PROSPECT NO. 3 HYDROELECTRIC PROJECT
FERC PROJECT NO. P-2337

Final License Application
for Major Project—Existing Dam

Volume III
Exhibit E—Environmental Exhibit Appendices

PACIFICORP
A BERKSHIRE HATHAWAY ENERGY COMPANY

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PROSPECT NO. 3 HYDROELECTRIC PROJECT
FERC PROJECT NO. P-2337

Final License Application
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Volume I: Initial Statement and Exhibits A, B, C, D, F, G, and H*
Volume II: Exhibit E*
Volume III: Exhibit E Appendices
Volume IV: Exhibit F Appendices (CEII)*
(*Provided under separate cover)

VOLUME III
TABLE OF CONTENTS

APPENDIX A. EROSION AND SEDIMENT CONTROL PLAN

EROSION & SEDIMENT CONTROL PLAN

Prospect No. 3 Hydroelectric Project
FERC Project No. P-2337

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TABLE OF CONTENTS

1.0 INTRODUCTION

PacifiCorp owns and operates the 7.2-megawatt (MW) Prospect No. 3 Hydroelectric Project (Project; Federal Energy Regulatory Commission (FERC) Project No. P-2337) located on the South Fork Rogue River, near the community of Prospect in northeastern Jackson County, Oregon. The 376.2-acre Project occupies approximately 52.5 acres of federal lands administered by the U.S. Department of Agriculture (USDA)-Forest Service, High Cascades Ranger District of the Rogue River-Siskiyou National Forest (RR-SNF).

The Project primarily consists of a 172-foot-long, 24-foot-high concrete diversion dam; upstream and downstream fish passage facilities; a 15,894-foot-long conduit system, including canal, pipeline, tunnel, and penstock sections; a powerhouse containing one generating unit with a rated capacity of 7,200 kilowatts (kW) operating under 740 feet of static head; and a 6.97-mile-long, 69-kilovolt transmission line. The Project is operated in run-of-river mode with no appreciable storage capacity. A map showing the general location of Project facilities is presented below (Figure 1).

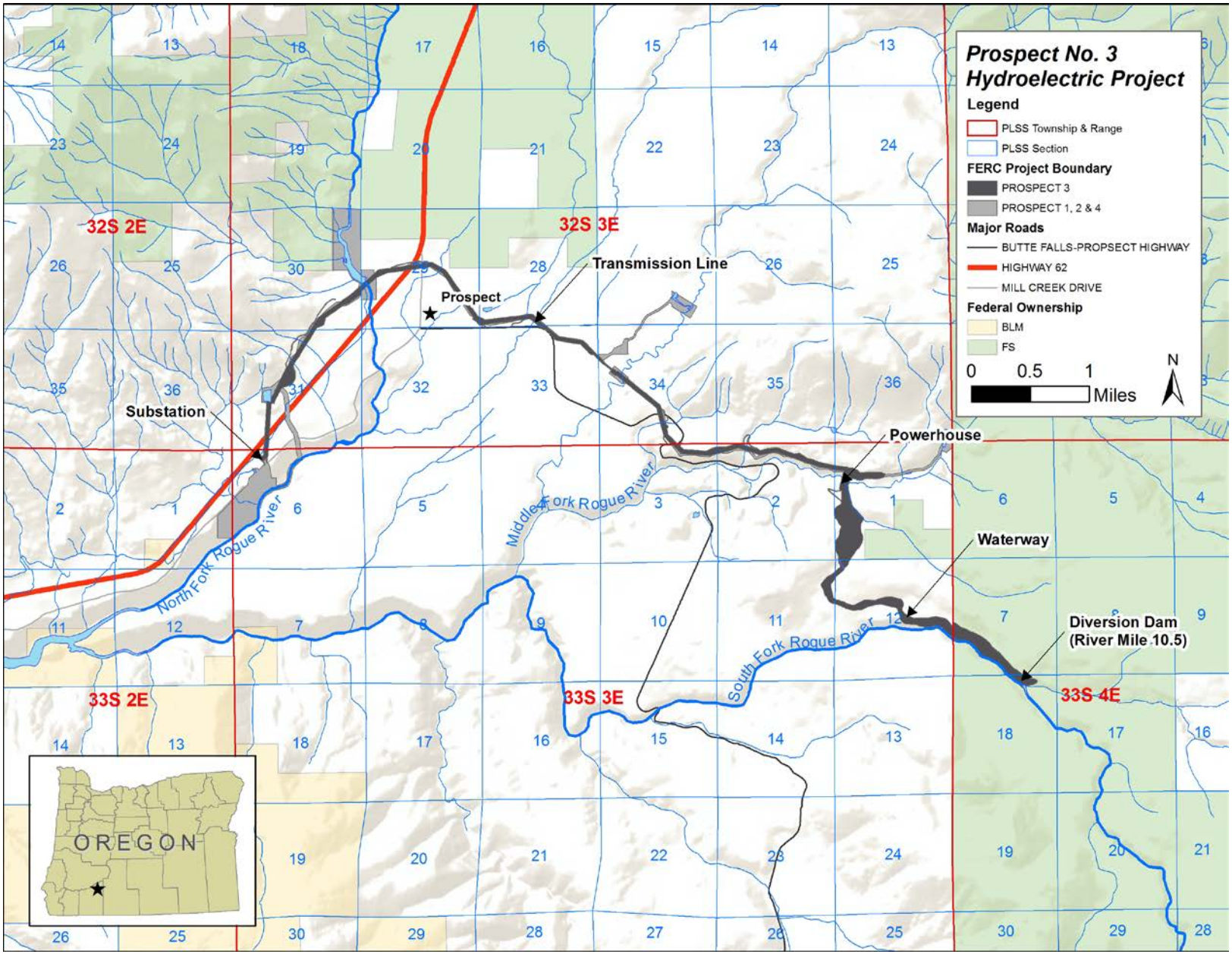
1.1 Purpose of the Plan

This plan provides a resource for preventing and controlling erosion at the Project. The plan includes a detailed description of actual site conditions; measures proposed to control erosion, to prevent slope instability, and to minimize the quantity of sediment mobilized from Project operation or maintenance activities; detailed descriptions of control measures; and an implementation schedule for monitoring and maintenance activities. The plan provides additional resources for further development of erosion prevention and control strategies at the Project, as well as for constructing, inspecting and maintaining a range of erosion control measures.

1.2 Organization of the Plan

This plan begins with a discussion of the conditions that underlie potential erosion at the Project, providing context for the erosion and sediment control measures that follow. Section 2 reviews the physical characteristics of the area, and Section 3 presents the routine and emergency maintenance activities that can contribute to erosion. Section 4 identifies the facility operations and features that PacifiCorp is prioritizing in its effort to prevent and remediate erosion. Specific erosion control measures that PacifiCorp is already undertaking are addressed in Section 4. With respect to prevalent features such as roads and overland flow routes, this section also touches on the key factors that PacifiCorp will consider when making decisions about where to focus its resources for maximum impact. This plan concludes with a review of Best Management Practices (BMPs) applicable to the sources and types of erosion that may occur at the Project. In recognition of the dynamic nature of facility operations, Section 5 is structured as a guide to BMP selection that will serve as a resource for future project-specific erosion and sediment control plans.

Figure 1. Project Facilities and Vicinity



2.0 SITE CHARACTERISITCS

The Project is located primarily on the western slope of the High Cascade Mountains between the South Fork and North Fork Rogue River. The Project descends 895 feet in elevation from east to west. The South Fork diversion dam is located at 3,375 feet, while the powerhouse and Prospect substation are located at 2,635 feet and 2,480 feet, respectively. The Project alignment transitions from federally owned lands of the Rogue River-Siskiyou National Forest to PacifiCorp-owned property, which runs through private timber company holdings and rural developments associated with the community of Prospect. Water diversion and release activities affect the South and North Forks of the Rogue River.

2.1 Climate

The Project watersheds are approximately bounded by the high elevation weather station at Crater Lake National Park ("CRATER LAKE NPS HQ, OR US"; elevation 6,475 ft.) and the low elevation weather station at Jess Dam, approximately twenty river miles downstream of the diversion ("LOST CREEK DAM, OR US"; elevation 1,580 ft.) (NOAA, 2011). The latest, three-decade (1981-2010) averages of climatological variables are summarized in Table 1.

Table 1: Thirty-year average climate variables (1981-2010) (NOAA, 2011) (NRCS, 2015)

Climate Station	Precipitation (inches)	Snowfall (inches)	Winter Minimum Temperature (°F)	Annual Average Temperature (°F)	Summer Maximum Temperature (°F)
CRATER LAKE NPS HQ	66.21	495.2	18.1	37.9	65.5
LOST CREEK DAM	33.04	2.0	29.8	52.8	85.9

The western slope of the High Cascades Physiographic Province exhibits a defined, wet winter season and warm, dry summer season. More than half of the average annual precipitation falls from November through February (NOAA, 2011).

2.2 Soils

Project generation facilities are underlain by the geologically recent, volcanic formations of the High Cascades physiographic province. These formations vary in age from 6,800 to over 8 million years old (USDA Forest Service, 1998). As recently as 15,000 years ago, the High Cascades were covered in glacial ice, ultimately resulting in subsequent glacial outwash deposits at higher elevations (>5,000 feet). The topography of the High Cascades is characteristic of a broad upland plateau with scattered volcanic cones that are easily recognizable due to only slight modifications by erosion (Johnson, 1993). Steep relief in the High Cascades also occurs in glacially carved river canyons such as that of the South Fork Rogue.

The Project vicinity includes some exposed, older deposits of basalt, but these basaltic flows are generally overlain with younger lava flows of basaltic andesite (USDA Forest Service, 1998). The remaining geologic formations are deposits associated with the eruption of Mt. Mazama

approximately 6,800 years ago. These deposits include pyroclastic rocks and volcanic sediments, including ashflow and airfall pumice. Relatively soft rock types (e.g. tuff, breccias, agglomerate) are overlain by more resistant material (e.g. andesite, basalt). The geology of the Project west of the North Fork Rogue exhibits older, Miocene-age (over 5.3 million years ago), pyroclastic rocks typical of the Western Cascade physiographic province (Badura & Jahn, 1977).

Regional volcanism and its resultant geology and topography are products of the subduction of the oceanic Juan de Fuca tectonic plate beneath the continental North American tectonic plate. A major fault begins at the headwaters of the Middle Fork and continues south beyond the crest of the South Fork Rogue watershed (USDA Forest Service, 1998).

The Project vicinity exhibits abundant reserves of sand and gravel resources, as well as lava flows suitable for crushed rock and large rock for road construction. There are no known metallic mineral or petroleum resources in the vicinity, and past studies indicated that there is little potential for discovery of such resources in the watershed (USDA Forest Service, 1998).

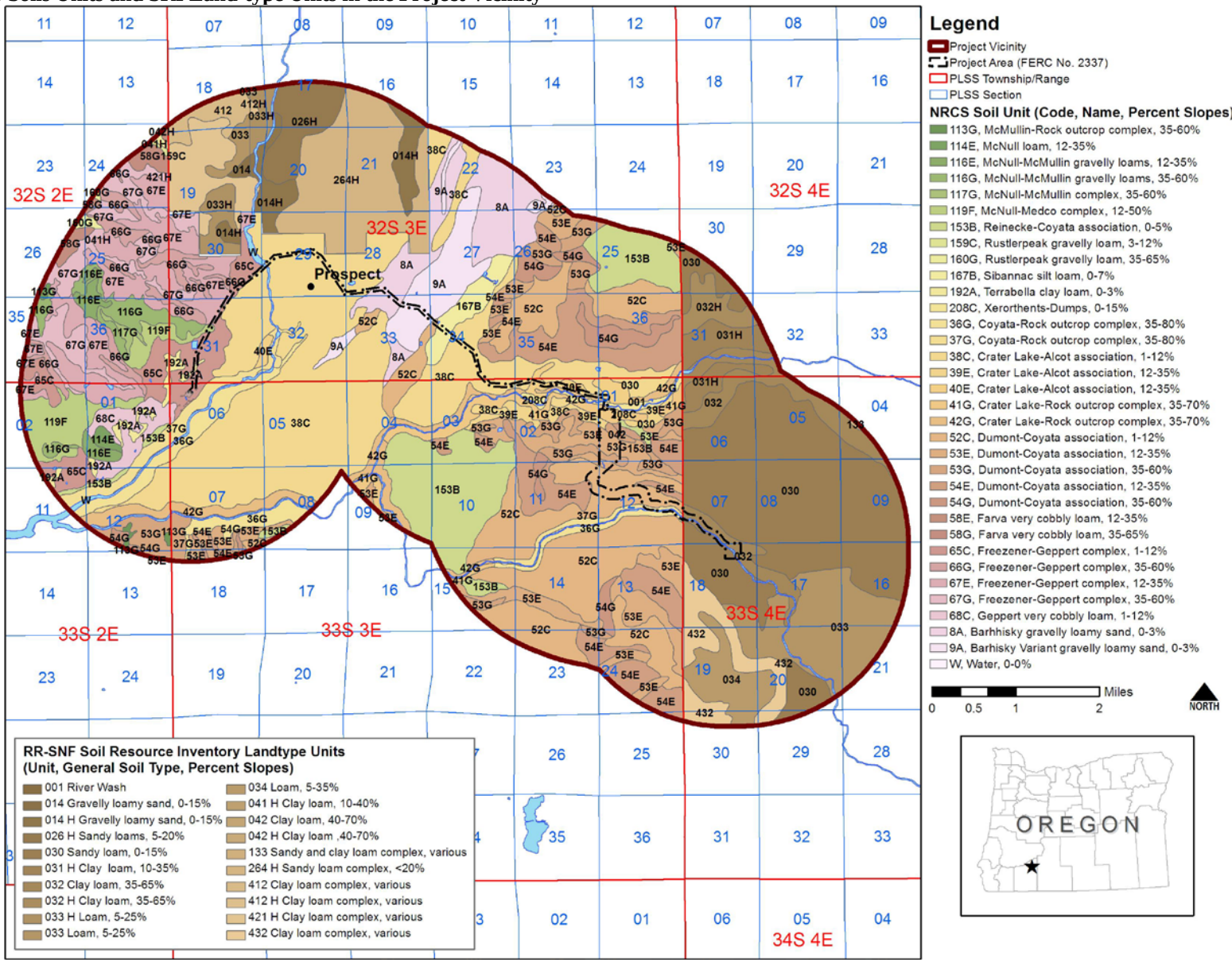
The United States Department of Agriculture and Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, conducted a soil survey of the Jackson County Area in 1993. The subsequent report is the primary source of information for this discussion (Johnson, 1993). Soils were categorized by general types, including complexes or associations of multiple types, and further refined into specific map units based on slope and aspect of the location (Figure 2).

The diversity of soil types within the Project Area is primarily a function of the transmission line alignment, which traverses seven different soil types in eleven map units. The primary Project works within the NRCS' survey area, including the powerhouse and the majority of the waterway, are within four primary soil types: Coyata-rock outcrop complex, Crater Lake-Alcot association, Crater Lake-rock outcrop complex, and Dumont-Coyata association. These soil types account for four of the five types with the largest areal extent. The Freezener-Geppert complex is located below the portion of the transmission line running parallel to North Fork Canal in the western-most portion of the Project area. The four primary soil types are discussed in additional detail below.

A Soil Resources Inventory (SRI) prepared by the USFS (Badura & Jahn, 1977) was utilized to synthesize information regarding soil resources on National Forest lands. The spatial information contained in the SRI is of limited utility at the scale of the Project Vicinity and in the context of current geographic information systems (GIS) technology, but the soil descriptions provided in the SRI were used to fill in the gaps in information on federal lands, which are not mapped by the NRCS.

While the eastern portion of the Project on the Rogue River-Siskiyou National Forest was not specifically covered in the NRCS survey, it is reasonable to assume that this upper portion is also composed of Coyata-rock outcrop complex and Dumont-Coyata association soils. The South Fork canyon is mapped as Coyata-rock outcrop complex for approximately 2.62 miles west of the Forest boundary; this segment of the river is consistent in character with the upper segment

Figure 2. NRCS Soils Units and SRI Land-type Units in the Project Vicinity



from east of the Forest boundary to the Project boundary east of the diversion dam. Additionally, the character and topography of the hill slopes on both sides of the river east of the Forest boundary are consistent with the areas mapped as Dumont-Coyata association soils immediately to the west of the Forest boundary. The SRI identifies these areas primarily as sandy loams on 0 to 15 percent slopes and clay loams on 35 to 65 percent slopes.

The Coyata-rock outcrop complex is found on 35 to 80 percent slopes of the South Fork Rogue River canyon and is likely associated with the diversion site and woodstave flowline alignment, as described in the preceding paragraph. This soil type is approximately 50 percent Coyata soil and 30 percent rock outcrop. The Coyata soil, which was formed in colluviums derived primarily from andesite, is moderately deep and well drained. Bedrock is at an average depth of 31 inches. Runoff from these soils is rapid, and the hazard of water erosion is high

The ***Crater Lake-Alcot association*** occurs below a small portion of the penstock and on large tracts of land between the north and middle forks of the Rogue beneath the transmission line alignment. Both soil types are deep, well- to somewhat-excessively-drained, and formed in volcanic ash and pumice. The depth to bedrock is 60 inches or more. Because these soils are moderately well drained, the speed of runoff and hazard of water erosion are primarily a function of slope and aspect. The unit under the penstock is on a 12 to 35 percent north slope, and as such, runoff is moderate, and the hazard of water erosion is moderate to high.

The ***Crater Lake-rock outcrop complex*** is found on both aspects of 35 to 70 percent hill slopes in the Middle Fork Rogue River canyon. The powerhouse and terminal 565 feet of penstock are located on this soil unit. The complex is approximately 55 percent Crater Lake soil and 20 percent rock outcrop. The Crater Lake soil, which was formed in volcanic ash and pumice, is very deep and well drained. The depth to bedrock is 60 inches or more. This complex is subject to rapid runoff and high potential for water erosion.

The majority of Project features, including all of the canal, tunnel, and forebay, as well as segments of the flowline and penstock, occur on ***Dumont-Coyata association*** soils. These gravelly loams are located on plateaus of 1 to 12 percent slopes and hill slopes from 12 to 60 percent. The association is composed of approximately 50 percent Dumont soil and 30 to 35 percent Coyata soil. As the Coyata described above, Dumont soils are formed in colluviums derived predominantly from andesite. The soil is deep and well drained, but permeability is slow. The depth to bedrock is 60 inches or more. Runoff and erosive hazards are a function of the slope, but the majority of the Project waterway is located on a plateau, for which runoff is slow and the hazard of water erosion is slight.

Management considerations for these soil types that are applicable to the Project include the following:

- high erodability in areas of low plant cover;
- site disturbance including construction activities may result in slope instability problems such as soil erosion, sloughing, and raveling;
- soils are prone to compaction;
- excavation increases the risk of water erosion;

- erosion control measures may be needed to reduce soil loss from cut and fill slopes;
- soil is susceptible to being pushed from its natural position during equipment operations;
- un-surfaced roads on hillsides are sticky and soft when wet and dusty when dry; and
- special precautions may be needed to control soil loss following activities that expose the soil.

3.0 MANAGEMENT PRIORITIES

Wood-stave sections of the Project flowline and sag-pipe are a cause of erosion due to leakage at several locations along its length. These structures are planned for replacement in 2021 with elevated, 5/16-inch-thick, steel pipeline with concrete foundations and column supports at approximately forty-foot intervals[1]. Replacement of these pipelines is anticipated to reduce chronic erosion due to leakage, and remove an ongoing threat of sediment contribution to the South and Middle Fork Rogue River.

The preliminary geotechnical report prepared by Cornforth Consultants for the flowline and sag-pipe replacement conceptual design report (McMillen, LLC, 2014) indicates that there are no signs of ancient landslides; global instability; historically-active, deep-seated slumps; or rotational slides associated with the existing and proposed alignments of the flowline and sag-pipe. Rockfall from the slopes above the flowline is coincident to the Project and is generally not the result of Project construction, operations, or maintenance. However, the preliminary geotechnical report identifies nine locations with evidence of rock failures and/or high potential of falling rock along the flowline. These locations exhibit potential to damage the flowline and result in water erosion of sediments adjacent to and below the flowline. Cornforth's report indicates that that several small slope failures, which are the result of water leakage from the woodstave pipe, currently exist along the flowline. Leakage from the sag-pipe also results in water erosion and mobilization of sediments to the Middle Fork Rogue River below the sag-pipe.

Construction and maintenance of project access roads, waterways, and staging areas has resulted in the removal of vegetative cover and the exposure and compaction of soils. In particular, the dam access road and penstock slope were identified in Scoping Document 2 (FERC, 2013) for their potential impact to soil resources. With respect to the penstock slope, grasses, forbs, and shrubs provide over eighty percent areal cover on average, and water bars are present where necessary to route leakage and/or precipitation-derived sheet flows to natural drainages primarily to the east of the penstock alignment, thereby reducing the potential for erosion along this slope during normal operating conditions. Water bars are also present on the dam access road to facilitate appropriate draining and prevent volumes of water that may otherwise mobilize sediments on an exposed native surface slope. However, potential for future erosion along the dam access road will increase if the water bars and ditch lines are not maintained properly.

As noted in Section 2, soils within the project area formed on ash and pumice are moderately susceptible to wind and water erosion, and therefore, earthen roads and unlined channels in these

[1] Future commodity (e.g., steel, oil, et. al) prices and construction methods may dictate other alternative pipeline construction materials and methods.

soils are likely to be subject to erosion. Despite the diverse native plant community present in the Project area, these conditions indicate that disturbed ground is likely to be difficult to stabilize, and once exposed, is likely to be subject to chronic erosion.

Erosion prevention associated with maintenance actions will be a primary component of erosion-control planning for the Project. Related priorities include monitoring or BMP implementation associated with the following:

- erosion on flow routes of spilled and released water;
- wind and water erosion on facility roads, particularly those that drain to water resources;
- control of erosion on dredge spoils; and
- control of erosion during construction or other activities that result in disturbed soils, particularly where disturbed areas drain to water resources.

Recommendations pertinent to each of these management priorities are presented in the following sections.

3.1 Overland Flow Routes

In most cases, erosion on overland flow routes for spilled or released waters are not long, and do not pose management concerns. However, an exception to this is the forebay overflow spillway discharging to Daniels Creek. In this case, the route is relatively long (2,486'), discharge and velocities are potentially high, and gully erosion has been significant. Management of this particular site is discussed in Section 4, and involves both operational and structural measures.

3.2 Roads

Many of the roads throughout the Project area lack water and sediment control Best Management Practices (BMPs). In some places, the roads are excessively dusty. Graveled segments in some areas are in need of replenishment. PacifiCorp maintains right-of-way agreements and/or easements on a number of road segments that are not owned by PacifiCorp (e.g., access roads from Butte Falls Highway to the powerhouse and diversion dam). PacifiCorp will be solely responsible for erosion and sediment control on Project roads within PacifiCorp ownership. Road maintenance required on private and/or federal lands will be subject to coordination with land owners and will not necessarily be governed by this Plan.

Given the importance of roads to sediment contribution, PacifiCorp will prioritize sediment delivery from PacifiCorp-owned facility roads to water resource areas within the Project. Implementation of BMPs for roads will be prioritized based on proximity to aquatic resources, and potential magnitude of water resource/habitat impacts. Inspection and assessment of existing roads may reveal opportunities to minimize or eliminate these impacts. Potential BMPs and remedial actions include:

- upgrading roads to reduce impacts in or restore functions to water resource areas;
- realigning or reconstructing road segments where erosion has been a long-standing problem; and
- actively maintaining BMPs, including water-bars, on an annual basis.

Road-related BMPs are contained in Section 4.1.

3.3 Dredging

Minimizing sediment contribution from dredging operations and associated hauling and disposal of sediments are management priorities. Measures to reduce dredging-related sediment contribution include:

- selection of dump sites in low-gradient areas away from water resources;
- allowing settling of material in staging areas or dump trucks to reduce loss of fines during hauling;
- proper preparation of receiving area by clearing and grubbing;
- following engineer's directives concerning keying in and placing spoils; and
- immediate seeding with native plant materials adapted to local climatic conditions.

3.4 Erosion Control During Construction

Projects that disturb more than one acre, including flowline and sag-pipe replacement, must comply with erosion control planning required by the Oregon Department of Environmental Quality (ODEQ). This applies to projects done in phases that may not involve contiguous areas. PacifiCorp has a number of practices in place for addressing construction-related erosion control; thus the management priority is to ensure existing BMPS are adhered to. These include but are not limited to:

- designation of an erosion-control lead for the project;
- providing 24-hour contact information for emergency erosion response personnel;
- worst-case scenario planning and emergency response plan, including stockpiling of emergency erosion control materials;
- identification of erosion hazards for the site(s);
- marking of construction limits and protection of natural area buffers;

- establishment of perimeter erosion controls;
- designation of equipment maneuvering and parking areas;
- designation of stockpile locations;
- provision of storage areas for construction materials; and
- maintenance of inspection records for erosion control measures and facilities.

4.0 BEST MANAGEMENT PRACTICES AND ACTIONS

This section of the ESCP describes the primary BMPs that PacifiCorp will consider for the major types and sources of potential erosion on Project lands. This is not intended to be a prescription for known or probable sources of erosion. Rather, it is intended to guide BMP selection, and to provide a source of information for future project or site-specific erosion identified within the project area.

4.1 Roads

Roads that affect the hydrology of water resources or that chronically discharge stormwater or sediments to water resources are a management priority. PacifiCorp maintains right-of-way agreements and/or easements on a number of road segments that are not owned by PacifiCorp (e.g., access roads from Butte Falls Highway to the powerhouse and diversion dam). PacifiCorp will be solely responsible for erosion and sediment control on Project roads within PacifiCorp ownership. Road maintenance required on private and/or federal lands will be subject to coordination with land owners and will not necessarily be governed by this Plan. General BMPs to reduce the impacts of roads on wetlands, wet meadows and streams are described in this section.

4.1.1 Roads in Wet Meadows

- Groundwater and surface drainage in wet meadows should not be intercepted, diverted or concentrated.
- The culverts of roads crossing wet meadows should not be set below grade. If they are set below grade, they should have stable drop inlets to prevent stream incision.
- Road-related runoff in wet meadows should be diffused.
- Maintenance of road-related ditches in wet meadows should only be done when needed and should not result in ditch deepening. Existing ditches should have frequent turnouts and plugs.
- Roads should not affect meadow hydroperiods, and upland plant species should not be invading meadows due to roads.

4.1.2 Piped Stream Crossings

- Stream channels should not be straightened, filled, narrowed, dredged or relocated to accommodate roads.
- Fill for crossing structures should not encroach in stream channels or floodplains, and embankments at spans and bridge crossings should be vegetated or armored.
- Culverts should not discharge directly or indirectly to sensitive areas.
- Fords and low-water crossings should not cross streambeds on fine sediments, particularly if use is heavy.
- Approaches to fords and low-water crossings should be low-gradient and armored with rock.

4.1.3 Road Upgrades

Roads that chronically disturb wetlands or water resources should be considered for engineered upgrades, realignment, decommissioning or general improvements. Engineered upgrades may involve changes to the road or road base, drainage template, surfacing and drainage features, including complete or partial reconstruction of the problem road or road segment. These treatments may include:

- construction of drop inlets for drainage in meadows and wetlands;
- installation of measures allowing through-seepage of ground- and surface water at grade (e.g., over-excavate and place foundation rock);
- addition of rock to road surfaces (using well-graded angular stone with the proper percentage of fines);
- lining earthen ditches with rock (sized for expected worst-case flows and placed two diameters thick, pressed into ditch with backhoe bucket);
- construction of engineered and armored drain dips and rock-protected outfall structures; and
- installation of passive water quality facilities.

Drainage features should be engineered and drainage relief should be spaced according to soils, gradient, cross-slope, tread width and location on hillslope. Outsloping should be favored over insloping of ditches and pipes. Rolling dips are favored over waterbars as they are friendlier to vehicles. Dips should be armored so that they can better withstand the use that eventually will require their reconstruction. Dips should be elongated so that wheels easily traverse them, and should drain to areas where sediments can be deposited and runoff can be infiltrated.

4.1.4 Road Realignment

When a new alignment is warranted, care should be taken to locate the new road or road section so that it meets multiple-use requirements for maximum gradient, clearing and turn radii, and can be traversed by equipment that will use and maintain it. New locations should avoid wet areas, springs, floodplains, stream corridors, wetlands, and the lower portions of slopes, especially those that are north facing.

4.1.5 Road Decommissioning

Options for decommissioning range from blocking the problem road or road segment to obliterating it and re-establishing the former landscape topography and plant cover. Decommissioning techniques and their intended functions are shown below (Table 2). The need for road decommissioning is not anticipated during the current license term.

Table 2. Road decommissioning techniques and intended functions.

Technique	Construction or Application	Intended Function
Road closure structures ("tank traps")	Install 4-ft. high berm backed by 4-ft. deep trench	Keep vehicles off closed road
Scarification	use excavator to rip to 1.5-ft. depth; add slash to roadway after ripping	encourages establishment of vegetation; enhances infiltration
Waterbars and waterbar spacing	must extend completely across road; proper height, spacing and drainage gradient are critical	routes water off the road surface; protects roadway where ditch relief culverts will remain in place
Culvert removal and reshaping of stream crossings	excavate down to pre-fill gradient of channel; remove culvert; pull fill back	allows channels to function properly at all discharges, free from confinement by or sedimentation from fill
Erosion control seeding	many variables to get right: seed mix, rock content of seeding site, other site conditions, timing and rate of application	encourages vegetative stabilization of bare earthen surfaces
Live hardwood seedlings	plant hardwood seedlings at culvert removal sites	accelerates re-vegetation and stabilization at culvert removal sites

4.1.6 Establishment of Vegetative Buffers

Vegetative buffers between roads, streams and wetland resources greatly reduce sediment input from adjacent roads and improve streamside habitat. Recommended minimum widths are shown below (Table 3).

Table 3. Buffer widths for streamside management zones

Ground Slope	Width of Streamside Management Zone (slope distance)
0% - 20%	35 feet

Ground Slope	Width of Streamside Management Zone (slope distance)
21% - 40%	65 feet
41% - 60%	100 feet
60% +	130 feet

4.1.7 Drainage Gradients and Features

Roads must be sloped so that their surfaces shed water and the materials supporting the tread remain structurally sound. Favorable drainage gradients are achieved in numerous ways, including cross-sloping (in-sloping, out-sloping, or crowning) and by means of rolling dips and water bars. It is essential to limit both slope length and gradient of road runoff to control erosion. The following drainage practices are commonly prescribed and are essential to the long-term stability of earthen roads and to protection of adjacent sensitive resources.

- *Avoid steep road grades.* Avoid road grades in excess of 12 percent when possible. It is very difficult to control drainage on steep grades, and erosion on steep grades is expensive to remediate. The distance water travels down road surfaces of varying width and gradient are shown below (Table 4).

- *Maintain minimum drainage gradients.* Maintain positive surface drainage by means of out-sloped, in-sloped, or crowned sections having cross slopes of 3 percent to 5 percent.

- *Provide drainage at frequencies appropriate for soils and gradients.* Roll grades or undulate the road profile frequently to disperse water from the tread. Rolling dips and water bars provide essential drainage relief frequency that prevents erosion from damaging the earthen surface of the road. Spacing depends on gradient and the erodibility of the native earth materials. Table 5 summarizes drainage relief frequencies for non-surfaced roads, and can be used as a starting place for determining the necessary spacing of drainage features.

Table 4. Distance water travels on a road surface as a function of width,

	14 foot width			24 foot width		
Road gradient	**2 % cross slope**	**5 % cross slope**	**8 % cross slope**	**2 % cross slope**	**5 % cross slope**	**8 % cross slope**
2 %	20 ft.	15 ft.	14 ft.	34 ft.	26 ft.	25 ft.
4 %	31 ft.	18 ft.	16 ft.	54 ft.	31 ft.	27 ft.
6 %	44 ft.	22 ft.	18 ft.	76 ft.	37 ft.	30 ft.
8 %	58 ft.	26 ft.	20 ft.	99 ft.	45 ft.	34 ft.
10 %	71 ft.	31 ft.	23 ft.	122 ft.	54 ft.	38 ft.

	14 foot width			24 foot width		
Road gradient	**2 % cross slope**	**5 % cross slope**	**8 % cross slope**	**2 % cross slope**	**5 % cross slope**	**8 % cross slope**
12 %	85 ft.	36 ft.	26 ft.	145 ft.	62 ft.	43 ft.
15 %	106 ft.	44 ft.	30 ft.	181 ft.	76 ft.	51 ft

Source: *Geotechnical/Materials Engineering Training Session,* by Keller and Vanderhust, U.S.D.A. Forest Service, Region V., 1982.

Table 5. Rolling dip / water bar spacing in different materials *

Road Grade	Coarse, rocky gravelly materials	Gravelly sands, silty sandy gravels, coarse pyroclastics	Silty clays, clays, fine sandy silty clay, weathered metavolcanics,	Friable silts, fine silts and sands, fine decomposed granitic soils
2 %	300 ft.	160 ft.	136 ft.	100 ft.
4 %	280 ft.	145 ft.	121 ft.	85 ft.
6 %	250 ft.	140 ft.	113 ft.	75 ft.
8 %	230 ft.	135 ft.	106 ft.	70 ft.
10 %	200 ft.	125 ft.	97 ft.	60 ft.
12 %	175 ft.	115 ft.	80 ft.	50 ft.
15 %	150 ft.	105 ft.	75 ft.	40 ft.

* Spacing given is to avoid rilling in excess of one inch.
* In middle topographic position, reduce spacing 18 feet.
* In lower topographic position, reduce spacing 35 feet.
* On SW aspects, reduce spacing 15 feet.
* For each 10 percent decrease in slope gradient below 80 percent, reduce spacing 5 feet.

Source: *Geotechnical/Materials Engineering Training Session,* by Keller and Vanderhust, U.S.D.A. Forest Service, Region V., 1982.

- *Assure that drainage facilities do not pose barriers to vehicles & equipment.* Rolling grade dips must be "transparent," so that vehicles roll smoothly through them. Dips must be angled at approximately 45 degrees to the travel direction. They must fall at about 20 percent of slope so that they are "self-cleaning," meaning that downslope-moving sediments delivered to them will be carried off the road in runoff. The mound and dip must be armored with gravel or rock.

- *Prevent erosion at outlets of rolling dips.* Outlets of rolling dips should be armored with rock to prevent erosion. Brush or native organic debris can be spread in the lead-off ditch to slow the velocity of the runoff and facilitate the deposition of sediments. Even well-functioning rolling dips require maintenance.

- *Install pipes and ditches as a last resort; assure funds are available to maintain them.* Road culverts and associated ditches should be used only as a last resort to achieve good

drainage. This is because these facilities require regular inspection and maintenance, and severe damage can result from their failure. General guidelines for culvert placement include the following:

1. *Avoid long sustained grades.* Avoid long, sustained grades that concentrate flows. Install grade breaks to get stormwater off the road.

2. *Avoid discharging road runoff onto fill slopes and unprotected soils.* Concentrated runoff from roads can cause damage to fill slopes and to unprotected soils adjacent to the road. Discharge sites need to be carefully selected so that runoff velocity is slowed and sediments settle out. Native organic debris can be used to create settlement and infiltration areas for runoff discharged from the road.

3. *Don't let watercourses run down the road.* The road should descend to a water crossing from both sides of the channel so that over-bank stream flow cannot run down the road.

4. *Avoid floodplain stream crossings.* Cross streams at narrow spots where there is enough rock support for bridge footings; the span will be out of reach of flood waters and the road will not be subject to floodplain dynamics.

5. *Select pipe sizes based on hydrologic data.* All culvert sizes should be prescribed based on the size of the contributing watershed and best hydrologic data available.

- *Special considerations for road segments with sections steeper than 12 percent of gradient.* A stable road should ascend/descend at no more than 12 percent of gradient, and be aligned perpendicular to the fall-line, or nearly so. It should avoid stacking switchbacks in order to eliminate drainage problems. Over-steep road segments with chronic erosion or repair needs should be abandoned and rehabilitated, and alternative alignments established. Abandoned segments should be scarified and mulched and seeded with native materials.

Table 6 presents recommendations for culvert spacing.

Table 6. Recommended distance between culvert cross-drains (in feet).

Road Grade (%)	Soils with Low to Moderate Erosion Hazard	Soils with High Erosion Hazard
0-3	500	325
4-6	400	230
7-9	325	160
10-12	280	130
12+	245	100

Source: Low Volume Road Engineering Best Management Practices Field Guide Keller and Sherar, USFS. Jan. 2001.

4.1.8 Inspection

A road inspection program is a proactive means of addressing issues before they result in negative impacts to the road system or aquatic resources. Timely inspection and follow-up also protects the road itself from damage by wear and weather. Regular inspection of Project roads will be conducted during O&M activities and routine waterway patrols. Special attention to seasonal needs may be required during the following time periods:

- *Late spring.* The crew should maintain ditches, swales, pipe inlets and outlets to clean out sediments, leaves and blockages so that the drainage system will function at full capacity. Any new sources of erosion of road shoulders, drainage ditches and swales or pipe outlets should be found and repaired at this time.

- *Summer.* Spot maintenance should be performed as needed to control dust or limit erosion during summer thunderstorms.

- *Pre-winter.* An annual pre-winter inspection should assure the drainage system will function to full capacity.

- *Mid-winter.* The drainage system should be inspected after every major storm to assure that structures are clear.

A more rigorous inspection is required for new roads, particularly during the first year, and following the first storm events. No new roads are anticipated; however, inspection for new roads would be conducted as follows:

- *After the first hard rain.* Look for ponding, gullying and washouts. Determine the cause and take steps to correct design or construction faults or errors. Inspect landscaped and/or re-vegetated areas to determine whether runoff has affected them and construct drainage modifications as needed.

- *After two months or several moderate rains.* Road structures and drainage systems should be inspected. Drainage systems should be repaired and/or enhanced if they are not functioning properly.

- *Every six to eight weeks.* Damage noted during routine inspections should be repaired right away, particularly if the damage is to road structures or is related to drainage.

4.1.9 Maintenance Schedule

PacifiCorp's road maintenance program is designed to meet both safety and environmental objectives. PacifiCorp maintains right-of-way agreements and/or easements on a number of road segments that are not owned by PacifiCorp (e.g., access roads from Butte Falls Highway to the powerhouse and diversion dam). PacifiCorp will be solely responsible for erosion and sediment control on Project roads within PacifiCorp ownership. Road maintenance required on private and/or federal lands will be subject to coordination with land owners and will not necessarily be

governed by this Plan. In general, existing road maintenance will be conducted on an as-needed basis as determined by routine inspections (Section 4.1.8)

Drainage problems that result in impacts to receiving water resources or wildlife habitats should be taken care of as soon as they are discovered. Other repairs may need to wait until soils are firm enough to support repair vehicles, if needed. It may be necessary to install temporary stabilization or armoring to stabilize the site until environmental windows are favorable for sensitive species or in-water work.

