Wallowa Falls Hydroelectric Project
FERC Project No. P-308
Updated Study Report

(Final Technical Report)

Aesthetic and Visual Resources

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Acronyms and Abbreviations

CFR	*Code of Federal Regulations*
cfs	cubic feet per second
dBA	decibels
FERC	Federal Energy Regulatory Commission
Forest Plan	Wallowa-Whitman National Forest Land and Resource Management Plan
GIS	geographic information system
OPRD	Oregon Parks and Recreation Department
PM&E	protection, mitigation, and enhancement
Project	Wallowa Falls Hydroelectric Project
RV	recreational vehicle
SMS	Scenery Management System
USFS	United States Forest Service
VMS	Visual Management System
VQO	Visual Quality Objective
WWNF	Wallowa-Whitman National Forest

EXECUTIVE SUMMARY

This Updated Study Report (Report) assesses the effects of the Wallowa Falls Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) Project No. P-308, on aesthetic and visual resources, in accordance with *Code of Federal Regulations* Title 18, Conservation of Power and Water Resources. The purpose of this Report is to inform stakeholders and PacifiCorp of any issues and findings that were identified, collected, and synthesized during relicensing. This Report also identifies needs that were considered in developing potential protection, mitigation, and enhancement (PM&E) measures. The following objectives were established for the Report:

- Identify applicable goals stated in applicable comprehensive resource management and land use plans that apply to aesthetic and visual resources.
- Document and describe the existing characteristics of aesthetic and visual resources within the Study Area.
- Identify changes to the existing aesthetic characteristics and visual resources as a result of changes to Project facilities and operations associated with relicensing.
- Review potential conflicts with the goals that apply to aesthetic and visual resources identified in applicable comprehensive resource management and land use plans. Assess how relicensing may result in changes to Project facilities and operations conflicting with these plans.
- Identify opportunities for mitigation measures.

This Report documents the results of the study that examined existing aesthetic and visual resources associated with the Project and projected future needs related to aesthetic and visual resources over the term of the new license (anticipated to be 30 to 50 years). The following describes the report organization:

- Section 2 describes existing aesthetic and visual resources and their characteristics within the Study Area and reviews applicable comprehensive resource management and land use plans.
- Section 3 describes the methodology used to identify Project-related changes to existing aesthetic and visual resources.
- Section 4 assesses changes to the existing aesthetic and visual resources as a result of changes to Project facilities and operations associated with relicensing.
- Section 5 presents discussions and conclusions.
- Section 6 lists the references cited in the text.

- The appendices contains photographs of Project facilities (Appendix A), photographs of two different flows released into the bypassed reach (Appendix B), and noise recordings of the Project powerhouse taken from various locations within the Study Area (Appendix C).

The components are summarized in the following sections.

ES.1 Identification of Resource and Land Management Plan Goals Related to Aesthetic and Visual Resources of Relevance to the Project

Two agencies in the Study Area have developed resource management or land use plans that address aesthetic or visual resources. They are the U.S. Forest Service (USFS), which manages the Wallowa-Whitman National Forest (WWNF), and Wallowa County, which plans and manages lands and resources within the nonfederal unincorporated parts of Wallowa County. The *Wallowa-Whitman National Forest Land and Resource Management Plan* (Forest Plan; USFS, 1990) assigned a Visual Quality Objective (VQO) of Retention to the WWNF lands in which the Project is located. The Retention VQO is the second-most restrictive VQO in terms of permissible changes to a viewed landscape. The Eagle Cap Wilderness is near the Project (0.25 mile away) but the *Eagle Cap Wilderness Stewardship Plan* (USFS, 1995b) is not applicable to the Project. No goals, standards, or metrics related to noise on National Forest System lands were identified by PacifiCorp or the WWNF. The *Wallowa County Comprehensive Plan* (Wallowa County, 2003) contains goals and policies related to visual resources that must be examined.

ES.2 Description of the Existing Aesthetic Characteristics of the Study Area and Project

The very mountainous Study Area is visually spectacular, and the rugged terrain in which most of the Project is located, combined with thick vegetation, screens much of the Project from general public view. Because the Project has been in existence since 1921, its presence has contributed to the Study Area's character.

ES.3 Changes to Project Facilities and Operations from Relicensing

Potential changes in minimum flows released into the bypassed reach will likely be greater than the current requirements. This potential increase in the amount of water released into the bypassed reach would improve the aesthetic and visual characteristics of several portions of the bypassed reach that can be viewed by the public.

ES.4 Potential Conflicts with Resource and Management Plan Goals

The Project dam, spillway, catwalks, laydown area, storage yard, and upper penstock trestle do not meet a VQO of Retention and are inconsistent with the Forest Plan (and have been since the Forest Plan was adopted in 1990). The Project is consistent with the *Wallowa County Comprehensive Plan*.

ES.5 Conclusions and Recommendations

The Report identifies several measures to consider for improving the Project's aesthetic and visual environment. The following measures are recommended for Project facilities located on WWNF lands:

- Modify the intake structure to make it more attractive and similar in character with the storage shed (cabin) in the laydown area.

- Treat the timber support members of the upper trestle that are light in color by staining them a darker color so that all support timbers are the same uniform color.

To improve the appearance of Project facilities that are seen from the upper end of the Joseph-Wallowa Lake Highway, the Wallowa Lake Trailhead, and Little Alps Day Use Area (the powerhouse, substation, fenced yard, and entrance to Pacific Park), the following measures are suggested:

- Partially screen the Project powerhouse area (and make more attractive) with landscaping along the portion of the fence abutting the Joseph-Wallowa Lake Highway turnaround area.

- Modify or replace chain-link fence on the side abutting the Joseph-Wallowa Lake Highway turnaround area with black-coated vinyl chain-link fence.

- Add interpretive signage near the Joseph-Wallowa Lake Highway turnaround area for the public to read that would explain the history and function of the Project, Pacific Park, the local trail system, and other features.

1.0 STUDY OBJECTIVES AND DESCRIPTION

PacifiCorp Energy (PacifiCorp) is in the process of filing an application to relicense the Wallowa Falls Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) Project No. P-308, located on the East Fork Wallowa River, West Fork Wallowa River, and Royal Purple Creek in Wallowa County, Oregon. The current license will expire on February 28, 2016. The Project has a generation capacity of 1,100 kilowatts and is situated on private land owned by PacifiCorp and federal land managed by the Wallowa-Whitman National Forest (WWNF).

In accordance with Title 18 (Conservation of Power and Water Resources) of the *Code of Federal Regulations* (CFR), Section 5.11(d)(1), FERC requires relicensing applicants to assess Project effects on aesthetic and visual resources. To fulfill this requirement, the following objectives were established for the aesthetic and visual resources study:

- Identify applicable goals stated in applicable comprehensive resource management and land use plans that apply to aesthetic and visual resources.
- Document and describe the existing characteristics of aesthetic and visual resources within the Study Area.
- Identify changes to the existing aesthetic characteristics and visual resources as a result of changes to Project facilities and operations associated with relicensing.
- Review potential conflicts with the goals that apply to aesthetic and visual resources identified in applicable comprehensive resource management and land use plans. Assess how relicensing may result in changes to Project facilities and operations conflicting with these plans.
- Identify opportunities for mitigation measures.

This Report documents the results of the study that examined existing aesthetic and visual resources associated with the Project and projected future needs related to aesthetic and visual resources over the term of the new license (anticipated to be 30 to 50 years). The following describes the report organization:

- Section 2 describes existing aesthetic and visual resources and their characteristics within the Study Area and reviews applicable comprehensive resource management and land use plans.
- Section 3 describes the methodology used to identify Project-related changes to existing aesthetic and visual resources.
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- Section 5 presents discussions and conclusions.

- Section 6 lists the references cited in the text.

- The appendices contains photographs of Project facilities (Appendix A), photographs of two different flows released into the bypassed reach (Appendix B), and noise recordings of the Project powerhouse taken from various locations within the Study Area (Appendix C).

2.0 BACKGROUND DESCRIPTION

This section provides background information useful to understanding the aesthetic and visual resource analysis, as well as accomplishes the following:

- Defines the Study Area
- Describes the nexus between Project facilities and operations and aesthetic and visual resources
- Summarizes resource management and land use plan goals and policies related to aesthetics and visual resources

2.1 Study Area Definition

2.1.1 Aesthetic and Visual Resources

Because most of the Project is located within the steep, narrow, heavily timbered canyon of the East Fork Wallowa River, the visibility of Project facilities is limited (see Figure 1). The most visible Project facilities are located in the northwest portion of the existing and proposed FERC Project boundaries, and they include the powerhouse, substation, and Pacific Park Campground. These facilities, it should be noted, are not visible over a great distance (less than approximately 0.25 mile) due to topography and vegetation. Because of the Project's limited visibility, the Study Area for aesthetic and visual resources is 0.5 mile from the Project boundary. Figure 2 provides an overview of the Study Area and the proposed Project boundary.

2.1.2 Noise

The most prevalent noise associated with the Project is associated with generating electricity. Water released from the Pelton Wheel generator (which is located in the powerhouse) into the existing tailrace channel produces a noise that has been characterized as a "hum" which under varying circumstances, can be heard as far as several miles away. The Study Area for noise is a 3-mile radius around the Project powerhouse.

2.2 Nexus to Project

Per 18 CFR §5.11(d)(4), this section describes the nexus between Project operations and effects on aesthetic and visual resources. The Project has potential direct and indirect effects on aesthetic and visual resources within, and adjacent to, the Project boundary, as well as on the affected reach of the East Fork Wallowa River below the Project dam (the bypassed reach). These effects include the visibility of Project facilities within the surrounding landscape, diversion of water from the East Fork Wallowa River, and sound from the Project powerhouse.

