utah, southeastern Idaho, and southwestern Wyoming. It comprises approximately 7,500 square miles of mountain and valley lands (2,700 in Idaho, 3,300 in Utah, and 1,500 in Wyoming). The Bear River begins in the Uinta Mountains in Utah and extends 500 miles, crossing state boundaries five times before ending in the Great Salt

Lake. It is the largest tributary to the Great Salt Lake and the largest stream in the western hemisphere that does not empty into the ocean. The Bear River ranges in elevation from over 13,000 to 4,211 feet and is unique in that it is entirely enclosed by mountains, thus forming a huge basin with no external drainage outlets.

Developed and undeveloped agricultural lands throughout the basin, as well as urban areas, are located in valleys along the main stem of the river and its tributaries. The Bear River watershed also includes vast amounts of federal (both US Bureau of Land Management and US Forest Service) and state lands that serve a range of natural and agricultural functions. The Bear River is a highly regulated system. The major headwater storage facility is Bear Lake, the discharges from which are primarily for irrigation and flood control.

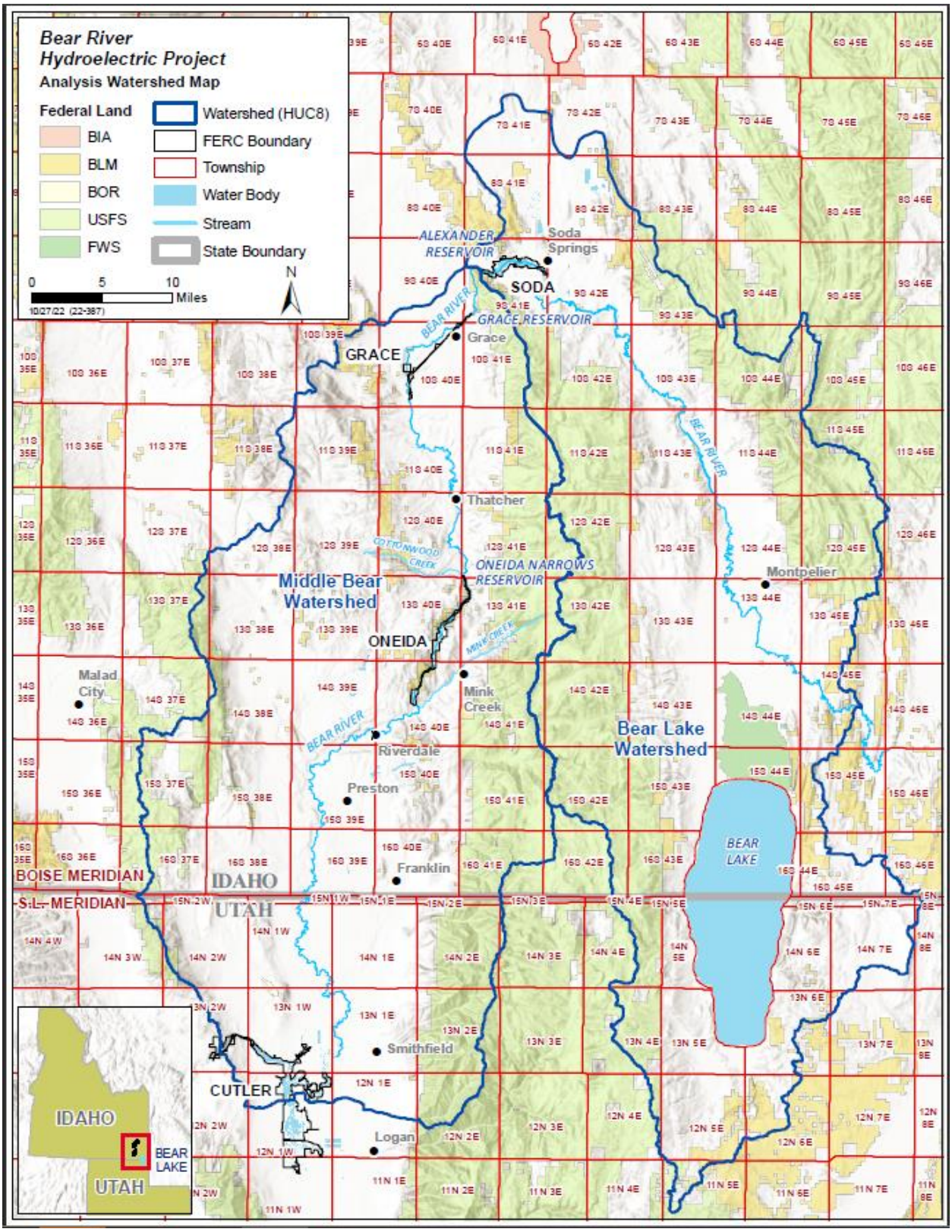

Figure 2. Project location and watershed map.

1.5 ZONES OF EFFECT

The waters affected or potentially affected by the current Project include the Bear River from the upstream end of Soda Reservoir at RM 190 to the upstream end of Cutler Reservoir at RM 66. The reach upstream of the Soda reservoir is not included as a zone of effect because the Project does not affect or regulate those waters but rather the Project is reliant on the inflows from the Bear River Irrigation Project and is subject to the Bear River Compact (as revised) and other agreements that are summarized in Section 1.2.2 above. The Project license and Settlement Agreement were designed to not interfere with those agreements.

The Soda development zones of effect include the Soda reservoir and regulated riverine reach downstream of Soda dam. A major irrigation diversion owned by the Last Chance Canal Company, located approximately four miles downstream of the Soda dam, can withdraw up to 658 cfs from the Bear River and has a large influence on flows in the Soda riverine reach zone of effect. The Soda development passes the required irrigation flows in coordination with the Grace and Oneida developments.

The Grace development zones of effect include the reservoir (Grace forebay), bypass reach, and regulated riverine reach downstream of the Grace powerhouse. There is an irrigation diversion owned by the Gentile Valley Canal Company that withdraws 35 cfs (40 cfs including the Thatcher Irrigation Company water rights) in the downstream end of the Grace bypass reach. In addition to managing irrigation flows, the Grace development provides scheduled releases of recreational boating flows in the bypass reach. Minimum flows in the bypass reach are released at the Grace dam.

The Oneida development zones of effect include the Oneida reservoir, bypass reach, and regulated riverine reach downstream of the Oneida powerhouse. Oneida reservoir levels and flows in the regulated riverine reach downstream of the Oneida powerhouse are coordinated with the other Project developments to balance irrigation flows, recreation flow releases, minimum flows, and ramp rates while also maintaining the downstream Cutler reservoir elevation for environmental protection.

The zones of effect discussed for this LIHI application cover much longer portions of the Bear River than the area enclosed in the FERC Project boundaries for each development where PacifiCorp has control over the shoreline. For example, the Oneida Project boundary extends downstream to the south end of the 11-mile long Oneida Narrows Canyon where PacifiCorp ownership ends above the confluence of the Bear River and Mink Creek (upstream of the bridge at Highway 36) but the entire reach down to the Cutler reservoir is included for flow and ramping purposes. Additionally, though not included in a zone of effect, many of the Project's mitigation measures are implemented over a much wider watershed enhancement area to help to work toward goals with greater benefits that what may be achieved within the Project boundary alone.

The Bear River Project has eight zones of effect (ZoE) for the purposes of LIHI certification standards analysis. These zones are, in order from upstream to downstream:

(1) ZoE 1: Soda impoundment - consists of the Soda (Alexander) reservoir that extends from where it transitions from the Bear River, downstream of the confluence with Big Springs Creek (approx. RM 190), to the Soda dam (approx. RM 185).

(2) ZoE 2: Soda regulated riverine reach - includes the Bear River reach between Soda Dam (approx. RM 185) and the upstream end of the Grace Reservoir (approx. RM 180).

(3) ZoE 3: Grace impoundment- is the Grace Reservoir that extends from the dam intake (approx. RM 179), upstream approximately 1 mile to the upper end of the reservoir (RM 180).

(4) ZoE 4: Grace bypass reach – includes the Bear River reach between the Grace Dam (RM 179) and the Grace powerhouse (RM 172).

(5) ZoE 5: Grace regulated riverine reach – is the Bear River reach between Grace powerhouse (RM 172) and the upstream end of Oneida Reservoir (RM 148).

(6) ZoE 6: Oneida impoundment – is the Oneida Reservoir that extends from the dam intake (approx. RM 143), upstream approximately 4.5 miles to the north end of the reservoir where it transitions from the unregulated Bear River riverine reach (approx. RM 148).

(7) ZoE 7: Oneida bypass reach – includes the Bear River reach from the Oneida Dam (RM 143) downstream approximately 0.8-miles to the Oneida powerhouse (RM 142).

(8) ZoE 8: Oneida regulated riverine reach - includes the Bear River reach beginning at the powerhouse (RM 142) and extending downstream approximately 76 river miles to the upstream end of the Cutler Reservoir (approximately RM 66).

A diagram depicting the ZoE is provided in Figure 3 and in aerial views of the zones in Figures 4a through 4h.

1.6 CHANGES SINCE LAST CERTIFICATION

There have been no major changes to the facilities, operations, environmental conditions affecting the facility or regulatory requirements since the last LIHI certification in December 2014.

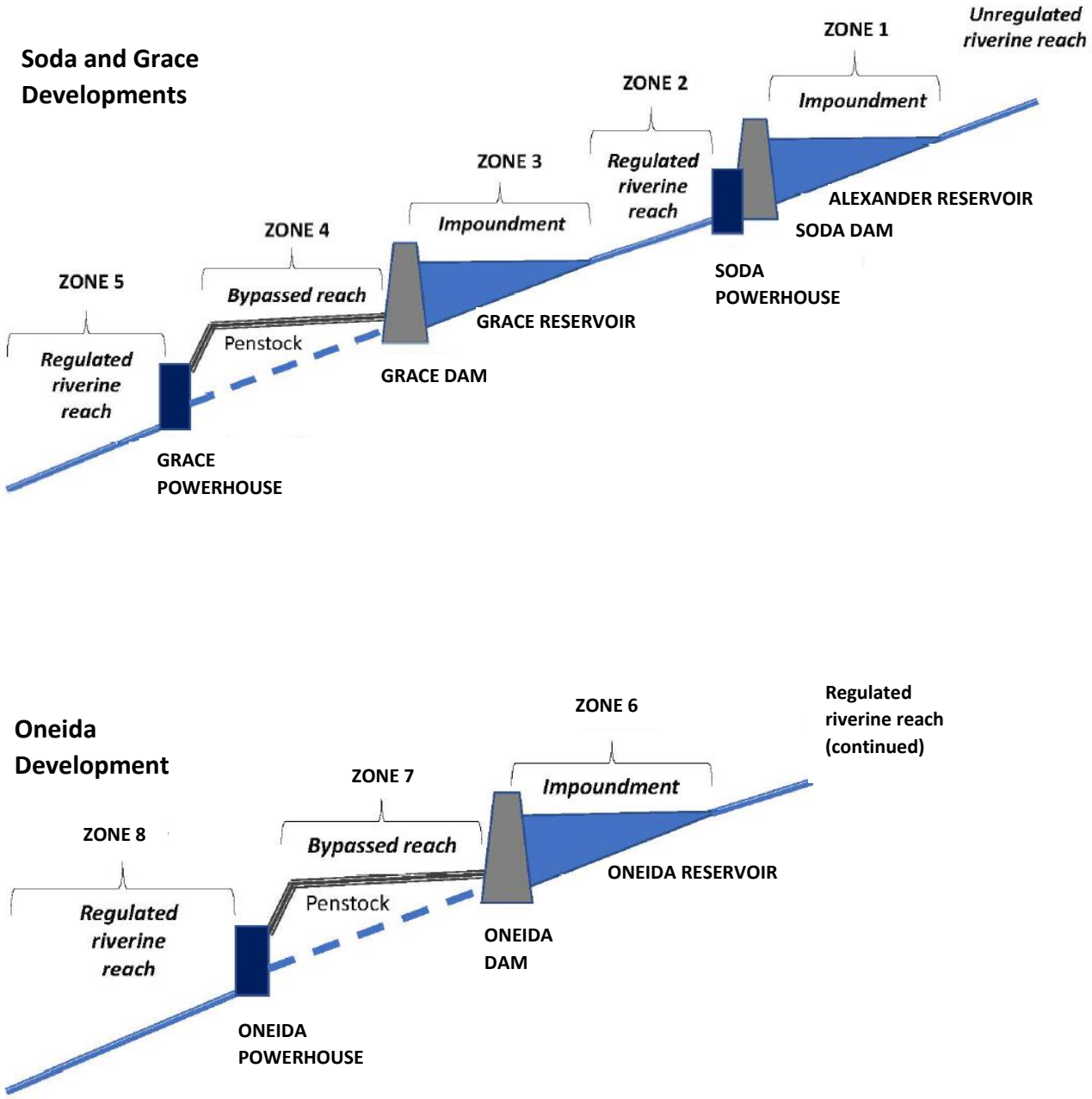

Figure 3. Zones of Effect conceptual diagram for the Bear River Project Developments.

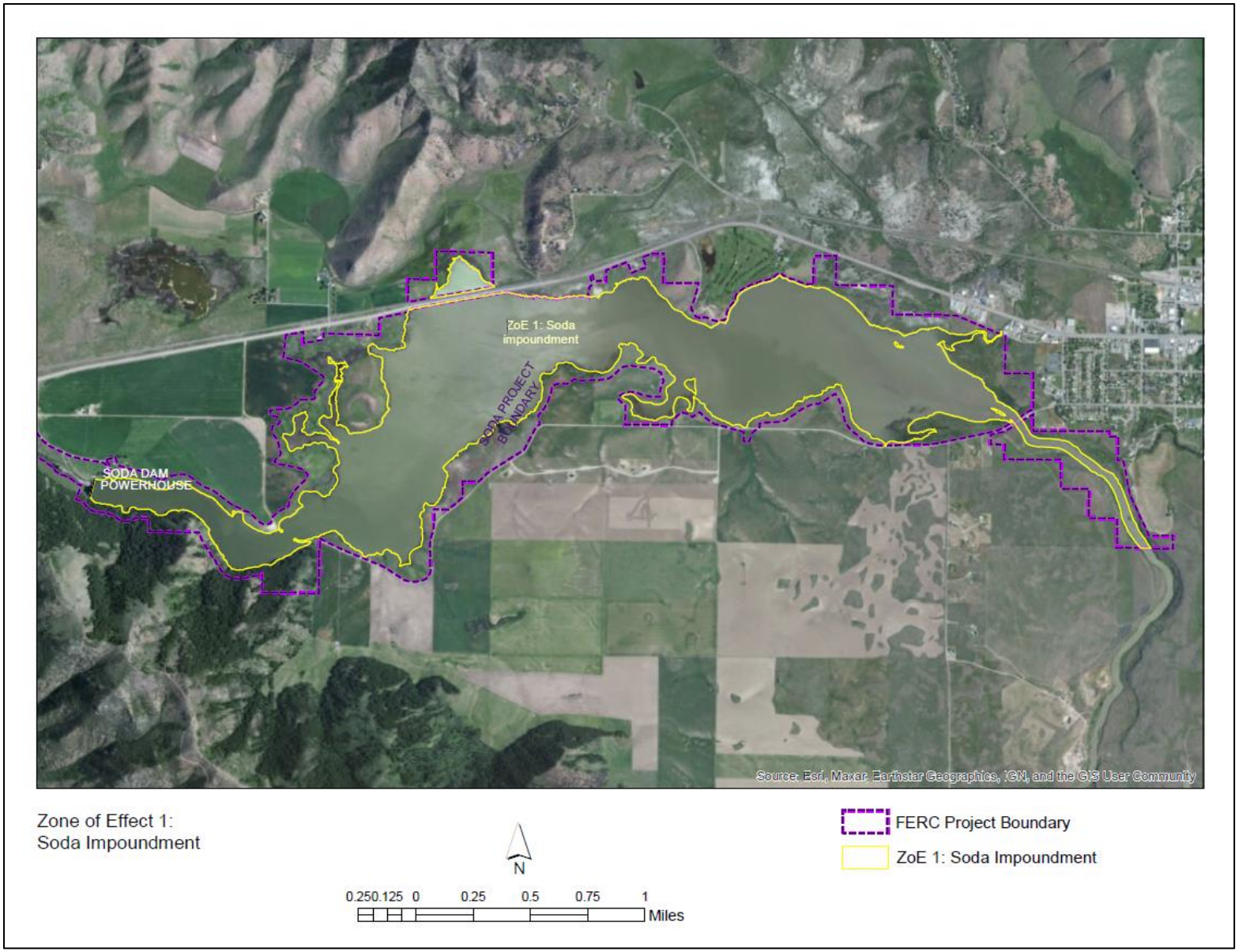

Figure 4a. Aerial view of ZoE 1 – Soda reservoir (map 1 of 8).

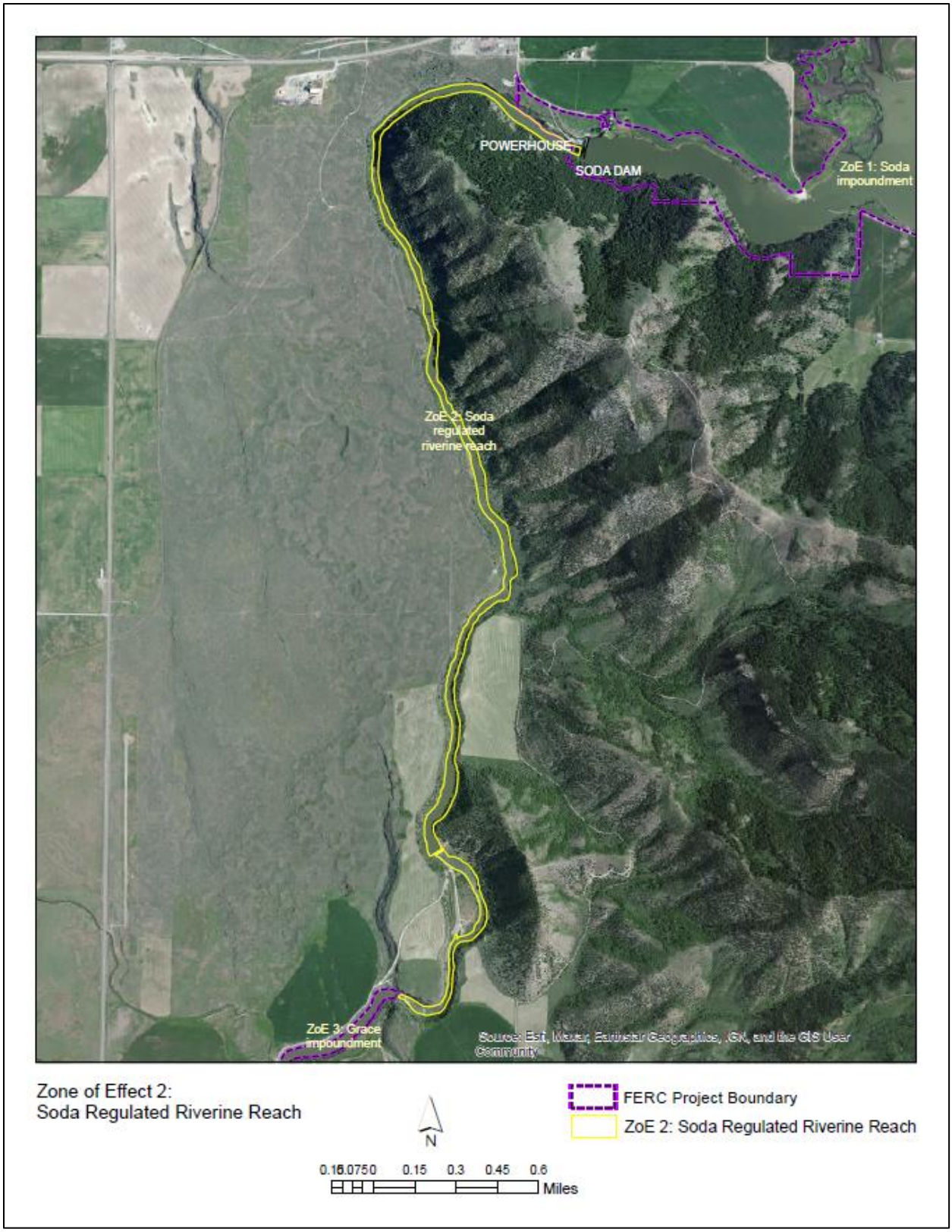

Figure 4b. Aerial view of ZoE 2 – Soda regulated riverine reach (map 2 of 8).

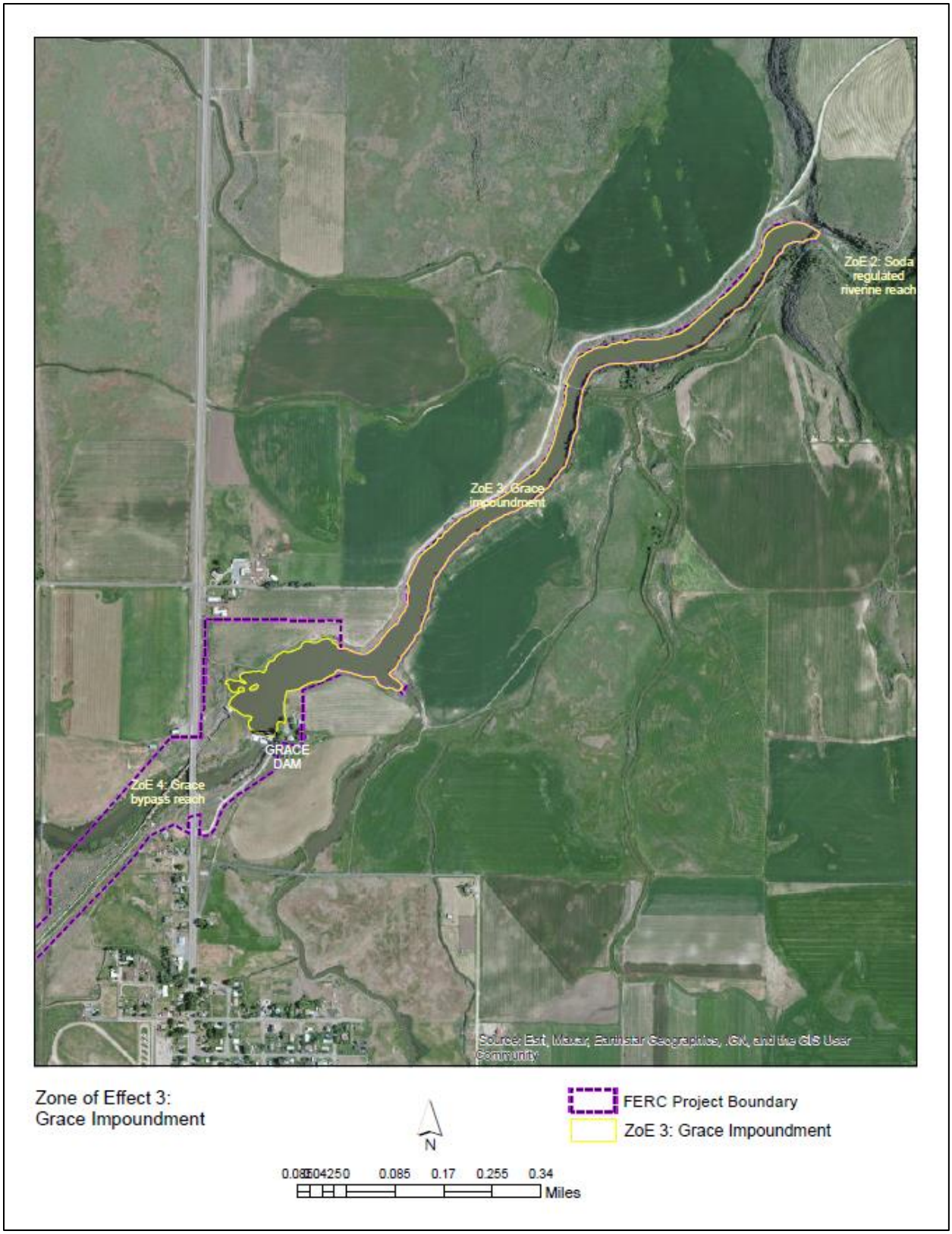

Figure 4c. Aerial view of ZoE 3 – Grace reservoir (map 3 of 8).

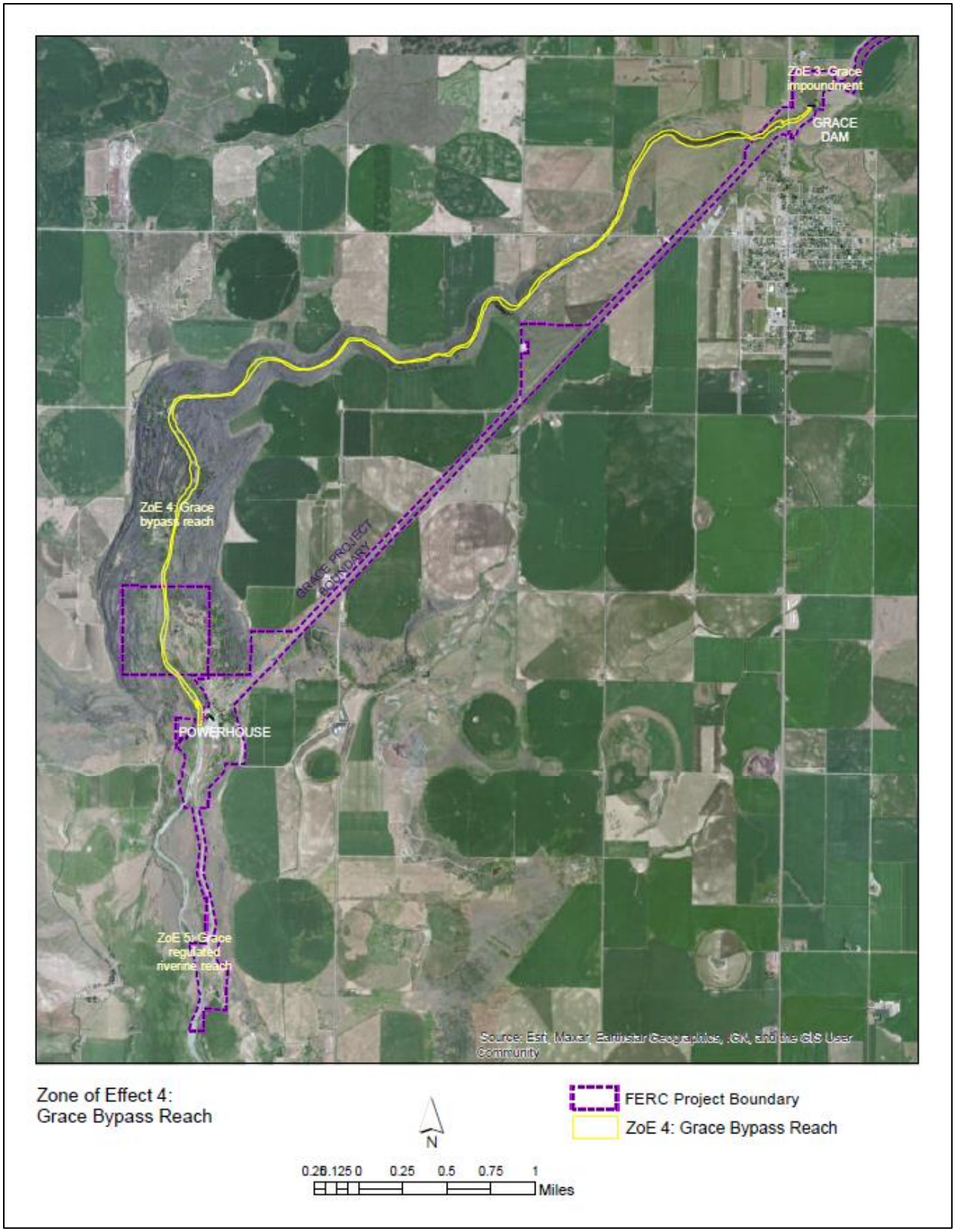

Figure 4d. Aerial view of ZoE 4 – Grace bypass reach (map 4 of 8).

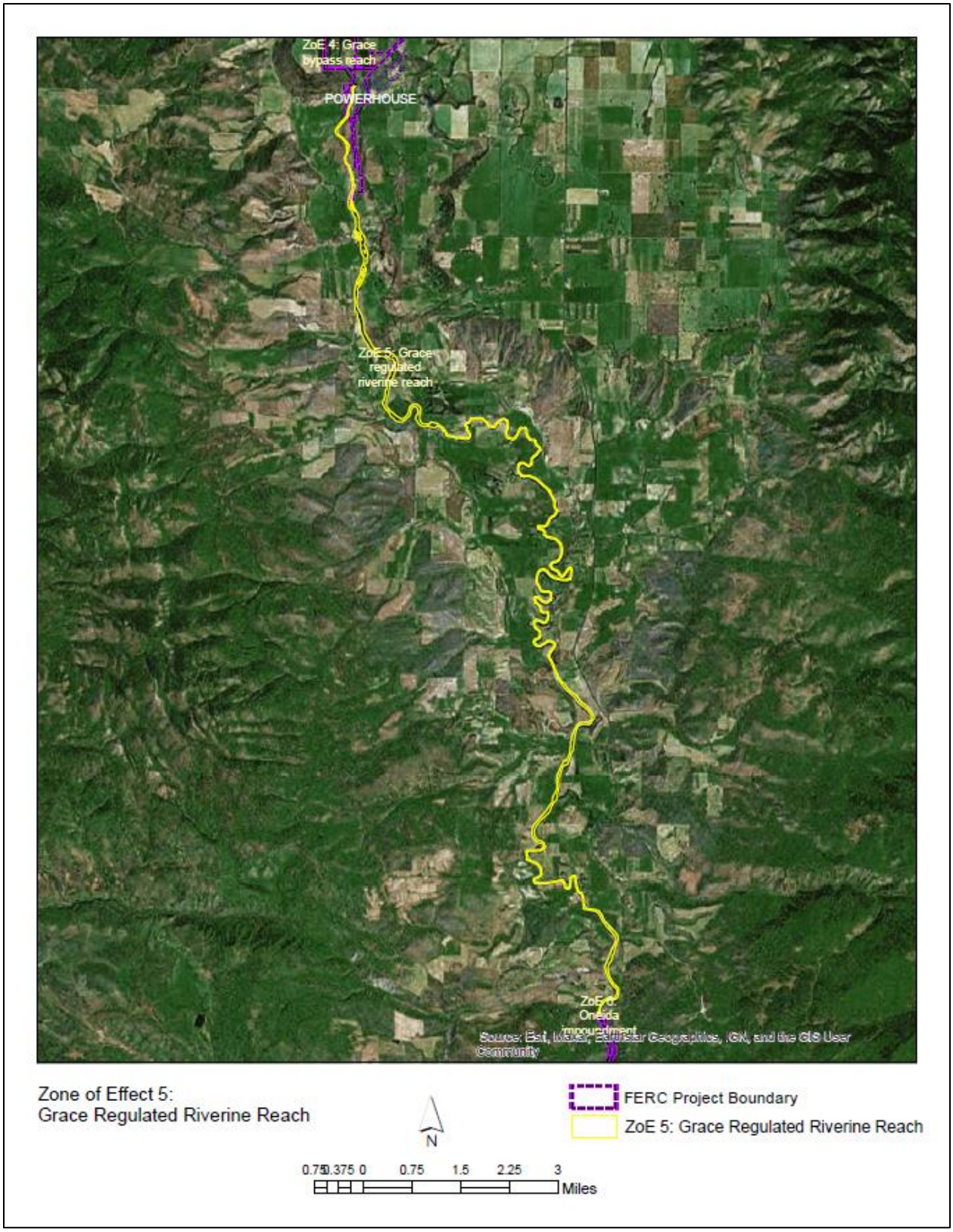

Figure 4e. Aerial view of ZoE 5 – Grace regulated riverine reach (map 5 of 8).

