REVIEW OF APPLICATION FOR LIHI RECERTIFICATION OF THE NORTH UMPQUA HYDROELECTRIC PROJECT (FERC PROJECT NO. 1927; LIHI CERTIFICATE NO. 69)

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NORTH UMPQUA HYDROELECTRIC PROJECT
FERC PROJECT NO. 1927

REVIEW OF APPLICATION FOR LIHI RE-CERTIFICATION

TABLE OF CONTENTS

LIST OF TABLES

Acronyms and Abbreviations

A	
Applicant	PacifiCorp
B	
BIOP	biological opinion
BLM	Bureau of Land Management
C	
CWA	Clean Water Act
E	
ESA	Endangered Species Act
F	
FEB	Fish Evaluation Building
FERC	Federal Energy Regulatory Commission
H	
HPMP	Historic Properties Management Plan
I	
IFIM	Instream Flow Incremental Methodology
ITS	incidental take statements
L	
LIHI	Low Impact Hydropower Institute
M	
MOU	Memorandum of Understanding
MW	megawatt
N	
NOAA	National Oceanic and Atmospheric Administration
NUR	North Umpqua River
O	
ODEQ	Oregon Department of Environment Quality
ODFW	Oregon Department of Fish and Wildlife
P	
Project	North Umpqua Hydroelectric Project
R	
RM	river mile
RRMP	Recreation Resources Management Plan
S	
SA	Settlement Agreement

SHPO	State Historic Preservation Office
SMP	Shoreline Management Plan

T

TDG	total dissolved gas
TMDL	Total Maximum Daily Load

U

UNF	Umpqua National Forest
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service

W

WQC	water quality certification

Z

ZoE	Zone(s) of Effect

1.0 INTRODUCTION

The 194-megawatt (MW) North Umpqua Hydroelectric Project (FERC Project No. 1927) is located in Oregon on the North Umpqua River (NUR) and two of its tributaries, Clearwater River and Fish Creek. It lies on the western side of the central Cascade Mountain range in eastern Douglas County, approximately 60 miles east of the city of Roseburg. The watershed supplying the Project is entirely within the Umpqua National Forest (UNF) and is managed by the U.S. Forest Service. The Project is currently operating under a 35-year license issued by the Federal Energy Regulatory Commission (FERC) on November 18, 2003, which is set to expire on November 1, 2038. This license incorporates the terms of a 2001 Settlement Agreement (SA) between PacifiCorp and various federal and state regulatory agencies.

Originally constructed between 1942 and 1956, the Project consists of five separate facilities, which are described in the Zones of Effect (ZoE) section below. In 2022, PacifiCorp submitted a license amendment application to incorporate pumped storage. This amendment was approved by FERC on December 1, 2023. Despite the approval, PacifiCorp is no longer pursuing the additional pumped storage development at the Project and is seeking Low Impact Hydropower Institute (LIHI) recertification based on the Project's current configuration.

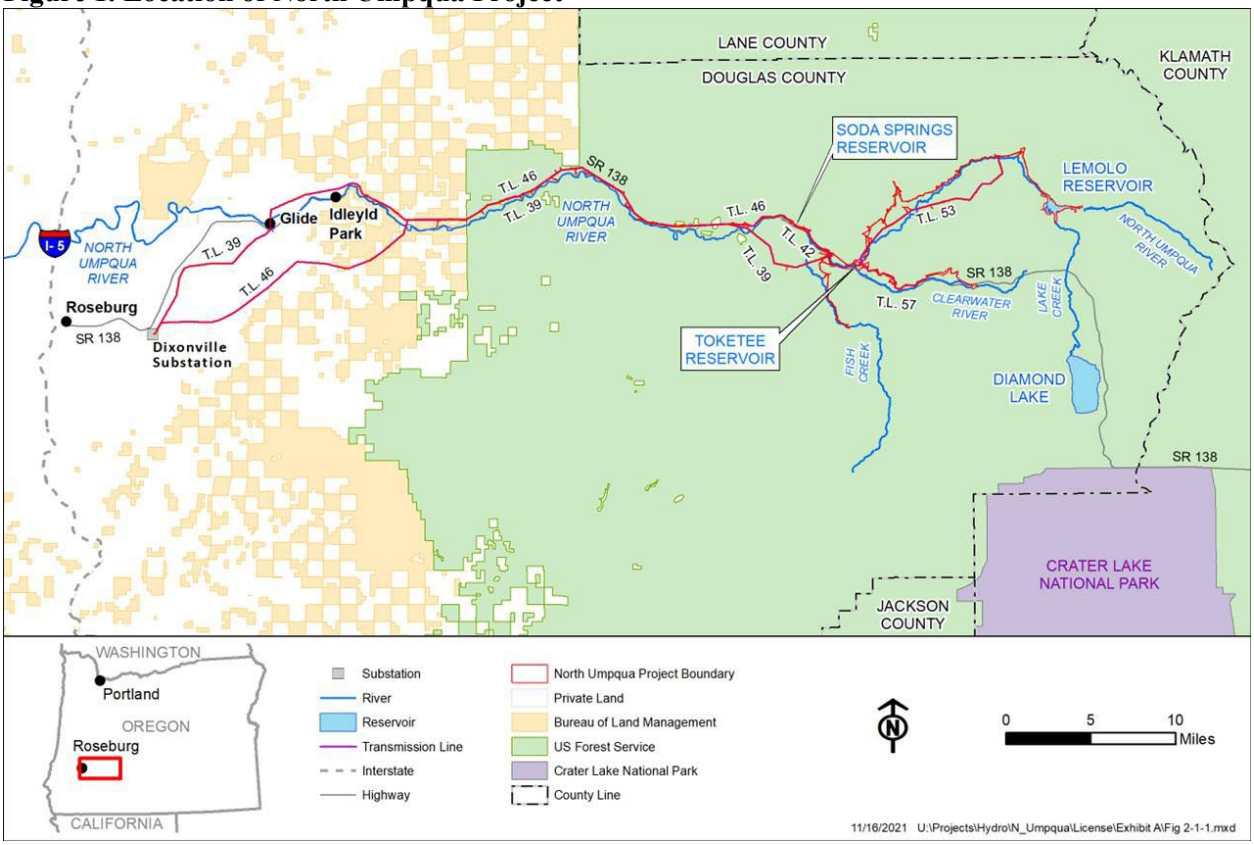
The Project includes five primary facilities located along the North Umpqua River (NUR) at approximately river miles (RM) 69.8 (Soda Springs), 73.2 (Slide Creek), 75.4 (Toketee), 88.5 (Lemolo No. 2), and 93 (Lemolo No. 1), and is situated on the west side of the central Cascade Mountain range in eastern Douglas County, Oregon. The watershed that supplies water to the Project lies entirely within the Umpqua National Forest (UNF) and is part of the North Umpqua watershed unit (HUC 17100301). This watershed encompasses the 106-mile-long NUR and its 1,374-square-mile drainage area. Soda Springs, the most downstream diversion dam in the Project, is located at river mile (RM) 69.8 and marks the start of the Project's hydrologic influence. The watershed upstream of this point covers approximately 382 square miles, or about 28% of the total NUR Basin. There are no dams within the watershed upstream of the Project. Winchester Dam[1] is the only dam on the North Umpqua River downstream of the Project at RM 7.

The Project infrastructure consists of eight powerplants, eight dams, 21.7 miles of canal, 9.8 miles of flume, and 5.8 miles of penstocks and tunnels, totaling 37.3 miles of water conveyance features. Water

[1] Owned by the Winchester Water Control District, a private association of homeowners who live around the private water ski lake formed by the Winchester Dam. The dam is rated by Oregon Department of Fish and Wildlife as a high priority for removal.

storage is provided by three major reservoirs: Lemolo Reservoir, Toketee Reservoir, and Soda Springs Reservoir. The eight facilities are organized into 18 Zones of Effect (ZoE), which are described in detail in the ZoE section of this report. For a comprehensive description of each facility, refer to Table 1 in PacifiCorp's LIHI application.