2.3 Resource Management and Land Use Plan Goals and Policies Related to Aesthetics and Visual Resources

Per 18 CFR §5.11(d)(2), this section describes goals and policies that are related to aesthetic and visual resources found in resource management and land use plans. Two agencies in the Study Area have developed resource management or land use plans that address aesthetic or visual resources—the U.S. Forest Service (USFS), which manages the WWNF, and Wallowa County, which plans and manages lands and resources within the nonfederal unincorporated parts of Wallowa County. The Project is located on lands that fall under the jurisdictions of both agencies and must conform to relevant plans developed by each.

2.3.1 Wallowa Whitman National Forest

2.3.1.1 Wallowa-Whitman National Forest Land and Resource Management Plan

Day-to-day management of scenery and visual resources in national forests is prescribed in land and resource management plans (forest plans). The WWNF is managed under the *Wallowa-Whitman National Forest Land and Resource Management Plan* (Forest Plan; USFS, 1990). National forests base managing scenery and visual resources on one of two systems: the Scenery Management System (SMS) (USFS, 1995a) or the older Visual Management System (VMS) (USFS, 1974). National forests that have updated or revised their forest plans since 1995 have generally adopted the SMS system to replace the VMS. Forests such as the WWNF that have not completed or finalized updates or revisions of their forest plans often continue to use the VMS.

Forest plans consider several factors when developing an inventory of existing visual conditions and when planning how to manage the forest to meet future visual resource planning objectives. Existing and desired future visual condition classifications are called Visual Quality Objectives (VQOs) in the VMS. The objectives are used to provide management direction in terms of how much a landscape may be altered and still meet forest plan direction for the visual resource. They are intended to help a forest team manage its lands to achieve a desired future condition, including meeting future VQO classes if areas do not currently meet established VQOs. Five VQOs describe the landscape in varying degrees of naturalness. They are Preservation (the landscape is essentially unaltered), Retention (the landscape appears largely unaltered), Partial Retention (the landscape may appear slightly altered), Modification (the landscape can appear moderately altered), and Maximum Modification (the landscape can appear heavily altered).

The Project is located in an area with a VQO of Retention, which is the second most restrictive VQO in terms of permissible changes to the viewed landscape (see Figure 3). In the Retention VQO, human activities are not visually evident, and the valued (desired) landscape character appears intact or unaltered. Deviations associated with proposed actions might be present, but they must repeat the form, line, color, texture, pattern, and scale common to the landscape. The southernmost part of the Project boundary is approximately 0.25 mile north of the edge of the Eagle Cap Wilderness. The wilderness

has a VQO of Preservation, which is the most restrictive VQO in terms of allowed changes to the viewed landscape.

2.3.1.2 Eagle Cap Wilderness Stewardship Plan

The boundary of the Eagle Cap Wilderness is located approximately 0.25 mile beyond the Project boundary. The *Eagle Cap Wilderness Stewardship Plan* (Stewardship Plan; USFS, 1995b) was developed for the Eagle Cap Wilderness in 1995 to supplement the Forest Plan (USFS, 1990). The Stewardship Plan is used in conjunction with the Forest Plan in managing the Eagle Cap Wilderness, and it includes standards and guidelines for resources within the Eagle Cap Wilderness, including social elements. These standards and guidelines address human issues, such as carrying capacity, solitude (for visitors), occupied campsites, group size, intrusions that might disturb visitors, and user density. The Stewardship Plan does not contain VQOs or specific guidance on visual issues. Visual resources within the wilderness are addressed in the Forest Plan. The Forest Plan's VQO of Preservation for the Eagle Cap Wilderness is consistent with the intentions of preserving the characteristics of the wilderness that make it special, including the aesthetic and visual environment.

2.3.2 Wallowa County

The *Wallowa County Comprehensive Plan* (Comprehensive Plan; Wallowa County, 2012) contains a series of goals that address concerns related to a number of topics and resources. Goal 5 of the Comprehensive Plan is titled "Open Spaces, Scenic and Historic Areas, and Natural Resources." The intent of this goal is to conserve open space and protect natural and scenic resources. Appendix 6 of the Comprehensive Plan identifies scenic views and sites, including two near the Study Area for this Project's aesthetic and visual resources. The two areas are the Eagle Cap Wilderness and Mount Howard. Goal 5 also contains several maps (Maps G5-1: Sensitive View Areas, G5-2: Scenic Resource Areas, and G5-3: Protected Status Scenic Resources) that depict areas around Wallowa Lake, including part of the Project Study Area.

3.0 METHODS

This Report was developed in consultation with stakeholders between 2010 and 2013. Because much of the Project is located in the WWNF, local WWNF staff were involved in reviewing and approving the Study Plan (PacifiCorp, 2011a) that was used as the basis for obtaining and providing the information used for this Report. After the Study Plan was reviewed and approved by FERC, work on the Report commenced. Materials related to the Project and the relicensing effort were supplied by PacifiCorp to CH2M HILL for review. The WWNF website (USFS, 2012) was consulted numerous times to obtain information from the Forest Plan. In addition, WWNF staff were contacted to obtain WWNF geographic information system (GIS) and other data. Wallowa County Planning Department staff were contacted to confirm relevant information in the county comprehensive plan. During the development of the *Study Progress Report* (Draft Report; (PacifiCorp, 2012), PacifiCorp, CH2M HILL, WWNF, and Oregon Parks and Recreation Department (OPRD) staff visited the Project Area several times to familiarize themselves with the existing aesthetic and visual resource conditions and to discuss possible ways to improve aesthetic and visual resource conditions. Suggestions made by the group were reviewed with members and formed the basis of the potential protection, mitigation, and enhancement (PM&E) measures described in Section 5, Discussion and Conclusions.

To assist in describing the character of the Study Area and Project facilities and operations, a systematic approach to photo-documenting the Study Area was undertaken. Photographs of Project facilities and their surroundings were taken from 18 locations around the Study Area; these are presented in Appendix A. Particular attention was paid to photographing these facilities from locations where the general public potentially sees them. Photographs of the potential impact of operations on the East Fork Wallowa River bypassed reach were taken for two different low flows (5 and 8 cubic feet per second [cfs]) that were within the range of low-release flows evaluated in relicensing studies. The photographs were taken from four of the relatively few locations near the bypassed reach that can be seen by the general public (see Appendix B).

The assessment of the visual compatibility or incompatibility of existing Project facilities with the WWNF Forest Plan was determined by using the VMS to evaluate whether the facilities met (or would meet) the VQOs assigned to areas where they are located. These determinations were made by the authors of this Report and reviewed by WWNF staff for confirmation.

The assessment of the consistency or inconsistency of existing Project facilities, as well as the consistency or inconsistency of these facilities after Project relicensing with the *Wallowa County Comprehensive Plan*, was described in the Draft Report. Wallowa County did not provide comments related to the conclusions expressed in the Draft Report. Wallowa County is assumed to agree with the conclusions described in Section 5.2 of this Report.

4.0 RESULTS

To evaluate noise associated with the Project, noise level readings from 25 publically accessible locations near the Project were recorded using an Ono Sokki LA-221 Sound Level Meter. The readings were taken on June 12, 2013, between 8:30 a.m. and 10:30 a.m. when the Project powerhouse was releasing between 11 and 12 cfs of water into the Project tailrace. The release of water creates the bulk of the noise associated with the Project powerhouse. The data collected for the noise evaluation is presented in Appendix C. The intent of obtaining noise data was to determine if noise generated by the Project powerhouse exceeded existing standards, rather than simply stating that the Powerhouse generator could be heard. No applicable county, state, or USFS standards could be found by PacifiCorp (or WWNF or the OPRD) to which Project powerhouse noise levels could be compared with to determine whether there was a noise-related impact.

This section presents the results of the aesthetic and visual resource analysis. Conclusions are presented in Section 5.

4.1 Aesthetic and Visual Characteristics of the Study Area

Wallowa Lake and nearby topography were largely created by glaciation. The Wallowa Lake and Eagle Cap Wilderness area is one of the most spectacular in Oregon, and it attracts people from throughout the Pacific Northwest and beyond. Wallowa Lake is a classic example of a lake carved by a glacier (see Figure 1). Its east and north sides comprise grass-covered moraines and have little development. The Joseph-Wallowa Lake Highway passes along the lower slope of the east moraine and follows the lake into the heavily timbered valley at the southern end of the lake. Wallowa Lake State Park is located at the south end of the lake. The shoreline of the state park includes the delta area of the Wallowa River, “park-like” areas with grass and picnic facilities, and a developed marina and boat launch.

Immediately south of the state park is the community of south Wallowa Lake. This area has a strong vacation-resort character and is densely developed. It contains many single-family residences, some of which are used as year-round residences, with others rented as vacation homes. Several resorts provide rental cabins and recreational vehicle (RV) or tent campsites. Two camps—one operated by the Methodist Church and the second by the Blue Mountain Council of the Boy Scouts of America—are located along the West Fork Wallowa River. Neither camp is used as much as they were in past years, and both are in varying states of disrepair. Other visitor-oriented businesses that influence the character of the south Wallowa Lake community include restaurants, souvenir shops, the Wallowa Lake tram that takes people to the top of nearby Mount Howard, miniature golf facilities, water bumper cars, and a go-cart track. Several outfitters are located in the area and take clients on horseback rides on trails that pass through the Project; these rides can range from an hour to multiday back-country excursions into the Eagle Cap Wilderness.

Included in the area between the community of south Wallowa Lake and the Project boundary is land owned by PacifiCorp that is leased to OPRD for the Wallowa Lake State Park maintenance facility and the Little Alps Day Use Area. The maintenance

facility is set away from Joseph-Wallowa Lake Highway, and vegetation between the road and the maintenance facilities tends to screen views of the facility. The Little Alps Day Use Area has numerous trees and a park-like character. Both sides of the end of Joseph-Wallowa Lake Highway are used for parking by people visiting the Eagle Cap Wilderness or, to a lesser degree, the Little Alps Day Use Area. Some parts of the sides of the highway can be quite congested with parked vehicles during peak use times.