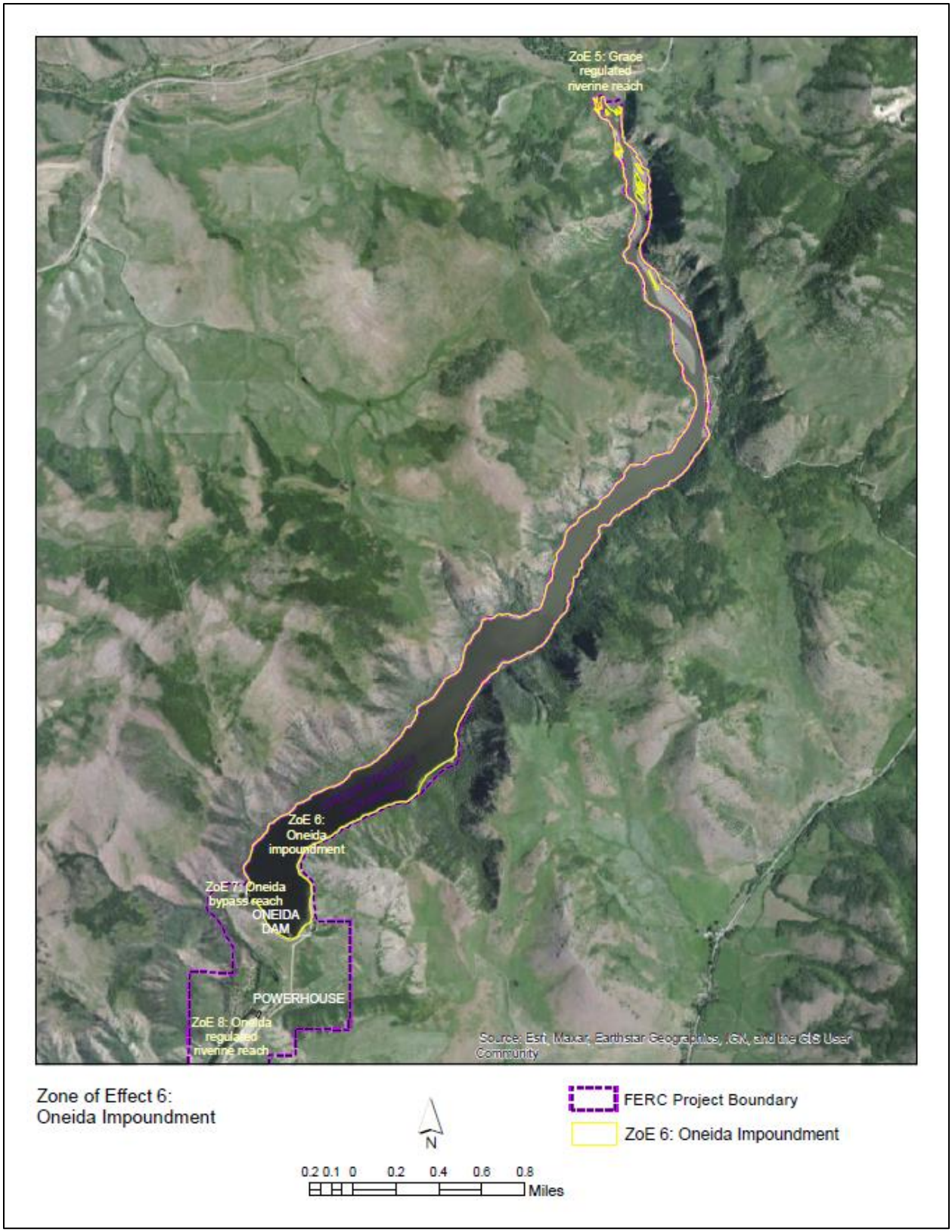

Figure 4f. Aerial view of ZoE 6 – Oneida impoundment (map 6 of 8).

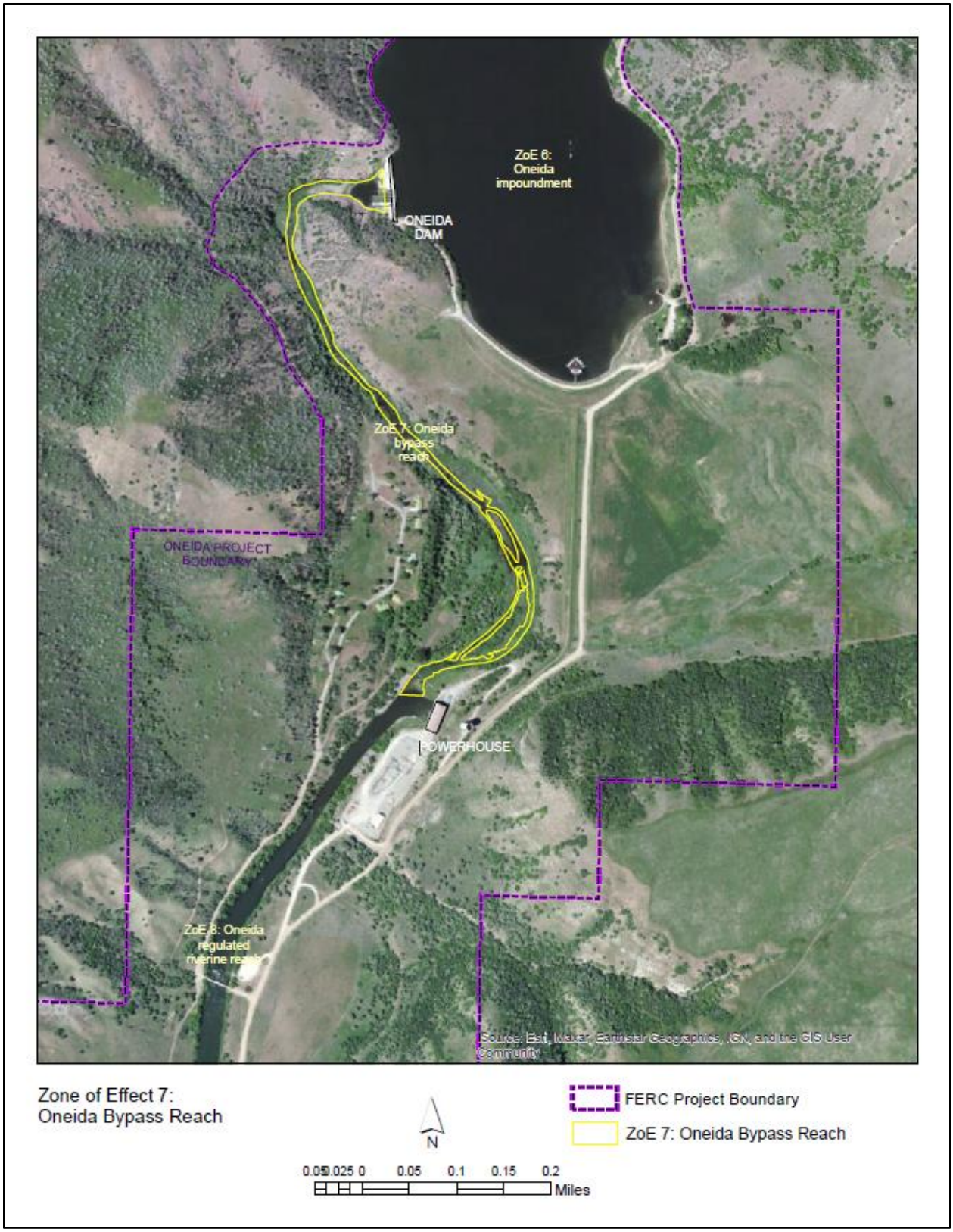

Figure 4g. Aerial view of ZoE 7 – Oneida bypass reach (map 7 of 8).

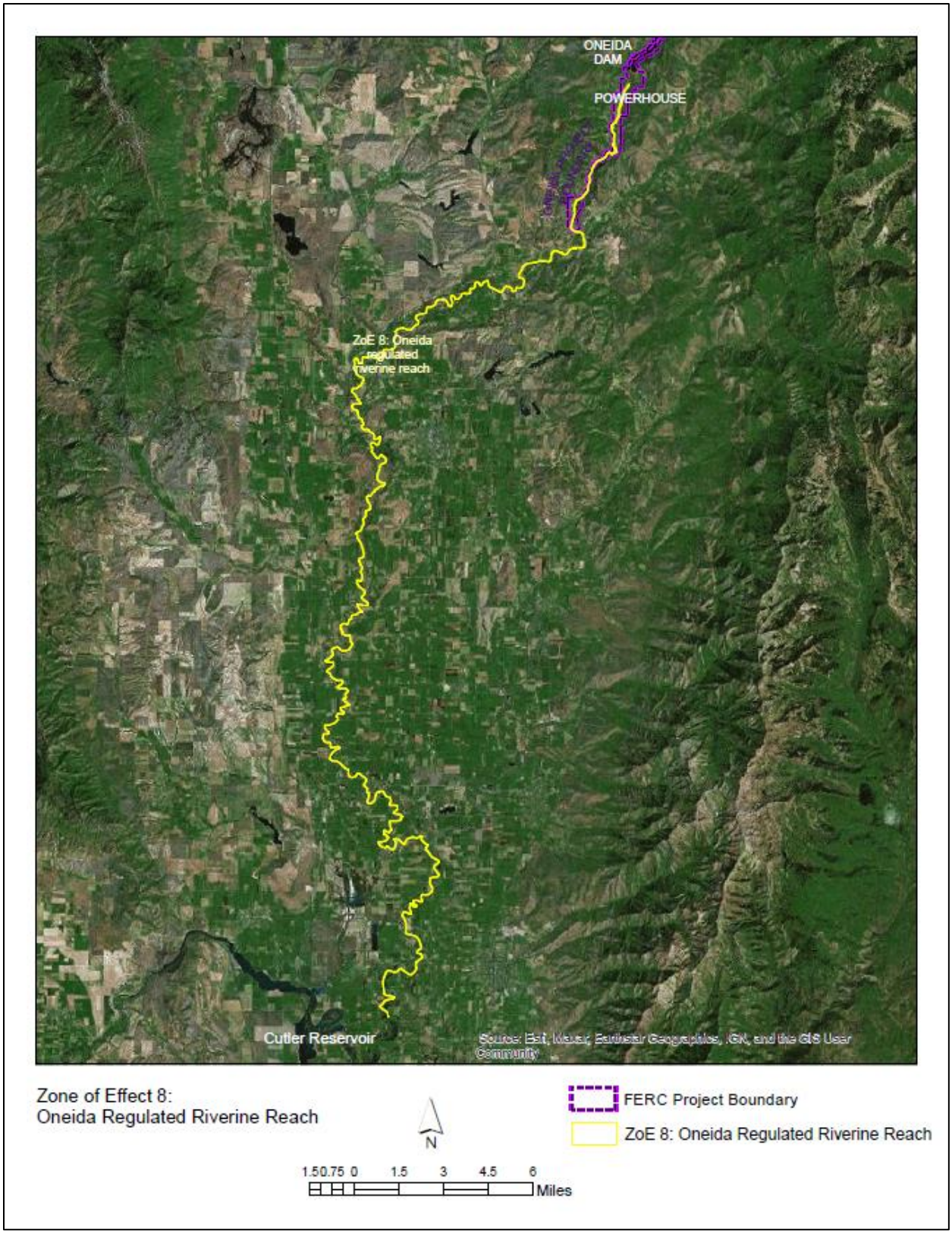

Figure 4h. Aerial view of ZoE 8 – Oneida regulated riverine reach (map 8 of 8).

2.0 CERTIFICATION STANDARDS

PacifiCorp reviewed the certification criteria and alternative standards outlined in LIHI's *Low Impact Hydropower Certification Handbook, 2nd Edition* (Revision 2.05: January 1, 2022) for each of the Zones of Effect (ZoE) identified in Section 1.5. Alternative standards matrices (Handbook Table B-1.2) were completed for each ZoE, as presented below, and the selected alternative standards for each ZoE are grouped by criterion and presented in the applicable sub-sections.

The standards applicable to each criterion for Zones 1 through 8 are indicated in Table 2.c.

Table 2.c Standards Matrix Template for Multiple ZoEs.

Zone Name	**River Mile at Upper and Lower Extent of Zone**	***CRITERION*** ***(type in one numbered standard and PLUS if applicable)***							
		A	***B***	***C***	***D***	***E***	***F***	***G***	***H***
		Ecological Flows	**Water Quality**	**Upstream Fish Passage**	**Downstream Fish Passage**	**Shoreline and Watershed Protection**	**Threatened and Endangered Species**	**Cultural and Historic Resources**	**Recreational Resources**
ZoE 1. Soda - impoundment	RM 190-185	2	2	1	4	2-Plus	2	2	2
ZoE 2. Soda - regulated riverine reach	RM 185-181	2	2	4	1	2-Plus	2	2	2
ZoE 3. Grace - impoundment	RM 180-179	2	2	1	4	2-Plus	2	2	2
ZoE 4. Grace - bypass reach	RM 179-172	2	2	4	1	2-Plus	2	2	2
ZoE 5. Grace - regulated riverine reach	RM 172-148	2	2	1	1	2-Plus	2	2	2
ZoE 6. Oneida - impoundment	RM 148-143	2	2	1	4	2-Plus	2	2	2
ZoE 7. Oneida - bypass reach	RM 143-142	2	2	4	1	2-Plus	2	2	2
ZoE 8. Oneida - regulated riverine reach	RM 142-66	2	2	1	1	2-Plus	2	2	2

2.1 CRITERION A – ECOLOGICAL FLOW REGIMES

Table 2.1-1. Ecological Flow Regime Alternative Standards Matrix

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION A* Ecological Flows
ZoE 1. Soda - impoundment	RM 190-185	2
ZoE 2. Soda - regulated riverine reach	RM 185-180	2
ZoE 3. Grace - impoundment	RM 180-179	2
ZoE 4. Grace - bypass reach	RM 179-172	2
ZoE 5. Grace - regulated riverine reach	RM 172-148	2
ZoE 6. Oneida - impoundment	RM 148-143	2
ZoE 7. Oneida - bypass reach	RM 143-142	2
ZoE 8. Oneida - regulated downstream reach	RM 142-66	2

STANDARD A-2. Agency Recommendation: The flow regime at the facility was developed in accordance with a science-based resource agency recommendation.

Standard A-2 is selected for all Project developments. The Project license, Section 401 Water Quality Certification (WQC), Settlement Agreement, and agency-approved Operations and Compliance Plan (PacifiCorp 2013) provide an operational regime that was developed based on agency recommendations to support habitat and other conditions suitable for healthy fish and wildlife resources. The operational regime provides adequate flows, and reduction of rapid flow fluctuations within and downstream of the Project compared to historical Project operations.

Flow and ramping requirements and required information are presented below followed by sections for specific ZoEs.

Flow and Ramping Requirements

Resource agency recommendations regarding flow conditions are contained in Sections 3.2 and 3.3 of the Settlement Agreement adopted by the FERC in the new license issued December 22, 2003 (as modified on May 23, 2006 by the Cove decommissioning order) and the WQC issued by Idaho Department of Environmental Quality (IDEQ) on June 23, 2003. The Section 401 WQC is included as Attachment A to the Project license.

The Project license and the Settlement Agreement are available on PacifiCorp's website (follow the Project License or Settlement Agreement links on the Bear River project homepage: https://www.pacificorp.com/energy/hydro/bear-river.html).

December 22, 2003 License Order with attached 401 WQC: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CD9DE5-66E2-5005-8110-C31FAFC91712

May 23, 2006 License Amendment (Cove Decommissioning Order) with attached 401 WQC: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01CF305B-66E2-5005-8110-C31FAFC91712)

The current Project license includes the most recent recommendations on flows. The License Order (FERC 2003b, page 12) confirms that no 10j agency recommendations were proposed and the agency recommendations were included in the Settlement Agreement which in turn were included in the license. A second Settlement Agreement specific to Cove decommissioning contained updated agency recommendations for Grace bypass flows that were incorporated into the Project license (FERC 2006, page 9).

Flow releases. Article 408 of the Project license and the WQC established minimum instream flows downstream of each development. These minimum flow requirements were revised May 23, 2006, when FERC issued its Cove Decommissioning Order amending Article 408. The minimum stream flows (MSF) are:

- Downstream of Soda dam (ZoE 2): year-round minimum flow of 150 cfs, or inflow into the Alexander reservoir, whichever is less;
- Grace bypass reach (ZoE 4): year-round minimum bypass flow of 63 cfs or inflow, whichever is less, in addition to 2 cfs leakage below the Grace dam;
- Oneida reach downstream of the powerhouse (ZoE 8): year-round minimum flow of 250 cfs or inflow, whichever is less, in addition to 1 cfs leakage downstream of Oneida dam.

Per Article 410 of the Project license, PacifiCorp developed a plan to modify the flows from Kackley Spring (ZoE 5) to benefit the aquatic resources in the Bear River, based on the results of studies and monitoring outlined in the Settlement Agreement. The Kackley Springs Plan was approved by FERC Order dated March 22, 2005. Following the completion of the studies and monitoring, the Environmental Coordination Committee (ECC) agreed in 2008 to discontinue diversion of the spring directly into the Bear River and send the water down a longer route that can potentially be used by native fish for spawning and rearing. PacifiCorp completed the work on the reroute in September, 2009.

In accordance with Article 420 of the Project license, PacifiCorp developed an Operational Regime to minimize the frequency of river level fluctuations downstream of the Oneida powerhouse (ZoE 8), thereby reducing bank erosion and turbidity in the river. The Operational Regime was approved by FERC Order dated August 17, 2005.

Ramping rates. Article 412 of the Project license and the Section 401 WQC established maximum ramping rates downstream of the Soda and Oneida dams (ZoEs 2 & 8). A minor discrepancy between the Project license and the Section 401 WQC was reconciled by FERC Order issued on July 7, 2004 (FERC 2014b) that modified Article 412 (b). The maximum ramping rates are:

- 1.2 feet per hour in the Soda reach (ZoE 2), ascending and descending, as measured at USGS Gage No. 10075000; and
- 3.0 inches every 15 minutes on the descending arm of the ramp in the Oneida reach (ZoE 8) measured at a designated site between river miles 26 and 30. This equates to two feet in 15 minutes at the USGS gage directly below the Oneida tailrace.

Boater flow ramp rates.
The 1-ft per hour down ramp target following boater flow releases in Grace bypass reach (ZoE 4) was agreed to in 2012.

Suspension of the Article 409 Fish Stranding Minimization Plan was confirmed by FERC on October 17, 2012 and no further changes to ramp rates were required.

The Project license and Section 401 WQC also permit PacifiCorp to increase flow ramping rates for emergencies, to comply with legal constraints associated with water rights, for emergency power needs, and to comply with requirements of the downstream Cutler Hydroelectric Project.

Flow and Water Level Monitoring and Compliance

PacifiCorp's Bear River Hydroelectric Project is in compliance with resource agency recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection for all reaches. The latest record of attainment is provided in the annual Oneida Development Operations Report filed with the IDEQ for water year 2021 (https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/annual-reports/2021-report/Oneida_WY2021_Ops_Rpt.pdf) and reports for prior years are available on PacifiCorp's website: https://www.pacificorp.com/energy/hydro/bear-river/annual-reports.html. (see Section 2.1.2).

In the past 10 years, no notices of violations pertaining to the Ecological Flow Standard were received. The following deviations to MSF or ramping requirements were reported to FERC.

On October 30, 2013 a short (40-minute) deviation from the required 251 csf MSF hourly average downstream of the Oneida development occurred while conduct maintenance. There were no reports of fish stranding as a result. Procedures to ensure flows are greater than the minimum before preforming maintenance and corrections to the automated low flow alarm programming have been implemented to avoid this situation. In a letter dated June 23, 2014, FERC concluded that the deviation was not considered to be a violation of Article 408 of the license: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01c2a9f3-66e2-5005-8110-c31fafc91712.

On October 4, 2019, a deviation from the ramp rate from Oneida plant occurred during testing of new load control programming. The descending ramp rate was exceeded by 0.25-ft for one 15-minute interval. FERC was notified of the incident and that no adverse environmental effects were observed. In a letter dated December 17, 2019 FERC determined that this was not a violation of Article 412 of the license:
https://elibrary.ferc.gov/eLibrary/filedownload?fileid=02057eed-66e2-5005-8110-c31fafc91712

On November 29, 2019, a short (approximately 1 hour) deviation from the MSF requirements occurred due to an imbalance on the transmission system that caused the Oneida plant to trip. FERC was notified on December 5, 2019:
https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0205422f-66e2-5005-8110-c31fafc91712.

License Article 408 allows flows to be suspended on a temporary basis for unforeseen events that are beyond the licensee's control.

The Operations and Compliance Plan (PacifiCorp 2013) described in Section 1.3 identifies how flows and water levels are monitored and how compliance with requirements is demonstrated.

Operations and Compliance Plan:
https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01B2C0DA-66E2-5005-8110-C31FAFC91712

Reservoir levels for both Soda and Oneida reservoirs are monitored at various compliance point locations (gages) that are alternated based on inflow thresholds defined in the Operations and Compliance Plan. Reservoir elevation gage and stream gage readings are used together to compute inflow. In order to insure that flow rates never fall to less than the specified minimum flow requirements, compliance threshold points (specified inflow rates) have been established. The compliance threshold points are 170 cfs and 275 cfs for Soda and Oneida developments, respectively. When inflows to Soda and Oneida reservoirs are relatively high (equal to or above a 170 cfs and 275 cfs threshold for Soda and Oneida respectively), stream gages are used as the minimum flow compliance points. When inflows are lower, the 24- hour moving average reservoir elevation is the measure of compliance and is kept relatively constant (i.e., within Soda and Oneida elevation deadband thresholds in Table 1 of the Operations and Compliance Plan shown below) to ensure that the inflow to the reservoir is passed downstream (Operations and Compliance Plan page 4).

Table 1. Soda and Oneida Reservoirs Deadband Thresholds (when inflow is below the compliance thresholds of 170 cfs for Soda and 275 cfs for Oneida).

Deadband Parameter	Soda	Oneida
Upper Threshold	Baseline + 0.5 feet	Baseline + 2.0 feet
Upper Target	Baseline + 0.25 feet	Baseline + 1.5 feet
Lower Target	Baseline – 0.25 feet	Baseline – 1.5 feet
Lower Threshold	Baseline – 0.5 feet	Baseline – 2.0 feet

The operator will make adjustments to outflow, typically once a day, to keep the reservoir elevation within target elevation range. If the elevation falls below the lower threshold because of desired generation flows above the inflow or spinning reserve call-out event, a new (lower) baseline and associated deadband would be re-established. This situation represents outflow above and beyond the inflow and is protective of the resource and provides for use of stored water that does not impact minimum flow compliance; the drawdown would be refilled during times when inflow exceeds the minimum flow level.

The Grace development is operated in conjunction with the other Project developments per Operational Regime and the Operations and Compliance Plan. Inflow to the Grace reservoir is important for determining the downstream minimum flow requirements and how flows are released at the dam. Reservoir elevations are used in flow computations and flows from Soda development, and withdrawals from Bench B and the Last Chance Canal are monitored to inform operational decisions. Reservoir elevation thresholds as they relate to streamflow compliance methods are discussed below. For context, information from the Operations and Compliance Plan on minimum flows in the bypass reach is initially presented here. See Section 2.1.4 for further bypass flow discussion.

MSF requirements downstream of the Grace Dam into the Black Canyon reach vary depending on inflow to the Grace Reservoir. The MSF delivery from the Grace Dam is provided either through a low-level bypass valve (primary method) or slide gate (secondary method). Each of these MSF release methods has a different compliance methodology and location.
Although Article 408 allows the MSF to be reduced without limitation to match inflow when inflow is less than 63 cfs, PacifiCorp has voluntarily chosen to maintain a lower MSF target of 40 cfs when inflow falls below this number.
There are two available methods for minimum flow compliance at the Grace Development and each uses a separate compliance location. The primary method uses the low-level bypass valve installed on the minimum flow bypass conduit and the secondary method uses one or more of the slide gates on the dam.

Primary Flow Compliance Method. The flow through the bypass valve will be at least 63 cfs on an hourly average basis measured at the top of each hour. In operation, the target flow will be 65 cfs to provide a buffer.
The primary compliance location is the ultrasonic flow measurement device located on minimum flow bypass conduit. The 2 cfs leakage noted in Article 408 will pass through the dam and is not represented on the flow measurement device (Operation and Compliance Plan, page 9).

Secondary Flow Compliance Method. If the primary minimum flow bypass valve is not used for any reason, then one or more of the slide gates on the dam will be opened to a predetermined level to ensure that the minimum flow requirements are met. The hydraulic equation of flow for the gate relating the flow to the opening size and reservoir elevation will be used along with a gate-specific calibrated constant to determine the gate opening required to provide the minimum flow.

The typical values for the threshold level, alert level and normal operating range for the Grace Reservoir, along with the anticipated flow rates for the alert level and normal operating range, are shown below in Table 2 from the Operations Plan. While these values are anticipated to be static, they will be modified as needed.

Table 2. Grace Minimum Flow Compliance Terms for Relating Reservoir Level to Minimum Flow		
Reservoir Level Term	**Typical Values**	**Flow through Secondary Compliance (slide gates)**
Threshold Level (used to determine opening size of minimum flow gate or valve)	5553.0'	65 cfs
Alert Level	5553.8'	70 cfs
Normal Operating Range	5554.2' - 5554.5'	74 cfs (at 5554.3')

Daily manual verification of the minimum flow gate setting will be done at the Grace Dam when the secondary compliance method is in use. If the water level is discovered to be below alert level when the operator makes the daily check or monthly manual reading, they will take appropriate action to ensure the minimum flow is restored by increasing the reservoir water level or gate opening.

The automated measuring and recording of the water level in the Grace Reservoir will be done with electronic measuring equipment, which is connected to the PacifiCorp SCADA system and recorded in PacifiCorp's electronic databases. The water level is always monitored for operational purposes. When the secondary compliance method is in place, the following processes will be followed: The slide gate setting and the electronic readout of the reservoir level will be checked each day as part of the operator's compliance duties. The electronic reservoir water level will be verified by a manual measurement once a month. The operator will check to make sure there is no blockage in the gate and that the minimum flow is being provided by confirming that the gate setting is correct and that the water level is at or above the threshold level. The operator will check other available information such as outflow from the Soda Reservoir, and flows in the Last Chance and Bench B irrigation diversion canals to determine river conditions and verify that the minimum flow requirement can be met. The minimum flow gate setting and electronic read-out of the Grace Reservoir water level will be documented each day on a compliance log along with the monthly manual reading.

Enforceable agreements

The Project is affected by agreements that influence inflow and flows to meet irrigation demands in the Bear River. See Sections 1.2.1 and 1.2.2 above for an explanation of the Settlement Agreement and relationship to the Bear Lake Irrigation Project.

2.1.1 ZoE 1: Soda Impoundment

Criterion	*Standard*	*Instructions*
A	2	Agency Recommendation (see Appendix A for definition): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).

Soda reservoir is commonly known as the Alexander Reservoir. The powerhouse is integral to the dam and the development does not contain a bypassed reach.

The Project license does not directly specify reservoir levels, refill rates or other restrictions but rather provides requirements for instream flows and ramping rates for the river downstream (see Sections 1.3 and 2.1.2). Project reservoirs levels are managed and monitored per the Operations and Compliance Plan to provide the required flow and ramp rates. Project developments are operated in a coordinated manor to meet irrigation demands while reducing potential river flow related impacts to downstream reaches. Reservoirs (ZoEs 1, 3, and 6) are operated in a modified run-of-river mode whereas water stored in Soda and Oneida reservoirs may at times be needed to satisfy short-term irrigation demand or to maintain reservoir levels in the downstream Cutler reservoir for environmental protection purposes.

The operational regime is consistent with Idaho Department of Fish & Game (IDFG) Fisheries Management Plan to manage a mixed (warm and coldwater) fishery in the Soda reservoir and the basin-wide objective to support Bonneville cutthroat trout (BCT) restoration (see Section 2.3). The stated strategy for BCT restoration is to cooperate with PacifiCorp and other interested parties to implement and monitor FERC license conditions to protect BCT in the Bear River system (IDFG 2019. Idaho Department of Fish & Game Fisheries Management Plan 2019-2024, pages 349- 351. https://idfg.idaho.gov/sites/default/files/2019-2024-idaho-fisheries-management-plan-original.pdf?update10-2019.

2.1.2 ZoE 2: Soda regulated riverine reach

Criterion	*Standard*	*Instructions*
A	2	Agency Recommendation (see Appendix A for definition): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).

The Soda development does not have an associated bypass reach. A diversion owned by the Last Chance Canal Company, located approximately 4 miles downstream from Soda dam and 0.5 miles upstream of the Grace reservoir, can withdraw 658 cfs from the Bear River.

The following MSF and ramp rates were recommended in the Project license, Settlement Agreement, and WQC:

- Downstream of Soda dam: year-round minimum flow of 150 cfs, or inflow into the Alexander reservoir, whichever is less.
- 1.2 feet per hour in the Soda reach, ascending and descending, as measured at USGS Gage No. 10075000.

The Project license and Section WQC also permit PacifiCorp to increase flow ramping rates for emergencies, to comply with legal constraints associated with water rights, for emergency power needs, and to comply with requirements of the downstream Cutler Hydroelectric Project.

The agency flow recommendations for the Project were developed and negotiated during the relicensing and settlement process with subsequent revisions to the Grace bypass flows during the Cove decommissioning settlement. Technical studies that that were available included the Soda IFIM, Oneida IFIM, and fish studies cited later in the license application and following Environmental Impact Statement (EIS).

The Soda IFIM indicated that flows of 150 cfs provide optimum habitat for a put and take trout fishery (PacifiCorp 1999a, page E3-23). Follow-up studies after the 150 cfs minimum flow was implemented indicate that the overall effect of the minimum flow has been positive, as indicated by an increase in rainbow trout mean sizes (FERC 2003a. Bear River Final EIS, page 60).

Coordination with resource agencies during development of the Settlement Agreement and continued participation of agencies in the ECC meetings provided opportunities for adaptive

management actions that benefit water quality and other resources in the wider basin Action Area (see Sections 2.2 and 2.5).

The operational regime is consistent with the IDFG Fisheries Management Plan for the reaches between Soda dam and Grace dam (ZoEs 2 and 3) which is to provide for mixed species, put-and-take/general/conservation management and to evaluate the fishery and monitor minimum flow (IDFG 2019. Idaho Department of Fish & Game Fisheries Management Plan 2019-2024, pages 349- 351).

2.1.3 ZoE 3: Grace Impoundment

Criterion	***Standard***	***Instructions***
A	2	Agency Recommendation (see Appendix A for definition): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).

The Grace impoundment known as Grace Reservoir has a limited storage capacity. The average residence time in the reservoir is about 1 hour (Cove decommissioning environmental report, page 20). There is an irrigation diversion (Bench B intake, owned by Gentile Valley Irrigation Co.) located in Grace reservoir 0.25 miles upstream from the Grace dam.

There are no flow related requirements specific to the Grace reservoir. The Grace development is operated in conjunction with the other Project developments per Operational Regime and the Operations and Compliance Plan.

The operational regime is consistent with the IDFG Fisheries Management Plan (IDFG 2019, page 350) which does not distinguish the Grace reservoir from the Soda riverine reach as discussed in Section 2.1.2.

2.1.4 ZoE 4: Grace bypass reach

Criterion	*Standard*	*Instructions*
A	2	Agency Recommendation (see Appendix A for definition): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).

The Grace bypass reach is 6.6 miles long. When enough flow is available, water is diverted at Grace dam into a flowline before returning to the Bear River downstream of the Grace powerhouse. Flows in the Grace bypass are the result of the minimum flows provided at the dam, 2 cfs leakage from the dam and discharge from five major springs. A non-facility related irrigation diversion that is located approximately 300 feet upstream from the powerhouse diverts 35 to 40 cfs into the Gentile Valley Canal (for Gentile Valley Irrigation Co. and Thatcher Irrigation Co.). The five major springs in the Grace bypass reach plus dam leakage produce a total flow contribution of 40-70 cfs which is typically enough to satisfy the water right held by Gentile Valley Irrigation Co. (Cove decommissioning environmental report, page 33). The minimum flows released at the dam provide the balance of flows in the bypass reach.

Flow releases:

Article 408 of the Project license and the WQC established minimum instream flows from Grace dam. These minimum flow requirements were revised May 23, 2006, when FERC issued its Cove Decommissioning Order amending Article 408. The current minimum flow for the Grace bypass reach is a year-round minimum bypass flow of 63 cfs or inflow, whichever is less, in addition to 2 cfs leakage downstream of the Grace dam.

In 2011, PacifiCorp installed a low level release valve at Grace dam to improve the measurement and delivery of the required minimum instream flow in the bypass reach.

IFIM results. The Grace IFIM study conducted in August 1997, as summarized in the Grace-Cove license application (PacifiCorp 1999b, pages E3-31 to E3-33), concluded that a release of 20 cfs from Grace dam would provide about 94 percent of the maximum amount of habitat possible for rainbow and cutthroat trout juvenile and adult rearing in the bypass and that increasing releases to provide additional habitat for trout spawning is not warranted since a small amount of habitat occurs and it is poor quality, and the trout fishery is predominantly a put-and-take fishery.

The Grace-Cove IFIM studies indicated that increasing minimum flows in the Grace bypass (much above the 80-cfs proposed level) would increase available habitat for various trout life stages but would also increase summer temperatures. In the Final EIS for the Bear River license application, FERC staff concluded that the flow proposals would provide substantial increases in the amount of physical habitat available for most trout rearing life stages and although summer temperatures would be increased, they would not likely have an adverse effect on the fishery (FERC 2003a, page 68).

Cove decommissioning. The Cove decommissioning order revised the flow requirements for the Grace bypass from 80 cfs to a year-round minimum flow of 63 cfs or inflow, whichever is less, in addition to 2 cfs leakage downstream of Grace dam. The Grace-Cove Settlement parties agreed that the minimum flows in the Grace bypassed reach should be reduced from 80 to 63 cfs in exchange for greater environmental benefits that would result if PacifiCorp would decommission the Cove development. The extra generation gained from that change would partially offset both the decommissioning costs and the net power generation lost by taking the Cove development out of service. Environmental benefits from removing the Cove development include restored run-of-river flows in the Cove bypassed reach (approximately 1.7 miles of Bear River channel downstream of the dam site) and former reservoir reach, and restored aquatic connectivity (PacifiCorp 2005a, Application of PacifiCorp for Amendment of License and Submission of Offer of Settlement concerning the Decommissioning of the Cove Development). FERC staff agreed that removal of Cove development will result in environmental benefits for aquatic resources in the Project area and that reducing minimum flows in the Grace bypassed reach will not result in significant adverse environmental impacts (FERC order dated May 23, 2006).

Grace-Cove Settlement Agreement:
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/cove-decommissioning/2005-08-15_License_Amendment_Application.pdf

Subsequent studies conducted by PacifiCorp and the ECC supported the conclusion that reducing minimum flows in the Grace bypassed reach do not result in significant adverse environmental impacts (Bear River Final Variable Flow Report – September 12, 2011 and Black Canyon Boater Program Ramp Rate Study: Fish Stranding Following Boater-Flow Releases 11-24-10; available on PacifiCorp's Bear River website: https://www.pacificorp.com/energy/hydro/bear-river/project-documents.html). The final variable flow study measured changes in aquatic biota (macroinvertebrates, organic matter, periphyton, fisheries, periphyton, filamentous green algae, and substrate) between the three baseline years compared to the three flow-release years but did not reveal clear adverse environmental impacts due to the boater-flow releases.