Figure 1. Location of North Umpqua Project



The Project has historically operated in a peaking mode, generating more electricity during high-demand hours from 6:00 A.M. to 10:00 P.M., but this mode of operation is evolving as the Project increasingly responds to variable renewable energy integration across the western grid. Storage capacity at five of the facilities is limited but Lemolo, Toketee, and Soda Springs Reservoirs have more storage capacity. Lemolo Reservoir plays a key role in shaping daily flows, while Soda Springs Reservoir serves to reregulate upstream flows and maintain stable baseflows to the NUR downstream. Water is typically released from Lemolo during the day and continues to Soda Springs, with this pattern reversing at night as Lemolo Reservoir is re-filled, and Soda Springs Reservoir water surface elevations are reduced as stable flows are released to the North Umpqua River downstream of the Project. The Project's license, Settlement Agreement (SA), and water quality certification (WQC) specify minimum instream flows, water surface elevations, and ramping rates, including special provisions for bypassed reaches like Fish Creek, where natural inflows often fall below required levels. Project generators are managed

automatically through programmable logic controllers, with oversight via SCADA systems from PacifiCorp's Toketee and Ariel control centers. Although control operators can adjust generation through the network, operators generally allow the plant to run in automatic mode and will call out an on-site operator for any unplanned outages or alarms.

This report presents the review findings and recommendations concerning the LIHI re-certification application submitted by PacifiCorp in October 2024. The review is being conducted in accordance with the current 2nd Edition LIHI Handbook (Revision 2.05) that was in effect at the time of initial application.

The Stage I recertification review was conducted in December 2024 and focused on three primary questions:

1. Is there any missing information in the application?
2. Are there any newly identified issues of concern or have there been any material changes (see Section 5.3.3 and Section 5.3.4) at the facility during the term of the previous Certification?
3. Have there been any material changes in the LIHI criteria or Certification process since the facility was originally certified or last recertified?

The only material change at the Project has been the temporary lowering of the Toketee Reservoir elevation by two feet for dam safety reasons as safety-related dam rehabilitation work is in progress (see Attachment 1 and Attachment 2 of the LIHI application).

The LIHI Handbook had been revised between the prior certification and the current application; therefore, Item 3 was met, and this full recertification review was conducted.

2.0 REGULATORY AND COMPLIANCE STATUS

The Federal Power Commission issued a 50-year license to the California Oregon Power Company for the Toketee Hydroelectric Project (FERC Project No. 1927) in 1947, with the license being amended to include additional developments as they were constructed. After the original license expired, the Project operated under annual licenses, and in 1961, PacifiCorp acquired the Project. Following a relicensing process in the mid-1990s, which included compliance with state and federal resource plans and regulations, PacifiCorp entered into a settlement process with seven state and federal agencies. This process aimed to resolve all issues regarding relicensing, as well as to establish resource protection, mitigation, and enhancement measures (PM&Es). The settlement process culminated in a new 35-year FERC license being issued in 2003, which incorporated the settlement agreement (SA) as part of the regulatory compliance framework.

Following relicensing, the Project undertook significant construction activities to meet the regulatory requirements set forth in the SA, including the construction of fish passage facilities, tailrace barriers, fish screens, and habitat connectivity structures. These projects were designed to meet FERC's compliance mandates related to fish protection and aquatic ecosystem health. Environmental compliance notifications and/or follow-up reporting were provided to the relevant agencies for nine events during this certification term, all of which have been resolved and/or corrected as outlined in Section 1.2.2. of the LIHI application. None were considered FERC violations. The ongoing maintenance and safety upgrades since the relicensing further demonstrate PacifiCorp's commitment to adhering to regulatory standards for dam safety and environmental stewardship.

Adopted in May 2002, the Project's Resource Coordination Committee (RCC) was created by Section 21 of the SA. The RCC is comprised of representatives from each of the signatory agencies. The RCC is tasked with facilitating coordination of the Resource Coordination Plan (RCP), including oversight of ongoing operations and maintenance activities. In addition, the RCC is responsible for coordinating and monitoring the design and implementation of Protection, Mitigation, and Enhancement (PM&E) measures, as well as coordinating PacifiCorp's ongoing monitoring requirements.

The Project is currently operating under and complies with the conditions in the Clean Water Act (CWA) Section 401 WQC for the Project issued by Oregon Department of Environment Quality (ODEQ) on June 28, 2002, as modified by a letter from ODEQ dated June 6, 2005. On December 13, 2022, ODEQ issued to PacifiCorp a WQC modification (Certification Modification; Attachment 15 of the LIHI Application) pursuant to PacifiCorp's February 25, 2022 application to the FERC to amend the existing Project license

for the Fish Creek Pumped Storage Project (Pumped Storage Project). As noted above, the pumped storage development at Fish Creek is no longer being pursued by PacifiCorp. The WQC modification did not alter any of the terms and conditions of the original WQC that are unrelated to the proposed pumped storage project. In an October 2024 letter, ODEQ provided confirmation that the terms of both the original WQC and the modification remain valid and in effect (Attachment 30 of the LIHI application).

Since the last recertification, PacifiCorp performed exploratory drilling downstream of Toketee Dam and discovered a soft, sandy zone. While no distress signs were observed under static loading, PacifiCorp decided to lower the maximum water surface elevation in Toketee Reservoir from 2,430 feet to 2,428 feet due to potential dam safety concerns under seismic loading. FERC's Portland Regional Office concurred with this decision in May and July of 2014, and PacifiCorp has maintained this operational restriction while conducting revised seismic stability analyses and coordinating dam safety rehabilitation measures with FERC.

3.0 PUBLIC COMMENTS RECEIVED OR SOLICITED BY LIHI

The LIHI application was publicly noticed on March 11, 2025, and notice of the application was forwarded to the resource agency and stakeholder representatives listed in the application; this comment period closed on May 10, 2025. Comment letters can be found under the Certification Files - 2025 Recertification section of the Project's webpage.

On May 8, 2025, several organizations consisting of Steamboaters, Native Fish Society, Pacific Rivers, Umpqua Watersheds, and WaterWatch of Oregon submitted a joint comment letter. The comment letter opposes the LIHI recertification of the Project, citing significant and ongoing ecological harm. The group expressed concern over being excluded from the stakeholder consultation process despite long-standing involvement. In response to a LIHI staff inquiry, Pacificorp indicated that they did not consider these groups to be "currently engaged stakeholders" as defined in the LIHI Handbook; and that the regular Resource Coordinating Committee meetings with parties to the settlement are open to members of the public, including NGOs, but these NGOs have not participated in those meetings.[2]

Commenters highlighted that they had opposed certification for the original LIHI application in 2010 and that the cumulative environmental impacts of the NUHP's extensive infrastructure, including barriers to fish and wildlife movement, degraded water quality, altered hydrology, and habitat loss. Concern was also raised about the Soda Springs Dam, which they noted disrupts sediment transport, diminishes spawning habitat, and supports invasive species and should be removed. The letter concludes by emphasizing these adverse effects are incompatible with the criteria for low-impact certification.

In its May 8, 2025, letter, Oregon Wild opposed PacifiCorp's application for LIHI recertification of the North Umpqua Hydroelectric Project. The organization argues that the Project fails to meet certification standards due to its detrimental effects on fish passage, sediment transport, and aquatic habitat connectivity. Specifically, dams like Soda Springs and Slide Creek obstruct access to critical spawning habitats for species such as Chinook salmon, steelhead, Coho salmon, cutthroat trout, and Pacific lamprey, while also disrupting the natural movement of large wood and gravel essential for downstream ecosystems. Oregon Wild contends that artificial fish ladders are inadequate substitutes for natural river processes and criticizes the relicensing settlement for excluding conservation groups and failing to consider dam removal.[3] Additionally, the extensive network of diversions and canals fragments habitats

[2] Pacificorp email to M. Fischer dated May 20, 2025.
[3] However, the Oregon Wild letter also stated about the relicensing: "the conservation groups chose not to waste any further time in negotiations" with PacifiCorp and the federal and state agency parties to the Settlement Agreement (SA)."

and impairs watershed hydrology, adversely affecting both aquatic and terrestrial species. The letter concludes that the Project violates multiple objectives of the Northwest Forest Plan's Aquatic Conservation Strategy[4] and urges the LIHI to deny certification to uphold the integrity of its standards.