4.1.10 Resource-Friendly Contracting

When maintenance activities will be accomplished under contract, natural resource protection practices will be specified in the contracts and approved in the field. Examples of these practices include:

- contractors attend a pre-work site meeting and provide input into maintenance contracts;
- contractors participate in identifying places where excess earth materials can be disposed in the field (not in wetlands, near streams or in other sensitive locations), and how spoil pile erosion will be controlled;
- contractors are experienced in particular techniques such as temporary erosion practices during ditch cleaning;
- contractors provide worst-case erosion response plans detailing the locations of response materials and a communication plan;
- earth-disturbing activities such as blading and shaping dirt roads and cleaning ditches with equipment are paid by clearly marked segments, not by linear feet (a practice that encourages over-maintenance and unnecessary exposure of disturbed earth to erosion and transport to water resources);
- erosion prevention and sediment control practices are part of all maintenance practices that disturb ground;
- controls for sensitive area protection are installed before maintenance activities begin;
- erosion control practices are inspected and maintained daily while maintenance work is being completed;
- measures such as seeding or mulching for erosion control are inspected by the contractor during the rainy season until the project manager finds that the disturbed earth has been stabilized;
- ground-disturbing work is delayed in excessively wet weather; and

- daily inspections of work that can affect water or other sensitive resources and a written record of inspections and follow-up actions are maintained.

4.1.11 Maintain Drainage Ditches and Sediment Traps

Ditches route water alongside or away from roads until it can be discharged. Whether they are maintained by hand or by machine, ditches require regular maintenance to avoid overflows and resulting washouts. Some roads have inside ditches that collect water both from the cut slope and from the road surface, and route it to culvert cross-drains. Sediments can clog ditches and should be removed if they interfere with conveyance of runoff. Ditches "cleaned" or "pulled" on an as needed basis. This operation requires a backhoe with a bucket that scoops out the sediments and vegetation. Ironically, this often leaves the ditch bare and susceptible to erosion when the first big runoff event occurs. PacifiCorp will maintain ditches as per the following guidelines:

- Conduct major work on ditches during the dry season with consideration of Industrial Fire Precaution Levels (IFPL).
- If the ditch discharges to a stream or wetland, vegetation should be hand cleared by lopping it off close to the ground surface.
- Clean ditches only in locations where sediment collects, or where vegetation is interfering with water conveyance.
- It may be necessary to add roughness elements, such as rock, to prevent ditch erosion.
- Sediments should be removed and hauled to a designated location; not spread for re-integration into the road surface.

4.1.12 Maintain Dissipation Aprons

When concentrated stormwater from a pipe or ditch is discharged, the energy of the falling water is capable of accomplishing impressive erosion in the discharge area. To avoid this, the discharge site typically is armored with cobbles and boulders. Despite this, discharge sites frequently sustain erosion anyway, and the discharge apron needs to be maintained every few years. This may require more rock to dissipate runoff energy and allow settling of sediments. Rock is typically sized to withstand the worst-case flow velocity, and is placed two diameters thick in the receiving area.

4.1.13 Roadside Vegetation

Roads will be scheduled for vegetation maintenance as needed. Vegetation should not pose a hazard to road users, restrict their movement or interfere with sight distance. Branch stubs should not protrude from the boles of trees adjacent to the road. Prunings should be lopped and scattered near the road but not in or adjacent to the clearing limits. Recommendations for vegetation maintenance include the following:

- *Roadside pruning* should take place after the nesting season. The potential impact of chainsaw noise on sensitive species should also be considered. Pruned material can be lopped and scattered near the road.

- *Clearing Excessive Vegetation.* Excess growth in roadside ditches (over and above that necessary to maintain pollutant uptake), can impede water flow and cause sediment build-up, potentially saturating the road foundation.

- *Bio-swales.* The drainages that flow to swales should be inspected regularly to make sure that erosion from "up-line" is not reducing swale effectiveness. If eroding up-line ditches are found to be a source of sediments, roughness elements such as rock and coarse wood may need to be added to the ditches to slow the flow and reduce erosion. Rounded stone may deter organic debris from hanging up in the ditch. If flow volumes are too high and ditch erosion cannot be controlled, the flow may need to be split to a second swale. Annual leaf-fall should be removed from swales when possible, to improve their efficiency. Sediments that accumulate in swales should be removed periodically, so that the swale is capable of holding runoff from larger storms. This may necessitate removal and re-establishment of vegetation.

4.1.14 Road Tread Maintenance

Vehicular traffic during the wet season can degrade the road surface and generate sediment in runoff. Routine inspection and maintenance can prevent degradation of water resources and wildlife habitat. PacifiCorp will reduce impacts of road surface maintenance by adhering to the following guidelines when possible:

- Reduce or minimize hauling and grading during wet weather conditions.

- Grade only when and where needed and only when moist, not wet, after rainy season.

- Do not disturb sections of the roadway that do not need maintenance while repairing, blading or grading sections that do.

- Do not blade, grade or drag in rain or freezing temperatures except for emergency access.

- Avoid work near streams during the rainy season.

- Do not blade surface materials when they are dry (contributes to loss of fines and subsequent washboarding).

- Do not blade ditch spoils back onto the road surface. Dispose of them in a pre-determined area.

- Control dust in summer to conserve fines in the road surface. This can be accomplished by placing a layer of well-graded aggregate on the road and compacting it at the proper moisture content. If the road has already been rocked, ripping and re-compacting may be

sufficient to ameliorate dust problems. The ratio of coarse to fine materials may need adjustment, or, if aggregates are not desired, organic lignins can be spray-applied as a dust palliative.

- Maintain only the width of tread necessary to support the designated uses. Excess width can be expensive and can generate unnecessary and chronic erosion. Often, excess width can be successfully ripped and seeded to reduce the amount of bare earthen surface exposed to erosion.

4.2 Ground-disturbing Activities

Prior to ground-disturbing activities, PacifiCorp and/or their contractors will:

- identify and protect areas of vegetation to be preserved;
- identify and demarcate grading limits in the field;
- identify existing stabilized construction entrance and laydown areas or construct stabilized entrance and laydown areas to prevent tracking of fines on to adjacent improved roads;
- stabilize all equipment access routes as required to prevent erosion;
- establish a concrete wash-out area away from any watercourse;
- install perimeter sediment control silt fence or staked straw waddles to prevent any stormwater runoff or sediment transport into adjacent waterways;
- identify suitable upland area(s) for onsite water disposal and infiltration of construction dewatering water; and
- hold a pre-construction meeting with contractor team to review project schedule, installation and maintenance of erosion and sediment control BMPs, project inspection and corrective action protocols.

During ground-disturbing activities, PacifiCorp and/or their contractors will:

- stockpile extra straw waddles and silt fence onsite;
- regularly inspect all erosion control BMPs and modify as necessary;
- stabilize exposed soils that will remain unworked for over forty-eight hours; and
- monitor onsite water disposal areas and modify or relocate as necessary to assure that infiltration is occurring.

Following ground-disturbing activities, PacifiCorp and/or their contractors will:

- provide final grading and permanent erosion and sediment controls on all exposed soils;
- remove and properly dispose of all construction materials and waste, including sediment retained by temporary BMPs;
- remove all temporary BMPs as areas are stabilized; and
- revegetate all disturbed soil with native seed and plants, with priority given to locally adapted native species as directed by RR-SNF botany staff.

4.3 Erosion Control and Remediation on Federal Lands

Approximately 52.5 acres of the Project, including the diversion dam, fish passage facilities, and majority of the flowline, occur within Federal lands administered by the U.S. Department of Agriculture, Forest Service, High Cascades Ranger District (District) of the Rogue River-Siskiyou National Forest. Erosion control measures and remediation activities on Federal lands will be coordinated with District soils staff and must be approved in writing by the line officer (i.e., District Ranger) prior to implementation.

5.0 IMPLEMENTATION APPROACH

The BMPs outlined in this plan address potential erosion associated with Project activities, conditions, and facilities. The plan provides a framework within which PacifiCorp will work with the regulatory agencies to proactively address activities that either currently or may in the future pose risks of erosion and sediment contribution.

This plan is not intended to substitute for detailed prescriptions associated with future ground-disturbing projects. These actions are subject to regulations specified in the National Pollutant Discharge Elimination System (NPDES) 1200-C permitting process administered by Oregon Department of Environmental Quality (ODEQ) for actions disturbing more than one acre, which require their own Erosion and Sediment Control Plans. However, impacts from these future projects are expected to be reduced through erosion control planning, training, and ongoing application of BMPs described in this plan.

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APPENDIX B. FISH PASSAGE FACILITIES OPERATIONS AND MAINTENANCE PLAN

FISH PASSAGE FACILITIES
OPERATIONS AND MAINTENANCE PLAN

Prospect No. 3 Hydroelectric Project
FERC Project No. P-2337

Prepared by:
PacifiCorp
Portland, OR

December 2016

TABLE OF CONTENTS

1.0 INTRODUCTION

PacifiCorp owns and operates the 7.2-megawatt (MW) Prospect No. 3 Hydroelectric Project (Project; Federal Energy Regulatory Commission (FERC) Project No. P-2337) located on the South Fork Rogue River, near the community of Prospect in northeastern Jackson County, Oregon. The 376.2-acre Project occupies approximately 52.5 acres of federal lands administered by the U.S. Department of Agriculture (USDA), Forest Service, High Cascades Ranger District of the Rogue River-Siskiyou National Forest (RR-SNF).

The Project primarily consists of a 172-foot-long, 24-foot-high concrete diversion dam; upstream and downstream fish passage facilities; a 15,894-foot-long conduit system, including canal, pipeline, tunnel, and penstock sections; a powerhouse containing one generating unit with a rated capacity of 7,200 kilowatts (kW) operating under 740 feet of static head; and a 6.97-mile-long, 69-kilovolt transmission line. The Project is operated in run-of-river mode with no appreciable storage capacity.

This plan provides a resource for operations and maintenance of Project fish passage facilities. The plan includes a detailed description of the facilities and provides maintenance schedules for ensuring safe and reliable operation.

PacifiCorp has proposed a number of fish passage facility modifications in the next license term. These modifications include construction of an auxiliary bypass flow system to reliably provide minimum flows to the bypassed reach, relocation of the fish bypass return pipe discharge from Pool 6 of the fish ladder to Pool 1 of the fish ladder, and modification of fish ladder weirs to facilitate the auxiliary bypass flow system and fish bypass return pipe construction. Modifications are proposed for construction in 2019. This plan will be updated within twelve months of completion of fish passage facility modifications.

2.0 FISH PASSAGE FACILITIES

2.1 Upstream Fish Passage

The fish ladder is a concrete pool-and-weir-type ladder with fifteen pools of varying dimensions and an approximate running length of eighty-six feet providing upstream fish passage over the diversion dam. The ladder is located on the north bank of the South Fork Rogue River adjacent to the waterway intake structure. Pools 1 through 6 of the ladder ascend from the river in a westerly direction to the switchback between Pools 6 and 7, after which the ladder ascends in an easterly direction toward the dam. The fish ladder exit is provided by two submerged, 2.5’ x 1.3’ rectangular orifices at the upstream face of the dam to the south of the intake structure. The ladder was originally constructed in 1931 and was modified in 1973 and again in 1996 to its current form. An overview of the upstream fish passage facilities is provided in Photo 1.

2.2 Downstream Fish Passage

The fish screen is located within the Project waterway approximately 215’ downstream of the dam. The inclined-plane screen is 25’ in length, 9’ 9” in width, and composed of 0.25” wedge-wire, with a surface area of approximately 193 square feet. The screen was designed for a gross approach velocity of 0.75 feet per second (fps). Perforated plate baffles were temporarily

installed to create a more uniform flow through the screen following hydraulic assessments in 1998. The baffles were redesigned and replaced in 2015 (Photo 2). The screen rotates at its mid-point along the horizontal axis from the inclined position to a plane or declined position to facilitate debris removal via backwashing the screen face with canal flows. Converging channel walls over the downstream 11' 5" of the screen direct fish to the fish return pipe.

A backwater sluice gate downstream of the fish screen automatically adjusts its aperture to regulate water surface elevations over the fish screen and into the fish return pipe at varying diversion flow rates. Continuous data provided by water surface elevation level loggers on the upstream and downstream sides of the screen are used to initiate rotation of the screen for backwashing cycles.

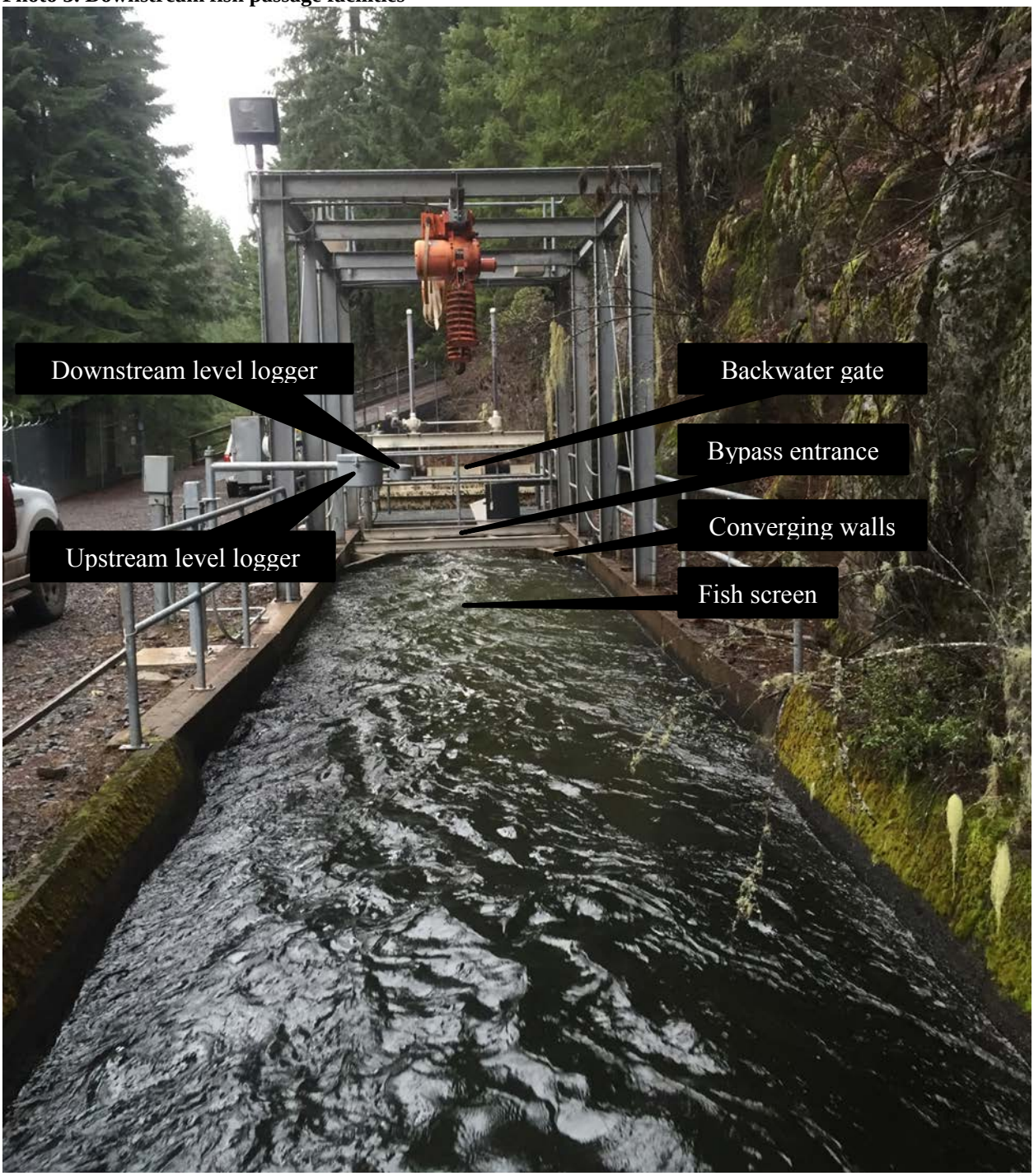
The fish bypass begins at the converging walls of the fish screen with an 18"-wide, 28"-high steel flume with a 5' radius, 180 degree turn. The bypass is designed to accommodate bypass flows of 6 to 15 cubic feet per second (cfs) with a transport velocity of 3.9 fps at 150 cfs. An approximately 60"-long, 30"-high slide conveys fish from the steel flume to the 18", steel bypass return pipe. The bypass return pipe descends approximately 48" in elevation in a southeasterly direction for approximately 159.5' to the pipe outlet above Pool 6 of the fish ladder. Fish bypass pipe flows increase attraction flows to the fish ladder.

The downstream fish passage facilities are shown in Photo 3.

Photo 1. Upstream fish passage facilities overview looking northwest from the dam

Photo 2. Detail of fish screen and rear-mounted baffle plates

Photo 3. Downstream fish passage facilities



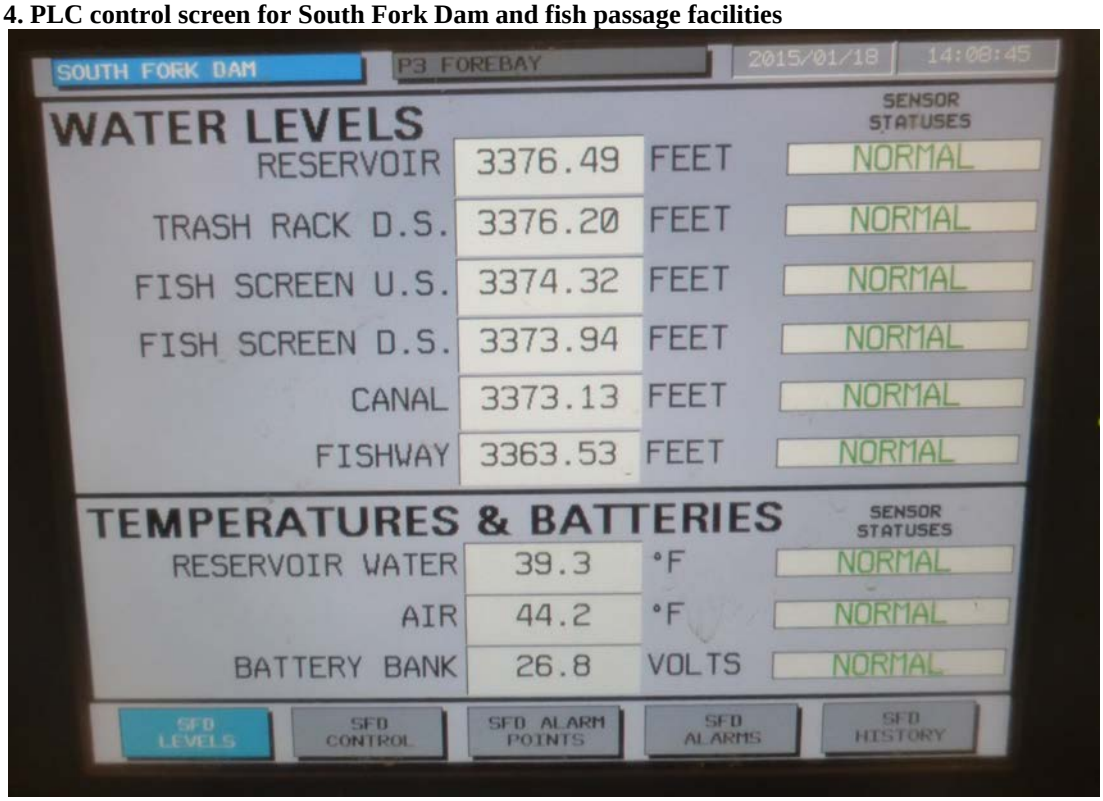
3.0 OPERATIONS AND MAINTENANCE

3.1 Operations

3.1.1 Remote Sensing

Project operators will monitor water levels in the fish passage facilities with remote sensing equipment. Six ultrasonic water surface level loggers are located at the impoundment upstream of the dam, the intake downstream of the trash rack, upstream of the fish screen, downstream of the fish screen (i.e., upstream of the backwater gate), the canal downstream of the backwater gate, and Pool 6 of the fish ladder. If alarm conditions arise or remote sensing data appear questionable, operators will visit the facilities for inspection and maintenance. The programmable logic control (PLC) screen display at the South Fork Dam control building is provided for reference in Photo 4.

Photo 4. PLC control screen for South Fork Dam and fish passage facilities



3.1.2 Upstream Fish Passage Facility

The fish ladder exit is composed of two 30”-high by 16”-wide, submerged adjustable height orifices. The exit orifice gates are manually adjusted as needed based on flow and debris conditions upstream of the dam. The orifices should always be open a minimum of 15” to meet state fish passage criteria. During low flow conditions (≤175 cfs), the minimum in-stream flow is

maintained through the fish ladder entrance (i.e., Pool 1) via a combination of the fish ladder inflow through the exit orifices and the fish screen bypass return flow discharged into Pool 6 of the fish ladder.

Photo 5. Fish ladder exit orifice gate control

3.1.3 Downstream Fish Passage Facility

Remote sensing instrumentation will monitor water levels upstream and downstream of the fish screening facilities on a continuous basis. This monitoring will detect water level fluctuations indicative of excessive debris on the screen face (i.e., high differential between the upstream and downstream water surface elevations) and prompt an automated backwash sequence in which the screen is rotated on its horizontal axis so that canal flow will wash the debris from the screen face.

Certain predictable seasonal conditions during which high debris loads are anticipated will require altered screen operation to prevent unnecessary damage to the facility. Operators may rotate the screen to a neutral (i.e., plane) position to allow debris to flow unimpeded past the facility in late fall for leaf litter, during conditions that may form ice or slush, and during the spring runoff season, as needed. The need for non-normal operation will be determined by repeated, consecutive initiation of the automated backwash sequence. Operators will remove the screen assembly from service during periods when the likelihood of frazil ice formation is high. Electronic sensors will aid in this monitoring process. Lubrication procedures on screen assembly equipment will occur in accordance with the manufacturer's recommendations.

3.2 Maintenance

3.2.1 Remote Sensing

Calibration of remote sensing instrumentation and controls will occur quarter-annually (approximately every three months). Inspection and cleaning of electrical auxiliary equipment will occur annually.

3.2.2 Upstream Fish Passage Facility

Project operators will visit the fish ladder a minimum of three times per week during the migration period (April through July) to inspect for debris blocking the entrance to and/or exit from the ladder and impeding travel between weirs. Operators will remove debris jams as needed. An annual inspection will focus on identifying excessive bed load and debris in fish ladder pools. Removal of excessive bed load and debris will occur as needed.

3.2.3 Downstream Fish Passage Facility

Operators will perform a functional test of the backwash system monthly. Debris and/or residue may form on the screen face that regular automated backwashing will not remove. Operators will monitor the progress of this debris and/or residue weekly and pressure wash the screen when appropriate. Operators will inspect the fish bypass conduit for debris a minimum of three times per week and clear as needed. An inspection of the screen seals, bearings, backwash drives, and other screen system equipment will occur annually. Part replacement will occur as needed. Downstream fish passage facility maintenance should not occur during peak out-migration (April-June).

3.2.4 Maintenance Schedule

Table 1. Fish passage facilities maintenance schedule

Downstream Passage Facilities	
Frequency	***Task***
Three times per week	Inspect screen face for buildup not removed during backwash
Three times per week	Inspect bypass conduits for debris
Monthly	Functional test of screen backwash system
Annually	Inspect screen integrity, seals, backwash drives, and other screen system equipment
As Required	Pressure wash screen
As Required	Remove screen assembly from canal, or rotate to neutral position, during potentially damaging seasonal conditions
As Required	Perform lubrication procedures in accordance with manufacturer's recommendations
Remote Sensing	
Frequency	***Task***

Daily	Monitor site remotely
Quarter-annually	Calibrate remote sensing instrumentation and controls
Annually	Clean and inspect electrical auxiliary equipment
As Required	Inspect site if alarm conditions arise or data is questionable
Upstream Passage Facilities	
Frequency	***Task***
Three times per week	Inspect ladder for debris blockage
Annually	Inspect ladder for excessive bed load and debris in pools
As Required	Remove debris jams or excessive bed load and debris in pools

4.0 PLAN UPDATES

PacifiCorp has proposed a number of fish passage facility modifications in the next license term. These modifications include construction of an auxiliary bypass flow system to reliably provide minimum flows to the bypassed reach, relocation of the fish bypass return pipe discharge from Pool 6 of the fish ladder to Pool 1 of the fish ladder, and modification of fish ladder weirs to facilitate the auxiliary bypass flow system and fish bypass return pipe construction. Modifications are proposed for construction in 2019 but are pending the final license order from FERC.

An updated Fish Passage Facilities O&M Plan will be prepared to reflect changes to the fish passage facilities. The maintenance schedule provided in Table 1 will remain consistent in the updated plan with the schedule provided herein. The updated plan will be provided to ODFW for a 30-day review period. PacifiCorp will consider and incorporate, where appropriate, ODFW's comments on the plan. The updated plan, including a record of consultation with ODFW, will be filed with FERC within twelve months of completion of fish passage facility modifications.

APPENDIX C. VEGETATION MANAGEMENT PLAN

VEGETATION MANAGEMENT PLAN

Prospect No. 3 Hydroelectric Project
FERC Project No. P-2337

Prepared by:
PacifiCorp
Portland, OR

August 2016

TABLE OF CONTENTS

1.0 INTRODUCTION

PacifiCorp owns and operates the 7.2-megawatt (MW) Prospect No. 3 Hydroelectric Project (Project; Federal Energy Regulatory Commission (FERC) Project No. P-2337) located on the South Fork Rogue River, near the community of Prospect in northeastern Jackson County, Oregon. The approximately 376.2-acre FERC Project boundary begins on federal lands administered by the U.S. Department of Agriculture (USDA), Forest Service, High Cascades Ranger District of the Rogue River-Siskiyou National Forest (RR-SNF) and transitions to PacifiCorp-owned property, the latter of which traverses private timber company holdings and rural developments of the community of Prospect. The Project descends 895 feet in elevation from the diversion dam at 3,375' above sea level (ASL) at the eastern extent to 2,480' ASL at the Prospect Central substation at the western extent. These gradients of elevation, ownership, and land use result in heterogeneous habitat values across rather homogenous habitat types and vegetation associations.

The Project primarily consists of a 172-foot-long, 24-foot-high concrete diversion dam; upstream and downstream fish passage facilities; a 15,894-foot-long conduit system, including canal, pipeline, tunnel, and penstock sections; a powerhouse containing one generating unit with a rated capacity of 7,200 kilowatts (kW) operating under 740 feet of static head; and a 6.97-mile-long, 69-kilovolt transmission line. The Project is operated in run-of-river mode with no appreciable storage capacity. A map showing the general location of Project facilities is presented below (Figure 1).

Project operations and maintenance (O&M) activities have the potential to adversely impact native plant communities within the Project boundary. The Vegetation Management Plan (Plan) provided herein has been prepared to address these potential impacts.

1.1 Purpose

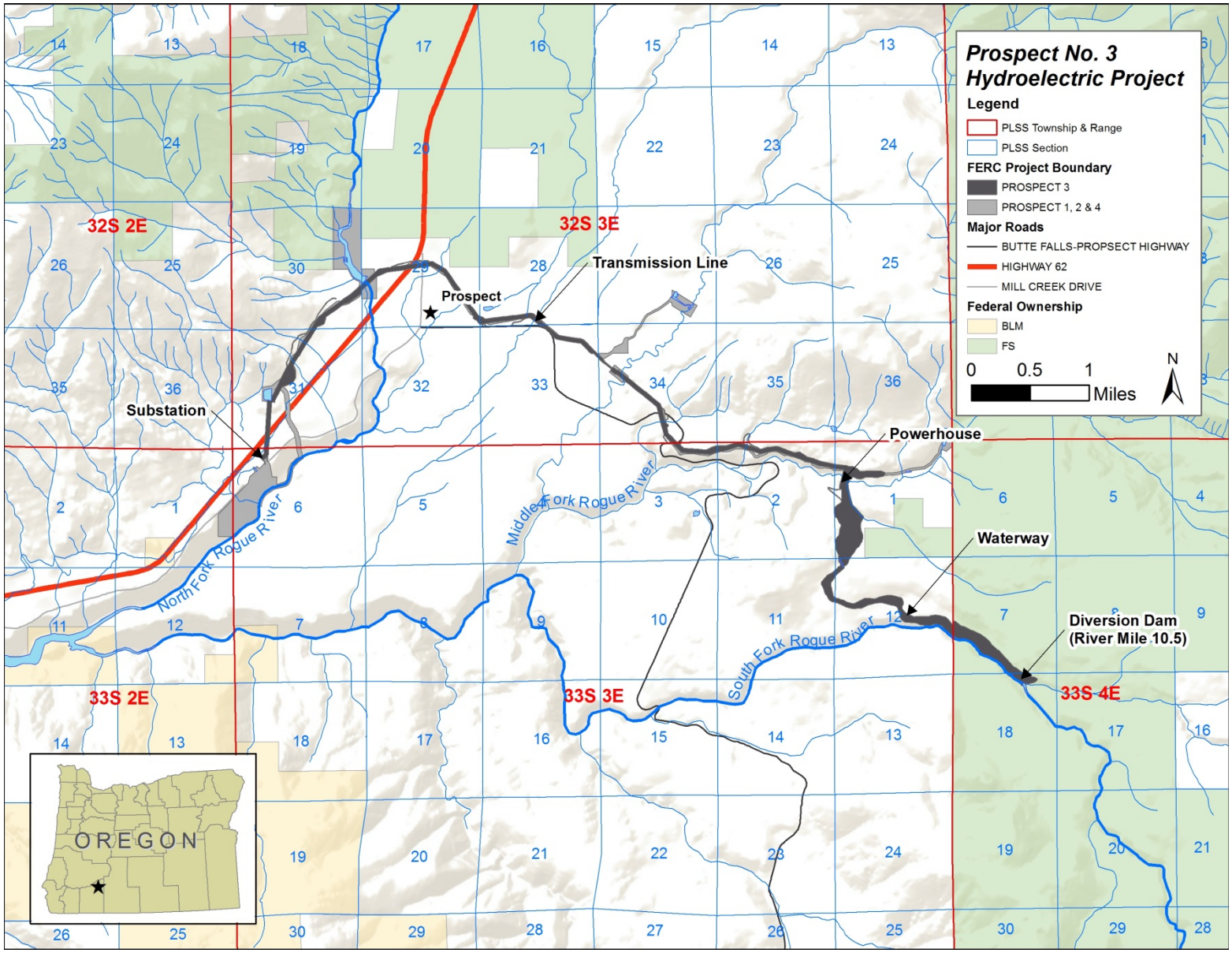
The Plan provides the information and programs necessary to manage and protect botanical resource values in the Project boundary during the term of a new FERC license for the Project. The Plan is intended to cover all Project-related O&M activities on private and federal lands. The Plan establishes goals for managing vegetation within the Project boundary, defines specific activities or measures to meet these goals, and describes how these activities are to be implemented.

1.2 Goals

To meet the purpose of the Plan and guide Project vegetation management activities, goals were established to:

- promote the establishment and maintenance of native plant communities while allowing for continued Project O&M,
- minimize the spread of noxious weed species within the Project boundary,
- provide for revegetation of disturbed areas resulting from Project O&M, and
- protect known populations of special status botanical species within the Project boundary.

Figure 1. Project Facilities and Vicinity



1.3 Organization of the Plan

The Plan begins with a discussion of the baseline vegetation conditions at the Project and the O&M activities with potential to impact botanical resources. This background information provides context for the vegetation management measures that follow. The subsequent Plan sections identify measures planned to minimize the spread of noxious weeds, to provide for revegetation of disturbed areas, and to protect known populations of special status botanical species.

2.0 SITE CONDITIONS

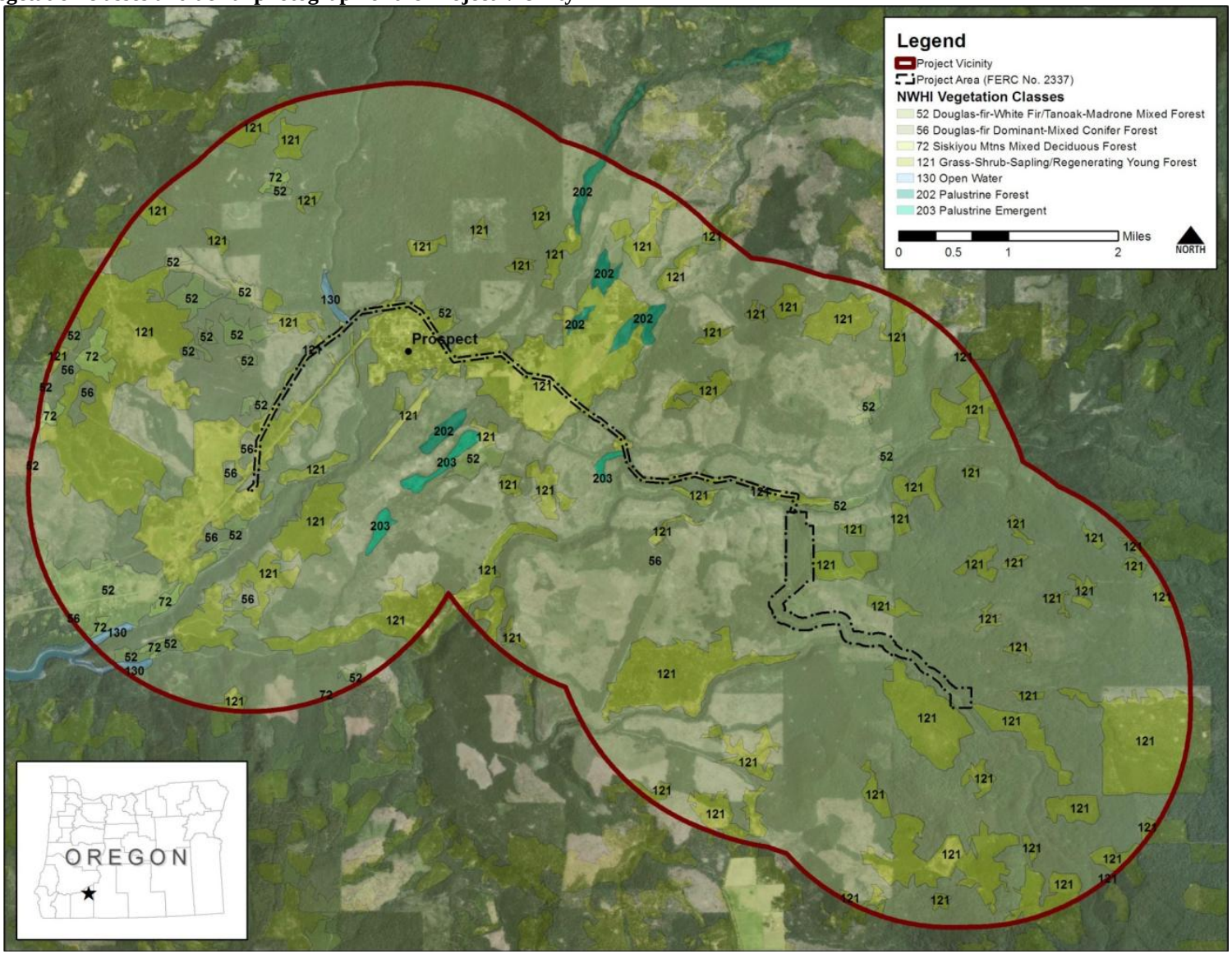
The Project is located primarily on the western slope of the High Cascade Mountains between the South Fork and North Fork Rogue River. The Project descends 895 feet in elevation from east to west. The South Fork diversion dam is located at 3,375 feet, while the powerhouse and Prospect substation are located at 2,635 feet and 2,480 feet, respectively. The Project alignment transitions from federally owned lands of the RR-SNF to PacifiCorp-owned property, which runs through private timber company holdings and rural developments of the community of Prospect. These gradients of elevation, ownership, and land use result in heterogeneous habitat values across rather homogenous habitat types and vegetation associations.

GIS data sets from the Northwest Habitat Institute (NWHI) (Northwest Habitat Institute, 2000) were used to analyze wildlife habitat and vegetation types within the Project Vicinity[1]. Three primary wildlife habitat types exist within the Project Vicinity: riparian, open water/wetland, and southwest Oregon mixed conifer-hardwood forest. Within the mixed conifer-hardwood forest habitat type, the following NWHI vegetation types were identified within the Project Vicinity: Douglas-fir dominant–mixed conifer forest (23,178 ac.), grass-shrub-sapling or regenerating young forest (7,558 ac.), Douglas-fir-white fir/tanoak-madrone mixed forest (853 ac.), palustrine forest (181 ac.), Siskiyou Mountains mixed deciduous forest (148 ac.), palustrine emergent (96 ac.), and open water (54 ac.). Figure 2 shows an aerial image of the Project Vicinity and vegetation types.

Forested areas associated with the Project are a mix of coniferous and deciduous trees dominated by Douglas-fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), and western hemlock (*Tsuga heterophylla*). Other common tree and shrub species include sugar pine (*Pinus lambertiana*), ponderosa pine (*Pinus ponderosa*), incense cedar (*Calocedrus decurrens*), vine maple (*Acer circinatum*), big leaf maple (*Acer macrophyllum*), chinquapin (*Castanopsis chrysophylla*), California hazel (*Corylus cornuta*), Pacific dogwood (*Cornus nuttalli*), Pacific ninebark (*Physocarpus capitatus*), Oregon white oak (*Quercus garryana*), and madrone (*Arbutus menziesii*). The trees vary in size from young seedlings to large mature trees (> 30 in. diameter at breast height). The canopy cover varies from fairly open (40 percent) to dense (>75 percent). Depending upon the canopy cover and aspect, the understory ranges from relatively open areas comprised of grasses and forbs with isolated shrubs to bare ground with thick layers of duff.

[1] "Vicinity" is defined as within two miles of the FERC Project boundary.

Figure 2. NWHI vegetation classes and aerial photograph of the Project Vicinity



Common understory shrubs and forbs include Oregon grape (*Berberis nervosa*), squawcarpet (*Ceanothus prostratus*), oceanspray (*Holodiscus discolor*), twinflower (*Linnaea borealis*), brackenfern (*Pteridium aquilinum*), thimbleberry (*Rubus parviflorus*), and whipplevine (*Whipplea modesta*). In forest stands with dense canopy cover, sugarstick (*Allotropa virgata*) and prince's-pine (*Chimaphila umbellate*) are common understory species (PacifiCorp, 2003).

A significant portion (>30%) of the Project Vicinity is subject to regular, commercial timber harvest operations. Regenerating forest plots are comprised of various heights and age classes of timber production species, primarily Douglas-fir and ponderosa pine. In the first five to ten years following harvest, grass and forb species flourish in the lack of canopy cover. These openings can provide important forage and browse habitat for black-tailed deer and elk. On non-federal lands, mixed conifer forest is the exception to the rule of regenerating young forest. Few large tracts of intact forest remain; watercourses are easily delineated from aerial photography due to the network of trees remaining as riparian buffers.

The High Cascades are botanically less diverse than the adjacent Klamath and Siskiyou Mountains. Soil chemistry and precipitation are dominant influences in species diversity and composition, and the broad volcanic plateaus of the Project Vicinity support a homogenous mix of plant species dominated by a few conifer species, as identified above. Variety in species dominance and size is primarily a function of increases in elevation. The Project Vicinity straddles the ecotone between the High and Western Cascades and therefore supports a more xeric plant assemblage and greater diversity than may be found in higher elevation and/or more northerly portions of the High Cascades.

