Draft Evaluation and Findings Report Section 401 Water Quality Certification for the Carmen-Smith License Amendment (FERC Project Number 2242)

Submitted to: Eugene Water and Electric Board

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1.0 Introduction

1.1 Background

The Eugene Water and Electric Board owns and operates the Carmen-Smith Hydroelectric Project ("Project", FERC No.2242), a 92-MW facility located in the Upper McKenzie River subbasin in Linn and Lane Counties, Oregon. On May 19, 2019, the Federal Energy Regulatory Commission issued to EWEB a new 40-year license ("License") for the continued operation of the Carmen-Smith project. In conjunction with the relicensing of the Project the Oregon Department of Environmental Quality issued a conditional water quality certification pursuant to Section 401 of the Clean Water Act, which are included as Appendix A of the new License.[1]

During relicensing, EWEB, state and federal resource agencies, Tribes, and conservation organizations entered into a Settlement Agreement[2] intended to balance the interests of the settlement parties with the continued operation of the Project. Exhibit B to the Settlement Agreement is the Aquatics Management Plan, which prescribes protection mitigation and enhancement measures that EWEB must implement under a new License. Section 4.2.4 of the Aquatics Management Plan requires EWEB to install and operate a turbine bypass valve at the Carmen Power Plant within five years of license issuance (i.e., by May 19, 2024). The purpose of the turbine bypass valve is to reduce the occurrence of spill events at Smith Dam caused by interruptions in power generation at the Carmen plant.

Following license issuance, EWEB determined that the construction, operation, and maintenance of a Load Bank could meet the objectives of Aquatics Management Plan by reducing the frequency and occurrence of project-related spills and ramping. As proposed, the Load Bank would operate by diverting power to an array of air-cooled resistors during transmission line outage events. The Load Bank would maintain uninterrupted flow through the turbine generators during transmission line outages thereby avoiding the need to spill unused penstock flow to the Smith bypass reach.

On June 18, 2021, EWEB filed with FERC an application for a non-capacity license amendment ("license amendment application") requesting changes to Section 4.2.4 of the Aquatics Management Plan. These changes would authorize EWEB to construct, operate, and maintain a Load Bank instead of the turbine bypass valve. On March 8, 2023, EWEB filed with the Oregon Department of Environmental Quality an application to modify its existing water quality certification to address impacts on water quality caused by the proposed change to the Project as described in the June 18, 2021, license amendment application.

[1] "Clean Water Act Section 401 Certification for the Carmen-Smith Hydroelectric Project, FERC No.2242", dated January 2011. In July 2018, DEQ modified the original certification to address changes to the proposed action as reflected in the 2016 Settlement Agreement.

[2] On October 23, 2008, EWEB filed with the Commission the "Settlement Agreement for the Relicensing of the Carmen-Smith Hydroelectric Project (FERC No. 2242)". In November 2016, EWEB filed with the Commission the "Amended and Restated Offer of Settlement for the Relicensing of the Carmen-Smith Hydroelectric Project", which replaces and supersedes the 2008 Settlement Agreement in its entirety.

1.2 License Amendment Application

The June 18, 2021, non-capacity license amendment application pending before FERC seeks the following:

(1) amend Section 4.2.4 of the Aquatics Management Plan to require the installation and operation of a load bank instead of a turbine bypass valve to reduce spill events in the Smith bypass reach. The load bank would dissipate electricity equivalent to that produced by 800 cfs of penstock flow through the Carmen power plant.
(2) Revise the September 21, 2020, order requiring by July 30, 2021, a 60-percent designs for a bypass valve with a requirement for 60-percent design for the load bank.[3]

1.3 Request to Modify CWA Section 401 Water Quality Certification

In July 2018 DEQ issued EWEB a modified section 401 water quality certification ("Certification"). Condition 3(b) of the Certification directs EWEB to undertake spillway reduction measures as specified in Section 4.2.4 of the Aquatics Management Plan. In addition, Condition 8(a)(3) requires EWEB to monitor total dissolved gas below the turbine bypass valve during operation. Because the Certification includes certain conditions related to the operation of the turbine bypass valve EWEB has requested DEQ evaluate the impact of the proposed changes to the Project on water quality, and if necessary, modify the existing Certification to ensure the Project, as modified, complies with applicable water quality standards and other appropriate requirements of state law.

