Portland General Electric Company
121 SW Salmon Street • 1WTC0306 • Portland, OR 97204
portlandgeneral.com

July 26, 2021

Via Electronic Filing

Public Utility Commission of Oregon
Attention: Filing Center
P.O. Box 1088
Salem, OR 97308-1088

RE: UE 391 - In the Matter of Portland General Electric Company's 2022 Annual Power Cost Update Tariff (Schedule 125)

Dear Filing Center:

Attached for filing in the above referenced matter please find the reply testimony of Sophiya Vhora, Darrington Outama, Greg Batzler (PGE / 300) and Exhibits 301-306. Confidential Exhibits will be submitted to the filing center in an encrypted zip folder. The password to open the folder will be sent in a separate email.

Work papers will be submitted to puc.workpapers@puc.oregon.gov. Confidential work papers will be submitted in an encrypted zip folder. The password to open the folder will be sent in a separate email.

Sincerely,

/s/ Jaki Ferchland

Jaki Ferchland
Manager, Revenue Requirement

JF/np
Enclosure

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I. Introduction

Q. Please state your names and positions with Portland General Electric (PGE).

A. My name is Sophiya Vhora. My position at PGE is Manager, Financial Analysis.

My name is Darrington Outama. My position at PGE is General Manager, Power Operations.

My name is Greg Batzler. My position at PGE is Regulatory Consultant, Rates and Regulatory Affairs.

Our qualifications were previously provided in PGE Exhibit 100.

Q. What is the purpose of your testimony?

A. The purpose of our testimony is to respond to the positions the Public Utility Commission of Oregon (OPUC or Commission) Staff (Staff), the Alliance of Western Energy Consumers (AWEC), and the Oregon Citizens' Utility Board (CUB) put forward regarding PGE's net variable power cost (NVPC) forecast for 2022.

Q. Please summarize your review of parties' positions.

A. Parties have introduced positions on numerous issues and in a number of instances, parties recommend reductions to PGE's NVPC forecast. As described in more detail below, PGE finds some of the parties' recommendations to be reasonable, and others largely (1) inaccurate, (2) opportunistic in seeking benefits (without recognizing costs or risks), or (3) based on incomplete analysis. If implemented in their entirety, those latter recommendations and associated reductions would unfairly introduce a significant downward bias on PGE's NVPC forecast, making it highly unlikely PGE would recover its prudently incurred power costs in 2022 under normal conditions.

Q. What is your recommendation regarding the specific issues identified below?

A. With the exceptions that we discuss below, we recommend the Commission reject AWEC's and OPUC Staff's other proposed adjustments.

Q. What is PGE's position regarding the issues raised by CUB.

A. PGE finds CUB's recommendations to be reasonable. We discuss each of CUB's recommendation in more detail in Section II-J.

Q. What specific issues do you address in your testimony?

A. We address the following issues raised by parties:

- Unwarranted Modeling Enhancements (Section II-A)
- Western Energy Imbalance Market (EIM) (Section II-B)
- Major Outage at Pelton-Round Butte (Section II-C)
- Transmission Resales Revenues (Section II-D)
- Gas Optimization (Section II-E)
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- COB Margin (Section II-G)
- Avangrid Capacity Contract (Section II-H)
- Lydia 2.0 (Section II-I)
- Other Items (Section II-J)
    - PTC Rate
    - Carty, Colstrip, Beaver Forced Outage Rates (FOR)
    - Faraday Repowering Project
    - Schedule 125 Changes
    - Wheatridge Facility Performance Report

- Wheatridge Battery Storage Optimization
- Energy Storage Systems modeling in MONET

Q. What are the recommendations that PGE finds reasonable?

A. PGE finds the following recommendations to be reasonable:

- PTC Rate: PGE agrees with AWEC' recommendation. See Section II-J(1) for more details.
- Faraday Repowering Project: PGE agrees with Staff's recommendation. In fact, PGE adjusted the average energy production at Faraday in the July 15, 2021 MONET update, to reflect the expected total annual generation from the Faraday Repowering Project and the PTCs associated with the project incremental generation. See Section II-J(3) for more details.
- Schedule 125: PGE agrees with Staff's and CUB's proposed changes to the Schedule 125 language. See Section II-J(4) for more details.
- Wheatridge facility Performance Report: PGE agrees with Staff's recommendation to include additional items in the annual report. Additionally, PGE does not oppose CUB's request for clarification with regards to Commission Order No. 20-321 issued in Docket No. UE 370. See Section II-J(5) for more details.
- Wheatridge Battery Storage Optimization: PGE partially agrees with AWEC's recommendation. Specifically, PGE agrees that more detailed modeling of the battery dispatch could be warranted, and we propose to re-evaluate the Wheatridge dispatch modeling and propose updated modeling in the 2023 AUT. See Section II-J(6) for more details.
- Energy Storage Systems in MONET: PGE agrees with CUB's recommendations, except the inclusion of the Coffee Creek and the Baldock battery storage projects in the 2022

NVPC forecast because the two projects are not expected to come online in 2022. See Section II-J(7) for more details.

Q. How is the remainder of your testimony organized?

A. After this introduction, we have two sections:

- Section II: Parties' Proposed Adjustments
- Section III: Summary and Conclusion

II. Parties' Proposed Adjustments

A. Unwarranted modeling changes

Q. Please summarize AWEC's concerns regarding the modeling enhancements included by PGE in the initial April 1, 2021 AUT filing.

A. AWEC argues that PGE did not comply with the Minimum Filing Requirements (MFRs) established in Docket No. UE 198, Commission Order No. 08-505, when including modeling enhancements in the April 1, 2021 initial AUT filing. Instead, to be allowed to propose modeling enhancements, AWEC argues that PGE should have filed this year's AUT prior to February 28, 2021.

Q. Why did PGE propose modeling enhancements in the AUT initial filing?

A. As noted in PGE Exhibit 100, PGE included modeling enhancements in the April 1 AUT filing because at the time of the filing we were also preparing a 2022 test-year general rate case (GRC) filing. PGE has since filed its 2022 GRC,[1] which is now docketed as UE 394. As such, because the GRC direct case filing occurred after the required date for the AUT filing, we included the proposed modeling enhancements within the AUT.

Q. What is the basis for AWEC's argument?

A. AWEC reads Commission Order No. 08-505 to require that MFRs that include modeling enhancements be submitted before February 28 in a GRC year.

Q. Do you agree with this interpretation?

A. No. Commission Order No. 08-505 established that in either an AUT year or a GRC year, "at a minimum […] the Direct Case Filing MFRs will be delivered with the initial filing."[2] The

[1] Filed July 9, 2021.
[2] See Commission Order No. 08-505, Appendix A, page 11: https://apps.puc.state.or.us/orders/2008ords/08-505.pdf

April 1st initial filing date for the AUT was established in Docket No. UE 180, Commission Order No. 07-015. The Commission did not adopt a required filing date for GRC filings.

Q. Did any other party raise this issue in their opening testimony?

A. No. Neither OPUC Staff nor CUB raised this as an issue. In fact, both Staff and CUB either took no issue with and/or supported a number of modeling enhancements proposed in our initial filing.

Q. Did PGE comply with Commission Order No. 08-505?

A. Yes. PGE included MFRs that contained modeling enhancements in our AUT initial filing. As noted above, we included these enhancements in the AUT initial filing because the GRC filing did not occur until July 9, 2021.

Q. Did PGE provide information to parties regarding the proposed modeling enhancements prior to the April 1 initial filing?

A. Yes. In fact, PGE held three separate workshops and presentations with parties to describe the proposed modeling enhancements and other major items for the 2022 NVPC forecast.[3] PGE provided these workshop presentations within its initial April 1st filing as PGE Exhibits 102, 103, 104, and 105.

Q. AWEC also argues that parties did not have time to conduct proper discovery in this case. Do you agree?

A. No. Not only is this statement not accurate, but no other party raised issues regarding discovery in this case. PGE provided parties with timely information regarding the proposed modeling enhancements through the workshops we held. Additionally, we submitted timely responses to approximately 190 data requests in this case, with many of them containing

[3] PGE held the workshops on December 16, 2020 (Exhibit 102), January 25, 2021 (Exhibits 103 and 104), and March 5, 2021 (Exhibit 105)

numerous subparts. For comparison, in our 2019 GRC (Docket No. UE 335) parties submitted less than 50 data requests on power cost items and in our last AUT (Docket No. UE 377), PGE responded to approximately 150 data requests.