2.1 Noxious Weeds

Surveys conducted in June, August, October, November, and December 2014, as reported in the Initial Study Report: Special Status Plants and Noxious Weeds (Pacific Crest Consulting, LLC, 2015), identified a total of 107 site locations of eight target noxious weed species (Table 1) within the Project boundary. None of these weed species are on the Oregon Department of Agriculture (ODA) high priority List A. The greatest plant concentration and diversity of noxious weed species was found between the Prospect No. 2 forebay and the Prospect Central substation. The map set provided in Appendix A shows the noxious weed locations within the Project boundary.

Table 1: Noxious Weed Sites Found in the Noxious Weed Study Area (Pacific Crest Consulting, LLC, 2015)

Species	Number of Sites	ODA Status	NRCS Species Code[2]
Centaurea pratensis	1		CEPR2
Centaurea solstitialis	4	B	CESO3
Cirsium arvense	6	B	CIAR4
Cytisus scoparius	63	B	CYSC4
Lathyrus latifolia	15	B	LALA4
Phalaris arundinacea	2		PHAR4

[2] Code acronyms retrieved from NRCS *PLANTS Database* (NRCS 2015), accessed January 12, 2015.

Species	Number of Sites	ODA Status	NRCS Species Code[2]
Rubus armeniacus	9	B	RUAR9
Taeniatherum caput-medusae	7	B	TACA8

2.2 Special Status Species

Surveys conducted in 2000 within significant portions of the Project Vicinity identified over 170 species of plants (PacifiCorp, 2003). No special status plant species were identified at that time. Surveys conducted in June, August, October, November, and December 2014, as reported in the Initial Study Report: Special Status Plants and Noxious Weeds (Pacific Crest Consulting, LLC, 2015), identified over 200 vascular plant species and twelve non-vascular species, three of which were undescribed species of hypogeous fungi (i.e., truffles). No federally- or Oregon-listed threatened, endangered, candidate, or special concern species were found in the survey area. Eight special status plant species were identified and are indicated below in Table 2 along with their special status listing source and category.

Table 2: Special Status Plant Species Found in the Special Status Plant Species Study Area (Pacific Crest Consulting, LLC, 2015)

Species	Total # of Sites	# of Sites on RRSNF Land	# of Sites on PacifiCorp Land	Status			NRCS Species Code[3]
				S/M[4]	RFSSSL[5]	ORBIC[6]	
Chaenotheca ferruginea	1	--	1	B	--	--	CHFE7
Clavariadelphus sachalinensis	1	--	1	B	--	3	CLSA9
Leptogium rivale	1	1	--	E	--	--	LERI2
Rhizopogon masoniae	1	1	--	--	STR	1-X	RHMA14
Rhizopogon truncatus	1	1	--	D	--	4	RHTR4

[3] Code acronyms retrieved from NRCS *PLANTS Database* (NRCS 2015), accessed January 12, 2015
[4] 2009 Survey and Manage Category
[5] Regional Forester's Strategic and Sensitive Species List as of the most recent update (December 2011). STR = Strategic, SEN = Sensitive
[6] Oregon Biodiversity Information Center: 1 = taxa that are threatened with extinction or presumed to be extinct throughout their entire range (1-X designating presumed extirpation from Oregon or extinction); 2 = taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon; these are often peripheral or disjunct species which are of concern (when considering species diversity within Oregon's borders, they can be very significant when protecting the genetic diversity of a taxon)—ORBIC regards extreme rarity as a significant threat and has included species which are very rare in Oregon on this list; 3 = taxa for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range; 4 = taxa which are of conservation concern but are not currently threatened or endangered; this includes taxa which are very rare but are currently secure, as well as List 4 contains taxa which are declining in numbers or habitat but are still too common to be proposed as threatened or endangered. While these taxa may not currently need the same active management attention as threatened or endangered taxa, they do require continued monitoring.

Species	Total # of Sites	# of Sites on RRSNF Land	# of Sites on PacifiCorp Land	Status			NRCS Species Code[3]
				S/M[4]	RFSSSL[5]	ORBIC[6]	
Sparassis crispa	1	1	--	D	--	--	SPCR4
Spathularia flavida	3	1	2	B	--	--	SPFL4
Tremiscus helvelloides	1	--	1	D	--	--	TRHE7

The Special Status Species sites located during the Study, with the exception of the one site of *Leptogium rivale* (S/M Category E), were found on forested slopes away from project facilities and structures by at least thirty meters distance. One of these populations, a site of *Spathularia flavida* (S/M Category B status) was found on a roadcut alongside an old, abandoned road that was likely established for the purpose of constructing the penstock and/or logging the forested slope many years ago. Another population, the one site of *Tremiscus helvelloides* (S/M Category B status), was found in close proximity to, but not on, a very similar abandoned road on the same forested slope. These abandoned roads had not been maintained for many years, had no evidence of recent use, and were becoming overgrown in areas. No sites were found on or alongside roads that were actively maintained and used. The *Leptogium rivale* site was found on bedrock and large boulders in the bed of the South Fork Rogue River downstream of South Fork Dam.

The Special Status Species of greatest significance is *Rhizopogon masoniae*, presumed to be extinct until found during the Study. This species was previously known only from Clackamas County, Oregon, where recent relocation efforts failed to find sporocarps at historic population sites. The identification of this species was verified by Dr. Michael Castellano, a USFS Forest Ecology Researcher, and the voucher currently resides at the office of the USFS Forestry Sciences Laboratory in Corvallis, Oregon. With the exception of *Clavariadelphus sachalinesis*, the other Special Status Species located during the Study are not typically viewed as rare or sensitive, as evident by their absence on the Regional Forester's Special Status Species List (RFSSSL) and Oregon Biodiversity Information Center (ORBIC) list. *C. sachalinesis* has ORBIC3 status but is locally common in the south Cascades of Oregon.

The three undescribed fungi species found during relicensing surveys are not identified on any of the special status lists that concern the Project. These species are all hypogeous fungi that have been verified by Dr. Michael Castellano of the USFS Forestry Sciences Laboratory, Corvallis, Oregon, and the collected specimens currently reside at his offices. Additional information on these species is presented in the Initial Study Report. The two new species of *Rhizopogon* will be described and published using their two respective Project locations as their type localities. When published, the Project location of the new species of *Hymenogaster* will be included with the species description and greatly expand the previous known range of the species. All three species are potential future candidates for ORBIC listing and subsequent RFSSSL listing.

3.0 PROJECT EFFECTS ON VEGETATION

This section identifies the Project O&M activities with the potential to impact native plant communities. To facilitate use by PacifiCorp staff, the specific activities and methods included in vegetation management are organized into three main sections—the first covering the transmission line corridor, the second addressing routine Project facilities O&M, and the third addressing non-routine Project facility construction.

3.1 Transmission Line

Electrical power produced by the Project generating unit is conveyed to the electrical grid via a 6.97-mile-long, 69-kilovolt (kV) transmission line that ultimately terminates at Prospect Central substation. There is also a connection to a local distribution sub-station near Red Blanket Road. From the initial substation immediately to the west of the powerhouse, the transmission line alignment crosses the Middle Fork Rogue and from that point on follows the general alignment of the Prospect Nos. 1, 2, and 4 Hydroelectric Project (FERC Project No. P-2630) waterway. Transmission line access roads are shared with Prospect Nos. 1, 2, and 4 waterway operations and maintenance access. The transmission line alignment crosses primary public access roads at Prospect-Butte Falls Highway, Mill Creek Road, and Highway 62, at the Middle Fork Canal crossing near North Fork Reservoir and at the P2 penstock crossing near the transmission line terminus at Prospect Central substation. The transmission line is not located on any federal lands.

The right-of-way (ROW) clearance area associated with the Project transmission line is dictated by PacifiCorp engineering specifications and is dependent upon the type of transmission structure supporting the conductors. 69-kV lines may be supported by single-pole or “H”-pole construction. Single-pole, 69-kV structures require a 25-foot buffer from the center line (i.e., 50-foot total ROW width) and H-pole, 69-kV structures require a 30-foot buffer from the center line (i.e., 60-foot total ROW width). PacifiCorp manages trees and vegetation within the transmission ROW corridor to provide safe, reliable service to customers.

The following measures will be implemented, as appropriate, for all vegetation maintenance clearance activities associated with the transmission lines:

- Crews will observe the Industrial Fire Precaution Level (IFPL) and have proper fire-suppression tools and materials, as required by the Oregon Department of Forestry (ODF).
- Gas power tools will be equipped with approved spark arresters.
- Areas of ground disturbance will be subject to weed control activities prior to disturbance and revegetated according the guidance in Sections 4.0 and 5.0 of the Plan.
- Heavy mechanical clearing will be conducted only when the ground is dry enough to support the equipment being used.
- Planting to encourage the establishment of low-growing plant communities in riparian reserves, highway buffers, or other segments of the ROW will use native species according to the guidance provided in Section 5.0 of this document.

PacifiCorp's vegetation management in and along the transmission line corridor includes the following five types of activities with the potential to affect botanical resources:

- Hazard tree removal;
- Under clearance;
- Side clearance;
- Access road clearance; and
- Slash and debris management.

3.1.1 Hazard Tree Removal

A transmission line hazard tree is defined as either: (1) a dead, dying, diseased, deformed, or unstable tree with a high probability of falling and contacting a substation, transmission conductors, structures, or guy wires; or (2) a green tree currently under or near the transmission line that will grow into the line within the next year. Hazard trees are typically large trees growing outside the cleared ROW for a transmission line. Prevailing winds, slope, and soil depth are factors that need to be considered when identifying hazard trees. These trees are usually identified during routine or periodic inspections conducted to assess damage from a specific storm or wind event. The primary objective in managing hazard trees is removal or topping, as safely as possible.

Cutting with chainsaws is the primary method for removing or topping hazard trees in the vicinity of transmission lines. To the extent possible, trees will be cut in a manner that minimizes damage to the trunk and root systems of adjacent trees. Where appropriate, conifers will be cut below the lowest live limb to eliminate the continued growth of lateral branches. Stumps will be cut parallel to the ground to prevent injury. Other considerations for removal and disposal of hazard trees include the species, size (height and diameter-at-breast height (dbh)), condition, and location.

3.1.2 Under Clearance

The National Electric Safety Code (Institute of Electrical and Electronics Engineers (IEEE), 2012) requires utilities (such as PacifiCorp) to clear trees growing under power lines. Under clearance is the process of cutting trees growing under transmission lines, with the primary objective of preventing fires and outages that can result when vegetation contacts ungrounded supply conductors. Where possible, PacifiCorp will also minimize damage to existing low-growing species that do not conflict with power lines with the secondary objective of maintaining or promoting an early seral successional stage (grasses, forbs, and shrubs).

Manual (i.e., hand pulling, lopping by hand crews) and mechanical (i.e., chainsaws, mowing) methods are used for under clearance. The specific methods selected will depend on the location. In general, trees will be cut before they reach a dbh of 6 inches and felled in a manner that minimizes damage to low-growing native shrubs. Conifers will be cut below the lowest live limb to eliminate the continued growth of lateral branches. Stumps will be cut parallel to the ground to prevent injury. Objectives for slash/debris management will determine if the cut trees

are removed or left within or near the ROW. Herbicides may also be used as an under clearance method in select sites under specific conditions.

3.1.3 Side Clearance

Side clearance is the process of removing trees and tree limbs that protrude into the ROW either under or over the transmission line. Side clearance specifications vary by line type and pole construction. On long spans, side clearance may need to be increased at mid-span to accommodate conductor swing. Cutting with chainsaws is the primary method for removing tree limbs that protrude into the transmission line ROW. Tree limbs are pruned from the ground up. Objectives for slash/debris management will determine if the limbs are removed or left within or near the ROW.

3.1.4 Access Road Clearance

PacifiCorp needs road access to the Project transmission lines for inspection and maintenance. Clearance along access roads involves brushing, which is the removal of small trees and shrubs, and is conducted as needed to allow administrative access by high clearance vehicles Manual (i.e., hand pulling, lopping by hand crews) and mechanical (i.e., chainsaws, mowing) methods are used for the clearance of transmission line access roads. The methods used to provide access for inspection and routine maintenance may be different than those used to provide access for the heavy equipment needed for occasional major maintenance (e.g., tower replacement) along the transmission line. The specific methods selected will depend on the type of equipment or vehicle that needs access. Where possible, desirable vegetation (e.g., native low-growing shrubs) will be left in place along roadsides. Stumps will be cut parallel to the ground to prevent injury, and any stumps left in the roadbed will be cut as low as possible. Objectives for slash/debris management will determine if brush is removed or left within or near the ROW.

3.1.5 Slash and Debris Management

Slash is defined as brush and limbs less than six inches in diameter that are removed during under clearance, side clearance, and hazard tree removal. Debris is woody material greater than six inches in diameter, and includes tree trunks and large limbs. The objective of slash/debris management is to ensure that these materials are either left in or near the transmission line ROW, or removed, as determined by resource objectives for the site. There are three primary ways of managing slash and debris. It can either be (1) chipped, with the residual chips blown on site; (2) lopped and scattered on site; or (3) piled on site. Woody debris is typically left on site provided it does not block access or represent a safety or fire hazard. Slash and debris left on site should be placed outside the wire zone whenever possible. Slash piles should not be obvious to the public; limit access; block drainages; be placed in streams, lakes, ponds, or wetlands; or create a fire hazard.

3.2 Project Facilities Operations and Maintenance

3.2.1 Project Facilities

The Project consists of:

(1) a 172-foot-long, 24-foot-high, concrete diversion dam with a 98-foot-long, un-gated ogee spillway oriented to the northwest at RM 10.5 on the South Fork Rogue River;

(2) a one-acre impoundment at elevation 3,375 feet with a gross capacity of 19-acre-feet;

(3) a fish passage facility on the northeast bank of the river, including (a) an 86-foot-long, 15-pool concrete ladder for upstream fish passage over the diversion dam, and (b) a 0.25-inch wedge-wire, inclined-plane fish screen with a surface area of 193 square feet, which transitions to a bypass pipe to return fish to Pool 6 of the ladder and facilitate downstream passage;

(4) a 15,894-foot-long conduit system with a primarily southeast-to-northwest alignment consisting of, in order, (a) a 273-foot-long concrete-lined canal section; (b) a 66-inch-diameter, 5,448-foot-long woodstave pipe; (c) a 5,805-foot-long concrete-lined canal section; (d) a 5-foot-wide by 6.5-foot-high, 698-foot-long, concrete-lined, horseshoe type tunnel; (e) a 416-foot-long canal to penstock transition (i.e. forebay) with a 2,486-foot-long side channel spillway that discharges to Daniel Creek; and (f) a 66-inch to 68-inch-diameter, 3,254-foot-long, riveted steel penstock with a south-to-north alignment;

(5) a powerhouse containing one generating unit with a rated capacity of 7,200 kW operating under a static head of 740 feet and producing a 30-year (1986-2015) average annual energy output of 35,050 megawatt hours (MWh);

(6) a concrete tailrace structure approximately 20 feet by 20 feet by 5 feet with an automated backwater gate and 172-foot-long, concrete lined overflow spillway that discharges to Daniel Creek;

(7) a 66-inch, 887-foot-long woodstave sag pipe that routes flows in a south-to-north alignment from the tailrace to the Middle Fork Canal of the Prospect Nos. 1, 2, and 4 Project (FERC No. P-2630); and

(8) a 6.97-mile-long, 69-kilovolt (kV) transmission line in a generally east-to-west alignment that connects the powerhouse to Prospect Central substation.

The transmission line is addressed separately in Section 3.1.

The diversion dam, impoundment, fish passage facilities, intake canal, and a portion of the flowline are located on federal lands of the RR-SNF.

3.2.2 Operations and Maintenance Activities

Regular or routine Project O&M activities requiring management and/or removal of vegetation include the following activities:

- Hazard tree removal;
- Facility brushing;
- Spillway brushing;
- Fence maintenance; and
- Access road maintenance.

Hazard Tree Removal

A Project facility hazard tree is defined as a dead, dying, diseased, deformed, or unstable tree with a high probability of falling and contacting a facility. Hazard trees are typically large trees growing adjacent to, and often upslope of, Project facilities. Prevailing winds, slope, and soil depth are factors that need to be considered when identifying hazard trees. These trees are usually identified during routine or periodic inspections conducted to assess damage from a specific storm or wind event. The primary objective in managing hazard trees is removal or topping, as safely as possible to prevent facility damage.

Cutting with chainsaws is the primary method for removing or topping hazard trees in the vicinity of Project facilities. To the extent possible, trees will be cut in a manner that minimizes damage to the trunk and root systems of adjacent trees. Where appropriate, conifers will be cut below the lowest live limb to eliminate the continued growth of lateral branches. Stumps will be cut parallel to the ground to prevent injury. Other considerations for removal and disposal of hazard trees include the species, size (height and diameter-at-breast height (dbh)), condition, and location.

Facility Brushing

FERC requires line-of-sight to Project facilities for routine dam safety and engineering inspections. These inspection needs may require brushing, which is the removal of small trees and shrubs, between facilities and access roads. Some of the Project facilities (e.g., flowline, penstock) are only accessible by foot or small off-road vehicle. These facilities must also be cleared of adjacent vegetation on all sides. Manual (i.e., hand pulling, lopping by hand crews) and mechanical (i.e., chainsaws, mowing) methods are used for facility brushing. Slash is typically left on-site as long as it does not block access, present a fire hazard, or impact a sensitive habitat (e.g., stream, wetland). Facility brushing will avoid removing larger overstory trees that do not pose an imminent threat to Project facilities and may serve as wildlife habitat, when and where possible.

Spillway Brushing

Project spillways must be clear of trees and brush that may restrict spillway capacity. Project spillways include the bypass reach immediately below the diversion dam, the forebay overflow

spillway that discharges to Daniel Creek, and the tailrace spillway that discharges to Daniel Creek. Manual (i.e., hand pulling, lopping by hand crews) and mechanical (i.e., chainsaws, mowing) methods are used for the facility brushing. Slash is typically moved to adjacent upland sites and/or hauled off-site for disposal.

Fence Maintenance

The Project headworks (e.g., intake control building and fish passage facilities); open canal segments of the waterway; Project forebay, penstock intake and control building; powerhouse; and sub-station are fenced facilities. Storm damage often results in tree-fall, which may damage Project fencing. Trees, debris (plant matter over 6" dbh), and slash (plant matter under 6" dbh) that fall on the Project fencing must be cut and removed to repair and maintain the fencing components. Manual (i.e., hand removal, lopping by hand crews) and mechanical (i.e., chainsaws) methods are used for removing vegetation from the fence line. Slash and debris is typically left on-site as long as it does not block access, present a fire hazard, or impact a sensitive habitat (e.g., stream, wetland).

Access Road Maintenance

PacifiCorp needs road access to the Project facilities for inspection and maintenance. Clearance along access roads involves and is conducted as needed to allow administrative access by high clearance vehicles. Manual (i.e., hand pulling, lopping by hand crews) and mechanical (i.e., chainsaws, mowing) methods are used for the clearance of facility access roads. The methods used to provide access for inspection and routine maintenance may be different than those used to provide access for the heavy equipment needed for occasional major maintenance (e.g., canal repairs). The specific methods selected will depend on the type of equipment or vehicle that needs access. Desirable vegetation (e.g., native low-growing shrubs) will be left in place along roadsides, where and when possible. Stumps will be cut parallel to the ground to prevent injury, and any stumps left in the roadbed will be cut as low as possible. Objectives for slash/debris management will determine if brush is removed or left adjacent to the road.

3.3 Project Facility Construction

Project facility construction includes non-routine replacement or reconstruction of existing facilities as well as the construction of new facilities. These activities have the potential to remove and/or disturb vegetation for construction site clearing, access, and/or staging.

3.3.1 Planned Construction

PacifiCorp proposes to replace the existing woodstave flowline, woodstave sag pipe, and vehicle access bridge over the flowline intake. In addition, PacifiCorp proposes to upgrade the six existing four-foot-wide wildlife crossings of the canal to twelve feet in width. PacifiCorp also proposes to construct five twelve-foot-wide wildlife crossings of the new steel flowline and eight two-foot-wide wildlife crossings of the canal within the canal fencing. To facilitate compliance with proposed ramp rates, PacifiCorp proposes to install a communications link on the USGS' South Fork Rogue gage to deliver real-time flow readings to Project instrumentation and controls. The proposed facility construction schedule is identified below in Table 3.

Table 3: Proposed Project facilities and construction schedule

Facility	Proposed Construction Completion
Communications link and controls	2019
Steel flowline	2021
Steel sag pipe	2021
Wildlife crossing upgrades	2021
Wildlife crossing construction	2021
Vehicle access bridge over flowline intake	2022

Flowline Replacement

Planned replacement of the woodstave flowline presents the largest potential spatial impact to native plant communities, and therefore, the flowline replacement impacts are presented here in additional detail. The proposed routes of the new flowline and sag pipe segments do not come within close proximity to any special status species sites. Any staging areas or other proposed disturbances relating to construction of the new flowline should be done with consideration to special status species site locations. Multiple special status species site locations were found between the proposed flowline and Imnaha Road. Any proposed roads and associated disturbances for accessing the proposed flowline from Imnaha Road should also be constructed outside the buffer radii, if possible. No special status species sites were found near the primary proposed staging area for flowline construction at the north end of the flowline junction with the canal at the end of the spur road on PacifiCorp property approximately 1,000 feet east of Imnaha Road. Construction and related disturbances of this staging area should have no effect on any of the known special status species site locations.

3.3.2 Unplanned Construction

During the term of the new FERC license, there may be a need for unanticipated facility replacement, reconstruction, and/or new construction. These activities have the potential to remove and/or disturb vegetation for construction site clearing, access, and/or staging. To prevent unanticipated impacts to native plant communities, PacifiCorp will perform botanical surveys for noxious weeds and special-status species within the proposed clearing, access, staging, and disposal areas. Surveys will be performed by qualified individuals having successfully completed college-level courses in botany and with demonstrated experience in regional botanical surveys. Observed noxious weeds and/or special-status species will be addressed with the measures presented below in their respective sections of the Plan.

Unplanned construction on federal lands will be coordinated with and approved by USDA-Forest Service staff at the High Cascade Ranger District. PacifiCorp will submit to USDA-Forest

Service a written request for Notice to Proceed, which will include construction plans, profiles, schedules, maps, and photos of the site, as applicable. Measures to protect native plant communities on federal lands will be coordinated with USDA-Forest Service staff.

4.0 NOXIOUS WEEDS

4.1 Project Effects

The vast majority of noxious weed sites in the Project exist at least partially in areas that are likely affected by Project activities. These areas include existing roads, penstock routes, and other Project facilities. Ground disturbance, caused by activities such as road use, construction, and maintenance within the Project, facilitates dispersal of and establishes suitable habitat for noxious weeds.

Success of noxious weed management efforts within the Project boundary is limited due to the Project bordering a diversity of lands with various ownerships and uses such as agriculture, logging, and private residency. These land uses, plus the presence of public roads within the Project, especially State Highway 62, provides high-potential, regular noxious weed introduction vectors. In addition, the Project overall is generally very narrow in outline, allowing for potentially rapid infestation of noxious weeds across the width of the Project.

Though no ODA List A high priority noxious weed species were detected during relicensing studies, there were multiple specific noxious weed populations found that have potential to quickly become large infestations. These include small populations of *Centaurea solstitialis* and *C. pratensis*. These species are new invaders to the Project, having not been documented previously, and are relatively small in size. The populations were few in number, found in close proximity to habitats ideal for rapid population expansion, and were growing along roads and waterways that could provide excellent means of dispersal.

4.2 Inventory

Inventory involves two distinct tasks: (1) an initial inventory of the FERC Project boundary to document the location and extent of weed populations at the time of FERC license issuance (2019), and (2) subsequent discrete inventories of the spatial extent of ground-disturbance for proposed projects more than five years after license issuance (i.e., 2024 to license expiration) and prior to project implementation for comparison with initial inventory data and to identify any new infestations.

4.2.1 Initial Project Inventory

A comprehensive inventory is the first step in implementing a strategic noxious weed prevention and control program. PacifiCorp previously identified and mapped noxious weed infestations on their lands within the previous FERC Project boundary during relicensing studies in 2014. Most of the identified infestations were located along access roads. A new, “initial” survey and inventory of noxious weeds will be conducted in the first year of the new License (2019). The

initial Project inventory will be used to develop treatment plans for ground-disturbing projects in the first five years of License implementation (i.e., 2019-2023).

Methods

The noxious weed inventory survey will include all lands owned by PacifiCorp or USFS within the existing FERC Project boundary, including the transmission line corridor (Study Area; see Figure 1). Prior to conducting field surveys, surveyors will compile a noxious weed list for the Study Area from the current Oregon Department of Agriculture's State Noxious Weed List. This list will be updated, if needed, to include changes made by ODA prior to field surveys. The list will only include weeds on the State Noxious Weed List that are known or suspected to occur in Jackson County.

A review of existing data will be conducted on noxious weed locations within the Project Vicinity (i.e. within two miles of the FERC Project Boundary). This data will be from all easily accessible data sources, including www.weedmapper.org (ODA 2013) and RR-SNF databases. The Study Area will be assessed to identify areas with high, moderate, and low potential for noxious weeds as defined below. This information will be used to develop a survey strategy that will maximize efforts in the high potential areas and provide adequate effort in moderate and low potential areas.

- "High potential areas" include those areas with frequent or continued soil disturbance, frequent or constant exposure to weed seed vectors, or are known to have existing noxious weeds other than bull thistle or St. John's-wort (USDA Forest Service, 2014). Examples of this would include the public access roads and transmission line rights-of-way within the Study Area.
- "Moderate potential areas" include areas with prior or frequent soil disturbance, but low exposure to weed seed vectors. Examples of this would include the dam access road, canal segments, and forebay.
- "Low potential areas" include areas that have intact soils and low exposure to weed seed vectors. Examples of this would include portions of the penstock and woodstave flowline alignments.

On uplands and riparian vegetation zones (USDA Forest Service, 2014), qualified botanists will conduct field surveys using "intuitive-controlled" survey methodology (Whiteaker et al. 1998). In an intuitive-controlled survey, the botanist searches for noxious weeds while traversing the entire Study Area to observe a representative cross section of the major habitats and topographic features (Whiteaker et al. 1998). Study areas should be surveyed intensively enough to locate all major topographic features and high probability areas and to observe a representative cross-section of minor topographic features, plant associations, and moderate to low probability areas. Areas identified as high potential in the pre-field review will be surveyed to cover 100 percent of the area. Moderate and low potential areas will be surveyed to cover 50 and 10 percent of the area, respectively. Surveyors will also document incidental observations of noxious weeds outside of the FERC boundary but adjacent to the Study Area.

Surveyors will collect point and/or polygon geographic information systems (GIS) data identifying noxious weed locations using global positioning system (GPS) field units. Bull thistle

and St. John's-wort will be excluded from field mapping due to their ubiquity in the Project Area (USDA Forest Service, 2014). Locations of noxious weed infestations will be presented on maps for use by PacifiCorp staff and contractors.

Appropriate field survey time in the High Cascades of the RR-SNF is typically between May and September but is dependent on both climatic conditions and topography. Actual survey dates will be refined to account for phenology of noxious weeds that have a high likelihood of occurring within the Study Area and adjusted for climatic conditions during the calendar year 2019 growing season. Two surveys will be conducted during the 2019 growing season; one in spring to early summer (e.g. May through June) and one in the late summer (e.g. July through August).

4.2.2 Discrete Inventories

After a period of five years from the initial inventory (i.e., 2024), new noxious weed inventories will be conducted prior to any proposed ground-disturbing activities (i.e., unplanned construction; see Section 3.3.2) within the FERC Project boundary. A qualified botanist having taken college-level courses in botany will perform the surveys by walking within the disturbance boundaries of the proposed project to visually inspect the full project site.

Prior to conducting field surveys, surveyors will compile a noxious weed list for the Study Area from the current Oregon Department of Agriculture's State Noxious Weed List. This list will be updated, if needed, to include changes made by ODA prior to field surveys. The list will only include weeds on the State Noxious Weed List that are known or suspected to occur in Jackson County.

Surveyors will collect point and/or polygon geographic information systems (GIS) data identifying noxious weed locations using global positioning system (GPS) field units. Bull thistle and St. John's-wort will be excluded from field mapping due to their ubiquity in the Project Area (USDA Forest Service, 2014). Locations of noxious weed infestations will be presented on maps for use by PacifiCorp staff and contractors.

Survey dates will depend on project development and construction season, but the dates will account for phenology of noxious weeds that have a high likelihood of occurring within the disturbance boundary and adjusted for climatic conditions during the growing season, when possible.

4.3 Control

The primary objective of noxious weed control is to eradicate, reduce, or contain established infestations. If eradication or reduction is not possible, the secondary objective of control is to prevent the infestation from spreading to other areas.

There is no single effective method for controlling noxious weed species. Controlling infestations of most species requires integrating a variety of methods depending on the size and location of the population. These methods should be followed by revegetation when it is unlikely that surrounding native vegetation will readily recolonize the area.

Because the USDA-FS currently allows herbicide use only in select, approved locations, most noxious weed control on RR-SNF lands in the Project boundary will involve manual and mechanical methods. In general, weed control efforts should be focused on infestations and in areas where there is the greatest chance of success. Manual methods will usually be restricted to infestations less than 1 acre in size or the treatment of scattered individuals over a larger area that are either just beginning to invade or remaining following application of another control method.

Control methods on PacifiCorp property will be developed by the Project environmental coordinator. Control methods on USDA-FS property will be developed in coordination with RR-SNF botany staff.

4.3.1 Methods

There are a wide variety of methods available for noxious weed control. These can be broadly grouped into four main types:

- Manual
- Mechanical
- Chemical
- Biological

Controlling noxious weed infestations generally requires repeated and coordinated efforts over time, a process referred to as integrated weed management, in addition to post-treatment revegetation. Since the overall goal of noxious weed management is to maintain or re-establish functioning native plant communities, revegetation must follow the application of control methods. The four types of control and associated methods are briefly discussed below. Revegetation methods are discussed in detail in Section 5.0.

Manual Methods

Manual methods of weed control may include the following:

- Pulling – physically pulling weeds from the soil or using a weed wrench.
- Cutting/lopping – using shears, clippers, or brush saws to sever above-ground parts of noxious weeds.
- Solarizing – covering noxious weed infestations with black plastic or jute.
- Digging – using a pulaski or shovel to remove entire plants.
- Grazing – using livestock (cattle, sheep, or goats) to reduce the above-ground portions of noxious weeds (may also be considered a biological control).

In general, hand pulling, cutting, and digging have relatively limited use in controlling noxious weed populations. These methods are very labor-intensive and not applicable to large areas. They do not reduce seeds in the soil or eliminate root systems, and some species may resprout after being cut or pulled. Because seeds of some species can remain viable for many years, other follow-up methods may be necessary to supplement manual methods. Although hand removal of weeds can be selective and minimize effects to surrounding vegetation, trampling damage and/or soil disturbance can sometimes be worse than that of mechanical methods.

Digging and cutting may be appropriate for eradicating sporadically occurring plants in small areas, in sensitive habitats, or near streams. Cutting can effectively control annual and biennial weeds, although the timing of this technique is critical. Hand pulling, which can also result in additional soil disturbance, may be the best method for weed control in landscaped areas around Project administrative sites. Solarizing can be effective at controlling noxious weed infestations in small areas that do not have aesthetic concerns or native plants that should be retained.

Grazing, particularly by cattle, has long been used to control infestations of noxious weeds over relatively large areas. In recent years, the use of goats for weed control has gained popularity because they are browsers, not grazers, and therefore eat a wide variety of forbs and shrubs, including knapweed and yellow starthistle. While goats do not compact the soil as do cattle, they need to be contained to effectively reduce weed populations, and thus require fencing and/or careful tending. They are also not selective and are best used to control dense infestations. Grazing does not reduce seeds in the soil or eliminate root systems, and some species may re-sprout.

Mechanical Methods

Mechanical methods of weed control may include, but are not limited to, the following:

- Cutting – using chainsaws and brush hogs to remove the branches and stems from noxious weeds that have woody stems and branches.
- Mowing –cutting noxious weeds by mowing with a rotary head attached to tractors or rubber-tired vehicles.
- Discing – using a tractor-pulled disc to blade and turn the soil.
- Steaming – using a Waipuna machine to apply hot water to kill noxious weeds.

Chainsaws and brush hogs can be effective tools for removing noxious weeds that are shrubs. They can be applied selectively, so damage to nearby desirable vegetation is minimized. They can also be used near water and result in minimal soil disturbance. However, these mechanical cutting methods have the same disadvantages as hand cutting—they do not reduce seed in the soil or eliminate roots, and are practical only in small areas. Mowers can be effective in controlling some noxious weed species over large areas if used at the appropriate time. Mowers, however, are non-selective, cannot be used on steep or rocky sites, do not kill roots, and may spread seeds.

Discing is also non-selective and limited by terrain and soil type. This method can be effective at killing roots and preventing resprouting for some species, but results in substantial soil disturbance and may spread rhizomes.

Hot water is a relatively new method of controlling noxious weeds in the United States. Hot water is applied with a Waipuna machine. The Waipuna machine can be used selectively but generally requires road access. Both the USDA-FS and USDI-BLM use this technique to control noxious weed infestations along roads.

Chemical Methods
The USDA-FS allows use of chlorsulfuron, clopyralid, glyphosate, imazapic, imazapyr, metsulfuron methyl, picloram, sethoxydim, sulfometuron methyl, and triclopyr. Mixtures of herbicide formulations containing three or less of these active ingredients may be applied where the sum of all individual Hazard Quotients for the relevant application scenarios is less than 1.0 (USDA-FS, 2005).

Application of any herbicides to treat invasive plants will be performed or directly supervised by a State or Federally licensed applicator. All treatment projects that involve the use of herbicides will develop and implement herbicide transportation and handling safety plans (USDA-FS, 2005).

In general, herbicides should be applied before plants set seed, and care must be taken to avoid spraying non-target species. Chemicals can be applied as spot treatments, in which the chemical is applied to individual plants or a small area by hand, using a squirt bottle, spray gun, backpack spray unit, or truck mounted sprayer with a handgun. Herbicide application to larger areas can be accomplished by broadcasting with a spray gun, broadcast nozzle, or boom attached to a truck, all-terrain vehicle (ATV), or tractor. Broadcast application should be limited to large, dense infestations where there is minimal risk of affecting non-target species. Shrubs, such as Scotch broom, can be treated by applying herbicide to a cut stem or to the base of the stem. Herbicide applications must follow label directions (includes rates, target species, application types, and personal protection equipment).

To minimize or eliminate direct or indirect negative effects to non-target plants, terrestrial animals, water quality and aquatic biota (including amphibians) from the application of herbicide, use site-specific soil characteristics, proximity to surface water and local water table depth to determine herbicide formulation, size of buffers needed, if any, and application method and timing. Consider herbicides registered for aquatic use where herbicide is likely to be delivered to surface waters (USDA-FS, 2005)

Biological Controls
PacifiCorp does not propose using biological controls during the license term.

4.3.2 Schedule

For the planned construction projects identified in Section 3.3.1, weed treatments will begin one growing season prior to ground-breaking and continue in the year of construction as species phenologies allow.

For unplanned construction projects (Section 3.3.2), weed treatments will begin as soon as possible within the year that the project is developed, following inspection, and prior to ground-breaking.

4.4 Prevention

Preventing establishment and spread is the most cost-effective means of managing noxious weeds. Preventing the establishment of noxious weeds will be one of the primary objectives of

any activity within the Project boundary that involves ground disturbance, erosion control, or maintenance.

Best management practices (BMPs) can be implemented to prevent the establishment and spread of noxious weeds during ground disturbance, erosion control, and maintenance activities. BMPs include the following:

- Training to encourage weed awareness and prevention efforts among Project and contractor staff (see Section 4.5);
- Planning and scheduling construction and maintenance activities;
- Ensuring that materials, including sediments (e.g., rock fill), are weed-free;
- Cleaning machinery and other equipment;
- Minimizing ground disturbance, particularly in riparian areas; and
- Revegetating after ground disturbing activities (see Section 5.0).

For Project-related activities, PacifiCorp will be responsible for implementing any and all appropriate BMPs to prevent the spread of noxious weeds within the Project boundary.

4.4.1 Planning and Scheduling

Minimizing the spread of noxious and invasive weeds by planning and scheduling is particularly applicable to vegetation clearance and erosion control activities, which are generally scheduled in advance. The noxious weed inventory map and GIS database will show the locations of known weed infestations relative to Project facilities. When possible, PacifiCorp will treat existing infestations before the maintenance activity occurs or perform work in and through noxious weed infestations prior to seed set or after dispersal.

Seed set times differ for the various noxious weed species in the Project boundary, and vary within species depending on elevation and aspect. Seed set time is not a factor for work performed in areas infested with species that spread mostly vegetatively. Approximate seed set times for some of the current priority species are as follows:

- Scotch broom species: June-July
- Spotted knapweed: July -September
- Diffuse knapweed: July-September
- English ivy: Spreads mostly vegetatively
- Himalayan blackberry: August-September
- Giant knotweed: Spreads mostly vegetatively
- Yellow starthistle: June-September

Seed set times of these species generally correspond to summer-fall, the same time period when most vegetation maintenance activities are scheduled. When possible, PacifiCorp will schedule specific maintenance activities to avoid the time of seed set, particularly for later blooming species, such as the two knapweeds and Himalayan blackberry. Alternatively, activities can be conducted with follow-up monitoring and early treatment to prevent establishment of new infestations.

The noxious weed inventory map will show the locations of infestations relative to ROW and facility access points (see maps in Exhibit G). Where possible, PacifiCorp will initiate vegetation maintenance activities in weed-free locations and work toward infested areas. This sequence will minimize the spread of weed seeds and/or rhizomes via equipment and vehicles. It is probably most applicable to vegetation maintenance projects that typically proceed in a linear fashion, such as side and under clearance activities along the transmission lines, and road and canal clearance.

4.4.2 Equipment and Vehicle Cleaning

The numerous weed infestations along roads indicate that disturbed habitats are easily colonized by weeds and that vehicles appear to be effective at transporting noxious weed seeds and plant parts. PacifiCorp will implement an equipment and vehicle cleaning program that will involve power spraying with water before and after working on Project lands in areas of known weed infestations. Equipment and vehicles that arrive from locations outside the general Project vicinity and/or that have been used off paved or gravel roads will be washed prior to accessing Project lands.

Contracts for vendors will stipulate that equipment brought onto the Project must be washed and be free of all dirt, mud, and plant parts.

4.4.3 Minimize Ground Disturbance

Since most noxious weeds are associated with disturbed areas, minimizing ground disturbance is key to preventing establishment. Project managers for PacifiCorp and contractors will prepare a plan for all construction and erosion control projects that stipulates the location and size of equipment storage pads, vehicle parking sites, and other areas expected to be cleared or disturbed. The estimated amount of disturbance and site characteristics will dictate how disturbance is managed (one concentrated site or several dispersed sites). In general, disturbance will be limited to sites that are as small and as contained as possible to accomplish the project at hand. To the extent possible, these sites will be placed in areas that have been disturbed previously. The removal of trees and other vegetation that provides shade will be minimized, where practical. Workers will be informed of the need to limit the extent of ground disturbance and vegetation clearance. Clearing limits will be identified and marked. Construction activity or movement of equipment into existing vegetated areas will not be initiated until clearing limits are marked. Because of the particular difficulty in controlling the establishment and spread of weeds along streams, alteration of stream banks and existing riparian vegetation will be minimized, to the extent possible.