Grace Recreational Flow Release. The Bear River FERC License and Settlement Agreement require the provision of recreational releases of water into the Grace Bypassed Reach for whitewater boating. The current program provides three two-day weekends and one three-day weekend of recreation flows. These weekend flows are provided between April 1 and June 5 on a schedule jointly prepared by PacifiCorp, American Whitewater and the ECC. Flows are to be 900 cfs from 10 a.m. to 4 p.m., with 200 cfs provided between flow days. If inflow is greater

than 900 cfs, the larger flow will be provided up to 1,500 cfs. Flows greater than 1,500 cfs can be used for generation.

Recreational flow releases and flow-transition methodology are described in the Operations and Compliance Plan (PacifiCorp 2013, page 12-15).

Whitewater flows may be provided by several methods, depending on available flows. When the Grace Plant is online and passing 900 cfs or more, the plant would be taken offline and the flows released to the bypass reach. If flows are less than 900 cfs, supplemental water is released from Soda reservoir to make up the difference.

During whitewater boating events, the measure of compliance is the 15-minute change to slide gate openings from the beginning of the ramping event when flows are provided by reducing flow for generation. When recreational releases are provided from Soda the ramping will be based on generation changes.

Minimum flow measurements are made at the dam using the ultrasonic sensor in the release valve or through calculations and slide gate rating tables as described in Section 2.1.3 above. A USGS gage (10080000) located downstream of Grace dam in the bypass reach is primarily used for the rating table for slide gate changes. The gage is also used to quantify flow during high runoff and recreational release events (Operations and Compliance Plan - PacifiCorp 2013, page D-5).

Ramp rates:

Following whitewater release studies, it was decided in 2012 to use a one-foot-per-hour down-ramp target and the compliance method is set forth in the Operations and Compliance Plan.

The 1-ft/hr down ramp rate following boater-flow releases, was recommended by the ECC and is supported by the fish stranding study that showed that significantly more fish were stranded when lower (0.25-ft/hr) down ramp rates were tested compared to higher (0.5-ft/hr and 1-ft/hr) down ramping rates.

The operational regime is consistent with IDFG Fisheries Management Plan basin-wide objective to support Bonneville Cutthroat Trout (BCT) restoration (see Section 2.3) and to manage for a mixed fishery in the reaches between Oneida reservoir and Grace dam (ZoEs 4 and 5). The management direction is to work with landowners and water users on tributaries to restore native cutthroat populations and to monitor BCT populations in the river and primary tributaries to determine the success of conservation hatchery and habitat restoration programs (IDFG 2019. Idaho Department of Fish & Game Fisheries Management Plan 2019-2024, page 350).

2.1.5 ZoE 5: Grace regulated riverine reach

Criterion	***Standard***	***Instructions***
A	2	Agency Recommendation (see Appendix A for definition): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).

There are no flow-related requirements specific to the Bear River directly downstream of Grace powerhouse. The Grace development is operated in conjunction with the other Project developments per Operational Regime and the Operations and Compliance Plan.

Downstream of the Grace powerhouse, discharge from three natural springs in the former Cove bypass reach and the Kackley Springs tributary add to flows passed through Grace powerhouse and bypass reach.

Per Article 410 of the Project license, PacifiCorp developed a plan to modify the flows from Kackley Spring to benefit the aquatic resources in the Bear River, based on the results of studies and monitoring outlined in the Settlement Agreement. The Kackley Springs Plan was approved by FERC Order dated March 22, 2005. Following the completion of the studies and monitoring, the ECC agreed in 2008 to discontinue diversion of the spring directly into the Bear River and send the water down a longer route that can potentially be used by native fish for spawning and rearing. PacifiCorp completed the work on the reroute in September, 2009.

The removal of the Cove development from this reach (see Section 2.1.4) has provided environmental benefits from restored run-of-river flows to the upper 1.7 miles of this reach.

The operational regime is consistent with the IDFG Fisheries Management Plan as described above in Section 2.1.4.

2.1.6 ZoE 6: Oneida impoundment

Criterion	*Standard*	*Instructions*
A	2	Agency Recommendation (see Appendix A for definition): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).

The Oneida facility consists of the Oneida Reservoir that is impounded by the gravity dam and earth embankment with a spillway, three penstocks, and a powerhouse (see Section 1.1). Water is released from Oneida reservoir through either the Oneida flowline or spillway gates.

The Project license does not directly specify reservoir levels, refill rates or other restrictions. The Oneida development is operated in conjunction with the other Project developments per Operational Regime and the Operations and Compliance Plan as described above for Soda reservoir (See Section 2.1.1).

The reservoir management is consistent with IDFG management direction to maintain diverse fishing opportunities for a mixed fishery in the reservoir. The operational regime supports IDFG objectives for the Bear River basin for BCT restoration (see Section 2.3).

2.1.7 ZoE 7: Oneida bypass reach

Criterion	*Standard*	*Instructions*
A	2	Agency Recommendation (see Appendix A for definition): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).

The Oneida bypass reach is a short section (less than 0.5 miles) of Bear River that curves around the base of the gravity dam to the Powerhouse. A base flow was not recommended in the Project license or WQC for the bypass reach. The flows are a result of seepage past the Oneida dam (about 5 cfs). The seepage provides relatively cool water to this reach that supports a self-sustaining brown trout population (see Section 2.3.5).

2.1.8 ZoE 8: Oneida regulated riverine reach

Criterion	***Standard***	***Instructions***
A	2	Agency Recommendation (see Appendix A for definition): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).

The regulated downstream reach downstream of Oneida dam extends to the Cutler Reservoir, in Utah. Downstream of Oneida dam, the FERC Project boundary only extends along the Bear River to the downstream end of the Oneida Narrows Canyon (approximately 11 miles). The topography broadens once the Bear River exits the canyon near the confluence with Mink Creek. From that point downstream, the Bear River meanders through a broad valley until it reaches Cutler reservoir.

The MSF and ramp rates were recommended in the Project license, Settlement Agreement, and WQC. A goal of the Settlement Agreement was to operate the Project in a manner that provides improved water quality and other environmental benefits in this reach. The Operations and Compliance Plan provides for coordinated Project operations that ensure compliance with minimum flows and ramp rates to minimize the frequency of river level fluctuations downstream of the Oneida powerhouse.

Flow releases:

The minimum flows for the Oneida reach downstream of the powerhouse are a year-round minimum flow of 250 cfs or the inflow, whichever is less, in addition to 1 cfs leakage downstream of Oneida dam.

Oneida flows of 250 cfs provide close to maximum habitat for rearing adult and juvenile trout and for a wetted channel (PacifiCorp 1999c. License Application, page E3-57). In the EIS, FERC concluded that the 250-cfs minimum flow would provide an adequate level of habitat stability to support the existing fishery for stocked trout and that limiting the downramping to 3.0 inches per

15 minutes should provide additional protection from stranding for fish and macroinvertebrates (FERC 2003a, EIS page 73).

Ramping rates:

The maximum ramping rate is 3.0 inches every 15 minutes on the descending arm of the ramp in the Oneida reach measured at a designated site between river miles 26 and 30. This equates to two feet in 15 minutes at the USGS gage directly downstream of the Oneida tailrace. A minor discrepancy between the Project license and the Section 401 WQC for ramping rates below the Oneida dam was reconciled by FERC Order issued on July 7, 2004 that modified Article 412 (b) to match the Section 401 WQC (FERC 2004b). The ramp rate measurement location and correlation to USGS gage readings were clarified.

The Project license and Section 401 WQC also permit PacifiCorp to increase flow ramping rates for emergencies, to comply with legal constraints associated with water rights, for emergency power needs, and to comply with requirements of the downstream Cutler Hydroelectric Project.

In accordance with Article 420 of the Project license, PacifiCorp developed an Operational Regime to minimize the frequency of river level fluctuations downstream of the Oneida powerhouse, thereby reducing bank erosion and turbidity in the river that negatively affect water quality. Historically, when Oneida reservoir was used to balance grid fluctuations, flow fluctuations were common. The current Operational Regime eliminates peaking operations and the recommended ramp rate reduces flow fluctuations compared to historic levels.
The Operational Regime was approved by FERC Order dated August 17, 2005. In their Order, FERC concludes that implementation of the operational regime would minimize fluctuations downstream of the Oneida powerhouse, thus reducing bank erosion and turbidity in the river, and further, providing flows of 900 cfs, when available, during the summer months would increase boating opportunities at the Oneida reach throughout the recreation season.

IDEQ indicated that based on WQMP studies, the Project did not contribute to water quality violations downstream of Oneida dam (see Section 2.2). In their TMDL 5-year assessment, IDEQ reported that bank stability was generally higher for the reach immediately downstream of the Oneida dam compared to reaches further downstream (see Section 2.2).

The operational regime is consistent with IDFG management direction to seek opportunities to improve conditions for native BCT and to maintain the high-use fishery through sterile rainbow trout stocking or native cutthroat trout supplementation (IDFG 2019. Fisheries management Plan, page 350). The operational regime and other license conditions also support the IDFG objective for the Bear River basin to improve habitat for BCT (see Sections 2.3 and 2.5).

2.2 CRITERION B – WATER QUALITY

Table 2.2-1. Water Quality Alternative Standards Matrix.

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION B* Water Quality
ZoE 1. Soda - impoundment	RM 190-185	2
ZoE 2. Soda - regulated riverine reach	RM 185-180	2
ZoE 3. Grace - impoundment	RM 180-179	2
ZoE 4. Grace - bypass reach	RM 179-172	2
ZoE 5. Grace - regulated riverine reach	RM 172-148	2
ZoE 6. Oneida - impoundment	RM 148-143	2
ZoE 7. Oneida - bypass reach	RM 143-142	2
ZoE 8. Oneida - regulated downstream reach	RM 142-66	2

STANDARD B-2. Agency Recommendation: The facility is in compliance with all water quality conditions contained in a recent Water Quality Certification or science-based resource agency recommendation providing reasonable assurance that water quality standards will be met for all waterbodies that are directly affected by the facility. Such recommendations, whether based on a generally applicable water quality standard or one that was developed on a site-specific basis, must include consideration of all water quality components necessary to preserve healthy fish and wildlife populations, human uses, and recreation.

Standard BA-2 is selected for all Project developments. The Project is in compliance with all conditions in the water quality certification. The Project license and water quality certification provide agency recommendations to preserve healthy fish and wildlife populations, human uses, and recreation. The State of Idaho water quality classification system, Section 303(d) listings, water quality certificate, and required monitoring are explained below followed by sections for reservoir and riverine ZoEs.

Water Quality Classification

The State of Idaho Administrative Code (IAC 58.01.02.100.03.b.c, 04, 05 and 160.02.03) assigns the following designated beneficial uses to the Bear River, including the reaches from Railroad bridge (T14N, R45E, Sec. 21) to the Idaho/Utah boarder that includes all ZoEs; Aquatic Life (a. Cold water and b. Salmonid spawning), Recreation (a. Primary contact), Water Supply (b. Agricultural and c. Industrial), Wildlife Habitats, and Aesthetics
(Source: https://adminrules.idaho.gov/rules/2011/58/0102.pdf pages 26-27, 137 and 139).

Section 303(d) of the CWA requires states to develop a list of waterbodies that do not meet water quality standards and to submit updated list to EPA every two years. The most recent 303(d) list is found in the appendix A of the Idaho's Integrated Report Final 2022 dated April 2022 (IDEQ 2022a) as described below.

Idaho's 2022 Integrated Report

A primary objective of the 2022 Integrated Report is to describe the attainment status of Idaho's surface waters relative to their beneficial uses. To achieve this, all state waters are placed into at least one of five primary reporting categories based on the amount of information known about their water quality, whether or not their beneficial uses are supported, and the types of impairments preventing beneficial use support. Categories are generally defined as:

- Category 1 - Waters are wholly within a designated wilderness or 2008 Idaho Roadless Rule "Wild Land Recreation" area and are presumed to be fully supporting all beneficial uses.
- Category 2 - Waters are fully supporting those beneficial uses that have been assessed. The use attainment of the remaining beneficial uses has not been determined due to insufficient (or no) data and information.
- Category 3 - Waters have insufficient (or no) data and information to determine if beneficial uses are being attained or impaired. Category 3 has an additional subcategory.
- Category 4 - Waters do not support one or more beneficial uses, but they do not require development of a TMDL.
    - Category 4a: Waters have a TMDL completed and approved by EPA.
    - Category 4b: Waters have had pollution control requirements other than a TMDL placed on them, and these waters are reasonably expected to attain the water quality standard within a reasonable period of time.
    - Category 4c: Waters failing to meet applicable water quality standards due to other types of pollution (e.g., flow alteration), not a pollutant.
- Category 5 - Waters do not meet applicable water quality standards for one or more beneficial uses due to one or more pollutants; therefore, an EPA-approved TMDL is needed. Category 5 water bodies make up the § 303(d) list.

Copies of the applicable pages from the State of Idaho's CWA Category 5 § 303(d) list of impaired waters and 305(b) list of waters classified as Category 4a and Category 4c are provided in Appendix A-2-1. A summary of the lists of impaired waters for each ZoE is provided in Table 2.2-2.

The Bear River reaches upstream of Soda reservoir and between Soda dam and the Idaho/Utah boarder are classified as Category 5 (§ 303(d) list) as impaired for cold water aquatic life and salmonid spawning temperature (IDEQ 2022, 2022 Integrated Report-Appendix A, page 299). The Bear River Project area between Soda dam and Oneida reservoir is also listed as Category 4c for flow regime modification (2022 Integrated Report-Appendix A, page 259).

TMDLs have been established pursuant to Section 303(d) of the CWA for Total Phosphorus (TP) and Total Suspended Solids (TSS) for the Alexander (Soda) reservoir, the Oneida Narrows reservoir, and the Bear River from the Alexander reservoir to the Idaho border (Category 4a. 2022 Integrated Report-Appendix A, pages 127, 129 and 130).

Sources:

Cirrus Ecological Solutions, LC. 2005. PacifiCorp Bear River Hydroelectric Project FERC No. 20, Environmental Report, Cove Development Decommissioning. Prepared for PacifiCorp. Logan UT. June 30, 2005.

ERI. 2005. *Draft Bear River/Malad Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204*. Prepared for Idaho Department of Environmental Quality. Logan. January 2005.

IDEQ (Idaho Department of Environmental Quality). 2011. *Bear River Basin Addendum to the Bear River/Malad Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204.* (IDEQ July 2011 revised February 2013). Pocatello, ID: DEQ https://attains.epa.gov/attains-public/api/documents/actions/IDEQ/53480/106604

IDEQ (Idaho Department of Environmental Quality). 2017. *Bear River Basin TMDL Five-Year Review*. January 2017. Pocatello, ID: DEQ. https://www2.deq.idaho.gov/admin/LEIA/api/document/download/11669.

IDEQ (Idaho Department of Environmental Quality). 2022a. *Idaho's Integrated Report, Final*, Boise, ID: DEQ. https://www2.deq.idaho.gov/admin/LEIA/api/document/download/16619 Appendix A contains the CWA § 305(b) list and § 303(d) list for the 2022 Integrated Report that were compiled by DEQ using EPA's ATTAINS database: pages 127, 129, 130, 259, and 299. https://www2.deq.idaho.gov/admin/LEIA/api/document/download/16769

IDEQ (Idaho Department of Environmental Quality). 2022b. *Final 2022 § 305(b) Integrated Report* (Interactive Map https://mapcase.deq.idaho.gov/wq2022/ with links to the Bear River assessment units and status reports).

Table 2.2-2 Summary of CWA 303(d) and 305(b) lists and TMDLs by Zone of Effect

ZoE	State Waterbody ID	Category from 2022 Integrated Report and Appendix A (page #)	EPA Waterbody Report reach summary with map link and TMDL plans for impaired parameters
ZoE 1-Soda reservoir	ID16010201BR001_0L Alexander Reservoir (Bear River) Lake, Freshwater (1031.87 Acres)	4a-approved TMDLs for Aquatic Life-Cold water: TP and TSS (page 127) Unassessed for Salmonid spawning, Primary contact recreation, Water Supply (Agricultural, Industrial), Wildlife Habitat, and Aesthetic uses IDEQ Assessment Unit Status Report 2022 web page: https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010201BR001_0L	https://mywaterway.epa.gov/waterbody-report/IDEQ/ID16010201BR001_0L/2022 Aquatic Life-Cold water TMDLs for TP and TSS EPA TMDL ID: 30351 2006-06-29 Bear River/Malad River Subbasin Assessment and TMDL Plan: https://attains.epa.gov/attains-public/api/documents/actions/IDEQ/30351/106650
ZoE 2-Soda regulated riverine	ID16010202BR009_06 Bear River - Alexander Reservoir Dam to Densmore Creek (15.62 miles) This state assessment reach includes all of the Grace development reaches and ends approximately 2.9 miles downstream of Grace powerhouse (1.1 miles downstream of the FERC boundary).	5- § 303(d) list for Aquatic Life: Cold water-Temperature and Salmonid spawning-Temperature (page 299) 4a-approved TMDLs for Aquatic life-Cold water: TP and TSS (page 130) 4c-for Flow Regime Modification (page 259) Unassessed for Primary contact recreation, Water Supply (Agricultural, Industrial), Wildlife Habitat, and Aesthetic uses IDEQ Assessment Unit Status Report 2022 web page: https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR009_06	https://mywaterway.epa.gov/waterbody-report/IDEQ/ID16010202BR009_06/2022 Aquatic Life-Cold water TMDLs for TP and TSS No plan in place for Cold water life: Flow Regime Modification, and Salmonid Spawning-Temperature EPA TMDL ID: 30351 2006-06-29 Bear River/Malad River Subbasin Assessment and TMDL Plan: https://attains.epa.gov/attains-public/api/documents/actions/IDEQ/30351/106650 EPA TMDL ID: 53480 2013-09-13 Bear River/Malad Subbasin TMDL Addendum: https://attains.epa.gov/attains-public/api/documents/actions/IDEQ/53480/106604

ZoE	State Waterbody ID	Category from 2022 Integrated Report and Appendix A (page #)	EPA Waterbody Report reach summary with map link and TMDL plans for impaired parameters
ZoE 3- Grace reservoir	State assessment reach ID16010202BR009_06 includes all of the Grace development reaches.	Same as above 4a, 4c and 5	Same as above
ZoE 4- Grace bypass	State assessment reach ID16010202BR009_06 includes all of the Grace development reaches.	Same as above 4a, 4c and 5	Same as above
ZoE 5- Grace-regulated riverine	ID16010202BR009_06a Bear River-Densmore Cr to above Oneida Reservoir (21.37 miles) State assessment reach starts 2.9 miles downstream of Grace powerhouse (1.1 miles downstream of the FERC boundary).	5- § 303(d) list for Aquatic Life: Cold water-Temperature and Salmonid spawning-Temperature (page 299) 4a- approved TMDLs for Aquatic life-Cold water: TP and TSS (page 130) 4c- for Flow Regime Modification (page 259) Unassessed for Primary contact recreation, Water Supply (Agricultural, Industrial), Wildlife Habitat, and Aesthetic uses IDEQ Assessment Unit Status Report 2022 web page: https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR009_06a	https://mywaterway.epa.gov/waterbody-report/IDEQ/ID16010202BR009_06a/2022 Aquatic Life-Cold water TMDLs for TP and TSS No plan in place for cold water life - Flow Regime Modification, and Salmonid Spawning-Temperature EPA TMDL ID: 30351 2006-06-29 Bear River/Malad River Subbasin Assessment And TMDL Plan: https://attains.epa.gov/attains-public/api/documents/actions/IDEQ/30351/106650

ZoE	State Waterbody ID	Category from 2022 Integrated Report and Appendix A (page #)	EPA Waterbody Report reach summary with map link and TMDL plans for impaired parameters
ZoE 6- Oneida reservoir	ID16010202BR008_0L Oneida Narrows Reservoir 12.11 miles	4a- approved TMDLs for Aquatic Life: Cold water for TP and TSS (page 130) Unassessed for Salmonid spawning, Primary contact recreation, Water Supply (Agricultural, Industrial), Wildlife Habitat, and Aesthetic uses IDEQ Assessment Unit Status Report 2022 web page: https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR008_0L	https://mywaterway.epa.gov/waterbody-report/IDEQ/ID16010202BR008_0L/2022 Aquatic Life-Cold water TMDLs for TP and TSS EPA TMDL ID: 30351 2006-06-29 Bear River/Malad River Subbasin Assessment And TMDL Plan: https://attains.epa.gov/attains-public/api/documents/actions/IDEQ/30351/106650
ZoE 7- Oneida bypass	Same as below	Same as below 4a and 5	Same as below
ZoE 8- Oneida regulated riverine	ID16010202BR006_06 (2010/4/5 assessment date) Bear River-Oneida Narrows Reservoir Dam to Idaho/Utah boarder 36.09 miles. And ID16010202BR006_02 (2019/6/11 assessment date) Bear River-Oneida Narrows Reservoir Dam to Idaho/Utah boarder 49.37 miles	5- § 303(d) list for Aquatic Life: Cold water- Temperature and Salmonid spawning- Temperature (page 299) 4a approved TMDLs for Aquatic Life-Cold water: TP and TSS (page 129) Fully supporting Primary Contact Recreation. Unassessed for Water Supply (Agricultural, Industrial), Wildlife Habitat, and Aesthetic uses IDEQ Assessment Unit Status Report 2022 web page: https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR006_06 and https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR006_02	https://mywaterway.epa.gov/waterbody-report/IDEQ/ID16010202BR006_06/2022 Aquatic Life-Cold water TMDLs for TP and TSS No plan in place for cold water life - Flow Regime Modification, and Salmonid Spawning-Temperature EPA TMDL ID: 30351 2006-06-29 Bear River/Malad River Subbasin Assessment And TMDL Plan: https://attains.epa.gov/attains-public/api/documents/actions/IDEQ/30351/106650

Idaho TMDL plans:

Total Maximum Daily Load plans (TMDLs) have been developed for Total Phosphorous (TP) and Total Suspended Solids (TSS) for Project reaches. The Environmental Report for Cove decommissioning (Cirrus Ecological Solutions, LC. 2005. page 29) summarized the Bear River/Malad Subbasin Assessment and Total Maximum Daily Load Plan (ERI 2005) that indicated that the Bear River from Soda dam to Oneida Reservoir was not impaired for Total Suspended Solids (sediment) although existing loads approached the assimilative capacity of this reach during the summer season (ERI 2005). In general, sediment loading in the mainstem Bear River channel from Bear Lake to below Oneida Reservoir is believed to be reduced by the presence of reservoirs along this reach. Measurement of TP in water samples collected from the Bear River between Soda dam and Oneida Reservoir consistently exceeded levels recommended by IDEQ. The TMDL assessment indicated that existing TP loads delivered to Oneida Reservoir must be reduced from a minimum of 7 kg/day (winter season) up to a maximum of 142 kg/day (late spring-early summer season). TP loads exceeding the assimilative capacity determined in the TMDL could contribute to excessive algae growth, low dissolved oxygen levels, and eutrophication of Oneida Reservoir.

An Addendum to the Bear River/Malad Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204 was completed in 2011 and revised in 2013 (IDEQ 2013). This assessment includes an evaluation of mainstem Bear River water quality and contains revised waste load allocations (WLA) for the six municipal point source dischargers in the basin. There were not any changes to the listing status of Project reaches. However, this addendum notes that many of the ECC projects for Bonneville Cutthroat Trout (BCT) are directly related to improving water quality. In that TMDL addendum, tables 21 and 22 (pages 40-43) summarized ECC projects completed through 2010. While those projects focus on BCT restoration, many are directly related to improving water quality. Nineteen projects relating directly to water quality improvements (e.g., bank stabilization, removal 39 of confined animal feeding sites and barns from streamside areas and riparian fencing) were completed by 2010. Many more such projects will be completed during the remaining license period. WLAs are based on water quality data indicating phosphorus targets are generally being met. IDEQ concluded that continued reductions in both total phosphorus (via activities reducing sediment inputs into the Bear River and its tributaries) and dissolved phosphorus (via reduction of animal waste by removal or improvements to confined animal feeding operations) will assure water quality sufficient to accommodate proposed WLAs will be maintained or improved in the future.

Idaho DEQ TMDL Five-Year Review

The Final Bear River Basin TMDL Five-Year Review report dated January 2017 (IDEQ 2017, page 119) states: “The majority of PacifiCorp’s habitat enhancement projects will help achieve TMDL targets. Many projects focus on sediment and nutrient reductions and take place on TMDL streams and all drain to the main stem Bear River, a TMDL water body. Efforts to recover BCT will ultimately lead to improving Beneficial Use Reconnaissance Program (BURP) scores through higher Stream Fish Index ratings. Additionally, projects aimed at improving fish passage often have additional benefits such as helping move streams towards appropriate sediment transport regimes and maintaining channel stability.”

The 2017 IDEQ Bear River Basin 5-Year Review (IDEQ 2017) indicated that TSS and TP concentrations tended to reflect hydrologic management and channel conditions. Monitoring locations below reservoirs tended to have low TSS and TP concentrations during all hydrologic periods because the reservoirs (Alexander, and Oneida Narrows) act as settling basins for sediment and associated phosphorus. Channel conditions between river reaches were also correlated with TSS and TP concentrations. Sections of the river that had low bank stabilities tended to be correlated with increases in TSS concentrations. For example, the Gentile Valley had low bank stabilities and TSS concentration increased. The same was true for the reach of river between Oneida Reservoir outlet and the Idaho-Utah border (IDEQ 2017, page 88).

Bank stability immediately downstream of the Project appeared to be relatively better than further downstream of the Project under current operations. In 2015, IDEQ conducted a modified streambank erosion inventory/canoe survey to document conditions of riverine and riparian habitat that included two reaches of the Bear River within the Project area. Results summarized in the Bear River Basin 5-Year Review (IDEQ 2017, pages 42-54) indicated that the reach immediately downstream of the Grace-Cove Project boundary (upper ZoE 5) was relatively more stable than the reach further downstream in the Gentile Valley (70-80% of the samples did not have unstable banks compared Gentile Valley where only 50-60% did not have unstable banks). For the reach immediately downstream of the Oneida Narrows canyon (upper ZoE 8), a higher percentage (90-100% compared to 70% to 50%) of the samples did not have unstable banks and also contained more woody riparian vegetation compared to reaches further downstream. Although the presence of uncovered and unstable banks was highly variable, bank instability tended to increase downstream.

Water Quality Certificate

The Bear River project is in compliance with the conditions in the Section 401 WQC issued by Idaho Department of Environmental Quality (IDEQ) on June 23, 2003. The Section 401 WQC is included as Appendix A to the Project license order (page 62) that is available on PacifiCorp's website (https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/Order_Approving_Settlement_Agreement_and_Issuing_New_License_12_22_03.pdf).

The 401 WQC contains two specific water quality assessment conditions (1 and 5) that require PacifiCorp to develop and implement Water Quality Monitoring Plans (WQMPs) for the Grace bypass reach and the Bear River downstream of the Oneida powerhouse to monitor temperature, dissolved oxygen, nutrients, specific conductance, and turbidity. The purpose of the WQMPs is to characterize water quality conditions in the reaches and to investigate potential connections between the facility and water quality criteria exceedances. These conditions from the 401 WQC are incorporated into Article 413 of the Project license.

The 401 WQC also requires PacifiCorp to provide IDEQ with an annual Oneida Development Operations Report that demonstrates compliance with flows and ramping requirements. PacifiCorp has submitted this report to IDEQ every year since 2004. A copy of the most recent report is available on PacifiCorp's website

(https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/annual-reports/2021-report/Oneida_WY2021_Ops_Rpt.pdf).

Water Quality Monitoring

In accordance with the 401 WQC and Article 413, the WQMPs were completed on June 18, 2004 and approved by the FERC Order dated September 15, 2004. Beginning in May 2004, PacifiCorp conducted extensive water quality monitoring in the Grace bypass and downstream of the Oneida powerhouse. Monitoring in the Grace bypass reach serves as the basis for evaluating both the Grace development and the Soda development's effects on water quality.

PacifiCorp submitted the 2007 Water Quality Monitoring Report for the Grace-Cove Development to IDEQ in January 2008. Based on the results of the water quality monitoring in the Grace bypass, IDEQ informed PacifiCorp in a letter dated January 20, 2009 that "PacifiCorp's operation has not contributed to violations of State of Idaho water quality standards," and that water quality monitoring at Grace can be discontinued two years before scheduled (see Appendix A).

A final Oneida Water Quality Monitoring Report was submitted to the IDEQ on April 6, 2007. Supplemental reports and data were provided to IDEQ in February, 2009. This information documents the results of studies that PacifiCorp conducted to investigate potential connections between the facility and water quality criteria exceedances. Operational changes at Oneida to reduce potential contributions to exceedances included the elimination of peaking events and the establishment of a ramping rate based on bank stability. IDEQ informed PacifiCorp in a letter dated July 24, 2009, that the water quality monitoring downstream of the Oneida powerhouse demonstrates that the facility is not contributing to violations of State of Idaho water quality standards (see Appendix A).

Water quality monitoring was also conducted during whitewater boating flow releases in the Black Canyon. A study plan was developed in 2008 by PacifiCorp and the IDEQ and studies were conducted during 2008, 2009, and 2010 whitewater releases. IDEQ continued to collect water quality monitoring data during boater flow events in 2012, 2013, and 2014 to inform potential future management decisions. A final Boater Flow Water Quality Report (Oasis Environmental 2011) was submitted to FERC. Findings were discussed by the ECC at a two-day whitewater boater flow meeting in February 2015. At that meeting, IDEQ stated that they believed that the compromise goals for water quality had been met (Bear River Hydroelectric Project 2021 Annual Report. PacifiCorp. 2021. page 25).

Sources:

ERI. 2007a. Oneida Hydroelectric Project FERC No. 472 Water Quality Summary 2004-2005. Version April 5, 2007: https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/water-quality-studies/2007-04-05_Final_Oneida_Water_Quality_Study.pdf

ERI. 2007b. The Bear River Hydroelectric FERC Project No. 20 Grace-Cove Development 2007 Water Quality Summary: https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/water-quality-studies/2008-01-01_Grace_Cove_Development_Water_Quality_Summary.pdf.

Oasis Environmental. 2011. Effects of the Variable Flow Regime on the Ecology of the Black Canyon of the bear River, Idaho, Final Report Year 7: (https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/black-canyon/2011-09-122_BR-VariableFlowReport_FINAL.pdf).

2.2.1 Water Quality Standards for ZoEs 1, 3, and 6: Impoundments

Criterion	***Standard***	***Instructions***
B	2	Agency Recommendation: • Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter or email from the agency). • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

Standard B-2 (Agency Recommendation) is selected for the Soda, Grace, and Oneida impoundments.

The Soda and Oneida reservoirs do not appear on the § 303(d) list. The Grace reservoir (ZoE 3) is part of the riverine reach that is on the Category 5 § 303(d) list for impaired temperature for salmonid spawning and cold water aquatic life. Soda, Grace and Oneida reservoirs have approved TMDLs (Category 4a) for Aquatic Life TP and TSS parameters.

The Project is in compliance with the conditions in the Section 401 WQC issued by IDEQ on June 23, 2003. The 401 WQC conditions and Project license required WQMP studies in the Grace and Oneida riverine reaches to assess the effects from the Project. From these studies,

IDEQ determined that the Project did not contribute to violations of the State water quality standards (see Section 2.2.2 below).

The 401 WQC and Project license Article 413 specify flow and ramping requirements to protect water quality and require monitoring and annual reporting. There are no additional WQC requirements specific to the reservoirs. As discussed in Section 2.1, compliance with flow and ramping requirements is monitored and reported annually an annual Oneida Development Operations Report. There have been no water quality violations issued to the Bear River Project.

2.2.2 Water Quality Standards for ZoEs 2, 5, and 8: regulated riverine reaches and bypass reaches ZoEs 4 and 7.

Criterion	***Standard***	***Instructions***
B	2	Agency Recommendation: • Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter or email from the agency). • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

Standard B-2 (Agency Recommendation) is selected for the regulated riverine reaches and bypass reaches.

The river reach upstream of Soda reservoir and all of the riverine reaches from the Soda dam to the Idaho/Utah boarder (including Grace reservoir but not Soda and Oneida reservoirs) are on the 303(d) list as impaired for temperature for both salmonid spawning and cold water aquatic life. These riverine reaches have approved TMDLs (Category 4a) for TP and TSS.

In accordance with the 401 WQC and Article 413 of the Project license, PacifiCorp prepared Water Quality Monitoring Plans (WQMPs) for the Grace bypass reach and the Bear River downstream of the Oneida powerhouse to monitor temperature, dissolved oxygen, nutrients, specific conductance, and turbidity. The purpose of the WQMPs was to characterize water quality conditions in the reaches and to investigate potential connections between the facility and water quality criteria exceedances. Monitoring in the Grace bypass reach serves as the basis for evaluating both the Grace development and the Soda development's effects on water quality. The WQMPs were completed on June 18, 2004 and approved by the Federal Energy Regulatory Commission (FERC) Order dated September 15, 2004.

Beginning in 2004, PacifiCorp performed the water quality monitoring per WQMPs for the Grace bypass and downstream of the Oneida powerhouse. Based on results from these studies, IDEQ informed PacifiCorp in a letter dated January 20, 2009, that PacifiCorp's operation has not contributed to violations of State of Idaho water quality standards in the Grace bypass (Appendix

A-2.2-2). Likewise, for the Oneida development, IDEQ informed PacifiCorp in a letter dated July 24, 2009, that the water quality monitoring downstream of the Oneida powerhouse demonstrates that the facility is not contributing to violations of State of Idaho water quality standards (Appendix A-2.2-3).