Q. Did AWEC raise other issues regarding PGE's proposed modeling enhancements?

A. Yes. AWEC provides lengthy testimony where they argue that, absent abnormal events, an accurate NVPC forecast will have an average variance close to zero compared to actual historical NVPC.[4] Therefore, because modeling enhancements proposed in this AUT result in an increase to the NVPC forecast, AWEC appears to suggests they should be rejected without a review on the merit of the proposal.[5] In support of their argument, AWEC analyzed historical actual NVPC results and NVPC forecasts to determine the average power cost variance between 2011 and 2020. In their analysis, AWEC excluded what they consider to be outlier months when extraordinary events may have occurred that resulted in out of normal power cost variances. Because historically PGE's NVPC forecast did not perfectly align with actual NVPC, AWEC recommends that PGE should not be allowed to include modeling enhancements that increase the power cost forecast if an offsetting update is not applied.

Q. Do you agree with AWEC?

A. No. AWEC's recommendation suggests a biased approach when reviewing any proposal to improve the MONET model, if the proposed enhancement results in a NVPC forecast increase. It is expected that there would be a power cost variance every year because the MONET forecast tool cannot perfectly mirror PGE's actual power operations. As described in Section II-G below, MONET's normalized and deterministic environment will produce forecasts that will diverge from actual operations due to numerous factors, not only due to

[4] AWEC/200, Kaufman/3, lines 19-21.
[5] AWEC/200, Kaufman/7, lines 1-2.

extraordinary events. However, overall, PGE's NVPC forecasts have been in line with actual results since the Commission adopted the Power Cost Adjustment Mechanism (PCAM) in 2007. Supporting this is the fact that PGE has triggered the PCAM only twice since its inception and not at all since 2011. Throughout that span, PGE and stakeholders have collaborated in making several enhancements, modifications, and additions to the modeling approach. These enhancements and updates are what has kept the forecast current. The very analysis that AWEC performed is evidence that MONET has to keep up with the changes in the portfolio as well as the market and is an explicit endorsement for continued changes to the model. Furthermore, AWEC's removal of outlier events is arbitrary at best and biased at worst.

Q. What is PGE's response to AWEC's argument that the historical power cost variance will be close to zero if no abnormal events would occur?

A. As described above, PGE does not find it realistic to assume the MONET tool can produce a perfect forecast. AWEC's arguments appear to suggest AWEC would prefer PGE's power costs were subject to a perfect pass-through and that the PCAM should be eliminated. This would be the simplest approach for achieving AWEC's goal of a zero variance between PGE's power cost forecast and actual results. And PGE would welcome the opportunity to simplify the process.

Q. Please summarize PGE's position regarding AWEC's recommendation that the Commission should reject PGE's modeling enhancements?

A. PGE disagrees with AWEC's recommendation and arguments that the modeling enhancements should be rejected. PGE provided MFRs in support of proposed modeling

enhancements with the AUT initial filing in a GRC year,[6] as provided in Commission Order No. 08-505. Moreover, PGE held workshops and presentations with parties before making the filing to ensure parties received timely information regarding the modeling enhancements and other major items that impact the 2022 NVPC forecast. In support of their recommendation, AWEC misinterprets Commission Order No. 08-505 and argues that, "absent abnormal events, […], the average deviation between forecast and actual NVPC will be close to zero"[7] and thus, any modeling enhancement that results in a power cost forecast increase should be rejected if no discretionary offset is applied. This is an unreasoned biased approach that doesn't support an objective review on the merit of any proposed modeling enhancement.

B. Western EIM

Q. What did Parties recommend regarding PGE's EIM method:

A. Parties have the following recommendations:

OPUC Staff:

1. PGE should use historical data starting with December 2018 and including the most recently available data up to a maximum of 36 months to inform the 2022 GHG revenue forecast.
2. PGE should use the maximum amount of California Carbon Offsets (CCO) allowed by the California Air Resources Board (CARB) cap and trade regulation for 2022 CARB compliance obligation purposes.

[6] PGE submitted the 2022 GRC initial filing on July 9, 2021. The case is docketed under Docket No. UE 394.
[7] AWEC/200, Kaufman/3

3. PGE should remove the escalation factor applied to historical Grid Management Charges (GMC) when determining the GMC forecast for 2022.
4. Staff recommends adjusting PGE's 2022 expected costs associated with CARB compliance obligations based on historical data analysis showing that, on average, only 77.4% of energy transfers to California were deemed delivered for CARB compliance purposes and incurred a compliance obligation.

In total, Staff's EIM recommended adjustment is approximately $0.5 million.

AWEC:

1. PGE should remove the data exclusions from the EIM trading limits calculations.
2. PGE should eliminate the dispatch offsets between same types of resources in the real time dispatch.

AWEC's EIM adjustment is approximately $0.7 million.

Q. Please address Staff's recommendations.

A. We discuss each of Staff's recommendations below:

GHG Revenue Forecast Method

Q. Has PGE evaluated Staff's proposal?

A. Yes, and our evaluation is ongoing. Staff proposes a forecast that uses December 2018 through March 2021 data and includes a seasonality factor that PGE continues to evaluate.

Q. Do you agree with Staff's recommendation regarding the use of historical data for GHG revenues calculations?

A. Partially. In concept, PGE is not opposed to including more than 12 months of historical data in it its GHG revenue calculation. In practice, PGE proposes the use of its existing model structure to forecast GHG revenue and costs but adjusted for two whole years. That is, there

are no changes to the method except that PGE's weighted average method is applied to multiple years instead of a single year. PGE would include a third year in future AUT proceedings.

Q. What is the impact of PGE's proposal?

A. Using the April 1 filing as the basis, adding a second year to PGE's weighted average forecast would increase the EIM GHG benefit forecast by approximately $35,000.

CCO Usage for CARB compliance obligation

Q. What is PGE's position regarding the CCO adjustment proposed by Staff?

A. Presently, PGE is only investigating options to exchange CCOs in its inventory with CCOs sourced from projects that provide direct environmental benefits in the state of California. PGE proposes to use 4% instead of 2% in its calculation of compliance costs attributed to CCOs if PGE executes a contract to exchange CCOs before the conclusion of the AUT proceeding.

Q. What would be the impact of PGE's proposal?

A. Using the April 1 filing as the basis, increasing the CCO weighing from 2 percent to 4 percent would increase the EIM GHG benefit by approximately $4,000.

Grid Management Charges Escalation

Q. Please summarize Staff's proposal to adjust PGE's forecast of grid management charges.

A. Staff argues that GMCs should not be escalated because they are set based on trading volumes in the entire EIM market and they both increase and decrease over time.

Q. Do you agree with Staff's proposal to reduce PGE's forecast of grid management charges?

No. GMCs do change year-to-year (and in some instances within a year), but that is not an argument for no escalation. In fact, CAISO's annual update from 2020 to 2021 was an increase in the GMC of approximately 2.8%.[8] PGE continues to propose the use of the standard escalator (2.05%) in its GMC forecast.

CARB compliance cost

Q. Does PGE agree with Staff's proposal to adjust the EIM GHG benefit based on energy "deemed delivered" to California per the CARB report?

A. No. In its analysis, Staff has identified the instances where only a financial benefit is attained (i.e., no compliance obligation) due to the GHG price difference in the fifteen-minute market (FFM) and five-minute market (RTD). Instances, where only a financial benefit is attained, occur when the resource effectively "buys back" a GHG award in the five-minute market at a lower price than the GHG award issued to the resource in the fifteen-minute market. PGE does not include these instances in its GHG benefit forecast.

Q. Why does PGE exclude the financial benefit from its EIM GHG benefit forecast?

A. The five-minute market activity (energy or GHG) is often the result of the market correcting for forecast and schedule variance where load, variable energy resources, or other generating resources are not equaling the schedules issued in the fifteen-minute market. These are variances PGE cannot actively address (or plan to capture benefits from) through its scheduling or bidding strategies in the EIM. Therefore, PGE does not consider them a benefit suited for its deterministic NVPC forecast.

Q. Are there any other issue with Staff's adjustment?

[8] The 2020 weighted GMC of $0.1905/MWh compared to a 2021 GMC of $0.1958/MWH represents a 2.8% increase in 2021. PGE provided GMCs by year from 2018 to 2021 in response to OPUC Data Request No. 076.

A. Yes. Staff's method assumes there is $0 cost associated with the "buy back" of the GHG award in the five-minute market. This is not the case. The five-minute market "buy back" will have a price greater than $0, meaning Staff's proposed adjustment of $205,736 is an estimate of the gross benefit. Staff arguments would in effect only include the benefit without consideration given to the costs associated with the "buy back". Thus, it is overstated and if the adjustment is accepted by the Commission the amount would need to be reduced appropriately.

Q. Does PGE have an estimate of the over-statement?

A. Not yet. Evaluating 5-minute data over a two-year period is a time-consuming and tedious task that will take more time than allotted for the reply testimony schedule.