On May 9, 2025, Oregon Department of Fish and Wildlife (ODFW) submitted a comment letter which outlines their support for PacifiCorp's application for LIHI recertification of the Project. Their letter highlights that PacifiCorp has met the requirements outlined in the 2001 SA and memorandum of understanding (MOU) with ODFW[5], including implementing minimum flows, ramping limits, fish passage improvements, and habitat mitigation measures. ODFW noted that upstream and downstream fish passage structures, such as those at Soda Springs Dam, function as intended, with minimal interruptions. They report that habitat conditions for fish and wildlife, including threatened and endangered species, have improved compared to pre-relicensing conditions. Additionally, PacifiCorp has demonstrated ongoing monitoring, maintenance, and responsiveness to ecological concerns. Based on these factors, ODFW endorses recertification.

The reviewer did not solicit additional comments from the resource agencies or tribes listed in the application, or the above-referenced commenting parties. Rather, LIHI staff reviewed the original 2010-2011 certification documentation, comment letters from that time, the board decision to certify the Project, as well as documentation related to the 2014 recertification (resource agencies provided positive comments on that application, see 2015 Recertification Review Report). Overall, the current NGO comment letters do not provide any additional or new information that was not provided before. While these organizations continue to recommend removal of the Soda Springs Dam, no resource agencies have made formal recommendations to remove the dam as required by the LIHI handbook (Section 2.2 and Appendix A).

[4] The Northwest Forest Plan was initiated in 1994 and pertains to the management of federal lands in the Pacific Northwest, coordinated by the various federal agencies with land management responsibility.
[5] Appendix E of the 2001 Settlement Agreement

4.0 ZONES OF EFFECT

18 ZoEs divided into eight facilities were designated by the Applicant. Aerial photographs illustrating these ZoE can be found in Appendix A of the LIHI application. The 18 ZoEs are listed here followed by how they are organized by facility.

- ZoE 1 – **Lemolo Reservoir** – the approximately 419-acre Lemolo Reservoir impounding the NUR from the inlet to the Reservoir (RM 95.6) to Lemolo No. 1 Dam (RM 93.0);
- ZoE 2 – **Lemolo No. 1 Bypassed Reach** – the approximately 4.30-mile-long Lemolo No. 1 bypassed reach of the NUR from Lemolo No. 1 Dam (RM 93.0) to the upstream extent of the Lemolo No. 2 impoundment of the NUR (RM 88.6);
- ZoE 3 – **Lemolo No. 2 Impoundment** – the approximately 1.4-acre Lemolo No. 2 impoundment of the NUR from RM 88.6 to Lemolo No. 2 Dam at RM 88.5, inclusive of the Lemolo No. 1 powerplant tailrace;
- ZoE 4 – **Lemolo No. 2 Bypassed Reach** – the approximately 12.10-mile-long Lemolo No. 2 bypassed reach of the NUR from Lemolo No. 2 Dam (RM 88.5) to the upstream extent of Toketee Reservoir (RM 76.4);
- ZoE 5 – **Toketee Reservoir** – the approximately 96.9-acre Toketee Reservoir impounding the NUR from the downstream extent of the Lemolo No. 2 bypassed reach (RM 76.4) to Toketee Dam (RM 75.4), inclusive of the Lemolo No. 2 and Clearwater No. 2 powerplant flows;
- ZoE 6 – **Toketee Bypassed Reach** – the approximately 2.08-mile-long Toketee bypassed reach of the NUR from Toketee Dam (RM 75.4) to the upstream extent of Slide Creek impoundment (RM 73.3);
- ZoE 7 – **Slide Creek Impoundment** – the approximately 2.0-acre Slide Creek impoundment from the downstream extent of the Toketee bypassed reach (RM 73.3) to Slide Creek Dam (RM 73.2), inclusive of the Toketee and Fish Creek powerplant tailraces;
- ZoE 8 – **Slide Creek Bypassed Reach** – the approximately 1.94-mile-long Slide Creek bypassed reach of the NUR from Slide Creek Dam (RM 73.2) to the Slide Creek powerplant tailrace (RM 71.2);
- ZoE 9 – **Slide Creek Full-Flow Reach** – the approximately 0.20-mile-long Slide Creek full-flow reach of the NUR from Slide Creek powerplant tailrace (RM 71.2) to the upstream extent of Soda Springs Reservoir (RM 71.0);
- ZoE 10 – **Soda Springs Reservoir** – the approximately 31.5-acre Soda Springs Reservoir from the downstream extent of the Slide Creek full-flow reach of the NUR (RM 71.0) to Soda Springs Dam (RM 69.8);
- ZoE 11 – **Soda Springs Bypassed Reach** – the approximately 0.5-mile-long Soda Springs bypassed reach of the NUR from Soda Springs Dam (RM 69.8) to the Soda Springs powerplant tailrace (RM 69.3);
- ZoE 12 – **Regulated Reach of the NUR** downstream of the Project – the approximately 2.1-mile-long regulated reach of the NUR downstream of the Project from Soda Springs powerplant tailrace to United States Geological Survey (USGS) gage number 14316500 upstream of Copeland Creek in the Wild and Scenic Reach of the NUR;

- ZoE 13 – **Clearwater No. 1 Impoundment** – the approximately 11.8-acre Clearwater No. 1 impoundment known as Stump Lake from Clearwater River mile 8.5 to Clearwater No. 1 Dam (RM 8.1);
- ZoE 14 – **Clearwater No. 1 Bypassed Reach** – the approximately 3.22-mile-long Clearwater No. 1 bypassed reach of the Clearwater River from Clearwater No. 1 Dam (RM 8.1) to the upstream extent of the Clearwater No. 2 impoundment (RM 4.9);
- ZoE 15 – **Clearwater No. 2 Impoundment** – the approximately 1.2-acre Clearwater No. 2 impoundment of the Clearwater River from the downstream extent of the Clearwater No. 1 bypassed reach (RM 4.9) to Clearwater No. 2 Dam (RM 4.9), inclusive of the Clearwater No. 1 powerplant tailrace;
- ZoE 16 – **Clearwater No. 2 Bypassed Reach** – the approximately 5.23-mile-long Clearwater No. 2 bypassed reach of the Clearwater River from Clearwater No. 2 Dam (RM 4.9) to the river confluence with the NUR (RM 0.0) downstream of Toketee Dam within the Toketee bypassed reach (ZoE 6);
- ZoE 17 – **Fish Creek Impoundment** – the approximately 3-acre Fish Creek impoundment of Fish Creek from RM 6.6 to Fish Creek Dam (RM 6.6); and
- ZoE 18 – **Fish Creek Bypassed Reach** – the approximately 7.05-mile-long Fish Creek bypassed reach of Fish Creek from Fish Creek Dam (RM 6.6) to the confluence with the NUR (RM 0.0) downstream of Slide Creek Dam within the Slide Creek bypassed reach (ZoE 8).

4.1 STANDARDS MATRIX

The table below shows the Applicant-selected standards for each criterion in each ZoE. Changes shown in **red font** are those where the reviewer disagrees with the Applicant selection.