4.5 Training

Project operations, construction, and maintenance activities are conducted by PacifiCorp and contractor staff that typically have little knowledge of noxious weeds. For the duration of the license period, PacifiCorp will design and implement a training program to educate Project staff and contractors on the need for and importance of noxious weed prevention. PacifiCorp's Environmental Coordinator will meet with Project operators, managers, and maintenance staff in

the first quarter of each year to review the noxious weed maps and BMPs for preventing the spread of weeds relative to any construction, erosion control, and maintenance activities.

5.0 REVEGETATION

Revegetation is an integral part of vegetation management, noxious weed prevention, and associated site restoration. It is also an aspect of Project maintenance, new construction, and erosion control. This section provides standards and guidelines for replanting and/or reseeding of disturbed areas resulting from operation and maintenance of the Project. The overall intent of revegetation is to prevent the establishment of weeds, enhance wildlife habitat, control erosion, improve aesthetics, and restore land health in the Project area.

5.1 Planning

The first step in the process of revegetation is to estimate the size of the disturbed site. As a general rule, revegetation of small sites (<0.25 acre) associated with routine O&M (e.g., landings for pole replacement) will involve seeding with a native species mix. Large sites (>0.25 acre) disturbed by more major O&M activities or Project-related construction will be revegetated using a combination of seeding and planting with native stock, and will require development of a site-specific revegetation plan. The revegetation plan will be prepared by PacifiCorp's environmental coordinator and/or qualified contract staff that have taken college-level courses in botany.

5.2 Implementation

The first step in preparing small sites disturbed by O&M activities for seeding is hand raking to reduce soil compaction and to uniformly rough the surface in preparation for seeding. If needed, the soil will be amended by applying and incorporating compost and/or sawdust or woodchips. Application of fertilizer may be appropriate on a site-specific basis, but should not be applied where there is potential for direct delivery into waterways.

5.2.1 Seeding

Seeding is one of the most common methods of reestablishing native plants because it is relatively cost effective. However, plant establishment from seed can take several years and be difficult, particularly if weeds are present on or near the site. Consequently, seeding appears to work best for small sites that are bordered by areas that can provide a source of native plants to aid in colonization.

Seed mixes will contain only species from genetic stock that meet the standards of the USDA-FS native vegetation management program. When possible, sites will be seeded at a time that takes advantage of natural moisture. Seeding success is greatly influenced by temperature and precipitation; germination is typically successful when temperatures are above freezing and precipitation is high. These conditions typically occur in the spring and fall, with the best times varying by site location. Overall, there needs to be adequate moisture and temperature conditions for seed germination and seedling growth and establishment.

There are three primary seeding methods: drilling, broadcasting, and hydroseeding. The best method depends on site accessibility and terrain, seedbed characteristics, and time of seeding. In developing the site-specific revegetation plan, PacifiCorp will coordinate with USDA-FS botanists to determine the most appropriate method for the site, as well as the appropriate seeding rate.

After seeding, most sites will benefit from a protective cover of mulch. Mulch protects the soil and seeds from wind and water erosion and conserves soil moisture. Mulch should be applied immediately after seeding to protect the seeds and not damage emerging seedlings.

Seed mixes will likely include blue wild rye, other native grasses, and several forb species. Mixes may vary from year to year, depending on seed availability. Several different mixes may be needed to meet the varying environmental conditions over the entire Project area. Seeding rates will likely vary from 10 to 20 lbs. /acre, depending on the species. It is expected that most small O&M sites will probably be seeded using the broadcast method.

5.2.2 Planting

Larger disturbed areas, erosion control/repair sites, and wetland restoration/enhancement sites may be replanted with trees, shrubs, and forbs, as appropriate to the location. These plant materials can be purchased as bare root and/or containerized stock but must be grown from seeds or cuttings from genetically appropriate native stock in accordance with the RR-SNF native plant program. For some sites, it may be possible to use salvaged plant materials (e.g., plants excavated with the root wad intact, cuttings, rhizome segments, etc.), which is preferable when possible. In developing site plans on the RR-SNF, PacifiCorp will coordinate with USDA-FS botanists to select the species to be planted, type of material (bare root or containerized), stocking rates, and most suitable planting time. Selected species will depend on site location, terrain, soils, and any associated needs for habitat enhancement or aesthetics.

Plant materials, whether bare root, containerized, or salvaged, should be handled as little as possible before transplanting. Planting holes can be made using mechanical or manual methods. To minimize labor, excavation time, and moisture loss, hole size should not be any larger than necessary to allow roots to contact the soil and approximately maintain their natural form.

5.3 Monitoring

Effectiveness monitoring will be conducted to determine the success of revegetation efforts or to identify problems that may need to be corrected. Revegetated sites will be revisited at least once during the year following replanting. Any bare areas will be replanted, erosion repaired, and weeds treated. Some areas, particularly those associated with erosion control/rehabilitation and wetland enhancement/restoration, may require longer-term and more intensive monitoring to ensure success. A long-term monitoring program, if needed, will be included in the site-specific revegetation plan to be developed by PacifiCorp (in coordination with the USDA-FS when implemented on RR-SNF lands). Monitoring programs will include quantitative objectives for plant survival and cover, and weed and erosion control over a 3-year period. Monitoring

techniques may include transects to record plant cover, plot frames to record plant density, and/or photo points.

Potential problems that can affect a revegetation project after initial planting include the following:

- The establishment of noxious weeds or other non-native invasive species.
- Foraging by wildlife, which may affect plant survival or growth.
- Erosion that damages plant materials and/or removes substantial amounts of soil.
- Flooding, windstorm, hail, etc. that severely damage plants or remove soil.
- Failure or lack of vigor in introduced plantings.
- Unexpected successional changes that shift species composition or abundance.
- Unfavorable amounts of moisture (too little, too much, or wrong time of year).
- Mulch layers that are too thick and inhibit seed germination.

6.0 SPECIAL-STATUS SPECIES

Eight special status species and three other species of interest sites were located during relicensing studies. These sites, with the exception of the one site of *Leptogium rivale* (S/M Category E), were found on forested slopes away from project facilities by at least thirty meters distance. The *Leptogium rivale* site was found on bedrock and large boulders in the bed of the South Fork Rogue River downstream of South Fork Dam and appears robust and healthy. Since the Project operates in run-of-river mode, mostly natural flow levels and fluctuations go through the *Leptogium rivale* population area; operation as normal may therefore have no effect on this population. No sites were found on or alongside roads that were actively maintained and used.

The sites found on forested slopes, including those associated with abandoned roads, do not appear to be affected by any current Project-related activities. The proposed routes of the new flowline and sag pipe segments also do not come within close proximity to any Special Status Species sites. No Special Status Species sites were found near the primary proposed staging area for flowline construction at the north end of the flowline junction with the canal at the end of the spur road on PacifiCorp property approximately 1,000 feet east of Imnaha Road. Construction and related disturbances of this staging area should have no effect on any of the known Special Status Species site locations.

Project O&M, new construction, and/or forest management activities, such as logging or fuels reduction, can be conducted with minimal or no negative effects on Special Status Species sites if the sites are buffered from such activities.

6.1 Buffer Zones

PacifiCorp will establish buffer zones with a radius of 100 feet around each of the special status species and other species of concern sites, with the exception of the *Leptogium rivale* site within the South Fork Rogue River bypassed reach. New construction and/or general vegetation management will be restricted within the buffer zone. Light vegetation removal, such as fuels reduction, can occur within this buffer during the correct time of year when the associated special status species population is not producing sporocarps, if the slash is subsequently

removed to be burnt or otherwise disposed of outside of the buffer. Maintenance of existing Project roads, including ditch-lines, will not be restricted in the buffer zone, but the travelled way will not be expanded through disturbance of adjacent road-cuts within buffer zones. The buffer zones are indicated in the map set presented in Appendix A.

6.2 Training

Project operations, construction, and maintenance activities are conducted by PacifiCorp and contract staff who typically have limited exposure to special status botanical species. For the duration of the license period, PacifiCorp will design and implement a training program to educate Project staff and contractors on the need for and importance of special status species buffers. PacifiCorp's Environmental Coordinator will meet with Project operators, managers, and maintenance staff in the first quarter of each year to review the buffer zone locations and planned maintenance for the year.

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APPENDIX A: MAP SET

HIGHWAY 62

NYE DITCH

MILL CREEK DRIVE

MILL CREEK DRIVE

CYSC4

ROGUE RIVER

PACIFICORP

Prospect No. 3 Hydroelectric Project (FERC Project No. P-2337) Vegetation Management Plan August 2016

0 200 400 800 Feet

Legend

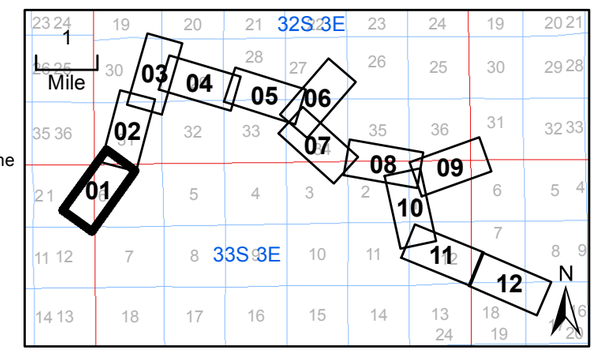
FERC Project Boundary
- PROSPECT 3
- PROSPECT 1, 2 & 4
- Project Facilities

Federal Ownership
- BLM
- FS
- Non-PacifiCorp Road
- PacifiCorp Road
- Topographic Contours (40')
- Stream

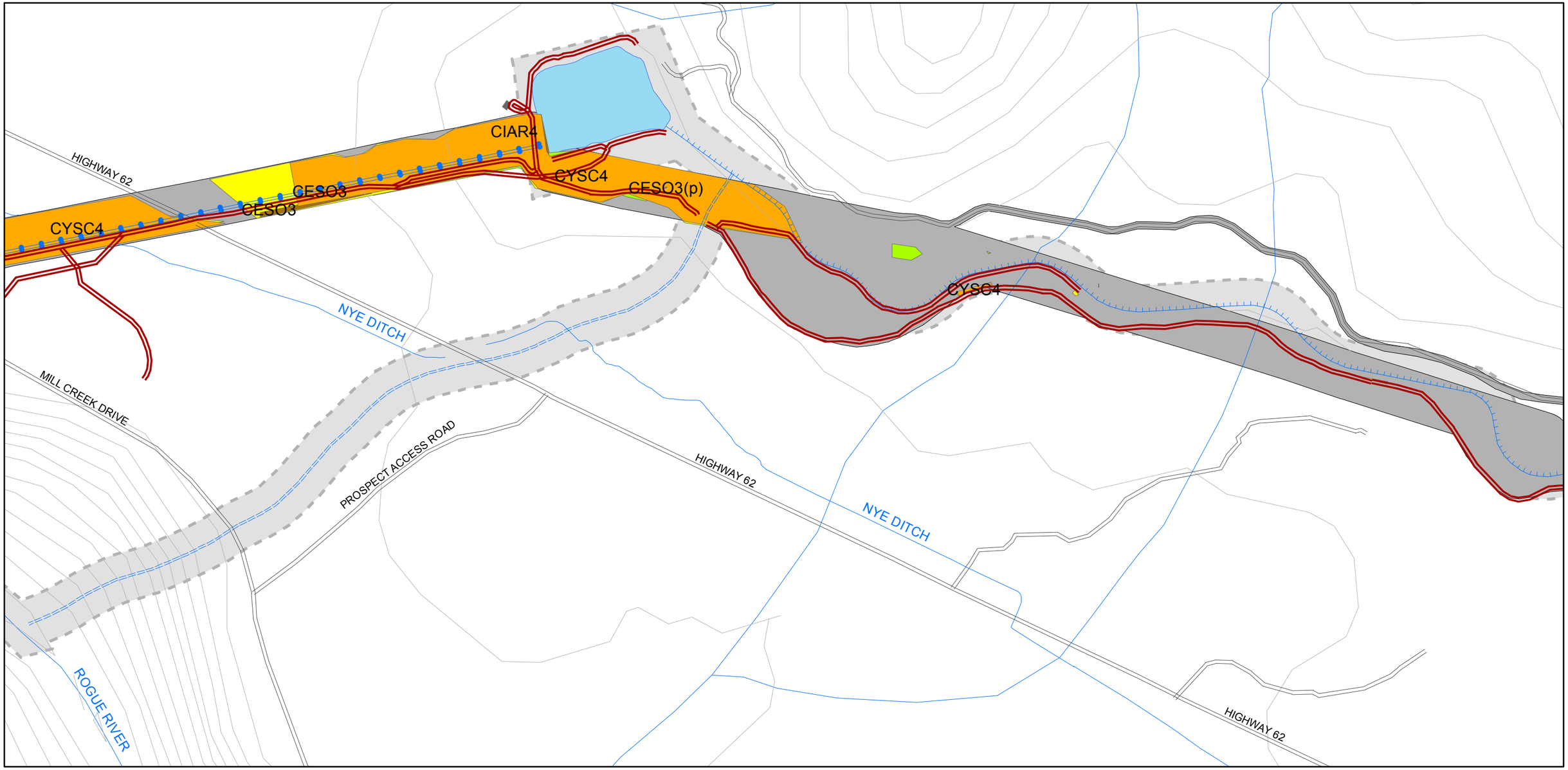
Project Waterway Type
- Elevated Steel or Wood
- Forebay
- Open Canal
- Overflow
- Penstock
- Route
- Tunnel

Noxious Weeds
- CEPR2
- CESO3
- CIAR4
- CYSC4
- LALA4
- PHAR3
- RUAR9
- TACA8

- SpecialStatusSpecies2
- Special Status Species Buffer Zone
- Other Species of Interest
- Other Species of Interest Buffer Zone



Map Sheet 01



PACIFICORP

Prospect No. 3 Hydroelectric Project (FERC Project No. P-2337) Vegetation Management Plan August 2016

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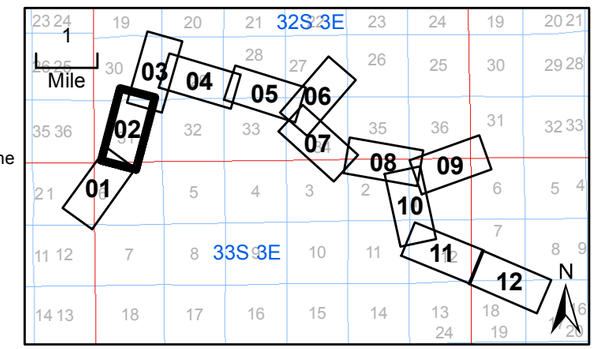
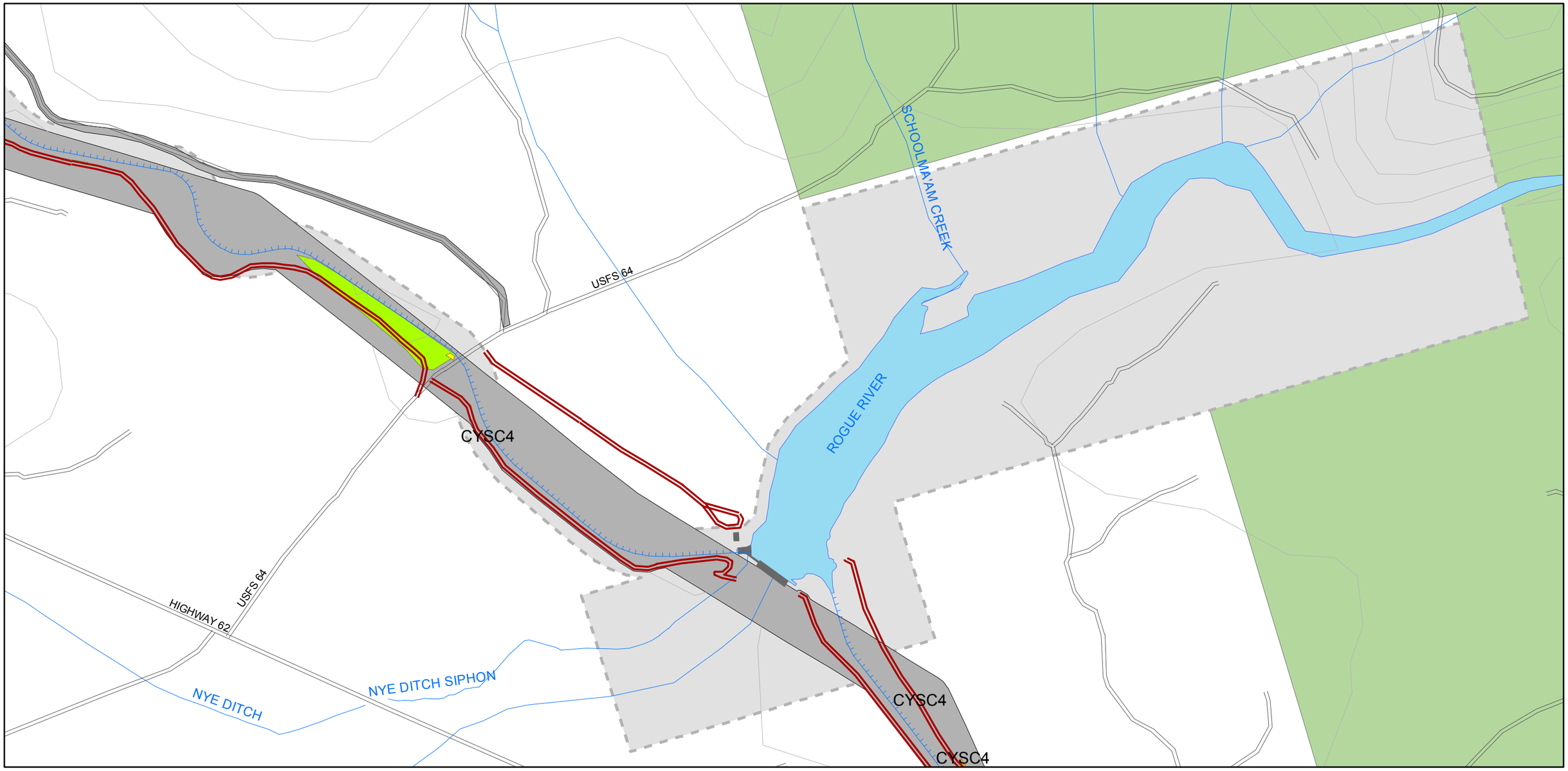


Map Sheet 02



PACIFICORP

Prospect No. 3 Hydroelectric Project (FERC Project No. P-2337) Vegetation Management Plan August 2016

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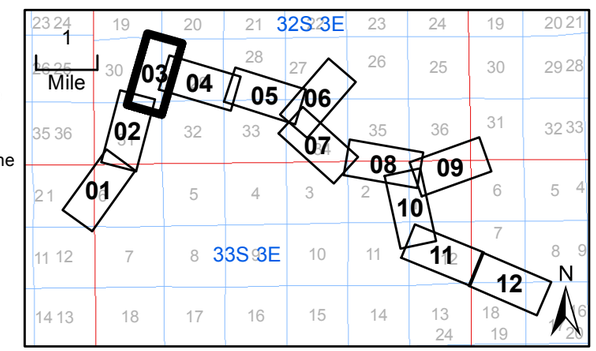

Map Sheet 03

CYSC4
CYSC4
CIAR4
CYSC4
CYSC4
CYSC4
CYSC4
CYSC4
CYSC4
CYSC4
COOL CREEK
MILL CREEK
MILL CREEK DRIVE
HIGHWAY 62
1st STREET
NYE DITCH SIPHON
ROGUE RIVER
HIGHWAY 62
BUTTE FALLS-PROPSECT HIGHWAY

PACIFICORP

Prospect No. 3 Hydroelectric Project (FERC Project No. P-2337) Vegetation Management Plan August 2016

0 200 400 800 Feet

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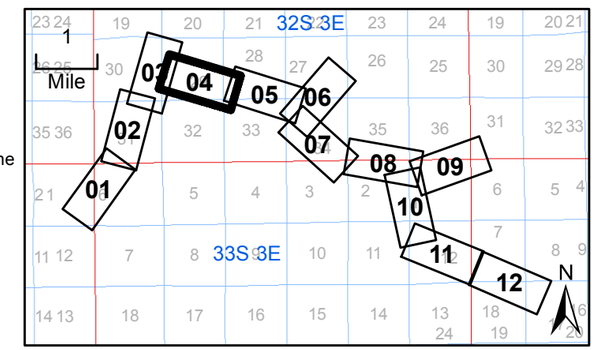
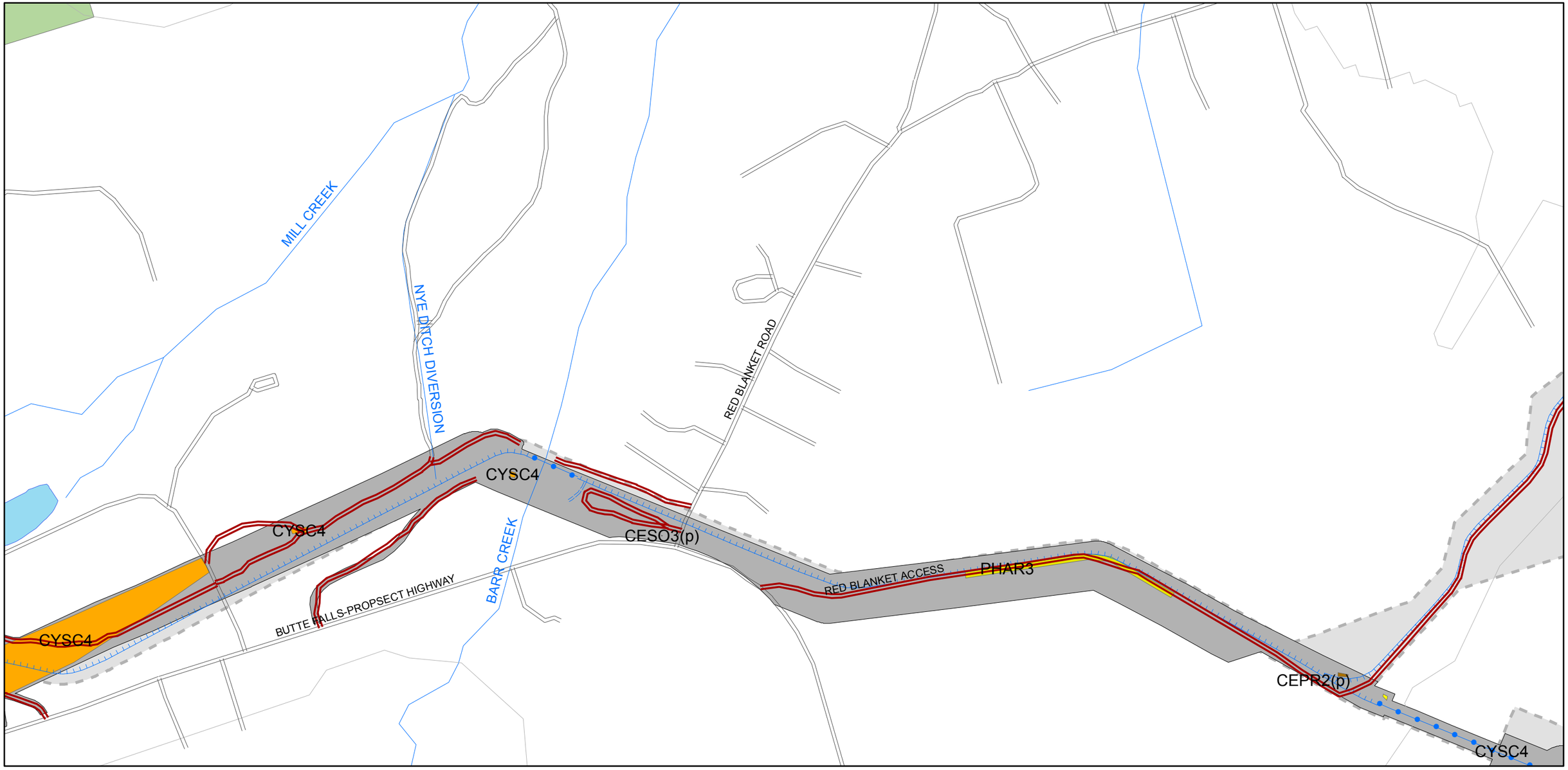


Map Sheet 04



PACIFICORP

Prospect No. 3 Hydroelectric Project (FERC Project No. P-2337) Vegetation Management Plan August 2016

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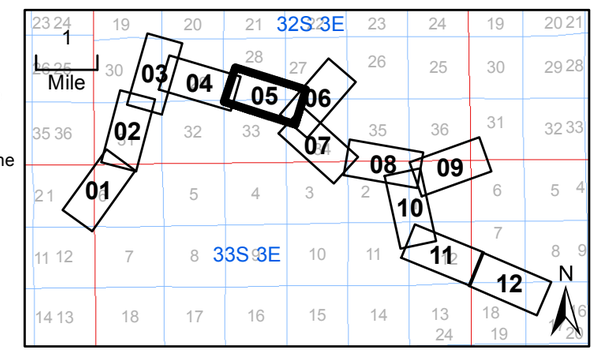

Map Sheet 05

CEPR2(p)

RED BLANKET ACCESS

RED BLANKET ACCESS

CYSC4

CIAR4

CIAR4

CIAR4

PHAR3

CIAR4

RED BLANKET CREEK

PACIFICORP

Prospect No. 3 Hydroelectric Project (FERC Project No. P-2337) Vegetation Management Plan August 2016

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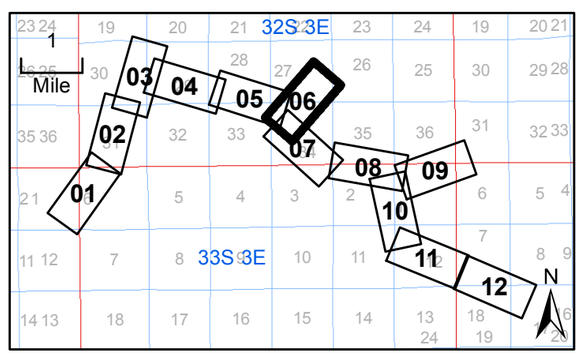
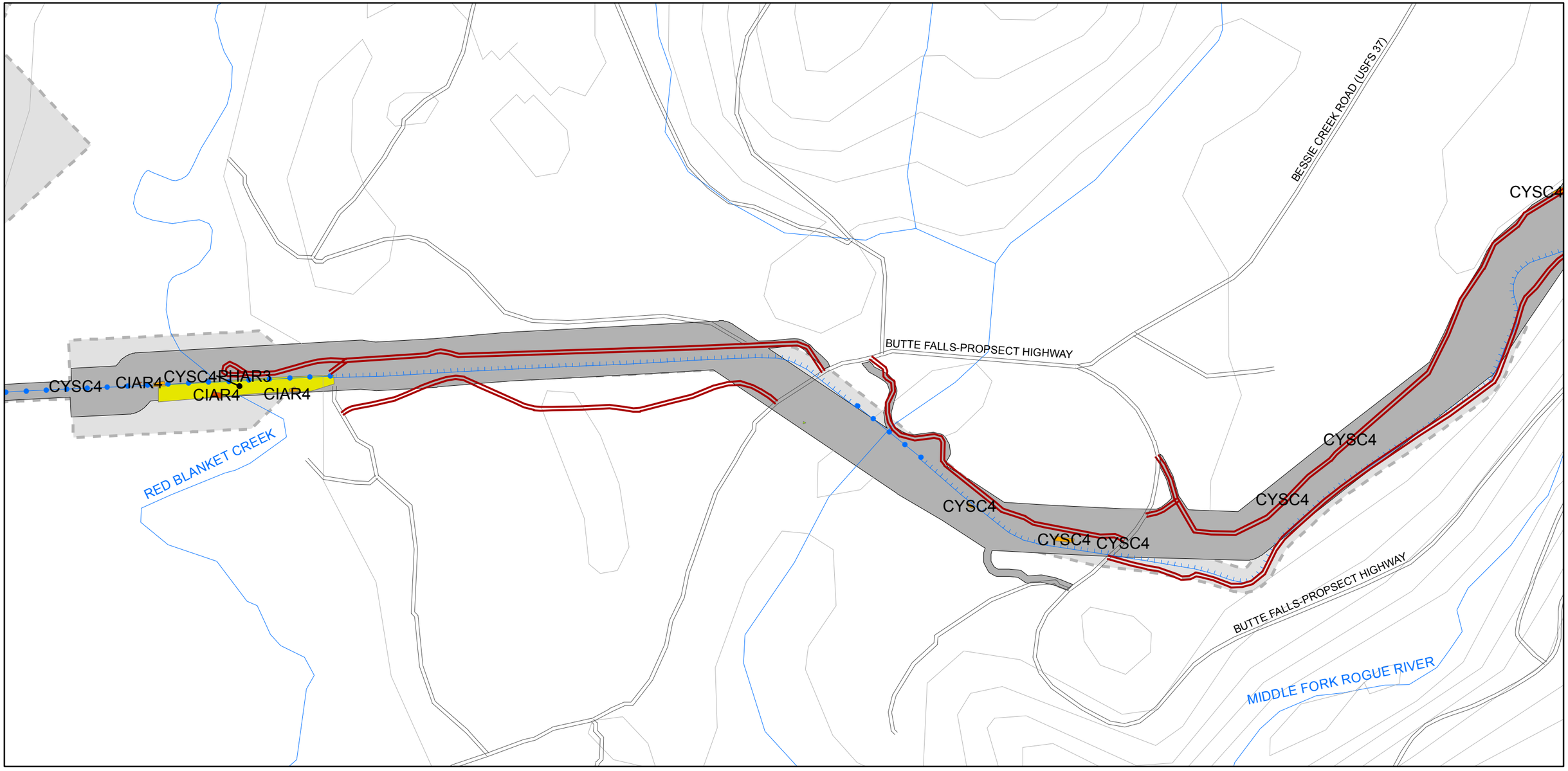


Map Sheet 06



PACIFICORP

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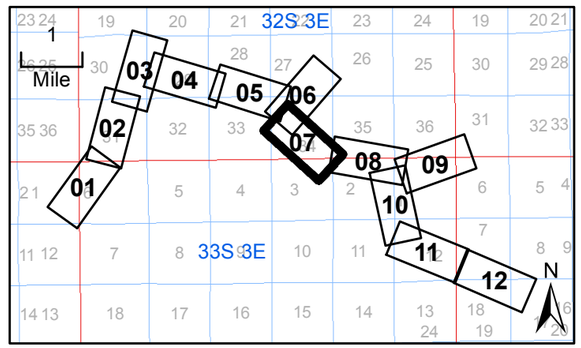

Map Sheet 07

BESSIE CREEK ROAD (USFS 37)

BESSIE CREEK ROAD (USFS 37)

BESSIE CREEK ROAD (USFS 37)

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

CYSC4

BUTTE FALLS-PROPSECT HIGHWAY

MIDDLE FORK ROGUE RIVER

MIDDLE FORK ROGUE RIVER

PACIFICORP

Prospect No. 3 Hydroelectric Project (FERC Project No. P-2337) Vegetation Management Plan August 2016

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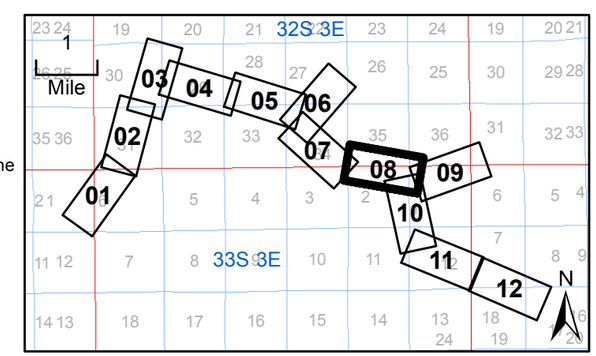
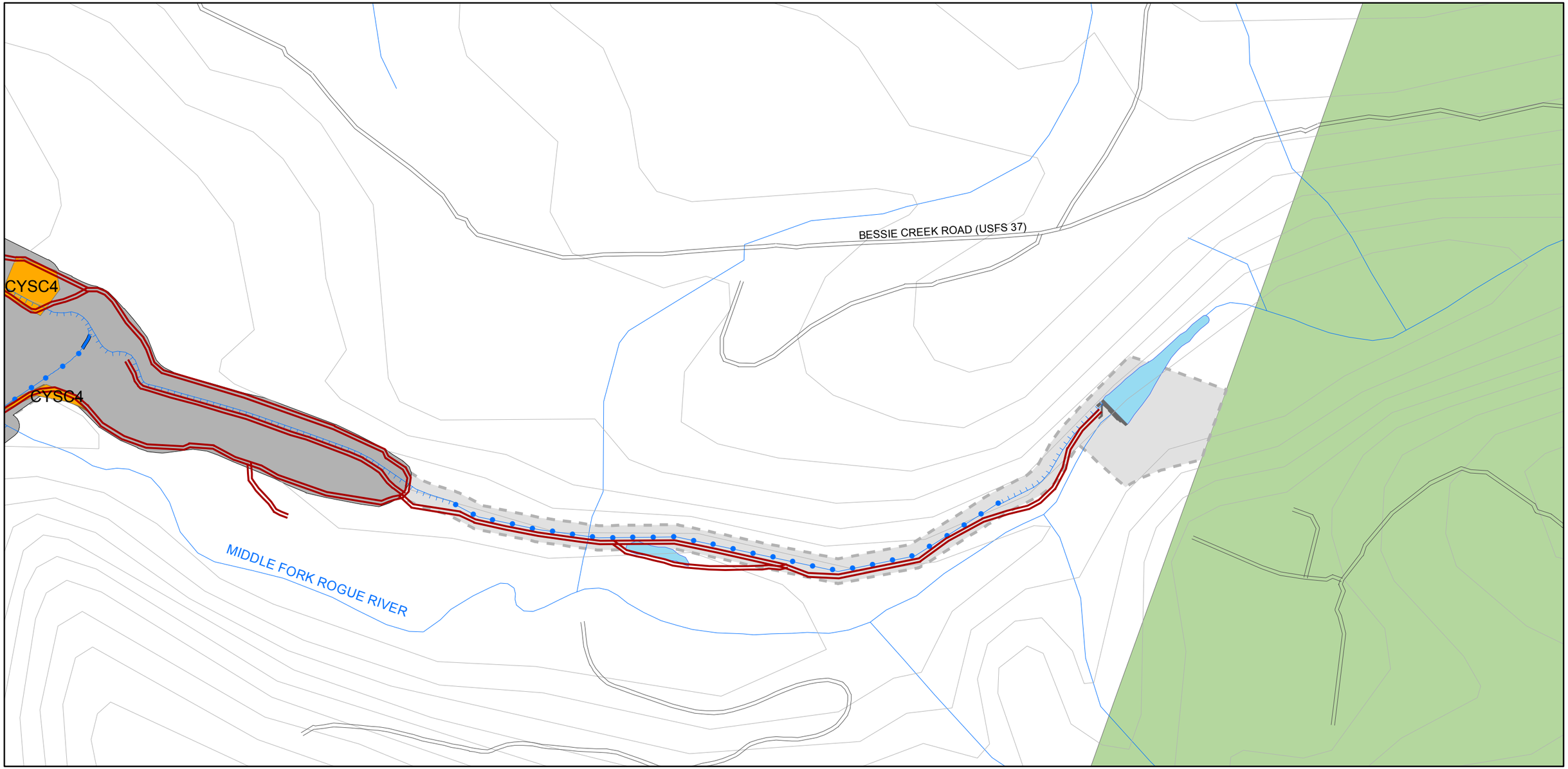


Map Sheet 08



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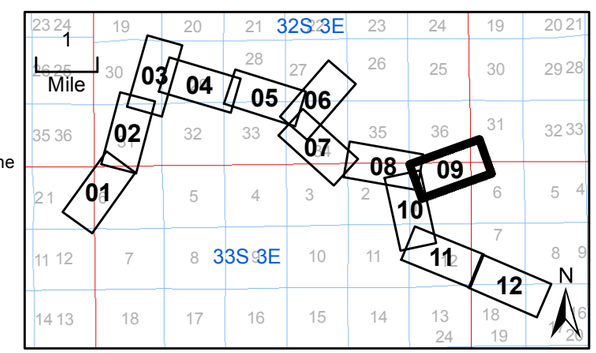
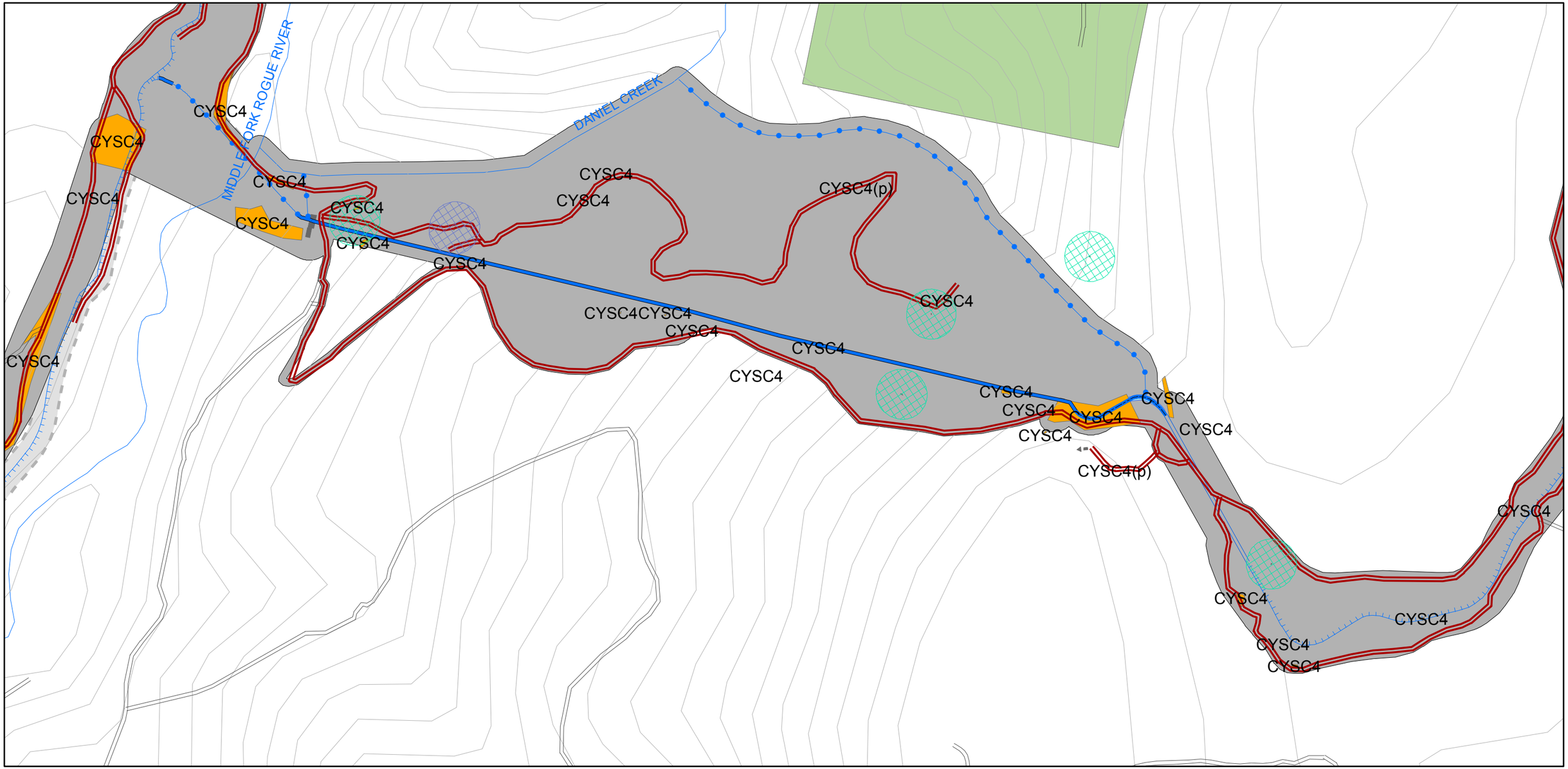


Map Sheet 09



PACIFICORP

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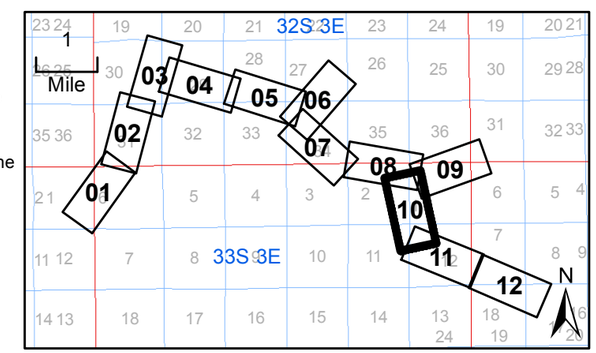

Map Sheet 10

CYSC4

IMNAHA ROAD

CYSC4(p)

CYSC4(p)

CYSC4(p)

USFS 3775800

CYSC4

CYSC4

IMNAHA ROAD

SOUTH FORK ROGUE RIVER

PACIFICORP

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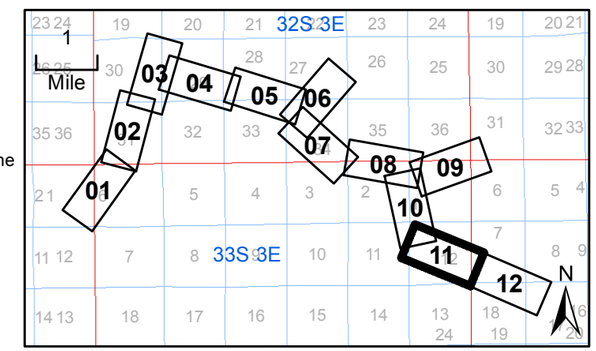

Map Sheet 11

CYSC4(p)

USFS 3775800

IMNAHA CREEK

SOUTH FORK ROGUE RIVER

PACIFICORP

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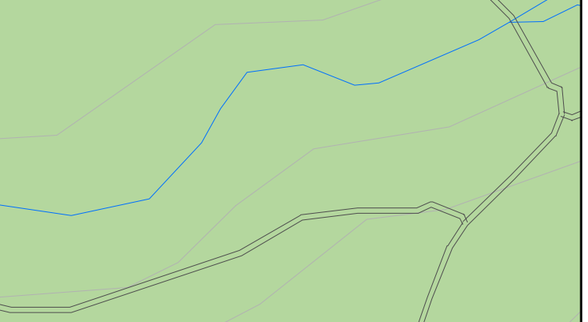

Map Sheet 12

APPENDIX D. HISTORIC PROPERTIES MANAGEMENT PLAN

Prospect No. 3 Hydroelectric Project
Federal Energy Regulatory Commission (FERC)
Project No. P-2337 Historic Properties Management Plan

Submitted to:

PACIFICORP
A BERKSHIRE HATHAWAY ENERGY COMPANY

Submitted by:
Historical Research Associates, Inc.
Natalie K. Perrin, MS
Sara Davis, MA

Portland, Oregon
December 2016

HISTORICAL
RESEARCH
ASSOCIATES, INC.