Q. Please summarize PGE's position regarding Staff's recommended changes to the EIM method.

A. PGE partially agrees with Staff on the GHG revenue forecast method and the CCO adjustment. Specifically, PGE proposes to use its existing model structure to forecast GHG revenues and costs but adjusted for two whole years. PGE would include a third year in future AUT proceedings. With regards to the CCO adjustment, PGE proposes to use 4% CCOs if we execute a contract to exchange CCOs by the conclusion of this AUT. PGE however disagrees with Staff on the other two adjustments they recommend. As described in this testimony, GMCs change from year to year and applying the standard escalator used in MONET is a reasonable approach. Also, Staff's recommendation regarding CARB compliance costs is not attainable in actual operations since PGE does not have an opportunity to actively employ scheduling or bidding strategies to attain the reduced CARB compliance costs as described by Staff.

Q. Please discuss AWEC's recommended EIM adjustments.

A. We discuss AWEC's adjustments below:

EIM Trading Limits

Q. Did parties review PGE's EIM sub-hourly dispatch method in general and the EIM trading limits method in particular?

A. Yes. Staff and AWEC reviewed PGE's proposed method and provided recommendations. Staff, in particular, performed a very thorough review, issuing more than 30 data requests on the EIM topic, many of them with numerous subparts, requesting a substantial amount of detail.

Q. Did Staff have a recommendation following their review of PGE's forecast method?

A. Yes. At the conclusion of their review, in testimony Staff recommended that "PGE's model, including its proposed enhancements, be used for the purposes of the 2022 AUT."[9]

Q. What is AWEC's recommendation regarding PGE's EIM trading limits method?

A. AWEC recommends removing all the outlier data exclusions applied by PGE on the dataset used to ensure reasonable and expected thermal and hydro trading limits.

Q. Do you agree with AWEC's argument that all data should be included in the calculation of EIM trading limits?

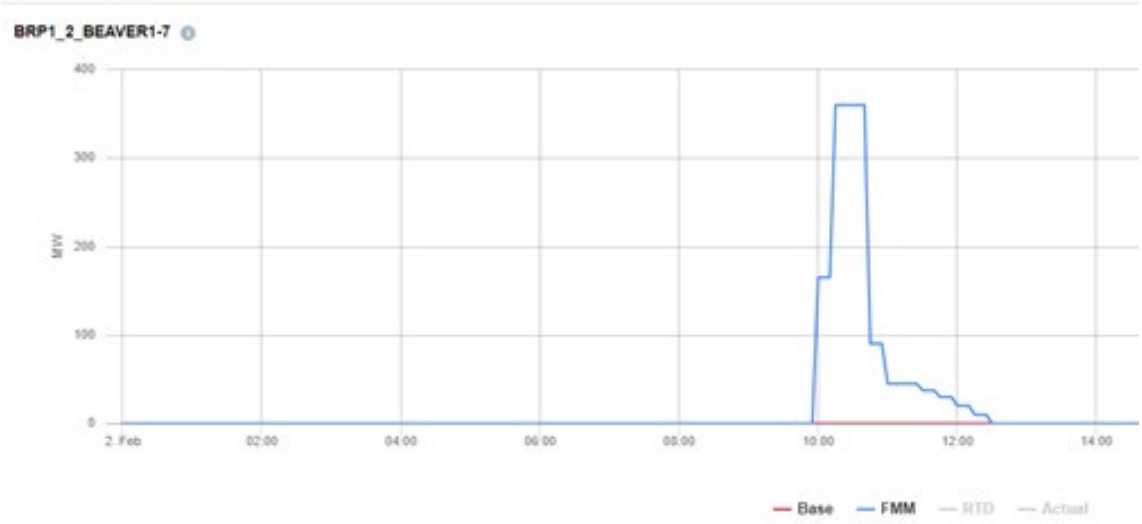
A. No. MONET is an average model. PGE removes outliers from the historical EIM data set to more closely align with an average model construct and make it more likely that MONET will generate reasonable and robust EIM benefits based on the normal operating conditions represented in the MONET model.

Q. Can you provide an example of an outlier in the data?

[9] Staff 100/, Enright/27, lines 1-2

A. Yes. CAISO market instructions for large movements in unit commitment or dispatch that deviate from PGE's submitted base schedules are often outliers. Figure 1 below shows a unit commitment issued by CAISO for the Beaver resource. During Hour Ending 11 on February 2nd 2020, CAISO committed Beaver from 0 to 360MW in the FMM market when PGE had not scheduled to start Beaver to serve load. This unit commitment will look like a large incremental movement (i.e., also referred to as Inc in this testimony) in PGE's dataset.

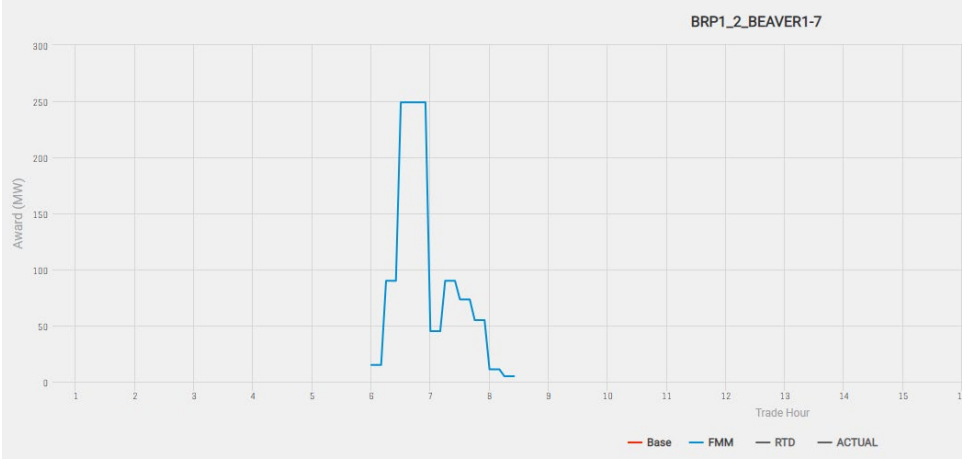
Figure 1 – EIM Beaver Unit Commitment – Example#1



Q. Can you provide another example?

A. Yes, see Figure 2 below. During Hour Ending 6 on March 25th, 2019, CAISO committed Beaver from 0 to 249MW in the FMM market, and stayed at 249MW level for only 30 minutes, when PGE had not scheduled to start Beaver to serve load.

Figure 2 – EIM Beaver Unit Commitment – Example#2



Q. What method did PGE use to remove outlier data from the EIM trading limits calculation?

A. PGE used the interquartile range (IQR) method to remove outlier interval values and ensure normalized EIM trading limits. The lower end and the upper end cutoffs are both calculated based on the calculated IQR. Also called midspread, the IQR is a measure of statistical dispersion, being equal to the difference between 75th and 25th percentile. In PGE's IQR method, the outliers are defined as being any point of data that lies over 1.5 times IQRs below the first quartile (25th percentile) or above the third quartile (75th percentile).

PGE's method is a well-known method to identify outliers in the data, which do not represent normal operating conditions and is commonly used in statistical analysis.

Q. Instead of using the IQR method, would it be reasonable to review all incremental and decremental movements to determine their root cause and whether they represent an outlier?

A. No. PGE's dataset includes tens of thousands of eligible intervals. It is not practical to review each interval to determine the reason that a high incremental ("INC") or decremental ("DEC") occurred.

Q. What issue does AWEC have with the data exclusion?

A. AWEC argues that the lower end cutoffs are nearly always below zero. As a result, PGE almost never excludes records due to the lower bound and nearly all data exclusions are due to the upper bound, and this introduces statistical bias

Q. Why are all outliers identified on the upper end of the INC and DEC movements?

A. There are two reasons:

1. The EIM data is not a normal distribution.
2. PGE separated the incremental and decremental movements into two datasets and converted the decremental movements to positive values (i.e., originally decremental movements were all negatives). When the dataset contains only positive values and the IQR method's data inclusive range is quite large, it is mathematically reasonable to observe a negative value for the lower end cutoff.

Q. Do you agree that the result of a negative value signals bias?

A. No. PGE applied the IQR method objectively. PGE would have introduced bias if PGE selected different multipliers for either the incremental or decremental range.

Q. You have explained mathematically why a negative value for the lower end cutoff is reasonable. Mathematics notwithstanding, does PGE consider generator movement near zero to be an outlier?

A. No. The EIM is an imbalance market, and one of its primary purposes is to economically resolve the imbalance that occurs between changes in resource schedules and actual operations. These changes can be load deviations, variable energy resource deviations, or other forms of schedule deviations (e.g., dispatchable resources or scheduled interchange). In general, PGE expects these types of deviations to be small, not large.