The northernmost part of the existing Project boundary (Pacific Park Campground) is approximately 1 mile south of the southern end of Wallowa Lake and 0.25 mile south of the edge of the Wallowa Lake community. This part is bordered by the Little Alps Day Use Area on the east and the PacifiCorp-owned ridge separating this area from the West Fork Wallowa River gorge on the west. Flowing through the campground from southeast to northwest before spilling into the West Fork Wallowa River are the existing main (or western) channel and side (or eastern) channel tailraces. The main channel resembles a creek, whereas the side channel has an appearance more similar to that of a drainage channel.

The powerhouse/substation area is situated southeast of the campground at the upper part of the Wallowa Lake valley. This is the last fairly level area before the Project enters the steep and narrow East Fork Wallowa River valley. With the exception of the powerhouse, substation, and their fenced yard, this part of the Study Area has a park-like appearance. There are numerous trees, the Wallowa Lake Trailhead, the Little Alps Day Use Area, and towering slopes and peaks above. The powerhouse, substation, and fenced yard introduce features with industrial character to the area. The powerhouse and fenced yard are located at the end of the Joseph-Wallowa Lake Highway and are quite visible from it and nearby areas.

From the powerhouse/substation area, the Project passes through the East Fork Wallowa River valley to the upper Study Area. This part of the Project boundary is located between the river below and steep side slopes containing rock outcroppings and talus slopes above. Because of the rugged terrain, the vast majority of people viewing this area do so from the East Fork Wallowa River Trail (East Fork Trail) or the forebay access road. Due to the thick vegetation along the trail and road, views tend to be upward towards the slopes, cliffs, and peaks above. Views down to the river are possible at several areas where there are breaks in the vegetation or where the trail or road pass near the river. The forebay access road is currently outside of the Project boundary. PacifiCorp proposes that the new Project boundary include the forebay access road.

Approximately 0.25 mile southeast of the Project boundary (and higher in terms of elevation) is the Eagle Cap Wilderness. With the exception of Project facilities (the forebay, dam, and spillway catwalk and storage/laydown area) there are very few signs of human alteration of the landscape that can be seen from the East Fork Trail between the trailhead area and the beginning of the wilderness. Once in the wilderness, there are also few signs of human alteration of the landscape until Aneriod Basin, where a private inholding containing several buildings can be seen.

4.2 Project Effects on Aesthetic and Visual Character and Resources

Both Project facilities and operations influence the aesthetic and visual setting and condition of the Study Area. The physical characteristics of Project facilities are described below, as are the influences that Project operations have on the aesthetic and visual character of the Study Area.

4.2.1 Facilities

Project facilities have existed since 1921 when the Project was constructed. To some degree, these facilities have become part of the local landscape and influence its character. The following describe and discuss the appearance and visibility of Project facilities. Table 4.2-1 lists and briefly describes Project facilities that are seen by the general public. Appendix A contains photographs of Project facilities, and Figure 4 depicts the locations of the facilities described below.

Table 4.2-1 Major Project Facilities Visibility Summary.

Facility (from upriver to downriver)	Location	Visibility	Potential Viewers	Notes
Royal Purple Diversion	WWNF	Only seen if leave trails.	People leaving East Fork Trail.	Very difficult to reach or see due to heavy vegetation and being off trail.
Forebay	WWNF	Visible from one location along East Fork Trail and from terminus of the forebay access road and storage area.	People hiking on East Fork Trail or on the forebay access road.	Seen from a short (100- to 150-foot) section of the trail. Has a pond appearance.
Dam Laydown and Storage Area	WWNF	Visible from one location along East Fork Trail and from terminus of Project forebay access road and storage area.	People hiking on East Fork Trail or on the forebay access road.	Seen from the same short section of trail as above. The open laydown and storage facilities (including the “cabin-like” storage building) introduce human-made elements into the view from the trail.
Dam, Spillway, and Catwalk	WWNF	Visible from one location along East Fork Trail and from terminus of the forebay access road and storage area.	People hiking on East Fork Trail or on the forebay access road.	Seen from the same short section of trail as above. Presence of dam and other facilities add human-made elements.
Penstock	WWNF and PacifiCorp land	Elevated sections are visible from several parts of East Fork Trail and the forebay access road.	People hiking on East Fork Trail or on the forebay access road.	Elevated structures likely of interest to some views, owing to their unusual and historical character.

Table 4.2-1 Major Project Facilities Visibility Summary.

Facility (from upriver to downriver)	Location	Visibility	Potential Viewers	Notes
Forebay Access Road	WWNF and PacifiCorp land	Visible from Wallowa Lake Trailhead area and from parts of the East Fork Trail.	People hiking on East Fork Trail or on forebay access road.	Appears as a cleared road when viewed from trail.
Powerhouse and Substation	PacifiCorp land	Very visible from Joseph-Wallowa Lake Highway, Wallowa Lake Trailhead, part of Little Alps Day Use Area, Pacific Park Campground, the lower portions of the East Fork and West Fork Trails.	Motorists, people parking and accessing trails, campers at Pacific Park Campground.	Very visible because of location off of terminus of Joseph-Wallowa Lake Highway and proximity to Wallowa Lake Trailhead, other area trails, and Little Alps Day Use Area. Chain-link fence around the facility, open yard, and color (yellow) of building lend an industrial appearance to the powerhouse area.
Tailraces	PacifiCorp land	Visible from Pacific Park Campground, Little Alps Day Use Area.	Campers at Pacific Park Campground and recreationists at Little Alps Day Use Area.	The main (western) tailrace is similar in appearance to creeks, the side-channel (eastern) tailrace less so.
Pacific Park Campground	PacifiCorp land	Visible form Joseph-Wallowa Lake Highway, Little Alps Day Use Area.	Campers at Pacific Park Campground and recreationists at Little Alps Day Use Area.	Has the characteristics of a rustic campground.

4.2.1.1 Royal Purple Diversion

This facility includes a 2-foot-high and 9-foot-long concrete diversion dam and a 240-foot-long and 8-inch-diameter pipe that discharges flows into the forebay upriver from the Project dam. Views of the diversion facility from the East Fork Trail are obscured by vegetation and topography. Due to its remote location that is difficult to access or see and its small scale, the diversion dam and pipeline have no to little influence on visual resources in the WWNF, and they are not inconsistent with the Forest Plan.

4.2.1.2 Forebay

The 0.2-acre forebay has the appearance of a small pond or pool in the East Fork Wallowa River. The amount and apparent speed of water moving through it depends upon flow. During much of the year, water is released over the dam into the spillway, so there is the appearance of slowly moving water through the forebay. The forebay is visible to people hiking along the East Fork Trail as they approach the dam area and to

people accessing the area from the forebay access road. It likely attracts less attention than the dam, catwalk, and intake structure. Along with the dam and its related structures, the forebay has changed the appearance of this part of the East Fork Wallowa River. To some viewers its presence likely detracts from a natural setting, but other people might appreciate its pond-like appearance as part of the Project dam complex. The forebay would likely meet a VQO of Retention when viewed from the East Fork Trail without the presence of other associated Project facilities (dam, spillway, and catwalk).

4.2.1.3 Dam, Spillway, and Catwalk

The Project's dam is a buttressed, rock-filled timber crib dam that is 125 feet in length and 18 feet in height. It has a 30-foot-wide spillway over which an aluminum catwalk has been installed to provide access over the dam for PacifiCorp workers. A wood deck over the forebay that supports the intake structure control wheels is located just beyond the southeastern side of the catwalk. These Project facilities are the most visible components seen from the East Fork Trail (although they are visible from between approximately 100 and 150 feet of the trail); to fully view the facilities, visitors must leave the trail and approach the dam. In a comment letter to FERC dated June 23, 2011, the WWNF noted that Project features, including the dam and spillway catwalk, are considered visual intrusions to forest visitors viewing it from the East Fork Trail. The most immediately visible facility to most viewers is likely the catwalk, due to its semireflective aluminum finish. These facilities are located within the WWNF, and due to their contrast with the nearby landscape in terms of color, line, form, and texture, they do not meet a VQO of Retention when viewed from the East Fork Trail.

4.2.1.4 Laydown and Storage Area

The laydown and storage area is located on the southeast side of the forebay across the forebay from the East Wallowa Trail. The area consists of a clearing, a storage shed (which, due to its cabin-like appearance, has visual interest), and piles of materials (old wood pipes, shakes, and other miscellaneous materials). When viewed from the East Fork Trail, the area has some visual interest due to its "clearing with a cabin" character. When seen at a closer distance from the forebay access road, it has more of a utilitarian appearance. Its appearance is not that of a natural opening and is likely seen by most viewers as part of the Project complex. Due to its contrast with the nearby landscape in terms of form, line, color, and textures, the laydown and storage area does not meet a VQO of Retention when viewed from the East Fork Trail.

4.2.1.5 Penstock

The 5,688-foot-long penstock varies is size from 16 to 18 inches in diameter. Most of it is underground, but there are two aboveground sections supported by trestles. The upper trestle section that is located within the WWNF is below the dam and between the east side of the East Fork Wallowa River and the forebay access road. It is visible though trailside vegetation from the East Fork Trail. The penstock color is a mottled brown, whereas the trestle support timbers (and cross bracing) are a mixture older, very dark wood, newer (greenish colored) timbers, and (brown) cross braces. When viewed from

the East Fork Trail, the penstock and trestles contrast with the lighter brown color of the cut bank beyond it. Along the 100 feet or so of the East Fork Trail from which the penstock can be viewed, it appears as a long, linear, human-made object. Some viewers likely find its presence inconsistent with the setting, whereas some likely find it of interest (although no Project components have been designated as historic resources, some components, like the penstock, have a character that might be best described as historic industrial). The upper trestle is located within the WWNF and, due to its contrast with the nearby landscape in terms of color, form, and line, does not meet a VQO of Retention when viewed from the East Fork Trail. The rest of the penstock is buried and not seen from the East Fork Trail.