Additional studies to assess the effects of the Black Canyon boater flows on water quality were conducted by PacifiCorp and IDEQ. Based on the results and further discussions with the ECC in a two-day meeting held in 2015, IDEQ stated that they believed that the compromise goals for water quality had been met (Bear River Hydroelectric Project 2021 Annual Report. PacifiCorp. 2021. page 25).

There have been no substantial changes to operating conditions since the WQMP studies were completed. Water quality monitoring plan actions under License articles 413 and 419 are summarized in the Bear River Hydroelectric Project 2021 Annual Report (pages 25 and 26; https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/annual-reports/2021-report/Bear_River_2021_Annual_Report.pdf).

Watershed protection activities in the basin are described in Section 2.5 and are summarized in the 2021 annual report (PacifiCorp 2021) and prior annual reports available on PacifiCorp's website. The annual reports include appendices with performance tracking data and photos for site plans, shoreline buffer areas, and ECC project monitoring. In the TMDL 5-year review (page 119), IDEQ notes that many of the ECC/PacifiCorp habitat enhancement projects for BCT are directly related to improving water quality in the basin by focusing on sediment and nutrient reductions in tributary streams. IDEQ states that the majority of PacifiCorp's habitat enhancement projects will help achieve TMDL targets.

2.3 CRITERION C – UPSTREAM FISH PASSAGE

Table 2.3-1. Upstream Fish Passage Alternative Standards Matrix.

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION C* Upstream Fish Passage
ZoE 1. Soda - impoundment	RM 190-185	1
ZoE 2. Soda - regulated riverine reach	RM 185-180	4
ZoE 3. Grace - impoundment	RM 180-179	1
ZoE 4. Grace - bypass reach	RM 179-172	4
ZoE 5. Grace - regulated riverine reach	RM 172-148	1
ZoE 6. Oneida - impoundment	RM 148-143	1
ZoE 7. Oneida - bypass reach	RM 143-142	4
ZoE 8. Oneida - regulated downstream reach	RM 142-66	1

STANDARD C-1. Not Applicable/De Minimis Effect: The applicable Zone of Effect does not create a barrier to upstream passage, or there are no migratory fish in the vicinity of the facility. If such species were present historically, the facility did not contribute to the extirpation of such species; or

STANDARD C-4. Acceptable Mitigation: In the absence of science-based fish passage resource agency recommendations and in lieu of upstream passage provisions at the facility, the facility employs approved, alternative fish passage mitigation measures that support the species affected by the facility. These measures could be in-kind or out-of-kind mitigation. In all cases, resource agencies must approve the measures and must have determined that the total benefits provided by them equal or exceed the benefits of providing upstream passage provisions at the facility, measured in terms of reproductive success (for example, numbers of fish produced) or area of suitable fish habitat provided.

Fish species information

Anadromous species were never present in the southeast part of Idaho where the Bear River is located. The Bear River drainage flows into the Great Salt Lake that has no connection to the ocean.

The Bonneville cutthroat trout (BCT) (*Oncorhynchus clarki utah*) is a species that may exhibit fluvial as well as resident life histories. The BCT is a fish native to the Bear River basin that has been affected by habitat degradation and fish passage impediments. It was a species of special concern in the State of Idaho when the Project license was issued (FERC 2006, page 5) and is currently ranked S4 (not rare and apparently secure, but with cause for long-term concern) in the Idaho species diversity database (https://idfg.idaho.gov/species/taxa/80327). Self-sustaining populations of BCT are present in parts of the Bear River system, though mostly in headwater tributaries that have suitable habitat and water quality. This species is present in Cottonwood Creek (upstream of Oneida reservoir) and Mink Creek (located downstream of the Oneida development), and Birch Creek (a tributary of Mink Creek) and in tributaries to the Bear River further downstream. This species may seasonally occur in the Grace bypass and in the Bear River to the upstream end of Oneida reservoir.

BCT populations in Cottonwood Creek and Mink Creek may be isolated from the mainstem due to irrigation dams and may be influenced by interbreeding with Yellowstone cutthroat and rainbow trout species (PacifiCorp 1999c, page ES-8). Protection and restoration of the BCT were key issues that were addressed in the Settlement Agreement and license and resulted in the license requirement for development of a BCT restoration plan as a mitigation measure.

Fish passage mitigation

The Project license or Settlement Agreement do not provide fish passage provisions. Fish passage at the Cove development was to be studied but ultimately the Cove development was decommissioned and the dam was removed.

The accepted alternative mitigation measures for fish passage that were approved by resource agencies that were parties to the Settlement Agreement include the fishery protection and

enhancement measures in the Sections 3.1, 3.2, and 3.3 of the Settlement Agreement. These fishery protection measures are designed to improve habitat conditions, monitor and provide for adaptive management, and specify measures such as minimum flows, ramping rates, and fish stocking. The majority of the measures emphasize restoration of BCT (Section 3.1 of the Agreement). This included the preparation of a restoration plan for BCT (BCT Restoration Plan), funding for elements of the plan, funding for a BCT conservation hatchery program, funding for habitat restoration for BCT, and acquisition for land and water rights for the benefit of BCT and other fish and wildlife resources in the action area (Settlement Agreement section 3 and FERC EIS). These measures can apply within an "Action Area" that extends beyond the Project boundary. The Action Area is defined as "the Bear River and land drained by the Bear River and its tributaries below the point of confluence of the Bear Lake Outlet Canal with the mainstem Bear River and above the Idaho Utah border." Together, these measures will provide greater benefits in terms of BCT population viability and suitable habitat restoration than can be achieved presently in the Project area alone.

Fishery protection and enhancement measures that apply to the Action Area were included in the following license articles:

403 – develop the Comprehensive BCT Restoration Plan,
404 – develop a plan and funding for stocking native BCT,
405 – develop a plan for restoration of aquatic and riparian habitat for BCT and other fish and wildlife resources,
406 – develop a plan for acquiring land and water rights, and
407 – develop a plan for monitoring (creel surveys, Grace bypass telemetry studies, macroinvertebrate sampling) for seven years.

BCT Restoration Plan. The Final Comprehensive BCT Restoration Plan (Shrier 2008) is available on PacifiCorp's website:
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/bonneville-cutthroat-trout/2008-12-01_Comprehensive_Bonneville_Cutthroat_Trout_Restoration_Plan.pdf
The purpose of the BCT Restoration Plan is to provide a prioritized list of strategies and actions that will conserve native BCT in the Bear River Hydroelectric Project Action Area. The overarching goal for the restoration plan is "To preserve, restore, and protect Bonneville cutthroat trout and their unique ecological and behavioral characteristics within the Bear River Action Area to ensure the long-term viability of the species on a population by population basis." The actions in this plan focus on habitat restoration and enhancement, and recommendations for re-establishing BCT in areas where they have been extirpated. The primary areas of focus include:

- Actions to protect and enhance existing BCT populations;
- Habitat assessments to identify passage issues to improve or expand existing BCT range to historic drainages; and
- Identification of riparian areas in need of improvements.

These primary areas of focus guide the following objectives established for this restoration plan:

- Establish and enhance "conservation populations" to preserve the genetic integrity of the Bear River BCT populations;
- Maintain current BCT distribution, and restore distribution in previously occupied areas, if warranted and feasible;
- Optimize habitat conditions for BCT through restoration and maintenance to allow conservation populations the opportunity for BCT to express the desired population characteristics and to seed new habitats as they become available;
- Reduce impacts of wild rainbow trout populations in the Action Area by rehabilitating some key stream reaches for BCT in the Bear River Action Area where these rainbow trout directly impact BCT; and
- Link management actions and requirements to meet specific recreation objectives and fishing opportunities for BCT.

In order to be most effective, an approach recommended by Teuscher and Capurso (2007) supports restoring areas that have received the least amount of impacts and that still support a self-sustaining population of BCT. Restoring those areas first sets a higher baseline from which to work towards restoration of those streams more heavily impacted (Shrier 2008, page 23).

This BCT Restoration Plan recommends nearly 50 action items that, if implemented, could contribute significantly to the restoration of BCT habitat that could contribute greatly to the protection and recovery of BCT within the Action Area. Some of these action items have since been completed. The ECC will continue to evaluate specific proposals for the Bear River Habitat Enhancement Fund and the Land and Water Conservation Fund mechanisms for their merits as they relate to this plan.

In general, the Bear River Project area between Soda reservoir and Oneida powerhouse does not contain the most critical areas (e.g., best habitat, genetically important "conservation populations," etc.) that are prioritized within the Action Area for the BCT Restoration Plan. Where restoration measures occur within the Project area, they are mentioned under each ZoE.

Monitoring and Adaptive Management. The Settlement Agreement and Project license (Article 402) provided for formation of the ECC that includes agency representatives and other stakeholders that oversee studies and determines how mitigation funds are allocated in the Action Area. The agencies are parties to the Settlement Agreement and therefore approve these measures and Standard C-4 Acceptable Mitigation applies to all these ZoEs.
The ECC continues to evaluate aspects of the BCT Restoration Plan and proposals for work under the Habitat Enhancement Fund and the Land and Water Conservation Fund. Where substantial benefits can be realized, the ECC has supported changes such as decommissioning of the Cove development which restored aquatic connectivity through the former Cove development to the Grace bypass reach.

One of the Idaho Department of Fish & Game objectives for the Bear River drainage is to improve habitat for Bonneville cutthroat trout. The stated strategy is to cooperate with PacifiCorp and other interested parties to implement and monitor FERC license conditions to protect Bonneville cutthroat trout in the Bear River system (IDFG 2019, page 349).

https://idfg.idaho.gov/sites/default/files/2019-2024-idaho-fisheries-management-plan-original.pdf?update10-2019

In the Bear River Basin 5-year Review, IDEQ states "The majority of PacifiCorp's habitat enhancement projects will help achieve TMDL targets. Many projects focus on sediment and nutrient reductions and take place on TMDL streams and all drain to the main stem Bear River, a TMDL water body. Efforts to recover BCT will ultimately lead to improving BURP scores through higher Stream Fish Index ratings. Additionally, projects aimed at improving fish passage often have additional benefits such as helping move streams towards appropriate sediment transport regimes and maintaining channel stability." (IDEQ 2017, Bear River Basin 5-Year Review, page 119).

Upstream passage is not available at the Soda, Grace, and Oneida dams. The affected reaches that are immediately downstream of the dams include the Soda regulated riverine reach (ZoE 2), Grace bypass reach (ZoE 4), and the Oneida bypass reach (ZoE 7). As described above, alternative mitigation measures approved by agencies in the Settlement Agreement and Project license are applied to a larger Action Area and continue to provide out-of-kind mitigation that benefits BCT and other fish and wildlife. Therefore Standard C-4 is selected for those zones. Mitigation measures and other information specific to particular ZoEs are noted in the sections below.

2.3.1 ZoEs 1, 3, and 6: Soda, Grace, and Oneida Impoundments:

Criterion	***Standard***	***Instructions***
C	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to upstream fish passage in the designated ZoE. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no additional facility barrier to further upstream movement. • Document available fish distribution data and the lack of migratory fish species in the ZoE. • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

Standard C-1 De Minimis Effect applies to all three reservoirs. There are no facility-related barriers to upstream fish movements from within Soda, Grace, or Oneida reservoirs. There is a non-facility related irrigation intake in Grace reservoir located approximately 0.25 miles upstream from the Grace dam but it is not a diversion dam that creates a physical barrier to movements out of the reservoir.

2.3.2 ZoE 2: Soda regulated riverine reach.

Criterion	*Standard*	*Instructions*
C	4	Acceptable Mitigation: • Describe the alternative mitigation measures being deployed in lieu of upstream fishways and provide documentation of agency approval of them. • Explain how the total benefits of the mitigation provided equals or exceeds the benefits that might accrue from providing upstream passage in terms of reproductive success (e.g., numbers of fish produced, or area of suitable habitat provided). • Explain how the alternative mitigation measures sustain the abundance and diversity of fish stocks in the river system.

The Soda dam does not have upstream fish passage so alternative mitigation strategies provide out-of-kind mitigation that benefit BCT and other fish and wildlife in a wider Action Area.

For the Soda riverine reach and other downstream ZoEs, the BCT Plan states that the Dam Complex MU (the BCT management unit that encompasses all of the PacifiCorp Project areas) does not contain "conservation populations" (genetically important BCT populations identified from genetic sampling studies) or their spawning habitat so management actions within this area should only be considered after all other actions in the BCT Plan are completed or if BCT becomes listed by the USFWS (Shrier 2008, page 26).

2.3.3 ZoE 4: Grace bypass reach.

Criterion	*Standard*	*Instructions*
C	4	Acceptable Mitigation: • Describe the alternative mitigation measures being deployed in lieu of upstream fishways and provide documentation of agency approval of them. • Explain how the total benefits of the mitigation provided equals or exceeds the benefits that might accrue from providing upstream passage in terms of reproductive success (e.g., numbers of fish produced, or area of suitable habitat provided). • Explain how the alternative mitigation measures sustain the abundance and diversity of fish stocks in the river system.

Upstream movements of riverine fish in this reach are blocked at Grace dam. Implementing the BCT Plan provides alternative mitigation measures to improve BCT habitat and connectivity in tributaries to the Bear River within the Action Area.

The Project license required studies to assess potential effects from variable whitewater boating flow releases in the Black Canyon on aquatic resources. The resulting six-year study (Oasis Environmental 2011, pages 6-1 to 6-4) did not show a decline in measures of biotic integrity. Minimum flows in the Grace bypass are protective of habitat while not adding a volume that excessively contributes to warming that would negate the potential benefits from the springs in this reach.

2.3.4 ZoE 5: Grace regulated riverine reach.

Criterion	*Standard*	*Instructions*
C	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to upstream fish passage in the designated ZoE. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no additional facility barrier to further upstream movement. • Document available fish distribution data and the lack of migratory fish species in the ZoE. • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

There are no facility barriers to upstream fish movements within this reach and upstream into the Grace bypass reach.

The BCT Restoration Plan indicates several important measures that have been implemented within the Grace regulated riverine reach. The main diversion on Cottonwood Creek (a tributary to the Bear River between Grace powerhouse and Oneida reservoir) has been modified to allow safe upstream and downstream passage. This action, funded by the ECC and implemented by Trout Unlimited, may be the most significant activity that could have occurred in this drainage area (Shrier 2008, page 27). Access to the potential BCT spawning habitat in the Black Canyon Reach (Grace bypass) has also been restored as a result of the Cove Dam removal in 2006 (Shrier 2008, page 27).

The Kackley Springs habitat improvement project in this reach was modified by the ECC to reroute the channel of Kackley Springs further downstream to provide additional habitat for BCT. In this case, the ECC decision to extend the Kackley Springs channel is an example of adaptive management to direct the mitigation funds for greater benefits.

2.3.5 ZoE 7: Oneida bypass reach.

Criterion	*Standard*	*Instructions*
C	4	Acceptable Mitigation: • Describe the alternative mitigation measures being deployed in lieu of upstream fishways and provide documentation of agency approval of them. • Explain how the total benefits of the mitigation provided equals or exceeds the benefits that might accrue from providing upstream passage in terms of reproductive success (e.g., numbers of fish produced, or area of suitable habitat provided). • Explain how the alternative mitigation measures sustain the abundance and diversity of fish stocks in the river system.

Upstream fish passage is blocked at Oneida dam. Alternative mitigation strategies provide out-of-kind mitigation.

This short (0.5-mile) reach supports a naturally-reproducing population of non-native brown trout as summarized in the Oneida license application (PacifiCorp 1999c, page ES-8). The brown

trout in the bypass benefit from the relatively cool water seeping from the lower section of the dam and little fishing pressure. Although the macroinvertebrate community appears to be somewhat stressed due to water quality, it is unlikely that the Project can improve conditions for the brown trout population or macroinvertebrate community through flow releases. Increasing releases from the surface of Oneida Reservoir will result in warmer water in summer which would be detrimental to fish and macroinvertebrates. Releases from the lower portions of Oneida reservoir would also be subject to water quality problems such as limited supply and low DO (PacifiCorp 1999c, page ES-8).

Idaho Department of Fish & Game notes that brown trout were stocked in the Bear River up to 1998 when stocking was terminated to assist with restoration of BCT. Brown trout were most successful as a put-and-grow fishery downstream from Oneida dam. A residual population of naturally spawning brown trout remains in this reach but at a lower density than before stocking was ended (IDFG 2019, page 347).

2.3.6 ZoE 8: Oneida regulated riverine reach.

Criterion	***Standard***	***Instructions***
C	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to upstream fish passage in the designated ZoE. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no additional facility barrier to further upstream movement. • Document available fish distribution data and the lack of migratory fish species in the ZoE. • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

Standard C-1 was selected to meet this Criterion because there are no facility barriers to upstream fish movements from this reach into the Oneida bypass reach.

Alternative mitigation strategies approved by agencies in the Settlement Agreement and Project license continue to provide out-of-kind mitigation that benefits BCT and other fish and wildlife. Measures specific to this reach include riparian fencing projects at Mink Creek. Mink Creek is a tributary to the Bear River that contains an important BCT population.

2.4 CRITERION D – DOWNSTREAM FISH PASSAGE AND PROTECTION

Table 2.4-1. Downstream Fish Passage Alternative Standards Matrix.

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION D* Downstream Fish Passage
ZoE 1. Soda - impoundment	RM 190-185	4
ZoE 2. Soda - regulated riverine reach	RM 185-180	1
ZoE 3. Grace - impoundment	RM 180-179	4
ZoE 4. Grace - bypass reach	RM 179-172	1

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION D* Downstream Fish Passage
ZoE 5. Grace - regulated riverine reach	RM 172-148	1
ZoE 6. Oneida - impoundment	RM 148-143	4
ZoE 7. Oneida - bypass reach	RM 143-142	1
ZoE 8. Oneida - regulated downstream reach	RM 142-66	1

STANDARD D-1. Not Applicable/De Minimis Effect: The applicable Zone of Effect does not create a barrier to downstream passage, or there are no migratory fish in the vicinity of the facility. If such species were present historically, the facility did not contribute to the extirpation of them; the facility does not contribute adversely to riverine fish populations or to their access to habitat necessary for the completion of their life cycles, or

STANDARD D-4. Acceptable Mitigation: In the absence of science-based resource agency recommendation for downstream fish passage and in lieu of downstream passage and/or protection provisions at the facility, the applicant employs approved alternative fish passage mitigation measures that support migratory and native non-migratory fish species affected by the facility. These measures might include in-kind or out-of-kind mitigation. In all cases, resource agencies must approve the measures and must have determined that the total benefits provided by them are likely to equal or exceed the benefits of installing and operating downstream passage and/or protection provisions, measured in terms of reproductive success (for example numbers of fish produced) or areas of suitable fish habitat provided.

Riverine/resident fish species information

The Bonneville cutthroat trout is a native riverine species that may exhibit fluvial as well as resident life histories. Self-sustaining populations of BCT are present in parts of the Bear River system, though mostly in tributaries that have suitable habitat and water quality. See Section 2.3 for additional information on BCT.

Other species that may exhibit local movements within a river include brown trout and rainbow trout. These two trout species have been introduced through stocking in the past. A self-sustaining population of brown trout exists in the Oneida bypass reach.

Mountain whitefish, a native species, may also move locally within stream systems. This species was documented in Soda development (reservoir and upstream and downstream of the Project), Grace development (in the bypass and upstream and downstream of the Project), and Oneida development (upstream and downstream of the Project, and in the reservoir and bypass reaches).

A mixture of warmwater and coldwater species of fish occur in the Project area. Fish species found in the Bear River in the Project area during relicensing studies are listed in the table below from the Final EIS (FERC 2003, page 55).

Table 2.4-2. Fish Species Present in the Bear River Projects Vicinity (Source: PacifiCorp, 1999a, 1999b, and 1999c).

Species	Soda		Grace		Cove			Oneida		
	Reser-voir	Reach	Fore-bay	By-pass	Fore-bay	By-pass	Reach	Reser-voir	By-pass	Reach
Brown trout		X		X		X			X	X
Cutthroat trout[a]	X	X		X			X			X
Rainbow trout	X	X	X	X	X	X	X	X	X	X
Mountain whitefish	X	X		X			X	X	X	X
Common carp	X	X	X		X	X	X	X		X
Utah chub	X	X								
Longnose dace		X							X	X
Speckled dace		X							X	X
Redside shiner		X	X	X				X	X	X
Spottail shiner								X		
Utah sucker	X		X		X		X	X	X	X
Mountain sucker							X			
Brown bullhead									X	
Channel catfish	X							X		X
Black crappie	X									
White crappie	X									
Green sunfish	X							X	X	X
Bluegill	X							X	X	
Smallmouth bass	X	X	X	X		X		X		
Largemouth bass	X									
Yellow perch	X	X	X	X			X	X	X	
Sauger								X		
Walleye								X	X	X
Mottled sculpin		X		X			X		X	X
Piute sculpin		X		X			X		X	

[a] Although the applicant's studies did not collect any Bonneville cutthroat trout in the project reaches, the species may seasonally occur within these reaches.

The Bear River Basin 5-Year Review (IDEQ 2017, pages 103-104) describes fish communities in Oneida reservoir and in the downstream river reach. In Oneida reservoir, the fishery is primarily composed of nonnative species including Walleye, Common Carp, Smallmouth Bass, Yellow Perch, and Green Sunfish. The only native fish present is the Utah Sucker, comprising <4% of the fish assemblage (Hardy et. al 2012 in IDEQ 2017). Downstream of the reservoir, Utah Suckers, Rainbow Trout, Smallmouth Bass, Mountain White Fish, Brown Trout, and Common Carp (5.1%) composed most of the fish sampled. Two native species of concern, BCT and Bluehead Suckers, were present during all surveys but were in low abundance. In the reach just downstream of the canyon, Utah Suckers, Mountain White Fish, Rainbow Trout, Brown Trout, Common Carp, and Smallmouth Bass composed the majority of the fish assemblage. Downstream of Riverdale, the character of the fish community changes, with salmonid species becoming rare, and nonnative Common Carp dominating the fish community. No BCT have been collected in this mainstem Bear River area during current or historical surveys, and no reproductive activity has been documented.

Nonnative Brown Trout were historically stocked downstream of Oneida Reservoir until 1998. Brown Trout density and biomass are higher closer to Oneida dam. Successful reproduction of Brown Trout downstream of Oneida Reservoir is indicated by the presence of juveniles. Rainbow Trout are currently stocked in the Bear River downstream of Oneida Reservoir by the IDFG to maintain a put-and-take fishery. Rainbow Trout were present in all river reaches, but densities are also higher in reaches near the Oneida dam. Overall, both native (BCT and Mountain White Fish) and nonnative (Brown Trout and Rainbow Trout) salmonids are most abundant from downstream of Oneida Reservoir to Riverdale. Downstream of Riverdale, densities and relative abundance of salmonids precipitously decline.

2.4.1 ZoEs 1, 3, and 6: Impoundments

Criterion	***Standard***	***Instructions***
D	4	Acceptable Mitigation: • Describe the alternative mitigation measures being deployed in lieu of downstream fish passage and/or protection strategies and provide documentation of agency approval of the measures. • Explain how the total benefits of the mitigation strategy equals or exceeds the benefits that might accrue from providing downstream passage in terms of reproductive success (e.g., numbers of fish produced, or area of suitable habitat provided). • Explain how the alternative mitigation measures sustain the abundance and diversity of fish stocks in the river system.

Standard D-4 – Acceptable mitigation is selected for the Soda, Grace, and Oneida impoundments (ZoE 1, 3, and 6).

The three dams do not have downstream fish passage facilities. The reservoirs support a mixture of warmwater and coldwater fish species, most of which are not native. Downstream passage at the three dams is limited to passage over the spillways during high flows or through the facilities.

Alternative mitigation strategies approved by agencies in the Settlement Agreement and Project license provide out-of-kind mitigation that benefits the native BCT and other fish and wildlife. These mitigation measures are implemented in the wider Action Area as described in Section 2.3.

2.4.2 ZoEs 4 and 7: bypass reaches.

Criterion	***Standard***	***Instructions***
D	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to downstream fish passage in the designated ZoE, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). Typically, tailwater/downstream zones will qualify for this standard since below a dam and powerhouse there is no additional facility barrier to further downstream movement. Bypassed reach zones must demonstrate that flows in the reach are adequate to support safe, effective, and timely downstream migration. • For riverine fish populations that are known to move downstream, explain why the facility in the designated ZoE does not contribute adversely to the species populations or to their access to habitat necessary for successful completion of their life cycles; or • Document available fish distribution data and the lack of fish species requiring passage in the ZoE; or • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

The Grace and Oneida bypass reaches do not have facility-related obstructions to downstream fish passage. The Grace bypass has a combination of minimum flows and seepage from the dam and discharge from springs in the lower part of that reach that provide enough flows for downstream passage even after the irrigation diversion withdraws. The short Oneida bypass reach does not have a minimum flow requirement but seepage from the dam provides enough cool water to support a self-sustaining population of brown trout as noted in Section 2.3.5.

2.4.2 ZoEs 2, 5, and 8: regulated riverine reaches.

Criterion	*Standard*	*Instructions*
D	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to downstream fish passage in the designated ZoE, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). Typically, tailwater/downstream zones will qualify for this standard since below a dam and powerhouse there is no additional facility barrier to further downstream movement. Bypassed reach zones must demonstrate that flows in the reach are adequate to support safe, effective, and timely downstream migration. • For riverine fish populations that are known to move downstream, explain why the facility in the designated ZoE does not contribute adversely to the species populations or to their access to habitat necessary for successful completion of their life cycles; or • Document available fish distribution data and the lack of fish species requiring passage in the ZoE; or • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

There are no facility-related barriers to downstream fish passage in the Soda, Grace and Oneida regulated riverine reaches. There is an irrigation diversion owned by the Last Chance Canal Company in the Soda regulated riverine reach (ZoE 2) and a few pumps and irrigation diversions downstream of the Oneida development (ZoE 8) that are not related to the Project.

2.5 CRITERION E – SHORELINE AND WATERSHED PROTECTION

Table 2.5-1. Shoreline and Watershed Protection Alternative Standards Matrix.

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION E (type in one numbered standard and PLUS if applicable)* Shoreline and Watershed Protection
ZoE 1. Soda - impoundment	RM 190-185	2-Plus
ZoE 2. Soda - regulated riverine reach	RM 185-180	2-Plus
ZoE 3. Grace - impoundment	RM 180-179	2-Plus
ZoE 4. Grace - bypass reach	RM 179-172	2-Plus
ZoE 5. Grace - regulated riverine reach	RM 172-148	2-Plus
ZoE 6. Oneida - impoundment	RM 148-143	2-Plus
ZoE 7. Oneida - bypass reach	RM 143-142	2-Plus
ZoE 8. Oneida - regulated downstream reach	RM 142-66	2-Plus

STANDARD E-2. Agency Recommendation: The facility is in compliance with all government agency recommendations in a license, exemption, water quality certificate, or other authorization, such as an approved SMP or equivalent for protection, mitigation or enhancement of shoreline surrounding the facility.

Land Use and Land Cover

The three Project developments are located in the upper part of the Bear River watershed (Fig. 2) described in Section 1.4. The Bear River flows through developed and undeveloped lands. Land use in the Project area is mostly rural with areas of forest, mountains, valleys and open pastures, with widely dispersed homes and ranches and small towns. The Soda development is located at the upstream end of the Gem Valley, which consists of large dry-farms and some irrigated farmlands. The southern part of the Gem Valley, south of the Grace development, is called Gentile Valley. The next valley south is Mound Valley, and at its southern extreme, the Bear River enters an 11-mile-long canyon known as the Oneida Narrows.

Agricultural use dominates the valleys along the mainstem and tributaries. The river is highly regulated for irrigation and flood control. A number of irrigation diversions are located in Project reaches (see Section 1.5).

Federal lands occur around and within the Project boundary. These areas are managed by the BLM and USFS under their resource management plans. A small corner of USFS land is located near Soda reservoir approximately 0.5 miles east of the dam. There are larger parcels of land managed by the BLM near the dam. There are parcels of USFS and BLM land upstream of Grace reservoir. Small parcels of BLM land are located near the Grace powerhouse and near the former Cove development. The Oneida development (reservoir and downstream Oneida Narrows reach) is mostly on land managed by the BLM. The BLM Oneida Narrows RNA is designated as an Area of Critical Environmental Concern (ACEC). The Oneida Narrows road which is in the FERC Project boundary is included in that ACEC.

Land Management Plan

PacifiCorp's Land Management Plan and associated individual site plans provide maps and descriptions of existing land uses and desired future conditions within the Project developments.

The Project license issued on December 22, 2003, approved the Settlement Agreement and incorporated most measures from the Settlement agreement with little or no modification. As required by the license, a Land Management Plan (LMP) was developed in 2005 for PacifiCorp-owned lands within the FERC Project boundary.

The 2005 LMP fulfilled the requirements of Article 424 and addressed requirements in FERC Articles 425 and 426 which call for development of a Shoreline Buffer Zone Plan and a Cove Bypass Reach Buffer Zone Plan, respectively. All measures related to shorelines, wetlands, and riparian areas were compiled into the LMP to provide overall management guidance related to wetland and riparian habitats on PacifiCorp-owned land within the FERC Project.

The LMP was revised in 2011 to include important protection measures (e.g., fencing) installed on PacifiCorp lands that are outside of the Project boundary and to address the decommissioning of the Cove development. The 2011 LMP was prepared in consultation with the ECC and was approved by FERC on July 17, 2014 (https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01D065E2-66E2-5005-8110-C31FAFC91712).

The LMP required creation of Site Plans for the Project developments. Site Plans were completed for four planning areas: Soda, Grace Dam and Last Chance, Grace-Cove, and Oneida. The Last Chance Hydroelectric Project Development, located between the Soda and Grace developments, is owned by PacifiCorp but is not part of the Bear River Hydroelectric Project. Lands associated with the Last Chance Development are included in the LMP for the purpose of consolidating all PacifiCorp land management guidance into one document. All Site Plans have been implemented. Site Plans contain maps and tables showing the land use classifications, baseline conditions, desired future conditions, and corrective measures for specific areas to protect, mitigate or enhance the condition of soils, vegetation, and ecosystem functions on shoreline and watershed lands associated with the facility. Corrective actions such as installation of fences to protect riparian areas from grazing or vehicles, reseeding damaged areas with native grasses and forbs, and renegotiating agricultural leases have been implemented where appropriate to aid restoration of the desired future conditions set forth in the Site Plans.

The 2011 LMP and site plans are available on PacifiCorp's website under Land Management and Site Plans: https://www.pacificorp.com/energy/hydro/bear-river/project-documents.html.

LMP
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/land-management-and-site-plans/2011-12-15_FINAL_Rev_BR_Land_Mgmt_Plan.pdf

Soda Site Plan
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/land-management-and-site-plans/2009-09-09_4_BR_Soda_Site_Plan.pdf

Grace Dam and Last Chance Site Plan
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/land-management-and-site-plans/2009-11-23_Grace%20Dam%20and%20Last%20Chance%20Site%20Plan.pdf

Grace-Cove Site Plan
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/land-management-and-site-plans/2005-09-02a_Grace_Cove_Site_Plan_FINAL.pdf

Oneida Site Plan
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/land-management-and-site-plans/2008-09-08_Oneida_Site_Plan_September_2008.pdf

Annual compliance and performance tracking monitoring is being undertaken as scheduled at all Bear River developments and site-specific results are presented in the appendices of the annual reports. The latest implementation measures are summarized in the 2021 Annual Report (PacifiCorp 2021, https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/annual-reports/2021-report/Bear_River_2021_Annual_Report.pdf). To access the previous 2006 - 2021 Annual Reports, follow the links on PacifiCorp's Bear River Annual Reports page: https://www.pacificorp.com/energy/hydro/bear-river/annual-reports.html.

The 2021 Annual Report (Table 3, page 14) summarizes accomplishments for Articles 424, 425, 426 and 427. Monitoring forms/reports and photo-documentation are included in the following Appendices of the 2021 Annual Report:

Appendix B – Grace-Cove Site Plan compliance monitoring and performance tracking,
Appendix C – Cove Shoreline Buffer Fence annual monitoring report,
Appendix D – Oneida Site Plan compliance monitoring and performance tracking,
Appendix E – Soda Site Plan compliance monitoring and performance tracking,
Appendix F – Grace Dam and Last Chance Site Plan compliance monitoring and performance tracking, and
Appendix G – Habitat Enhancement Project monitoring.

2.5.1 Shoreline and Watershed Protection for ZoE 1: Soda reservoir

Criterion	***Standard***	***Instructions***
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility in the designated ZoE (e.g., Shoreline Management Plans). • Provide documentation that the facility is in full compliance with applicable agency recommendations or management plans.

Standard E-2 – Agency Recommendation is selected for all ZoEs. Agency recommendations for protection, mitigation or enhancement of shoreline surrounding the facility are addressed in the LMP and Site Plans described above. The Project is in compliance with the LMP guidelines and specific Site Plans.

The Soda Site Plan management area includes the PacifiCorp-owned shorelands and conservation easement areas along the reservoir (ZoE 1) and the upstream 0.25-miles of the Bear River (ZoE 2) on the north shore that is owned by PacifiCorp. These areas form the FERC Project boundary for the Soda Development. Specific measures to manage public access, vegetation management, wetland and riparian habitat, and agricultural uses to protect or enhance shoreline are described in the Soda Site Plan (PacifiCorp 2009a, pages 29-49).

Compliance monitoring for these areas is documented in Appendix E of the 2021 Bear River Annual Report.