Q. Does PGE's method remove a significant amount of outlier data?

A. No, it does not. Even after applying the method, only a small percentage of data intervals are excluded. Table 1 below provides the percentage of intervals that remain in the data set after removing the outlier data:

Table 1: Percentage Intervals Used in EIM Trading Limits Calculations

	FMM % of FMM eligible intervals remain in dataset	**RTD** % of RTD eligible intervals remain in dataset
Hydro INC	92.2% [115305/125094]	93.5% [77795/83181]
Hydro DEC	97.6% [163687/167657]	94.1% [114908/122136]
Thermal INC	97.6% [136258/139664]	92.1% [78575/85323]
Thermal DEC	96.3% [126515/131388]	91.8% [122760/133674]

Q. Are there other ways to review PGE's method for reasonableness?

A. Yes. The Commission can review the MW (or 5-minute MWh) levels that remain in the dataset. In this testimony, we will refer to this level as a "cutoff". The cutoff is the highest MW value that remains in the dataset to be part of the weighted average limit calculation. For example, if the cutoff is equal to 300 MW (i.e., 25 MWh if measured at a 5-minute level), PGE is allowing all increments or decrements in the dataset to remain so long as they are equal to 300 MW or lower.

Q. What are the cutoffs?

A. Exhibit 301 displays the monthly cutoff values in tabular form. The cutoff values listed in Columns B through E and L through N in Exhibit 301 are reported in MWh units of measurement at a 5-minute time granularity but can be converted to an hourly MW level, as shown in Columns F, G, P, and Q. For example, in January, the hydro INC upper limits for FMM market and RTD market are 20.61 and 8.56, respectively. Combining the FMM limit

and RTD limit together means that hydro incremental movement will not be considered as an outlier unless it increases more than 29.17 MWh.

Converting 29.17 MWh to an hourly movement limit results in a value of 350.04MW.[10] That is, in January, PGE's limit methodology is effectively allowing any hydro INC trading movements below 350.04 MW per hour to be included in the dataset for calculating EIM trading limits. Similarly, our cutoff for thermal INC is 340.2 MW. In total, the INC cutoffs are 690.06 MW. The theme of high cutoff values is similar across other months.

For clarification, Table 6 included in AWEC Exhibit 200 on page 17, does not represent PGE's IQR cutoffs for either thermal or hydro resources in the FFM.

Q. Is there anything else noteworthy about the January example of 690.06 MW?

A. Yes. As a general test of reasonableness, the cutoff values can be compared to the average transmission limits in the market. CAISO's Department of Market Monitoring (DMM) reports on market performance each quarter and as part of the report, DMM reports average transfer limits. In the first quarter of 2021, PGE's average transfer limit was 660 MW in the export direction.[11] This means that the cutoff value PGE is using for historical generator movement data is slightly higher than the average transmission limit in the market during the first quarter of 2021.

Q. Are there other concerns with AWEC's proposal?

A. Yes. AWEC's recommendation is contrary to the normalized MONET environment and increases the likelihood that the EIM benefit forecast will be unreasonably high due to trading limits that reflect all historical data. AWEC also proves to be inconsistent and opportunistic

[10] 29.17 x 12 5-minute intervals = 350.04MW
[11] See page 73 of the Quarterly Report on Market Issues and Performance. http://www.caiso.com/Documents/2021-First-Quarter-Report-on-Market-Issues-and-Performance-Jun-9-2021.pdf

depending on the argument they want to make. For example, in AWEC Exhibit 200, Section II, AWEC argues that outlier months should be excluded when comparing actual NVPC with forecast NVPC. However, in Section IV of the same testimony exhibit, AWEC is proposing an adjustment to EIM benefits based on the inclusion of outlier data in the calculation.

Dispatch Offsets

Q. What is AWEC's recommendation regarding dispatch offsets between the same type of resources within EIM?

A. AWEC argues that "increments and decrements in the EIM are performed at the plant level but PGE models them at the resource type-level" and in doing so "PGE allows increments and decrements to offset and thus does not account for the benefit of redispatches that offset within resource type."[12] AWEC then recommends that offsets be removed, which would result in a higher increment limit. From this, AWEC calculates an adjustment of $93,000.

Q. How does CAISO refer to dispatch offsets?

A. In general, CAISO will refer to dispatch offsets as a benefit category associated with base schedule rebalancing. CAISO defines base schedule rebalancing as an instance where a scheduling coordinator (like PGE) submits a resource plan (set of base schedules) that is not economically optimized and EIM optimizes the base schedules. That is, there are no transfers between EIM entities, just optimization of the single entity's base schedules.

Q. Is base schedule rebalancing a benefit applicable to PGE's EIM benefit method?

A. No. PGE's method assumes MONET is producing an optimal set of base schedules. Therefore, base schedule rebalancing is not a benefit in the AUT construct.

Q. Are there other reasons to reject AWEC's recommendation?

[12] AWEC/200, Kaufman/18, lines 8-12.

A. Yes. Both the incremental and decremental dispatch are not necessarily economic outcomes.

Q. Can you provide an example?

A. Yes. Consider the unit commitment and dispatch of Port Westward 2. If load increases by 20MW and all other PGE thermal resources are at their maximum operating level, CAISO will commit Port Westward 2 to start up. However, the market will also need to decrement the generation from another thermal resource uneconomically to remain balanced, because Port Westward 2 has a minimum load level of 36 MW (for all six engines in a hall) and the market only needs a total of 20 MW increment. Therefore, there will be a dispatch offset from reducing another thermal resource dispatch by 16 MW to ensure the market is balanced.

Q. Are there any other issues with AWEC's recommendation?

A. Yes. While AWEC recommends removing dispatch offsets between the same types of resources, PGE's method allows parties to have both FMM and RTD INC and DEC limits. That is, we do not offset FMM and RTD markets. In our method, the FMM and RTD limits are additive. However, in actual operations, the FMM instruction and RTD instruction are frequently in the opposite directions due to the forecasts or market condition changes. For example, PGE's Carty resource might be instructed to move up in FMM according to the FMM load forecast, but later when the load forecast is updated to be a lower value, the market may move Carty back down.

Q. Please summarize your position on AWEC's recommendations and adjustments regarding PGE's EIM modeling.

A. In summary, PGE disagrees with both of AWEC's recommendations. To determine EIM trading limits PGE employed the IQR method, which is a well-known and frequently used statistical tool that results in reasonable trading limits that represent normal operating

conditions. PGE also disagrees with AWEC's EIM dispatch offset argument and adjustment. As described above, while this type of offset occurs in real operations, it is not appropriate to include within the forecast environment, as perfect optimization is already assumed.

C. Major Outage at Pelton Round Butte

Q. Please summarize Staff's issue with PGE's planned 480v switchgear replacement outage at the Pelton Round Butte hydro project (PRB).

A. Staff argues that the forecasted spill associated with the planned plant outage at PRB may not be necessary and thus recommends removing the forecasted power cost increase associated with spilling water at the facility. To support their argument, Staff indicates that water has not been spilled at PRB for the past 25 years.[13] They further support their argument with an estimate of inflows to Lake Billy Chinook during the expected outage period that appears to illustrate the reservoir will not grow high enough to force spillage.

Q. Do you agree with Staff's arguments for eliminating the forecasted spill at PRB?

A. No. There are several factors that make Staff's assumption impossible, and Staff is incorrect in some of the facts they use to support their assumption. First, the 2022 outage at Round Butte will require all units to be off-line, something PGE has worked to avoid unless absolutely necessary. Second, Staff's support for their claim of no historical spillage (and therefore spilling is unnecessary) at PRB only refers to water spills due to river flow conditions, not spill due to maintenance work at the dam. The PRB project has in fact spilled water in the past 25 years, the last occurrence due to maintenance work requiring all the units to be out of service. Finally, and most importantly, there are FERC license requirements PGE must follow that make it impossible to operate PRB in the manner Staff suggests.

[13] Staff/100, Enright/17, lines 14-15

Q. You mention that the 2022 outage will require all units at Round Butte to be offline. Why does this matter?

A. This is not a typical outage for PGE. Given the age of the 480v station service electrical system, PGE needs to repair and replace critical electrical components to ensure safe, reliable operation of the plant. Because of the design of the station service circuit, to safely isolate the system to do the repairs, the entire plant will lose power supply during the work. This includes all the controls and supporting equipment for the hydro turbine generators. PGE will need to de-energize all units at Round Butte and no Round Butte unit will have the ability to generate energy. In past years during more typical major outrages, there is typically one or more generators that are still online. As such, PGE is typically still able to pass water through the remaining in-service turbine(s), generating electricity and discharging water down the river. These are the more standard major outages that PGE experiences at PRB and it makes sense that spillage is not required or modeled in MONET for these instances.