The lower trestle section is located on PacifiCorp land and is seen by far fewer people than the upper section. It can only be seen by people travelling on the forebay access road. Viewers get much closer to the lower trestle (many view it from the wood bridge that crosses the bypassed reach) than the upper trestle. Many who view it also take time to examine a waterfall upriver from where the trestle crosses over the bypassed reach. The lower trestle has a metal support structure that runs along its top and, although it has not been designated as a historic resource, has a historic industrial character. Like the upper trestle, the wood timbers have been updated and have different colors, which detract from a unified trestle appearance.

4.2.1.6 Forebay Access Road

The forebay access road winds its way past the powerhouse and substation and continues up to the forebay area. The first hundred feet or so of the road are also used as the beginning of the East Fork Trail. The forebay access road passes over the Project penstock several times and is adjacent to the lower and upper penstock trestles. The unpaved road is steep is some locations but is still used by some recreationists for accessing the Eagle Cap Wilderness during the winter, partly because it avoids avalanche chutes located above the East Fork Trail. A small portion of the road that passes through the WWNF can be seen from the East Fork Trail behind the upper penstock trestle. The road does not meet a VQO of Retention when viewed from the East Fork Trail due to its contrast with the nearby landscape in terms of line, form, and color.

4.2.1.7 Powerhouse and Substation

The area where the powerhouse and substation are located is approximately 16,500 square feet (0.38 acre) in size. The powerhouse is approximately 35 feet wide by 45 feet long and 18 feet high. The metal building is a light yellow-green color and has a functional, industrial appearance. The substation is adjacent to the southeast side of the powerhouse. Four wood poles approximately 35 feet in height support the 7.2-kilovolt transmission line that connects the powerhouse with the substation. The perimeter of the facility is surrounded by a chain-link fence topped with constantine wire (which is a roll of barbed wire). A fenced gravel-covered yard surrounds the powerhouse and substation. An entry gate provides vehicular access to and from the Joseph-Wallowa Lake Highway turnaround area. The powerhouse and fenced yard are visible to people passing by in vehicles, from the Wallowa Lake Trailhead, from the WWNF connector trail that passes

next to it on its way to connect with the East Fork Trail and the West Fork Wallowa River Trail (West Fork Trail), and to some degree, from parts of the Pacific Park Campground.

4.2.1.8 Tailraces

There are currently two tailrace channels that pass through Pacific Park Campground on their way to the West Fork Wallowa River. The main (western) tailrace is located along the west side of Pacific Park Campground near the base of the slope adjacent to the campground. The open channel of the main tailraces has a creek-like appearance and generally has water flowing through it. The smaller side-channel tailrace on the east side of the campground separates the Pacific Park Campground from the Little Alps Day Use Area. This side-channel tailrace conveys water to the West Fork Wallowa River during times of high water and is similar in appearance to drainage channels or small streams.

PacifiCorp proposes to construct a new rerouted tailrace, which would consist of a buried 30-inch (76.2-centimeter)-diameter pipe that would be approximately 1,000 feet (305 meters) long and discharge into the East Fork Wallowa River. After leaving the vicinity of the powerhouse, the rerouted tailrace would run along the east side of the Joseph-Wallowa Lake Highway for approximately 350 feet. It would then turn east and pass through a forested area north of the OPRD Wallowa Lake State Park maintenance facility on its way to the East Fork Wallowa River. PacifiCorp proposes to revise the Project boundary to include the proposed tailrace alignment (and other appropriate Project features that are not in the current boundary, such as the Royal Purple Diversion and forebay access road). The existing tailrace channels would be retained for use as an emergency spillway to handle full generation flows.

4.2.1.9 Pacific Park Campground

The Pacific Park Campground is a linear facility located near the existing Project tailraces. The unpaved road, somewhat informal campsites, ample parking, wood tables, campfire pits rings, and two vaulted toilets give it a rustic appearance, particularly when compared with campsites at Wallowa Lake State Park or nearby private campgrounds. The two existing Project tailraces add to the setting with their stream-like appearance. The division between the campground and Little Alps Day Use Area is not strong; the existing side channel tailrace separates the two facilities and is crossed by informal structures, such as boards and logs. A barbed-wire fence also separates the two areas, but it is generally in disrepair and does not effectively keep people out of each facility. The campground and nearby areas are heavily forested, and a series of social trails wind up the hillside to the west of the campground. The entry to the campground is not identified well, and it is difficult for many people to understand what the campground is (some think it is an extension of the Little Alps Day Use Area). The campground is not particularly visible from the Joseph-Wallowa Lake Highway or its turnaround area. It is more visible from parts of the Little Alps Day Use Area.

4.2.2 Operations: Flow

The Project is operated in a run-of-river mode. Up to 16 cfs of water (15 cfs maximum from East Fork Wallowa River and 1 cfs from Royal Purple Creek) enters the steel penstock and flows 5,688 feet to the powerhouse. Water used for power generation is discharged into the West Fork Wallowa River, and water that is not used for power generation (above 16.5 cfs) flows over the spillway and into the bypassed reach of the East Fork Wallowa River. The bypassed reach begins at the dam and continues approximately 1.7 miles to its confluence with the West Fork Wallowa River just north of the Pacific Park Campground. The existing license requires a continuous minimum instream flow release into the bypassed reach of 0.5 cfs or the natural inflow to the reservoir, whichever is less (as measured immediately downriver from the dam).

PacifiCorp proposes that the Project continue to be operated in run-of-river mode during all times of generation and that a year-round minimum in-stream flow of 4 cfs be released into the bypassed reach as measured at the FERC-compliance gage immediately below the dam or inflow, whichever is less. This was proposed primarily to improve aquatic habitat between the natural fish barrier (falls) and the location of the proposed tailrace discharge, but would also benefit the aesthetic condition of the bypassed reach by releasing 4.0 cfs of water into the reach during periods of minimum flow compared to the 0.5 cfs that has been released during minimum flow under the current FERC license.

To provide an idea of when flows to the Project powerhouse would be low enough (under 16.5 cfs) to require minimum flow releases of 4 cfs into the bypassed reach, flow data were obtained and are displayed in Table 4.2-2. The table identifies the average minimum, mean, and maximum flows between May and the end of September and indicates when flows would fall below 16.5 cfs and the minimum flow of 4 cfs would need to be released into the bypassed reach. As the table shows, flows below 16.5 cfs can be expected to occur during May of average minimum flow years, from July through September of average minimum flow years, and during September of average mean flow years. These times correspond with the time of year that the greatest number of people would potentially view flows in the bypassed reach.

Because of the steep terrain it flows through, heavy riparian vegetation, and scarcity of places to view the bypassed reach, there are relatively few opportunities for the public to view water flowing through the reach. The best views are from several locations along the forebay access road (where it crosses or approaches the bypassed reach) and one or two locations along the East Fork Trail.

To determine how optional flows that were considered during the relicensing period would influence the aesthetic condition of the bypassed reach, photographs of two different flows were taken from four locations during the site visit. The flow photographed on August 21, 2012, was approximately 5 cfs, and the flow on August 22, 2012, was approximately 8 cfs. Photographs of the flows can be viewed in Appendix B. The following sections compare the two flows viewed from the four locations.

Table 4.2-2 Average Monthly Flow Data.[1]

Month	Average Minimum Flow (cfs)	Average Mean Flow (cfs)	Average Maximum Flow (cfs)
May	14.9	30	59.1
June	25.2	61	142.2
July	11.8	44	98.2
August	9.62	20	37.3
September	9.97	15	24.8

[1] For USGS gaging station 13325001 (East Fork Wallowa River and Wallowa Falls power plant tailrace near Joseph, Oregon) for the 58-year period of record 1924 to 1983.

Source: PacifiCorp (2011b).

4.2.2.1 Location 1: First Encounter with Bypassed Reach on Wallowa Falls Forebay Access Road

This close-up view of the bypassed reach from the edge of the forebay access road focuses on the riverbed. Slightly more rocks in the riverbed are covered with flowing water at the 8 cfs flow when compared with the 5 cfs flow, and slightly more "whitewater" is visible at the higher flow. Despite these slight differences, there are negligible differences between the aesthetic qualities of these flows. Both flows improve upon the aesthetic quality of the existing 0.5 cfs minimum flow.

4.2.2.2 Location 2: Waterfall Overlook

This location is approximately 10 feet from the side of the forebay access road and offers a clear view of the approximately 30-foot-high waterfall. Although the width of water flowing over the lip of the falls is about the same with both flows, the amount of whitewater cascading over the falls can be seen to decrease as the flows decrease. Although the 8 cfs flow would likely be seen by most viewers and is somewhat preferable compared with the 5 cfs flow, both flows create impressive waterfalls and are an improvement over the current minimum flow requirement.

4.2.2.3 Location 3: Forebay Access Road Bridge Over Bypassed Reach Looking South (upriver)

Looking upriver from the bridge provides a clear view of the river channel and its features. The 8 cfs flow produces slightly more whitewater features than the 5 cfs flow, but it does not noticeably increase the width of flow in the riverbed. There is relatively little difference in the appearance of the 8 and 5 cfs flows from this location and both flows would be an improvement over the existing 0.5 cfs minimum flow requirement.

4.2.2.4 Location 4: Forebay Access Road Bridge Over Bypassed Reach Looking North (downriver)

The downriver view from the bridge focuses on the area below the bridge and a log across the river channel. The higher the flow, the more whitewater can be seen spilling from the chute (seen at the bottom of the photograph) upriver from the log. The reviewer did not notice a great deal of difference between the flows when he visited this location. However, when comparing the two flows side by side in Appendix B, the slight to moderate difference between the 8 and 5 cfs flows becomes more somewhat more apparent. Both flows would be an improvement over the current minimum 0.5 cfs flow requirement.