Watershed Enhancement Fund

Criterion	***Standard***	***Instructions***
E	PLUS	Bonus Activities: • Provide documentation that the facility has a formal site-specific conservation plan protecting a buffer zone of 50% or more of the undeveloped shoreline; or • In lieu of a formal conservation plan, provide documentation that the facility has established a watershed enhancement fund for ecological land management that will achieve the equivalent land protection value of an ecologically effective buffer zone of 50% or more around the undeveloped shorelines.

Standard E – PLUS – watershed enhancement fund is applicable to all ZoEs.

PacifiCorp has established the Land and Water Conservation Fund and the LMP to implement watershed protection and enhancement measures that were agreed to by the parties to the Settlement Agreement. Together, these funds and protection measures provide the ecological and recreational equivalent of land protection value of an ecologically effective buffer zone of 50% or more around the undeveloped shorelines. Documentation was provided in a letter to LIHI transmitting PacifiCorp's Response to Certification Condition #2 for the Bear River Hydroelectric Project to request three additional years of certification. The acreage of conservation land provided by the Land and Water Conservation Fund and the LMP is much greater than the watershed protection acreage that would be provided through a 200-ft wide buffer around 50% of the undeveloped shoreline. In 2015, the LIHI board agreed and granted an extra three years of certification.

The acreage, type of acquisition (conservation easement or fee title), and length of riverbank protected using land and water acquisition funds to date are listed in a table in PacifiCorp's Annual Report (PacifiCorp 2021, page 21). Complete or partial funding for these projects was provided by grants awarded from the ECC's land and water acquisition fund. As of 2021, over $4.75 million has been provided through the Land and Water Conservation Fund for land acquisition for watershed protection and an additional $3.1 million has been provided for habitat enhancement projects (PacifiCorp 2021. Annual Report pages 40-41).

2.5.2 Shoreline and Watershed Protection for ZoE 2: Soda regulated riverine reach

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility in the designated ZoE (e.g., Shoreline Management Plans). • Provide documentation that the facility is in full compliance with applicable agency recommendations or management plans.

Standard E-2 – Agency Recommendation is selected for all ZoEs. The Project is in compliance with the agency recommendations in the LMP and specific Site Plans described above.

The Grace Dam and Last Chance Site Plan provides land management measures on PacifiCorp-owned properties in the downstream half of ZoE 2 upstream of Grace reservoir. This area is referred to as the Last Chance parcel (PacifiCorp 2009b, pages 26-30) and the shoreline is classified as Conservation Land to retain a shoreline buffer. Other areas included in this site plan encompass the Grace dam (ZoE 3) and the upland areas along the flowline. Specific measures to manage public access (fencing and cattle guards), vegetation management (reseeding), wetland and riparian habitat (fencing and reseeding), and agricultural uses (renegotiate leases) to protect or enhance shoreline are described in the site plan (PacifiCorp 2009b, pages 31-32).

Compliance monitoring for these areas is documented in Appendix F of the 2021 Bear River Annual Report.

See zone 2.5.1 above for Standard E – PLUS.

2.5.3 Shoreline and Watershed Protection for ZoE 3: Grace reservoir

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility in the designated ZoE (e.g., Shoreline Management Plans). • Provide documentation that the facility is in full compliance with applicable agency recommendations or management plans.

Standard E-2 – Agency Recommendation is selected for all ZoEs. The Project is in compliance with the agency recommendations in the LMP and specific Site Plans described above.

The Grace Dam and Last Chance Site Plan also provides land management measures on the limited PacifiCorp-ownership in Grace reservoir near the Grace dam (extending approximately 0.19 miles upstream from the dam), which is part of ZoE 3 (Grace reservoir reach). The site plan refers to this area as the Grace Dam Parcel. The shorelines are classified as Conservation-Shoreline Buffer in the Grace Dam and Last Chance Site Plan (PacifiCorp 2009b, pages 31-33).

Specific measures to manage public access (fencing, barriers to protect riparian), vegetation management (discontinue grazing), wetland and riparian habitat (fencing), and agricultural uses (discontinue permitted uses) to protect or enhance shoreline are described in the site plan (PacifiCorp 2009b, pages 31-32).

Compliance monitoring for these areas is documented in Appendix F of the 2021 Bear River Annual Report. Corrective action to discontinue grazing on a small 1-acre parcel northeast of the dam to allow revegetation of a riparian strip is still needed in the Grace dam parcel (2021 Annual report page F-3).

See zone 2.5.1 above for Standard E – PLUS.

2.5.4 Shoreline and Watershed Protection for ZoEs 4 and 5: Grace bypass and regulated riverine reaches

Criterion	***Standard***	***Instructions***
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility in the designated ZoE (e.g., Shoreline Management Plans). • Provide documentation that the facility is in full compliance with applicable agency recommendations or management plans.

Standard E-2 – Agency Recommendation is selected for all ZoEs. The Project is in compliance with the agency recommendations in the LMP and specific Site Plans described above.

A small 0.4-mile segment of the Bear River shoreline downstream of the Grace dam (ZoE 4-Grace bypass reach) is owned by PacifiCorp. This area is classified as Conservation-Shoreline Buffer in the Grace Dam and Last Chance Site Plan and has the same protective measures described above.

The Grace-Cove Site Plan includes a few PacifiCorp-owned parcels at the downstream end of the Black Canyon (ZoE 4 – Grace bypass) and on the Bear River between the Grace power plant and the former Cove power plant (upstream portion of ZoE 5 – Grace regulated riverine) and a short distance downstream (approx. 0.24 miles) to the south end of the Project boundary. The shorelines of the PacifiCorp-owned parcels in the bypass and riverine reaches are classified as Conservation Lands in the LMP and in the site plan. Parcel-specific land management measures to reclaim vegetation in disturbed areas, exclude livestock from riparian areas, and manage grazing leases are described in the Grace-Cove Site Plan (PacifiCorp 2005b, pages 25-43).

Compliance monitoring for the short shoreline segment downstream of Grace dam that is managed under the Grace Dam and Last Chance Site Plan is documented in the 2021 Bear River Annual Report, Appendix F. Compliance monitoring for the areas managed in the Grace-Cove Site Plan is documented in the 2021 Bear River Annual Report Appendix B.

See zone 2.5.1 above for Standard E – PLUS.

2.5.5 Shoreline and Watershed Protection for ZoE 6, 7, and 8: Oneida development (reservoir, bypass, regulated riverine below dam)

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility in the designated ZoE (e.g., Shoreline Management Plans). • Provide documentation that the facility is in full compliance with applicable agency recommendations or management plans.

Standard E-2 – Agency Recommendation is selected for all ZoEs. The Project is in compliance with the agency recommendations in the LMP and specific Site Plans described above.

The Oneida Site Plan provides land management measures that apply to six PacifiCorp-owned parcels between the upstream end of Oneida reservoir (ZoE 6) to the FERC Project boundary at the south end of the Narrows canyon (ZoE 8). Most of the shoreline of Oneida reservoir is owned by the BLM. PacifiCorp-owned lands downstream of the Oneida dam are classified as Conservation Lands. Specific measures to rectify conflicts (e.g., riparian fencing, seeding reclaimed areas, managing agricultural uses, and continued monitoring) are described for each parcel in the Oneida Site Plan (PacifiCorp 2008, pages 31-48).

Compliance monitoring for these areas is documented in the 2021 Bear River Annual Report Appendix D.

See zone 2.5.1 above for Standard E – PLUS.

2.6 CRITERION F – THREATENED AND ENDANGERED SPECIES PROTECTION

Table 2.6-1. Threatened and Endangered Species Alternative Standards Matrix.

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION F (type in one numbered standard and PLUS if applicable)* Threatened and Endangered Species
ZoE 1. Soda - impoundment	RM 190-185	2
ZoE 2. Soda - regulated riverine reach	RM 185-180	2
ZoE 3. Grace - impoundment	RM 180-179	2
ZoE 4. Grace - bypass reach	RM 179-172	2
ZoE 5. Grace - regulated riverine reach	RM 172-148	2

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION F (type in one numbered standard and PLUS if applicable)* **Threatened and Endangered Species**
ZoE 6. Oneida - impoundment	RM 148-143	2
ZoE 7. Oneida - bypass reach	RM 143-142	2
ZoE 8. Oneida - regulated downstream reach	RM 142-66	2

STANDARD F-2. Finding of No Negative Effect: There are or may be listed species in the facility area, but the facility has been found by an appropriate resource management agency to have no negative effect on them; or habitat for the species does not exist within the facility's affected area or is not impacted by facility operations.

2.6.1 Threatened and Endangered Species Protection for ZoE 1 through 8

Criterion	*Standard*	*Instructions*
F	2	Finding of No Negative Effects: • Identify all federal and state listed species that are or may be in the immediate area of the designated ZoE based on current data from the appropriate state and federal natural resource management agencies. • Provide documentation that there is no demonstrable negative effect of the facility on any listed species in the area from an appropriate natural resource management agency; or provide documentation that habitat for the species does not exist within the designated ZoE or is not impacted by facility operations.

Listed species are not known to occur within the Project area but it is possible that some of the wide-ranging species may move through the area. The potentially occurring listed species were discussed in the Environmental Impact Statement for the Project license in 2003. Listing status of some of the species reviewed in the EIS has changed since then but no additional currently listed species are known to occur and the habitat does not exist for some of the species. Standard F-2 is selected for all ZoEs because the EIS concluded that the Project operations and implementation of the Settlement Agreement is not likely to have a negative effect on the species they reviewed.

The EIS for the Project license application and the Environmental Analysis (EA) for the Cove decommissioning discuss the threatened, endangered, and sensitive species that may occur or pass through the Project area. These included the bald eagle, Canada lynx, Ute ladies'-tresses, yellow-billed cuckoo, gray wolf, and Canada lynx. The EIS cites a letter dated April 15, 2002, from the USFWS that stated that the threatened bald eagle (*Haliaeetus leucocephalus*) occurs in the area of the Soda development, and that there is the potential for occurrence of the threatened Canada lynx (*Lynx canadensis*) and threatened Ute's Ladies' tresses (*Spiranthes diluvialis*) in the lower Bear River Basin. A few years after the Endangered Species Act Section 7 consultation by USFWS on the new Project license was completed, bald eagles were federally delisted. The

northern Rocky Mountain population of gray wolves (including those in Idaho) have also been delisted. The yellow-billed cuckoo (*Coccyzus americanus*), which was a candidate species at the time, is now federally threatened.

2003 Final Environmental Impact Statement. Bear River: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20030416-0018&optimized=false

Idaho does not have a state Endangered Species Act but maintains a list of sensitive species for classification purposes. The IDFG web page for the Idaho Classification of Wildlife (IDAPA) https://idfg.idaho.gov/species/taxa/list/idapa provides a list of species that are currently classified as endangered, threatened and protected nongame species at this link: https://idfg.idaho.gov/species/taxa/list?usesa[]=Delisted&usesa[]=Proposed&usesa[]=Candidate&usesa[]=Threatened&usesa[]=Endangered.

The IDFG Idaho Fish and Wildlife Information System provides sensitive species observation records by county. Within the surrounding Caribou and Franklin counties, several federally-listed species have been observed. Complete lists of species that have been observed in Caribou or Franklin Counties and their conservation status are provided in Caribou County Observations List | Idaho Fish and Game and Franklin County Observations List | Idaho Fish and Game and those species that are federally-listed or were delisted are summarized in Table 2.6-1 below.

Table 2.6-1. Federally Listed (endangered, threatened, candidate) or Proposed and Delisted Species that Occur in Caribou and Franklin Counties, Idaho in 2022.

Scientific Name	Common Name	US ESA	IDAPA	Category
Lynx canadensis	Canada Lynx	Threatened	Threatened	Mammal
Pinus albicaulis	Whitebark Pine	Candidate		Plant
Gulo gulo	Wolverine	Proposed	Protected Nongame	Mammal
Falco peregrinus	Peregrine Falcon	Delisted	Protected Nongame	Bird
Haliaeetus leucocephalus	Bald Eagle	Delisted	Protected Nongame	Bird

USESA – US Fish and Wildlife Service listed species classification, per Endangered Species Act.
IDAPA – Idaho State Protection Status per Idaho Administrative Procedures Act: Designation 13 Title 01 Chapter 06 (IDAPA 13.01.06) – Rules Governing Classification and Protection of Wildlife.
Sources: query of species observations in Caribou Co. and Franklin Co. from IDFG, Idaho Fish and Wildlife Information System. Accessed 9/2022: https://idfg.idaho.gov/species/taxa/list/county/caribou and https://idfg.idaho.gov/species/taxa/list/county/franklin
and Spreadsheet of rare and sensitive species by county from IDFG Idaho list. Accessed 9/2022:.https://idfg.idaho.gov/sites/default/files/species_counties_09012017_bycounty.xlsx

A review of the databases available from the Idaho Department of Fish and Game, did not find any records of occurrences of federally-listed species in the immediate Project area.

The yellow-billed cuckoo occurs in riparian habitat in scattered locations in Idaho (IDFG database map https://idfg.idaho.gov/species/taxa/19476). The yellow-billed cuckoo may occur or disperse through the Project area but there are no records in the Caribou or Franklin county lists and the range map shows occurrences north and west of the Project area. The

yellow-billed cuckoo is known to use wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes. In the West, nests are often placed in willows along streams and rivers, with nearby cottonwoods serving as foraging sites (FWS: https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B06R#lifeHistory). The Project contains small areas of dense riparian habitat.

The wolverine (*Gulo gulo*) is a species that inhabits alpine and arctic tundra, boreal and mountain forests (primarily coniferous), usually in areas with snow on the ground in winter (https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.103092/Gulo_gulo). Riparian areas may be important winter habitat. There are observations of wolverine in the mountain ranges to the north and west of the Project. This species is wide ranging and may disperse through atypical habitat. The wolverine may travel through the Project area but it not likely to be a permanent resident.

Caribou Co. wolverine records:
https://idfg.idaho.gov/species/observations/list?category=All&species_id=17557&county_id=248&field_datetime_value%5Bmin%5D%5Bdate%5D=&field_datetime_value%5Bmax%5D%5Bdate%5D=&region_id=All&gmu_id=All&items_per_page=50

Franklin Co. wolverine records:
https://idfg.idaho.gov/species/observations/list?category=All&species_id=17557&county_id=255&field_datetime_value%5Bmin%5D%5Bdate%5D=&field_datetime_value%5Bmax%5D%5Bdate%5D=&region_id=All&gmu_id=All&items_per_page=50

Canada lynx generally occur in boreal and montane regions dominated by coniferous or mixed forest with thick undergrowth, but also sometimes enters open forest, rocky areas, and tundra to forage for abundant prey (https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.102126/Lynx_canadensis). The IDFG database contains several possible Canada lynx sightings in Caribou County and one in Franklin County. The Project area does not contain typical Canada lynx habitat and although they may pass through the area but it is unlikely that they are permanent residents.

Caribou Co. lynx records:
https://idfg.idaho.gov/species/observations/list?category=All&species_id=16860&county_id=248&field_datetime_value%5Bmin%5D%5Bdate%5D=&field_datetime_value%5Bmax%5D%5Bdate%5D=&region_id=All&gmu_id=All&verification%5B%5D=possible&items_per_page=25

Franklin Co. lynx records:
https://idfg.idaho.gov/species/observations/list?category=All&species_id=16860&county_id=255&field_datetime_value%5Bmin%5D%5Bdate%5D=&field_datetime_value%5Bmax%5D%5Bdate%5D=&region_id=All&gmu_id=All&verification%5B%5D=possible&items_per_page=25

Whitebark pine *(Pinus albicaulis)* occurs in high elevation upper subalpine forests (https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.128475/Pinus_albicaulis) which do not occur in the Project area. In the IDFG database, there is a record of occurrence for whitebark pine in Franklin County at approximately 250 meters in elevation at Wilderness Peak (https://idfg.idaho.gov/species/observation/1969376). This area is approximately 12 miles to the southeast of the Project in the Cache National Forest.

The Ute's ladies' tresses has not been documented in the Project area. Field surveys were conducted for Ute's ladies' tresses from August 31 to September 4, 1997, but no populations were located (PacifiCorp 1999b, page E3-67; FERC 2003a, page 82). The Project contains riparian and wetland habitats in which this species may occur. This species is known from approximately 76 sporadic occurrences in lower-elevation wet, herbaceous-dominated habitats, most of which are in Utah and Colorado (https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.129296/Spiranthes_diluvialis). The IDFG database does not contain any local records of occurrence of Ute's Ladies' tresses in Caribou or Franklin counties. The closest occurrences are documented in Bonneville, Fremont, Jefferson and Madison counties which are approximately 40 or 50 miles to the north and northwest.

Two plant species that, according to the Project Final EIS (FERC 2003a), were state listed in 2002 are found in the area: Kelsey's phlox (*Phlox kelseyi)*, and red glasswort (*Salicornia rubra*). Neither species is federally listed. Only *Salicornia rubra* still appears on Idaho's special status vascular and nonvascular plant list (https://idfg.idaho.gov/sites/default/files/idnhp_tracked_plant_species_2018.pdf). *Salicornia rubra* has a Global Rank of G5 for species that are demonstrably widespread, and secure. Idaho State ranking is S2S3 (S2-imperiled because of rarity/S3-rare or uncommon but not imperiled). In Minnesota, *Salicornia rubra* (red saltwort) is described as a succulent halophyte characteristic of salt flats and the margins of alkaline lakes in arid regions of the West; the range of *S. rubra* is relatively widespread, but because of its specialized habitat, its distribution is local and sporadic (https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDCHE0J020). The described salt flat habitat are not known to occur in the Project area.

As a signatory to the Settlement Agreement, USFWS stated that it anticipated that the operation of the Project, with the provisions of the Settlement Agreement, would have no effect on, or is not likely to adversely affect, the bald eagle, nor did USFWS anticipate adverse impacts to other listed species. In the project EIS, FERC staff concluded that current and proposed project operations would not affect the bald eagle or any other listed or candidate species (FERC 2003a).

2.7 CRITERION G – CULTURAL AND HISTORIC RESOURCES PROTECTION

Table 2.7-1. Cultural and Historic Resources Alternatives Matrix.

Zone Name	River Mile at Upper and Lower Extent of Zone	*CRITERION G (type in one numbered standard and PLUS if applicable)* Cultural and Historic Resources
ZoE 1. Soda - impoundment	RM 190-185	2
ZoE 2. Soda - regulated riverine reach	RM 185-180	2
ZoE 3. Grace - impoundment	RM 180-179	2
ZoE 4. Grace - bypass reach	RM 179-172	2
ZoE 5. Grace - regulated riverine reach	RM 172-148	2
ZoE 6. Oneida - impoundment	RM 148-143	2
ZoE 7. Oneida - bypass reach	RM 143-142	2
ZoE 8. Oneida - regulated downstream reach	RM 142-66	2

STANDARD G-2. Approved Plan: The facility is in compliance with approved state, federal, and recognized tribal plans for protection, enhancement, or mitigation of impacts to cultural or historic resources affected by the facility.

Article 423 of the FERC Project license requires PacifiCorp to implement the "Programmatic Agreement Among The Federal Energy Regulatory Commission And The Idaho State Historic Preservation Officer For Managing Historic Properties That May Be Affected By A License Issuing To PacifiCorp For The Continued Operation and Maintenance Of The Soda Project (FERC No. 20), Grace-Cove Project (FERC No. 2401) And Oneida Project (FERC No. 472) In Caribou And Franklin Counties, Idaho," (Programmatic Agreement) executed on February 25, 2003. As previously noted, the Soda, Oneida, and Grace facilities were subsequently licensed as one project under FERC license No. 20. The Programmatic Agreement generally identifies the cultural and historic resources on the Project.

Programmatic Agreement: https://elibrary.ferc.gov/eLibrary/filedownload?fileid=002a315f-66e2-5005-8110-c31fafc91712

Consistent with the Programmatic Agreement, PacifiCorp filed a draft Historic Properties Management Plan with FERC on March 29, 2005. The State Historic Preservation Office (SHPO) had comments on the draft that were reconciled in a subsequent draft with which SHPO concurred on July 16, 2007. The final Historic Properties Management Plan (HPMP) was approved and made part of the license by FERC Order dated June 17, 2008 (FERC 2008).

June 17, 2008 Order approving HPMP:
https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01d063f7-66e2-5005-8110-c31fafc91712

The Programmatic Agreement also requires PacifiCorp to prepare an annual report of activities implemented pursuant to the Historic Properties Management Plan and file it with FERC, SHPO, the Shoshone-Bannock Tribes, and the BLM. The first report was filed on January 22, 2010. In a letter dated February 1, 2010, the Commission acknowledged that the HPMP report fulfilled the annual filing requirement for 2009. HPMP reports have been filed annually since then.

Activities implemented to date have been summarized in the Project Annual Reports (to access the 2006 – 2021 Annual Reports, follow the Annual Reports link on the Bear River project homepage: https://www.pacificorp.com/energy/hydro/bear-river/annual-reports.html). Activities in most years since 2010 have consisted of annual cultural awareness training presentations to Project operations staff, monitoring of archaeological sites, and submittal of annual HPMP reports per Programmatic Agreement. In 2020 and 2021, meetings were held remotely and self-study training was presented to staff.

The HPMP requires development of a public education and interpretive program. Interpretive panel artwork that was finalized during 2011, was manufactured and installed in 2012, except those covering Native American use of the area. Eight signs that covered historical information on the Grace, Cove and Oneida developments in addition to Doc Kackley, the Oneida Plant Disaster, and Bonneville cutthroat trout, were installed at that time. A consultation meeting and field trip were held with the Shoshone Bannock Tribe concerning traditional cultural properties and interpretive signs. Graphics for Native American interpretive signs were finalized during 2014 and the signs were manufactured. These signs were installed during 2015. Copies of three of the signs were provided to the Shoshone-Bannock Tribe for their museum (PacifiCorp 2015, Final_2015_Bear River Annual Report.pdf page 30).

2.7.1 Cultural and Historic Resource Protection for ZoE 1: Soda impoundment

Criterion	***Standard***	***Instructions***
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

All Project developments (Soda, Grace, and Oneida developments) are in compliance with the Programmatic Agreement and approved HPMP and have completed activities and annual reporting discussed above. The HPMP practices are applicable to portions of the ZoEs that are within the FERC Project boundary. The HPMP identifies specific cultural and historic resources present on PacifiCorp property and practices to protect them. In the approving order for the HPMP dated June 17, 2008, Commission staff conclude that the final HPMP incorporates the requirements of article 423 and it provides for the identification, management, and protection for the Historic Properties within the area of potential effect (APE) of the Soda, Grace-Cove, and Oneida Developments.

The Soda development includes structures (hydroelectric complex, Soda dam and spillway, bungalows) in ZoE 2 that are National Register eligible as well as some lithic scatter sites

identified in the Programmatic Agreement (page 13). Four interpretive panels are installed in the Soda Powerhouse Day Use Area.

2.7.2 Cultural and Historic Resource Protection for ZoE 2: Soda regulated riverine

Criterion	***Standard***	***Instructions***
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

See response above for ZoE 1.

2.7.3 Cultural and Historic Resource Protection for ZoE 3: Grace reservoir

Criterion	***Standard***	***Instructions***
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

The Grace development is in compliance with the Programmatic Agreement and approved HPMP and has completed activities and annual reporting. See the response above for ZoE 1.

The Grace-Cove development includes structures (Grace hydroelectric facilities, residential complex, etc.) that are National Register eligible according to the Programmatic Agreement (page 15). No prehistoric sites eligible for listing in the National Register were identified.

2.7.4 Cultural and Historic Resource Protection for ZoE 4: Grace bypass

Criterion	***Standard***	***Instructions***
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

See response above for ZoE 1 and 3. Two interpretive panels are installed in the Black Canyon Put-in recreation access area and three interpretive panels are installed in the Black Canyon Take-out access area.

2.7.5 Cultural and Historic Resource Protection for ZoE 5: Grace regulated riverine

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

See response above for ZoE 1 and 3.

The Cove development was decommissioned in 2006. The dam and flowline were removed and the powerhouse was preserved in place. A MOA was executed between PacifiCorp and Idaho State Historic Preservation Office (SHPO) that identified measures to mitigate for the impacts of decommissioning on historic properties (FERC letter to PacifiCorp and SHPO dated May 2, 2006). Measures included HAER documentation of features that were removed, provisions for interpretive signage, and implementation of discovery protocols if previously unidentified archaeological resources were discovered during decommissioning activities.

2.7.6 Cultural and Historic Resource Protection for ZoE 6: Oneida Impoundment

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

The Soda development is in compliance with the Programmatic Agreement and approved HPMP and has completed activities and annual reporting. See response above for ZoE 1.

The Oneida development includes structures (Oneida hydroelectric facilities, residential complex, etc.) that are National Register eligible according to the Programmatic Agreement (page 18). No prehistoric sites eligible for listing in the National Register were identified in the Oneida development area. Two interpretive panels are installed in the Oneida Day Use Area near the dam.

2.7.7 Cultural and Historic Resource Protection for ZoE 7: Oneida Bypass

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

See response above for ZoE 1 and 6.

2.7.8 Cultural and Historic Resource Protection for ZoE 8: Oneida Regulated Riverine

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

See response above for ZoE 1 and 6.

2.8 CRITERION H - RECREATION RESOURCES

Table 2.8-1. Recreational Resources Alternative Standards Matrix.

Zone Name	**River Mile at Upper and Lower Extent of Zone**	***CRITERION H* Recreation Resources**
ZoE 1. Soda - impoundment	RM 190-185	2
ZoE 2. Soda - regulated riverine reach	RM 185-180	2
ZoE 3. Grace - impoundment	RM 180-179	2
ZoE 4. Grace - bypass reach	RM 179-172	2
ZoE 5. Grace - regulated riverine reach	RM 172-148	2
ZoE 6. Oneida - impoundment	RM 148-143	2
ZoE 7. Oneida - bypass reach	RM 143-142	2
ZoE 8. Oneida - regulated downstream reach	RM 142-66	2

STANDARD H-2. Agency Recommendation: The facility demonstrates compliance with resource agency recommendations for recreational access or accommodation (including recreational flow releases), or any enforceable recreation plan in place for the facility.

Standard H-2 applies to all ZoEs. Resource agency recommendations are contained in the Federal Energy Regulatory Commission (FERC) project license. Recreation-related license articles include:

412 (ramping rates),
416 (Recreation Plan)
417 (Traffic Safety Plan),
418 and 419 (develop plan to release whitewater boater flows at Grace Dam),
419 (release whitewater boater flows),
420 (operational regime to minimize the frequency of river level fluctuations below the Oneida powerhouse,
421 (develop a plan to forecast boating flows), and
422 (provide flow information website/phone).

Article 416 of the Project FERC license required development of a Recreation Plan that includes, among other details: a description of the existing recreation facilities and proposed improvements; operation and maintenance schedules and responsible entities; a schedule for funding; and drawings showing existing and proposed recreation facilities.

PacifiCorp developed a Recreation Management Plan (Recreation and Traffic Safety Plan) that was approved by FERC on October 11, 2005 (https://elibrary.ferc.gov/eLibrary/docinfo?accession_number=20051011-3021). An amendment to the Recreation and Traffic Safety Plan that increases public safety and security around project works was approved by FERC order dated September 26, 2018 (https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20180926-3052).

Recreation and Traffic Safety Plan:
https://elibrary.ferc.gov/eLibrary/docinfo?accession_number=20050203-0174)
also available on PacifiCorp's website:
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/bear-river/project-documents/final-documents/land-management-and-site-plans/2005-01-31_Recreation_Traffic_Safety_Plan_ECC_FINAL.pdf

The Commission-approved recreation facilities and amenities associated with each Project development are identified in a letter to FERC dated March 17, 2016 (https://elibrary.ferc.gov/eLibrary/docinfo?accession_number=20051011-3021) and are described in the ZoE sections below.

The facility is in compliance with the recreational conditions in the Federal Energy Regulatory Commission (FERC) project license. Documentation of monitoring, funding, and progress on implementation measures by license article is provided in the project Annual Reports. To access the 2006 - 2021 Annual Reports, follow the Annual Reports link on the Bear River project homepage: https://www.pacificorp.com/energy/hydro/bear-river/annual-reports.html. Representative photos of the recreational areas are included in the Recreation and Traffic Safety Plan (pages 11-14, 25, 27, 31) and Appendix B.

The last FERC Environmental and Recreation inspection was conducted on August 6 and 7, 2015. PacifiCorp received a letter from FERC dated August 11, 2015 (https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01d5fbe9-66e2-5005-8110-c31fafc91712) that noted two Part 8 signs and a traffic bollard that needed repair. By letter dated November 12, 2015, FERC acknowledged that all follow up items were completed (https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01D949D8-66E2-5005-8110-C31FAFC91712).

2.8.1 Recreation Resources for ZoE 1: Soda impoundment

Criterion	***Standard***	***Instructions***
H	2	Agency Recommendation: • Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.

The Project is in compliance with the recreational access, accommodation, and facilities conditions in the Project License as documented in the annual reports described above.

There are two main recreation sites on Soda reservoir:

- The Oregon Trail Park and Marina, located on the north shore of Soda reservoir, is owned by Caribou County. This facility provides a boat ramp, floating dock, picnic tables, two picnic shelters, trash receptacles, playground, parking for approximately 30 vehicles, two vault toilets with one that is ADA accessible. PacifiCorp provides funding for this county facility.
- The Second Bridge Boat Launch, located on PacifiCorp land on the north shore of Soda reservoir approximately 0.75 miles east of the Soda dam, provides a boat ramp, floating dock, trash receptacles, two portable toilets, and parking for approximately 30 vehicles. This facility is on PacifiCorp property that is maintained by Caribou County under agreement with funding by PacifiCorp.

In accordance with Article 416 of the license, PacifiCorp has made annual payments of up to $3,000 to Caribou County for management of recreational sites at the Soda (Alexander) reservoir.

2.8.2 Recreation Resources for ZoE 2: Soda regulated riverine

Criterion	***Standard***	***Instructions***
H	2	Agency Recommendation: • Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.

The Project is in compliance with the recreational access, accommodation, and facilities conditions in the FERC Project license as documented in the annual reports described above.

There are two recreation areas near the Soda powerhouse:

- The Soda Powerhouse Day Use Area, located on PacifiCorp land north of the Soda dam, provides a concrete hand-launch boat ramp, floating swim dock, picnic shelter, picnic tables, sandy beach area, drinking fountain, gravel parking are for approximately 15

vehicles, a restroom in an adjacent building, trash receptacles, large irrigated lawn, and four interpretive panels.
- A South Shore Access Area, also provides a gravel parking area for approximately four vehicles.

2.8.3 Recreation Resources for ZoE 3: Grace impoundment

Criterion	***Standard***	***Instructions***
H	2	Agency Recommendation: • Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.

There are no agency recommendations for the Grace impoundment in the Project license.

2.8.4 Recreation Resources for ZoE 4: Grace bypass

Criterion	***Standard***	***Instructions***
H	2	Agency Recommendation: • Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.

The Project is in compliance with the recreational access, accommodation, and facilities conditions in the FERC Project license as documented in the annual reports described above.

In 2005, in accordance with Article 416 of the Project license, PacifiCorp improved the boater put-in and take-out access points in the Grace bypass reach. The two recreation access areas in the bypass reach include:
- The Black Canyon Put-in, located on PacifiCorp land approximately 0.12 miles downstream from Grace dam, provides a hand-launch boat ramp, gravel parking area for approximately 15 vehicles including two ADA spaces, a portable restroom, and two interpretive panels.
- The Black Canyon Take-out, located on PacifiCorp land approximately 0.5 miles upstream from Grace powerhouse, provides a hand-launch boat ramp, fish stocking access, gravel parking area for approximately 15 vehicles including two ADA spaces, a portable restroom, angler access bridge, and three interpretive panels.

In addition, per Article 418 of the Project license, PacifiCorp consulted with the Bear River ECC to prepare a Boating Flow Release Plan that was approved by FERC Order dated August 11, 2005. The Plan centers on the installation of a spill gate in Grace dam to facilitate whitewater releases required under Article 419. The facility has been releasing the flows pursuant to Article 419 since 2008. Annual whitewater release calendars are prepared in consultation with American

White Water and approved by the ECC. The first release calendar was submitted to FERC in 2008. PacifiCorp has also made river flow information for the Grace bypass reaches available through a website and toll-free phone number.

In accordance with Articles 421 and 422 of the Project license, PacifiCorp provides river flow information for the Grace bypass reach through a toll-free phone number and websites:

- PacifiCorp Flow Phone: (800) 547-1501.
- Bear River Implementation website: https://www.pacificorp.com/energy/hydro/bear-river.html
- Grace Dam water releases: https://www.pacificorp.com/community/recreation/water-release/bear-river/below-grace-dam.html

PacifiCorp's Recreation and Traffic Plan includes provisions to ensure that flow-related recreational impacts are mitigated to a reasonable extent in all Zones of Effect where there is flow-related recreation. Where there is recognized, flow-related recreational use, the facility provides the public with relevant up-to-date information on river flows. The recreation plan was approved by FERC and provides for safety of employees and the public, and protections dictated by state or federal authorities.

2.8.5 Recreation Resources for ZoE 5: Grace regulated riverine

Criterion	***Standard***	***Instructions***
H	2	Agency Recommendation: • Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.

The Project is in compliance with the recreational access, accommodation, and facilities conditions in the FERC Project license as documented in the annual reports described above.

There are two recreation areas in this reach:

- The Cove Access Site, located on PacifiCorp land approximately 1.5 miles downstream of Grace powerhouse provides a gravel parking area for approximately five vehicles and three interpretive panels.
- The Kackley Access Site, located on PacifiCorp land approximately 0.25 miles downstream of Grace powerhouse provides a gravel parking area for approximately 10 vehicles.

2.8.6 Recreation Resources for ZoE 6: Oneida impoundment

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.

The Project is in compliance with the recreational access, accommodation, and facilities conditions in the FERC Project license as documented in the annual reports described above.