Q. Has the PRB project spilled water in the past?

A. Yes. Staff cites a report on PRB water management to support their claim that water has never been spilled at PRB in the last 25 years. However, the report cited by Staff appears to be referring to water spills at PRB due to river flow conditions and not water spills due to maintenance work at the dam. In fact, Round Butte was taken entirely offline in 2009 to complete intake modifications necessary for installation of the Selective Water Withdrawal for fish requirements. Just as we expect for the 2022 outage, Round Butte spilled water in 2009 during the period the entire plant was taken off-line.

Q. Can you speak to PGE's ability to simply shift its generation at the facility to manage spill at PRB?

A. Yes. Staff's argument that PGE can simply hold the water and shift when the water is used to generate energy, is not practical for multiple reasons. As part of the FERC license requirements for PRB, PGE (as the operator of the entire facility) is subject to several regulations that affect the ability to manage the water flow at the PRB facility. The FERC license is heavily influenced by the Endangered Species Act and as such requires PGE to maintain a certain amount of water through the PRB project to protect the fish that utilize the Deschutes watershed. The primary requirements affecting water management before and after the planned fall outage are as follows:

- Summer Pond Elevation Requirements: The PRB facility is subject to a license requirement (Article 414(a))[14] for summer pond elevation, which effectively results in PGE being constrained to managing PRBs water to within one foot from the reservoir maximum over summer months, from May to September 15th of each year. As such, when PGE heads into the full Round Butte outage in October, Lake Billy Chinook will already be at (or close to) full, severely limiting the ability to store any additional water while the plant is in its outage.
- Inflow/Outflow Requirements: PRB's FERC license (Article 412(c))[15] requires the water volume out of the PRB facility, below the Re-Regulating dam, to match within 10% of the volume that flows into Lake Billy Chinook, above the Round Butte dam, every day. There are also limits on the rate of change for lower river flows (described in Article 409 (a)).[16] As such, even if PGE could hold all the water during the outage, which, as we explain above, we cannot, PGE is still restricted to power generation levels (or spill levels in

[14] See PGE Exhibit 302 at page 70.
[15] See PGE Exhibit 302 at page 67.
[16] See PGE Exhibit 302 at page 63.

absence of the ability to generate at the facility) that support the daily inflow/outflow requirements, severely restricting PGE's ability to utilize this stored water to increase generation at PRB post-outage.

- Target Discharge Requirements: As described in License Article 412 (a)(1),[17] in addition to the 10% requirement above, PGE is also required to meet the target discharge flow each day by month. This additional constraint can serve to further reduce PGE's flexibility at PRB.

Q. Are there any other considerations PGE must take into account when managing the water flow at PRB?

A. Yes. One very important consideration for PGE, when managing the water inflow and outflow at PRB is the provision of ancillary services (AS) provided by the plant's flexibility and storage capabilities. Staff is correct that during the outages, PGE's AS capabilities provided by the facility will be impacted. However, what they do not recognize, or at least mention in their testimony, is that should PGE strictly focus on managing the water supply up to the maximum limits discussed above, the AS capabilities of the facility both pre- and post-outage most likely would be impacted, resulting in an increase to costs elsewhere in PGE's power cost portfolio, along with increased strains on PGE's system to perform balancing and integration services. That is, should PRB be in any way limited in its ability to provide AS, the provision of these services would most likely be handled by one of PGE's thermal units, at a higher cost.

Q. Please summarize PGE's response to Staff's proposed adjustment to Round Butte.

[17] See PGE Exhibit 302 at page 66.

A. Staff incorrectly argues that because PGE has not spilled water at PRB in 25 years and because their analysis shows "there is significant storage available upstream,"[18] PGE should be able to hold on to the water during the Round Butte full outage, that no spill should need to occur, and that PGE can increase generation at the facility both pre- and post-outage. This is incorrect for the many reasons discussed in detail above. In summary, PGE has needed to spill water during full plant outages, and has done so in the past, with the last one occurring in 2009. Additionally, FERC license requirements at the facility are such that there will be very little additional storage available pre-outage and very little ability to utilize stored water to increase generation at the facility post-outage. Finally, should PGE manage the reservoir to the edges of what we're allowed to do under our license, there could be impacts to PGE's AS capabilities at the facility pre- and post-outage, creating additional strains and costs elsewhere in PGE's supply stack.

D. Transmission Resales

Q. Please describe Staff's proposed adjustment related to PGE's forecast of transmission resale revenues.

A. Staff recommends that the 2022 transmission resale revenues should be calculated based on a five-year average of historical short-term transmission resale volumes and including transactions that occurred in Q3 of each year.[19] Based on this proposed method, Staff proposes to reduce PGE's 2022 NVPC forecast by approximately $3.3 million.

Q. How does Staff support their recommendation?

[18] Staff/100, Enright/19, line 10.
[19] Staff/300, Hanhan/8, lines 3-7.

A. Staff compares PGE's historical transaction resales volumes over the last five years with PGE's current method that assumes 300 MW transmission capacity available for resale in Q1, Q2, and Q4 of the forecast year. Based on their analysis, Staff concludes that PGE transacted more volumes in actual operations than forecast and proposes an adjustment.

Q. Do you agree with Staff's recommendation?

A. No. First, Staff does not factor in any cost associated with short-term transmission purchasing transactions into their adjustment. Second, Staff's adjustment assumes excess transmission in PGE's portfolio in the test year that ensures historical volumes can be met on a forward-looking basis during all hours of the year. PGE has neither excess transmission, nor a secured firm transmission resale agreement to support the assumption that historical volumes can be met on an ongoing basis.

Q. How does PGE determine its long-term transmission needs?

A. PGE's plans both generation and transmission on a long-term basis to meet projected peak load service obligations. PGE determines our long-term (i.e., 5 to 10-year planning horizon) transmission needs such that we meet our portfolio goals to: (a) ensure access to the full generation capability of PGE's remote resources and firm contracts; (b) ensure access to the regional markets to allow PGE to meet load service obligations in a cost-effective manner while ensuring reliability and deliverability; and (c) ensure power delivery during a 1-in-10 peak load event. Current estimates for a PGE 1-in-10 load event, including reserve requirements, loss obligations, and station service for the next ten years range from approximately 4,102 MW in 2022 to almost 4,482 MW in 2032. If compared to PGE's 2022 BPA PTP transmission demand of 3920 MW, it is obvious that PGE has no excess transmission in our portfolio. Moreover, we are beginning to see load events, such as the June

2021 heatwave when PGE experienced record system load of 4471 MW, which may prohibit PGE from engaging in short-term transmission resale transactions during portions of the year, to ensure PGE meets its load-serving obligations.

Q. Why does PGE see a risk in meeting the average transmission resales volumes seen in the last 5 years?

A. The time period used by Staff to support their proposal includes years when PGE had a long-term transmission resale agreement with a counterparty that included recall rights, which mitigated PGE's risk should load excursion events occurred. That agreement expired in Q1 2018, PGE was unable to renew it, and since then PGE has not secured another long-term resale agreement of any kind. Therefore, in addition to and supporting the fact that PGE does not have excess transmission capacity as described above, PGE has no firm transmission resale agreement. Additionally, when it is prudent to transact on a short-term basis, PGE participates in a transmission resale market that is somewhat illiquid, with a very limited number of participants. As such, should any one or more of the market participants adjust their resource portfolio so that their transmission demand is reduced, it would significantly impact PGE's transmission resale volumes. In short, PGE faces significant risk regarding transmission resale transactions and so the assumption that PGE can meet historical average volumes on a forward-looking basis is unreasonable.

Q. You mentioned that Staff did not consider costs associated with short-term transmission purchases in their proposed adjustment. Please elaborate.

A. While they do recognize that PGE engages in short-term transmission purchases, Staff did not factor into their adjustment any costs associated with these transactions. Staff does however

express openness to a mechanism that would include an offset to the total transmission resale revenue to account for short term purchases.

Q. You mention above that Staff's analysis includes years when PGE had a long-term transmission resale agreement, and it does not account for short-term transmission purchases. How is Staff's estimated transmission resale average volume impacted if only the years without a long-term agreement (i.e., 2018 to 2020) are used and short-term transmission purchases are factored in?

A. After adjusting to use only short-term transactions in years 2018-2020, and after including a weighted short-term transmission purchase capacity offset based on the difference in short-term sale and short-term purchase prices, the resulting net average transmission capacity available for resale over the three years is 324MW, compared to the 477MW[20] calculated by Staff. This is consistent with the 300MW currently assumed in MONET. However, as mentioned above, PGE does not agree with changing the transmission resale forecast method in this proceeding to using historical volumes as it is not representative of the significant risk PGE is exposed to in the transmission resale market.