As stated above, PacifiCorp proposes that the Project continue to be operated in run-of-river mode during all times of generation. The automated control system equipment would be set to divert no more than PacifiCorp's water right of 16 cfs from the East Fork Wallowa River. A year-round minimum in-stream flow of 4 cfs would be released into the bypassed reach, as measured at the FERC-compliance gage immediately below the dam, or inflow, whichever is less. The proposed operations would result in minimal changes to the appearance of the features of the reach described above. The increase in minimum flows released into the bypassed reach (from existing 0.5 cfs to 4 cfs) during low-flow months (the summer and early all) would be expected to improve the aesthetic condition of the bypassed reach during all water years, particularly during average minimum flow years.

4.2.3 Operations: Noise

Noise associated with various activities in the south Wallowa Lake area (e.g., vehicles, motorized boats, go-carts) as well as the operation of the Project generator can be heard in parts of the Study Area. In a comment letter to FERC dated June 23, 2011, the WWNF noted that noise from the powerhouse can be heard for at least a mile and that the WWNF considered this a disruption to forest visitors. To get an indication of how audible noise from the Project powerhouse was within the Study Area, noise readings were taken from 25 locations within the Study Area (including several WWNF trails) in the summer of 2013. The results are reported in Appendix C as is a list of common sources of sound and their relative decibel readings for comparison. The results were shared with WWNF and OPRD staff at a meeting held on June 11, 2013. No applicable county, state, or USFS standards were found by PacifiCorp (or the WWNF or OPRD) that existing Project-generated noise levels could be compared with to determine whether there was a Project-related noise impact; therefore, it is not possible to determine whether there would be noise-related impacts associated with the Project. Noise produced by the Project powerhouse will continue to be noticed by some recreationists using some WWNF trails to access the Eagle Cap Wilderness. As disclosed in Appendix C, other factors that also contribute to noise in the Study Area compete for audible attention with the Project powerhouse, and its contribution to potential noise related impacts would be difficult to determine, even if there were standards to use to assess impacts.

5.0 DISCUSSION AND CONCLUSION

This section presents the conclusions and recommendations associated with major issues discussed in this report.

5.1 Potential Conflicts with Aesthetic/Visual Resource Goals Contained in Land Use and Resource Management Plans

This section examines the consistency or inconsistency of changes associated with the Project on aesthetic and/or visual management goals contained in relevant land use and resource management plans. It evaluates consistency with the Forest Plan (USFS, 1990) and Wallowa County's Comprehensive Plan (Wallowa County, 2003). This section also contains proposed measures to improve the appearance and/or setting of Project facilities located within the WWNF and on private lands under the jurisdiction of Wallowa County.

5.1.1 Wallowa-Whitman National Forest

Several of the Project facilities (e.g., forebay, dam, spillway, catwalk, intake structure housing, dam laydown and storage area, and some portion of the upper penstock trestle) that are located within the WWNF do not meet the VQO of Retention that was assigned to the lands in which they are located. The facilities have been inconsistent since the current Forest Plan was adopted in 1990 and are currently inconsistent. In the comment letter sent by the USFS responding to the preapplication document, the FERC scoping document, and study request letter that was sent to the FERC dated June 23, 2011, the USFS expressed concerns related to the appearance of the Project forebay, dam, catwalk, and penstock. The USFS letter stated that these Project facilities are visual intrusions to East Fork Trail users due to the materials of which they are made (USFS, 2011). The letter also stated that, from several locations along the trail where it is visible, the penstock detracts from the natural quality of the area.

During site visits with PacifiCorp and WWNF staff, several other Project facilities located within the WWNF that detract from views from the East Fork Trail were identified. These additional facilities are the intake structure housing, the dam laydown and storage area on the east side of the forebay, and the area adjacent to and between the East Fork Trail and the west side of the dam and spillway catwalk and forebay. These facilities and the forebay, dam, catwalk, and penstock do not meet the assigned VQO of Retention because the area in which they are located does not appear to be largely unaltered when viewed from the trail, which is a requirement for the VQO of Retention. After a series of meetings with WWNF staff (including additional site visits), an aesthetics and visual resource management program was developed that would improve the appearance of the current condition of this portion of the Project. It was agreed that painting the brushed-aluminum catwalk (the color of which had previously been pointed out as being an issue) or replacing the relatively new catwalk with a nonaluminum structure would not be practical or result in enough of a visual improvement to justify the expense. Therefore, it was dropped from consideration. The proposed measures that were developed for Project facilities located within the WWNF are described below:

- **Improve the forebay intake structure by installing wood shake-siding to the exterior and roof of the equipment house.** Wood shakes would be attached to the intake structure-equipment house's exterior and roof (which are currently plywood) so that they would be similar in appearance to the storage structure that can be seen on the east side of the forebay; the storage structure currently has the appearance of a rustic cabin.

- **Improve the appearance of the laydown and storage area on east side of the forebay.** PacifiCorp currently uses the east side of the forebay within the FERC Project boundary to store materials needed for maintaining the dam, forebay, and other facilities. Much of the material currently stored in this area would be removed and/or consolidated behind the existing storage structure mentioned previously so that it would be less visible from the East Fork Trail.

- **Install an interpretive sign at the west side of the forebay.** Screening the Project facilities that can be seen from the East Fork Trail with vegetation was considered, but due to the FERC requirements regarding keeping areas near dams free of vegetation, this idea was abandoned. Instead, a project interpretive sign would be installed along the East Fork Trail at the forebay. The sign would include Project information, a map of the local trail system, and information related to the Eagle Cap Wilderness.

- **Enhance the upper penstock trestle and penstock pipe by painting them a uniform dark color in consultation with the WWNF.** The portion of the penstock just north (downstream) of the forebay dam and spillway that is supported by a timber trestle and visible from several locations along the East Fork Trail would be treated to make it more visually recessive. The most visible parts of this feature are the painted metal penstock, concrete and rock support structures, and support timbers that are different colors than the other support timbers. The penstock would also be painted a uniform color in consultation with the WWNF. The concrete support structures would be stained with a darker gray color that would be similar to that of nearby rocks. In addition, nearby rocks would be gathered and placed on top of and adjacent to the portions of the support structures that are visible to better blend them with the surrounding environment.

With the proposed measures described above, the Project facilities would still be visually evident from approximately 100 to 150 feet of the East Fork Trail and would not meet a VQO of Retention. Although the proposed measures would not meet a VQO of Retention, they would improve the existing appearance of Project facilities viewed from the East Fork Trail on a short-term and long-term basis. The informational signage that would be included among the proposed measures would describe the Project, identify Project facilities, and provide maps and information related to the Eagle Cap Wilderness. Based upon conversations in the field with people hiking the trail during site visits, many people have no idea what the "pond" (the forebay) is or what other facilities are. By implementing the proposed measures, Project facilities would be less visually intrusive than they currently are, and people using the trail would better understand what the Project facilities are and why they are located adjacent to a WWNF trail.

Although the bypassed reach is only visible from several sections of the East Fork Trail, the increase in the proposed minimum flow level from 0.5 cfs to 4 cfs would improve the aesthetic characteristics of the bypassed reach during the summer months. Many people using the trail might not notice the difference in flows, but some might and would be expected to appreciate the difference. The difference in flows would have no effect in terms of consistency with the Forest Plan.

5.1.2 Wallowa County

The Project would not be inconsistent with aesthetic or visual resource goals associated with the Wallowa County Comprehensive Plan. Appendix 5 under Goal 5 (Open Spaces, Scenic and Historic Areas, and Natural Resources) of the Comprehensive Plan identifies scenic views and sites. Two of these sites, the Eagle Cap Wilderness and Mount Howard, are in the Study Area. Changes associated with the Project would not be seen from the Eagle Cap Wilderness. Removing trees associated with the rerouted tailrace might be seen from part of Mount Howard but would appear as another open area in the forest canopy. Goal 5 also contains several maps (Maps G5-1: Sensitive View Areas, G5-2: Scenic Resource Areas, and G5-3: Protected Status Scenic Resources) that depict areas around Wallowa Lake, including part of the Project Study Area. The Project would not result in changes to the viewed landscape that would be seen from these areas.

Although there was no Wallowa County regulatory requirement to address the appearance of Project facilities on nonfederal lands, and no entity suggested that the appearance of these Project facilities be improved, PacifiCorp felt that the proposed measures would improve the appearance and image of PacifiCorp property, the entry into the WWNF and Eagle Cap Wilderness near the Wallowa Lake Trailhead, and the terminus of the Joseph-Wallowa Lake Highway. In addition to these measures, a number of recreation-related proposed measures were developed (see Recreation Resources updated Study Report) that would also improve this area's order and appearance. The proposed measures for aesthetic/visual resources that were developed for Project facilities located outside of the WWNF within Wallowa County are described below:

- **Replace the section of Project fencing adjacent to the terminus of Joseph-Wallowa Lake Highway with a simple, decorative metal fencing (approximately 125 linear feet (38.1 meters).** This fencing would extend from the Project gate (and include the gate) along the portion of the powerhouse yard area adjacent to the highway to the entrance to Pacific Park. The remainder of the Project yard chain-link fencing would be replaced with black vinyl-coated chain-link fencing, which would be less visible than the existing galvanized chain-link fencing.

- **Install low-maintenance landscape improvements, (e.g., native vegetation, boulders, rocks, cobble, and/or gravel) between the new Project fencing described above and the edge of the Joseph-Wallowa Lake Highway terminus.** The intent of the landscaping would be to screen views of the Project powerhouse and yard and make the highway terminus more attractive.

- **Recoat the powerhouse exterior.** The light-colored powerhouse roof, which is currently visible from parts of the Chief Joseph Mountain Trail, would be recoated with a more appropriate color (i.e., darker and nonreflective) within 3 years of the new license being issued. The color of the powerhouse siding would be changed to a dark green color similar to that of trees behind it to diminish the building's visibility at a time when the siding requires recoating.