On March 8, 2023, EWEB filed with DEQ a request to modify its water quality certification to address impacts on water quality caused by the proposed change to the Project described in the June 18, 2021, non-capacity license amendment (the "proposed action"). The proposed action seeks to reduce spill and ramping in the Smith bypass reach by constructing, operating and maintain a Load Bank. This change to the project would eliminate the discharge source represented by the turbine bypass valve and would require the following modifications to the 2018 Certification:

- Eliminating Condition 8(a)(3) to monitor total dissolved gas during pre-operational testing of the turbine bypass valve.
- Modifying the Operational Guidelines to reduce spill events at Smith Dam
- Modifying the Water Quality Management Plan to remove conditions related to monitoring discharge from the turbine bypass valve.

[3] On August 4, 2021, EWEB filed an extension of time request to file its 60% design, and associated plan and schedule for the Carmen Power Plant load bank with the Commission by December 15, 2021. By Order Granting Extension of Time, issued December 2, 2021, EWEB's request was approved. On December 15, 2021, EWEB filed its 60% design with the Commission for the load bank.

In response to the March 2023 application to modify the 2018 Certification and consistent with ORS 468B.045(2)[4] and OAR 340-048-0042(2)[5], DEQ evaluated the potential effects of the proposed action on water quality.[6] This report presents the findings of that evaluation.

2.0 Requirement for Certification

2.1 Applicable Federal and State Law

Section 401 of the Federal Clean Water Act (Clean Water Act or CWA), 33 USC §1341, establishes requirements for state certification of proposed projects or activities that may result in any discharge of pollutants to navigable waters. Before a federal agency may issue a permit or license for any project that may result in any discharge of pollutants to navigable waters, the state must certify that the proposed project will comply with applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act and any state regulations, including state water quality standards, adopted to implement these sections. The state certifying agency may condition any granted certificate to assure compliance with state water quality standards and other appropriate water quality-related requirements of state law.

DEQ is the agency of the State of Oregon authorized to implement certification functions prescribed by §401 of the Clean Water Act for state waters. DEQ must act on an application for certification in a manner consistent with the following federal and state requirements:

Federal Requirements

Sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act: These sections prescribe effluent limitations, water quality related effluent limitations, water quality standards and implementation plans, national standards of performance for new sources, and toxic and pretreatment effluent standards.

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[4] ORS 468B.045(2) ("The director shall: (a) Solicit and consider the comments of all affected state agencies relative to adverse impacts on water quality **caused by changes in the project**, * * * (2) Approve or deny a certification **of the proposed change** after making findings that the approval or denial is consistent with * * *.") (emphasis added).

[5] OAR 340-048-0042(2) ("The department must evaluate whether the activity **for which certification is sought** will comply with * * *.") (emphasis added).

[6] In correspondence dated January 14, 2022, the Commission stated: "Commission staff has confirmed with ODEQ that EWEB's proposed amendment will require an amended WQC to reflect the load bank alternative. Therefore, once ODEQ's amended WQC is filed with the Commission, the Commission will evaluate EWEB's proposed amendment." The Commission's stated intention to defer action on EWEB's license amendment application until after receipt of a water quality certification decision raises the question as to whether the Department's evaluation was required to comply with ORS 468B.045 or OAR 340-048-0042, that is, whether the Department was responding to a notification from a federal agency that it was considering a change to a project that had previously received a water quality certification from the Department, versus, whether the Department was responding to a request for certification from an applicant. Since here, the Department received direction from the Commission in January 2022 and a subsequent application for water quality certification from EWEB in March 2023, DEQ has chosen to demonstrate compliance with all potentially applicable statues and rules in its water quality evaluation of the proposed action without making any determination as to which statute or rules are applicable in this unique factual situation.

State Requirements

OAR chapter 340, division -041 and OAR 340-048-0005 through 340-048-0050: These rules were adopted by the Environmental Quality Commission (EQC) to prescribe the state's water quality standards (OAR chapter 340, division -041) and procedures for receiving, evaluating, and taking final action upon a water quality certification application (OAR chapter 340, division -048). OAR 340-048-0050 describes the circumstances under which DEQ may take action to modify or revoke an existing water quality certification.

ORS 197.180(1): This statute requires state agency actions to be consistent with acknowledged land use plans and implementing regulations, or if a plan is not acknowledged, compatible with state land use goals. Findings must support the state agency action.