Q. Are there other issues with Staff's proposed adjustment?

A. Yes. The adjustment and method proposed by Staff looks at one item in isolation, whereas PGE's forecast and actual operations are managed at the portfolio level. When managing PGE's entire portfolio, transmission resales can represent an instrument to optimize PGE's transmission need to reliably serve our load and is based on the economics of PGE's generation plants. For example, transmission resales can occur when a plant is placed in forced outage, if the transmission isn't needed for replacement power. Also, going forward, PGE is

[20] Staff/300, Hanhan/8, line 8

expecting an increased need for transmission rights to fully optimize the capacity that the Douglas hydro resource provides, and to enable transaction with new EIM participants.

Q. Does PGE agree to modify the transmission resale modeling in this proceeding?

A. No. PGE does not agree with Staff's proposed modification in this proceeding. However, PGE does propose to re-evaluate the current methodology and include an update within its 2023 power cost forecast.

Q. Did Staff have other clarification questions in their opening testimony?

A. Yes. Staff is seeking clarification regarding how PGE estimated the transmission resale price of $1.5/MWh for 2022. Staff indicates they were not able to verify within PGE's work papers if historical short-term transaction prices were reasonably close to PGE's estimate. However, in PGE's response to OPUC Data Request No. 015, Attachment 015-A, we provided historical transmission resale transaction information, including transaction prices. Using this data and considering short-term transmission resale transactions executed from 2018 to 2020, the average transaction price is approximately $1.59/MWh. PGE relied on these historical transaction prices and expected market movements in 2022 when estimating a 2022 short-term transmission resale price.

E. Gas Optimization

Q. Please describe Staff's recommendation regarding PGE's gas storage optimization modeling.

A. Staff reviewed the gas storage optimization model included in MONET and concluded that PGE omitted to reflect the expected benefit within our initial 2022 NVPC forecast. Based on their conclusion, Staff recommends that PGE reduce the 2022 NVPC forecast by $4.2 million to account for the omitted value.

Q. Did PGE omit to include the gas storage optimization in the 2022 NVPC forecast?

A. No. Staff's adjustment appears to be due to a simple misunderstanding of how the gas storage optimization benefits are reflected in the 2022 NVPC forecast.

Q. How does PGE reflect the gas storage optimization benefit in the 2022 NVPC forecast?

A. As described in PGE Exhibit 100, PGE enhanced the gas storage optimization modeling to incorporate the North Mist stored gas into the fuel costs for dispatching the PW1, PW2, and Beaver plants within the MONET model. With the enhancements, the fuel supply is optimized to prioritize fueling the most efficient plant with the least expensive source of gas first. Thus, the plant output within MONET and the NVPC forecast will reflect reduced plant dispatch costs based on a blend of fuel from Sumas, Rockies, and North Mist storage.

Q. Why doesn't PGE include the expected benefit as a line item in the gas storage optimization worksheet, similar to how it was included in the 2021 AUT?

A. In the 2021 NVPC forecast (UE 377), the gas optimization modeling was performed outboard of MONET, and the gas storage optimization benefit provided as a line item in the gas storage worksheet was applied as a reduction to the forecast. For the 2022 NVPC forecast, PGE embedded the gas storage optimization benefit in MONET, as described above. Thus, the benefit is now reflected as a reduction to the dispatch costs of PGE's plants in the PW/Beaver complex via MONET dispatching the plants using a blended fuel price that is based on the calculations in the "Gas Storage" worksheet – which estimates the expected plant dispatch and fuel consumption volume by fuel source as a weighting for the respective prices and not outboard, as a line item. Exhibit 303 provides a with and without April 1, 2021 MONET run that reflects the gas storage optimization impact on the 2022 NVPC forecast. That is, if the gas optimization modeling is switched off, the 2022 NVPC forecast is approximately $515.9

million, compared to the $511.8 million reflected in PGE's April 1 initial NVPC filing. Thus, the gas storage optimization modeling reduces the 2022 NVPC forecast by approximately $4.2 million.

Q. Does Staff raise any other issues regarding PGE's gas storage optimization model?

A. Yes. Staff noted and is seeking clarification for why the injection/withdrawal cycles in the months of September and March are inconsistent with the injection and withdrawal patterns for other months. Specifically, Staff is asking: 1) why PGE does not model gas storage injection or withdrawal in the month of March, and 2) why does PGE model both gas storage injection and withdrawal in the month of September.

Q. Please address Staff's question regarding gas storage injection and withdrawal in March.

A. The gas injections for the storage modeling are determined based on the Sumas market gas price curve, with monthly injections prioritized in order of least to most expensive gas prices. For the March-June injection period, no injection occurs in March simply because the gas price is higher compared with April through June. PGE's gas storage optimization model prioritizes injection when Sumas market prices are lowest to optimize the storage weighted average cost of gas.

Q. Why does September have both gas storage injection and withdrawal?

A. Gas storage withdrawals are determined based on Summer and Winter seasons and are typically planned for the months during which the electric and gas market prices are more expensive. For the month of September, it is modeled as both a partial injection and withdrawal month to compensate for the limited injection period over which the storage capacity may be refilled before the next December-February gas withdrawal season. Doing

this provides for more stored gas during the Winter season burn to benefit customers when market prices are more expensive. Gas injection between the Summer and Winter withdrawals is limited to October-November (approx. 60 days) and further limited by the North Mist maintenance schedule in October, which reduces the injection days by 50%.

Q. Please summarize PGE's position regarding the gas optimization adjustment proposed by Staff.

A. PGE does not agree with Staff's conclusion that PGE omitted to reflect the gas storage optimization benefit in the 2022 NVPC forecast. Compared to the 2021 NVPC forecast, PGE enhanced the model to be embedded in MONET through reduced dispatch costs for PGE's PW/Beaver complex. Therefore, although not reflected as a line item in the gas storage worksheet, PGE does provide the gas storage optimization benefit to customers via a reduction of the NVPC forecast, as reflected in Exhibit 303.

F. Day-Ahead Forecast Error

Q. Please summarize the issue raised by AWEC with regards to the costs associated with the Day Ahead Forecast Error included in the MONET model.

A. AWEC makes two arguments in support of removing the day-ahead forecast error from MONET. First, AWEC argues that the costs associated with the day-ahead forecast error should be removed from the NVPC forecast because the MONET economic dispatch is not based on day-ahead forecasts. Secondly, AWEC makes the argument that Lydia 2.0 methodology update proposed by PGE already "simulates the cost associated with dispatch in hourly markets based upon the equivalent of an hour-ahead wind forecast"[21] and therefore "MONET already includes the cost associated with moving from a day-ahead to hour-ahead

[21] AWEC 100, Mullins/14, lines 14-16

wind forecast,"[22] negating the need to include a day-ahead forecast error within MONET. Additionally, AWEC argues that should PGE use the prior Lydia methodology (i.e., Lydia 1.0), PGE should at the very least remove escalation from the DAFE value.

Q. Why does PGE include a day-ahead forecast error in the NVPC forecast?

A. The cost of wind day-ahead forecast error estimates the cost of the changes in PGE's non-wind resource portfolio and market position that result from the need to re-optimize PGE's system, in an effort to accommodate the differences between the day-ahead and hour-ahead forecasts for wind generation. In actual operations, these costs materialize in the form of market transactions (purchases and sales) and the re-position of available generation resources between PGE's day-ahead commitments, hour-ahead commitments, and real-time dispatch.

Q. Please address AWEC's argument that the MONET dispatch is not based on day-ahead forecasts and therefore PGE should remove the day-ahead forecast error cost.

A. PGE does not find this argument to be compelling. The fact that MONET does not make market purchases and sales and unit commitments in the day-ahead is precisely the reason a day-ahead forecast error must be imputed into the model. MONET is a single-stage, hourly NVPC forecast model that does not reflect the day-ahead wind variability. To integrate wind resources, PGE incurs costs associated with forecast changes from day-ahead to hour-ahead, and forecast changes for hour-to-hour, within the hour, and moment-to-moment.

While the ancillary services modeling within MONET handles the hour-to-hour (imbalance reserves), within the hour (load following reserves), and the moment-to-moment (regulation reserves) changes at the hourly stage, it does not address the day-ahead and hour-ahead portfolio changes due to variable energy resources (including wind) and the associated

[22] AWEC 100, Mullins/14, lines 16-17

costs. The day-ahead and hour-ahead portfolio changes and associated costs are only accounted for in MONET through the inclusion of the day-ahead forecast error and therefore it is not appropriate to remove it.