5.1.3 Conclusions

Although some of the Project facilities that are located on WWNF-lands currently do not meet the Forest Plan VQO of Retention (USFS, 1990) and would not meet it with the measures proposed by PacifiCorp, the proposed measures would improve the appearance of most facilities. The measures would also improve the visual setting of Project facilities that can be viewed from between approximately 100 to 150 feet of the East Wallowa Trail. The measures also would provide information to the public explaining the presence of the Project in a national forest, the Project's history and facilities, and provide information related to the WWNF and the Eagle Cap Wilderness. The measures, which were developed with review by WWNF staff, would result in an improved aesthetic/visual setting for recreationists passing by on the East Fork Trail on their way to and from the Eagle Cap Wilderness,

The measures proposed for Project facilities located outside of the WWNF would improve the appearance of the facilities, the terminus of the Joseph-Wallowa Lake Highway, the entrance to the Pacific Park Campground, and the area near the Wallowa Lake trailhead.

6.0 REFERENCES

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Figures

FIGURE A-1
View of Study Area Terrain

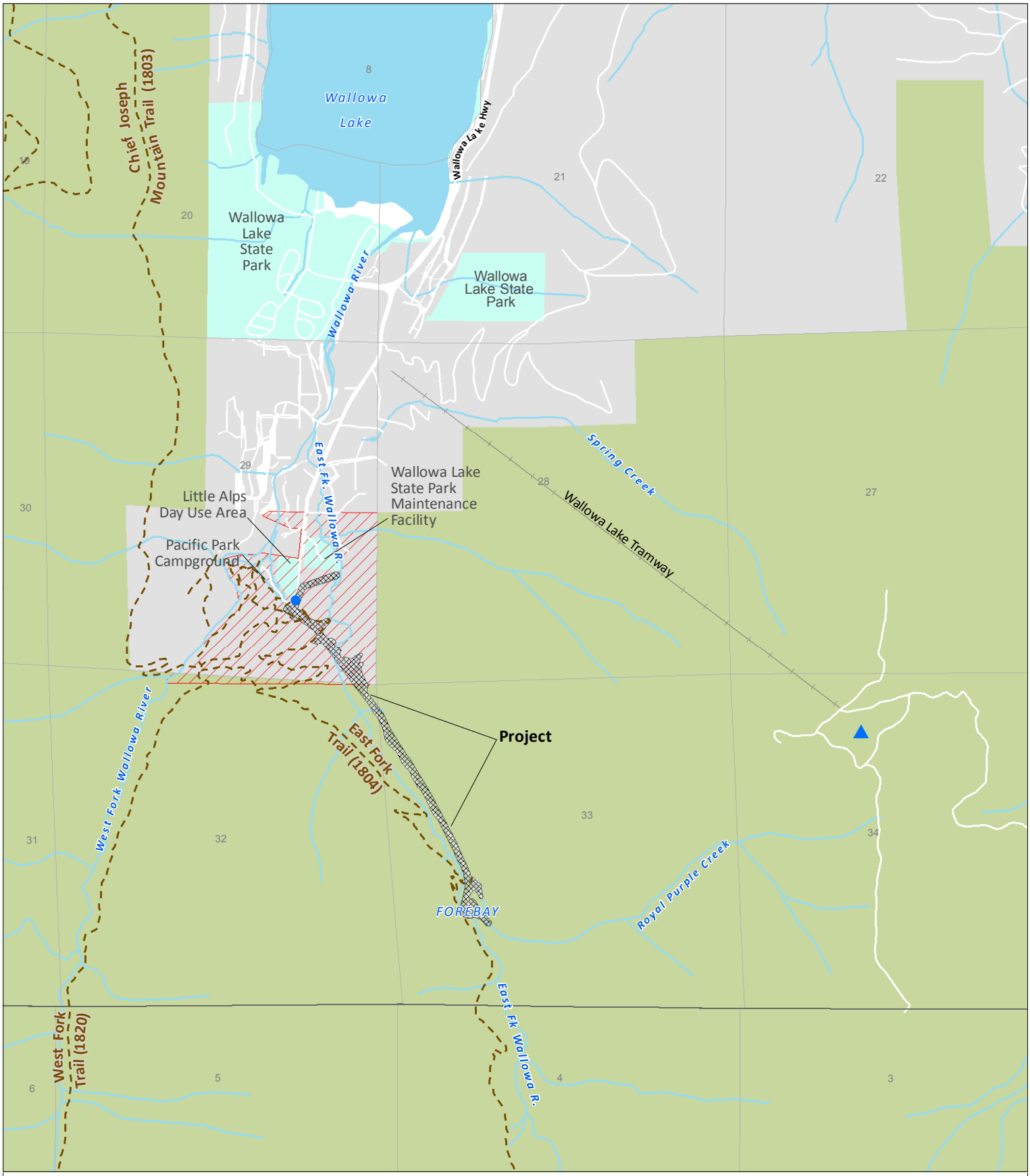

Figure A-2

Study Area Overview

0 1,000 2,000
Feet

N

- Proposed Project Boundary (FERC)
- Mount Howard
- Wallowa Lake Trailhead (USFS)
- Pacific Park Campground Area - PacifiCorp Operated
- USFS Trail
- Wallowa Lake Tramway
- Road (white)
- Water
- Section
- Township Range
- PacifiCorp Ownership
- PacifiCorp Land Leased to the State of Oregon
- Private Ownership
- Federal Ownership (U.S. Forest Service)
- State Park

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Data are projected in UTM Zone 11, NAD83, meters.

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gisdept@Pacificorp.com

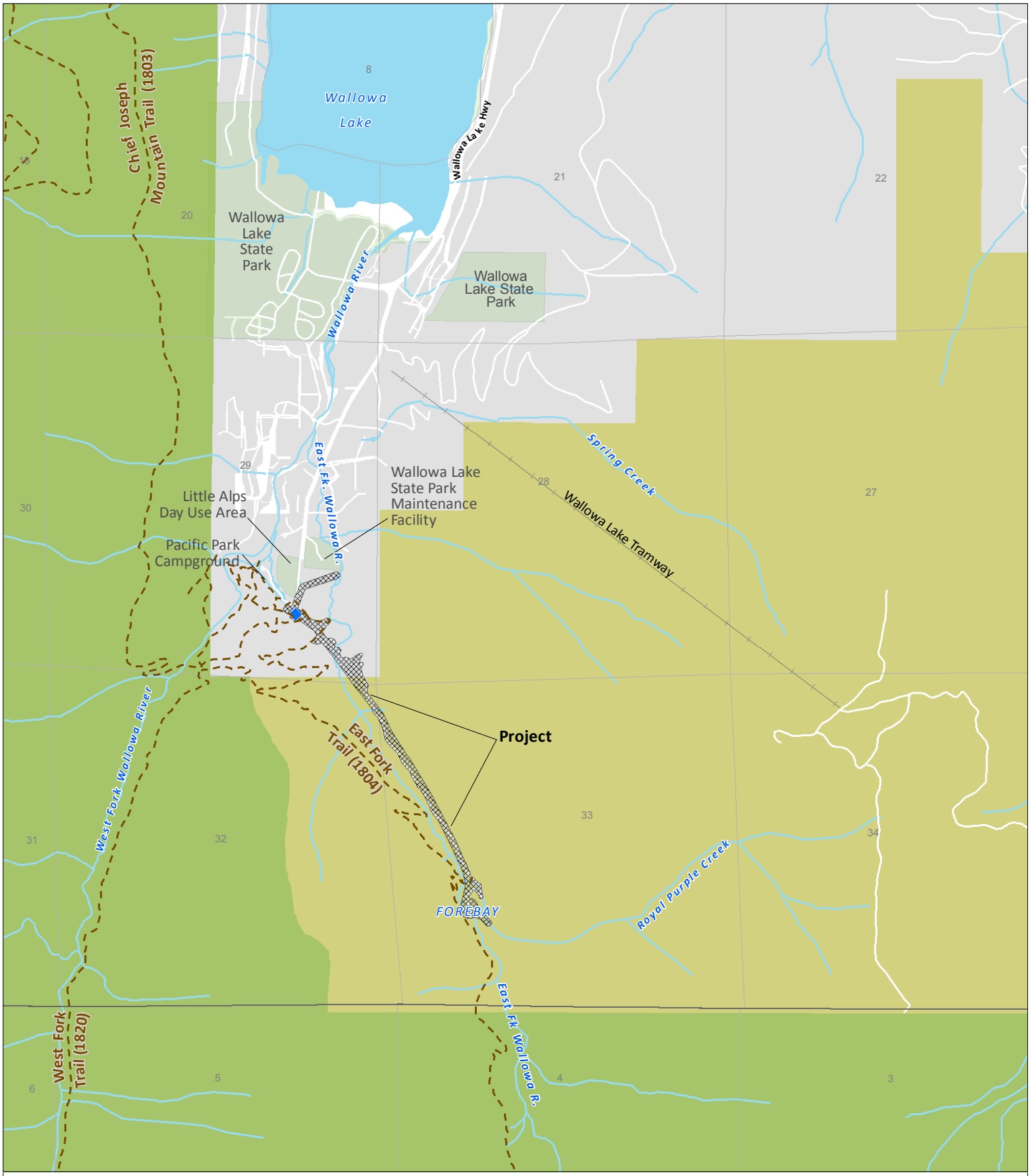

Figure A-3

Wallowa - Whitman NF Visual Quality Objective

0 1,000 2,000
Feet

N

Proposed Project Boundary (FERC)
Park

Visual Quality Objective
Preservation
Retention
None

Powerhouse
Forebay
USFS Trail
Wallowa Lake Tramway
Road (white)