This report was prepared by HRA Principal Investigator Sara J. Davis, MA, and Natalie K. Perrin, MS, who meet the Secretary of the Interior's professional qualifications standards for archaeology and architectural history, respectively. This report is intended for the exclusive use of the Client and its representatives. It contains professional conclusions and recommendations concerning the potential for project-related impacts to archaeological resources based on the results of HRA's investigation. It should not be considered to constitute project clearance with regard to the treatment of cultural resources or permission to proceed with the project described in lieu of review by the appropriate reviewing or permitting agency. This report should be submitted to the appropriate state and local review agencies for their comments prior to the commencement of the project.

STATEMENT OF CONCURRENCE
WITH THE
PROSPECT NO. 3 HYDROELECTRIC PROJECT
HISTORIC PROPERTIES MANAGEMENT PLAN

WHEREAS, the Federal Energy Regulatory Commission or its staff (hereinafter, "FERC") issued a new license to PacifiCorp to continue operating the Prospect No. 3 Hydroelectric Project FERC No. 2337 (hereinafter, "Project") as authorized by Part I of the Federal Power Act, 16 U.S.C. Sections 791 (a) through 825 (r) as amended; and

WHEREAS, FERC has determined that the ongoing operation of the Project may affect properties included in or eligible for inclusion in the National Register of Historic Places (hereinafter, "Historic Properties"); and

WHEREAS, a portion of the Project lies on U.S. Department of Agriculture Forest Service (USDA-FS) lands, and PacifiCorp operates portions of the Prospect No. 3 Hydroelectric Project on lands under USDA-FS jurisdiction with certain stipulations; and

WHEREAS, PacifiCorp has consulted with the Oregon State Historic Preservation Officer (hereinafter, "SHPO") pursuant to 36 CFR §800.13 of the Advisory Council on Historic Preservation's regulations (36 CFR Part 800), implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470F; hereinafter, "Section 106"); and

WHEREAS, the Settlement Agreement for the Prospect No. 3 Hydroelectric Project (hereinafter, "SA") stipulates that PacifiCorp will prepare a Historic Properties Management Plan (hereinafter "HPMP") defining measures to address its effects on Historic Properties within the Area of Potential Effects (hereinafter "APE"); and

WHEREAS, the USDA-FS and the Cow Creek Band of Umpqua Tribe of Indians, the Confederated Tribes of Grand Ronde, and the Confederated Tribes of the Siletz Indians were invited to participate in the consultation of the Programmatic Agreement (hereinafter "PA"), which stipulates that PacifiCorp will implement an HPMP defining measures to address its effects on Historic Properties within the APE; and

WHEREAS, FERC and the SHPO agree that PacifiCorp will administer the Project in accordance with the stipulations of the PA to satisfy FERC's Section 106 responsibilities during the term of the new license and as a condition of issuing a new license for the Project; and

WHEREAS, Article 414 of the FERC Order issuing a new license for the Prospect No. 3 Project stipulates that the licensee shall implement the PA and a HPMP for the Project; and

WHEREAS, PacifiCorp and the USDA-FS have actively participated in the consultation regarding this Project and have reviewed and agreed upon the provisions contained in this HPMP, which follows FERC's guidelines for managing historic properties; and

NOW THERFORE, PacifiCorp, the USDA-FS, and the SHPO agree that the Project will be administered during the period of the new license in accordance with this HPMP to satisfy FERC's Section 106 responsibilities.

Steve Albertelli, Relicensing Program Manager **PacifiCorp**	**Date**
Rob MacWhorter, Forest Supervisor **USDA Forest Service, Rogue River-Siskiyou**	**Date**
Christine Curran, Deputy Oregon State Historic Preservation Officer **Oregon State Historic Preservation Office**	**Date**

Overview and Executive Summary

PacifiCorp is seeking a new operating license from the Federal Energy Regulatory Commission (FERC) to continue operating its existing Prospect No. 3 Hydroelectric Project (Project), FERC Project No. P-2337. The Project is located on the South Fork Rogue River in Jackson County, near the community of Prospect, Oregon. The Project consists of the South Fork Diversion Dam, waterways, the Forebay, the Forebay Spillway, a Penstock, the Prospect No. 3 Powerhouse (Powerhouse), sag-pipe, supporting structures, and a transmission line with 141 structures. These facilities are all extant, and no new facilities are planned, though several existing facilities are proposed for replacement during the new license term.

The current license, issued in 1989 for a period of 30 years, will expire on December 31, 2018. The issuance of a new license by FERC constitutes a federal undertaking subject to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulations, 36 CFR 800. In accordance with Section 106 regulations, PacifiCorp consulted with the Oregon State Historic Preservation Office (SHPO), the Rogue River-Siskiyou National Forest (RR-SNF), and affected Native American Tribes including the Confederated Tribes of Grand Ronde, Confederated Tribes of Siletz Indians, and the Cow Creek Band of Umpqua Tribe of Indians (collectively, the Stakeholders). For hydropower licensing undertakings where historic properties are present, FERC typically completes Section 106 by entering into a Programmatic Agreement (PA) with the SHPO, applicant, and other appropriate stakeholders. Because it is not possible for FERC to determine all of the effects of every Project activity over the course of the new license, FERC requires a license applicant to develop and implement a Historic Properties Management Plan (HPMP) under the license terms and PA stipulations. The PA and HPMP are enforceable for the entire term of the new license.

PacifiCorp defined an area of potential effects (APE) for the Project and conducted a cultural resource survey to identify historic properties within the APE. Following completion of the inventory process, PacifiCorp evaluated identified properties to the extent feasible to determine whether they met the eligibility criteria for listing in the National Register of Historic Places (NRHP) (defined in 36 CFR 60.4). The results of those investigations were presented to the Stakeholders in the Updated Cultural Resource Study Report for the Prospect No. 3 Hydroelectric Project (Davis and Perrin 2016), and included results of the survey of the 376-acre APE; identification of five archaeological resources, including two isolates and three sites (35JA122, 35JA927, and 35JA928); and a recommendation that the Project is eligible for the NRHP as part of the Prospect Hydroelectric Project Historic District. The SHPO has concurred with this recommendation.

As a result of the relicensing effort and cultural resource survey, an HPMP was drafted to address the results of the survey and manage historic properties during the term of the license. The HPMP addresses management of both known historic properties and the potential to identify previously undocumented historic properties. By means of an approved HPMP, FERC requires consideration and appropriate management of effects on historic properties throughout the term of the license, thereby meeting the requirements of Section 106 for its undertakings.

The relicensing of the Project will have no effect on the characteristics that make the Project eligible for listing in the NRHP; however, modifications anticipated by PacifiCorp during the new license period have the potential to affect historic properties. This HPMP provides procedures for considering and managing effects upon historic properties resulting from activities associated with the construction, operation, and maintenance of the Project, and establishes a decision making process for considering potential effects upon historic properties early in project planning.

The purpose of this document is to provide guidance to PacifiCorp on the maintenance and operations of historic properties located within the boundaries of the Project. It is intended for use by management and staff in coordination with PacifiCorp's HPMP coordinator, and provides procedures and protocols for continued consultation with Stakeholders. The HPMP includes five chapters. Chapter 1 provides introductory information on the history and regulatory context of the Project. Chapter 2 provides background information into the environmental and cultural context of the APE, as well as previous survey and inventory efforts and a list of known historic properties within the APE. Chapter 3 includes project management and preservation goals and priorities. Chapter 4 defines known project effects anticipated over the course of the license, as well as mitigation and management measures. Chapter 5 includes implementation procedures.

Table of Contents

List of Figures

List of Tables

ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
ARPA	Archaeological Resources Protection Act
B.P.	years before present
CCS	cryptocrystalline silicate
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIS	Commission on Indian Services
CMU	concrete masonry unit
COPCO	California Oregon Power Company
CRA	Cultural Resources Analyst
FERC	Federal Energy Regulatory Commission
FMR	fire-modified rock
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HPMP	Historic Properties Management Plan
HRA	Historical Research Associates, Inc.
ILP	Integrated Licensing Process
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
ORS	Oregon Revised Statutes
PA	Programmatic Agreement

Project	Prospect No. 3 Hydroelectric Project
QTU(s)	quarter test unit(s)
RR-SNF	Rogue River-Siskiyou National Forest
SHPO	State Historic Preservation Officer
TCP	Traditional Cultural Property
TU(s)	test unit(s)
U.S.C.	United States Code
USDI	U.S. Department of the Interior
USFS	United States Department of Agriculture, Forest Service

1. Introduction

PacifiCorp is seeking a new operating license from the Federal Energy Regulatory Commission (FERC) to continue operating its existing Prospect No. 3 Hydroelectric Project (Project), FERC Project No. P-2337. The Project is located on the South Fork Rogue River in Jackson County, near the community of Prospect, Oregon (Figures 1-1 and 1-2). The Project consists of the South Fork Diversion Dam, waterways, the Forebay, the Forebay Spillway, a Penstock, the Prospect No. 3 Powerhouse (Powerhouse), sag-pipe, supporting structures, and a transmission line with 141 structures. These facilities are all extant, and no new facilities are planned, though several existing facilities are proposed for replacement during the new license term.[1]

As a result of the relicensing effort, a cultural resources survey was conducted and this Historic Properties Management Plan (HPMP) was drafted to address the results of the survey and manage historic properties during the term of the license. This HPMP addresses management of known historic properties and the processes to identify and manage previously undocumented historic properties.

1.1 History of the Project License

The Project facilities were primarily built in 1931 by the California Oregon Power Company (COPCO). The original Prospect No. 3 Project held two separate licenses from the Federal Power Commission (which became FERC in 1977); one project was licensed for 50 years and one was licensed for 30 years. COPCO merged with Pacific Power and Light in 1961, and the Project was consolidated into one license in 1964. The 1964 license was issued for 25 years. A new license was issued in 1989 for a period of 30 years. That license, which is current, will expire on December 31, 2018.

1.2 Regulatory Context

PacifiCorp elected to use FERC's Integrated Licensing Process (ILP) (18 CFR 5). As part of the ILP (18 CFR 5.11, 5.12, and 5.13), a study plan for cultural resources was developed, reviewed by consulting parties, revised (Ragsdale et al. 2014), and approved by FERC's study plan determination

[1] The Project partially overlaps the FERC boundary for the Prospect Nos. 1, 2, and 4 Hydroelectric Project (FERC Project No. P-2630) (Figure 1-2). Cultural resource studies were conducted for the relicensing of the Prospect Nos. 1, 2, and 4 Project in 2000 (PacifiCorp 2002, 2003), and that project was issued a new license in 2008. Resources related to the Prospect Nos. 1, 2, and 4 Project are eligible for the National Register of Historic Places (NRHP) as a historic district, with a period of significance of 1911–1944 (Oregon Historic Sites Database [OHSD] 2011; Perrin and Miller 2013).

on May 27, 2014. PacifiCorp contracted with Historical Research Associates, Inc. (HRA), to complete the cultural resource studies for the Project. An Updated Study Report was provided pursuant to 18 CFR 5.15 (Conduct of Studies) of the ILP in May 2016 (Davis and Perrin 2016).

As the Project requires a new license from FERC, a cultural resource survey was completed to satisfy the requirements of Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulations, 36 CFR 800. The cultural resource survey for the new license was conducted in compliance with Oregon state laws concerning historic properties and following the guidelines of the Oregon State Historic Preservation Office (Oregon SHPO 2011, 2013, 2015).

1.3 Area of Potential Effects

The area of potential effects (APE) for the Project is the FERC project boundary (Figures 1-1 and 1-2). The FERC Project boundary for the previous license term, which expires December 31, 2018, occupied a total of 336.7 acres, of which approximately 38.1 acres are lands of the United States administered by the U.S. Forest Service (USFS) (Figure 1-3). PacifiCorp proposed to revise the Project boundary under the new license term to include critical access routes and exclude areas outside of Project influence. The revised Project boundary occupies a total of 376.2 acres, of which approximately 52.5 acres are lands of the United States administered by the U.S. Forest Service. The identified APE is approximately 376 acres.[2]

The Prospect No. 3 Hydroelectric Project is located on private land owned by PacifiCorp and on federal land managed by the USFS (presently administered as the Rogue River-Siskiyou National Forest [RR-SNF]). The Project waterworks extend from the South Fork Diversion Dam on the South Fork Rogue River to the sag-pipe over the Middle Fork Rogue River, which routes flows from the Powerhouse tailrace to the Middle Fork Canal of the Prospect Nos. 1, 2, and 4 Hydroelectric Project. The Project transmission line then continues in a westerly direction, crossing Red Blanket Creek, Barr Creek, Mill Creek, and the North Fork Rogue River Reservoir just north of the community of Prospect before heading southwest to the Prospect Central Substation.

[2] At this time, no comments have been received from the consulting tribes as to the nature of the identified APE.

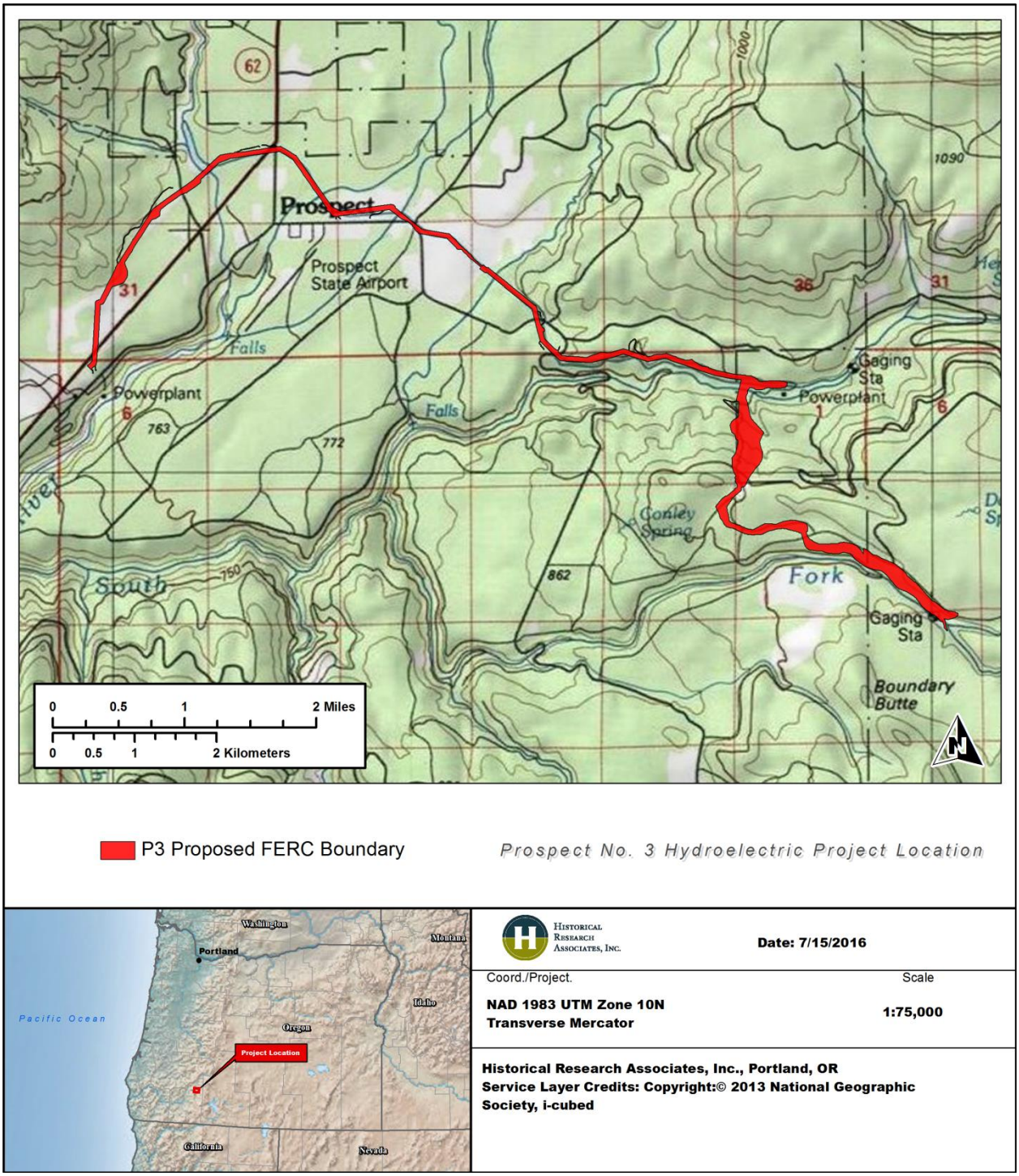

Figure 1-1. Location of the Prospect No. 3 Hydroelectric Project Proposed FERC Boundary, which is the Project APE.

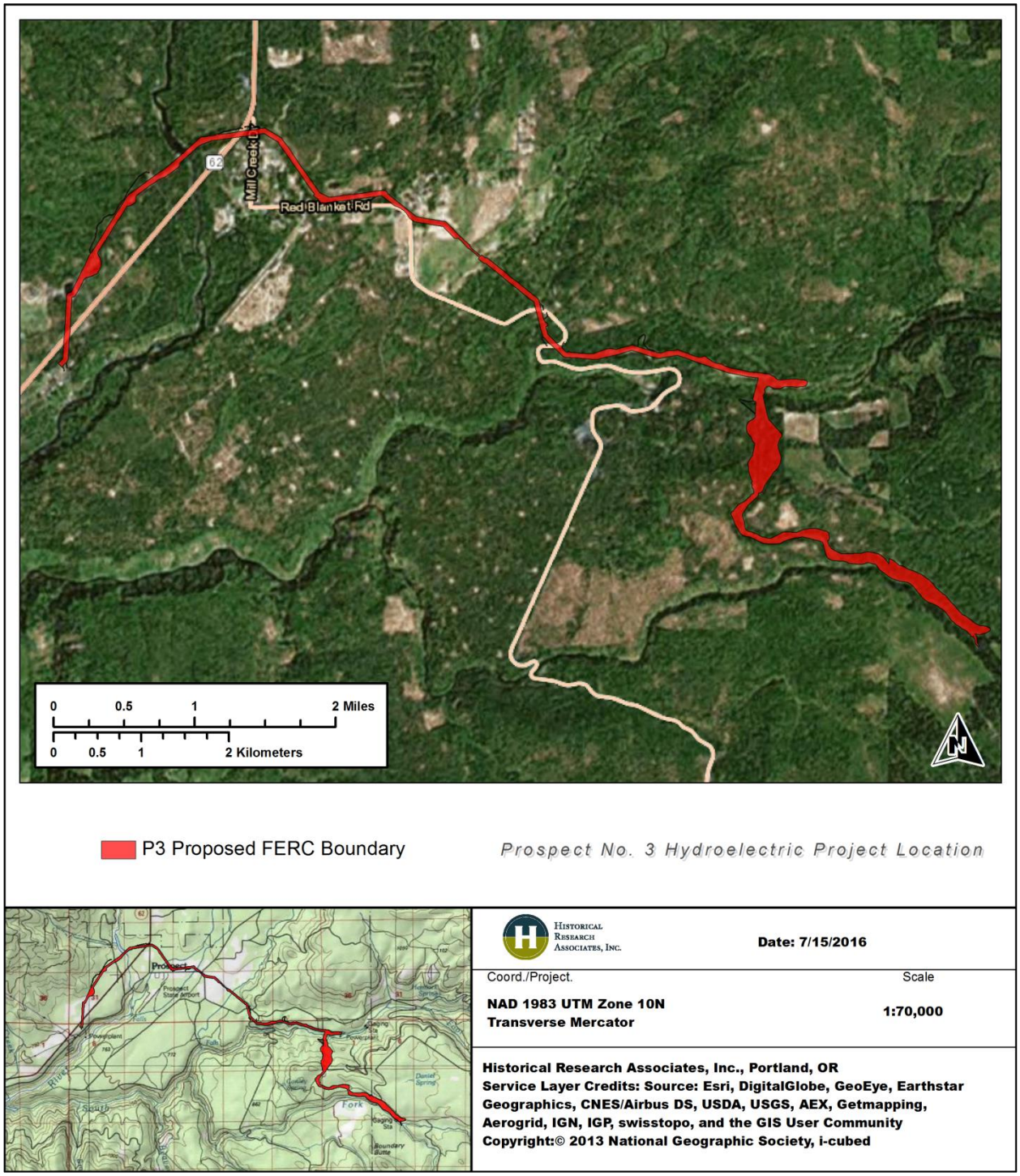

Figure 1-2. Location of the Prospect No. 3 Hydroelectric Project Proposed FERC Boundary, which is the Project APE.

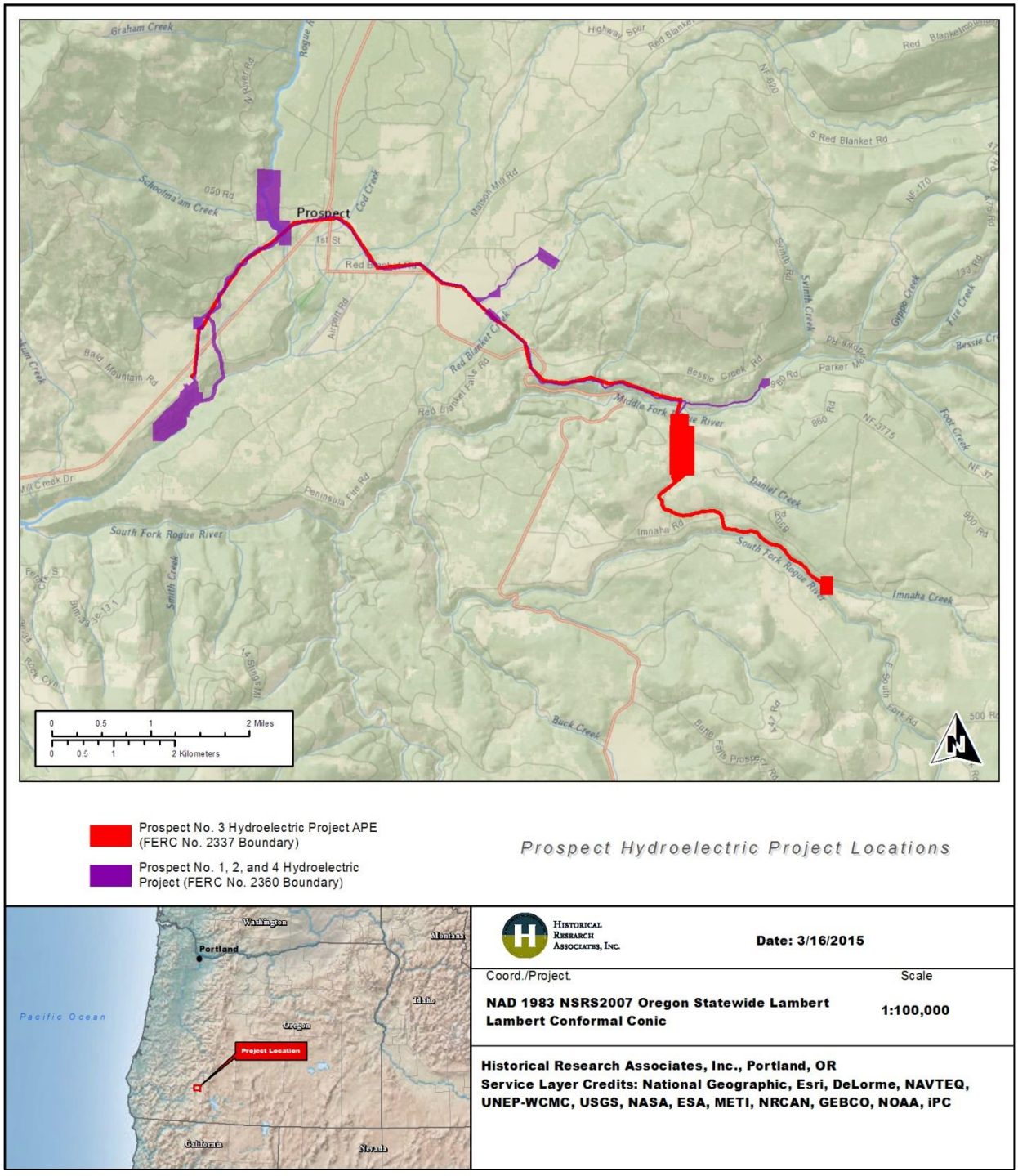

Figure 1-3. Location of the previous Prospect No. 3 Hydroelectric Project FERC Boundary (license to expire December 31, 2018) and the Prospect Nos.1, 2, and 4 Hydroelectric Project.

1.4 Purpose and Intent

PacifiCorp has prepared this HPMP in accordance with FERC "Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects," adopted in 2002. The HPMP is a management tool to facilitate responsible stewardship of historic properties, defined as those properties eligible for listing in the National Register of Historic Places (NRHP) and protected under Section 106 of the NHPA and other federal and tribal regulations. More specifically, the HPMP is an implementation tool to be used to guide the preservation of historic properties through measures such as avoidance, data gathering, recovery, monitoring, and funding historic property programs in the Project vicinity. This HPMP will guide the protection of these resources throughout the term of the new license beginning in 2019.

1.5 National Register of Historic Places

NRHP guidance for eligibility states that "the quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of significant persons in our past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded or may be likely to yield information important in history or prehistory" (National Park Service 1997:2).

These criteria outline the basis for evaluation of historic properties. In addition, the NRHP outlines the following Criteria Considerations:

a. a religious property deriving primary significance from architectural or artistic distinction or historical importance; or

b. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

c. a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or

d. a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events; or

e. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,

g. a property achieving significance within the past 50 years if it is of exceptional importance.

For a district, site, building, structure, or object to qualify for the NRHP it must meet one of the National Register evaluation criteria by being associated with a significant historic context and by retaining integrity of those features necessary to convey its significance.

2. Background Information

2.1 Environmental Context

The Project is within the Western Cascades physiographic province in the Cascade Mountain Range of western Oregon (Franklin and Dyrness 1988; Orr and Orr 2000:141). The Cascade Mountain Range is divided into two parallel ranges that extend north–south through the state. The Western Cascades are an older formation created by crustal plate movements and heavy volcanic activity in the Eocene. Near the end of the Miocene, the Western Cascades were tilted causing a sloping west face of the mountains and a steep east face. The High Cascades resulted from heavy volcanic activity at the beginning of the Pliocene that formed the pronounced peaks that are recognizable today (Orr and Orr 2000:141).

The Western Cascades province near the Project area is typically composed of pyroclastics, basalt, and andesite, while the major valleys contain glacial deposits (Franklin and Dyrness 1988:22). The majority of the Project is mapped as Mazama ash flow deposits that consist of pyroclastic andesite and dacite (Walker and MacLeod 1991). Mount Mazama erupted approximately 7,700 years ago and that climactic eruption caused the peak to collapse and form the Crater Lake caldera (Bacon and Lanphere 2006). Other geologic units within the Project include Pliocene–Pleistocene-age basalt and basaltic andesite in the western Project area between the North Fork Rogue River and the Prospect Central Substation; Miocene–Pliocene-age Ridge-capping basalt and basaltic andesite between Imhaha Road and the Forebay; and Miocene-age Silicic vent complexes on the slope where the Penstock and Spillway are located (Walker and MacLeod 1991).

Soils vary within the Project area but are volcanic in nature. The flat basin that encompasses the central 4 miles (mi) of the Project includes Barr, Mill, and Red Blanket Creeks, known locally as "Prospect Flat" (LaLande 1980:161). This area is mapped as gravelly sandy loam soils that are deep, excessively drained, and form in ash deposits or alluvium mixed with ash, typical of the Crater Lake, Alcot, and Barhiskey soil series (United States Department of Agriculture-Natural Resources Conservation Service [USDA-NRCS] 1998a, 1998b, 2001a). The southeastern upland portion of the Project consists of rock outcrops and gravelly loams that are deep, well drained, and form in colluvium and residuum of igneous rocks, typical of the Dumont and Coyata soil series (USDA-NRCS 1997a, 2001b). The southwestern portion of the Project includes gravelly clay loams that form in colluvium of breccia and tuff, or weathered shale and sandstone, typical of the Freezener, Geppert, McNull, and McMullin soil series (USDA-NRCS 1997b, 1999, 2003a, 2003b).

The majority of the Project is positioned within a relatively level basin occupied by the upper reaches of the Rogue River and its tributary streams. The Rogue River originates at Boundary Springs near Crater Lake, approximately 20 mi northeast of the Project area. The Rogue River flows through the North Fork Diversion Dam before flowing through a steep canyon to Lost Creek Lake. Alluvium has been deposited along the banks of the river's tributaries, including Barr, Mill, and Red Blanket Creeks which all flow through the Project.

The eastern portion of the Project is in an upland setting with steep terrain and deeply incised streams. The Middle Fork and South Fork Rogue Rivers both begin in Sky Lakes Wilderness east of the project area. The Middle Fork headwaters are near Boston Bluff, 9 mi to the east, and the South Fork headwaters are near Smith Rock, 13 mi to the southeast. The Middle Fork joins the South Fork approximately 2.5 mi west of the Project Forebay. The South Fork flows over the Project's Diversion Dam, and the waters diverted at the South Fork Diversion Dam are ultimately discharged to the North Fork Rogue via the Middle Fork Canal.

The Project is within the Subalpine Forest vegetation zone that characterizes much of the high elevation portions of the Western Cascades (Franklin and Dyrness 1988:45). More specifically, this area is in a mixed conifer zone typical of elevations from 2,500 to 4,500 ft (Franklin and Dyrness 1988:131, 137). The mixed conifer zone in Oregon is a northern extension of the Sierran montane zone found in California and includes a dominant canopy of Douglas-fir (*Pseudotsuga menziesii*), sugar pine (*Pinus lambertiana*), ponderosa pine (*Pinus ponderosa*), incense cedar (*Libocedrus decurrens*), and white fir (*Abies concolor*). Typical understory comprises manzanita (*Arctostaphylos nevadensis*), ceanothus (*Ceanothus prostratus*), bearbrush (*Garrya fremontii*), huckleberry (*Vaccinium membranaceum*), and Oregon grape (*Mahonia nervosa*) (Franklin and Dyrness 1988:137–143).

The South Fork Diversion Dam is located at the eastern extent of the Project. Water flows northwest through open canal and elevated wood pipeline that parallels the steep valley of the South Fork Rogue River. On the relatively flat plateau between the South and Middle Forks of the Rogue, Project waters are conveyed in a northwesterly direction in an open canal and concrete-lined subterranean tunnel. Project waters then flow into the Project Forebay and continue north down a steep ridge through the Penstock that parallels the Spillway. The Penstock ends at the Powerhouse on the south bank of the Middle Fork Rogue River. The Project transmission line begins on the south side of the Middle Fork Rogue River and continues west/northwest, paralleling a canal, and crossing multiple streams within the basin. The basin becomes increasingly flat as the transmission line continues northwest to the North Fork Diversion Dam. The transmission line then extends southwest, past the Prospect No. 2 Forebay, still following a canal, and ends at the Prospect Central Substation and the southwestern extent of the Project at Structure 1/1. The Project area ranges in elevation from 3,375 ft at the South Fork Diversion Dam, to 2,480 ft at the Prospect Central Substation.

2.2 Cultural Context

2.2.1 Precontact Context

Cultural resource studies have been conducted in the Rogue River drainage since the 1960s in conjunction with a wide range of watershed development activities and to satisfy general site inventory and management goals of federal agencies. Much of the work has consisted of pedestrian survey in the Cascade Range, as this is where the bulk of federal lands are situated. Excavations have been limited to hydroelectric projects that took place in the 1970s and 1980s (i.e., Davis 1983). There have been few subsurface archaeological investigations in the project vicinity in general, and very few studies in the last 20 years (although see Connolly et al. 1994; Tveskov and Cohen 2006).

Several researchers have presented archaeological syntheses, some of which include models of cultural change and site distribution in the broad Rogue River Basin (Atwood and Gray 1996; Connolly 1986; LaLande 1980; Pettigrew and Lebow 1987; Winthrop 1993) (Table 2-1). The Holocene subdivisions used in this discussion follow general terminology of the region and the Pacific Northwest. These include the Paleoindian period (prior to 10,000 years before present [B.P.]), the Early Archaic (10,000 to 6000 B.P.), the Middle Archaic (6000 to 2000 B.P.), and the Late Archaic (2000 B.P to contact). Caution should be used, however, in the cultural chronologies described below, as the data relies heavily on projectile point types; very few radiocarbon dates or other absolute dating methods have been employed in the region. Connolly et al. (1994) have more recently identified temporal periods for the Upper Rogue River in the vicinity of Elk Creek based on data collected in that area, 10 mi west of the Project.

Paleoindian Period (prior to 10,000 B.P.)

The Paleoindian period is poorly represented in the archaeological record of the Upper Rogue River. In the general region, this period has frequently been associated with distinctive fluted projectile points associated with Clovis cultures. Isolated finds distinctive of this time period have not been identified in the immediate project vicinity; however, a complete fluted projectile point was purportedly identified at Medco Pond (Butte Falls Clovis) 3 mi southwest of the Project, although its original location is unverified (LaLande and Fagan 1982). A Clovis point was found near upper Butte Creek, a tributary of the Rogue River that lies roughly 15 mi southwest of the Project (LaLande and Fagan 1982), and another at Hyatt Meadows, along the Rogue River near the California border approximately 70 mi south of the Project (Tveskov and Cohen 2006). Clovis projectile points have also been identified at Site 35DO634 (Seneca Clovis), located 40 mi northwest of the Project, and Site 35JA301 (Ridgeline Clovis), located 30 mi south of the Project (Fagan et al. 1995; Ozbun and Fagan 1996). While these finds are not associated with radiocarbon

Table 2-1. Cultural Chronologies of Southwestern Oregon

Years B.P.	Connolly 1986		Pettigrew and Lebow 1987	Winthrop 1993	Connolly et al. 1994
250				Protohistoric	Post Contact
500		Gunther Sphere			
750			Rogue 2 Phase		
1000	Siskiyou Pattern			Formative	Upland Village
				Late Archaic	Upland Base Camp
2000			Rogue 1 Phase		
					Late Middle Holocene
3000					
			Coquille Phase		
4000				Middle Archaic	
5000	Cascade Pattern Glade Tradition		Marial 2 Phase		Early Middle Holocene
6000					
7000			Marial 1 Phase		
				Early Archaic	
8000					
					Pre-Mazama
9000					
			Applegate Phase		
10,000					

dates, evidence of Clovis cultures across North America have been tightly dated to between 12,800 and 13,250 calibrated years B.P. (Waters and Stafford 2007).

Fluted projectile point finds from the Northwestern Great Basin in Harney and Lake Counties, Oregon, continue to increase, supporting a strong Paleoindian presence in that region. Recent fluted points identified in Harney County including Sage Hen Gap (35HA3548), Sheep Mountain (35HA3667), and Rim Rock Draw (35HA3855) (O'Grady et al. 2008; Wisner 2012a, 2012b). Recent research has also suggested that large stemmed projectile points may be associated with populations that pre-date Clovis cultures (i.e., Wisner 1998). In particular, research at Paisley Caves in south-central Oregon has identified human coprolites dating to as old as 14,525 calibrated years B.P. and stemmed projectile points associated with radiocarbon dates as old as 13,293–13,519 calibrated years B.P. (Jenkins et al. 2014:486, 498).

Early Archaic Period (10,000 to 6000 B.P.)