Q. AWEC states that PGE does not actually dispatch its system based on a day-ahead wind forecast. Is that correct?

A. No. Contrary to AWEC's assertion, PGE makes unit commitments, sets expected dispatches, and engages in market activity (e.g., buying and selling power) to take a position that supports meeting the day-ahead load forecast. This day-ahead process is impacted by forecasts of expected wind and solar output. While AWEC is correct that the physical dispatch of PGE's plants isn't finalized until real-time, PGE does position its resources to meet expected system needs and the fact that changes occur all the way up until real time (e.g., updated wind forecasts) highlights the impacts of forecast error.

Q. AWEC's second argument is that PGE's update to the Lydia model incorporates the day-ahead forecast error cost. Do you agree?

A. No. The Lydia 2.0 methodology was not developed to capture the costs associated with the variance between the day-ahead and the hour-ahead wind forecast generation. As described in PGE Exhibit 100, Section III-B, Lydia 2.0 incorporates the effects of wind generation volatility on Mid-C hourly energy prices in the single-stage, hourly market in which MONET operates. This has no impact to the unit and market commitment changes that PGE must effectuate between the day-ahead and real-time. So, while Lydia 2.0 forecasts the impact of wind generation on Mid-C hourly energy price shaping, creating an interdependent process on an hourly basis, there still exists a day-ahead forecast error with respect to changes between

PGE's day ahead and hourly positions that a single-stage model, such as MONET cannot forecast.

Q. Can MONET account for changes in PGE's resource portfolio between day-ahead, hour-ahead, and real-time?

A. No. With the average wind shapes used in MONET, the model does not and cannot account for the dynamic changes within the portfolio between day-ahead, hour-ahead, and real-time. Further, as mentioned above, MONET is a single-stage model that does not reoptimize PGE's portfolio under changing conditions (e.g., block power purchases in the day-ahead vs. hourly purchases in the hour-ahead). Therefore, even with the changing Mid-C hourly energy price shapes for the NVPC forecast, there still exists a day-ahead forecast error because wind forecasts change from stage to stage (i.e., day-ahead → hour-ahead → real-time) and this impacts how PGE positions and re-positions its portfolio in each stage, which creates a cost**.**

Q. Has an estimate of the cost of day-ahead forecast error been included in PGE's prior power cost proceedings?

A. Yes. An estimate related to the cost of day-ahead forecast error has been included in PGE's NVPC forecasts every year since the 2008 test year in Docket No. UE 188. Parties have not contested the inclusion of the cost of day-ahead forecast error as a wind integration cost in prior proceedings. In fact, Staff stated in Docket No. UE 266 that they find that the "wind integration study is based on sound methodology and allows for reasonably accurate separation and calculation of wind integration cost components."[23]

[23] UE 266/Staff/100/Crider-Ordonez/7/16-20

Q. AWEC also raised concerns regarding the escalator applied to the day-ahead forecast error cost in MONET. Does PGE agree with AWEC's recommendation to remove the escalation factor?

A. Yes. PGE will remove the escalation factor in this proceeding. However, PGE may propose a more appropriate escalator or conduct a new day-ahead forecast study in future power cost proceedings.

Q. Please summarize PGE's position regarding AWEC's adjustment related to removing the day-ahead forecast error cost from the NVPC forecast?

A. PGE fundamentally disagrees with AWEC's adjustment. We don't find the adjustment to be appropriate because MONET is a single-stage, hourly NVPC model that does not account for the dynamic changes within the portfolio due to wind variability between day-ahead, hour-ahead, and real time. Reserves modeled in MONET to support wind integration only address the moment-to-moment, hour-to-hour, and within-hour changes to wind forecast generation. The day-ahead forecast error cost ensures that MONET also captures the impact of wind variability between the day-ahead and hour-ahead stages.

G. California-Oregon Border (COB) Trading Margins

Q. Please describe PGE's current method for calculating COB trading margins.

A. PGE's current method, which has been employed since Docket No. UE 335 (2019 test year), includes a pro forma contract in MONET, recognizing PGE's ability to purchase at Mid-C and sell at COB and vice versa (depending on prevailing forward price curves). The pro forma contract's value will be the result of a modeled hourly purchase or sale for each month of the year. To value the pro forma contract, we use shaped hourly forward curve prices for the

Mid-C and COB trading hubs to forecast the price margin. We forecast the pro forma contract quantity based on an analysis of historical trading volumes.

This method uses actual hourly data for trading activities and market forward curves to produce a granular forecast result that is consistent with PGE's actual ability to use its firm transmission access to sell or purchase power at the COB market. Moreover, the COB trading margin methodology captures both daily variation and intra-monthly variability of prices. The daily variation in prices is captured through the modeling of a weighted price shape for COB by hour and day of the week (i.e., weekday, Saturday, or Sunday) and intra-monthly variability of prices is accounted for through the modeling of hourly purchases or sales for each month of the year.

Q. Please summarize AWEC's proposal regarding COB trading margins.

A. AWEC argues that PGE's COB trading margin forecast method understates the margins because PGE's method "restricts the volume of transactions relative to the historical average because it assumes that PGE is making the same daily profile of sales and purchase in every day of the month."[24] AWEC goes on to argue that PGE's method "limits the price spreads, which are representative of a wider range of price spreads if viewed on an hourly basis, rather than a single monthly diurnal profile."[25] To support their argument, AWEC produces a margin by calculating monthly transaction volumes for purchases and sales and transacting for every hour based on these monthly limits and whether the spread between the hourly prices is positive or negative. Using this hourly view, AWEC calculates a margin.

Q. Was this issue raised by any other party in the proceeding?

A. No.

[24] AWEC/100/page 18 lines 5-7.
[25] AWEC/100/page 18 lines 7-9.

Q. Do you agree with AWEC's proposal regarding COB trading margins?

A. No. PGE's current method for forecasting COB margins provides for a normalized and forecasted value that recognizes both seasonality and hourly variability. AWEC's method is opportunistic in nature, using trading volumes that are greater than PGE's firm rights on the California-Oregon Intertie (COI), and simulating a real-time hourly trading approach, when PGE primarily transacts at COB in the day-ahead market, which trades in on-peak and off-peak blocks.

AWEC also fails to recognize the basic principle of MONET, which is to produce a final test year forecast of NVPC that reflects a baseline (or deterministic) forecast of all variables, including sales from PGE's resource portfolio under normal conditions (e.g., plant operations, water and wind flows, and weather). Risks associated with the variables are "frozen" at the final forecast date in November. That is, PGE no longer updates its forecast to reflect changes in the variables that would result in a reduction to (or increase in) costs. PGE's PCAM is designed for this type of activity, and actual changes to sales, purchases, plant dispatch, and any other variable within PGE's NVPC are considered in of that process.

Q. You mentioned that AWEC's analysis uses trading volumes in excess of PGE's firm rights on the COI. Please elaborate.

A. PGE's merchant operations have firm north to south rights on the COI of 296 MW. That is, assuming no outages or derations on the line, PGE can make firm deliveries of 296 MWh of electricity on the COI every hour of the year. However, AWEC's method assumes PGE can transact above this firm limit in 9 out of the 12 months of their analysis, or in approximately 3,811 hours out of the 5,273 hours they calculate a sale. Thus, approximately 72% of AWEC's calculated sales are using transaction limits above PGE's firm rights. In other words, for 9 of

12 months during 2022, AWEC's analysis assumes that if it is economic within the hour in question PGE will execute a transaction to sell energy at COB that is in excess of PGE's firm transfer rights.

Q. Notwithstanding the fact that AWEC is using transaction limits higher than PGE's firm rights, is it reasonable to assume PGE can utilize its firm capacity limit on the COI at any economic hour for 9 full months of 2022?

A. No, not at all. There is routine maintenance performed on the COI every year. In fact, over the last three full years, the north to south path on the COI had a total transfer capability (TTC) of approximately 82.6% on average, with the monthly average TTC over the same period ranging from a low of 43.4% to a high of 99.5%. As these data points illustrate, assuming PGE merchant can utilize their full rights within a normalized modeling environment is unreasonable.

Q. Does PGE solely use the COI for arbitrage opportunities?

A. Definity not. Access to the California market and firm rights on the COI provide significant reliability benefits to PGE. This was most recently seen during the June 2021 heatwave Portland and the Pacific Northwest just recently experienced, where PGE saw all-time highs in system load and Portland broke all-time temperature records. Mid-C day-ahead prices during this heatwave were in excess of $300 and PGE relied heavily on the COI to help meet load. In the month of June 2021 alone the Mid-C day-ahead on-peak price posted above $100 during six separate days. These are not arbitrage opportunities for PGE, these are reliability events, where PGE can use its access to California markets to manage power supply risk. Additionally, the examples highlight a distinction in PGE's methods of using access to California to manage risk that a simple review of historical prices would miss.