Section
Township Range
Water

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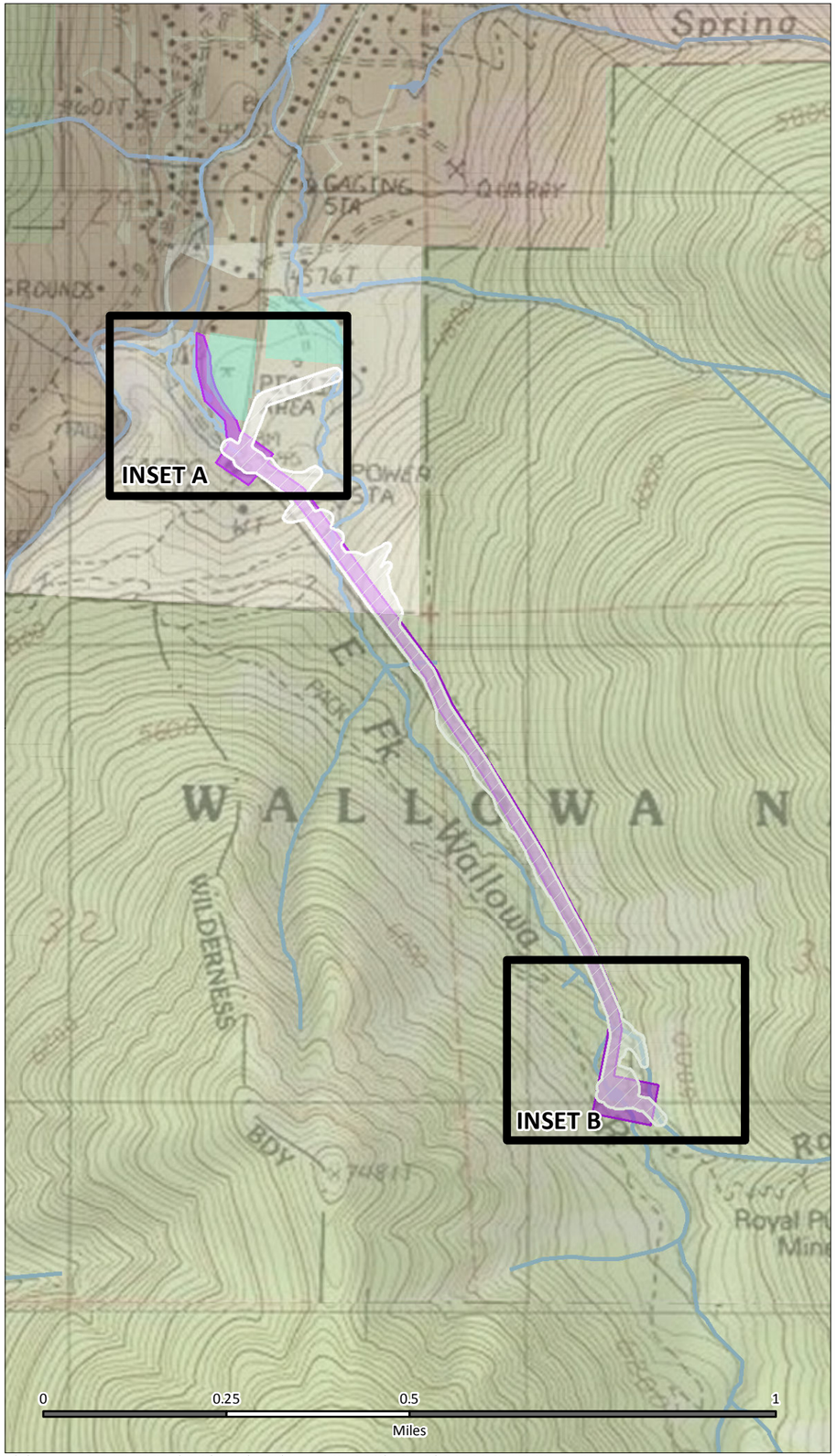
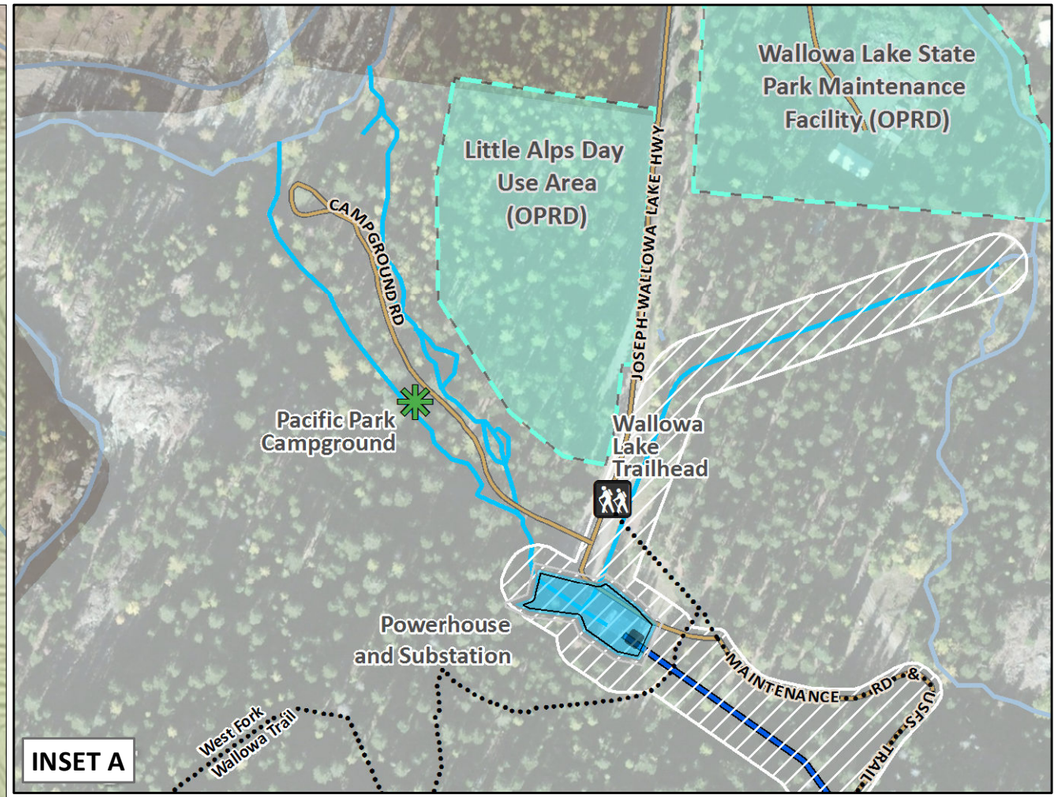
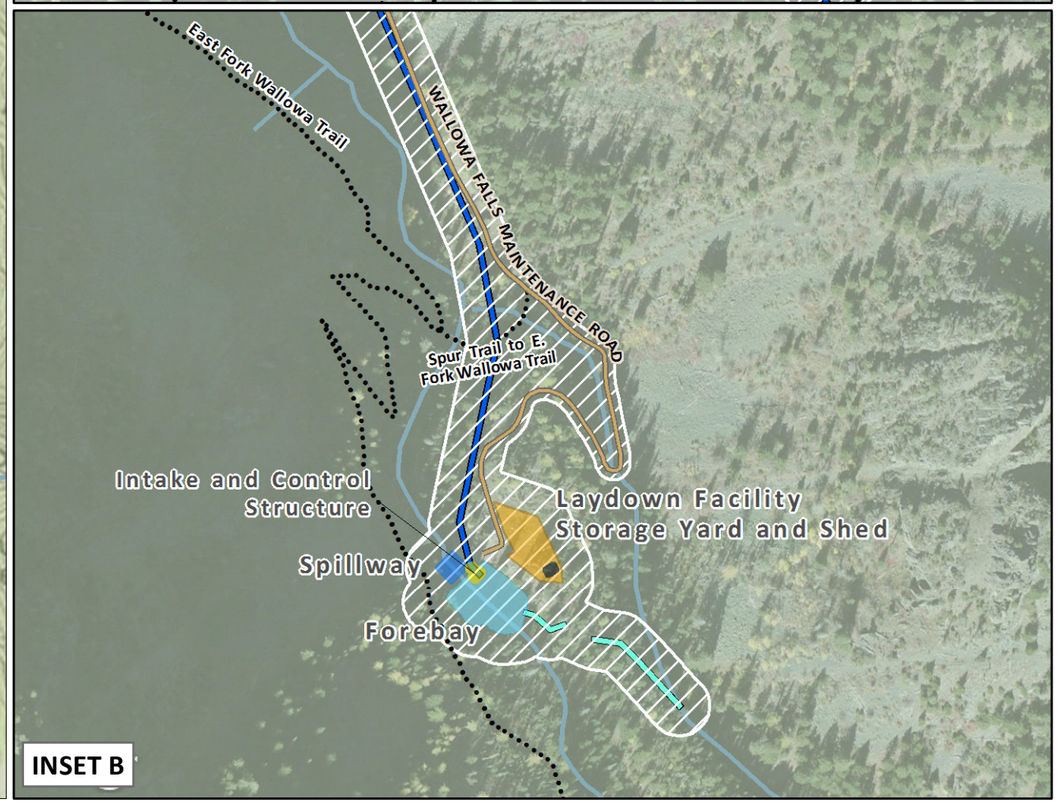
Figure A-4

Project Faclility Locations

Wallawa Falls Hydroelectric Project







Proposed Project (FERC) Boundary (white)
- Existing FERC Boundary
- PacifiCorp Owned Land (white)
- Boy Scouts of America
- Wallowa-Whitman National Forest
- PacifiCorp Owned State Managed[1]

Hydro Facility
- Penstock
- Flowline/Pipeline
- Channel Tailrace
- Powerhouse
- Building
- Intake Control Structure
- Storage Yard
- Forebay
- Spillway

- USFS Trailhead
- Pacific Park - PacifiCorp Operated
- Trail
- Road
- Water

[1] PacifiCorp land leased to Oregon Parks and Recreation Department (OPRD)

INSET MAP SCALE

0 100 200 300 400 500 Feet

N

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Data are projected in UTM Zone 11, NAD83, meters.