ORS 468B.045: When changes are proposed for a previously certified hydroelectric project, and a license amendment is being considered by a federal agency, Oregon Revised Statute 468B.045 requires DEQ to solicit comments from all affected state agencies and approve or deny a water quality certification for the project as modified. DEQ must consider whether the proposed changes are consistent with applicable rules, such as water quality rules adopted by the Environmental Quality Commission (DEQ's policy and rulemaking board). DEQ must notify FERC either that (a) it has approved a water quality certificate for the proposed modified project (with or without conditions) or (b) that there are no longer reasonable assurances that the project will comply with applicable legal requirements due to the proposed changes. Notification to FERC must take place within 60 days of FERC notification of receipt of an application for license amendment. Here, FERC did not provide formal notice of receipt of EWEB's license amendment application. Therefore, DEQ has in this instance provided a public comment period of 35 days for submission of written comments and also solicited comment from all affected state agencies.

2.2 General Application of State Water Quality Standards

Oregon water quality standards are contained in Oregon Administrative Rule (OAR) Chapter 340, Division 41 entitled "Department of Environmental Quality Water Pollution Division 41 Water Quality Standards: Beneficial Uses, Policies, and Criteria for Oregon." The water quality standards in Division 41 are composed of three elements: beneficial uses, numeric and narrative criteria, and the antidegradation policy. DEQ develops total maximum daily loads for waterbodies that do not attain water quality standards.

Designated beneficial uses

DEQ has designated beneficial uses for protection in each of Oregon's river basins and for certain waterways within some basins. The state's designated beneficial uses to be protected in the Willamette Basin, where the proposed project would be located, are listed in Oregon Administrative Rules 340- 041-0340, Table 340A, and Figures 340A and 340B. These uses include public and private domestic and industrial water supply, irrigation, livestock watering,

fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality, and hydropower.

The designated beneficial uses for waterways affected by the proposed action are unchanged since issuance of the July 2018 Certification.

Narrative and Numeric Criteria

Oregon's numeric and narrative criteria establish the levels necessary to support all designated beneficial uses. Numeric criteria for water quality standards such as temperature and dissolved oxygen may vary seasonally to support specific life-stage developments of sensitive aquatic uses species such as salmonid species. Oregon Administrative Rules (OAR chapter 340, division -041) include water quality criteria that apply to specific reaches and seasons, to a particular basin, and statewide.

Oregon's narrative and numeric criteria for waterways affected by the proposed action are unchanged since issuance of the July 2018 Certification.

Anti-degradation policy

Oregon's antidegradation policy (OAR 340-041-0004) applies to all surface waters. The goal of the antidegradation policy is to prevent unnecessary degradation of water quality and to protect, maintain, and enhance the quality of existing surfaces waters to ensure the full protection of all existing beneficial resources. For waters that meet applicable water quality standards, the policy states that the existing water quality shall be maintained and protected unless the Environmental Quality Commission (EQC) makes certain rigorous findings of need. For water bodies that do not meet certain criteria, the policy prohibits further degradation.

Oregon's antidegradation policy is unchanged since issuance of the July 2018 Certification.

3.0 Water Quality Standards Potentially Affected

3.1 Water Quality Parameters of Potential Concern

This section considers the potential effect of the Proposed Action on each water quality parameter found in OAR division 041. Table 3 summarizes the parameters of concern. The following section describes DEQ's evaluation of the Proposed Action's impacts and proposed measures**.**

Table 3: Parameters of Potential Concern

Parameter	Summary of Criteria	Potential Impact
Antidegradation	OAR 340-041-0004 Oregon's Antidegradation Policy prevents unnecessary water quality degradation from	The Load Bank will eliminate potential direct effects on water quality caused by the turbine bypass valve. Degradation may

Parameter	Summary of Criteria	Potential Impact
	new or increased point and nonpoint sources of pollution. The policy sets limits on allowable discharges to accommodate growth and certain activities while maintaining support for beneficial uses.	occur in the Smith Bypass reach if the proposed action does not decrease the occurrence of project-related spills at Smith Dam.
Statewide Narrative Criteria	OAR 340-041-0007 Notwithstanding the water quality standards contained in this Division, the highest and best practicable treatment and/or control of wastes, activities, and flows must in every case be provided to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.	The Load Bank will eliminate potential direct effects on water quality caused by the turbine bypass valve. Indirect effects on water quality may occur in the Smith Bypass reach if the proposed action does not decrease the occurrence of project-related spills at Smith Dam.
Bacteria	OAR 340-041-0009 Limits discharge of bacterial cells, raw sewage, animal waste runoff, sewer overflows, and other sources of bacterial pollution.	The Proposed Action does not represent a potential source of bacteria.
Biocriteria	OAR 340-041-0011 Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.	The Load Bank will eliminate potential direct impacts on water quality caused by the turbine bypass valve. Reduced habitat complexity may occur in the Smith Bypass reach if the proposed action does not decrease the occurrence of project-related spills at Smith Dam.
Turbidity	OAR 340-041-0036 No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity.	The Load Bank will eliminate a potential source of turbidity caused by the turbine bypass valve. Increased turbidity may occur in the Smith Bypass reach if the proposed action does not decrease the occurrence of project-related spills at Smith Dam.
Dissolved Oxygen	OAR 340-041-011 Sufficient concentrations of dissolved oxygen are necessary to support aquatic life.	The Proposed Action will not negatively impact dissolved oxygen in project waters.
pH	OAR 340-041-0021 Activities may not create changes to water quality that cause pH excursions beyond ranges necessary to support beneficial uses.	The Proposed Action will not negatively impact pH in project waters.