In general, this period is characterized by large foliate-shaped and broad-stemmed projectile points. Other tools included knives, scraping tools, milling stones, and edge-faceted cobbles (Connolly 1986:118; Pettigrew and Lebow 1987:11.61), indicating people were hunters and gatherers engaged in utilizing large mammals for food and clothing, as well as plants such as nuts and seeds for consumption. Pettigrew and Lebow (1987) refer to this period as the Applegate Phase based on data from archaeological site 35JA53. The Glade Tradition is initiated during the Early Archaic. This is interpreted to be a regional variant of the Cascade Phase, which is found throughout much of the Pacific Northwest during the early to middle Holocene (Connolly 1986, 1991; Leonhardy and Rice 1970). In parts of southwest Oregon and northwest California, Connolly (1986) and others argue that this tradition is remarkably persistent, and may have been present for much of the Holocene. A wide variety of stone implements are associated with the Glade Tradition: foliate and shouldered, contracting stem projectile points, edge-faceted cobbles, stone bowls, hammer/anvil stones, and fluted unifaces (Connolly 1986:118–119).

The Early Archaic was interrupted by the cataclysmic eruption of Mount Mazama around 7700 B.P. (Bacon and Lanphere 2006), which undoubtedly led to abandonment of the area for some time. There has been no clear evidence of occupation of the Upper Rogue River prior to the eruption, although areas in the Umpqua Basin (35DO383, 35DO672, and 35DO848), the Lower Rogue River (35CU84), and the Applegate Valley (35JA53) have identified pre-Mazama cultural deposits (Brauner and Nisbet 1983; Goebel 2001:22; Musil 1994; O'Neill 1996, 2008; Pettigrew and Lebow 1987:11.61). Excavations at Site 35JA189 (10 mi west of the Project at Lost Lake) and Site 35JA190 (14 mi west of the Project at the confluence of Brush Creek and the Rogue River) identified archaeological deposits above Mazama ash (deposited after the eruption). Excavations at these two

sites indicate they were utilized as seasonal camps during warmer seasons of the year with the earliest occupation around 6000 B.P. (Connolly et al. 1994:151, 161).

Middle Archaic (6000 to 2000 B.P.)

The Middle Archaic is characterized by large ovate and broad-stemmed projectile points, including Marial and Coquille styles of projectile points (Winthrop 1993:184). Winthrop (1993:196) describes this period as a mobile subsistence and settlement regime that tends to produce seasonal camps and task sites, particularly in regions such as the project area. Pettigrew and Lebow's (1987) Marial and Coquille Phases fall within the Middle Archaic period. The Marial Phase is dominated by intensive obsidian use, diverging stem broad necked and large willow leaf projectile points, unifaces, end scrapers, and a continuing presence of edge-faceted cobbles. The Coquille Phase is dominated by intensive use of cryptocrystalline silicate (CCS) raw materials, broad-necked Coquille-series and smaller willow leaf projectile points, and a high frequency of end scrapers (Pettigrew and Lebow 1987:11.60–11.61; Winthrop 1993:182). Middle Archaic assemblages often follow the Glade Tradition described above, a technology which includes stemmed and foliate projectile points that exhibit continuities from the Early Archaic (Connolly 1986). An obsidian hydration curve developed for Elk Creek obsidian suggested that a rim measurement larger than 2 microns was indicative of the Middle Archaic period (Pettigrew and Lebow 1987:10.26).

The Middle Archaic archaeological record in the current Project vicinity is more robust than that of the Early Archaic period although archaeological site data is limited to projectile point styles and obsidian hydration data. The Joham II Site (35JA27), located 10 mi southwest of the Project, contained subsurface projectile points associated with the Coquille series and obsidian hydration rind measurements between 3 and 5 microns (Pettigrew and Lebow 1987; Winthrop 1993:187), although the majority of this site was associated with artifacts from the Late Archaic. Site 35JA102 (10 mi west of the Project) contained a subsurface component with projectile points indicative of the Middle Archaic period including broad-stemmed, stemmed pointed shoulder, and notched lanceolate styles (Budy and Elston 1986:135).

Late Archaic (2000 B.P. to Contact)

The Late Archaic period is characterized by narrow-neck small stemmed, basal notched, or triangular projectile points, the appearance of residential features, and fauna and flora remains in the Lost Creek and Elk Creek regions (Pettigrew and Lebow 1987:11.69–11.72). Winthrop (1993:197) describes the Late Archaic as a collector subsistence and settlement regime that tends to produce villages, seasonal camps, and task sites in the region. Further, Winthrop (1993:205) suggests that people would have inhabited "moderate elevations, near perennial fish-bearing streams, and in the low foothills above the valley floors." Pettigrew and Lebow's (1987) Rogue Phase falls within the

Late Archaic period. The Rogue Phase is further divided into Rogue 1, typified by Coquille side-notch, Elk Creek square-barbed, and small willow leaf projectile points, and Rogue 2, typified by Rogue River series of projectile points (including barbed, diverging stem, and corner notched) (Pettigrew and Lebow 1987:11.61–11.62).

Elements of the Glade Tradition may persist through much of the Late Archaic in parts of the region (Connolly 1991; see also Beckham and Minor 1992). The Siskiyou Pattern, as defined by Connolly (1991), first appears in sites at approximately 1500 B.P. and is associated with a suite of assemblages of the Shasta and Irongate cultural complexes of northwestern California and southwestern Oregon. This pattern includes narrow-neck and barbed projectile points (i.e., Gunther style), hopper mortars, manos, and metates. In addition, trade items such as *Olivella* shell beads have been identified in other parts of southwest Oregon and northern California (Connolly 1986:120). The Gunther Sphere is based on the Gunther Pattern of northern California and includes fishing gear, pestles, steatite bowls, and ceramics. The Gunther Sphere is interpreted as an archaeological complex that existed at the same time as the Siskiyou Pattern but began somewhat later, around 1000 B.P. (Connolly 1986:119).

Site 35JA23 (Fawn Creek Site), located 7 mi southwest of the Project, contained deep deposits dating to the last 3,000 years, including occupational/residential floors, food processing features, a human burial, and housepits (Davis 1983:32–41; Joyer 2006). Site 35JA27's Late Archaic component was represented by various artifacts and eight radiocarbon dates, all within the last 2,000 years (Pettigrew and Lebow 1987:10.3). Numerous groundstone tools were identified at the Windom Site (35JA412), 13 mi southwest of the Project, and projectile point types suggested this locale was utilized for food processing over the last 2,000 years (Tveskov et al. 2002). Unique to this area has been the discovery of pot sherds and clay figurines dating to the Late Archaic period, potentially indicative of a regional pottery tradition present between 1100 and 400 B.P. (Mack 1989:50; Winthrop 1993:181). Pot sherds and figurines were identified at 35JA27 (10 mi southwest of the Project), and most recently, an anthropomorphic clay figurine was identified at the Blue Gulch Site (35JA205) located 6.5 mi southwest of the Project and interpreted to be a toy (Thorsgard n.d.; Tveskov and Cohen 2006).

2.2.2 Ethnographic Context

The Project is near the territorial historic boundary of the Molala, Takelma, and Klamath. Spier (1930:Figure 1) maps the community of Prospect as being the boundary between the Upland Takelma and Molala. However, Berreman (1937:14) maps the entire Project area as within Upland Takelma territory, postulating that the Molala territory did not extend as far south as the Rogue River until "recent" times. Kendall (1990:590) depicts the Takelma territory as extending upriver to Elk Creek and Lost Creek, but not as far as the South Fork Rogue River or the community of

Prospect (i.e., the Project area). The Klamath territory is mapped as extending to the west side of Crater Lake, between 15 and 20 mi northeast of the Project. The Project's upland setting was likely utilized for hunting, and gathering berries and roots by numerous peoples; however, these ethnographically documented boundaries were never intended to be a strict line, rather they were meant as a general territorial overview. As such, each of these three groups will be briefly discussed in relation to their documented use of the Cascades.

A wide network of mountain trails allowed all of these groups to utilize the uplands and travel for trade, warfare, or resource gathering (Zenk and Rigsby 1998:440). The Klamath, Takelma, and Molala languages are each part of the Plateau Penutian family (Beckham 1986:32; Kendall 1990:589; Stern 1998:446). The Takelma are closely related in language to their northern neighbors, the Cow Creek. The Upland Takelma spoke a language called Takelman and had a different dialect than the Lowland Takelma. Two dialects of Molala language have been postulated for the Northern and Southern Molala (Zenk and Rigsby 1998:439).

The Southern Molala territory encompassed the headwaters of the North Umpqua, South Umpqua, Upper Rogue, Middle Fork Rogue, and South Fork Rogue Rivers, in the Western Cascades and High Cascades (Zenk and Rigsby 1998:439–440). The Klamath territory was centered around Upper Klamath Lake, though a subgroup (Pelican Bay) inhabited the area around Agency Lake, 20 mi southeast of the Project (Stern 1998:446–447). The Upland Takelma may have once occupied the Upper Rogue River to the summit of the Cascades, bordering Klamath territory. Historically, however, their territory was reduced to areas west of Prospect as the Molala people moved into the area (Berreman 1937:27).

The Southern Molala would winter at bŭ'kstubŭ'ks, a village located near the modern community of Prospect (Spier 1930:4). The Klamath and Molala both frequented Huckleberry Mountain, 8 mi northeast of the Project, for picking berries in early fall (Spier 1930:9). The Cow Creek, residing primarily on the South Umpqua River, also utilized this upland resource (Beckham 1986:35). Spier (1930:24, 28) notes that as the Klamath and Molala utilized the same upland territory, the two groups maintained friendly relations, unlike the Upland Takelma with whom the Klamath often had turbulent relations, with each group conducting raids on the other. The Takelma also utilized the uplands often camping in Molala territory near the headwaters of the Rogue River (Spier 1930:29).

Klamath and Molala intermarriage was not uncommon and resulted in some bilingualism (Stern 1998:454; Zenk and Rigsby 1998:439–440). The Klamath obtained buckskins from the Molala, offering pond-lily seed and beads in trade (Spier 1930:41). According to Spier's (1930:59) informants, the Upland Takelma did not practice cranial deformation, unlike the Klamath and Molala (see also Zenk and Rigsby 1998:440). The Molala were known to hunt deer using snares, while the Klamath primarily hunted with bow and arrow; both groups apparently utilized dogs to some extent for tracking and driving game (Spier 1930:158; Stern 1998:449). Deer was the most

common animal hunted in the High and Western Cascades although elk was also hunted to a lesser extent (Stern 1998:449). Yew, available in the Western Cascades, was a preferred wood for bows for most groups (Spier 1930:194).

Euroamerican settlement of the region increased in the 1800s, and increased pressure from explorers and American settlers led to a series of treaties between tribal groups and the U.S. government. By the time these treaties were being negotiated, there were few surviving Molala people. The Molala Treaty of 1855 stated that Molala people would be removed to the Grand Ronde Reservation in western Oregon (Kappler 1904:740–741). Some Southern Molala went to the Klamath Reservation, presumably because of their closer ties to those groups (Zenk and Rigsby 1998:444).

The Klamath Lake Treaty of 1864 granted the Klamath reservation lands that included upper Klamath and Agency Lakes, and the Williamson and Sprague River drainages (Stern 1998:460). In 1954, the Klamath Tribes were terminated from federal recognition as a tribe by an act of Congress (Public Law 588). The Klamath Termination Act also dismantled the Klamath Reservation (Hood 1972). The Klamath Tribes regained federal recognition in 1986.

The Cow Creek signed a treaty in 1853 ceding most of their territory to the U.S. government and reserving land along Cow Creek (Kappler 1904:606). That treaty was canceled when the Rogue River War began, following a series of massacres and battles between the settlers and the Native Americans. That fall, federal authorities signed the "Treaty with the Rogue River" with some of the Takelma and Athapaskan chiefs and established the Table Rock Indian Reservation along the north bank of the Rogue River just north of present-day Medford (Kappler 1904:603; Schwartz 1997:59–60). This reservation was short lived and, after three years of hostilities, many Takelma and Cow Creek were removed to the Grand Ronde and Siletz Reservations (Kendall 1990:592). Many people, however, chose not to move to the reservations and settled in various places in the region. The Cow Creek and Takelma were included in 1954's Public Law 588 that terminated federal services to Western Oregon Tribes. The Cow Creek, however, were able to successfully challenge this law and received federal recognition in 1982.

2.2.3 Historic Context

The first settlers to the region were part of the Applegate party (led by Jesse Applegate) who established the Applegate Trail in 1846. Located 35 mi southwest of the Project APE, the trail extended through the modern Interstate 5 corridor in this part of Oregon, passing near Medford and through the Cascade Mountains east of Ashland (Jackson County Planning Department 1992:13; Most 2003). As more and more land was claimed in the fertile central Rogue River Valley (near Medford), people began seeking out places to claim in the uplands, including Prospect Flat (LaLande 1980:176).

Chauncey Nye was one of the first Euroamerican settlers in the project vicinity. He and his family settled just north of the modern community of Prospect (LaLande 1980:176–177), although Mr. Nye received a land patent for property near Cascade Gorge, approximately 4 mi southwest of Prospect (Bureau of Land Management [BLM] 1882). The General Land Office (GLO) map of 1884 depicts the first developments of the general Project area (BLM 1884). A house is mapped along a road that appears to have been present in the vicinity of Structure 2/3 in Section 29 of Township 32 South, Range 3 East. The road is mapped as "Wagon Road from Rogue River Valley to Fort Klamath." The wagon road appears to have crossed the Rogue River in the vicinity of the modern North Fork Reservoir. The house is on property purchased by Erick Salstrom under the Cash Entry Act of 1820 (BLM 1891).

There are also three houses mapped on the 1884 GLO as "Aiken's House." One is associated with a mapped barn and saw mill on the section line between Section 29 and Section 30, Township 32 South, Range 3 East. The location with the house, barn, and saw mill is within the modern community of Prospect along Mill Creek (BLM 1884). This sawmill was constructed in 1873 by John Beeson and C. D. Slosson, who sold it a year later to Harvey P. Deskins. In 1883, brothers Fred and Squire Aiken purchased the sawmill (LaLande 1980:177). The sawmill's location was situated 0.5 mi south of Structure 8/3. A portion of the land where the sawmill was located on Mill Creek, was purchased by George Aiken (son of Squire Aiken) under the Cash Entry Act (BLM 1887). The George Aiken parcel was in Section 32. The other portion of the sawmill property was purchased by Charles Millsap in Section 29 (BLM 1892b).

The other two houses mapped as "Aiken's House" on the GLO map are both just west of Red Blanket Creek in what is labelled "Red Blanket Prairie" (BLM 1884). One house is adjacent to an agricultural field in Section 33 and the second is approximately 0.1 mi east in Section 34; both are in Township 32 South, Range 3 East. These buildings were situated approximately 0.2 mi southwest of Structure 6/5. This property was issued to both Fred Aiken and Squire Aiken, who each purchased numerous 160-acre parcels under the Cash Entry Act (BLM 1889a, 1889b, 1890). One portion of the property was issued to Squire Aiken under the Homestead Act of 1862 (BLM 1892a). In total, the property encompassed 640 acres and was known as "Red Blanket Ranch" (LaLande 1980:177). Interestingly, the location of "Red Blanket Ranch" is where the G. C. Hollenbeak House is currently located, also adjacent to an agricultural field. The G. C. Hollenbeak House was constructed in 1910, and the family ran a cattle operation (Clay 1979a).

Harvey Deskin was the postmaster for the post office in the area (then called Deskin). Squire Aiken became the next postmaster and, in 1889, he was able to get the town name changed to Prospect (LaLande 1980:177; McArthur 1992:691). Squire Aiken also opened the first general store in Prospect (Atwood 1979). The post office and general store were destroyed by fire in 1890 (Clay

1979b). The Prospect Hotel was built in 1892 by A. H. Boothby in response to the increasing numbers of people passing through Prospect on their way to Crater Lake (LaLande 1980:180).

The wagon road depicted on the 1884 GLO was built initially in 1864 to ease travel between Fort Klamath and Jacksonville (BLM 1884; LaLande 1980:170). This road alignment in the vicinity of Prospect has been variously called Union Creek Military Road, Jacksonville–Fort Klamath Military Wagon Road, and Crater Lake Road (LaLande 1980:164; Shafer 1989; Tucker 2001). Portions of the road are still visible today (Shafer 1989). A similar alignment to this road later became Crater Lake Highway after a movement to make an accessible and more permanent route to the popular tourist attraction (Bell 2011). The original Crater Lake Highway route was eventually bypassed when Highway 62 was constructed. Today, a portion of the original Crater Lake Highway alignment is still in use as Mill Creek Drive.

In order to provide better farmland around Prospect, local residents constructed a water delivery system between 1920 and 1921 to aid in irrigation, diverting water from Mill Creek (LaLande 1980:181). This system became known as Nye Ditch, as the ditch was built by Nelson Nye (son of Chauncey) and Clem Clark along with their families and neighbors. Purportedly, there were two portions of the ditch. The upper portion was located north of Prospect and was used until the 1950s. The lower portion was 6.5 mi long extending between Prospect and Cascade Gorge, and is still used by area residents (Nye Ditch Users Improvement District 2014; Shafer 1989).

The high quality of timber in the Project vicinity was well known, and with lumber demand increasing in the early twentieth century, the Project area was a draw for timber companies (LaLande 1980:182). The Skeeters brothers leased a sawmill in 1940 approximately 0.8 mi northeast of Structure 16/3. This camp housed approximately 30 loggers and their families until 1973 when the mill was shut down and all of the buildings were torn down (Shafer 1986:4).

As settlement increased, so did concerns about natural resources in the west. The Forest Reserve Act of 1891 protected certain areas from homesteading or settlement in order to preserve the environment; these areas were administered by the Department of the Interior (Williams 2000:8). The Cascade Range Forest Reserve was established in 1893 by presidential proclamation in order to protect the crest of the Cascade Mountain Range and places such as Crater Lake, Diamond Lake, Mount Theilsen, Three Sisters, Mount Jefferson, and headwaters of most of the major rivers of the state (Unrau and Mark 1987; Williams 2000:25). Forest Reserves were eventually administered by the Department of Agriculture, and they became National Forests. The Siskiyou National Forest was created in 1906, and the Crater Lake National Forest was created in 1908. The Crater Lake National Forest became the Rogue River National Forest in 1932, and in 2004, it was combined with the Siskiyou National Forest. Today, the combined RR-SNF consists of a 1.8-million-acre area, and a portion of the Project APE is within the High Cascades Ranger District (USFS 2015).

PacifiCorp Background

In the 1850s, brothers Dr. Charles R. Ray and Col. Frank H. Ray established the Braden Mine and Mill on Gold Hill, in what is now the town of Gold Hill in Jackson County, Oregon. Encouraged by technological advances in hydroelectric power production and frustrated by the cost and limitations of steam power, the Rays incorporated the Condor Water & Power Company and sold bonds to cover the cost of hydroelectric development on the Rogue River. By 1902, they had completed construction of a hydroelectric facility called Gold Ray, 4 mi east of Gold Hill. In 1907, Condor Water and Power reorganized as Rogue River Electric (Dierdorff 1971).

Production was substantially augmented in 1911 with completion of the Prospect Hydroelectric Plant (now Prospect No. 1 Powerhouse) on the Rogue River. The water-conveyance system, Powerhouse, and transmission line from Prospect to the Gold Ray plant were completed in 1911. Prospect not only powered the Ray brothers' milling operation but also provided electricity to the communities of Medford, Jacksonville, Central Point, Grants Pass, and Ashland, Oregon (Perrin and Miller 2013). In 1913, Rogue River Electric merged with Northern California's Siskiyou Light and Power, creating COPCO, which purchased the Rays' interest in the Prospect plant (*Medford Mail Tribune* 1925:5). By 1921, COPCO was conducting preliminary studies as to how to increase the capacity of the Prospect Development. In 1926, COPCO initiated construction of a greatly expanded Rogue River hydroelectric development that incorporated the original 1911 Prospect facilities. Byllesby Engineering & Management Corporation assumed responsibility for the design and construction of the new facilities, which included the North Fork Diversion Dam and pond, 7,000 feet (ft) of canal, a Forebay, 3,100 ft of wood-stave flowline, a surge tank, penstocks, and the Prospect No. 2 Powerhouse. This system comprised Phase I of the so-called North Fork Development, which went into service in January 1928.

Expansion of the existing Prospect facilities and construction of Prospect No. 2 were only the first steps in expanding hydroelectric power production on the Rogue River. Drawings dated October 5, 1921, indicate initial interest in a canal line stretching from the Middle Fork to the North Fork of the Rogue River (COPCO 1921). By September 1924, survey crews were actively exploring the area around the Middle and South Forks in anticipation of further expansion for what was being called the South Fork Development, also known as Prospect No. 3 (Partridge and Hackett 1925). Simultaneously, preliminary geological reports were conducted for regulation, diversion, pondage, and storage projects being considered for further expansion of Prospect No. 2 (COPCO 1925). Of the projects considered, only the diversion project, encompassing the South Fork Development and subsequently Prospect No. 3, was constructed.

From June 20 to August 6, 1925, COPCO conducted extensive survey work on the Middle Fork of the Rogue River. A road was constructed to branch off from the main road between Prospect and Butte Falls to approximately 0.5 mi below (downstream from) a gauging station, as reported by

COPCO engineer E. C. Koppen in a 1925 report. Koppen further noted that "in connection with the investigations at Prospect, gaging [sic] stations were established on the Middle Fork and on Mill and Red Blanket Creeks. . . . The station on the South Fork was established previous to 1925. The gaging stations are visited and maintained by the Company employees at Prospect" (Koppen 1925).

By 1926, construction of the North Fork Dam, Prospect No. 2 Powerhouse, and associated water-conveyance system was well underway. In January 1928, the North Fork Development was complete, and the Prospect No. 2 Powerhouse went into service. During and following construction of the North Fork Development, continued studies were made to "determine the relationship between the several streams or parts of streams that are or ultimately will be tributary to the Prospect No. 2 Plant or the proposed Regulation Project" (Koppen 1929). Concurrently, further surveys for the "Prospect 3-A Development" were being conducted; Prospect 3-A appears to have been a hybrid of what had previously been referred to as Prospect No. 3, the South Fork Development, and/or the Diversion Project. Maps depicting 1926 survey results for Prospect 3-A show both an upper and lower location for dam sites on the Middle Fork, as well as three possible powerhouse and penstock locations for the South Fork (COPCO 1928). In 1961, COPCO merged with Pacific Power and Light, predecessor of PacifiCorp.

The so-called Prospect Diversion Project No. 2001, as constructed, included three diversion dams located on the Middle and South Forks of the Rogue River and Red Blanket Creek. The diversion project also included miles of flumes, canals, and siphons. Since initial construction of the Project almost 80 years ago, numerous changes due to maintenance concerns and technological improvements have occurred. Today, the Prospect No. 3 Hydroelectric Project, incorporating the South Fork Diversion Dam, Prospect No. 3 Powerhouse, and associated penstocks, pipelines, and siphon is regulated under a separate FERC license (FERC Project No. 2337) than other components of the Prospect Diversion Project licensed as the Prospect Nos. 1, 2, and 4 Hydroelectric Project (FERC Project No. 2630).

2.3 Survey and Inventory of Historic Properties

As part of pre-licensing studies, PacifiCorp conducted cultural resource surveys within the APE. The results of those surveys (Davis and Perrin 2016) were concurred upon by the Oregon State Historic Preservation Office (SHPO) and are summarized below; PacifiCorp has no plans to conduct additional investigations unless required via the guidance in this HPMP. Five archaeological resources, two historic districts, and two structures are known to be located within the Project APE; additional resources may be encountered over the license term. Not all the resources identified are historic properties that need to be managed as part of the HPMP; however, in an effort to clarify all historic property responsibilities for the Project, all precontact- and historic-period resources known

to exist in the APE are detailed below. NRHP eligibility determinations and management responsibilities are detailed below (Table 2-2).

Table 2-2. List of Documented Prospect No. 3 Hydroelectric Project Resources.

Resource	**Resource Type**	**Eligibility Determination***	**SHPO Concurrence**	**Management Responsibilities**
Isolate 2169-21	Archaeological Object (glass bottle)	Not Eligible	Concurred	None
Isolate 2169-3i	Archaeological Object(s) (2 tobacco tins)	Not Eligible	Concurred	None
Site 35JA927	Archaeological Site (precontact)	Not Eligible	Concurred	None
Site 35JA928	Archaeological Site (historic)	Not Eligible	Concurred	None
Site 35JA122	Archaeological Site (precontact)	Unevaluated		Treat as eligible; see Section 4.4
Prospect Hydroelectric Project	District	Eligible	Concurred	See Section 4.4
Nye Ditch	Structure	Unevaluated		Treat as eligible; see Section 4.4
Crater Lake Highway	District	Eligible	Concurred	See Section 4.4
ODOT Bridge 16017	Structure	Not Eligible	Concurred	None

* Determinations may be made by a federal agency and/or SHPO. All determinations of eligibility are subject to revisions if additional information is revealed or recovered, if the property is damaged, and/or due to other factors.

2.3.1 Archeological Resources

Five archaeological resources (two isolates, three sites) are located within the Project APE. Of these, both isolates were determined not eligible, as were two of the three sites (35JA927, 35JA928). The remaining site (35JA122) remains unevaluated due to its large size and extent outside of the APE.

A summary of each of the known sites is provided below. However, the comments are kept intentionally brief to enable wide dissemination of this HPMP without compromising what could be privileged and/or sensitive information that may pertain to an archaeological site. More detailed and in-depth discussions on archaeological resources can be found in Davis and Perrin (2016), via research at the Oregon SHPO, or via PacifiCorp's archives.

Isolates 2169-2i and 2169-3i

Two historic-period archaeological resources were recorded during the pedestrian survey. Isolate 2169-2i consisted of a single colorless glass toiletry bottle identified on the ground surface. The bottle was likely manufactured in 1931 or 1941. Four shovel probes were excavated around the isolate location, and no additional cultural material was identified. Isolate 2169-3i consisted of two upright tobacco tins. This type of tobacco tin was manufactured throughout the early twentieth century. Four shovel probes were also excavated around this isolate location, and no additional cultural material was identified.

Both isolates are likely related to construction or maintenance of Project facilities (i.e., canal or transmission line). There have been numerous disturbances to the landscape in the vicinity of the isolated finds due to the facilities, including an access road adjacent to 2169-2i and an artificial berm on which 2169-3i is situated.

HRA recommended that neither isolate is eligible for listing in the NRHP. While the hydroelectric facilities are eligible for listing in the NRHP under Criterion A (Events), these isolated finds do not contribute to the eligibility of the facilities. The artifacts are not associated with the lives of significant persons in our past (Criterion B), nor do they represent the work of a master of a distinctive period (Criterion C). The two isolates do not have the potential to yield important information to the history of the area (Criterion D) as these types of artifacts are common and similar isolated finds have been previously identified in the general Project vicinity. HRA recommended no additional cultural resource studies at these two isolate locations.

In a letter dated October 14, 2015, the Oregon SHPO concurred with these recommendations. Isolates 2169-2i and 2169-3i are not eligible for the NRHP. No additional cultural resource investigations or treatment measures are required for actions pertaining to these isolates.

Site 35JA928

Archaeological site 35JA928 consists of a sparse scatter of historic-period debris dating to the early to mid-twentieth century. Five shovel probes were excavated outside of the surface delineated site boundary, and no additional artifacts were identified. The debris scatter may be related to the construction or maintenance of the adjacent project facilities.

HRA recommended that the resource is not eligible for listing in the NRHP. While the adjacent hydroelectric facilities are eligible for listing in the NRHP under Criterion A (Events), this sparse debris scatter does not contribute to the eligibility of those facilities. The site is not associated with the lives of significant persons in our past (Criterion B), nor do the artifacts represent the work of a master of a distinctive period (Criterion C). The site does not appear to have the potential to yield important information to the history of the area (Criterion D). There is no subsurface component and few of the artifacts are diagnostic of a specific time period. The surface deposit is sparse and most of the artifacts are fragmented. HRA recommended no additional cultural resource studies at this location.

In a letter dated October 14, 2015, the Oregon SHPO concurred with these recommendations. Site 35JA928 is not eligible for the NRHP. No additional cultural resource investigations or treatment measures are required for actions pertaining to this site.

Site 35JA927

Site 35JA927 is a precontact lithic material site identified during the first study season investigations, when ten flakes (obsidian and CCS) were identified in shovel probe excavations to depths ranging between 10 and 160 centimeters below surface (cmbs). During the second study season, HRA completed subsurface testing of 35JA927 (under SHPO Archaeological Permit AP-2113). Seven quarter test units (QTUs) and one test unit (TU), equaling 2.77 cubic meters (m^3) of matrix, were excavated, resulting in the identification of just 12 pieces of debitage.

HRA recommended the site not eligible for listing in the NRHP. Neither background research nor excavations at the site suggest the pieces of debitage found at 35JA927 are associated with important historical events (Criterion A) or figures (Criterion B) or represent a unique or exemplary design or the work of a master (Criterion C). Further, excavations indicate that the site is a sparse scatter of lithic debitage without temporally diagnostic tools or buried cultural features. As such, 35JA927's research potential is limited, and it does not appear to have the potential to yield important information to the history of the area (Criterion D).

In a letter dated July 6, 2016, the Oregon SHPO concurred with these recommendations. Site 35JA927 is not eligible for the NRHP. No additional cultural resource investigations or treatment measures are required for actions pertaining to this site.

Site 35JA122

Site 35JA122 was originally identified in 1980 as a precontact lithic scatter on USFS property 0.6 mi northeast of the Project (Throop 1980). The investigators at the time suggested that the site extended south (to the current Project area). HRA's investigations recommended an expansion of the southeastern-most corner of the 1980 site boundary (on file with SHPO) 100 m to the northwest and 200 m to the southeast along the Project APE. The SHPO elected to further expand the boundary to include additional areas between the HRA investigated portions and the former site boundary. In total, 47 precontact artifacts (36 CCS flakes, 7 obsidian flakes, and 4 CCS biface fragments) and 18 historic-period artifacts (pull-tab cans) were identified.

The site has not been evaluated for NRHP eligibility, and a conclusive determination of eligibility will not be possible within the scope of the Project relicensing efforts, due to the site's extent outside of the APE. For this reason, PacifiCorp will treat the site as eligible for the NRHP, and follow the review procedures described in Section 4 in response to future proposed actions within the revised site boundaries.

2.3.2 Architectural Properties

Two historic districts and two additional structures are located within the Project APE. Of these, both historic districts and one structure (Nye Ditch) are eligible for the NRHP. The remaining structure, Oregon Department of Transportation (ODOT) Bridge 13017, was determined not eligible for the NRHP. Three of these are not affiliated with PacifiCorp projects or operations, specifically Nye Ditch, Crater Lake Highway Historic District, and ODOT Bridge 16017. The Oregon SHPO concurred with the following recommendations for eligibility in a letter dated July 13, 2016 (Table 2-3).

A summary of each of the known properties is provided below. However, the comments are kept intentionally brief. More detailed and in-depth discussions on architectural resources can be found in Davis and Perrin (2016), via research at the Oregon SHPO, or via PacifiCorp's archives.

Table 2-3. List of Documented Prospect No. 3 Hydroelectric Project Resources.

Name	Date	Description	Eligibility	SHPO Concurrence	Photo
Prospect No. 3 Impoundment	1932	Impoundment	Contributing	Concurred	
South Fork Diversion Dam and Spillway	1932	Structure	Contributing	Concurred	
South Fork Diversion Dam Intake and Control Building	1932, altered	Structure	Contributing	Concurred	
South Fork Diversion Dam Fish Passage (Ladder, Fish Screen, Return Pipe)	1932, altered 1997	Structure	Contributing	Concurred	

Table 2-3. List of Documented Prospect No. 3 Hydroelectric Project Resources.

Name	Date	Description	Eligibility	SHPO Concurrence	Photo
South Fork Conduit (Water Conveyance System)	1932	Structure	Contributing	Concurred	
South Fork Canal Gauge Station	1949	Building	Noncontributing	Concurred	
Wildlife Crossings	ca. 1995	Structure	Noncontributing	Concurred	
Prospect No. 3 Control House	ca. 1990	Building	Noncontributing	Concurred	

Table 2-3. List of Documented Prospect No. 3 Hydroelectric Project Resources.

Name	Date	Description	Eligibility	SHPO Concurrence	Photo
Prospect No. 3 Powerhouse	1932	Building	Contributing	Concurred	
Prospect No. 3 Powerhouse Tailrace and Spillway	1932	Structure	Contributing	Concurred	
Prospect Transmission Line	1932	Structure	Contributing	Concurred	

Prospect Hydroelectric Project Historic District

HRA recorded 13 resources (including both contributing and noncontributing resources) associated with developments of the Prospect Hydroelectric projects (Nos. 1–4), the collective of which are eligible as a historic district. Though licensed separately, the Prospect Nos. 1, 2, and 4 Hydroelectric Project and the Prospect No. 3 Hydroelectric Project are intertwined both physically and historically. Buildings and structures of Prospect No. 3 directly related to hydroelectric power production are eligible for the NRHP as part of the Prospect Hydroelectric Project Historic District, which also encompasses resources of the Prospect Nos. 1, 2, and 4 Hydroelectric Project.

The Prospect Hydroelectric Project Historic District is eligible under Criterion A, for contributions to the development and growth of hydroelectric power production along the Rogue River and its tributaries. Resources of the Prospect Hydroelectric Project Historic District are also eligible under Criterion C when they convey a visual sense of the engineering practices of the historic district that date to the period of significance. The period of significance is 1911–1944, and encompasses the original construction of the Prospect Hydroelectric Plant (Prospect No. 1) in 1911 and culminates in construction of Prospect No. 4 in 1944. Areas of significance include conservation and engineering.

The historic-period resources identified as part of the Prospect No. 3 Hydroelectric Project are presented roughly upstream to downstream as they would be encountered on the Project. Not all resources of the Prospect No. 3 Project contribute to the district's eligibility. Table 2-3 (above) provides a brief synopsis of contributing and noncontributing resources, photographs, and dates of each recorded resource. The narrative below describes character-defining features of individual buildings and structures, where applicable. Character-defining features of the district as a whole include unlined impoundments, steel and wood-stave pipes, concrete dams and spillways, open flumes (both concrete-lined and unlined), and brick powerhouses and ancillary buildings.

Though no objects or archaeological sites have as yet been identified that contribute to the district, future investigations may reveal additions to the district inclusive of buildings, structures, sites, and objects.[3]

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[3] Structural debris was identified on the surface of a terrace about 150 m east of the siphon north of where it crosses the Middle Fork Rogue River. The structural debris consisted of roughly 50 red clay bricks, several fire bricks, many burnt lumbered wood fragments, metal wire and conduit, sheet metal fragments, and vitreous ceramic fragments from a sink or other fixtures, as well as a small concrete foundation, water pipes, and a capped well/cistern. The structural debris is related to the South Fork Operator's Residential Complex (a house and two outbuildings), which housed a maintenance foreman at the location until 1982; the complex was demolished and burned in November 2005. Prior to demolition and in consultation with SHPO, the house and two outbuildings were documented via Oregon Inventory of Historic Properties forms and photography as mitigation for the adverse effect of removal of the buildings (SHPO Projects # 05-

… continued on next page

Prospect No. 3 Impoundment

The Prospect No. 3 Impoundment is a 1-acre impoundment at an elevation of 3,375 ft, located on the South Fork Rogue River. The South Fork Rogue River originates 13 mi upstream of the Project in the Sky Lakes Wilderness of the RR-SNF. The impoundment also captures Imnaha Creek waters, which flow into the impoundment just east of the South Fork Diversion Dam. The impoundment is an unlined earthen impoundment with a gross capacity of 19 acre-ft, and usable capacity of less than 5 acre-ft. Average impoundment depth is approximately 5 ft, and maximum depth is approximately 8 ft. At normal maximum pool, the impoundment has a surface area of 1 acre. The retention time of impounded water is less than one hour.

The Impoundment contributes to the eligibility of the Prospect Hydroelectric Project Historic District. Character-defining features are limited to the unlined earthen pool.

South Fork Diversion Dam and Spillway

The South Fork Diversion Dam is a 172-ft-long, 24-ft-high concrete diversion dam located on the South Fork Rogue River. The structure is aligned roughly northeast–southwest, and includes a 98-ft-long un-gated ogee spillway located on the south end. The dam is constructed of board-formed poured concrete. An Intake and Control Building are situated on the north side of the dam.

The Diversion Dam and Spillway contribute to the eligibility of the Prospect Hydroelectric Project Historic District. Character-defining features include the dam's concrete materials and the ogee spillway.

South Fork Diversion Dam Intake

The Intake, with attached control building, is adjacent and integral to the South Fork Diversion Dam. The control building is a one-story concrete masonry unit (CMU, also known as concrete block) building with a shallow sloped shed roof clad in corrugated metal. The building has a steel pedestrian door on the north face and a vent on the south face, but is otherwise devoid of openings. Operations and maintenance equipment is located within the building. The CMU building was constructed atop a board-formed poured-concrete substructure that ties into both the diversion dam and fish passage facilities.

2399 and 05-0967). Because the complex was in use until 1982, the structural debris does not qualify as an archaeological resource and was not recorded as such. Its location is noted to prevent future confusion in regards to the origin of the structural debris.

On the impoundment/dam side (east face) of the control building is the intake headgate, which allows water to flow from the impoundment into the conduit (water-diversion system). The intake has a large trash rack that is controlled by a manual lift, accessed via a steel catwalk.

The Intake and control building contribute to the eligibility of the Prospect Hydroelectric Project Historic District. Character-defining features include the concrete materials of the substructure and the manual-lift trash rack.

South Fork Diversion Dam Fish Passage Facilities

The fish passage facility includes an 86-ft-long, 15-pool concrete ladder for upstream fish passage over the diversion dam. The ladder is constructed of board-formed poured concrete. The downstream fish passage facilities include a 0.25-inch (in) wedge-wire, inclined-plane fish screen with a surface area of 199 square ft located within Project diversion facilities (the canal). The screen transitions to a bypass pipe to return fish to the ladder and facilitate downstream passage.

The Dam Fish Passage Facilities contribute to the eligibility of the Prospect Hydroelectric Project Historic District. Character-defining features include the concrete materials and stepped massing.

South Fork Conduit (Water Conveyance System)

The South Fork Conduit system includes 15,894 ft of water conveyance consisting of, in order:

- a 273-ft-long concrete-lined canal section adjacent and integral to the South Fork Diversion Dam;
- a 66-in-diameter, 5,448-ft-long wood-stave pipe, laterally reinforced with steel wire and supported by concrete anchor footings. Note that the wood-stave pipe is scheduled for replacement in 2021;
- a 5,805-ft-long concrete-lined canal section;
- a 5-ft-wide by 6.5-ft-high, 698-ft-long, concrete-lined, horseshoe-type tunnel;
- a roughly S-shaped 416-ft-long canal to penstock transition (Forebay) with a 2,486-ft-long side-channel spillway (Forebay Spillway); and
- a 66-in- to 68-in-diameter, 3,254-ft-long, riveted-steel Penstock that terminates at the Powerhouse.

Other aspects of the water conveyance system include the South Fork Canal Transition Structure, which marks the switch from wood-stave pipe to concrete-lined canal. The Canal Transition Structure is a roughly hexagonal, board-formed poured-concrete encasement. An internal, manually operated gate is controlled by a metal wheel.

Along the conduit are various trash racks, including those at the transitions from canal to wood-stave pipe, canal to tunnel, and penstock intake, a racked structure between the Forebay and Penstock. From there, water flows through the Penstock and Excess Velocity Valve House, a circa 1990 building with a shed roof clad entirely in standing-seam metal.