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Appendix A
Photographs of Project Facilities

Photo 1: Royal Purple Diversion Dam

Photo 2: Royal Purple Pipeline

Photo 3: Project Forebay and East Fork Wallowa River Inlet

Photo 4: Project Forebay and Intake Structure

Photo 5: Project Dam, Spillway and Catwalk

Photo 6: Project Spillway, Dam, Catwalk, and Intake Structure

Photo 7: Intersection of East Fork Trail with Project Dam and Catwalk

Photo 8: Project Laydown Area, Storage Yard and Storage Shed

Photo 9: Upper Penstock Trestle and Forebay Access Road Seen from East Fork Trail

Photo 10: Lower Penstock Trestle and Bypass Reach Seen from Forebay Access Road Bridge

Photo 11: Project Forebay Access Road

Photo 12: Project Forebay Access Road and Buried Penstock on Right

Photo 13: Project Powerhouse and Substation from Near Wallowa Lake Trailhead Area

Photo 14: Project Powerhouse and Substation Seen from Joseph-Wallowa Lake Highway Turnaround

Photo 15: Looking Upstream at Lower Project Side Tailrace Channel in Pacific Park Campground

Photo 16: Side view of Lower Project Main Tailrace Channel in Pacific Park Campground

Photo 17: Example of Campsite in Pacific Park Campground

Photo 18: Pacific Park Campground Restrooms

Appendix B
Bypassed Reach Flow Comparison

BYPASS REACH FLOW COMPARISON

	First Encounter with Bypass Reach on Wallowa Falls Forebay Access Road	Waterfall Overlook (Sideways View)	Forebay Access Road Bridge Over Bypass Reach Looking South (upriver)	Forebay Access Road Bridge Over Bypass Reach Looking North (downriver)
August 22, 2012 8 cubic feet per second				
August 21, 2012 5 cubic feet per second				

Appendix C
Noise Level Recordings

Noise Level Recordings

Noise levels from areas near the Project were recorded by Mark Greenig of CH2M HILL on June 12, 2013 between 8:30 a.m. and 10:30 a.m. using an Ono Sokki LA-221 Sound Level Meter. The weather was clear with occasional breezes. The Project powerhouse was releasing between 11 and 12 cubic feet per second (cfs) of water into the Project tailrace. The release of water creates the bulk of the noise (the "hum") associated with the Project powerhouse.

To provide some context related to the decibel readings that were collected, the following was obtained from the Center of Hearing and Communication website. It provides examples of the decibel levels of commonly heard sounds.

Points of Reference of Common Sounds - measured in dBA (or decibels)

- 0—The softest sound a person can hear with normal hearing
- 10—normal breathing
- 20—whispering at 5 feet
- 30—soft whisper
- 50—rainfall
- 60—normal conversation
- 110—shouting in ear
- 120—thunder

(Source: Center of Hearing and Communication; accessed at http://www.chchearing.org/noise-center-home/facts-noise/common-environmental-noise-levels.)

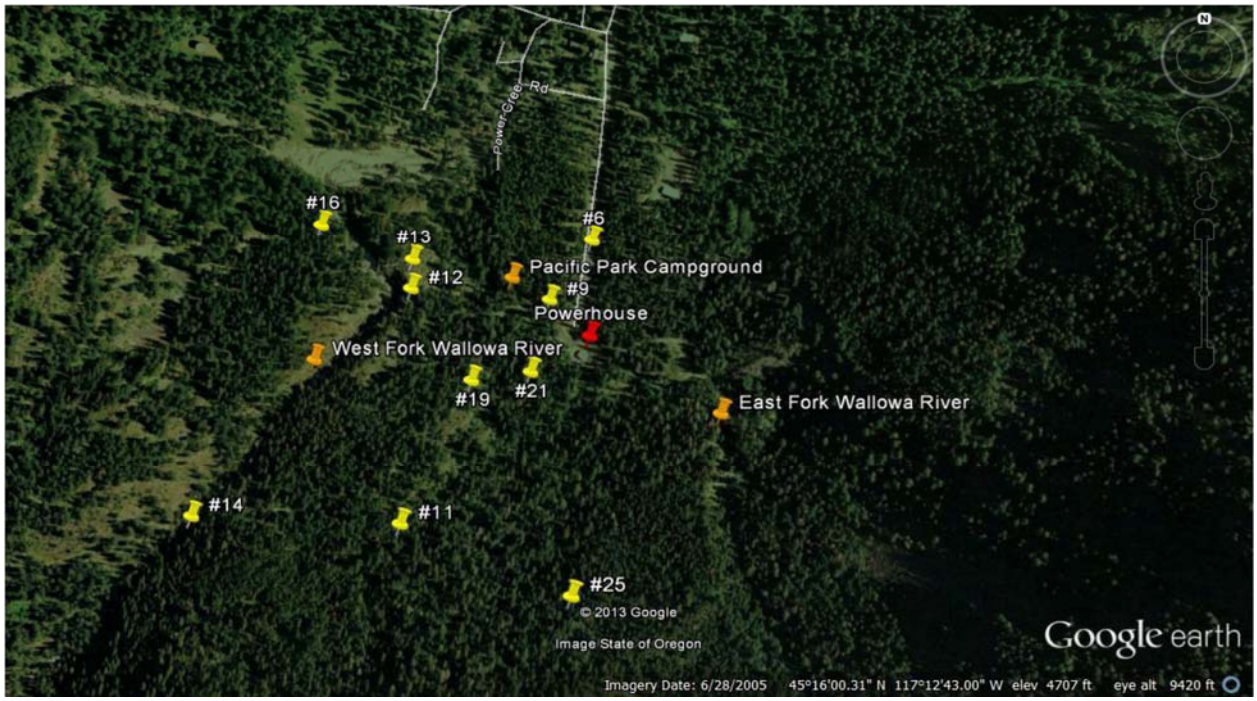

Figure 1: Locations of Noise Readings

Noise Readings Near Wallowa Falls Hydroelectric Project				
Location #	**Location Description**	**dba**	**Project Heard?**	**Notes**
Wallowa Lake Highway north of Project				
1	Next to Project powerhouse fence	69	Yes	Sound of water released from Project (the "hum" of water being released, which is the "sound" of the Project Power plant) very audible.
2	25 feet from fence	65	Yes	Same as above.
3	50 feet from fence	61	Yes	Less than above.
4	100 feet from fence	55	Yes	Less than above. Could hear flowing water from other sources (probably the East Fork of the Wallowa River [East Fork] and Project tailraces [tailraces]), but sound of Project powerhouse water release most audible sound (unless vehicles drive by).
5	200 feet from fence	51	Somewhat	Sound of flowing water (West and East Forks) and Project tailraces started to compete with Project powerhouse water release for listening attention.
6	400 feet from fence (see Figure 1)	51	Barely	The sound of flowing water was clearly heard from this location, and Project powerhouse water release barely heard.
Pacific Park Campground				
7	Entry gate	64	Yes	Mix of sounds from Project powerhouse water release and flowing water from tailraces.
8	Entry road and eastern bypassed reach	70	Barely	Flowing water of tailraces was very audible sound, and Project powerhouse water release was barely heard.
9	Bottom of slope near start of social trail. Approximately 260 feet from Project powerhouse (see Figure 1)	54	Yes	Sound from Project powerhouse water release was more audible than flowing water of bypassed reach.
Trails west of Project powerhouse				
10	Social trail – intersection with other social trail	49	Yes	Could hear Project powerhouse water release (and other sounds), but the sound was somewhat muted in this location surrounded by forest.
11	Approximately midpoint to ridgeline trail	46	Somewhat	Much of noise from Project powerhouse muffled by forest.
12	Intersection of hillside social trail with ridgeline social trail – approximately 0.15 mile from Project powerhouse	57	Barely	Flowing water from West Fork was most audible sound and could barely hear Project powerhouse water release.
13	Flat area east of overlook on "knob" at north end of ridge. Approximately 0.14 mile from Project powerhouse (see Figure 1)	55	Yes	Terrain blocked much sound from West Fork and Project powerhouse water release could be clearly heard.

Noise Readings Near Wallowa Falls Hydroelectric Project				
Location #	**Location Description**	**dba**	**Project Heard?**	**Notes**
14	On top of overlook.	55	No	West Fork most audible and could not hear Project powerhouse water release.
15	West Fork Trail bridge over West Fork	75	No	Very high flows of West Fork were clearly heard, and could not hear Project powerhouse water release.
16	Chief Joseph Mountain Trail	36	No	Middle of thick forest, no wind, was no perceptible sound from flowing water or the Project powerhouse water release.
17	First Chief Joseph Trail overlook area - approximately 0.25 mile from Project powerhouse (see Figure 1)	51	Barely	Location where could first hear Project powerhouse water release from the trail, but West Fork most noticeable sound.
18	Chief Joseph Trail – near where trail turns to BC Creek	59	No	Could hear West Fork and BC Falls but not Project powerhouse water release.
Connection trail between West Fork and Wallowa Lake Trailhead area that passes through PacifiCorp land.				
19	Intersection of ridge trail and connection trail – approximately 0.9 mile from Project powerhouse (see Figure 1)	47	Yes	Sound from Project powerhouse water release was more noticeable than the sound of the West Fork.
20	Immediately southwest of, and almost in sight of, Project powerhouse - approximately 250 feet from Project powerhouse (see Figure 1)	51	Yes	Sound from Project powerhouse water release was clearly heard, and sound from Project powerhouse generator could be heard.
21	Immediately east of Project powerhouse.	48	Yes	Both sounds described above could be heard.
East Fork Trail				
22	Within sight of powerhouse	48	Yes	Sounds of Project powerhouse water release and East Fork were heard about evenly.
23	Intersection of trail and forebay access road	48	Yes	Same as above.
24	Overlook of East Fork	48	No	East Fork clearly heard, and Project powerhouse water release not heard.
25	On switchback facing north – approximately 0.21 mile from Project powerhouse (see Figure 1).	46	Yes	Could hear both Project powerhouse water release and East Fork.