There are two recreation areas on the Oneida reservoir:

- Oneida Day Use Area, located on PacifiCorp property on Oneida reservoir near the dam, contains a boat ramp, floating dock, 10 picnic sites, a portable toilet, parking for approximately 35 vehicles, and two interpretive panels.
- Maple Grove campground located on BLM land on the east shore of Oneida reservoir, is managed by BLM with PacifiCorp funding. The campground contains 12 campsites, boat ramp, floating dock, parking for approximately four vehicles, and two ADA accessible vault toilets.

In accordance with Article 416 of the Project license, PacifiCorp has provided $50,000 to the BLM to upgrade the Maple Grove and Redpoint (ZoE 8) campgrounds. Annual payments of $10,000 (in 2002 dollars escalated annually by GDPI) to the BLM for management of these campgrounds are ongoing per the terms of the Project license.

2.8.7 Recreation Resources for ZoE 7: Oneida bypass

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.

There are no agency recommendations for the Oneida bypass in the Project license.

2.8.8 Recreation Resources for ZoE 8: Oneida regulated riverine

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.

The Project is in compliance with the recreational access, accommodation, and facilities conditions in the FERC Project license as documented in the annual reports described above.

In 2005, in accordance with Article 416 of the Project license, PacifiCorp improved the boater put-in and take-out access points in the Oneida reach downstream of the powerhouse. Each of the access points now includes a hand-launch boat ramp, gravel parking area, and portable restroom.

There are four recreation areas downstream of the Oneida powerhouse:

- The Oneida Narrows Put-in, located approximately 0.25 miles downstream of the Oneida Powerhouse on PacifiCorp land, provides a gravel hand-launch boat ramp, parking area for approximately 30 vehicles including two ADA spaces, and a portable restroom.
- The Oneida Narrows Take-out, located approximately 3.5 miles downstream of Oneida Powerhouse on BLM land, provides a gravel hand-launch boat ramp, parking area for approximately 40 vehicles, and a portable restroom.
- The Redpoint Campground, located partly on BLM and partly on PacifiCorp land approximately 2.25 miles downstream of Oneida powerhouse, provides 10 developed campsites with one ADA accessible site, one double vault toilet, day use picnic sites, non-motorized boater access.
- An additional Bear River Access Site provides a gravel parking area for approximately 10 vehicles.

Funding is provided to BLM for Redpoint Campground (see Section 2.8.6). Annual payments of $3,000 are provided to Franklin County Sheriff for law enforcement assistance in the Oneida Canyon (in 2002 dollars escalated annually by GDPI).

In accordance with Articles 421 and 422 of the Project license, PacifiCorp provides river flow information for Oneida reach through a toll-free phone number and websites:

- PacifiCorp Flow Phone: (800) 547-1501.
- Bear River Implementation website: https://www.pacificorp.com/energy/hydro/bear-river.html
- Oneida Dam water releases: https://www.pacificorp.com/community/recreation/water-release/bear-river/below-oneida-dam.html

PacifiCorp's Recreation and Traffic Plan includes provisions to ensure that flow-related recreational impacts are mitigated to a reasonable extent in all Zones of Effect where there is flow-related recreation. Where there is recognized, flow-related recreational use, the facility provides the public with relevant up-to-date information on river flows. The recreation plan was approved by FERC and provides for safety of employees and the public, and protections dictated by state or federal authorities.

3.0. SWORN STATEMENT AND WAVER

B.3 Attestation and Waiver Form

All applications for LIHI Certification must include the following statement before they can be reviewed by LIHI:

ATTESTATION

As an Authorized Representative of PacifiCorp

the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's certification program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The Undersigned further acknowledges that if LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to the final certification decision and prior to marketing the electricity product as LIHI Certified® (which includes selling RECs in a market that requires LIHI Certification).

The Undersigned further agrees to hold the Low Impact Hydropower Institute, the Governing Board, and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's certification program.

FOR PRE-OPERATIONAL CERTIFICATIONS:

The Undersigned acknowledges that LIHI may suspend or revoke the LIHI Certification should the impacts of the facility, once operational, fail to comply with the LIHI program requirements.

Authorized Representative:

Name: Todd Olson

Title: Director PacifiCorp Renewable Resources

Authorized Signature: Todd Olson

Date: Click or tap to enter a date. 12/20/2022

LIHI Handbook 2nd Edition – Revision 2.05, 01/01/2022

4.0. CONTACTS

B.4 Contacts Forms

Table 4.0-1. Applicant-related Contacts

Facility Owner:	
Name and Title	Will Shallenberger, Vice President, Renewable Resources
Company	PacifiCorp
Phone	503-813-7268
Email Address	Will.Shallenberger@pacifiCorp.com
Mailing Address	825 NE Multnomah St., Suite 1800, Portland, OR 97232
Facility Operator (if different from Owner):	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
Consulting Firm / Agent for LIHI Program (if different from above):	
Name and Title	Todd Olson, Director, Renewable Resources
Company	PacifiCorp
Phone	503-813-6657
Email Address	Todd.Olson@pacificorp.com
Mailing Address	825 NE Multnomah St., Suite 1800, Portland, OR 97232
Compliance Contact (responsible for LIHI Program requirements):	
Name and Title	Mark Stenberg, Bear River License Program Manager
Company	PacifiCorp
Phone	208-852-5507
Email Address	Mark.Stenberg@pacificorp.com
Mailing Address	822 Grace Power Plant Rd., Grace, ID 83241
Party Responsible for Accounts Payable:	
Name and Title	Chet Perry, Renewable Resource Reporting Specialist
Company	PacifiCorp
Phone	503-813-7034
Email Address	Chet.perry@pacificorp.com
Mailing Address	825 NE Multnomah St., Suite 600, Portland, OR 97232

Table 4.0-2. Current Relevant State, Federal, and Tribal Resource Agency Contacts (excluding FERC).

Agency Contact		*Area of Responsibility (check applicable boxes)*
Organization Name	U.S. Fish and Wildlife Service	☐ Flows ☐ Water Quality ☒ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title	Matt Bringhurst, Wildlife Biologist – Conservation Partnerships	
Phone	208-237-6975 Ext. 120	
Email address	Matthew_Bringhurst@fws.gov	
Mailing Address	4425 Burley Drive, Suite A, Chubbuck, ID 83202	

Agency Contact		*Area of Responsibility (check applicable boxes)*
Organization Name	U.S. Bureau of Land Management	☐ Flows ☐ Water Quality ☒ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title	Mike Kuyper, Assistant Field Manager (Acting ECC member until fishery biologist position is filled)	
Phone	208-478-6358	
Email address	mkuyper@blm.gov	
Mailing Address	Pocatello Field Office, 4350 Cliffs Drive, Pocatello, ID 83204	

Agency Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	U.S. National Park Service	☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☒ Recreation
Name and Title	Dan Miller, Community Planner	
Phone	503-808-6723	
Email address	dan_miller@nps.gov	
Mailing Address	White Salmon, WA 98672	

Agency Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	U.S. Forest Service	☐ Flows ☐ Water Quality ☒ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title	Corey Lyman, Fisheries Biologist	
Phone	208-557-5838	
Email address	corey.lyman@usda.gov	
Mailing Address	1405 Hollipark Drive, Idaho Falls, ID 83401	

Stakeholder Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	Shoshone-Bannock Tribes	☐ Flows ☐ Water Quality ☒ Fish/Wildlife ☐ Watershed ☐ T&E Species ☒ Cultural/Historic ☐ Recreation
Name and Title	Hunter Osborne, Fisheries Biologist	
Phone	208-239-4564	
Email address	hosborne@sbtribes.com	
Mailing Address	29 Shoshone Drive, P.O. Box 306	

Stakeholder Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	Idaho Department of Environmental Quality	☒ Flows ☒ Water Quality ☐ Fish/Wildlife ☒ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title	Jennifer Cornell, Water Quality Regional Manager	
Phone	208-236-6160	
Email address	jennifer.cornell@deq.idaho.gov	
Mailing Address	444 Hospital Way #300, Pocatello, ID 83201	

Stakeholder Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	Idaho Department of Fish and Game	☐ Flows ☐ Water Quality ☒ Fish/Wildlife ☒ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title	Patrick Kennedy, Regional Fisheries Manager	
Phone	208-236-1262	
Email address	pat.kennedy@idfg.idaho.gov	
Mailing Address	1345 Barton Road, Pocatello, ID 83204	

Stakeholder Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	Idaho Department of Parks and Recreation	☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☒ Recreation
Name and Title	Keith Jones, Natural Resource Program Manager	
Phone	208 769-1511	
Email address	keith.jones@idpr.idaho.gov	
Mailing Address	2885 W Kathleen Ave, Suite 1 Coeur d'Alene, ID 83815	

Stakeholder Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	Idaho Council of Trout Unlimited	☐ Flows ☐ Water Quality ☒ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title	Jim DeRito, Bear River Project Coordinator	
Phone	208-360-6165	
Email address	jderito@tu.org	
Mailing Address	44 W Spring Creek Pkwy, Providence, UT 84332	

Stakeholder Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	Idaho Rivers United	☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☒ Recreation
Name and Title	Nic Nelson, Executive Director	
Phone	208-343-7481	
Email address	nic@idahorivers.org	
Mailing Address	P.O. Box 633, Boise, ID 83701	

Stakeholder Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	American Whitewater	☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☒ Recreation
Name and Title	Charlie Vincent, Regional Coordinator	
Phone	801-243-4892	
Email address	clvincent@xmission.com	
Mailing Address	1800 E 3990 SouthSalt Lake City, UT 84124	

Stakeholder Contact		***Area of Responsibility (check applicable boxes)***
Organization Name	Greater Yellowstone Coalition	☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☒ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title	Allison Michalski, Idaho Conservation Coordinator	
Phone	(208) 932-4085	
Email address	amichalski@greateryellowstone.org	
Mailing Address	60 E. Little Ave., Suite 201P.O. Box 1072, Driggs, ID 83422	

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APPENDIX A – SUPPORTING DOCUMENTS

A-2.2-1 Idaho Impaired Waters Category Lists
A-2.2-2 IDEQ Grace-Cove 2009 WQC Compliance Letter
A-2.2-3 IDEQ Oneida 2009 WQC Compliance Letter

Appendix A-2.2-1 Idaho 2022 Integrated Report List of Impaired Water Categories for Bear River

Applicable reaches of the Bear River are highlighted in yellow on the lists of impaired waters from the Appendix A of Idaho's 2022 Integrated Report. Lists of impaired waters are provided for the following categories:

- The 303(d) list of impaired waters
- The 305(b) list of waters classified as category 4a (waters that have a TMDL completed and approved by EPA).
- The 305(b) list of waters classified as category 4c (waters failing to meet applicable water quality standards due to other types of pollution, e.g., flow alteration, not a pollutant).

Additional Links to IDEQ Interactive Map Application

DEQ (Idaho Department of Environmental Quality). 2022. *Final 2022 § 305(b) Integrated Report* (Interactive Map https://mapcase.deq.idaho.gov/wq2022/) with links to the following Bear River assessment units and status reports:

Assessment Unit ID: ID16010201BR002_06, Assessment Unit Name: Bear River-Ovid Creek confluence to Alexander Reservoir (this is the reach upstream of the Project area); https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010201BR002_06

Assessment Unit ID: ID16010201BR001_0L, Assessment Unit Name: Alexander Reservoir (Bear River); https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010201BR001_0L

Assessment Unit ID: ID16010202BR009_06, Assessment Unit Name: Bear River – Alexander Reservoir Dam to Densmore Creek; https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR009_06

Assessment Unit ID: ID16010202BR009_06a, Assessment Unit Name: Bear River – Densmore Cr to above Oneida Reservoir; https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR009_06a

Assessment Unit ID: ID16010202BR008_0L, Assessment Unit Name: Oneida Narrows Reservoir; https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR008_0L

Assessment Unit ID: ID16010202BR006_02, Assessment Unit Name: Bear River-Oneida Narrows Reservoir Dam to Idaho/Utah border; https://mapcase.deq.idaho.gov/wq2022/scripts/adb2022.aspx?WBIDSEGID=ID16010202BR006_02

Bear River

ID16010202BR005_02L	Glendale Reservoir	203.11	Acres
MERCURY	2/18/2010 (NED) - Mercury listing based on the DEQ report, "Arsenic, Mercury, and Selenium in Fish Tissue from Idaho Lakes and Reservoirs: A Statewide Assessment" (Essig and Kostermann, May 2008). A Mercury level of 0.565 mg/kg, which exceeds the human health criterion of 0.3 mg/kg, was reported.		
ID16010202BR006_06	Bear River-Oneida Narrows Reservoir Dam to Idaho/Utah border	36.09	Miles
TEMPERATURE	Exceeded State Water Quality Standards for salmonid spawning and cold water aquatic life. See temperature data in IDASA.		
ID16010202BR009_02b	Alder Creek - headwaters to mouth	17.72	Miles
FECAL COLIFORM			
ID16010202BR009_06	Bear River - Alexander Reservoir Dam to Densmore Creek	15.62	Miles
TEMPERATURE	Exceeded State Water Quality Standards for salmonid spawning and cold water aquatic life. See temperature data in IDASA.		
ID16010202BR009_06a	Bear River - Denismore Cr to above Oneida Reservoir	21.37	Miles
TEMPERATURE	Exceeded State Water Quality Standards for salmonid spawning and cold water aquatic life. See temperature data in IDASA.		
ID16010202BR014_02c	Shingle Creek	10.48	Miles
ESCHERICHIA COLI (E. COLI)	10/6/2015 (NED) - The five-sample geometric mean E. coli samples collected on Shingle Creek in 2002 had a value of 385 cfu/100mL, which is greater than the 126 cfu/100mL criterion value.		
SEDIMENTATION/SILTATION	4/7/17 (HH): 2015 BURP site had 52% bank stability, and fine sediments < 6 mm made up 85% of particles in riffles. These data indicate that excess sedimentation is impacting cold water aquatic life and salmonid spawning in this AU.		
ID16010202BR014_03a	Shingle Creek	0.84	Miles
ESCHERICHIA COLI (E. COLI)			
ID16010202BR018_02b	Swan Lake Creek	13.79	Miles
FECAL COLIFORM	The five-sample geometric mean E. coli sample had a value of 4,937 cfu/100mL, which greater than the 126 cfu/100mL criterion value. Therefore, the recreational use of this water body is considered impaired by bacteria.		
SEDIMENTATION/SILTATION			
ID16010202BR019_02	Fivemile Creek - source to Dayton	9.51	Miles
ESCHERICHIA COLI (E. COLI)			
ID16010202BR019_02a	Fivemile Creek - Dayton to mouth	5.71	Miles
ESCHERICHIA COLI (E. COLI)			
ID16010202BR020_02L	Weston Creek Reservoir	111.42	Acres
MERCURY	2/18/2010 - (NED) Mercury listing based on the DEQ report, "Arsenic, Mercury, and Selenium in Fish Tissue from Idaho Lakes and Reservoirs: A Statewide Assessment" (Essig and Kostermann, May 2008). A Mercury level of 0.379 mg/kg, which exceeds the human health criterion of 0.3 mg/kg, was reported.		
ID16010202BR021_02	Jenkins Hollow (Newton Creek)	14.1	Miles
SEDIMENTATION/SILTATION			

2022 Integrated Report - Category 4a

Bear River

16010201 Bear Lake

		EPA TMDL ID	Approval Date		
ID16010201BR001_0L	Alexander Reservoir (Bear River)			1031.87	Acres
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010201BR002_02a	Sulpher Canyon - Headwaters (middle and S.Sulpher) to mouth			12.24	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010201BR002_02c	lower Skinner Creek - above Nounan Rd Crossing to Bear River			4.41	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
SEDIMENTATION/SILTATION		30351	Jun 29, 2006		
ID16010201BR002_05	Bear River-railroad bridge (T14N, R45E, Sec. 21) to Ovid Cr.			57.47	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010201BR002_06	Bear River - Ovid Creek confluence to Alexander Reservoir			44.09	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
		53480	Sep 13, 2013		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
		53480	Sep 13, 2013		
ID16010201BR003_02	lower Bailey Creek - FS boundary to mouth			3.05	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010201BR003_02a	Upper Bailey Creek - HW to FS boundary			4.71	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010201BR004_02	Eightmile Creek - headwaters to N. Wilson Creek			28.53	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010201BR004_02a	South Wilson Creek			4.68	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010201BR004_03a	Eightmile Creek - N Wilson Cr to 1 mi below FS boundary			1.75	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
SEDIMENTATION/SILTATION		30351	Jun 29, 2006		

2022 Integrated Report - Category 4a

Bear River

16010202 Middle Bear

		EPA TMDL ID	Approval Date		
ID16010202BR002_04	Cub River - Maple Creek to Border			5.57	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
		53480	Sep 13, 2013		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR003_02	Cub River - Sugar Creek to US Hwy 91 Bridge			12.7	Miles
ESCHERICHIA COLI (E. COLI)		30351	Jun 29, 2006		
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR003_03	Cub River - Sugar Creek to Maple Creek			5.28	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR003_03a	Maple Creek			3.81	Miles
ESCHERICHIA COLI (E. COLI)		30351	Jun 29, 2006		
ID16010202BR005_02	Worm Creek - unnamed tributaries			21.49	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR005_02b	Worm Creek (lower) - Glendale Reservoir to Border			13.67	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
		53480	Sep 13, 2013		
SEDIMENTATION/SILTATION		30351	Jun 29, 2006		
ID16010202BR006_02	Bear River-Oneida Narrows Reservoir Dam to Idaho/Utah border			49.37	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR006_02a	Deep Creek			10.37	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
SEDIMENTATION/SILTATION		30351	Jun 29, 2006		
ID16010202BR006_06	Bear River-Oneida Narrows Reservoir Dam to Idaho/Utah border			36.09	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR007_02a	Strawberry Creek			10.36	Miles
PHOSPHORUS, TOTAL		53480	Sep 13, 2013		
SEDIMENTATION/SILTATION		53480	Sep 13, 2013		

2022 Integrated Report - Category 4a

Bear River

ID16010202BR007_03	Mink Creek - source to mouth			8.01	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR008_0L	Oneida Narrows Reservoir			420.78	Acres
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR009_02	Unnamed Tributaries			112.96	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR009_02a	Smith Creek - HW to mouth			9.07	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR009_02b	Alder Creek - headwaters to mouth			17.72	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR009_02c	Burton Creek - headwaters to mouth			13.83	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR009_06	Bear River - Alexander Reservoir Dam to Densmore Creek			15.62	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
		53480	Sep 13, 2013		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR009_06a	Bear River - Denismore Cr to above Oneida Reservoir			21.37	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR010_02	Williams Creek - source to mouth			20.49	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR010_02a	Williams Creek - FS boundary to Bear River			4.04	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		
ID16010202BR011_02	Trout Creek - source to mouth			47.03	Miles
PHOSPHORUS, TOTAL		30351	Jun 29, 2006		
TOTAL SUSPENDED SOLIDS (TSS)		30351	Jun 29, 2006		

Bear River

ID16010202BR003_03	Cub River - Sugar Creek to Maple Creek	5.28	Miles
FLOW REGIME MODIFICATION			
ID16010202BR006_06	Bear River-Oneida Narrows Reservoir Dam to Idaho/Utah border	36.09	Miles
FLOW REGIME MODIFICATION			
ID16010202BR007_02a	Strawberry Creek	10.36	Miles
FLOW REGIME MODIFICATION			
PHYSICAL SUBSTRATE HABITAT ALTERATIONS			
ID16010202BR009_06	Bear River - Alexander Reservoir Dam to Densmore Creek	15.62	Miles
FLOW REGIME MODIFICATION			
ID16010202BR009_06a	Bear River - Denismore Cr to above Oneida Reservoir	21.37	Miles
FLOW REGIME MODIFICATION			
ID16010202BR011_03	Trout Creek - source to mouth	3.94	Miles
FLOW REGIME MODIFICATION			
ID16010202BR013_02	Densmore Creek - source to mouth	22.88	Miles
FLOW REGIME MODIFICATION			
ID16010202BR014_04	Cottonwood Creek - lower Cottonwood Creek (4th order)	14.02	Miles
FLOW REGIME MODIFICATION			
ID16010202BR015_04	Battle Creek - source to mouth	16.27	Miles
FLOW REGIME MODIFICATION			
PHYSICAL SUBSTRATE HABITAT ALTERATIONS			
ID16010202BR018_02b	Swan Lake Creek	13.79	Miles
FLOW REGIME MODIFICATION			
ID16010202BR020_02	Weston Creek - unnamed tributaries	32.2	Miles
FLOW REGIME MODIFICATION			
ID16010202BR020_02c	upper Weston Creek - FS boundary to reservoir	12.19	Miles
FLOW REGIME MODIFICATION			
PHYSICAL SUBSTRATE HABITAT ALTERATIONS			
ID16010202BR020_02d	Weston Cr - HW to FS boundary and Trail Hollow	10.76	Miles
PHYSICAL SUBSTRATE HABITAT ALTERATIONS			
FLOW REGIME MODIFICATION			
ID16010202BR020_03	Weston Creek - Dry Canyon to above Weston City	8.29	Miles
FLOW REGIME MODIFICATION			

APPENDIX A-2.2-2

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

444 Hospital Way, #300 • Pocatello, Idaho 83201 • (208) 236-6160

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

January 20, 2009

Mr. Mark Stenberg
PacifiCorp Energy
License Program Manager – Idaho
822 Grace Power Plant Road
Grace ID 83241

RE: Compliance with DEQ's 401 certification condition 1 (a. and b.), Grace/Cove water quality monitoring.

Dear Mr. Stenberg:

In compliance with DEQ's 401 certification for PacifiCorp's Bear River Hydroelectric Projects, PacifiCorp Energy has monitored water quality through Grace/Cove from 2004-2007. DEQ Pocatello Regional office staff have reviewed these data and concluded that PacifiCorp's operation has not contributed to violations of State of Idaho water quality standards. DEQ's 401 certification of June 2003 required PacifiCorps to implement water quality monitoring in this project reach for six (6) years.

Based on the four (4) years of data (2004-07) and our agreed upon need to reallocate those monitoring resources to documenting water quality associated with the whitewater boater flow program in 2008 (and following years) DEQ is relieving PacifiCorp of the last 2 years (2008-2009) of water quality monitoring as required under condition 1 (a. and b.) in the 401 certification.

Should new or additional information suggest that PacifiCorp's ongoing operation of the Grace Project is causing water quality violations, DEQ reserves the right, in consultation with PacifiCorp, to reopen the 401 certification.

Please call me at 236-6160 if you have questions or want to discuss.

Sincerely,

Lynn Van Every
Regional Water Quality Manager

Cc: file

APPENDIX A-2.2-3

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

444 Hospital Way #300 • Pocatello, Idaho • 83201

24 July 2009

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

Mark Stenberg
PacifiCorp Energy, Grace Hydro Plant
822 Grace Power Plant Road
Grace ID 83241

RE: Oneida Hydroelectric Project, FERC No. P-20, Clean Water Act Section 401 Certification.

Dear Mr. Stenberg:

The Idaho Department of Environmental Quality (DEQ) has reviewed "Water Quality Summary 2004-2005 for the Oneida Hydroelectric Project," 31 May 2006, and "Supplemental Report to the May 2006 Water Quality Summary 2004-2005," 26 February, 2009, (hereafter "Reports") submitted on behalf of PacifiCorp by Ecosystems Research Institute of Logan, Utah. The reports are intended to fulfill Section 5 and 6 requirements of the 401 water quality certification issued by DEQ on 23 June 2003. The reports describe the relationship among flow changes and turbidity, and other water quality parameters in Bear River downstream of the Oneida Hydroelectric Project (project). Additionally, at DEQ's request, PacifiCorp provided raw data and filtered data used to compile the reports. DEQ conducted an internal analysis of this data set which included turbidity, flow, stage, and precipitation records from 2004-2005. Finally, you, Conley Baldwin and the consultant team have taken time to meet with Greg Mladenka and me on numerous occasions to discuss operational considerations and license constraints at the project, possible additional data analysis and the reports' conclusions, with a goal of understanding and evaluating the project's contributions to exceedances of State of Idaho Water Quality Standards..

After extensive evaluation of the reports, the 2004-05 data, and much discussion, internally and with PacifiCorp, it is DEQ 's opinion that project operations that occurred in compliance with FERC license conditions (Articles 408, 412 and 420) during the study period of 2004-05, the Oneida Hydroelectric Project did not contribute to violations of State of Idaho Water Quality Standards.

In the event that PacifiCorp anticipates operating the project in a manner substantially different than during the 2004-2005 study period PacifiCorp shall consult with IDEQ in advance. Examples of such changes include significant changes to the frequency or magnitude of daily stage changes than those presented in the reports (2004-2005 data). If significant operational changes are planned or occur, DEQ may require further study of water quality effects to determine if operations are causing exceedances of Water Quality Standards.

Section 4 of the 401 water quality certification requires reporting of the preceding water year on an annual basis to DEQ. In addition to the items list in Section 4, the annual report shall include summary statistics for the frequency and magnitude of daily stage changes and downramp.

We appreciate your cooperation in complying with conditions in the Water Quality Certification. If you have any questions or need clarification, please contact me at 208-236-6160.

Sincerely,

Lynn Van Every
Regional Water Quality Manager

Cc: Bruce Olenick, DEQ Regional Administrator
file

APPENDIX B - ADDITIONAL FIGURES, MAPS, PHOTOGRAPHS

B-1 Project Photographs
B-2 Aerial view of Project facilities
B-3 Bear River license Exhibit G project boundary maps

Appendix B-1 – Project Photographs

Soda Dam

Grace Dam

Oneida Dam (gravity dam)

Recreation Site Photos

Soda Development

Soda Reservoir Oregon Trail Park and Marina

Soda Powerhouse Day Use Area

Soda Powerhouse Day Use Area hand boat launch

Soda Reservoir Second Bridge Boat Launch Part 8 Sign

Grace Development

Grace bypass Black Canyon Take Out Part 8 Sign

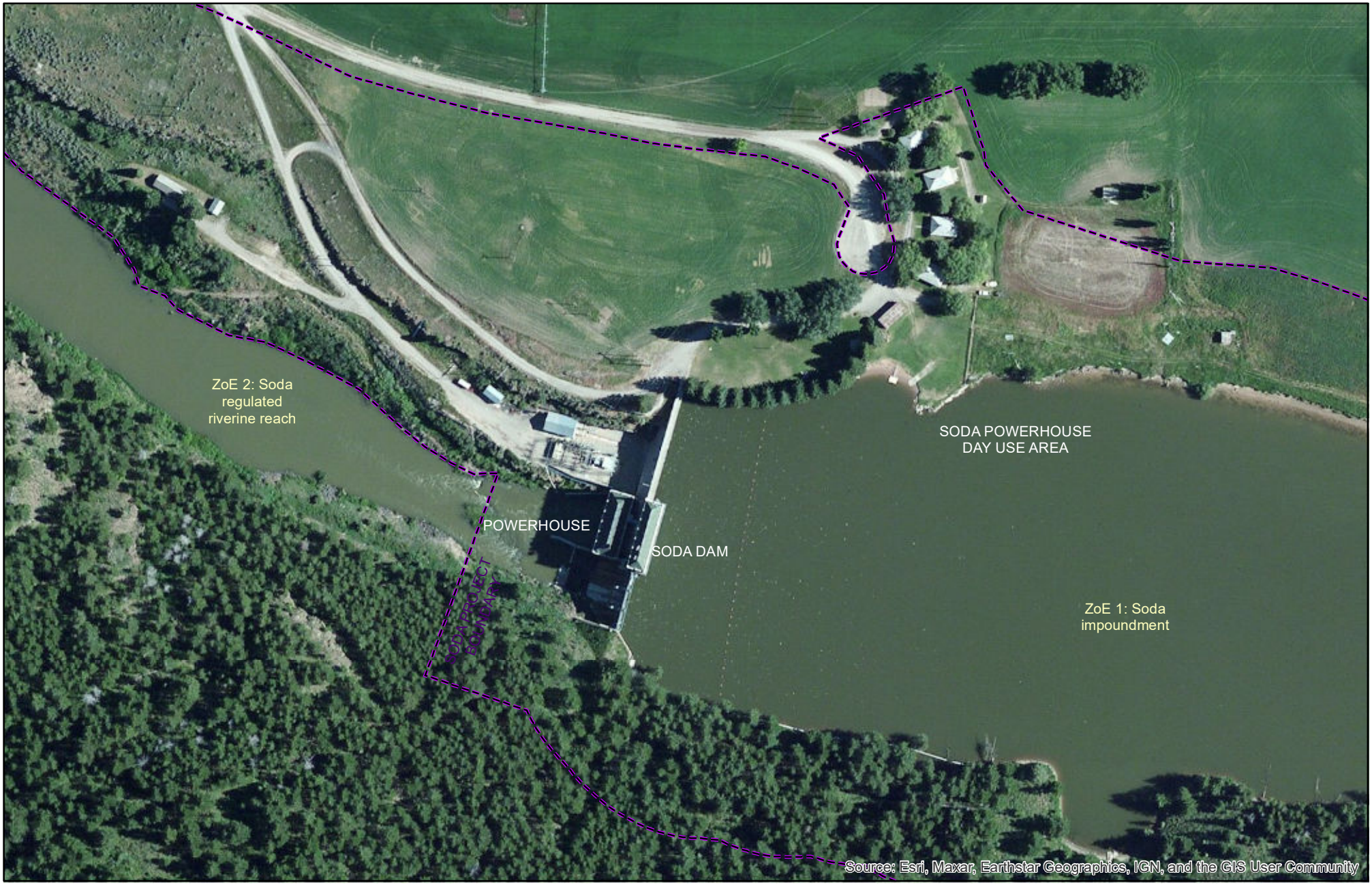
Oneida Development

Oneida Reservoir Day Use Area with boat launch and floating dock.