TABLE 1. ZONES OF EFFECT CRITERION AND STANDARD SELECTED

CRITERION and STANDARD SELECTED								
Zone Number and Zone Name	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***
	Ecological Flows	**Water Quality**	**Upstream Fish Passage**	**Downstream Fish Passage**	**Shoreline and Watershed Protection**	**Threatened and Endangered Species**	**Cultural and Historic Resources**	**Recreational Resources**
Zone 1 – **Lemolo Reservoir**	1	2	1	4	2	3	2	2
Zone 2 – **Lemolo No. 1 Bypassed Reach**	2	2	4	1	~~1~~**2**	3	1	2
Zone 3 – **Lemolo No. 2 Impoundment**	1	2	1	4	~~1~~**2**	3	2	2
Zone 4 – **Lemolo No. 2 Bypassed Reach**	2	2	2	1	~~1~~**2**	3	1	2
Zone 5 – **Toketee Reservoir**	1	2	1	2	~~1~~**2**	3	2	2
Zone 6 – **Toketee Bypassed Reach**	2	2	4	1	~~1~~**2**	3	1	2
Zone 7 – **Slide Creek Impoundment**	1	2	1	4	~~1~~**2**	3	2	2
Zone 8 – **Slide Creek Bypassed Reach**	2, PLUS	2	4, PLUS	1	~~1~~**2**	3	1	2
Zone 9 – **Slide Creek Full-Flow Reach**	2, PLUS	2	1, PLUS	1	~~1~~**2**	3	1	2
Zone 10 – **Soda Springs Reservoir**	1	2	1, PLUS	2, ~~PLUS~~	~~1~~**2**	3	2	2

CRITERION and STANDARD SELECTED								
Zone Number and Zone Name	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***
	Ecological Flows	**Water Quality**	**Upstream Fish Passage**	**Downstream Fish Passage**	**Shoreline and Watershed Protection**	**Threatened and Endangered Species**	**Cultural and Historic Resources**	**Recreational Resources**
Zone 11 – **Soda Springs Bypassed Reach**	2, PLUS	2	~~2, PLUS~~	1	~~1~~**2**	3	1	2
Zone 12 – **Regulated Reach of the NUR** d/s of the Project	2	2	1	1	2	3	1	2
Zone 13 – **Clearwater No. 1 Impoundment**	1	2	1	4	~~1~~**2**	3	2	2
Zone 14 – **Clearwater No. 1 Bypassed Reach**	2	2	4	1	~~1~~**2**	3	1	2
Zone 15 – **Clearwater No. 2 Impoundment**	1	2	1	4	~~1~~**2**	3	2	2
Zone 16 – **Clearwater No. 2 Bypassed Reach**	2	2	4	~~2~~, **1**	~~1~~**2**	3	1	2
Zone 17 – **Fish Creek Impoundment**	1	2	1	2	~~1~~**2**	3	2	2
Zone 18 – **Fish Creek Bypassed Reach**	2	2	2, PLUS	1	~~1~~**2**	3	1	2

5.0 DETAILED CRITERIA REVIEW

ZoEs are analyzed separately under each criterion topic and are grouped together by classifying standard.

5.1 ECOLOGICAL FLOW REGIMES

Goal: The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources.

The following discussion is based on the Applicant's decision to categorize eight ZoEs, all impoundments or reservoirs, as meeting Standard A-1.

***STANDARD A-1**. **Not Applicable/De Minimis Effect:** The facility operates in a true run-of-river operational mode and there are no bypassed reaches or water diversions associated with the applicable ZoE, or the facility is located within an existing water conduit that does not discharge into natural waterways.*

Discussion (Standard A-1): The ecological flow criterion applies to river flows, and because the Project's impoundments and reservoirs have minimal impact or are managed to support fish and wildlife, the non-riverine ZoEs meet Standard A-1.

All ten other ZoE were classified as meeting Standard A-2 and the reviewer agrees with this selection.

***STANDARD A-2. Agency Recommendation**: The flow regime was developed and is being implemented in accordance with a science-based agency recommendation.*

Discussion (Standard A-2): Flow condition recommendations from resource agencies are outlined in SA Section 5, the FERC license, and the CWA Section 401 Water Quality Certification (including a 2005 ODEQ modification)[6]. The ecological flow recommendations in these documents are based on Instream Flow Incremental Methodology (IFIM) studies conducted by PacifiCorp during the 1993–1994 relicensing process, along with additional IFIM studies completed as part of the 1998 North Umpqua Cooperative Watershed Analysis by Stillwater Sciences, Inc. PacifiCorp's IFIM studies (1995) included fish population surveys, aquatic habitat mapping, and channel segmentation; selection and measurement of representative transects across various flows; observation of fish species and life stages under different depth and velocity conditions; and use of PHABSIM modeling to quantify the relationship between flow and habitat availability for each species and life stage. PacifiCorp's LIHI application features Table 7,

[6] These documents are available on PacifiCorp's Project website.

which outlines the current instream flow requirements in each Project bypassed reach. Minimum flows vary seasonally from 40 – 80 cfs depending on the bypass at the Lemolo No. 1, Lemolo No. 2, Clearwater No. 1, Clearwater No. 2, and Toketee bypassed reaches. Minimum flows at the Fish Creek (130 cfs), Slide Creek (240 cfs) and Soda Springs (275 cfs) bypassed reaches are consistent throughout the year.[7]

PacifiCorp has committed to minimizing impacts during maintenance and emergency shutdowns by timing work to align with resource agency preferences, limiting flow fluctuations during emergencies, upgrading the Soda Springs powerhouse bypass valve, and following ramping measures outlined in Section 6 of the 2001 SA.

PacifiCorp's ecological flow compliance is verified through their agency-approved Flow Monitoring Plan, which includes monitoring at USGS-operated and PacifiCorp-funded gaging stations (which track flows across all 18 ZoEs), annual flow monitoring reports submitted to ODEQ, Oregon Water Resources Department, and the Forest Service for approval. Flow event variance reporting, for threshold exceedances, ensuring agencies are aware when flows temporarily exceed recommendations.

Since the Flow Monitoring Plan was revised in 2017, the Project has maintained compliance, with a few exceptions which were either short in duration, small in magnitude, related to planned maintenance or natural conditions;[8] all which were reported and discussed openly with agencies (the FERC license does not require reporting to FERC of flow deviations). Table 1 in the 2022 flow monitoring report (LIHI application Attachment 3) describes the planned and emergency-response events that affected flow in waterways and/or bypassed reaches during the 2022 water year (ending September 30, 2022). The 2022 report concludes that the Project was in compliance other than the few variance events which were reported and did not have an environmental impact. Each annual flow monitoring report has concluded that the Project is meeting is PM&E obligations related to flow conditions.

In the 8 bypassed reaches, USGS gages indicated the ZoEs adhere to specific seasonal minimum flow standards (standards vary by ZoE) and are noted above and in Table 7 of the LIHI application. PacifiCorp's newly constructed fish passage facilities eliminate all ramping in the eight bypass reaches, except during planned Project maintenance and emergency shutdowns. PacifiCorp is meeting goals for minimizing impacts during maintenance and emergency shutdowns by scheduling maintenance work at times of the year preferred by the resource agencies, limiting flow fluctuations to the extent possible

[7] Minor discrepancies between the SA and the WQC minimum flow amounts were reconciled by a modification to the WQC approved by Oregon Department of Environmental Quality in a letter dated June 6, 2005.
[8] Or in the case of naturally low flows in Fish Creek, which regularly drop to less than the required flow even after PacifiCorp ceases diversion, which is a condition anticipated and recognized by resource agencies.

during emergency situations, upgrading the Soda Springs powerhouse emergency bypass valve, and implementing other measures specified in SA Section 6.

STANDARD A-PLUS: *In addition to satisfying one of the numbered standards above, the facility is operating an adaptive management program to regularly evaluate and adjust facility operations with respect to flows and habitat conditions; or has implemented significant, non-flow habitat enhancements (for example, structural improvements leading to river restoration) with demonstrated net benefits to fish and wildlife resources affected by the facility in the applicable ZoE.*

Discussion (Standard A-PLUS): In three reaches (ZoEs 8, 9, 11), PacifiCorp has implemented long-term adaptive management and habitat enhancement programs, including gravel augmentation (Soda Springs, Slide Creek, Regulated Downstream Reach), fish habitat creation (e.g., 15,000 sq ft of Chinook habitat), and sediment and large woody debris passage to restore geomorphic processes. PacifiCorp's monitoring has confirmed sustained or improving fish use, including all three target salmonid species, which consisted of steelhead (*Oncorhynchus mykiss*), spring Chinook salmon (*O. tshawytscha*), and coho salmon (*O. kisutch*).

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project is in compliance with flow requirements and operates to protect aquatic habitat, and therefore continues to satisfy the ecological flow regimes criterion and Standard A-PLUS.

5.2 WATER QUALITY

Goal: Water Quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions.

The following discussion is based on the Applicant's decision to categorize all 18 ZoEs as meeting Standard B-2. The reviewer agrees with this selection.