Pedestrian bridges, in a variety of shapes, sizes, and ages, cross the water-conveyance system in various locations. Generally, they are simple metal spans covered in grating or wood decking.

The Conveyance System contributes to the eligibility of the Prospect Hydroelectric Project Historic District. Character-defining features include the alignment, massing, and concrete, steel and wood-stave materials.

South Fork Canal Gauge

The former South Fork Canal Gauge (USGS Gauging Station No. 14332001) measured and recorded diverted flows. The station was used from 1949 to 1983 to combine in-stream flows in the bypassed reach with the diverted flows into a single data record. The single-bay, one-story saltbox building sits on a poured-concrete foundation, has a metal roof, and is clad in board-and-batten siding.

The Canal Gauge does not contribute to the eligibility of the Prospect Hydroelectric Project Historic District.

Wildlife Crossings

Added in circa 1995, wildlife crossings of various shapes and sizes also bisect the water-conveyance system. Generally, they are simple, earth-covered metal spans. They are located in various places between the Forebay and the South Fork Diversion Dam.

The Wildlife crossings do not contribute to the eligibility of the Prospect Hydroelectric Project Historic District.

Prospect No. 3 Control House

The Control House is located south of the Penstock intake structure and contains operations and maintenance equipment. The one-story building is rectangular in plan, sits on a poured-concrete foundation, and features a shed roof clad in standing-seam metal. The building is constructed of CMU and features a pedestrian access door on its east face but is otherwise devoid of openings.

The Control House does not contribute to the eligibility of the Prospect Hydroelectric Project Historic District.

Prospect No. 3 Powerhouse

The Powerhouse is rectangular in plan, sits on a poured-concrete foundation, and has a flat roof with a parapet. The building's poured-concrete substructure is visible on the entry level, which then transitions to brick veneer. The front façade (south face) features four banks of multi-light metal-sash windows, currently protected by metal screening. Above each window bay are recessed brick "transoms" that feature no windows but have concrete sills and a rowlock course of bricks as the header. Between the window bays and on the corners of the building are engaged brick pilasters topped with concrete caps. The building is symmetrical, with the east face mirroring the west face. The north and south faces also mimic each other, both featuring two banks of multi-light metal-sash windows as on the front façade, minus the central engaged pilaster and brick transoms. Instead, the banks on the north face are topped by a central vent flanked by four-over-four metal-sash windows, also with concrete sills and a rowlock header.

The Powerhouse contains one 9,000 kilovolt amps Allis-Chalmers Company synchronous generator and one 47-in-diameter, 10,700 horsepower, vertical-shaft, Francis-type turbine manufactured by American Hydro Corporation. A new turbine runner was installed in the summer of 1997 to eliminate cavitation and erosion damage to the runner buckets and wicket gates. American Hydro Corporation manufactured the new runner and fabricated it from 304L stainless steel for better erosion protection. In addition to the runner, new wicket gates and bushings were also installed. Modifications to the runner increased the turbine capacity, but the generator continues to limit unit capacity and did not result in a change to the authorized installed capacity for the Project.

The Powerhouse contributes to the eligibility of the Prospect Hydroelectric Project Historic District. Character-defining features include the building's rectilinear massing, concrete and brick materials, and multi-light metal-sash windows.

Prospect No. 3 Powerhouse Tailrace and Spillway

On the north side of the Powerhouse is the concrete tailrace and spillway structure, which is approximately 20 ft by 20 ft by 5 ft with a 172-ft-long, concrete-lined overflow spillway. Water from the tailrace flows into the sag pipe, a 66-in, 887-ft-long wood-stave pipeline that routes flow from the Powerhouse to the Middle Fork Canal of the Prospect Nos. 1, 2, and 4 Project. Water diverted for generation at the South Fork Diversion Dam does not, for the most part, reenter the South Fork drainage, but is instead diverted north to the North Fork Rogue River via the sag pipe from the Powerhouse tailrace to the Middle Fork Canal. Thus, the reach of the South Fork Rogue River that is bypassed by the Project extends 10.5 mi downstream from the dam to the terminus of the river at its confluence with the mainstem Rogue River at Lost Creek Reservoir.

The Tailrace and Spillway contribute to the eligibility of the Prospect Hydroelectric Project Historic District. Character-defining features include the alignment, massing, and concrete materials.

Prospect Transmission Line

The Prospect Transmission Line is a 6.97-mi-long, 69-kilovolt transmission line that connects the Powerhouse to the Prospect Central Substation. Most of the transmission line parallels the Prospect Nos. 1, 2, and 4 Hydroelectric Project waterways and is located on private land running perpendicular to limited public viewpoints (e.g., road crossings).

The line comprises wood pole structures, transmission cables, conductors, insulators, and mounting equipment. The wood poles are individually identified and cataloged within the PacifiCorp system for management purposes via a number plate. The wood poles are tall, cylindrical, and augered into the earth. Generally, the structures are T-shaped; affixed to each pole is a wooden bar to which three insulators are mounted on either wood or metal brackets. The insulators extend up from the bracket, and each insulator is connected to one of the three transmission cables. The pole structures are often also laterally reinforced via guy wires anchored into the ground.

The Transmission Line contributes to the eligibility of the Prospect Hydroelectric Project Historic District. Character-defining features include the alignment and wood poles.

Prospect Sag Pipe (Inverted Siphon)

The Prospect Sag Pipe was previously recorded as the Prospect Inverted Siphon of the Prospect Nos. 1, 2, and 4 Hydroelectric Project, and has been determined eligible/contributing to the Prospect Hydroelectric Project Historic District. Water from the Prospect No. 3 tailrace is conveyed to the Prospect Nos. 1, 2 and 4 Hydroelectric Project by means of the sag pipe/inverted siphon. Water discharges from the Prospect No. 3 powerhouse into an open basin, from one side of which a wood-stave and steel pipe siphon carries a maximum of 150 cubic feet of water per second (cfs) across the Middle Fork Rogue River to the Middle Fork canal. A segment of the original wood stave pipeline was replaced at an unknown date; it is thought to date from circa 1964, which corresponds to a major flood event that took place that year. The sag pipe is scheduled for replacement in 2021 and will require consultation when design and construction plans are finalized (see Section 4.4.7).

Nye Ditch

Nye Ditch crosses the Project APE near Structure 4/1, between Highway 62 and the Prospect Central Substation. Additionally, a diversion associated with the northern segment of Nye Ditch extends underground through the APE in the vicinity of Structure 13/4, emptying into the Middle Fork Canal. Nye Ditch was constructed in two segments between 1920 and 1921. The extent of the northern segment is unknown, but was historically located north of Prospect and was used until the 1950s. One previously documented remnant, in ruin, is 2 mi north of the Project APE just east of Highway 62 (Shafer 1989).

The southern segment of Nye Ditch (including where it crosses the APE near Structure 4/1) is 6.5 mi long extending between Prospect and Cascade Gorge. The resource is an unlined earthen ditch that briefly parallels the elevated flume underneath the transmission line (Figure 2-1). The Nye Ditch Diversion near Structure 13/4 flows south to the canal through an underground tunnel (Figure 2-2). Its date of construction is unknown. As the Middle Fork Canal was constructed between 1926 and 1928, the diversion likely post-dates the original ditch construction.

Figure 2-1. Overview of Nye Ditch in the vicinity of Structure 4/1; view to the northeast.

The southern segment of Nye Ditch, completed in 1921, extends for 6.5 mi and is still in use to the present day. The ditch crosses the APE just south of Highway 62, near Structure 4/1. Another segment of Nye Ditch, in ruin, located 2 mi north of the APE, was previously recommended not eligible for listing in the NRHP (archaeological resource RR-1057) (Shafer 1989). It is not possible to provide a firm eligibility evaluation of Nye Ditch as a whole (the southern, intact segment) because such a small component of the resource is within the APE. Likewise, the Nye Ditch Diversion, which extends underground through the APE in the vicinity of Structure 13/4 and empties into the Middle Fork Canal, and its relationship to the larger expanse of Nye Ditch, remains undetermined. An intensive-level inventory of the resource would be necessary to assess its eligibility, including a complete physical description and history. If future actions by PacifiCorp will impact the structure, an evaluation on the ditch and consultation with SHPO will be necessary; no such actions are anticipated.

Figure 2-2. Area where Nye Ditch Diversion flows into the Middle Fork Canal; view to the southwest.

Crater Lake Highway Historic District

Crater Lake Highway was built between 1910 and 1925 after a movement by local officials to create an accessible and permanent route to Crater Lake. Crater Lake Highway was utilized until the 1960s, when the modern alignment of Highway 62 was constructed. Portions of Crater Lake Highway are still intact, including modern Mill Creek Drive, which extends through the Project APE between Structures 9/3 and 10/3 (Figure 2-3). The resource is a paved, two-lane road. The intact segment of Crater Lake Highway, between Cascade Gorge and the intersection of Mill Creek Drive with Highway 62, has been recorded as part of the Crater Lake Highway Historic District. The district has been determined eligible for listing in the NRHP (Bell 2011). If future actions by PacifiCorp will impact the district, an evaluation on the district and consultation with SHPO will be necessary; no such actions are anticipated.

Figure 2-3. View of the Crater Lake Highway Historic District where is crosses the APE. Structure 10/3 is visible in the background; view to the east.

ODOT Bridge 16017

ODOT Bridge 16017 is located within the Project APE between Structures 5/4 and 6/4 at milepost 42.19 on Highway 62. Built in 1963, the structure is a 167-ft-long reinforced-concrete deck-girder bridge (ODOT 2014) (Figure 2-4). The bridge spans the Prospect Nos. 1, 2, and 4 flumes, which convey water from the Prospect No. 2 Forebay to the Prospect No. 4 powerhouse. The bridge was constructed over two pre-existing flowlines that convey water from the Prospect No. 2 forebay to the Prospect No. 2 powerhouse; original design drawings indicate that the bridge was also designed to accommodate for a third flowline (never constructed).[4] As originally constructed, the bridge followed the standard specifications for the construction of roads and bridges of Federal Highway Projects, as detailed in the manual of the Bureau of Public Roads FP61. The original aluminum rails and posts were replaced with concrete barriers and metal guardrails around 1996 (Chris Bell, personal communication 2016).

[4] California Oregon Power Co. Flume Overcrossing, STA. 1032, Crater Lake Highway, Oregon Forest Highway Project 17, Bridge 16017. On file with the Oregon Department of Transportation, Salem, Oregon.

ODOT Bridge 16017, constructed in 1963, falls within the second period of significance (1946–1966) of Oregon bridge types characterized by mass production of standardized forms (Kramer 2004). To be eligible for listing in the NRHP, a bridge constructed during this period must be a design that has special or unusual engineering design elements (i.e., significant scale, significant engineering obstacles, or aesthetic considerations); be completed during the earliest iterations that a design type appeared on Oregon highways; or be an example of a design incorporating significant technological advances (i.e., prestressed beams, post-tensioning, or segmental construction) that was completed within the first two years of the innovations appearing on Oregon highways (Kramer 2004:74). This bridge does not appear to meet any of these criteria, being a late example of a ubiquitous type with later modifications to the guardrails. HRA recommended that ODOT Bridge 16017 is not eligible for listing in the NRHP. This recommendation was supported by ODOT Historian Chris Bell (Bell, personal communication, 2016). This resource will not be affected by any planned Project actions, and no review procedures or treatment measures are proposed for the structure.

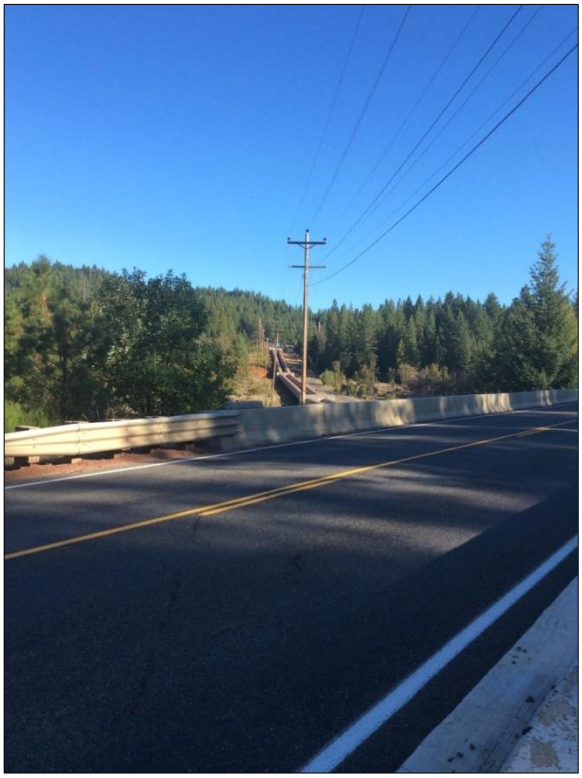

Figure 2-4. Overview of the Highway 62 Bridge 16017 within the APE with Structure 6/4 in the background; view to the north.

2.3.3 Traditional Cultural Properties

During the pre-licensing studies for the Project, consulting parties were asked to comment on potential traditional cultural properties (TCPs) within the Project. To date, no TCPs have been identified and, at this time, the assumption is that none are present within the Project APE. While no TCPs have been identified to date within the APE, over the course of the new license TCPs may be identified. If potential TCPs are identified, PacifiCorp will comply with National Register Bulletin 38: *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (USDI 1998). The methods for protection of these resources may vary widely depending upon the specific characteristics of the TCP and the nature of the effects.

The key principle for protection of TCPs is consultation. TCPs can be defined as eligible for inclusion in the NRHP because of their association with cultural practices or beliefs of a living community that are rooted in the community's history, and/or are important in maintaining the continuing cultural identity of the community. Thus, close coordination and formal consultation with the Tribes are essential to defining protection or mitigation measures. FERC has appointed a Tribal Liaison who can assist in the process, if needed.

3. Project Management and Preservation Goals and Priorities

Historic properties management follows a series of principles that form the basis for the management measures discussed in Chapter 4. The management of historic properties involves both the long-term preservation of the historic values of the properties and consideration of the effects of a licensee's actions on historic properties. According to the license application, PacifiCorp plans to continue operating the Project and is committed to managing the Project in a manner that protects significant historic properties, while not impeding the safe and efficient production of power. The primary goals over the course of the license include appropriate replacement of historic power generation and transmission facilities and ensuring that archaeological sites aren't harmed when working in known archaeological sites or when ground disturbance occurs.

Specifically, PacifiCorp seeks to maintain the integrity of the Project's NRHP-eligible properties while maintaining the flexibility needed to manage the Project as required by law and operating conditions. These historic properties are the sites, buildings, and structures described in Chapter 2, the historic district overall, and any as yet undiscovered historic properties.

3.1 Preservation Standards

There are four distinct, but interrelated, approaches to the treatment of historic properties: preservation, rehabilitation, restoration, and reconstruction. These approaches, based upon information contained in the Secretary of the Interior's *Standards for the Treatment of Historic Properties*, are commonly referred to as the Secretary's Standards.

Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time. Preservation maintains the existing integrity and character of a historic property by arresting or retarding deterioration caused by natural forces and normal use, and includes provisions for the protection of archaeological resources. *Preservation* for historic buildings, structures, sites, objects, and districts includes both maintenance and stabilization. Maintenance is a systematic activity that mitigates wear and deterioration by protecting the condition of a property. Stabilization entails reestablishing the stability of an unsafe, damaged, or deteriorating property while maintaining its existing character. *Preservation* does not include extensive replacement and new construction; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems, and other code-required work needed to make properties functional is appropriate within a preservation project.

Based on the operating needs and anticipated goals and priorities of the new license, *Preservation*, as defined above, is the preferred approach adopted by PacifiCorp at the Project. The Secretary of the Interior's *Standards for Historic Preservation Projects* (Federal Register, Vol. 48. No. 190, Part IV) outlines preservation standards and procedures. These standards are based on the philosophy that actions requiring the least degree of intervention are preferable.

The primary principle upon which the preservation standards are based is the desire to maintain and repair historic materials and to retain a property's form as it has evolved over time. The standards recognize that change is integral to the continued operation of the Project and are designed to accommodate that change. PacifiCorp applies the preservation standards in a reasonable manner, taking into consideration economic and technical feasibility, as well as requirements for overall management of the Project and its other resources. Application of the preservation standards will assure retention of the character-defining features of the Project's historic properties, while permitting the flexibility required to upgrade facilities and equipment for efficient and economical operation. The standards will guide future actions by PacifiCorp as long as they own and operate the Project. They apply to both the interior and exterior of the powerhouse, dams and intake, and the water conveyance system. Additionally, PacifiCorp will document, evaluate, and protect archaeological resources, where found, if any are identified in the future.

PacifiCorp is practicing good preservation techniques by maintaining existing facilities and equipment through painting, retooling, repairing existing equipment, and typically using in-kind materials when replacement is needed. PacifiCorp will continue this policy of preserving the resource, wherever possible. Although the Project's resources have been properly maintained over the years, the normal deterioration of materials may require stabilization. Additionally, repairs with in-kind materials may not be feasible due to operational requirements or changing technologies related to the materials themselves (for example, replacement of wood-stave pipelines with steel). Replacement of material with a compatible substitute will be utilized when an in-kind option is not feasible or available.

As noted above, *preservation* constitutes the philosophical approach guiding the management of historic properties at the Project, including buildings, structures, sites (including archaeological sites), objects and districts. The standards that govern preservation efforts at the Project are outlined in detail in this section. These standards are adapted from the Secretary of the Interior's *Standards for Historic Preservation Projects* (Federal Register, Vol. 48. No. 190, Part IV).

1. **Retain Appropriate Use**—A property shall be used for its historic purpose or placed in a new use that requires minimal change to the defining characteristics of the property, its site, and its environment.

2. **Retain Historic Character**—The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. **Maintain Appropriate Era**—Each property shall be recognized as a product of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall be avoided.

4. **Retain Historic Changes**—Most properties change over time; changes that have acquired historic significance in their own right shall be retained and preserved.

5. **Retain Distinctive Features**—Distinctive features, finishes, and construction techniques, or examples of craftsmanship that characterize a property shall be preserved. Character-defining features are described in Section 2.3.

6. **Repair Historic Features**—Deteriorated historic features shall be repaired rather than replaced. Where the extent of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visible qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. **Use Appropriate Cleaning Methods**—Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of buildings and structures, if appropriate, shall use the gentlest means possible.

8. **Protect Archaeological Resources**—Significant archaeological resources potentially affected by a Project shall be avoided, and archaeological resources generally will be protected and preserved. If such resources must be disturbed, minimization or mitigation measures will be implemented (See Section 3.3)

9. **Alterations To Be Compatible**—New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. New work shall be differentiated from the old and shall be compatible with the massing, size, and scale of the historic architectural features to protect the historic integrity of the property and its environment.

10. **Design Removable Alterations**—New additions and adjacent or related new construction shall be undertaken in a manner so that if removed in the future, the essential form and integrity of the historic property and its environment will remain unimpaired.

3.2 Management Goals and Principles

PacifiCorp is committed to the stewardship of historic properties within the FERC Project boundary in coordination with the appropriate Tribes and federal agencies. Historic properties are considered non-renewable evidence of human occupation. These can include artifacts, ruins, architecture, and locations associated with traditional beliefs. PacifiCorp will protect and preserve the integrity of NRHP-eligible properties affected by the Project in the APE to the extent possible within the requirements of continuing Project operations and the need to balance stewardship of all sensitive resources in an integrated fashion. Effective management of historic properties will be founded on the goals and management principles discussed below, and conducted through ongoing management programs throughout the term of the operating license.

PacifiCorp's goals for protecting and managing historic properties, including unevaluated properties, are the following:

- Protect and maintain the integrity of historic properties.
- Avoid or mitigate Project-related impacts on historic properties.
- Maintain confidentiality of the location of sensitive historic properties.
- Ensure consistency with existing federal regulations and federal resource management plans.
- Address agency issues and coordinate management programs with the responsible land management and historic preservation agencies under the requirements of Section 106 of the NHPA.
- Maintain compatibility with the goals of other resource areas, such as water use and quality, aquatic resources, terrestrial resources, recreation, aesthetics, land management, and the needs of Project facilities and operations.
- Demonstrate good stewardship of historic properties by providing programs to reduce vandalism and looting and encourage public awareness and stewardship of the value of these resources.
- Provide cost-effective measures for historic properties that balance with other resources and meet or exceed existing environmental regulations.
- Maintain structures in a reasonable condition

3.3 Protection and Mitigation of Archaeological Resources

To achieve the goals listed above, PacifiCorp will consult and coordinate with responsible land management agencies and the Tribes, as well as follow the standards regarding the treatment of

archaeological resources developed by the Advisory Council on Historic Preservation (ACHP), published in *Recommended Approach for Consultation on Recovery of Significant Information from Archaeology Sites* (ACHP 1999). While regulations governing Section 106 were revised in January 2001, these principles for the treatment of archaeological resources remain relevant and appropriate. These principles are identified and described below.

Consult and Coordinate with Agencies and Tribes: Some of the Project APE is on lands managed by USFS; this includes at least a portion of 35JA122.[5] Effective management of historic properties will require close coordination and consultation between PacifiCorp, USFS, as well as the Tribes and other interested parties. Consultations are needed to inform agencies and the Tribes of current or future Project-related activities that may affect historic properties on Project lands within the APE, as well as to define mitigation for the adverse effects of these activities (if any).

Avoid Anticipated Project Effects: A basic principle in dealing with potential adverse effects is to avoid these effects by ensuring that proposed activities and ongoing operation and maintenance activities avoid NRHP-eligible and unevaluated archaeological sites. This is best done through good communication among the PacifiCorp HPMP Coordinator, Project operations, and maintenance staff so that activities can be planned or redesigned early in the process to avoid archaeological sites.

Preserve in Place through Archaeological Site Protection: In general, if Project effects to an archaeological site cannot be avoided, the preferred option is to preserve in place by protecting the site from adverse Project effects. Protecting an archaeological site in place conserves the significant cultural and scientific values of the site for the future and may be more cost-effective than full data recovery mitigation measures.

Mitigate Adverse Project Effects Through Data Recovery: If archaeological sites cannot be avoided or protected from ongoing or planned activities, PacifiCorp will mitigate adverse Project effects through data recovery excavations and investigations to recover a substantial sample of the scientific data contained in the site. Data recovery will be considered only if the preferred alternatives of site avoidance or protection cannot be fully implemented. Data recovery removes archaeological resources from their context. If other options cannot protect a site (or the information it contains) from destruction, data recovery investigations will be conducted to obtain and preserve a sample of the scientific information that will otherwise be destroyed.[6]

[5] The boundary of 35JA122 within the Project APE is on private lands, not federal lands. However, portions of 35JA122 extend north outside of the Project APE and onto lands managed by the USFS.

[6] Artifacts and/or other cultural materials (such as historic documents) will be collected and/or curated in accordance with either the requirements of an Oregon Archaeological Permit and/or PacifiCorp's general policy, which requires archaeological materials be either returned to the land owner, housed at a state-approved curation facility, or remediated to the appropriate Tribes. Curation requirements on PacifiCorp property, private lands, and USFS lands may vary and will be reviewed on a case-by-case basis in accordance with all applicable state and federal laws pertaining to the protection of archaeological materials.

3.4 Principles for Protection and Mitigation of Historic Buildings and Structures

This HPMP follows the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* as guidance for the protection of PacifiCorp's historic buildings and structures (36 CFR Part 68; July 12, 1995 Federal Register Vol. 60, No. 133). The *Guidelines* identify four distinct, but interrelated, approaches to the treatment of historic properties: preservation, rehabilitation, restoration, and reconstruction. These approaches are described below.

Preservation: Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time. Preservation maintains the existing integrity and character of historic buildings and structures by arresting or retarding deterioration caused by natural forces and normal use. It includes both maintenance and stabilization. Maintenance is a systematic activity that mitigates wear and deterioration by protecting the condition of a property. Stabilization entails reestablishing the stability of an unsafe, damaged, or deteriorating property while maintaining its existing character. Preservation does not include extensive replacement and new construction; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems, as well as other code-required work needed to make properties functional, is appropriate within a preservation project.

Rehabilitation: Rehabilitation is the act or process of making possible an efficient compatible use for a property through a program of repair, alteration, and addition that preserves those portions or features that convey the property's historical, cultural, or architectural values. Rehabilitation may involve major repairs or additions. This technique is applicable, for example, if continued efficient operation necessitates expansion of a powerhouse or changes to the dam or water conveyance system.

Restoration: Restoration accurately presents the form, features, and character of a property as it appeared at a specific historic period. It involves removal of features from other periods and replication of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems, as well as other code-required work needed to make properties functional is appropriate within a restoration project. This technique is generally not applicable to the Project's resources as long as the Project remains in operation, since efficient and economical operation requires that previous changes remain, thus precluding restoration to an earlier, outdated appearance. Restoration of an individual building, such as the guest house, may be appropriate in some circumstances.

Reconstruction: Reconstruction is the process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location. This

technique is not applicable to PacifiCorp's Project while it remains an operating hydroelectric facility.

As noted above, PacifiCorp has adopted "preservation" as the appropriate level of treatment for developments at the Project. Preservation of eligible structures will result in the Project's continued operation and retention of its character-defining features.

3.5 Principles for Protection and Mitigation of Traditional Cultural Properties

As noted in Section 2.3.3, while no TCPs have been identified to date within the APE, over the course of the new license, TCPs may be identified. If potential TCPs are identified, PacifiCorp will comply with National Register Bulletin 38: *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (USDI 1992). The methods for protection of these resources may vary widely depending upon the specific characteristics of the TCP and the nature of the adverse effects. The key principle for protection of TCPs is consultation, as described above.

4. Project Effects and Mitigation/Management Measures

This chapter provides the basic tools for PacifiCorp staff to use in managing historic properties at the Prospect No. 3 Hydroelectric Project. Though managed separately, the resources at Prospect No. 3 are historically and physically intertwined with those of the Prospect Nos. 1, 2, and 4 Hydroelectric Project. As such, and to ensure consistent treatment of the Historic District across both projects, measures for protecting, preserving, and mitigating effects to historic properties at Prospect No. 3 mimic those found in the HPMP for Prospect Nos. 1, 2, and 4.

The tools include:

- Designation of an HPMP Coordinator;
- Procedures for coordination with federal and state review agencies;
- List of probable changes anticipated as a result of relicensing;
- Review procedures for evaluation of the potential effects to historic properties of proposed changes, operations and maintenance;
- Protocol for the unanticipated discovery of historic properties;
- Protocol for monitoring actions with the potential to affect historic properties;
- Protocol for treatment of human remains;
- Protocol for response to vandalism;
- Protocol for emergency response;
- Procedures for training of personnel;
- Provisions for public interpretation; and
- List of activities that will be except from further review under the HPMP.

4.1 Designation of an HPMP Coordinator

PacifiCorp's cultural resource subject matter expert will serve as the HPMP Coordinator for the Prospect No. 3 Hydroelectric Project. His/her responsibilities will be to carry out the procedures and protocols identified in this HPMP and coordinate with PacifiCorp on-site operations staff

regarding the provisions of this plan. He/she will also be the primary point of contact responsible for consultation with the Oregon SHPO, FERC, and other interested parties regarding cultural resource compliance issues.

To best ensure compliance with all applicable current regulations and policies, the HPMP coordinator will have a background in management, archaeology, geology, historic preservation, or environmental planning, although these technical backgrounds are not required. If the designated HPMP Coordinator does not have these qualifications, PacifiCorp will provide appropriate training in historic preservation for the individual to succeed in this position. PacifiCorp will provide the HPMP Coordinator with access to periodic training in federal and state cultural resource workshops that address issues related to the Project's compliance with applicable historic resource laws and regulations, including Section 106 of the NHPA, as amended, and the application of new technologies in historic and cultural resource management. These programs may also include lectures and conferences sponsored by the Oregon SHPO, the National Trust for Historic Preservation, the Northwest Hydropower Association, the National Preservation Institute, Edison Electric Institute, the Utility Roundtable on Cultural Resources, and others.

The HPMP Coordinator's responsibilities include:

- Review activities that may affect cultural resources and assist with compliance.
- Coordinate the implementation of mitigation measures.
- Report the discovery of looting or vandalism and provide a summary of actions taken and any repair or mitigation that occurred as a result.
- Coordinate with individual managers and field staff for planned construction and maintenance activities.
- Notify federal land management agencies about vandalism, looting, or any undertakings that may affect historic properties in their jurisdiction.
- Participate in consultation with agencies and Tribes, including the Annual Meeting with the USFS, SHPO, and the Tribes.
- Arrange for qualified archaeologists when needed for undertakings requiring inspection, mitigation, and monitoring.
- Schedule and organize training for staff.
- Coordinate with land management agencies in providing interpretive programs.

- Visit or arrange for qualified archaeologists to visit archaeological sites annually to ensure that measures are effective and to check for possible damage to sites from looting or vandalism, erosion, or other sources of disturbance.
- Coordinate the planning, review, and completion of scheduled mitigation measures.

4.2 Agency Coordination

PacifiCorp interacts with several agencies in its management of historic properties within the Prospect No. 3 Hydroelectric Project. The roles of these agencies and Tribes are based on the laws and regulations described in Chapter 1, above. In addition, PacifiCorp may partner with nongovernmental entities, such as historical societies, in public education activities and seek their input on management of collected historic material.

Implementation of the HPMP is the primary responsibility of PacifiCorp as a FERC licensee. However, the USFS, as the federal land manager, will also play an important role in its implementation due to the location of Project features within the RR-SNF. Other agencies/jurisdictions, including SHPO and the Tribes, will also play a continuing role over the term of the new license. Table 4-1 shows the basic roles and responsibilities of the primary entities involved in HPMP implementation.

Table 4-1. Agency Roles and Responsibilities.

Agency	**Roles and Responsibilities**
FERC	Lead Agency Official for Section 106 compliance Statutorily responsible for ensuring that the HPMP is carried out Initiates formal consultation with Tribes
PacifiCorp	License holder FERC designee for Section 106 compliance Collaborates with and support FERC's consultation efforts Responsible for meeting the terms of the HPMP
HPMP Coordinator	Responsible for implementing the HPMP pursuant to license conditions Notifies federal land managers, who will notify the Tribes, of newly discovered sites found as a result of PacifiCorp activities, particularly where graves, human remains, funerary objects, or sacred sites are concerned.

Table 4-1. Agency Roles and Responsibilities.

Agency	Roles and Responsibilities
SHPO	Responsible for reviewing properties to determine National Register eligibility Consults on activities affecting eligible properties Issues state archaeological permits for investigations within known sites on non-federal public and private lands
ACHP	Serves as the review body in instances where the parties involved in consultation are unable to reach agreement on the actions required
USFS	Makes determinations of eligibility for historic properties on USFS lands Issues ARPA permits when archaeological research associated with Project-related excavation or removal is required Responsible for Section 106 compliance on USFS lands in consultation with SHPO
Tribes	Cow Creek Band of Umpqua Tribe of Indians, the Confederated Tribes of Grand Ronde, and the Confederated Tribes of Siletz Indians Involved in consultation on individual activities, specifically pertaining to sites found as a result of PacifiCorp activities, particularly where graves, human remains, funerary objects, or sacred sites are concerned
Private Land Owners	Maintains control and authority over their property Consults directly with PacifiCorp and the SHPO where actions may affect historic properties on private lands within a Project easement

4.2.1 Federal Agencies

PacifiCorp interacts with several federal agencies that issue permits for its operation of the Project. These agencies include the FERC, which issues licenses for the operation of the Project; USFS RR-SNF, which administers a portion of the Project APE; and the U.S. Army Corps of Engineers, which issues permits for developments affecting wetlands and navigable waters. To enable these agencies to fulfill their responsibilities under the National Environmental Protection Act (NEPA) and Section 106 of the NHPA, PacifiCorp will provide them with information on the potential effects of proposed actions on historic properties that are listed in, or eligible for listing in, the NRHP. As appropriate, meetings will be held to discuss proposed actions; potential effects to historic properties; and proposed measures to identify and evaluate historic properties, and avoid, minimize, or mitigate for adverse effects to historic properties as a result of these actions. As

appropriate, PacifiCorp will provide these agencies with scopes of work and/or research designs for these efforts and afford them the opportunity to comment on the scopes of work and/or research designs. The results of all efforts will be shared with these agencies, and they will be afforded the opportunity to comment. Any efforts to identify, evaluate, or avoid, minimize, or mitigate for adverse effect to archaeological historic properties on the RR-SNF will likely require a permit issued under the authority of the American Resources Protection Act of 1979 (ARPA).

Discovery and investigation of certain kinds of historic properties on the RR-SNF could also trigger the need for consultation with Tribes under the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), and/or Oregon state laws. Native American ancestral remains, funerary objects, sacred objects and objects of cultural patrimony associated with Oregon Tribes are protected under state law, including criminal penalties (Oregon Revised Statutes [ORS] 97.740-.994 and 358.905-.961). The laws recognize and codify the Tribes' rights in the decision-making process regarding ancestral remains and associated objects. Oregon laws (ORS 146.090 & .095) outline the types of deaths that require investigation and the accompanying responsibilities for that investigation. The law enforcement official, district medical examiner, and the district attorney for the county where the death occurs are responsible for deaths requiring investigation. Deaths that require investigation include those occurring under suspicious or unknown circumstances. If human remains that are inadvertently discovered or discovered through criminal investigations are not clearly modern, then there is high probability that the remains are Native American and therefore ORS 97.745 applies, which prohibits any person willfully removing human remains and/or objects of cultural significance from its original location and requires immediate notification of State Police, SHPO, Commission on Indian Services (CIS), and all appropriate Native American Tribes.

Though NAGPRA is best known for requiring museums and curation facilities to repatriate human remains and funerary objects to tribes, NAGPRA also requires that consultation with appropriate Native American Tribes prior to the intentional excavation, or removal after inadvertent discovery, of several kinds of cultural items, not only including human remains and funerary objects, but also sacred objects and cultural patrimony. Under this act, sacred objects are defined as, "Specific ceremonial objects which are needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present day adherents. [25 USC 3001 (3)(C)]." Cultural Patrimony was defined in the law as, "[a]n object having ongoing historical, traditional, or cultural importance central to the Native American group or culture itself, rather than property owned by an individual Native American, and which, therefore, cannot be alienated, appropriated, or conveyed by any individual regardless of whether or not the individual is a member of the Native American tribe or Native Hawaiian organization and such object shall have been considered inalienable by such Native American group at the time the object was separated from such group. [25 USC 3001 (3)(D)]." Should human remains, funerary objects, sacred items, or

cultural patrimony be identified on the RR-SNF, consultation with the appropriate Tribes to investigate and repatriate such items will need to be completed.

4.2.2 Oregon State Agencies

As detailed in this HPMP, PacifiCorp consults with the Oregon SHPO regarding historic property management efforts, and supplies copies of studies and inventory forms as appropriate. Over the course of the license, PacifiCorp may coordinate with SHPO to discuss proposed actions; potential effects to historic properties; proposed measures to identify and evaluate historic properties; and how to avoid, minimize, or mitigate for adverse effects to historic properties as a result of these actions. As appropriate, PacifiCorp will also provide the SHPO with scopes of work and/or research designs for such actions, and afford them the opportunity to comment. Furthermore, in compliance with and fulfillment of ORS 390.920 and 390.235, PacifiCorp's archaeological consultant may apply for a permit to investigate and/or excavate into an archaeological site on private lands in response to a need to perform subsurface activities, including archaeological investigation or ground disturbing activities associated with Project actions, within the recorded boundaries of an archaeological site. Any efforts conducted under a permit issued by the Oregon SHPO will adhere to the conditions of that permit, and ORS 390.235.

4.3 Review Procedures

The various types of Project actions outlined in Section 4.3 have the potential to affect historic properties. Two levels of procedures for evaluating and minimizing adverse effects on resources are defined below. Each level corresponds to the significance of the proposed action, in terms of the extent of the anticipated changes. Actions not subject to review procedures include those with no potential to affect a historic property, such as ground disturbance outside of archaeological sites or modifications to ineligible/noncontributing buildings or structures.

4.3.1 Level 1 Review Procedures

Level 1 Review procedures apply to routine maintenance activities such as cleaning, painting, caulking, and repair work that replace damaged features with in-kind materials as defined in Section 4.4.1. It further includes all actions within non-eligible archaeological site boundaries. Unless otherwise described, actions that have the potential to affect known resources and the decision-making process for determining that they were Level 1 reviews will be captured in the annual report (see Section 5.1).

The procedures to be followed for this type of work include:

1. PacifiCorp maintenance and engineering staff shall refer to Section 2.3.2 as directed by the HPMP Coordinator to identify character-defining features for affected resources.
2. If the proposed action will not alter a character-defining feature, work proceeds.
3. If the proposed action will alter any character-defining feature, PacifiCorp staff, under the supervision of the HPMP Coordinator, will apply the Prospect Project rehabilitation standards presented in Chapter 4 of this document to assure that the proposed change will not adversely affect the resource. If no adverse effect will occur, work proceeds.
4. If the proposed action will adversely affect a historic property or a character-defining feature of a historic property, PacifiCorp staff, under the supervision of the HPMP Coordinator, will consult pertinent reference material to identify a sensitive approach for accomplishing the needed improvement (a PacifiCorp-only internal review process). If the HPMP Coordinator is able to define a historically sensitive approach that will result in no adverse effect (including but not limited to revising the action to avoid historic properties), work proceeds.
5. If the proposed action will occur within the boundaries of a non-eligible archaeological resource on private or federal lands, no consultation is required.[7] If the proposed action will occur in an eligible or undetermined archaeological site on private lands, a state archaeological permit may be required. If the proposed action will occur in an eligible or undetermined archaeological site on federal lands, an ARPA permit may be required (see Section 4.2.).[8]
6. If the effects of the proposed work are unclear, or if there will be an adverse effect to a historic property, the HPMP Coordinator will consult with the appropriate staff of the SHPO (and the USFS on federal lands), and move to Step #4 of Level 2 Review Procedures.

4.3.2 Level 2 Review Procedures

This category includes modifications or additions to buildings or structures that may result from changes of use, modernization, operational efficiency, or technological advances. This category also includes changes and additions to (or subtractions from) the physical setting of the building. This category also includes replacement of features with unlike materials, proposed changes that are likely

[7] If additional sites are identified through inadvertent discovery in the future, no action will be required for those archaeological resources on private or federal lands that have been determined not eligible.

[8] One undetermined archaeological site, 35JA122, is known to exist on both private and federal lands within the APE.

to affect multiple character-defining elements or an extensive portion of a historic resource, and changes due to neglect, transfer, or sale of a property. This category of work also includes all actions within NRHP-eligible archaeological sites or archaeological sites that have not been evaluated for the NRHP.