Oneida Day Use Area picnic sites

Maple Grove Campground (BLM) entrance Sign


Redpoint Campground (BLM) picnic sites



Soda Development
Dam and Powerhouse

FERC Project Boundary

N

0.025 0.0125 0 0.025 0.05 0.075 0.1
Miles

Grace Development
Dam and intake

FERC Project Boundary

N

0.015 0.0075 0 0.015 0.03 0.045 0.06
Miles

Grace Development
Powerhouse

FERC Project Boundary

N

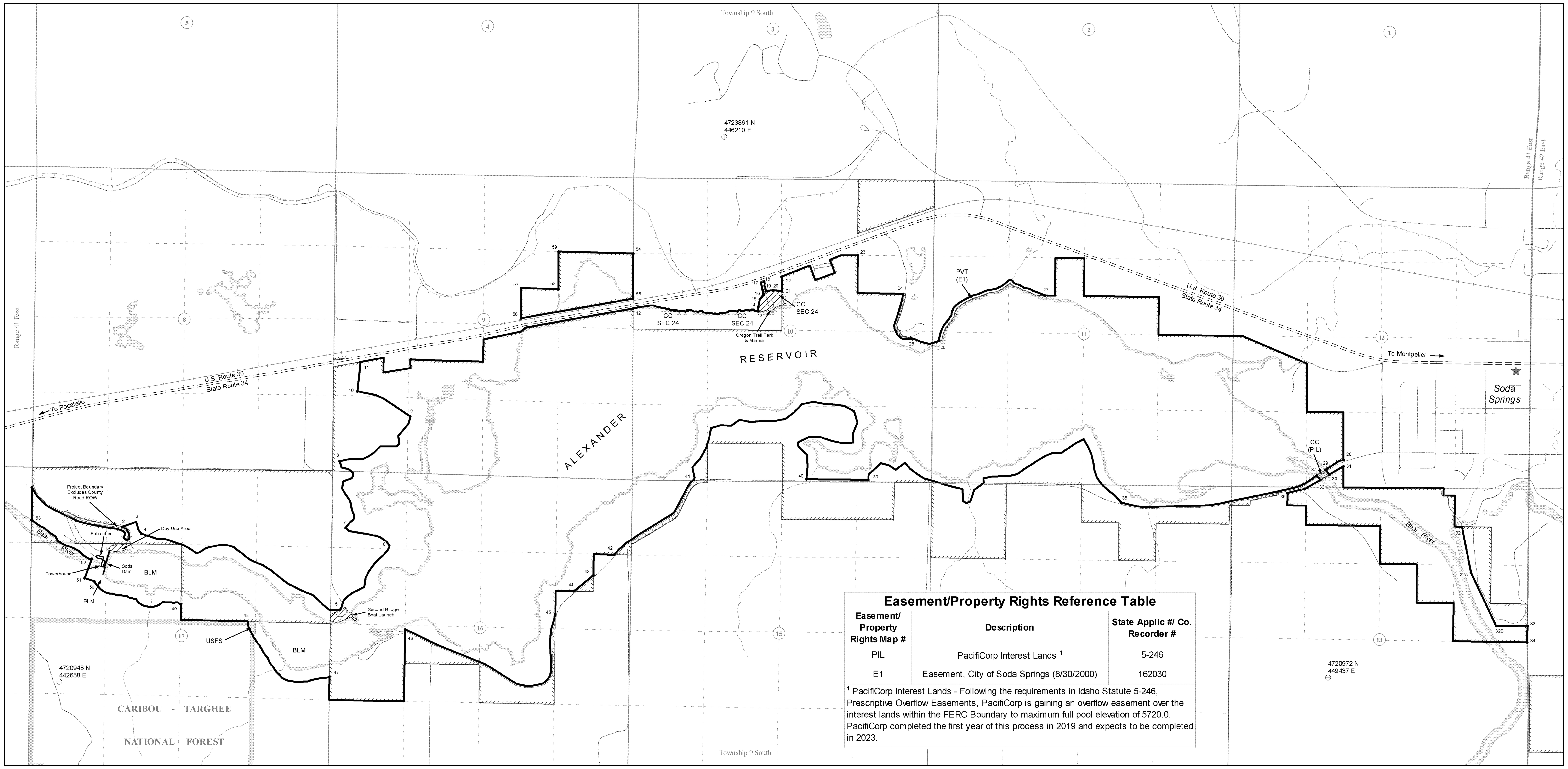
0.025 0.0125 0 0.025 0.05 0.075 0.1
Miles

Oneida Development
Dam, intake, and powerhouse

FERC Project Boundary

N

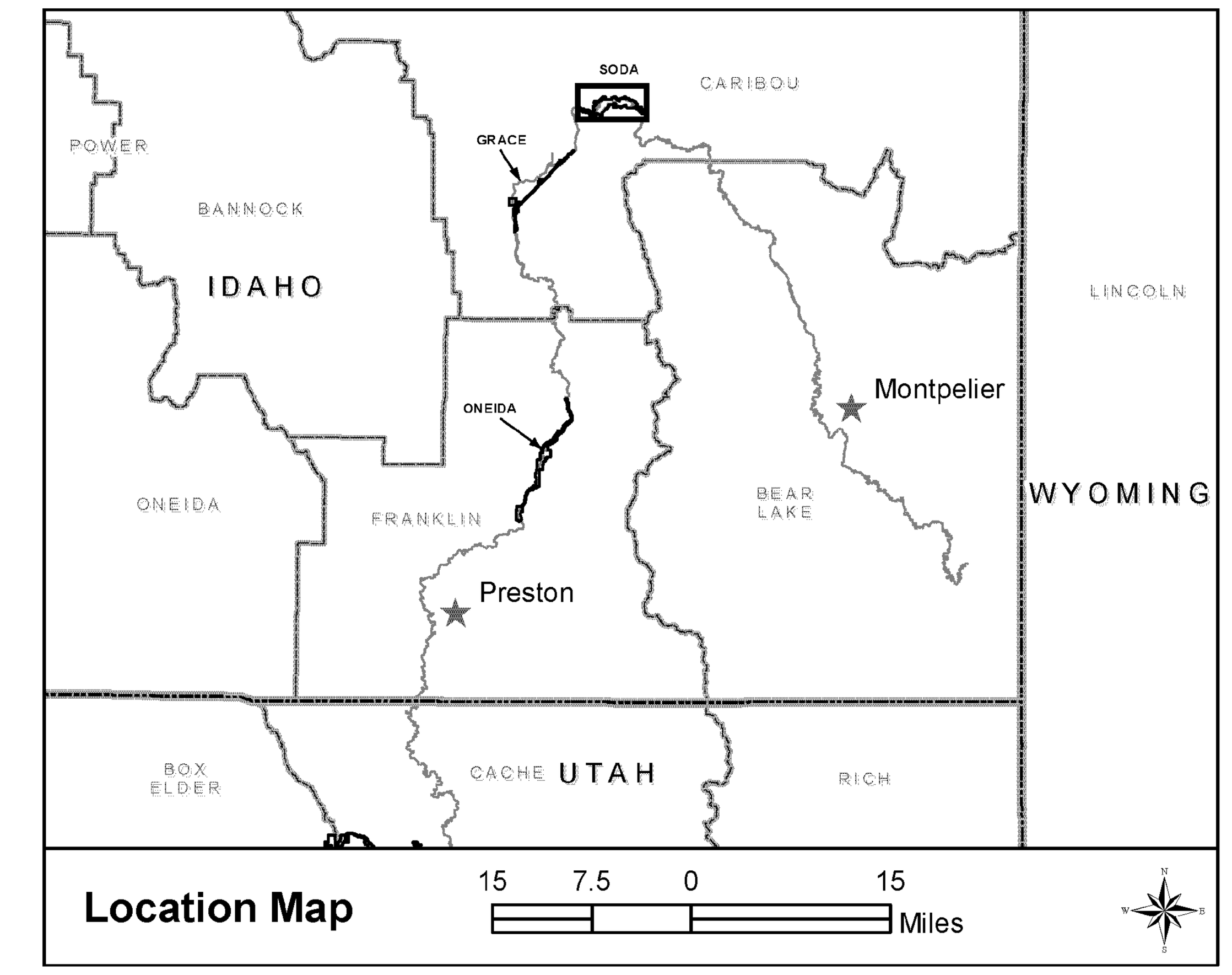
0.085 0.0425 0 0.085 0.17 0.255 0.34
Miles



Easement/Property Rights Reference Table

Easement/ Property Rights Map #	Description	State Applic #/ Co. Recorder #
PIL	PacifiCorp Interest Lands [1]	5-246
E1	Easement, City of Soda Springs (8/30/2000)	162030

[1] PacifiCorp Interest Lands - Following the requirements in Idaho Statute 5-246, Prescriptive Overflow Easements, PacifiCorp is gaining an overflow easement over the interest lands within the FERC Boundary to maximum full pool elevation of 5720.0. PacifiCorp completed the first year of this process in 2019 and expects to be completed in 2023.



Location Map

15 7.5 0 15 Miles

- Reference Point *
- Boundary Point
- City
- Project Boundary
- Recreation
- PacifiCorp Ownership
- PacifiCorp Interest Land
- National Forest
- Railroad
- US, State Route
- Secondary Road
- River
- Canal
- Township/Range
- Section
- Qtr Qtr Section

* Reference Point coordinates are in UTM Zone 12, NAD 83, meters.

MAP TEXT ABBREVIATIONS:

- BLM = USDI Bureau of Land Management
- USFS = USDA Forest Service
- CC = Caribou County Land
- HWL = High Water Line
- PIL = PacifiCorp Interest Land
- PVT = Private Land
- SEC 24 = Section 24 Reservation Land under Federal Power Act
- (E#) = Easement/Property Rights

I hereby state that the project boundary represented on this drawing is developed with reasonable accuracy in accordance with FERC requirements. Data has been developed by PacifiCorp's GIS department from a variety of sources including Federal, State, County, and PacifiCorp GIS sources including orthophotos. No field surveys were conducted. All reasonable efforts have been made to ensure that positional accuracy conforms to National Map Accuracy Standards for maps at 1:24000 scale.

Public Land Survey data is approximately located and is based on the Boise Meridian. Property lines are approximately located.

Boise Meridian, Caribou County, Idaho

Project Boundary Description: Soda Development

Point	Northing	Easting	Bearing	Dist. (ft)	Description
1	4721988.1	442511.7			INTX SECTION LINE W/ S'LY ROW OF COUNTY RD
				2356	ALONG S'LY ROW OF COUNTY RD
2	4721775.0	442994.0			INTX NE'LY ROW OF COUNTY RD W/ OPERATIONS LAND BOUNDARY
			N70-32-3E	256	ALONG OPERATIONS LAND BOUNDARY
3	4721801.5	443067.2			BEND POINT ON OPERATIONS LAND BOUNDARY
				234	ALONG OPERATIONS LAND BOUNDARY
4	4721738.6	443097.6			INTX OPERATIONS LAND W/ CONSERVATION BUFFER
				3926	ALONG CONSERVATION BUFFER
5	4721334.4	444157.7			BEND POINT ON CONSERVATION BUFFER
				1484	ALONG CONSERVATION BUFFER
6	4721677.2	444421.3			BEND POINT
				853	ALONG CONSERVATION BUFFER
7	4721770.0	444187.7			BEND POINT
				1526	ALONG CONSERVATION BUFFER
8	4722126.5	444156.3			BEND POINT
				1681	ALONG CONSERVATION BUFFER
9	4722366.3	444532.3			BEND POINT
				1039	ALONG CONSERVATION BUFFER
10	4722499.5	444250.1			BEND POINT
			N6-12-9E	521	ALONG CONSERVATION BUFFER
11	4722657.3	444267.3			INTX CONSERVATION BUFFER W/ PROP LINE
				5664	ALONG PROP LINE
12	4722942.3	445722.3			INTX PROP LINE WITH HWL (5720' CONT)
				2464	ALONG HWL (5720' CONT)
13	4722927.0	446393.2			INTX HWL W/ RECREATION SITE BOUNDARY
			N5-20-20W	80	ALONG APPROX. RECREATION SITE BDY THE FOLLOWING:
14	4722951.3	446390.9			BEND POINT
			N12-19-4E	137	(REC BOUNDARY)
15	4722992.1	446399.8			BEND POINT
			N40-50-6E	98	(REC BOUNDARY)
16	4723014.7	446419.3			BEND POINT
			N10-42-55W	220	(REC BOUNDARY)
17	4723080.4	446406.9			BEND POINT
			N70-4-56E	57	(REC BOUNDARY)
18	4723086.3	446423.1			BEND POINT
				170	(REC BOUNDARY)
19	4723035.3	446432.2			BEND POINT
				133	(REC BOUNDARY)
20	4723039.8	446472.6			BEND POINT
				147	(REC BOUNDARY)
21	4723034.9	446517.1			INTX RECREATION SITE BOUNDARY W/ 1/16 LINE
			N0-10-53W	257	ALONG 1/16 LINE (PROP LINE)
22	4723113.1	446516.9			INTX 1/16 LINE W/ PROP LINE
				1927	ALONG PROP LINE
23	4723226.2	446922.8			1/16 CORNER
				1465	ALONG PROP LINE
24	4723021.6	447165.9			INTX PROP LINE W/ W'LY ROW OF RD
				1024	ALONG W'LY ROW OF RD
25	4722783.6	447209.2			INTX S'LY ROW OF RD W/ PROP LINE
				509	ALONG PROP LINE
26	4722769.7	447355.8			INTX PROP LINE W/ 50' OFFSET LINE FROM HWL
				2461	ALONG 50' OFFSET LINE FROM HWL
27	4723011.6	447923.9			INTX 50' OFFSET FROM HWL W/ PROP LINE
				9009	ALONG PROP LINE
28	4722133.0	449519.0			INTX PROP LINE W/ N'LY ROW OF RD
				363	ALONG N'LY ROW OF RD
29	4722081.0	449422.0			INTX N'LY ROW OF RD W/ BEAR RIVER SHORELINE
			S37-47-16E	108	ALONG BEAR RIVER SHORELINE
30	4722054.0	449443.0			INTX BEAR RIVER SHORELINE W/ S'LY ROW OF RD
			N59-26-53E	290	ALONG S'LY ROW OF RD
31	4722099.0	449519.0			INTX S'LY ROW OF RD W/ PROP LINE
				3125	ALONG PROP LINE
32	4721776.0	450152.0			INTX PROP LINE W/ LEASE BOUNDARY
			S10-56-28E	822	ALONG LEASE BOUNDARY
32A	4721530.0	450199.0			BEND POINT
			S25-19-27E	1034	ALONG LEASE BOUNDARY
32B	4721246.0	450334.0			BEND POINT
			N89-31-23E	549	ALONG LEASE BOUNDARY
33	4721247.0	450501.0			INTX LEASE BOUNDARY W/ SECTION LINE
			S0-38-8W	292	ALONG SECTION LINE
34	4721158.0	450500.0			1/16 CORNER
				6807	ALONG PROP LINE
35	4721957.0	449219.0			INTX PROP LINE W/ S'LY ROW OF RD
				624	ALONG S'LY ROW OF RD
36	4722026.0	449394.0			INTX S'LY ROW OF RD W/ BEAR RIVER SHORELINE
			N37-4-33W	100	ALONG BEAR RIVER SHORELINE
37	4722050.0	449376.0			INTX BEAR RIVER SHORELINE W/ N'LY ROW OF RD
				3530	ALONG N'LY ROW OF RD
38	4721906.0	448330.0			INTX N'LY ROW OF RD W/ CONSERVATION BUFFER
				6128	ALONG CONSERVATION BUFFER
39	4722027.6	446979.1			INTX CONSERVATION BUFFER W/ N'LY ROW OF RD
				1087	ALONG N'LY ROW OF RD
40	4722030.5	446649.0			INTX N'LY ROW OF RD W/ CONSERVATION BUFFER
				5994	ALONG CONSERVATION BUFFER
41	4722026.7	446047.9			INTX CONSERVATION BUFFER W/ N'LY ROW OF RD
				1968	ALONG NW'LY ROW OF RD
42	4721626.8	445620.4			INTX N'LY ROW OF RD W/ PROP LINE
				726	ALONG PROP LINE
43	4721516.3	445509.7			INTX PROP LINE W/ NW'LY ROW OF RD
				443	ALONG NW'LY ROW OF RD
44	4721431.0	445406.2			INTX N'LY ROW OF RD W/ PROP LINE
				713	ALONG PROP LINE
45	4721313.3	445307.4			INTX PROP LINE W/ NW'LY ROW OF RD
				3939	ALONG NW'LY ROW OF RD
46	4721226.9	444504.3			INTX N'LY ROW OF RD W/ 1/16 LINE
				2979	ALONG 1/16 LINE
47	4720975.5	444100.7			INTX 1/16 LINE W/ 200' OFFSET LINE FROM HWL
				2027	ALONG 200' OFFSET LINE FROM HWL
48	4721268.1	443664.3			INTX 200' OFFSET FROM HWL W/ 1/16 LINE
				1449	ALONG 1/16 LINE (PROP LINE)
49	4721360.7	443307.3			INTX 1/16 LINE W/ 200' OFFSET LINE FROM HWL
				1710	ALONG 200' OFFSET LINE FROM HWL
50	4721484.4	442845.0			INTX W/ 200' OFFSET LINE FROM BEAR R. SHORELINE
			N70-57-36W	179	ALONG 200' OFFSET FROM BEAR RIVER SHORELINE
51	4721502.2	442793.5			INTX BEAR RIVER OFFSET W/ LINE PARALLEL TO DAM
			N19-47-28E	358	ALONG LINE PARALLEL TO DAM ENCLOSING SODA TAILRACE
52	4721604.9	442830.5			INTX LINE PARALLEL TO DAM W/ BEAR RIVER SHORELINE
				1289	ALONG BEAR RIVER SHORELINE
53	4721813.3	442509.3			INTX BEAR RIVER SHORELINE W/ SECTION LINE
			N0-47-25E	574	ALONG SECTION LINE (PROP LINE)
1	4721988.1	442511.7			INTX SECTION LINE W/ S'LY ROW OF COUNTY RD

PARCEL IN 9S 41E 9:

Point	Northing	Easting	Bearing	Dist. (ft)	Description
54	4723236.3	445723.4			1/16 CORNER
			S0-13-5W	792	ALONG SECTION LINE (PROP LINE)
55	4722994.9	445722.5			BEND POINT ON PROP LINE
			S80-3-20W	1993	ALONG PROP LINE
56	4722890.0	445124.1			BEND POINT ON PROP LINE
			N0-18-41E	532	ALONG PROP LINE
57	4723052.0	445124.9			BEND POINT ON PROP LINE
			S88-19-55E	654	ALONG PROP LINE
58	4723046.2	445324.2			BEND POINT ON PROP LINE
			N0-16-48E	657	ALONG PROP LINE
59	4723246.5	445325.2			BEND POINT ON PROP LINE (1/16 CORNER)
			S88-32-33E	1307	ALONG 1/16 LINE (PROP LINE)
54	4723236.3	445723.4			1/16 CORNER

NOTES:

- Conservation Buffer = Land Management Plan / Conservation Buffer
- Coordinates and Bearings are UTM Zone 12, NAD 83, meters. Distances are U.S. Survey Feet (Grid).

PROJECT BOUNDARY ACREAGE: SODA DEVELOPMENT

1) TOTAL ACREAGE WITHIN PROJECT BOUNDARY	1667.7 ACRES
2) PACIFICORP LAND	1577.2 ACRES
3) FEDERAL LAND	63.7 ACRES
4) CARIBOU COUNTY LAND *	24.1 ACRES
4) PRIVATE LAND	2.7 ACRES

* Includes 23.6 acres that retain a Section 24 Reservation.
ABOVE VALUES ARE APPROXIMATE. DERIVED FROM VARIOUS GIS DATASETS.

MAXIMUM FULL POOL ELEVATION (HWL) 5720.0 FEET

PACIFICORP

PacifiCorp has reviewed the Project boundary shown herein. PacifiCorp either owns in fee simple or possesses the flowage easements or property rights* for all lands drawn on this map that are inside the boundary.

* Property rights to be updated for parcels shown as PacifiCorp Interest Lands.

Exhibit G - 1 **Rev. 4**

Bear River Hydroelectric Project FERC No. 20
License Issued December 22, 2003
Soda Development Project Boundary

(Original Drawing Dated September 1999)

1 inch equals 1,000 feet

1,000 500 0 1,000 Feet

N

NO	DATE	CLD FERC NO	DESCRIPTION
4	06/13/2020	P-20-1035	Order approving Exhibit G with adjusted Boundary Acreage Table.
3	09/22/2016	P-20-1027	Order approving Exhibit G with revised federal acres & addition of LMP Conservation Lands
2	10/13/2005	P-20-1001	Drawing numbers and Exhibit G-5 applied as approved in Order
1	12/22/2003		New License Issued

FERC Drawing No. P-20-1041

4716642 N
436459 E

4715140 N
442064 E

4711452 N
439400 E

Township 9 South
Township 10 South

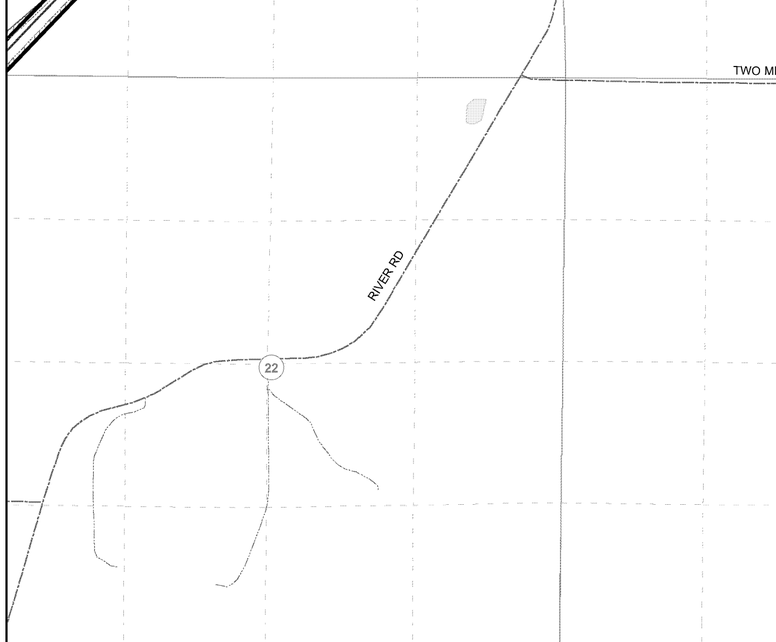
Range 40 East
Range 41 East

BLM
FLPMA
Reservoir
Last Chance Irrigation Canal Flume
PVT (E1)
Grace
HWY 34
Tanner Canal Intake Structure
Grace Reservoir
Intake Structure
Grace Dam
FLPMA LOT 2
PacifiCorp
Bench B Intake Structure
Intake Structure
FLPMA
Black Canyon Put-In
Bear River
Flowline
TURNER RD
CENTER ST
Grace
MAIN ST
RIVER RD
Gravel Storage Lease Area
VARLEY RD
ONE MILE RD
Surge Tank 3
TWO MILE RD

Township 10 South

Easement/Property Rights Reference Table

Easement/ Property Rights Map #	Description	County Recorder #
E1	Flowage Easement, Lloyd Brothers (3/2/2018)	200584



Location Map

15 7.5 0 15 Miles

Reference Point *
City
Paved Road
Graded Road
Project Boundary
Recreation
PacifiCorp Ownership
Township/Range
Section
Qtr Qtr Section

* Reference Point coordinates are in UTM Zone 12, NAD 83, meters.

Boise Meridian, Caribou County, Idaho

MAP TEXT ABBREVIATIONS:
- BLM = USDI Bureau of Land Management
- HWL = High Water Line
- PVT = Private Land
- (E#) = Easement/Property Rights
- FLPMA = unclaimed land that reverted to federal ownership under the Federal Land Policy and Management Act of 1976.

I hereby state that the project boundary represented on this drawing is developed with reasonable accuracy in accordance with FERC requirements. Data has been developed by PacifiCorp's GIS department from a variety of sources including Federal, State, County, and PacifiCorp GIS sources including orthophotos. No field surveys were conducted. All reasonable efforts have been made to ensure that positional accuracy conforms to National Map Accuracy Standards for maps at 1:24000 scale.

Public Land Survey data is approximately located and is based on the Boise Meridian. Property lines are approximately located.

PROFESSIONAL LAND SURVEYOR LICENSED 14707 7-16-2020 STATE OF IDAHO JAMES J. COUTS

GRACE DEVELOPMENT PROJECT BOUNDARY ACREAGE

1) TOTAL ACREAGE WITHIN PROJECT BOUNDARY	596.5 ACRES
2) PACIFICORP LAND	552.4 ACRES
3) FEDERAL LAND	27.8 ACRES
4) PRIVATE LAND	16.3 ACRES
MAXIMUM FULL POOL ELEVATION (HWL)	5,554.8 FEET

ABOVE VALUES ARE APPROXIMATE. DERIVED FROM VARIOUS GIS DATASETS.

PACIFICORP

PacifiCorp has reviewed the Project boundary shown herein. PacifiCorp either owns in fee simple or possesses the flowage easements or property rights for all lands drawn on this map that are inside the boundary.

NO.	DATE	OLD FERC NO.	DESCRIPTION
2	06/15/2020	P-20-1037	Order approving Exh G with easement on submerged private lands.
1	06/22/2016	P-20-1032	Order approving Exhibit G with revised federal acres & addition of LMP Conservation Lands
0	06/08/2009	P-20-1032	Order Approving Exhibit

Exhibit G - 2 **Rev. 2**

Bear River Hydroelectric Project, FERC No. 20
License Issued December 22, 2003

Grace Development Project Boundary

(Original Drawing Dated March 9, 2009)

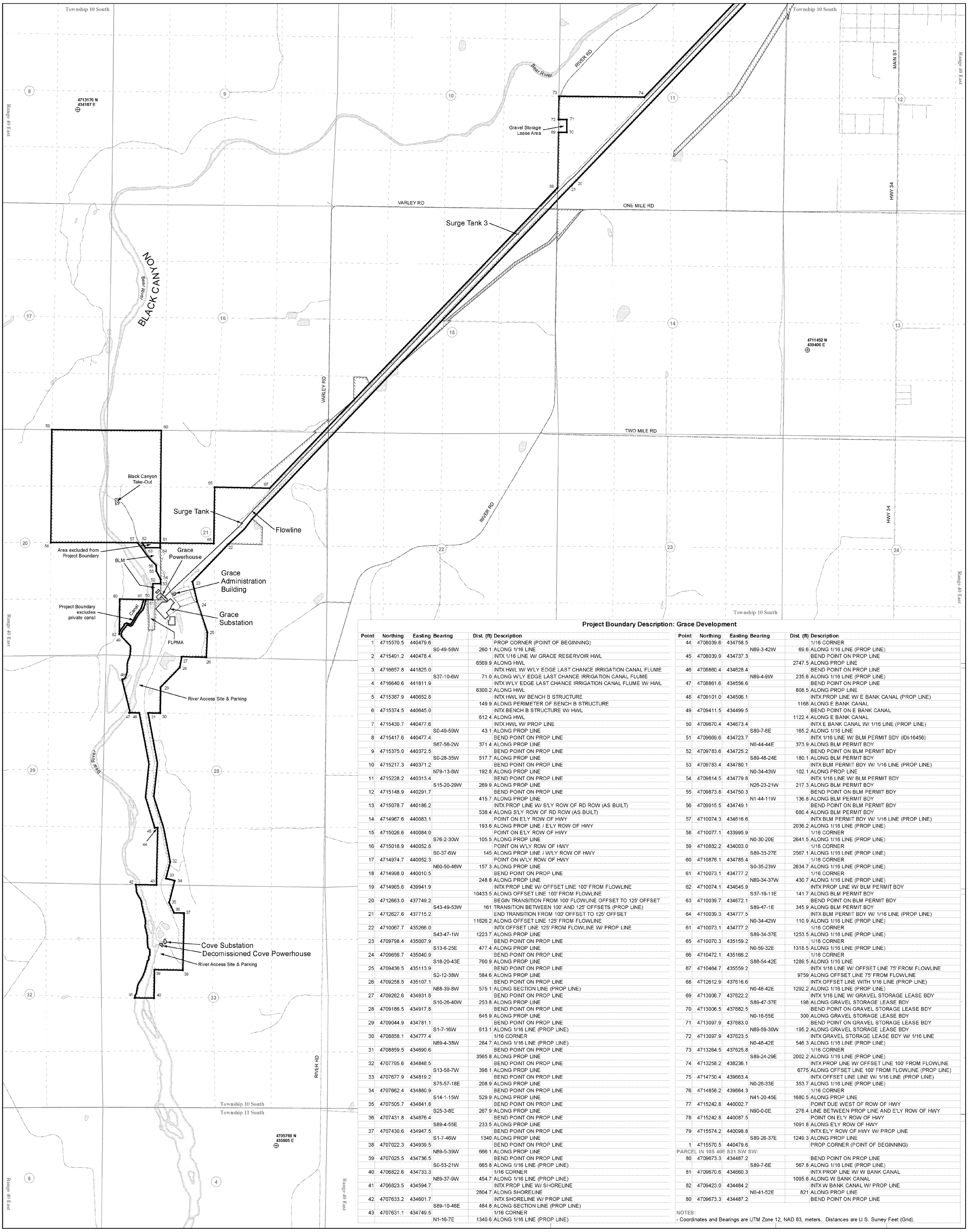
1 inch equals 1,000 feet

1,000 500 0 1,000 Feet

N

FERC Drawing No. P-20-1042

 1008430.006 U:\Projects\Exhibit_G\BearRiver\Grace\2020-06 Approved\Grace Ex G-2.mxd 07/13/2020



Project Boundary Description: Grace Development

Point	Northing	Easting	Bearing	Dist. (ft)	Description
1	4715570.5	440479.6			PROP CORNER (POINT OF BEGINNING)
			S0-49-58W	260.1	ALONG 1/16 LINE
2	4715491.2	440478.4			INTX 1/16 LINE W/ GRACE RESERVOIR HWL
				6569.9	ALONG HWL
3	4716657.8	441825.0			INTX HWL W/ W'LY EDGE LAST CHANCE IRRIGATION CANAL FLUME
			S37-10-6W	71.0	ALONG W'LY EDGE LAST CHANCE IRRIGATION CANAL FLUME
4	4716640.6	441811.9			INTX W'LY EDGE LAST CHANCE IRRIGATION CANAL FLUME W/ HWL
				6300.2	ALONG HWL
5	4715387.9	440652.8			INTX HWL W/ BENCH B STRUCTURE
				149.9	ALONG PERIMETER OF BENCH B STRUCTURE
6	4715374.5	440645.0			INTX BENCH B STRUCTURE W/ HWL
				612.4	ALONG HWL
7	4715430.7	440477.6			INTX HWL W/ PROP LINE
			S0-49-59W	43.1	ALONG PROP LINE
8	4715417.6	440477.4			BEND POINT ON PROP LINE
			S67-56-2W	371.4	ALONG PROP LINE
9	4715375.0	440372.5			BEND POINT ON PROP LINE
			S0-28-35W	517.7	ALONG PROP LINE
10	4715217.3	440371.2			BEND POINT ON PROP LINE
			N79-13-8W	192.8	ALONG PROP LINE
11	4715228.2	440313.4			BEND POINT ON PROP LINE
			S15-20-29W	269.9	ALONG PROP LINE
12	4715148.9	440291.7			BEND POINT ON PROP LINE
				415.7	ALONG PROP LINE
13	4715078.7	440186.2			INTX PROP LINE W/ S'LY ROW OF RD ROW (AS BUILT)
				538.4	ALONG S'LY ROW OF RD ROW (AS BUILT)
14	4714967.6	440083.1			POINT ON E'LY ROW OF HWY
				193.6	ALONG PROP LINE / E'LY ROW OF HWY
15	4715026.6	440084.0			POINT ON E'LY ROW OF HWY
			S76-2-30W	105.5	ALONG PROP LINE
16	4715018.9	440052.8			POINT ON W'LY ROW OF HWY
			S0-37-6W	145	ALONG PROP LINE / W'LY ROW OF HWY
17	4714974.7	440052.3			POINT ON W'LY ROW OF HWY
			N60-50-46W	157.3	ALONG PROP LINE
18	4714998.0	440010.5			BEND POINT ON PROP LINE
				248.8	ALONG PROP LINE
19	4714965.6	439941.9			INTX PROP LINE W/ OFFSET LINE 100' FROM FLOWLINE
				10433.5	ALONG OFFSET LINE 100' FROM FLOWLINE
20	4712663.0	437749.2			BEGIN TRANSITION FROM 100' FLOWLINE OFFSET TO 125' OFFSET
			S43-49-53W	161	TRANSITION BETWEEN 100' AND 125' OFFSETS (PROP LINE)
21	4712627.6	437715.2			END TRANSITION FROM 100' OFFSET TO 125' OFFSET
				11626.2	ALONG OFFSET LINE 125' FROM FLOWLINE
22	4710067.7	435266.0			INTX OFFSET LINE 125' FROM FLOWLINE W/ PROP LINE
			S43-47-1W	1223.7	ALONG PROP LINE
23	4709798.4	435007.9			BEND POINT ON PROP LINE
			S13-6-25E	477.4	ALONG PROP LINE
24	4709656.7	435040.9			BEND POINT ON PROP LINE
			S18-20-43E	760.9	ALONG PROP LINE
25	4709436.5	435113.9			BEND POINT ON PROP LINE
			S2-12-38W	584.6	ALONG PROP LINE
26	4709258.5	435107.1			BEND POINT ON PROP LINE
			N88-39-8W	575.1	ALONG SECTION LINE (PROP LINE)
27	4709262.6	434931.8			BEND POINT ON PROP LINE
			S10-26-40W	253.8	ALONG PROP LINE
28	4709186.5	434917.8			BEND POINT ON PROP LINE
				645.9	ALONG PROP LINE
29	4709044.9	434781.1			BEND POINT ON PROP LINE
			S1-7-16W	613.1	ALONG 1/16 LINE (PROP LINE)
30	4708858.1	434777.4			1/16 CORNER
			N89-4-38W	284.7	ALONG 1/16 LINE (PROP LINE)
31	4708859.5	434690.6			BEND POINT ON PROP LINE
				3565.8	ALONG PROP LINE
32	4707795.6	434848.5			BEND POINT ON PROP LINE
			S13-58-7W	398.1	ALONG PROP LINE
33	4707677.9	434819.2			BEND POINT ON PROP LINE
			S75-57-18E	208.9	ALONG PROP LINE
34	4707662.4	434880.9			BEND POINT ON PROP LINE
			S14-1-15W	529.9	ALONG PROP LINE
35	4707505.7	434841.8			BEND POINT ON PROP LINE
			S25-3-8E	267.9	ALONG PROP LINE
36	4707431.8	434876.4			BEND POINT ON PROP LINE
			S89-4-55E	233.5	ALONG PROP LINE
37	4707430.6	434947.5			BEND POINT ON PROP LINE
			S1-7-46W	1340	ALONG PROP LINE
38	4707022.3	434939.5			BEND POINT ON PROP LINE
			N89-5-39W	666.1	ALONG PROP LINE
39	4707025.5	434736.5			BEND POINT ON PROP LINE
			S0-53-21W	665.8	ALONG 1/16 LINE (PROP LINE)
40	4706822.6	434733.3			1/16 CORNER
			N89-37-9W	454.7	ALONG 1/16 LINE (PROP LINE)
41	4706823.5	434594.7			INTX PROP LINE W/ SHORELINE
				2804.7	ALONG SHORELINE
42	4707633.2	434601.7			INTX SHORELINE W/ PROP LINE
			S89-10-46E	484.8	ALONG SECTION LINE (PROP LINE)
43	4707631.1	434749.5			1/16 CORNER
			N1-16-7E	1340.6	ALONG 1/16 LINE (PROP LINE)
44	4708039.6	434758.5			1/16 CORNER
			N89-3-42W	69.6	ALONG 1/16 LINE (PROP LINE)
45	4708039.9	434737.3			BEND POINT ON PROP LINE
				2747.5	ALONG PROP LINE
46	4708860.4	434628.4			BEND POINT ON PROP LINE
			N89-4-9W	235.6	ALONG 1/16 LINE (PROP LINE)
47	4708861.6	434556.6			BEND POINT ON PROP LINE
				808.5	ALONG PROP LINE
48	4709101.0	434506.1			INTX PROP LINE W/ E BANK CANAL (PROP LINE)
				1168	ALONG E BANK CANAL
49	4709411.5	434499.5			BEND POINT ON E BANK CANAL
				1122.4	ALONG E BANK CANAL
50	4709670.4	434673.4			INTX E BANK CANAL W/ 1/16 LINE (PROP LINE)
			S89-7-6E	165.2	ALONG 1/16 LINE
51	4709669.6	434723.7			INTX 1/16 LINE W/ BLM PERMIT BDY (IDI-16456)
			N0-44-44E	373.9	ALONG BLM PERMIT BDY
52	4709783.6	434725.2			BEND POINT ON BLM PERMIT BDY
			S89-48-24E	180.1	ALONG BLM PERMIT BDY
53	4709783.4	434780.1			INTX BLM PERMIT BDY W/ 1/16 LINE (PROP LINE)
			N0-34-43W	102.1	ALONG PROP LINE
54	4709814.5	434779.8			INTX 1/16 LINE W/ BLM PERMIT BDY
			N26-23-21W	217.3	ALONG BLM PERMIT BDY
55	4709873.8	434750.3			BEND POINT ON BLM PERMIT BDY
			N1-44-11W	136.8	ALONG BLM PERMIT BDY
56	4709915.5	434749.1			BEND POINT ON BLM PERMIT BDY
				680.4	ALONG BLM PERMIT BDY
57	4710074.3	434616.6			INTX BLM PERMIT BDY W/ 1/16 LINE (PROP LINE)
				2036.2	ALONG 1/16 LINE (PROP LINE)
58	4710077.1	433995.9			1/16 CORNER
			N0-30-20E	2641.5	ALONG 1/16 LINE (PROP LINE)
59	4710882.2	434003.0			1/16 CORNER
			S89-33-27E	2567.1	ALONG 1/16 LINE (PROP LINE)
60	4710876.1	434785.4			1/16 CORNER
			S0-35-23W	2634.7	ALONG 1/16 LINE (PROP LINE)
61	4710073.1	434777.2			1/16 CORNER
			N89-34-37W	430.7	ALONG 1/16 LINE (PROP LINE)
62	4710074.1	434645.9			INTX PROP LINE W/ BLM PERMIT BDY
			S37-19-11E	141.7	ALONG BLM PERMIT BDY
63	4710039.7	434672.1			BEND POINT ON BLM PERMIT BDY
			S89-47-1E	345.9	ALONG BLM PERMIT BDY
64	4710039.3	434777.5			INTX BLM PERMIT BDY W/ 1/16 LINE (PROP LINE)
			N0-34-42W	110.9	ALONG 1/16 LINE (PROP LINE)
61	4710073.1	434777.2			1/16 CORNER
			S89-34-37E	1253.5	ALONG 1/16 LINE (PROP LINE)
65	4710070.3	435159.2			1/16 CORNER
			N0-59-32E	1318.5	ALONG 1/16 LINE (PROP LINE)
66	4710472.1	435166.2			1/16 CORNER
			S88-54-42E	1289.5	ALONG 1/16 LINE
67	4710464.7	435559.2			INTX 1/16 LINE W/ OFFSET LINE 75' FROM FLOWLINE
				9759	ALONG OFFSET LINE 75' FROM FLOWLINE
68	4712612.9	437616.6			INTX OFFSET LINE WITH 1/16 LINE (PROP LINE)
			N0-48-42E	1292.2	ALONG 1/16 LINE (PROP LINE)
69	4713006.7	437622.2			INTX 1/16 LINE W/ GRAVEL STORAGE LEASE BDY
			S89-47-37E	198	ALONG GRAVEL STORAGE LEASE BDY
70	4713006.5	437682.5			BEND POINT ON GRAVEL STORAGE LEASE BDY
			N0-16-55E	300	ALONG GRAVEL STORAGE LEASE BDY
71	4713097.9	437683.0			BEND POINT ON GRAVEL STORAGE LEASE BDY
			N89-59-30W	195.2	ALONG GRAVEL STORAGE LEASE BDY
72	4713097.9	437623.5			INTX GRAVEL STORAGE LEASE BDY W/ 1/16 LINE
			N0-48-42E	546.3	ALONG 1/16 LINE (PROP LINE)
73	4713264.5	437625.8			1/16 CORNER
			S89-24-29E	2002.2	ALONG 1/16 LINE (PROP LINE)
74	4713258.2	438236.1			INTX PROP LINE W/ OFFSET LINE 100' FROM FLOWLINE
				6775	ALONG OFFSET LINE 100' FROM FLOWLINE (PROP LINE)
75	4714750.4	439663.4			INTX OFFSET LINE LINE W/ 1/16 LINE (PROP LINE)
			N0-26-33E	353.7	ALONG 1/16 LINE (PROP LINE)
76	4714858.2	439664.3			1/16 CORNER
			N41-20-45E	1680.5	ALONG PROP LINE
77	4715242.8	440002.7			POINT DUE WEST OF ROW OF HWY
			N90-0-0E	278.4	LINE BETWEEN PROP LINE AND E'LY ROW OF HWY
78	4715242.8	440087.5			POINT ON EL'Y ROW OF HWY
				1091.8	ALONG E'LY ROW OF HWY
79	4715574.2	440098.8			INTX EL'Y ROW OF HWY W/ PROP LINE
			S89-26-37E	1249.3	ALONG PROP LINE
1	4715570.5	440479.6			PROP CORNER (POINT OF BEGINNING)
PARCEL IN 10S 40E S21 SW SW:					
80	4709673.3	434487.2			BEND POINT ON PROP LINE
			S89-7-6E	567.8	ALONG 1/16 LINE (PROP LINE)
81	4709670.6	434660.3			INTX PROP LINE W/ W BANK CANAL
				1095.6	ALONG W BANK CANAL
82	4709423.0	434484.2			INTX W BANK CANAL W/ PROP LINE
			N0-41-52E	821	ALONG PROP LINE
80	4709673.3	434487.2			BEND POINT ON PROP LINE