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

Discussion (Standard B-2): This Water Quality discussion references PacifiCorp's 2002 original WQC[9], the modified WQC (2022), records of consultation between the PacifiCorp and ODEQ, and PacifiCorp's most recent water quality monitoring report for the Soda Springs development (Attachment 17 of the LIHI application). The Project's original WQC was issued in 2002, modified in 2005 to include special monitoring activities which were completed and approved by ODEQ in 2014. The Project is currently operating under both the 2002 WQC as modified in 2005 and the 2022 WQC modification. As noted in PaciCorp's LIHI application, all 18 ZoEs comply with the conditions in the WQC for the Project and meet Standard B-2. As of now, water quality monitoring is limited to the continuous operation of the Soda Springs monitoring station, with annual reports to ODEQ. Even though all ZoEs meet the conditions in the WQC, five ZoEs were flagged and required additional monitoring or remediation to meet standards.

ZoE 1, Lemolo Reservoir was 303(d)-listed for harmful algal blooms in 2011, but upon discussion and observations, the technical working group determined the algal bloom had no link to the Project operations. There have been no harmful algal blooms since 2011. PacifiCorp continues ongoing collaboration with stakeholders through the North Umpqua Lake Management Group.

In 2011, there were high pH levels found at ZoE 3, Lemolo No. 2 Impoundment as a result of stagnation and macrophyte growth. PacifiCorp mitigated this issue by implementing daily drawdowns of the forebay from May to September. In 2018, the monitoring confirmed sustained compliance and the ODEQ concluded monitoring requirements in 2021 with conditions for continued operational compliance.

In 2011, during the refill of Lemolo No. 2, following canal maintenance, a trashrack became obstructed by debris, which induced an overflow event. This blockage caused several cfs of water to overflow for several hours at the Flume 12 spillway. This event led to significant erosion of the adjacent hillside, resulting in the deposition of approximately 4,000 cubic yards of soil and rock into the riparian zone and river channel of the North Umpqua River within this ZOE. PacifiCorp performed remediation and long-term monitoring (between 2012 and 2016) which showed no lasting impacts on the aquatic habitat. Final habitat surveys found continued spawning activity and stable habitat conditions, resolving any issues at ZoE 4.

In 2001, studies in ZoE 5, Toketee Reservoir, found that total dissolved oxygen exceedances were caused by air entrainment from the air admission valve on the turbine during low powerhouse output. In consultation with ODEQ, PacifiCorp retested total dissolved gas (TDG) levels in 2015 in response to low generation levels with the air admission system physically plugged. Tailrace TDG levels demonstrated

[9] Appendix A of the FERC license.

compliance with the TDG criteria at low generation output provided that the air admission system is fully disabled. In 2015, ODEQ restricted PacifiCorp to operate Clearwater No. 2 powerplant at generation levels ranging from 0.5 to 10 MW with the air admission system closed and physically plugged and PacifiCorp has been in compliance with these operating requirements since.

ZoE 12, the Regulated Reach of the NUR downstream of the Project, was added to the 303(d) list for temperature variations and this ZoE contains the Soda Springs Water Quality Station, which has continuously monitored Project water quality since 2001 and remains the only ZoE with active water quality monitoring. Long-term data from the station demonstrate that the Project does not contribute to temperature exceedances, aside from minor excursions (approximately 1°C) recorded during extreme conditions in limited years. Although the ODEQ found no evidence of Project-related temperature impacts, PacifiCorp continues to consult with ODEQ on revisions to the temperature Total Maximum Daily Load (TMDL) which was finalized by the US EPA on June 27, 2025.

Based on the application, WQC, and FERC eLibrary documents, this review finds that the Project is in compliance with water quality requirements and PacifiCorp operates the Project to protect water quality and aquatic habitat and therefore continues to satisfy the LIHI water quality criterion.

5.3 UPSTREAM FISH PASSAGE

Goal: The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy populations in areas affected by the facility.

As seen in Table 1 of this report, PacifiCorp selected ten ZoEs to meet Standard C-1; three ZoEs to meet Standard C-2; and five ZoEs to meet Standard C-4. The reviewer agrees with these selections.

Anadromous fish species that occur within the Project include spring Chinook salmon, coho salmon (a federally listed species), winter and summer steelhead, and Pacific lamprey. Potamodromous species include coastal cutthroat trout, kokanee (introduced), and rainbow trout. The LIHI application notes that the historic natural barrier to upstream passage of anadromous fish in the North Umpqua River was at the approximately 125-feet-high Toketee Falls within ZoE 6 (Toketee bypassed reach). The current barrier to upstream passage of anadromous fish in the river is Slide Creek Dam at river mile 73.2 (ZoE 8), a difference of 1.4 miles between the historic and current barriers to upstream fish passage. There are also two partial and/or seasonal upstream passage obstacles for anadromous fish in Fish Creek: an

approximately 6-foot-high waterfall at river mile 1.8 and a series of major cascades at river mile 3.2 within the Fish Creek bypassed reach (ZoE 18).

The following discussion is based on the Applicant's decision to categorize ten ZoEs as Standard C-1.

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

Discussion (Standard C-1): As discussed in the LIHI application, ten ZoEs do not create any type of barrier to upstream passage. Eight of the ten ZoEs classified under Standard C-1 are impoundment zones with no barriers to further upstream fish passage in the zone with no effect on upstream fish passage. The remaining two ZoEs meet Standard C-1 as both ZoEs (ZoE 9 and ZoE 12) are full-flow reaches devoid of barriers and with no effect on upstream fish passage in the zone. PacifiCorp has deployed advanced technology for fish passage in these two ZoEs described further under the Standard C-PLUS section below.

The following discussion is based on the Applicant's decision to categorize three ZoEs as Standard C-2. The reviewer agrees with this selection.

STANDARD C-2. Agency Recommendation: *The facility is in compliance with science-based resource agency recommendations for the applicable ZoE and which may include provisions for appropriate monitoring and effectiveness determinations.*

Discussion (Standard (C-2): The three ZoEs classified as Standard C-2 are ZoE 4 – Lemolo No. 2 Bypassed Reach, ZoE 11 – Soda Springs Bypassed Reach, and ZoE 18 – Fish Creek Bypassed Reach. These ZoEs meet Standard C-2 as they fulfill agency recommendations for upstream fish passage at their respective dams at the upstream extent of their zones as specified in the Project's SA and codified as USFWS and NOAA Fisheries Section 18 prescriptions in the FERC license. In its comment letter on the LIHI application, ODFW indicated that upstream fish passage structures operate as intended, implying that they are sufficiently effective at passing the target species.

ZoE 4 meets Standard C-2 by fulfilling agency recommendations for upstream passage at Lemolo No. 2 Dam at the upstream extent of the zone. In April 2006, PacifiCorp upgraded the existing fishway at the Lemolo No. 2 diversion (ZoE 4) to meet the state's fish passage criteria. Prior to this, in 2005, PacifiCorp filed the Lemolo No. 2 Fishway Operation and Maintenance Plan and Evaluation Plan, both of which

were approved by FERC in January 2006. Pursuant to the approved Evaluation Plan, the final Fish Passage Facility Evaluation Report was completed in 2007. PacifiCorp continues to operate and maintain the fishway in accordance with the approved Operation and Maintenance Plan. Therefore, ZoE 4 is in compliance with agency recommendations and does not impede fish passage.

ZoE 11 meets Standard C-2 by fulfilling agency recommendations for upstream passage at Soda Springs Dam at the upstream extent of the zone. To allow fish passage in ZoE 11, in 2012, PacifiCorp completed construction of upstream fish passage facilities at the Soda Springs dam and in 2013, FERC accepted the final construction report for this effort. Monitoring of fish passage is conducted annually in coordination with ODFW. PacifiCorp has successfully fulfilled agency recommendations for upstream fish passage at this ZoE.

The reviewer concludes that ZoE 11 meets Standard C-2, without a C-PLUS designation as originally asserted by PacifiCorp. While PacifiCorp has demonstrated coordination and consultation with resource agencies, the implementation of adaptive management and basin-scale restoration efforts is focused upstream of the Soda Springs Dam and does not occur within the boundaries of this specific ZoE.