Because this work is more extensive than maintenance, and has a greater probability of adversely affecting historic properties, a more extensive review procedure will be followed. This process includes review and approval by the SHPO (and the RR-SNF on federal lands). The procedures to be followed include:

1. PacifiCorp will discuss proposed actions to determine whether they may adversely affect historic properties. PacifiCorp will refer to Section 2.3.2 to identify character-defining features if a building or structure is to be altered, and will determine which projects have a potential adverse effect upon historic properties, as defined in 36 CFR Part 800.5. If the proposed action will not have an effect on the resource, work proceeds and the results of the review will be detailed in the annual report (see Section 5.1).
2. If the proposed action has the potential to affect historic properties, the HPMP Coordinator will:
    a. Apply the project preservation standards presented in Chapter 3 of this document;
    b. Identify sensitive ways to minimize the effect and accomplish the needed improvement.
3. The HPMP Coordinator will submit a description and appropriate illustrations of the proposed action, based on Step 2 above, to the SHPO (and the RR-SNF on federal lands) along with a recommendation regarding potential effects to historic properties. The SHPO (and RR-SNF on federal lands) will review this information and comment on whether they believe the project will affect historic properties. If the HPMP Coordinator and the SHPO (and RR-SNF on federal lands) believe that the project will have no effect or no adverse effect, work proceeds.
4. If the HPMP Coordinator believes that the action will not have an adverse effect on historic properties, but the SHPO (and/or the RR-SNF on federal lands) believe(s) that the project will have an adverse effect, then the HPMP Coordinator will request that the FERC determine whether the action will adversely affect historic properties pursuant to 36 CFR 800.5. The FERC will attempt to resolve the potential adverse effect with the SHPO (and RR-SNF on federal lands) pursuant to 36 CFR 800.6 (see also Section 5.3).
5. If the HPMP Coordinator, the FERC, and the SHPO (and the RR-SNF on federal lands) believe that the action will have an adverse effect on historic properties, the HPMP

Coordinator and the SHPO (and RR-SNF on federal lands) will consult to determine appropriate avoidance, minimization, or mitigations measures to resolve the adverse effect pursuant to Section 4.5 below.

For Sections 4.4.5 and 4.4.6, neglect, transfer or sale actions, consultation with the SHPO (and the RR-SNF on federal lands) shall include maintenance actions, alternative uses, and/or sale and transfer agreements that seek to avoid, minimize, or mitigate for adverse effects.

4.4 Changes Anticipated Under Relicensing

The routine maintenance, operation, and improvement actions that will occur during the new license period have the potential to affect historic properties. Since all possible actions that might occur during the new license period cannot be known at this date, general categories or types of actions were developed to provide a basis for determining the necessary management steps.

4.4.1 Routine Maintenance and Repairs

This category includes routine procedures, such as cleaning, painting, caulking, and repair work that replaces damaged features with in-kind or similar materials by onsite maintenance crews. These actions should not be in eligible or undetermined archaeological sites, and will involve limited ground disturbance. Anticipated work includes:

- Replacement of wood, steel, and/or concrete support structures with in-kind materials;
- Maintenance or replacement of concrete anchor blocks at the penstock with in-kind materials;
- Maintenance or replacement of surge tank walls with in-kind materials;
- Replacement of glazing, as well as painting and sealing of windows at the powerhouse; and
- General maintenance, repair, or replacement of Project components.

These types of actions would be evaluated via a Level 1 Review, would have no adverse effect, and no mitigation would be required.

4.4.2 Alterations to Buildings, Structures, and Sites

This category includes modifications of, or additions to, buildings, structures, or sites as a result of use, modernization, operational requirements, or technological advances. This category includes replacement of features with unlike materials. Anticipated work includes:

- Replacement of turbines and other electrical equipment with modern equipment to maintain operational efficiency;
- Alterations to the powerhouse structure to maintain adequate clearances around equipment or other requirements in response to changing regulations; and
- Replacement of existing roofing with other materials.

If such an action were to occur, a Level 2 Review may be required.

4.4.3 Isolation from, or Alteration of, the Property's Surrounding Environment

This category includes changes and additions to (or subtractions from) the physical setting of the buildings. No such work is anticipated at this time. If such an action were to occur, a Level 2 Review may be required.

4.4.4 Introduction of Elements Out of Character with the Property or its Setting

This category includes changes to characteristic features of the larger area that have the potential to affect the setting of the property. No such work is anticipated at this time. If such an action were to occur, a Level 2 Review may be required.

4.4.5 Neglect of a Property Resulting in Deterioration or Destruction

No properties are currently in a state of dereliction, and demolition or neglect of buildings or structures is unlikely to occur. If such an action were to occur, a Level 2 Review may be required.

4.4.6 Transfer or Sale of the Property Without Preservation Conditions

No transfer, sale or lease of buildings or structures is anticipated. If such an action were to occur, a Level 2 Review may be required.

4.4.7 Example of Known Actions: Conduit Replacement

Known actions to historic buildings and structures over the course of the Project license are limited to replacement of the sag pipe and the 5,448-ft-long wood-stave flowline. Both structures are eligible to the NRHP under Criteria A and C as contributing to the historic district. The structures are planned for replacement with steel in the same alignment and massing (size/shape) as the current

wood-stave pipe.[9] Replacement of wood stave with compatible substitute steel pipeline is the policy of PacifiCorp, allows for continued and improved operations at the Project, and has been an accepted treatment for the replacement of historic-period wood-stave pipes in the past (see the Prospect 1, 2, and 4 flowlines, OHSD 2011).

Replacement of the wood-stave pipeline and sag pipe will alter materials of the Project, specifically those of the South Fork Conduit (Water Conveyance System) and the Prospect Sag Pipe (Inverted Siphon), both contributing structures to the Prospect Hydroelectric Project Historic District. For the South Fork Conduit, the repair/replacement will be made in the same alignment and massing (size/shape) as the current wood-stave pipe. For the Prospect Sag Pipe, the repair/replacement will be made in the same alignment and massing (size/shape) as the current wood-stave and steel pipe.

Replacement of wood stave with compatible substitute steel pipeline complies with the Secretary of the Interior's Standards for *Preservation*. Preservation Standard No. 6 specifies that "deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials" (36 CFR 67.7.b). While replacement of wood stave with steel does not meet the requirement for materials, PacifiCorp is committed to maintaining the original design in regards to alignment and massing.

Further, the overall integrity of both the South Fork Conduit (water conveyance system) and the Prospect Hydroelectric Project as a whole will not be diminished to such an extent that the property would no longer be eligible for inclusion in the NRHP. However, cumulative maintenance actions such as these, where removal of historic-period materials (wood) are replaced with modern materials (steel) can be viewed as adverse over time.

As defined in 36 CFR Part 800, an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Examples of adverse effects include physical destruction of or damage to all or part of the property and alteration of the property, including repair and maintenance that is not consistent with the Secretary of the Interior Standards for the Treatment of Historic Properties (36 CFR Part 68), among others.

Resolution of Effects

Assuming the replacement of the wood-stave pipe with compatible substitute steel is the chosen alternative, a finding of an adverse effect for the removal and replacement of the two resources,

[9] Commodity (e.g., steel, oil) prices and evolving construction methods and materials may dictate other replacement alternatives than those presented herein.

specifically the South Fork Conduit (Water Conveyance System) and the Prospect Sag Pipe (Inverted Siphon), will likely be determined by SHPO pending further consultation upon completion of final construction designs (i.e., a Level 2 Review). Previous adverse effects to the Prospect Hydroelectric Project Historic District were mitigated via recordation. PacifiCorp will continue to add to the body of historic recordation via an entry on the PacifiCorp website in a format similar to a Historic American Engineering Reports (Level 2), though not vetted by the National Park Service. SHPO will be afforded an opportunity to review and comment on such a draft report prior to its upload to the website. No additional mitigation is proposed.

4.5 Avoidance

Avoidance should always be the initial subject of consultation. PacifiCorp should determine, through consultation with the SHPO (and the RR-SNF on federal lands), if there can be slight changes to their plans that would avoid the adverse effect. Avoidance may represent a change in the materials preferred for painting or minor repair work.

4.6 Archaeological Monitoring

Archaeological monitoring is an appropriate measure when an activity could affect archaeological historic properties or unevaluated sites, and the activity has a very discrete area of impact so that archaeological data recovery is not appropriate. Such actions might include transmission corridor maintenance, road maintenance, or pole maintenance. A qualified archaeologist is present during ground-disturbing operations and is authorized to halt operations should archaeological material be revealed. Upon halting the operation, the monitor evaluates the material and assesses its potential significance. If the material is not considered significant, the operation is permitted to continue. Monitoring may be appropriate for actions detailed in Sections 4.4.2, 4.4.3, and 4.4.4, and implemented via Level 2 Review Procedures.

4.7 Options for the Resolution of Adverse Effects

In the event that major changes to the historic properties of the Project are required or anticipated, and alternative procedures, designs, and/or uses that reduce or eliminate adverse effects are not feasible, PacifiCorp will commit to recording the historic properties to state Level 2 documentation standards of the Historic American Building Survey (HABS) and Historic American Engineering Record (HAER). State-level versions of HABS/HAER Level 2 Documentation include written data including a history and description of the resource; digital photographs of exterior and interior views; historic views and photographs, if available; and may include select representations of existing architectural and engineering plans and drawings, if available and appropriate. The state-level

HABS/HAER documentation may encompass all or portions of the Project and may include all or portions of the study, as determined by the SHPO (and the RR-SNF on federal lands) in discussions with PacifiCorp.

Resolution of adverse effects to historic properties may take a variety of forms depending on the nature of the undertaking and the practicality of measures needed to avoid, minimize or mitigate for the effects. Certain actions that may represent an adverse effect may be able to be resolved through measures that seek to avoid or minimize the effect, while others may require mitigation measures. The following measures are offered as possible resolutions to adverse effects as implemented through the review procedures discussed above.

1. **Design Guidelines** for projects with the potential to alter the historic character of a property or properties may be an appropriate minimization of adverse effects resolution. Such guidelines may identify appropriate landscaping, construction materials, massing, location, and other aspects of a construction design so that it can be built in such a way as to minimize the effect it has on historic properties. This would be an appropriate resolution measure for many of the actions described in Sections 4.4.2, 4.4.3, and 4.4.4.

2. **Archaeological data recovery** often serves as mitigation in instances where an NRHP-listed or eligible site cannot be avoided or preserved. Data recovery seeks to recover the information that the affected portion of the site contains through a controlled archaeological excavation and the analysis of recovered material. The Advisory Council on Historic Preservation has published a *Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites* (64 FR 27085-87, 18 May 1999) that provides guidance on this issue; the SHPO also maintains current standards and guidelines that should be followed. Data recovery also may be an appropriate resolution to actions detailed in Sections 4.4.2, 4.4.3, and 4.4.4.

3. **Recordation** of standing structures is a standard approach to the mitigation of adverse effects upon architectural resources. Recordation is generally undertaken in accordance with the standards and specifications promulgated by HABS/HAER as well as the SHPO. Documentation can include written narrative, large-format black-and-white photography, and measured drawings. The standards are available from the regional office of the National Park Service. Recordation may be an appropriate resolution to actions detailed in Sections 4.4.2, 4.4.3, and 4.4.4.

4. **Interpretation and Education Enhancement**: The physical location of the Project precludes any adequate, publically accessible areas for physical displays to provide for interpretation and education on the history of the Project and electrical power generation. However, the adjacent and physically and historically connected Prospect No. 1, 2, and 4

Hydroelectric Project maintains an interpretive sign at North Fork Dam Park. The sign includes information related to the whole of the Prospect Hydroelectric Project Historic District, including the Prospect No. 3 Hydroelectric Project. Future mitigation may incorporate additional interpretation or educational enhancement at North Fork Dam Park. Additional interpretation and education can be afforded to the public via PacifiCorp's web-based portals, which currently house past mitigation/documentation efforts from previous mitigation for Project actions. Other public outreach measures, such as public archaeology or a regional or traveling display, may also be deemed appropriate mitigation.

4.8 Protocol for the Unanticipated Discovery of Historic Properties

Despite best efforts, it is possible for unknown historic properties, particularly archaeological resources, to be uncovered or located during routine maintenance and construction activities. A resource discovery may consist of, but not be limited to:

- historic artifacts, foundations, wells, privies that are more than 50 years old;
- stone, bone, wood, or antler tools or artifacts;
- deposits of midden sediments;
- clusters of fire-modified rock (FMR), charcoal, or other evidence of fire-related activities;
- faunal materials in association with stone chips or tools
- expansion of Project boundaries to include new buildings and structures
- revision of the historic district's period of significance

PacifiCorp staff will undergo training in preservation techniques as detailed in Section 4.12 to aid in the understanding and identification of potential historic properties. If any archaeological resources, buildings, structures, objects, or sites which appear to be older than 50 years are encountered by PacifiCorp staff during routine maintenance and construction activities, or during emergency situations, the following protocol will be implemented:

1. If any member of a construction, maintenance, or other field crew believes that he or she has discovered a potential historic property, all work adjacent to the discovery will stop, and the work supervisor and HPMP Coordinator will be immediately notified.
2. The work supervisor and/or HPMP Coordinator will take appropriate steps to protect the discovery site and summon a Cultural Resources Analyst (CRA). The area of work stoppage will be determined in consultation with PacifiCorp's HPMP Coordinator or other qualified CRA and will be adequate to provide for the security, protection, and integrity of the cultural

materials. Vehicles, equipment, and unauthorized personnel will not be permitted to traverse the discovery site. Work in the immediate area will not be re-started until treatment of the discovery has been completed. Work will resume dependent upon the nature of the discovery, its eligibility, and finding of effect.

3. The HPMP Coordinator or CRA, in consultation with the SHPO (and RR-SNF on federal lands), will first determine whether the discovery could be eligible for listing in the NRHP through standard resource recordation procedures. If the discovery is recommended not eligible for the NRHP, the HPMP Coordinator will ensure that a memorandum and appropriate resource recordation form are completed and filed with SHPO, and work can continue.

4. If the discovery cannot be evaluated for the NRHP without intensive-level survey or archaeological excavation, including an inability to delineate a surface or subsurface site, the HPMP Coordinator or CRA will immediately contact the SHPO (and the RR-SNF on federal lands) to seek consultation regarding appropriate treatment. If the SHPO, in consultation with Tribes, determines that the discovery is an eligible precontact or historic-period Native American deposit, then PacifiCorp will also communicate with the affected Native American Tribes (on private or non-public federal lands) to determine potential cultural heritage significance and the appropriate treatment of the find. On federal lands, PacifiCorp may yield tribal communication responsibility to the RR-SNF, depending on the wishes of the RR-SNF. Treatment measures may include mapping, photography, limited probing and sample collection, excavation, or other activity. All subsurface excavation, artifact recovery, and analysis will be conducted under the appropriate state (on private lands) or federal (on the RR-SNF) permit.

5. The HPMP Coordinator will prepare a report on the methods and results of the investigations as required by the appropriate state or federal permit, and/or the current state guidelines for cultural resource reporting. The report will be addressed to the SHPO (and the RR-SNF on federal lands). The report schedule will be negotiated between the HPMP Coordinator and the SHPO (and the RR-SNF on federal lands) and detailed in the appropriate state or federal permit. PacifiCorp will provide a review copy of the draft report to the SHPO (and RR-SNF on federal lands) and affected Native American Tribes. On federal lands, the RR-SNF may wish to distribute this report to the appropriate Tribes. After a 30-day review period, PacifiCorp will make revisions that take into account review comments and will provide a copy of the final report to each of these parties.

Work can continue in the location of the find following the completion of archaeological field investigations conducted under the appropriate permit.

4.9 Protocol for the Treatment of Human Remains

The acidic soils of the region do not facilitate the preservation of bone; however, the possibility of preserved human skeletal material, or conclusive material evidence of burial sites, cannot be disregarded. In the event that human remains are encountered, whether during planned maintenance and construction activities, authorized archaeological excavations, or as a result of natural processes, the following protocol will be strictly followed:

1. All ground disturbing activity within 30 ft of the remains will be halted immediately. PacifiCorp will treat areas of known burials; both *in situ* and reburials, with the respect accorded any cemetery.

2. The HPMP Coordinator or CRA will be immediately contacted and will assume responsibility for assuring that this protocol is followed.

3. All skeletal material will be left in place until a designated professional archaeologist or medical examiner directs its removal.

4. On private lands, the State Police and Jackson County Medical Examiner's Office will be contacted immediately and asked to determine whether the remains are part of a potential crime scene. A forensic anthropologist may be required to determine whether the remains are of Native American ancestry. The SHPO will be contacted by telephone and informed of the discovery. The SHPO will be kept informed of all discussions regarding the remains until their final status is resolved. The listed federally recognized Native American Tribes will be contacted. Representatives of these groups will be invited to be present during the Medical Examiner's inspection of the remains.

5. In compliance with NAGPRA Title 43 CFR 10.4 (b), if the remains are found on federal lands, the HPMP Coordinator will immediately notify the RR-SNF. The RR-SNF shall be responsible for making the determination as to whether the remains are human, for consulting with the SHPO, and for notifying the appropriate Tribes.

6. On private lands, if the remains are determined to be Native American, the HPMP Coordinator will consult with the SHPO and the appropriate Tribes to determine the appropriate measures to resolve the find. Such measures may include reburial in place, reburial at a location requested by the tribe(s), or removal and curation with an appropriate curation facility. If reburial in place or within the Project APE is preferred, the location of reburials will be noted on planning maps to prevent future disturbance. These maps will not be available to the public. PacifiCorp will be responsible for costs associated with the appropriate resolution.

On federal lands, the RR-SNF will be responsible for all appropriate agency and tribal consultation and appropriate resolution; however, the HPMP Coordinator will participate in this consultation, and PacifiCorp will be responsible for costs associated with the appropriate resolution.

Regardless of land ownership, the action can continue following the removal of the remains from the location.

7. If the remains are determined to be human and associated with a crime scene, then the HPMP Coordinator shall follow the coroner's protocol for removal of the remains. The SHPO and the appropriate Tribes will be given copies of the appropriate documentation of the results of the finding and afforded the opportunity to comment on the find. The remains will be the responsibility of the Jackson County Medical Examiner's Office. The action can continue following the removal of the remains from the location.

8. If the remains are determined to be non-human, but archaeological in nature, then the procedures outlined in Section 4.6 will be followed. If the remains are determined to be non-human, and there is no archaeological material identified in association with the remains, the action can resume. The HPMP Coordinator will notify the appropriate agencies and Tribes of the discovery.

4.10 Protocol for Response to Vandalism

Vandalism consists of disturbance to historic properties, including damage to buildings and structures, unauthorized digging into archaeological sites, or collection of artifacts. The probability for vandalism within the Project is low; however, if at any time, PacifiCorp employees or contractors encounter unauthorized visitors who appear to be vandalizing buildings, digging or collecting materials from the ground surface, or are in possession of excavation equipment, or if a PacifiCorp representative encounters evidence of recent unauthorized excavations or abandoned digging equipment (such as screens or shovels), the following protocol will be implemented.

1. On private lands, if a possible vandal or looter is present, the PacifiCorp representative will note information about the person, their equipment, and their vehicle and immediately relay the information to the Hydro Superintendent and the HPMP Coordinator, who will confirm the information and notify the Jackson County Sheriff's Office. If the PacifiCorp representative notes damage to historic properties, abandoned excavations or digging equipment, they will notify within 24 hours the HPMP Coordinator, who will notify the Jackson County Sheriff's Office and the SHPO. On private lands, all acts of vandalism or looting will be referred to the Jackson County Sheriff for investigation and possible

prosecution. The HPMP Coordinator or CRA will immediately visit the site to assess any damage.

If a precontact archaeological site has been vandalized, the HPMP Coordinator will notify representatives of the federally recognized Native American Tribes and the SHPO about this assessment and will invite them to attend the site inspection. The assessment of impact will be described in a formal letter report from PacifiCorp to the Tribes and the SHPO. In consultation with the Tribes and the SHPO, PacifiCorp will determine what actions, if any, should be taken to mitigate damage to an affected site and/or prevent further damage.

2. On federal lands, the presence of a vandal or looter, digging equipment, or evidence of vandalism or looting of historic properties shall be reported to the HPMP Coordinator, who will then notify the RR-SNF within 24 hours. The responsibility to investigate and/or prosecute will fall to the RR-SNF. PacifiCorp will assist the RR-SNF, as needed.

3. Any act of vandalism or looting that involves human remains will also trigger the protocol for the treatment of human remains outlined above.

4.11 Protocol for Emergency Response

A number of events can occur within the Project that require a rapid response in order to safeguard facilities, provide for protection of wildlife habitat, protect public and private property, and prevent serious injury or loss of human life. These include, but are not limited to; forest fire, wind and electrical storms, mass wasting events (erosion; landslides), flood, earthquake, and dam failure. The emergency response protocol is designed to be implemented after such events have occurred.

1. The supervisor of response will notify the HPMP Coordinator of the location and nature of the emergency activities. If any large earth moving or clearing events take place, the area may need to be surveyed for cultural resources.

2. The HPMP Coordinator will check relevant databases for historic properties in the vicinity of the emergency. If historic properties are in the area of the emergency or the response (for example, both the area of the forest fire and the location of the construction of a fire line), and/or in the event of an unanticipated discovery of historic properties, then the HPMP Coordinator will be asked to assess the condition of those properties. In the event of an unanticipated discovery during an emergency response, reasonable efforts will be made to follow both the Protocol for Emergency Response as well as the Protocol for Unanticipated Discoveries (See Section 4.6).

3. On private lands, the HPMP Coordinator will use existing documentation as a comparison to a field visit to determine if historic properties have been destroyed, damaged, or

endangered by the emergency event or the response. If any of these conditions exist, then the HPMP Coordinator will document them in the field with mapping, photographs, and, in the case of imminent loss, collection of artifacts. The HPMP Coordinator will prepare a report documenting the nature and location of the emergency event, the nature of the response, the impact on the historic properties, and any proposals to prevent further damage to the properties and to mitigate for the loss. This report will be prepared for the SHPO within 4 months of the event, with draft copies sent to the SHPO and any affected Native American Tribes for review and comment. After a 30-day comment period, the comments of all of the consulting parties will be incorporated into a final report and copies will be sent to all of the participating parties.

4. If no alteration to the condition of the properties has occurred, a letter to that effect, noting the date(s) of the field visit(s), will be placed on file in lieu of the formal report.

5. On federal lands, the assessment of potential effects to historic properties shall be the responsibility of the RR-SNF; PacifiCorp will assist the RR-SNF, as needed.

4.12 Training in Preservation Techniques

PacifiCorp personnel responsible for the maintenance of historic resources at the Project are faced with the task of maintaining a viable, efficient power generating facility while protecting its historic character. Accustomed to modernizing, improving, or replacing components of the Project, PacifiCorp staff will now consider whether desired changes may be accomplished with minimal effect on the historic character of the resource. To ensure compliance during ongoing maintenance and repair activities, PacifiCorp will undertake a two-phase training effort. The first phase is the development of the Historic Properties Management Plan and its distribution to the Hydro Superintendent, HPMP Coordinator and appropriate operations staff.

Within one year of the FERC relicensing, PacifiCorp will initiate the second phase training effort. This will include an education program for the benefit of the Hydro Superintendent and appropriate staff and will focus on the HPMP and how to apply its procedures. Topics will include technical information on the maintenance, repair, and preservation of historic materials, as well as information on procedures for coordinating with the SHPO. The purpose of the training is to familiarize appropriate personnel with historic properties or potential historic properties that may be affected by proposed actions and to understand the procedures for evaluating the effects of those actions. Further training will occur periodically at the discretion of the Hydro Superintendent.

Training provided by PacifiCorp will provide staff with an understanding of the following elements associated with the protection of historic properties:

- Types, nature, and importance of historic properties, including precontact and historic-period archaeological sites, historic buildings and structures, and traditional cultural properties;
- Tribal concerns;
- How day to day Project operation and maintenance activities could potentially affect historic properties;
- How larger capital improvement projects could potentially affect historic properties;
- Damage that can occur from unauthorized collecting, digging, erosion, and construction;
- Characteristics of undesirable behavior;
- Locations where undesirable behavior takes place and where unauthorized individuals are not to be present or to linger;
- What to do upon noticing undesirable behavior;
- Whom and how to call for help when you suspect historic properties are being affected;
- What to do if staff find an artifact or site, or someone reports one; and
- When to engage the HPMP coordinator (Always!).

Designated key Project staff, such as managers and maintenance superintendents, should receive the following training:

- A workshop organized by the HPMP Coordinator to review and explain the HPMP; and
- Periodic workshops on protecting historic properties. These workshops will also be organized by the HPMP Coordinator and include instruction by qualified archaeologists, ethnographers, and historians.

4.13 Sample Actions and Procedures

This section identifies specific actions that have occurred, or are under consideration, that have the potential to adversely affect historic properties. They are presented here to provide specific example situations applicable to the Project to clarify the preservation standards and procedures for PacifiCorp staff.

4.13.1 Window Glazing

PacifiCorp anticipates replacement of the glazing in the powerhouse windows at 10-year intervals. Although the windows are character-defining features, replacement of the glazing in-kind (clear glass, individual panes, retention of existing steel frames) will have no adverse effect. This change can be accomplished with a Level 1 Review.

4.13.2 Replacement of Roofing Materials

PacifiCorp anticipates replacement of existing roofing with new materials. Since this change has the potential to affect character-defining features and may involve the use of unlike materials, the change would undergo a Level 2 Review. Given that a roof is visible only from limited areas, roofing materials have a limited lifespan, and assuming no alteration to the massing of the roof form, consultation with the SHPO may conclude that the change will have No Adverse Effect.

4.13.3 Additions to the Powerhouse

PacifiCorp has no plans to alter or expand the Prospect No. 3 Powerhouse; however, the potential exists that expansion of the powerhouse will be needed to house new equipment and meet new standards for clearance areas around equipment. This would alter the existing powerhouse, an eligible/contributing building to the historic district. Depending on the extent of proposed changes, PacifiCorp and the SHPO could develop design guidelines that seek to minimize adverse effects, and/or the SHPO may require state-level HABS/HAER recordation prior to the change. Regardless of the level of review and/or any mitigation that may be required, the Secretary of the Interior's Standards for Preservation shall guide all phases of this particular action. In the event that changes to the powerhouse will require ground disturbance, an archaeologist should be consulted.

5. Implementation Procedures

This HPMP has been finalized in accordance with the Programmatic Agreement (PA). FERC and the Oregon SHPO are signatories to the PA, which directs PacifiCorp to implement an HPMP that fulfills FERC guidelines as the proper methods for managing historic properties within the Project area. Other Project stakeholders may sign the PA as concurring parties. As part of the Section 106 consultation process, this HPMP has been reviewed by the federal land management agency (USFS), the Oregon SHPO, the Cow Creek Band of Umpqua Tribe of Indians, the Confederated Tribes of Grand Ronde, the Confederated Tribes of Siletz Indians, and FERC. All parties were provided with multiple opportunities to comment. Comments received were considered and incorporated into this document where appropriate. After successful deliberations with PacifiCorp on the terms of this document, the federal land management agencies, the SHPO, and PacifiCorp approved and signed the document.

5.1 Annual Report

An Annual Report will be completed by the end of the first quarter of each calendar year, and will describe cultural resource undertakings that required inspection, monitoring, consultation, surveys, training, or other activities completed during the previous calendar year. The Annual Report will be distributed to the FERC, SHPO, and appropriate Tribes, and will include:

- A list of the number and types of actions that were considered Level 1 Review actions.
- A summary of Project actions that required consultation, avoidance, or mitigation measures.
- A report of any specific resource or action of special concern to the appropriate federal or state agency, SHPO, or appropriate Tribes.
- A report of the discovery of looting or vandalism of any cultural resource and any repair or mitigation that occurred as a result.
- A discussion of any consultation that has occurred or is ongoing.
- A discussion of planned activities for the coming year, specifying those that will require consultation and/or review, and those that are exempt.
- Recommendations regarding amendments to the HPMP.

5.2 Review and Revision of the HPMP

PacifiCorp, the SHPO, and/or the Tribes can petition the FERC to amend the HPMP. Amendments will only become effective upon FERC approval.

5.3 Dispute resolution

Dispute resolution will be carried out in accordance with the procedures outlined in 36 CFR Part 800, Section 800.7.

5.4 Schedule

Table 5-1 details implementation procedures and processes that will be carried out under this HPMP.

Table 5-1. Schedule of Implementation Procedure and Processes.

Action	**HPMP Section**	**Schedule**
Mitigation for Adverse Effect	Section 4.7	Within six months of effect
Initiation of Training Efforts	Section 4.12	One year after acceptance of HPMP

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7. Glossary

Key terms and definitions used throughout the HPMP and relevant to historic resource management within the Project area are defined below.

Approval – Confirmation of concurrence with plans, designs, activities, and schedules prior to implementation by the party or parties assigned the responsibility in the Settlement Agreement.

Archaeological Properties – Any material remains of human life or activities (e.g., sites, features, objects) that can provide understanding of past human behavior as defined by the Archaeological Resources Protection Act.

Archaeological Site – An area that contains 10 or more artifacts or a cultural feature. Examples of precontact archaeological resources in the study area include Native American tools, flakes, and cultural features such as rockshelters and cairns. Examples of historic-period archaeological resources include trash scatters, building foundations, and other artifacts.

Archaeology – A method of the discovery, study, and reconstruction of past human cultures from material remains such as artifacts and sites.

Area of Potential Effects (APE) – The APE is the geographic area or areas where an undertaking may cause changes in the character or use of historic properties. The potential for visual impacts to historic resources as a result of the Project is also considered in this APE.

Artifact – Any object made, modified, or used by humans, usually but not necessarily portable.

Authority – The legal right to approve or modify an action or proposed action; this is based on statute, regulations, or legal agreements.

Consultation – Formal discussions for the purposes of developing and/or reviewing proposed activities and implementation plans. Consultation involves providing another party an opportunity for review and input regarding a proposed plan or activity. The objective of consultation is to obtain input and reach a joint understanding of requirements for the activity or plans. The results of

consultation are generally documented in reports, letters, or memoranda of agreement. Informal consultation generally pertains to the results of meetings, exchange of e-mail, or other informal communication between parties. Formal consultation involves procedures that are covered by agency regulations, such as consultation with the USFS under Section 106 of the NHPA, and tribal consultation.

Coordination – A process between agencies and PacifiCorp of cooperatively reviewing and analyzing PacifiCorp activities and agreeing on methods to eliminate or avoid impacts to historic properties within limits established by specific agency delegations, procedures, or legal authority. Coordination occurs best through positive working relationships between the agencies and the licensee.

Cultural Resources – Refers to those nonrenewable remains of human activity, occupation, artifacts, ruins, works of art, architecture, and areas of religious significance that were of importance in human events. These resources consist of physical remains and areas where significant human events occurred, even though physical evidence of such events no longer exists and the physical setting immediately surrounding the actual resource has changed.

Culture – The customs, beliefs, and ways of life of a group of people.

District – A district, or historic district, possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. A district derives its importance from being a unified entity, even though it often comprises a wide variety of resources, and from its significance. It must be important for historical, architectural, archaeological, engineering, or cultural values.

Environmental Setting – The entire parcel as of the date of landmark or historic monument designation, on which is located a landmark or historic monument, and to which it relates historically, physically, and/or visually. Environmental setting includes, but is not limited to, accessory structures and buildings, walkways and driveways, vegetation (including trees, gardens, lawns), walls, fences, gateways, rocks, and open space.

Funding – Money that is available and has been committed by an organization to accomplish an activity, project, or program. Funding represents monies currently available for expenditure for the designated work, compared to a budget that may only represent a plan or projection for use of future anticipated funding.

Ground-Disturbing Activity – Any activity that will result in the disruption or removal of *in situ* surface soils or sediments.

Guideline – A statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if professional judgment or scientific/engineering study indicates the deviation to be appropriate.

Historic – Referring to the time after written records or after the Europeans first came and wrote about the people and events in America.

Historic Buildings and Structures – Also known as Architectural and Engineering Properties. Resources that could include districts, sites, buildings, structures, or other objects associated with or that convey some aspect of American history, architecture, engineering, and/or culture. Examples of historic architectural and engineering resources in the study area include homestead sites, cabins, or other physical evidence of recent human habitation, including the Project facilities themselves.

Historic Preservation – The research, excavation, protection, restoration, and rehabilitation of buildings, structures, objects, districts, areas, and sites significant in the history, architecture, archaeology, or culture of the local area or the nation.

Historic Properties – Those properties determined eligible for listing in the NRHP. These may include historic and precontact archaeological sites, districts, buildings, structures, and objects.

Historical Archaeological Properties – Historic archaeological properties are those that date after the European entry into the New World. The historic period begins at somewhat different times in different regions.

Implementation – Accomplishment of on-the-ground or on-site construction, restoration, reconstruction, maintenance, or operational activities that relate to HPMP objectives. Implementation normally will not take place until the appropriate agencies or officials approve required permits, designs, and/or implementation plans.

Improvement – Any building, structure, place, site, structural work of art, landscape feature, plant life, life form, scenic condition, parking facility, fence, gate, wall, or other object constituting a physical betterment of real property, or any part of such betterment.

In-kind – Detailed in the Secretary of the Interior's *Standards for the Treatment of Historic Properties,* the preferred option is always replacement of the entire feature in kind, that is, with the same material. Because this approach may not always be technically or economically feasible, provisions are made to consider the use of a compatible substitute material.

Involvement – The inclusion of tribes or other people in the Section 106 process. Involvement can focus on addressing sensitive tribal issues as they relate to the Project in an informal but meaningful manner.

Jurisdiction – The legal right to control and regulate the use and activities on lands or roads.

License – The FERC license for the North Umpqua Hydroelectric Project, FERC Project No. 1927.

Maintenance – The act of keeping fixed assets in acceptable condition. It includes preventive maintenance, normal repairs, replacement of parts and structural components, and other activities needed to preserve a fixed asset so that it continues to provide acceptable service and achieves its expected life. Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than, those originally intended.

May – This word is not normally synonymous with "should" and does not normally express certainty as "will" or "shall" do. It is used to indicate a certain measure of likelihood or possibility, and is used to express a desire, contingency, purpose, or result.

Mitigation – Measures added to a project or activity to prevent, reduce, or correct its impact.

Monitoring – Monitoring typically refers to reconnaissance-level field investigation of an archaeological site by a professional archaeologist. Monitoring is often conducted to ensure that Project crews do not adversely affect discovered resources during excavation activities.

Must – This word, like the word "shall," is primarily of mandatory effect (State ex rel. McCabe v. District Court of Third Judicial Dist. in and for Deer Lodge County, 106 Mont. 272, 76 P.2d 634, 637); and in that sense is used in antithesis to "may."

Native American – The first people living in North and South America. Many groups of people today are Native Americans and have ancestors who lived in the country for thousands of years before Columbus came. They are also called American Indian, First American, Alaska Native, and Native People.

Notification – An announcement of an activity to occur.

Precontact Archaeological Properties – Precontact archaeological properties in the New World are those that pre-date contact with Europeans. In North America, precontact occupations are characterized by the absence of written records and, for all practical purposes, the absence of metal tools.

Prehistory/Precontact – Information about past events prior to the recording of events in writing. The period of prehistory differs around the world depending upon when written records became common in a region.

Preservation – The act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Project – The Prospect No. 3 Hydroelectric Project, FERC Project No. 2337, including all its associated lands within the FERC Project boundary, and facilities that are operated and maintained by PacifiCorp.

Project Boundary – The FERC Project boundary as amended in the new license.

Project Vicinity – This term is used generally to address lands near the Project.

Properties Eligible for Inclusion in the National Register – Properties that have been formally determined to be eligible and all other properties that meet the National Register criteria.

Reconstruction – The act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

Rehabilitation – The act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.

Remains – Also known as Human Remains. Any part of a deceased human being in any stage of decomposition, together with any artifacts or other materials known or reliably assumed to have been on or interred with the deceased human being.

Restore – The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Shall – As used in the HPMP, this word is imperative and mandatory. "Shall" is a word of command, and one that has always or must be given a compulsory meaning; as denoting obligation.

Should – The past tense of shall; ordinarily implying duty or obligation; although usually no more than an obligation of propriety or expediency, or a moral obligation, thereby distinguishing it from "ought." It is not normally synonymous with "may," and although often interchangeable with the word "would," it does not ordinarily express certainty as "will" and "shall" do.

Standard – A statement of required, mandatory, or specifically prohibitive practice regarding land management, safety, or other procedures.

Traditional Cultural Properties – Resources that are districts, sites, buildings, structures, or objects that embody traditional cultural values and are historically and traditionally associated with those values. TCPs are properties or locations that have associations "with cultural practices or beliefs of a living

community and (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (USDI 1992).

Will – An auxiliary verb commonly having the mandatory sense of "shall" or "must." It is a word of certainty, while the work "may" is one of speculation and uncertainty.

Appendix A: Maps

The HPMP maps include privileged information and are available to authorized parties upon request. Maps will be submitted with the final, signed HPMP and filed with FERC as privileged information not for public distribution.

APPENDIX E. CONSULTATION CONTACT LIST

Agency	Name	Title	Address
American Whitewater	Thomas O'Keefe, PhD	Pacific Northwest Stewardship Director	3537 NE 87th St., Seattle, WA 98115
American Whitewater	Bill Cross		3537 NE 87th St., Seattle, WA 98115
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Confederated Tribes of Grand Ronde	Reyn Leno, Council Chair		9615 Grand Ronde Rd., Grand Ronde, OR 97347
Confederated Tribes of Siletz Indians	Delores Pigsley	Tribal Chairman	1322 N. Larchwood, Salem, OR 97303
Cow Creek Band of Umpqua Tribe of Indians	Dan Courtney, Chairman		2371 NE Stephens St., Roseburg, OR 97470
Cow Creek Band of Umpqua Tribe of Indians	Kelly Crispen Coates	Fisheries Biologist	2371 NE Stephens St., Roseburg, OR 97470
Cow Creek Band of Umpqua Tribe of Indians	Jason Robinson	Natural Resources Director	2371 NE Stephens St., Roseburg, OR 97470
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Federal Energy Regulatory Commission	Matt Cutlip		888 First St. NE, Washington, DC 20426
Federal Energy Regulatory Commission	Jennifer Hill		888 First St. NE, Washington, DC 20426
Federal Energy Regulatory Commission	Kim Nguyen		888 First St. NE, Washington, DC 20426
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Federal Energy Regulatory Commission	Scott Van Norman		888 First St. NE, Washington, DC 20426
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National Rural Electric Coop. Assn.	Wallace F. Tillman	General Counsel	4350 Wilson Blvd., Arlington, VA 22203
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Oregon Department of Land Conservation and Development	Heather Wade	Coastal State-Federal Relations Coordinator	635 Capitol St. NE, Suite 150, Salem OR 97301-2540
Oregon Department of Environmental Quality	Chris Stine	Water Quality Engineer	165 East 7th Ave., Suite 100, Eugene, OR 97401
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Oregon Department of Fish and Wildlife	Craig Erwin	Assistant Manager	Cole M. River Hatchery, 200 Cole M. Rivers Dr., Trail, OR 97541
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Oregon Heritage, Oregon Parks & Recreation Department	Jason Allen	Historic Preservation Specialist	725 Summer St. NE, Suite C, Salem, OR 97301
Oregon Heritage, Oregon Parks & Recreation Department	Christine Curran	Deputy SHPO	725 Summer St. NE, Suite C, Salem, OR 97301
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Oregon Water Resources Department	Mary Grainey		725 Summer St. NE, Suite A, Salem, OR 97301-1271
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Public Utility Commission of Oregon	Secretary		2827 NE Fremont St., Portland, OR 97212-2545
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U.S. Bureau of Reclamation		Columbia-Cascades Area Office	1917 Marsh Road, Yakima, WA 98901-2058
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USDA Forest Service: Rogue River-Siskiyou National Forest	Joni Brazier	Soil Scientist	3040 Biddle Rd., Medford, OR 97504
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USDA Forest Service: Rogue River-Siskiyou National Forest	Robert MacWhorter	Forest Supervisor	3040 Biddle Rd., Medford, OR 97504
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