NOTES:
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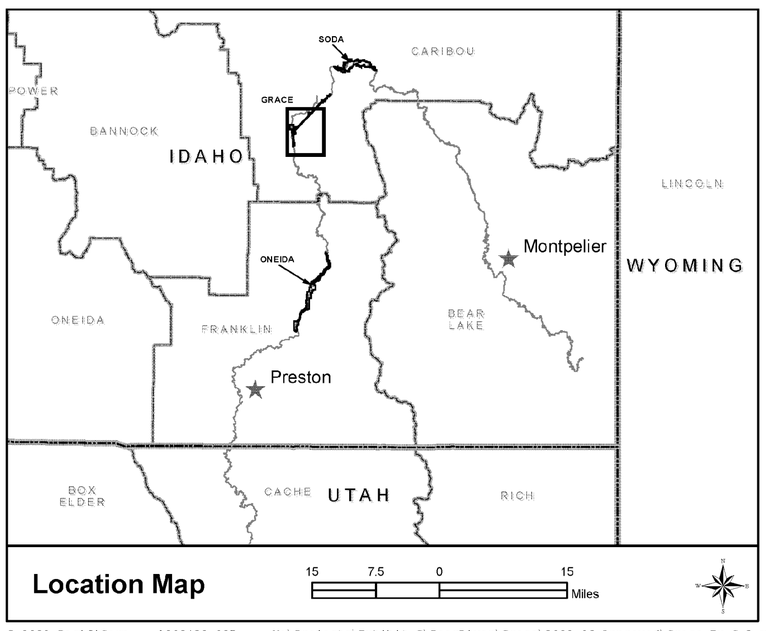

Location Map 15 7.5 0 15 Miles

Reference Point *
City
Paved Road
Graded Road
Project Boundary
Recreation
PacifiCorp Ownership
Township/Range
Section
Qtr Qtr Section

* Reference Point coordinates are in UTM Zone 12, NAD 83, meters.

Boise Meridian, Caribou County, Idaho

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Public Land Survey data is approximately located and is based on the Boise Meridian. Property lines are approximately located.

PROFESSIONAL LAND SURVEYOR LICENSED 14707 7/8/2020 STATE OF IDAHO JAMES J. COUTS

GRACE DEVELOPMENT PROJECT BOUNDARY ACREAGE

1) TOTAL ACREAGE WITHIN PROJECT BOUNDARY	596.5 ACRES
2) PACIFICORP LAND	552.4 ACRES
3) FEDERAL LAND	27.8 ACRES
4) PRIVATE LAND	16.3 ACRES
MAXIMUM FULL POOL ELEVATION (HWL)	5,554.8 FEET

ABOVE VALUES ARE APPROXIMATE. DERIVED FROM VARIOUS GIS DATASETS.

PACIFICORP

PacifiCorp has reviewed the Project boundary shown herein. PacifiCorp either owns in fee simple or possesses the flowage easements or property rights for all lands drawn on this map that are inside the boundary.

NO.	DATE	OLD FERC NO.	DESCRIPTION
1	06/15/2020	P-20-1038	Order approving Exh G with easement on submerged private lands.
0	09/22/2016		Order approving Exhibit G with revised federal acres & addition of LMP Conservation Lands

Exhibit G - 3 **Rev. 1**

Bear River Hydroelectric Project, FERC No. 20
License Issued December 22, 2003

Grace Development
Project Boundary

(Original Drawing Dated June 30, 2015)

1 inch equals 1,000 feet

1,000 500 0 1,000 Feet

N

FERC Drawing No. P-20-1043

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Project Boundary Description

Coordinates are UTM Zone 12, NAD 83, meters. Bearings and Distances are NAD 83 Idaho State Plane East, U.S. Survey Feet (Grid).

Point	Northing	Easting	Bearing	Distance (ft)	Description
1	4682078.9	439835.5			BEG at the INTX of the HWL & S 1/16-Line S13-T13S-R40E
			N.89°39'30"E	59.01'	Along the S 1/16-Line S13-T13S-R40E
2	4682078.8	439850.8			INTX of S 1/16-Line S13-T13S-R40E and 20' E'LY offset of Oneida Rd. CL
					Along 20' E'LY offset of Oneida Rd. CL
3	4680478.8	438706.6			INTX 20' E'LY offset of Oneida Rd. and S 1/16-Line S23-T13S-R40E
			S.89°21'08"E	802.49'	Along the S 1/16-Line S23-T13S-R40E
4	4680472.7	438951			S 1/16 Cor S23/24-T13S-R40E
			S.00°59'06"E	1,327.77'	Along E Line S23-T13S-R40E
5	4680068.1	438952.4			Sec Cor 23/24/25/26-T13S-R40E
			S.00°00'11"W	1,327.58'	Along E Line S26-T13S-R40E
6	4679663.7	438946.9			N 1/16 Cor S25/26-T13S-R40E
			N.89°09'18"W	1,315.03'	Along the N 1/16-Line S26-T13S-R40E
7	4679675.1	438546.3			NE 1/16 Cor S26-T13S-R40E
			S.00°00'08"W	663.31'	Along E 1/16 Line S26-T13S-R40E
8	4679473.0	438543.5			C-N-NE 1/64 Cor S26-T13S-R40E
			N.89°08'02"W	657.51'	Along S-N 1/16 Line S26-T13S-R40E
9	4679478.7	438343.3			SW-NE 1/64 Cor S26-T13S-R40E
			S.00°00'06"W	663.21'	Along W-E 1/16 Line S26-T13S-R40E
10	4679276.7	438340.5			C-W-E 1/64 Cor S26-T13S-R40E
			S.00°00'06"W	644.36'	Along W-E 1/16 Line S26-T13S-R40E
11	4679080.4	438337.8			NW-NE 1/64 Cor S26-T13S-R40E
			N.89°23'27"W	657.47'	Along N-S 1/16 Line S26-T13S-R40E
12	4679085.2	438137.5			C-N-S 1/64 Cor S26-T13S-R40E
			S.00°00'05"W	1,943.07'	Along the N-S 1/4 Line S26-T13S-R40E
13	4678493.2	438129.4			1/4 Cor S26/35-T13S-R40E
			S.00°01'16"E	1,351.61'	Along the N-S 1/4 Line S35-T13S-R40E
14	4678081.4	438123.6			C-N 1/16 Cor S35-T13S-R40E
			S.89°50'52"W	1,316.25'	Along the N 1/16 Line S35-T13S-R40E
15	4678085.8	437722.6			NW 1/16 Cor S35-T13S-R40E
			S.00°04'52"E	1,349.96'	Along the W 1/16 Line S35-T13S-R40E
16	4677674.6	437716.4			C-W 1/16 Cor S35-T13S-R40E
			S.00°04'53"W	2,695.47'	Along the W 1/16 Line S35-T13S-R40E
17	4676853.3	437704			W 1/16 Cor Sec 35/02-T13/14S-R40E
			S.00°18'21"E	2,655.65'	Along the W 1/16 Line S02-T14S-R40E
18	4676044.2	437697.2			C-W 1/16 Cor S02-T14S-R40E
			S.89°38'22"W	505.40'	Along the E-W 1/4 Line S02-T14S-R40E
19	4676045.3	437546.1			INTX of E-W 1/4-Line S2-T14S-R40E and 200' E'LY Offset of HWL
					Along 200' E'LY Offset of HWL
20	4676013.5	437415.6			INTX of 200' E'LY Offset of HWL and 20' E'LY offset of Oneida Rd. CL
					Along 20' E'LY offset of Oneida Rd. CL
21	4675978.6	437357.8			INTX of 20' E'LY offset of Oneida Rd. CL and 200' E'LY Offset of HWL
					Along 200' E'LY Offset of HWL
22	4675661.3	436694.6			END Course along 200' E'LY Offset of HWL
			N.48°40'24"W	189.85'	
23	4675700.1	436651.7			Point on 20' SW'ly offset of Oneida Road Bridge CL
			N.65°22'11"W	114.39'	Along 20' SW'ly offset of Oneida Road Bridge CL
24	4675715.0	436620.2			INTX of 20' SW'ly offset of Oneida Road Bridge CL and W'ly HWL
					Along W'ly HWL
25	4673650.5	435556.4			INTX of W'ly HWL and N Line S16-T14S-R40E
			S.88°29'26"E	382.21'	Along N Line S16-T14S-R40E
26	4673645.8	435672.7			Sec Cor 09/10/15/16-T14S-R40E
			S.00°02'14"W	1,867.98'	Along E Line S16-T14S-R40E
27	4673076.7	435664.6			
			N.89°57'46"W	279.84'	
28	4673077.9	435579.3			
			S.31°06'10"W	1,480.80'	
29	4672694.8	435341			
			S.13°08'57"E	2191.24'	
30	4672042.6	435483.9			Point on the S Line S16-T14S-R40E
			S.13°08'57"E	175.95'	
31	4671990.7	435495.3			Point on 20' NW'ly offset of Siphon CL
			S.52°00'04"W	1,050.66'	Along 20' NW'ly offset of Siphon CL
32	4671795.9	435241.1			INTX 20' NW'ly offset of Siphon CL and 16.5' W'ly offset of Oneida Rd. CL
					Along 16.5' W'ly offset of Oneida Rd. CL
33	4672052.8	434979.7			Point on the S Line S16-T14S-R40E
			N.89°37'30"W	488.37'	Along S Line S16-T14S-R40E
34	4672055.8	434831			1/4 Cor S16/21-T14S-R40E
			N.01°06'33"E	2,708.84'	Along N-S 1/4 Line S16-T14S-R40E
35	4672880.8	434858.2			C 1/4 Cor S16-T14S-R40E
			N.00°59'26"E	2,615.92'	Along N-S 1/4 Line S16-T14S-R40E
36	4673677.5	434882.9			1/4 Cor S09/16-T14S-R40E
			S.88°29'26"E	1,866.67'	Along N Line S16-T14S-R40E
37	4673654.7	435451.2			Point on N Line S16-T14S-R40E
			N.39°49'51"E	83.29'	
38	4673674.0	435467.8			Point on 200' W'ly offset HWL
					Along 200' W'ly offset HWL
39	4676170.5	437294.4			INTX 200' W'ly offset HWL and W Line S02-T14S-R40E
			N.00°10'43"W	626.46'	Along W Line S02-T14S-R40E
40	4676361.0	437296.4			INTX W Line S02-T14S-R40E and 200' W'ly offset HWL
					Along 200' W'ly offset HWL

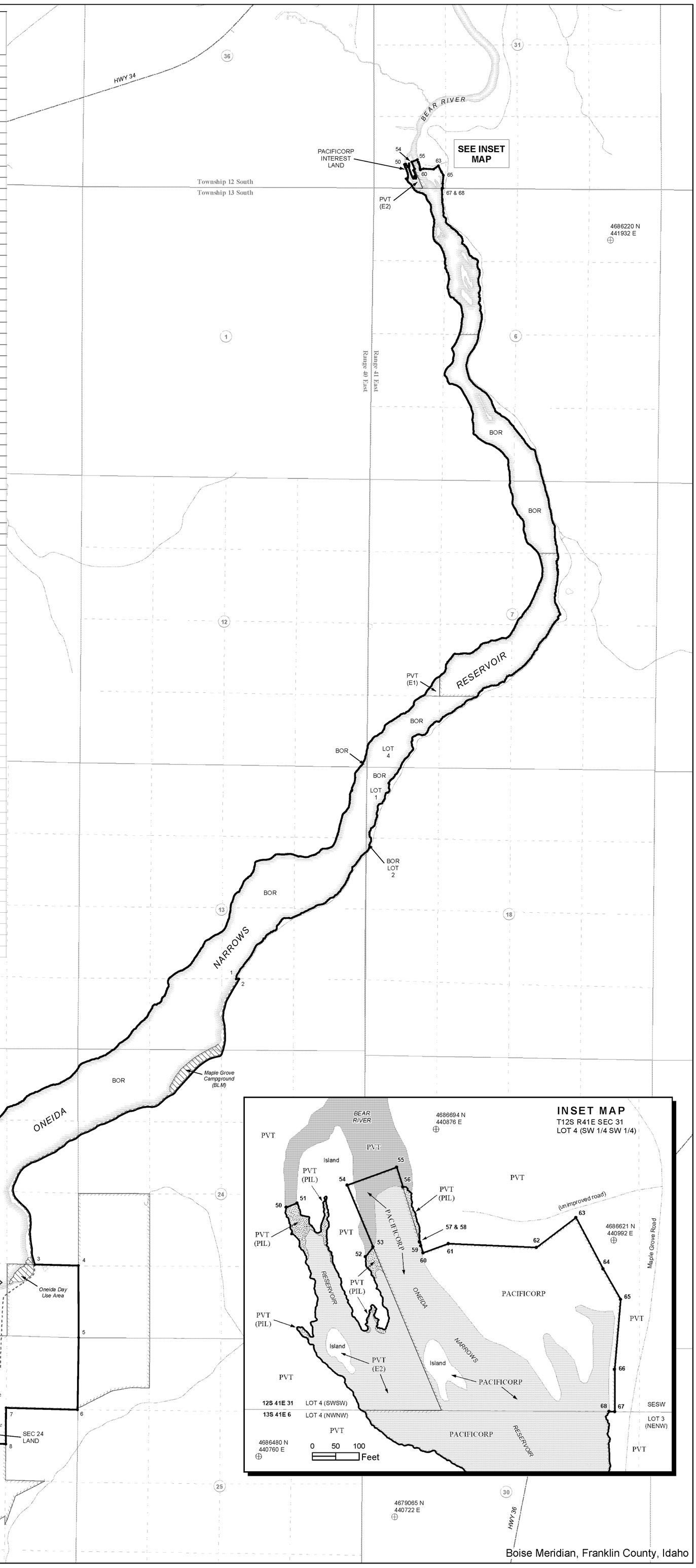
Project Boundary Description continues on Exhibit G-5

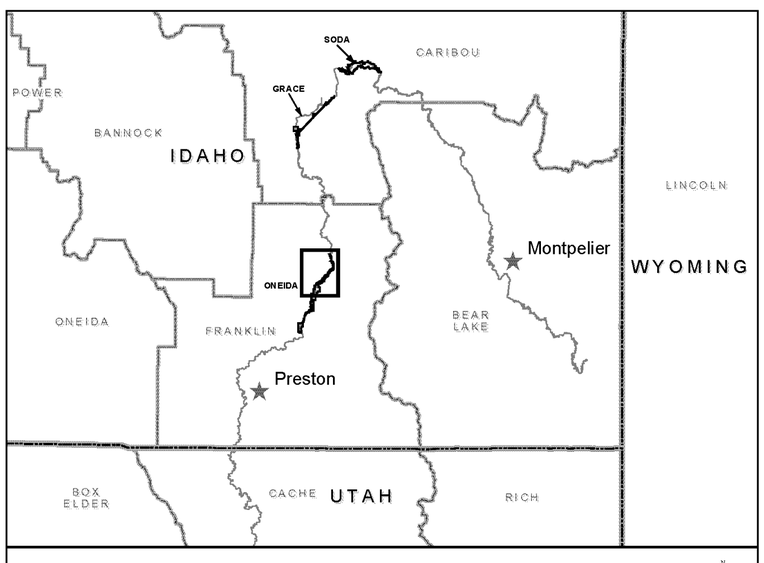
Easement/Property Rights Reference Table

Easement/ Property Rights Map #	Description	State Applic # / Co. Recorder #
PIL	PacifiCorp Interest Lands [1]	5-246
E1	Flowage Easement (3/5/2018)	273571
E2	Statutory Prescriptive Flowage Easement [2]	5-246

[1] PacifiCorp Interest Lands - Following the requirements in Idaho Statute 5-246, Prescriptive Overflow Easements, PacifiCorp is gaining an overflow easement over the privately titled lands within the FERC Boundary between elevations 4,882.5 and 4,882.9 (0.17 acres). PacifiCorp completed the first year of this process in 2019 and expects to be complete in 2023. Since 1947, the first year PacifiCorp could achieve this elevation, it has been reached 6 times.

[2] PacifiCorp Prescriptive Overflow Easement - Per the requirement of Idaho Statute 5-246, PacifiCorp has gained a prescriptive overflow easement of 1.16 acres over privately titled lands below an elevation of 4,882.5. PacifiCorp achieved reservoir elevations of 4,882.5, or greater, for each of five consecutive years. The elevations for the consecutive years are: 1997, 4,882.8; 1998, 4,882.8; 1999, 4,882.7; 2000, 4,882.5; and, 2001, 4,882.5. PacifiCorp has exercised this right five times since 2001.





Reference Point *
Boundary Point
City
Oneida Road
Paved Road
Graded Road
Transmission Line
Project Boundary
Recreation
PacifiCorp Ownership
PacifiCorp Interest Land
Township/Range
Section
Qtr Qtr Section

* Reference Point coordinates are in UTM Zone 12, NAD 83, meters.

I hereby state that the project boundary represented on this drawing is developed with reasonable accuracy in accordance with FERC requirements. Data has been developed by PacifiCorp's GIS department from a variety of sources including Federal, State, County, and PacifiCorp GIS sources including orthophotos. No field surveys were conducted. All reasonable efforts have been made to ensure that positional accuracy conforms to National Map Accuracy Standards for maps at 1:24000 scale. Public Land Survey data is approximately located and is based on the Boise Meridian. Property lines are approximately located.

MAP TEXT ABBREVIATIONS:

- BLM = USDI Bureau of Land Management
- BOR = USDI Bureau of Reclamation
- HWL = High Water Line
- LMP = Land Management Plan
- PIL = PacifiCorp Interest Land
- PVT = Private Land
- SEC 24 = Section 24 Reservation Land under Federal Power Act
- (E#) = Easement/Property Rights

BOR lands in the Oneida Canyon are managed by BLM under authority of an "Interagency Agreement Between The Bureau of Reclamation and The Bureau of Land Management, December 1982," signed by both agencies on 3/25/1983.

PROFESSIONAL LAND SURVEYOR LICENSED 14107 7/8/2020 STATE OF IDAHO JAMES J. COUTS

PROJECT BOUNDARY ACREAGE: ONEIDA DEVELOPMENT

1) TOTAL ACREAGE WITHIN PROJECT BOUNDARY	1595.3 ACRES
2) PACIFICORP LAND *	1039.7 ACRES
3) FEDERAL LAND	552.8 ACRES
4) PRIVATE LAND	2.7 ACRES

* Includes 10.0 acres that retain a Section 24 Reservation.
ABOVE VALUES ARE APPROXIMATE. DERIVED FROM VARIOUS GIS DATASETS.

MAXIMUM FULL POOL ELEVATION (HWL) 4,882.9 FEET

PACIFICORP

PacifiCorp has reviewed the Project boundary shown herein. PacifiCorp either owns in fee simple or possesses the flowage easements* or property rights for all lands drawn on this map that are inside the boundary.

* Flowage easements to be updated in 2023 for 0.17 ac shown as PacifiCorp Interest Lands.

NO.	DATE	DESCRIPTION	OLD FERC NO.
4	06/15/2020	Order approving Ex G with easement on submerged priv. lands, 2017 lidar and land surveys	P-20-1039
3	06/22/2016	Order approving Exhibit G with revised federal acres & addition of LMP Conservation Lands	P-20-1030
2	10/13/2005	Drawing numbers and Exhibit G-8 applied as approved in Order	P-20-1021
1	12/22/2003	New License Issued	

Exhibit G - 4 Rev 4

Bear River Hydroelectric Project, FERC No. 20
License Issued December 22, 2003
Oneida Development
Project Boundary

(Original Drawing Dated September 1999)

1 inch equals 1000 feet

1,000 500 0 1,000 Feet

N

FERC Drawing No. P-20-1044

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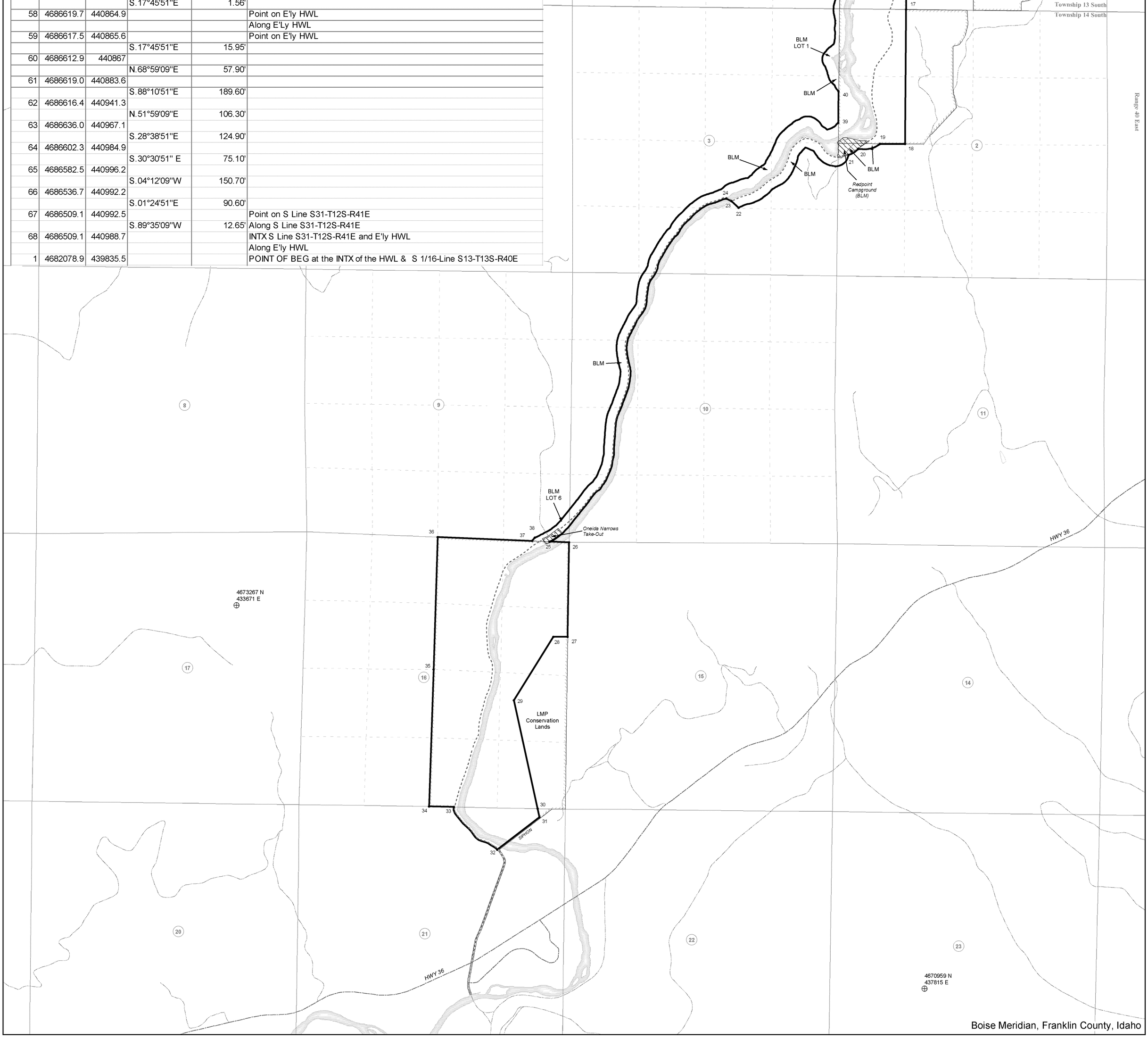
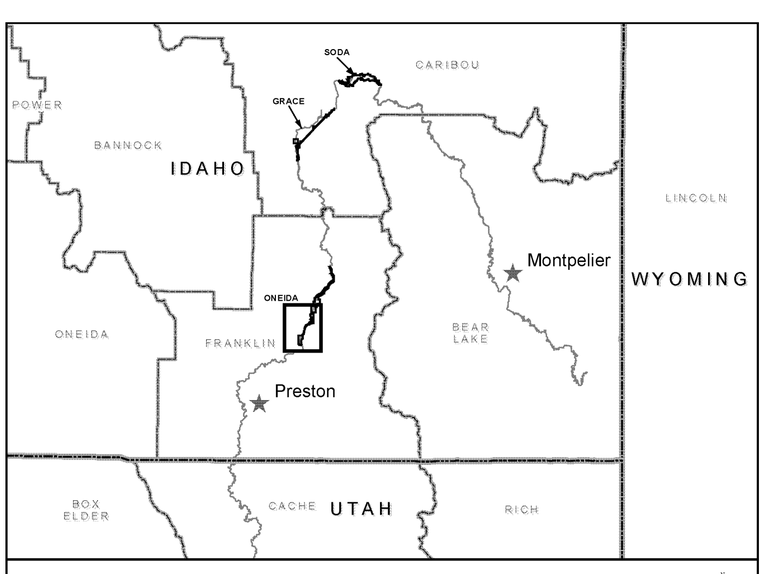
Project Boundary Description (continued from Exhibit G-4)
Coordinates are UTM Zone 12, NAD 83, meters. Bearings and Distances are NAD 83 Idaho State Plane East, U.S. Survey Feet (Grid).

Point	Northing	Easting	Bearing	Distance (ft)	Description
41	4677744.7	437316			INTX 200' W'ly offset HWL and W Line S35-T13S-R40E
			N.00°08'29"E	2,483.86'	Along W Line S35-T13S-R40E
42	4678501.1	437328.2			Sec Cor 26/27/34/35-T13S-R40E
			N.00°11'12"W	2,641.71'	Along W Line 26-T13S-R40E
43	4679306.0	437336.5			1/4 Cor S26/27-T13S-R40E
			S.89°07'20"E	1,319.14'	Along E-W 1/4 Line 26-T13S-R40E
44	4679294.3	437738.4			C-W 1/16 Cor S26-T13S-R40E
			N.00°05'50"W	2,649.30'	Along the W 1/16 Line S26-T13S-R40E
45	4680101.5	437750.8			W 1/16 Cor Sec 23/26-T13-R40E
			S.89°11'49"E	1,053.17'	Along N Line S26-T14S-R40E
46	4680092.6	438071.6			Point on N Line S26-T14S-R40E
			N.00°05'06"W	653.38'	
47	4680291.6	438074			Point on 20' W'ly offset Road CL
					Along 20' W'ly offset Road CL
48	4680763.1	438173.4			Point 20' W'ly offset Road CL
			N.12°47'10"E	143.70'	
49	4680805.7	438183.6			Point on W'Ly HWL
					Along W'Ly HWL
50	4686642.7	440777.6			Point on W'Ly HWL
			N.68°11'55"E	23.86'	
51	4686645.4	440784.8			Point on Island HWL
					Along Island HWL
52	4686610.3	440829.3			Point on Island HWL
			N.37°05'27"E	26.82'	
53	4686616.8	440834.4			
			N.23°28'26"W	143.66'	
54	4686657.2	440817.5			
			N.69°13'09"E	113.30'	
55	4686669.0	440849.9			
			S.17°45'51"E	45.10'	
56	4686655.8	440853.9			Point on E'Ly HWL
					Along E'Ly HWL
57	4686620.2	440864.8			Point on E'ly HWL
			S.17°45'51"E	1.56'	
58	4686619.7	440864.9			Point on E'ly HWL
					Along E'Ly HWL
59	4686617.5	440865.6			Point on E'ly HWL
			S.17°45'51"E	15.95'	
60	4686612.9	440867			
			N.68°59'09"E	57.90'	
61	4686619.0	440883.6			
			S.88°10'51"E	189.60'	
62	4686616.4	440941.3			
			N.51°59'09"E	106.30'	
63	4686636.0	440967.1			
			S.28°38'51"E	124.90'	
64	4686602.3	440984.9			
			S.30°30'51" E	75.10'	
65	4686582.5	440996.2			
			S.04°12'09"W	150.70'	
66	4686536.7	440992.2			
			S.01°24'51"E	90.60'	
67	4686509.1	440992.5			Point on S Line S31-T12S-R41E
			S.89°35'09"W	12.65'	Along S Line S31-T12S-R41E
68	4686509.1	440988.7			INTX S Line S31-T12S-R41E and E'ly HWL
					Along E'ly HWL
1	4682078.9	439835.5			POINT OF BEG at the INTX of the HWL & S 1/16-Line S13-T13S-R40E





Reference Point *
Boundary Point
City
Oneida Road
Paved Road
Graded Road
Transmission Line
Project Boundary
Recreation
PacifiCorp Ownership
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Township/Range
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Qtr Qtr Section

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PROFESSIONAL LAND SURVEYOR LICENSED 14107 7/8/2020 STATE OF IDAHO JAMES J. COUTS

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1	06/22/2016	Order approving Exhibit G with revised federal acres & addition of LMP Conservation Lands	P-20-1031
0	10/13/2005	Drawing numbers and Exhibit G-9 applied as approved in Order	

Exhibit G - 5 **Rev 2**

Bear River Hydroelectric Project, FERC No. 20
License Issued December 22, 2003
Oneida Development
Project Boundary

(Original Drawing Dated July 2005)

1 inch equals 1000 feet
1,000 500 0 1,000
Feet

N

FERC Drawing No. P-20-1045

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