ZoE 18 meets Standard C-2 by fulfilling agency recommendations for upstream passage at Fish Creek Dam at the upstream extent of the zone. In 2005, PacifiCorp filed the Fish Creek Diversion Dam Fishway Operation and Maintenance Plan which was approved by FERC in 2006. PacifiCorp continues to operate and maintain the facility pursuant to the approved Operation and Maintenance Plan and also incorporates adaptive management which is described further in the Standard C-PLUS section below.

The following discussion is based on the Applicant's decision to categorize five ZoEs as Standard C-4. The reviewer agrees with this selection.

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

Discussion (Standard (C-4): The five ZoEs classified as Standard C-4 are ZoE 2 - Lemolo No. 1 Bypassed Reach, ZoE 6 - Toketee Bypassed Reach, ZoE 8 - Slide Creek Bypassed Reach, ZoE 14 -

Clearwater No. 1 Bypassed Reach, and ZoE 16 - Clearwater No. 2 Bypassed Reach. These ZoEs meet Standard C-4 because acceptable mitigation which was identified in the 2001 ODFW MOU has been implemented in lieu of upstream fish passage at their respective dams. ODFW has waived state fish passage requirements at these dams in lieu of a combination of elements in the upper North Umpqua watershed and in the Canton Creek basin that are designed to provide a net benefit for native resident trout populations. PacifiCorp fulfills their obligations under the ODFW MOU through enhancement account funding. PacifiCorp provides reporting of the annual funding in its annual reports available on the Project website.

At ZoE 2 (Lemolo No. 2 Bypassed Reach) and ZoE 6 (Toketee Bypassed Reach), fish passage at these dams would primarily improve habitat connectivity among existing resident trout subpopulations, some of which are already isolated by nearby natural barriers. It would not provide access to new habitat or essential spawning areas. Therefore, ODFW concluded that the proposed alternative mitigation measures would offer a net benefit to wild native fish by improving habitat and increasing fish populations in enhanced waters, in lieu of providing fish passage.

For ZoE 8 (Slide Creek Bypassed Reach), the ODFW MOU quantified the net benefit of specific mitigation measures in lieu of passage at Slide Creek Dam which are described under Discussion for Standard C-PLUS, as this reach is adaptively managed.

The following discussion is based on the Applicant's decision to categorize five ZoEs as Standard C-PLUS, in addition to their numerical standards classifications. However, the reviewer disagrees that ZoE 11, Soda Springs Bypassed Reach satisfies the PLUS standard.

STANDARD C-PLUS: *In addition to satisfying one of the numbered standards above, the facility has deployed an advanced technology, the primary purpose of which is to increase upstream passage; or is part of a basin-scale redevelopment strategy; or is operating an adaptive management program to regularly evaluate the effectiveness of the measures implemented. The program should include monitoring of the overall passage effectiveness and correction of deficiencies in effectiveness.*

Discussion (Standard C-PLUS): In addition to satisfying one of the standards described above, four ZoEs have facilities that employ basin-scale redevelopment strategies and implement an adaptive management program to monitor, evaluate, and improve upstream passage effectiveness.

At ZoEs 8, 9, 10, and 18, PacifiCorp implemented a Long-Term Monitoring and Predator Control Program and has committed to contribute $100,000 annually to this fund for the duration of the license.

This program monitors and evaluates the success of anadromous fish reintroduction in the NUR upstream of Soda Springs Dam. This program also created and implements a study plan, implementation plan, and monitoring and adaptive management plan to reduce predation of anadromous salmonid juveniles by nonnative predator species in Soda Springs Reservoir which supports Standard C-PLUS in the upstream ZoEs. Adaptive management pursuant to monitoring results of this program also includes habitat enhancement and gravel augmentation as described in Section 2.1 of the relicensing SA.

Based on PacifiCorp's application, the 2024 Soda Springs Fish Passage Facilities Operations and Maintenance Annual Report, and FERC eLibrary documents, this review finds that the Project is in compliance with fish passage requirements and PacifiCorp operates the Project to support or mitigate for impacts to upstream migrating fish, and therefore continues to satisfy the LIHI fish passage criterion and the Standard C-PLUS categorization for the four ZoEs.

5.4 DOWNSTREAM FISH PASSAGE

Goal: The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the facility minimizes loss of fish from reservoirs and upstream river reaches affected by Facility operations. Migratory species are able to successfully complete their life cycles and maintain healthy populations in the areas affected by the Facility.

Resident fish in the Project area include brook trout, brown trout, bluegill, brown bullhead, and tui chub. Rainbow trout are also present in Fish Creek and downstream of Toketee Falls in the NUR. Kokanee were introduced and occur in Lemolo Reservoir. As noted in Section 5.3 above, migratory fish were historically excluded from the river by Toketee Falls within ZoE 6 (Toketee bypassed reach). There are also two partial and/or seasonal obstacles for anadromous fish in Fish Creek: an approximately 6-foot-high waterfall at river mile 1.8 and a series of major cascades at river mile 3.2 within the Fish Creek bypassed reach (ZoE 18).

The following discussion is based on the Applicant's decision to categorize ten ZoEs, all bypassed reaches and the NUR downstream reach, as meeting Standard D-1.While the LIHI application's Table 5 indicates Standard D-2 for ZoE 16, the text in the application indicates Standard D-1 which is appropriate for that ZoE.

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

contribute adversely to the sustainability of riverine fish populations or to their access to habitat necessary for the completion of their life cycles.

Discussion (Standard D-1): ZoEs classified as Standard D-1 are the bypassed and full-flow reaches downstream of dams and powerplants as there is no additional facility barrier to further downstream movement in the zone, and flows within the reach are adequate to support safe, effective, and timely downstream migration. The reviewer agrees with this selection.

PacifiCorp classifies the following ten ZoEs under Standard D-1:

- ZoE 2 – **Lemolo No. 1 Bypassed Reach**
- ZoE 4 – **Lemolo No. 2 Bypassed Reach**
- ZoE 6 – **Toketee Bypassed Reach**
- ZoE 8 – **Slide Creek Bypassed Reach**
- ZoE 9 – **Slide Creek Full-Flow Reach**
- ZoE 11 – **Soda Springs Bypassed Reach**
- ZoE 12 – **Regulated Reach of the NUR downstream of the Project**
- ZoE 14 – **Clearwater No. 1 Bypassed Reach**
- ZoE 16 – **Clearwater No. 2 Bypassed Reach**

The following discussion is based on the Applicant's decision to categorize three ZoEs as meeting Standard D-2. The reviewer agrees with this selection.

STANDARD D-2. Agency Recommendation: *The facility is in compliance with a science-based resource agency recommendation for downstream fish passage and/or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations.*

Discussion (Standard D-2): PacifiCorp classifies three ZoEs under Standard D-2 (ZoEs 5, 10, and 17, the Toketee, Soda Springs, and Fish Creek impoundments, respectively). The reviewer agrees with this selection.

At ZoE 5, PacifiCorp has implemented agency recommendations related to downstream fish passage featured in the ODFW MOU[10]. The ODFW MOU provides an analysis of fish populations upstream and downstream of Toketee Dam, at the downstream extent of this zone, as well as the net benefit to fish species of implementing the approved mitigation measures for upstream fish passage.

At ZoE 10, PacifiCorp has implemented agency-recommended measures to support downstream fish passage by constructing downstream fish passage and screening facilities at Soda Springs Dam in 2012.

[10] Appendix E of the 2001 Settlement Agreement

These facilities were designed in consultation with state and federal agencies to meet criteria for protecting salmonid fry and juvenile lamprey. The Soda Springs downstream fish passage facility includes a Fish Evaluation Building (FEB), which houses a fish trap used to monitor screen performance and support long-term evaluation of anadromous fish reintroduction. Following flood-related damage in December 2012, the screen structure was repaired in 2014, and FERC accepted the final construction report in April 2013.

The reviewer concludes that ZoE 10 meets Standard D-2, without a D-PLUS designation as originally asserted by PacifiCorp. While PacifiCorp has implemented agency-recommended measures, the implementation of adaptive management and basin-scale restoration efforts is focused upstream of the Soda Springs Dam and does not occur within the boundaries of this specific ZoE. Additionally, in the case that a PLUS award has been granted for downstream passage, the same PLUS cannot be duplicated in upstream for the same action or measure.