Parameter	Summary of Criteria	Potential Impact
Temperature	OAR 340-041-0028 Criteria is intended to minimize the risk to cold-water aquatic ecosystems from anthropogenic warming, to encourage the restoration and protection of critical aquatic habitat, and to control extremes in temperature fluctuations due to anthropogenic activities.	The Proposed Action will not negatively impact temperature in project waters.
Total Dissolved Gas	OAR 340-041-0031 Activities may not cause supersaturation of atmospheric gases in waters of the state at levels that exceed state numeric criteria.	The Proposed Action will eliminate a potential source of TDG caused by discharge from the turbine bypass valve.
Total Dissolved Solids	OAR 340-041-0032 Standard generally prohibits TDS concentrations which exceed basin-specific criterion of 100 mg/l.	The Proposed Action does not represent a potential source of total dissolved solids.
Toxic Substances	340-041-0033 Discharge of toxic material that affects aquatic life or human uses is not allowed.	The Proposed Action does not represent a potential source of toxic substances.
Three-Basin Rule	340-041-0350 New and/or increased waste discharges are prohibited in three Oregon basins, including the McKenzie above RM15.	The Proposed Action does not represent a new or increased waste discharge source into project waters.

DEQ's evaluation of direct and indirect effects of the Proposed Action is presented below.

3.2 Evaluation

The proposal to achieve spill and ramping reduction in the Smith bypass reach by operating a Load Bank instead of a turbine bypass valve eliminates a significant discharge source located near the Carmen powerhouse tailrace. Operation of the turbine bypass valve would discharge up to 800 cfs of penstock flow under 513 feet of static head into the narrow, upper reach of Trail Bridge Reservoir. These releases could potentially increase bankside erosion, sedimentation, turbidity, and total dissolved gas concentrations. The 2018 Certification required EWEB to measure the effect of turbine bypass valve operation on water quality and, if required, take steps necessary to ensure compliance with water quality standards.

As proposed, the Load Bank would maintain uninterrupted generation at the Carmen powerplant during transmission line outages. Redirecting power to the Load Bank during these events would cause no change in penstock flow through the turbine. Because the Load Bank would maintain continuous flow through the powerhouse during transmission line outages DEQ anticipates operation of the Load Bank will have only indirect effects on water quality in waters below the Carmen powerhouse during transmission line outage events.

DEQ notes that an engineering solution that includes a Load Bank would significantly reduce the occurrence of spills in the Smith bypass reach by maintaining continuous, uninterrupted flow

through the turbines during interruptions caused by transmission line outages. However, because the Load Bank operates by redirecting power generated at the powerhouse this solution cannot prevent spills when the turbine generators are not operating such as would occur during a turbine unit trip or other generating malfunction. During outages caused by a turbine trip, the operation of a turbine bypass valve could maintain penstock flow and, therefore, reduce the occurrence of spills during these types of operational failures.

EWEB maintains that spills in the Smith bypass reach caused by turbine unit trips occur much less frequently than those caused by transmission line outages. To support this assertion, EWEB reviewed operational data from 2012 to 2021 to evaluate the frequency, duration, and cause of spill events at Smith Dam. The review found that during the most recent ten years of operation, transmission line outages resulted in 2,222 hours of spill releases at Smith Dam. In contrast, operational or reliability issues (e.g., turbine unit trips) resulted in 48 hours of spill during the same period. EWEB notes that reliability improvements underway at the Carmen generation units are expected to increase operational reliability and further reduce the occurrence of turbine unit trips.

Based on our review of the historical spill record, DEQ finds that nearly 98 percent of unplanned spill events in the Smith bypass reach were caused by transmission line outages. During these types of events the Load Bank would maintain continuous turbine operation and cause no direct change in discharge. Because the Load Bank cannot reduce the occurrence of spills caused by turbine unit trips, reliance on the Load Bank to reduce unplanned spills may have indirect water quality effects in the Smith bypass reach. Specifically, unplanned releases to the Smith bypass reach may impact habitat emplacements required by EWEB under Section 4.3.5 of the Aquatics Management Plan.