PacifiCorp's 2016 *Final Soda Springs Fish Passage Facilities Hydraulic and Biological Evaluation Report*, (Attachment 23 of the LIHI application) filed with FERC, demonstrated high passage effectiveness, with 0% initial and delayed mortality for hatchery smolts and fry, and injury rates below 1% for both hatchery and wild juvenile fish. PacifiCorp's most recent *Operations and Maintenance Annual Report* for calendar year 2024 was submitted to FERC on January 17, 2025, in coordination with resource agencies and continues to show low mortality and injury.

As part of the SA's Long-Term Monitoring and Predator Control Program (discussed further in Section 2.4.10 of the LIHI application, the ODFW operates the FEB to monitor downstream migration and address predation issues in ZoE 10. In 2023, the FEB operated on 110 days over 44 weeks, typically three nights per week. During that period, an estimated 133,956 juvenile salmonids passed downstream, accounting for more than twice the 2022 estimate of 63,629.

At ZoE 17, PacifiCorp consulted with resource agencies to design and construct fish screens at the waterway intake to protect fish from the diversion intake and allow downstream passage for resident trout, other adult salmonids and lamprey. PacifiCorp conducted a post-construction hydraulic and biological evaluation and then, in consultation with agencies, upgraded the air system and reduced the channel width in the screen pool to increase the sweeping velocity of flow across the screens and better transport debris downstream. PacifiCorp conducted a second hydraulic balancing of the screens in the post-modification configuration and documented the results in a second hydraulic evaluation report in June 2013 (Attachment 26 of the LIHI application). The report concluded that the screens remained well

within the 0.4 feet per second (fps) approach velocity criteria (average approach velocities were less than 0.3 fps for fish protection while successfully increasing the sweeping velocity from 0.8 to 2.3 fps to better move debris off the screens and flowing downstream.

In its comment letter on the LIHI application, ODFW indicated that downstream fish passage structures operate as intended, implying that they are sufficiently effective at passing the target species.

The following discussion is based on the Applicant's decision to categorize five ZoEs as meeting Standard D-4. The reviewer agrees with this selection.

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

Discussion (Standard D-4): PacifiCorp classifies five ZoEs under Standard D-4 (ZoEs 1, 3, 7, 13, and 15 – the impoundments other than Soda Springs Reservoir), as PacifiCorp employs approved alternative fish passage mitigation measures that support migratory and native non-migratory fish species affected by the facility at these ZoEs.

In accordance with SA Section 4.3.4, PacifiCorp is required to implement mitigation measures and provide funding to support wild anadromous and migratory fish populations instead of constructing downstream fish passage at certain project developments. This approach was deemed more beneficial given the limited effectiveness of fish passage upstream of the natural barrier at Toketee Falls and at Slide Creek Dam. The ODFW MOU explains that Toketee, Clearwater Nos. 1 and 2, and Lemolo No. 1 dams block both upstream and downstream movement of rainbow, brown, and brook trout. However, because these fish are primarily non-native or genetically mixed, the resource agencies prioritized habitat and flow improvements in bypass reaches over fish passage for these populations which would improve access to

historically available spawning and rearing habitat for native anadromous and resident fish in the North Umpqua River basin.

Through an evaluation of the ODFW MOU, the SA, mitigation measures implemented, and FERC eLibrary documents, this review finds that the Project is in compliance with downstream fish passage requirements and PacifiCorp operates the Project to protect or mitigate for impacts to downstream migrating fish, and therefore continues to satisfy the LIHI downstream fish passage criterion.

5.5 SHORELINE AND WATERSHED PROTECTION

Goal: The Facility has demonstrated that sufficient action has been taken to protect, mitigate and enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility.

The Applicant categorized 16 ZoEs as meeting Standard E-1. This review finds that all 18 ZoEs are subject to review under Standard E-2 rather than E-1. The following discussion is based on the reviewer's decision to categorize all 18 ZoEs as Standard E-2.

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

Discussion (Standard E-2): PacifiCorp classifies ZoEs 1 and 12 under Standard E-2, and the reviewer determined the remaining 16 ZoEs are also categorized at Standard E-2. PacifiCorp meets LIHI Standard E-2 by implementing multiple shoreline and watershed protection measures consistent with agency recommendations and SA commitments. The ZoEs PacifiCorp designated are described below:

- **ZoE 1 (Lemolo Reservoir)**: PacifiCorp manages water levels in accordance with the 0.5-foot daily drawdown limit outlined in SA Section 9.3.3. This operational restriction helps prevent shoreline erosion and supports shoreline protection.
- **ZoE 12 (Regulated Reach of the NUR)**: PacifiCorp adheres to ramping and flow restrictions under SA Section 6.4 to protect the designated Wild and Scenic River segment downstream of Soda Springs Dam, supporting values such as fish, recreation, and water quality.

Although all other ZoEs lie entirely within federally managed lands (Umpqua National Forest), with no lands under PacifiCorp's ownership or control and there are no shoreline buffer zones or shoreline management plans required, these ZoEs are subject to the SA and license-required plans described below, thus Standard E-2 is appropriate for all ZoEs.

PacifiCorp follows FERC-approved Vegetation Management and Erosion Control Plans (SA Sections 12 and 14), which guide efforts in vegetation maintenance, invasive species control, and erosion prevention. PacifiCorp also implements various wildlife management activities to monitor bald eagles, avoid deer fawning areas, and protect threatened and endangered species, including the spotted owl. Pacificorp also holds annual planning meetings with signatory agencies to ensure ongoing alignment with management plans and agency expectations.

PacifiCorp has also established various mitigation or enhancement funds as part of the SA, including for tributary enhancement and ongoing monitoring, and funding for projects that mitigate Project impacts to wetlands and still-water-breeding amphibian habitat, riparian and aquatic species connectivity, vegetation management, terrestrial species connectivity, and soil loss and soil productivity resulting in erosion.

Based on PacifiCorp's application, current land ownership and management information, the vegetation and erosion management programs, and FERC eLibrary documents, this review finds that the Project is in compliance with shoreline and watershed protection requirements and PacifiCorp operates the Project to protect aquatic shorelines and the watershed including potentially affected wildlife habitat, and therefore continues to satisfy the LIHI shoreline and watershed protection criterion.

5.6 THREATENED AND ENDANGERED SPECIES

Goal: The Facility does not negatively impact federal or state-listed species.

The following discussion is based on the Applicant's decision to categorize all ZoEs as meeting Standard F-3. The reviewer agrees with this selection.

STANDARD F-3. Recovery Planning and Action: *The facility is in compliance with relevant conditions in a species recovery plan, in an incidental take permit or statement, biological opinion, habitat conservation plan, or similar government document and the incidental take document and/or biological opinion issued relevant to the facility was designed to be a long-term solution for protection of the listed species.*

Discussion (Standard F-3): PacifiCorp's 18 ZoEs comply with biological opinions (BIOPs) and incidental take statements (ITSs) issued by FWS and NOAA Fisheries, and therefore, the Project complies with Standard F-3. PacifiCorp demonstrates active and ongoing compliance with the Endangered Species Act (ESA), consistent with LIHI requirements. The Project footprint aligns with the FERC Project boundary, while the defined Action Area, which includes a 5-mile buffer, captures potential direct and indirect impacts. PacifiCorp coordinated with the United States Fish and Wildlife Service (USFWS) and

National Oceanic and Atmospheric Administration (NOAA) Fisheries to assess species presence and potential effects, consulting relevant databases and agency guidance.

In consultation with the USFWS and NOAA Fisheries, PacifiCorp identified 11 federally listed, candidate, or proposed species that may occur within this area. These include Oregon Coast coho salmon (threatened), Chinook salmon (candidate), northern spotted owl (threatened, also state-listed), marbled murrelet (threatened), gray wolf (endangered), Franklin's bumble bee (endangered), monarch butterfly (proposed), Kincaid's lupine (threatened, also state-listed), rough popcornflower (endangered), whitebark pine (threatened), and northwestern pond turtle (proposed).

NOAA Fisheries issued a BIOP and ITS in 2002 for coho salmon, concluding the Project would not jeopardize the species and that existing measures would enhance habitat. Similarly, USFWS issued a BIOP and ITS for the northern spotted owl and Kincaid's lupine; and later concurred with PacifiCorp's 2013 reinitiated consultation regarding revised owl critical habitat. USFWS also concurred with PacifiCorp's 2024 Biological Assessment in response to the 2021 listing for Franklin's bumble bee, that the Project may affect but is not likely to adversely affect this species. The marbled murrelet was determined to be unaffected due to limited, non-critical overlap with the Project area, and gray wolf impacts are considered negligible due to the minimal disturbance within potential habitat. Other species, including monarch butterfly, whitebark pine, northwestern pond turtle, and rough popcornflower, are either pending consultation, occur outside all ZoEs, or are absent based on field surveys.

Additional state-listed species that may be present in the Project area include Umpqua mariposa-lily and wayside aster. These species were not observed during relicensing surveys in 1992 through 1994 or in any subsequent project-specific rare plant surveys and are unlikely to occur in the primarily aquatic ZOEs.

Based on PacifiCorp's application, regular monitoring and reporting on listed species, submission of annual ITS reports, and participation in annual coordination meetings with the Level 1 Team (includes USFWS, US Forest Service, and Bureau of Land Management (BLM) staff), this review finds that the Project is in compliance with threatened and endangered species requirements and PacifiCorp operates the Project to protect aquatic and terrestrial species, and therefore continues to satisfy the LIHI threatened and endangered species criterion.

5.7 CULTURAL AND HISTORIC RESOURCES PROTECTION

Goal: The Facility does not unnecessarily impact cultural or historic resources that are associated with the Facility's lands and waters, including resources important to local indigenous populations, such as Native Americans.

Discussion (Standard G-1): The following discussion is based on the Applicant's decision to categorize 10 ZoEs as meeting Standard G-1. The reviewer agrees with this selection.

STANDARD G-1. Not Applicable/De Minimis Effect: *There are no cultural or historic resources present on facility lands that can be potentially threatened by construction or operation of the facility, or facility operations have been shown to not adversely affect those that are or were historically present.*

PacifiCorp classifies 10 ZoEs – the bypassed reaches and downstream reach (featured in Table 1 of this report) as meeting Standard G-1, as there are no known cultural or historic resources in the Project bypassed reaches, and Project operation and maintenance are unlikely to affect any unknown resources in the bypassed reaches. Therefore, Standard G-1 applies to the bypassed reach ZoEs.

The following discussion is based on the Applicant's decision to categorize eight ZoEs - as meeting Standard G-2.

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

Discussion (Standard G-2): PacifiCorp classifies eight ZoEs – the impoundments and reservoirs (featured in Table 1 of this report) under Standard G-2, as the Project complies with all requirements regarding cultural resource protection, mitigation or enhancement included in the SA and FERC license, including the Historic Properties Management Plan (HPMP) for the Project. The reviewer agrees with this selection.

As a part of relicensing, PacifiCorp performed cultural resource surveys and subsequent project-specific reviews and identified cultural and historic resources within the Project boundary. The Project's facilities are recognized as contributing elements to the North Umpqua Hydroelectric Project Historic District, which the Oregon State Historic Preservation Office (SHPO) has confirmed as eligible for listing in the National Register of Historic Places. Under Article 414 of the Project license, PacifiCorp is required to adhere to the terms of the Programmatic Agreement, executed in 2003 with FERC, the SHPO, Umpqua

National Forest, BLM, Cow Creek Band of Umpqua Tribe of Indians, and PacifiCorp, including full implementation of the HPMP. Article 414 noted that should the Programmatic Agreement be terminated, PacifiCorp is obligated to continue cultural resource protection through the provisions of the approved HPMP.

The HPMP was developed with input from the Forest Service, BLM, and SHPO, and was finalized and submitted to FERC in December 2006, with formal FERC acknowledgment received in October 2007. PacifiCorp continues to fulfill the monitoring, protection, and reporting requirements set forth in the Programmatic Agreement and HPMP, including the submission of annual reports to FERC, the Forest Service, BLM, SHPO, and tribal partners. In December 2024, PacifiCorp submitted the most recent annual report along with a 5-year action plan which demonstrated PacifiCorp's continued coordination and compliance with regulatory and tribal expectations regarding historic and cultural resource management.

Based on PacifiCorp's application, their ongoing consultation with agencies and tribes, compliance with the HPMP and Programmatic Agreement, and ongoing monitoring and reporting through the most recent annual report, this review finds the Project is operating to protect cultural and historic resources and therefore continues to satisfy the LIHI cultural and historic resource criterion.

5.8 RECREATIONAL RESOURCES

Goal: The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge.

The following discussion is based on the Applicant's decision to categorize all 18 ZoEs as meeting Standard H-2. The reviewer agrees with this selection.

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

Discussion (Standard H-2): PacifiCorp classifies all 18 ZoEs under Standard H-2, as the Project demonstrates compliance with resource agency recommendations for recreational access or accommodation. All Project ZoEs occupy public lands within the Diamond Lake Ranger District of the Umpqua National Forest, administered by the Forest Service. PacifiCorp does not own or operate any recreational facilities associated with the Project, as they are owned and operated by the Forest Service. Pursuant to Section 17 of the SA and the Project's Recreation Resources Management Plan (RRMP),

PacifiCorp provides funding for recreation operations, maintenance, and capital improvements in addition to funding for public information and recreation monitoring.

PacifiCorp funds 27 developed and dispersed recreation sites associated with the Project, of which 21 sites are within Project ZoEs. Together with Forest Service, PacifiCorp tracks implementation progress through annual coordination meetings and a rolling action planning process, which is publicly available on PacifiCorp's Project website.

In accordance with Section 17 of the SA, PacifiCorp ensures public access to Project reservoirs, stream channels, and adjacent lands for recreation, while maintaining compliance with public safety and FERC requirements. The company also funds law enforcement services related to recreational use within the Project boundary, formalized through a 2021 agreement with the Douglas County Sheriff's Office that extends through June 2026, which PacifiCorp states is expected to be renewed.

To support recreational use, PacifiCorp funds both capital improvements and future expansion of existing facilities, as well as maintenance and public information initiatives. Completed recreation-related projects include the 2010 reconstruction of the Poole Creek Campground boat ramp at Lemolo Reservoir to ensure extended seasonal access and the 2011 installation of an ADA-compliant, accessible fishing pier at Toketee Reservoir. PacifiCorp also maintains Lemolo Reservoir at or near full pool throughout the peak recreation season. In addition, PacifiCorp is responsible for maintenance of recreation-related roads, including those serving Bunker Hill, East Lemolo, and Poole Creek Campgrounds (ZoE 1), and Toketee Campground (ZoE 5), under the Project Transportation Management Plan.

Based on PacifiCorp's application, ongoing funding, and compliance with the RRMP and Section 17 of the SA, this review finds that the Project is in compliance with recreation resource requirements and PacifiCorp operates the Project in a manner that promotes public access and therefore continues to satisfy the LIHI recreation criterion.

6.0 RECERTIFICATION RECOMMENDATIONS

This review included evaluation of the application and additional information provided, a review of the FERC eLibrary, review of other publicly available information, and consideration of the comment letters received. Based on this evaluation, the reviewer has found that PacifiCorp has upheld compliance under LIHI standards. In addition to complying with LIHI's numbered standards, the reviewer concludes that ZoEs 8, 9, and 11 are categorized under Standard A-PLUS; and that ZoEs 8. 9, 10, and 18 are categorized under Standard C-PLUS.

The reviewer does not agree with PacifiCorp's classification as ZoE 11 as Standard C-PLUS or ZoE 10 as Standard D-PLUS because the implementation of adaptive management and basin-scale restoration efforts does not occur within the boundaries of these specific ZoEs. Based on continued compliance and two categories with PLUS awards, the reviewer recommends that the North Umpqua Hydroelectric Project be recertified for a term of fifteen (15) years with no conditions.

7.0 REFERENCES

Low Impact Hydropower Institute. 2022. Certification Handbook, 2nd Edition, Revision 2.05.

PacifiCorp. 2024. Application for Low Impact Hydropower Institute Recertification.