DEQ recognizes spills caused by turbine unit trips occur less frequently than those caused by transmission line outages. DEQ finds it reasonable to expect the frequency of unplanned spills caused by turbine failure will decrease because of improved reliability following planned turbine upgrades. To confirm these expectations, DEQ will require EWEB to document the occurrence, cause, and duration of unplanned spills at Smith Dam for a period of at least five years following operation of the Load Bank and include an analysis of spills in the annual water quality monitoring report. For unplanned spills that exceed 1,100 cfs (i.e., the equivalent flow dissipated by the Load Bank) EWEB must also perform visual reconnaissance of the habitat structures in the Smith bypass reach and undertake remedial actions developed in consultation with the Fish Working Group if measures are required to restore the pre-spill habitat function. If DEQ determines that the Load Bank does not reduce the occurrence of unplanned spills in the Smith bypass reach as required by Section 4.2.4 of the Aquatics Management Plan DEQ may, at its discretion, require EWEB to develop an adaptive management plan to further reduce the occurrence of spills. This plan may include a review and modification of the Operational Guidelines provided as Attachment C to the Aquatics Management Plan, or other measures intended to reduce spills, protect habitat, and ensure compliance with applicable water quality standards.

3.3 Findings and Determination

Based on our evaluation of the proposed action, DEQ is reasonably assured that an engineering solution that relies on a Load Bank to reduce the occurrence of unplanned spills in the Smith bypass reach as described in Section 4.2.4 of the Aquatics Management Plan will not violate water quality standards provided EWEB complies with the conditions in the Amended Certification.

4.0 Evaluation of Compliance with Sections 301, 302, 303, 306 and 307 of the Federal Clean Water Act

To certify project changes pursuant to Section 401 of the federal Clean Water Act, DEQ must find that the project, as modified, complies with applicable provisions of Sections 301, 302, 303, 306 and 307 of that Act and state regulations adopted to implement these sections.

Sections 301, 302, 306 and 307 of the federal Clean Water Act address effluent limitations, water quality related effluent limitations, national standards of performance for new sources and toxic and pretreatment standards. All these requirements relate to point source discharges and are the foundation for conditions incorporated in National Pollution Discharge Elimination System (NPDES) permits issued to the point sources. Point source discharges at hydroelectric projects may include cooling water discharges, stormwater, and sewage discharges.

Section 303 of the Act relates to Water Quality Standards and Implementation Plans. The federal Environmental Protection Agency (EPA) has adopted regulations to implement Section 303 of the Act. The EQC has adopted water quality standards consistent with the requirements of Section 303 and the applicable EPA rules. The EQC standards are codified in OAR Chapter 340, Division 41. EPA has approved the Oregon standards pursuant to the requirements of Section 303 of the Act. Therefore, the Project must comply with Oregon Water Quality Standards to qualify for certification.

As discussed above in this evaluation and findings report, the proposed modification of the Project will comply with Oregon Water Quality Standards and therefore Section 303 of the Clean Water Act, provided EWEB complies with the conditions of the Amended Certification.

5.0 State Agency and Public Comment

In a public notice issued May 17, 2023, DEQ requested comments from the public on the proposed certification decision. The public comment period closed on June 20, 2023. DEQ received no comments from the public during the public comment period.

On April 13, 2023, DEQ solicited input from the Oregon Department of Fish and Wildlife and the Oregon Water Resources Department on the potential effects of EWEB's proposed action as described in their license amendment application. On April 20, 2023, ODFW replied: "ODFW has reviewed EWEB's requested Amendment to Section 4.2.4 of the Aquatics Management Plan and the 401 water quality certification. We have no concerns with the proposed changes, and do not believe they will result in negative effects on aquatic resources." DEQ did not receive a response back from OWRD.

6.0 Conclusions

DEQ has determined that the Project, as modified, will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, OAR Chapter 340, Divisions 41 and 48, and other appropriate requirements of state law provided the Applicant implements the conditions included in this Amended Certification (attached). Based on the preceding evaluation and findings, and consideration of all comments of affected state agencies and the public relative to impacts on water quality caused by the changes in the project, DEQ recommends that pursuant to section 401 of the Federal Clean Water Act and ORS 468.045, the Director, or assigned signatory, issue the Amended Certification, and notify FERC that the proposed change to the Project is approved.