Q. What is the issue with forecasting margins by simulating hourly changes?

A. Most of PGE's actual trading activity at COB is in the day-ahead market. One of the fundamental differences of this market versus trading in real-time is the type of trade that can be executed. Trades in the day-ahead market are typically executed in 16- and 8-hour blocks. That is, for any given weekday and Saturday, you can transact at a price for hour ending (HE) 0700 through HE 2200 (i.e., on-peak or high-load hours) and/or for HE 2300 through HE 0600 (i.e., off-peak or low-load hours). Additionally, all of Sunday is considered off-peak. AWEC's method allows for a different transaction, at a different price during all hours of the year.

Q. You also mention that transactional costs and differences between MONET's normalized environment (normal weather, load, etc.), and real-world conditions within which PGE must operate should be factored in. Please explain.

A. Using a set of average historical volumes against a forward price curve, consistent with the price curve used in MONET, PGE's forecasting model for COB margins provides a relatively consistent and normalized forecast. However, when simply looking at actuals by hour in isolation, as is true for many of PGE's other power costs in isolation, you see non-normalized results that are affected by PGE's load deviations, weather deviations, and PGE's overall response to a constantly changing set of real-world conditions. As such, the effect on power costs from these changes is appropriately handled through the PCAM.

PGE also incurs transactional costs primarily on purchases that are not included in any of the data and are not forecast within MONET. When PGE exports energy from California to Oregon, we are subject to a Wheeling Access Charge (WAC), which is a flat fee (it does not update very frequently) and uplift costs for ancillary services, congestions, line losses, and

other factors, which tend to vary by month depending on the congestion conditions. For 2021, the WAC was $13.62 per MWh, while the uplift costs tended to vary between $0.50 to $1.00 per MWh. While PGE does not propose at this time to include these costs within our forecast method, we feel it is important to note that they exist.

In summary, the costs and conditions that PGE faces and must respond to when managing actual NVPC can vary significantly from what is included within a normalized forecast environment. As such, looking at calculated actual amounts in isolation will never exactly match what a reasonable forecast should be.

Q. AWEC also argues that PGE's forecast method underestimates volumes used. How does PGE respond to this argument?

A. AWEC is correct that PGE's method for calculating trades only includes one purchase or sale per trade, based on which direction the margin generates a positive value. However, what AWEC neglects to recognize is that PGE's forecast fundamentally differs from actual trades made at COB. PGE's forecasted trades only produce a benefit and never a loss. This is not the case when looking at actual COB purchases and sales against a Mid-C day-ahead price. In fact, from 2018 through 2020 on average, when comparing PGE's COB data to a settled day-ahead Mid-C price, a "loss" is calculated on over 668,000 of the MWh actually traded. Removing these volumes from PGE's three-year average MWh volumes of approximately 2.4 million results in approximately 1.7 million MWh,[26] which is in line with the approximate 1.5 million of volumes PGE transacts on within its forecasted method.

Q. You mention AWEC's proposal is opportunistic. Please elaborate.

[26] See Confidential PGE Exhibit 304.

A. AWEC is focusing on one specific trading activity in MONET and comparing it to actuals. However, the fact is actual operations in a number of areas diverge significantly from MONET's normalized environment. Most notably, PGE's actual purchases and sales across all trading hubs is routinely very different from what MONET forecasts. There are many reasons for these differences, such as changes in load, changes in PGE's supply stack, and changes in market prices. When comparing to actuals it is not appropriate to look at COB in isolation without considering PGE's trading and resource portfolio as a whole.

Q. If real operations can be so different from forecast, how does one gauge the accuracy of PGE's power cost forecasting?

A. One simple, yet holistic way to do this is through a review of PGE's power cost adjustment mechanism (PCAM) history. PGE has had a PCAM in place since 2007 and during this time (14 years), PGE has only triggered the PCAM mechanism twice. Furthermore, the PCAM has not triggered since 2011. What this shows is that PGE's forecast of power costs in total is very much in line with its actual results.

Q. Has the PCAM triggered since PGE's inclusion of a COB trading margin forecast?

A. No. In fact, as demonstrated in Table 2 below, a review of PGE's PCAM result for the four years it has included a COB trading margin forecast in the baseline shows that the total variance from forecasted results is $3.7 million above the baseline. That is, in total, PGE has under-recovered its power costs over this period.

Table 2
2017-2020 PCAM Results ($000s)

2017	2018	2019	2020*	Total
$15,019	($3,017)	$5,432	($13,737)	$3,697

*As filed on June 29, 2021

Q. Please summarize PGE's response to AWEC's proposed adjustment.

A. PGE has been forecasting a COB trading margin since 2017 and our current method used to forecast trading margins at COB has been in place since the 2019 forecast. PGE's method produces a normalized value that recognizes both seasonality and hourly variability and is consistent with the fundamental principles of MONET's deterministic forecast. In contrast, AWEC's proposed method uses several incorrect and/or unrealistic assumptions to achieve a result that is opportunistic and will result in PGE under-recovering its prudently incurred NVPC.

H. Avangrid Capacity Contract

Q. What is AWEC's recommendation with regards to the Avangrid Capacity contract modeling?

A. AWEC raised concerns that PGE is modeling the Avangrid capacity contract on a monthly basis assuming a static dispatch for the entire month and is recommending that PGE calculate the dispatch benefits of the Avangrid capacity contract in a manner that is consistent with the hourly market prices input into MONET. Based on their analysis, AWEC recommends an adjustment of approximately $0.6 million to the 2022 NVPC forecast.

Q. Does PGE agree with AWEC's recommendation?

A. No. AWEC argues that PGE should calculate the Avangrid capacity contract benefit based on hourly prices but fails to clarify that, in their adjustment, they do not use an hourly or even daily shaped gas price. To evaluate the most economic block-hour option for the contract dispatch and determine their proposed adjustment, AWEC is using an hourly shaped Mid-C energy price forecast for market prices, against a monthly, flat **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** price, with no hourly or daily shape**.** PGE finds this

analysis flawed since it's not an apples-to-apples comparison and is inconsistent with the contract parameters.

Q. Please elaborate on why AWEC's analysis produces incorrect results.

A. By using a flat monthly gas price, AWEC fails to account for the expected variability of daily gas prices or the unidirectional relationship between electric and gas prices. As provided in confidential Exhibit 306, the **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** daily average gas price is quite volatile and trended in the same direction as the Mid-C daily average prices for the period January 1, 2017, to December 31, 2019. This unidirectional relationship is common between regional gas and electric markets and it is reasonable to assume the gas and power market prices will continue to trend in the same direction and fluctuate every day.

Q. Does MONET forecast the daily gas volatility?

A. No. AWEC is assuming PGE has perfect foresight of hourly prices for a **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**. In reality, there is significant volatility in those daily prices and PGE does not forecast such volatility. Instead, MONET uses average conditions, and it is appropriate to make use of the monthly view because the daily volatility is not incorporated into the model and **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**

Q. Is AWEC's modeling consistent with the terms of the agreement?

A. No. **[BEGIN CONFIDENTIAL]** [redacted]

[redacted] **[END CONFIDENTIAL]** PGE provided the agreement in April 15 MFRs, Volume 5-Contracts.

Q. Irrespective of the contract terms, would PGE be able to model the contract using daily or hourly energy prices?

A. No. **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL].**

Q. Please summarize PGE's position regarding this adjustment.

A. PGE does not agree with AWEC's adjustment. AWEC's recommendation does not align with the terms of the agreement and the inputs used to determine the adjustment do not provide an apples-to-apples comparison to support a sound analysis, which leads to a biased result.

I. Lydia 2.0

Q. Please summarize AWEC's recommendation regarding Lydia 2.0.

A. AWEC argues that, in accordance with Commission Order No. 08-505, PGE is not allowed to propose modeling changes if the AUT initial filing is not submitted prior to February 28 of a GRC year and therefore, the Commission should reject PGE's proposed update to Lydia 2.0. Additionally, AWEC argues that the Lydia 2.0 methodology update does not appropriately

represent the relationship between wind and energy market prices. AWEC's recommendation results in a $5.6 million reduction to the 2022 NVPC forecast.

Q. Is PGE required to submit the AUT prior to February 28 in a GRC year if it proposes modeling changes?

A. No. The Commission Order No. 08-505 cited by AWEC does not establish required filing dates for AUT or GRC filings. The Order simply established the MFRs PGE must submit with the initial filing of AUTs and GRCs. Because PGE submitted the AUT prior to the GRC this year, we included proposed modeling changes in the AUT filing. Please see PGE's position on this matter in Section II-A.

Q. Did any of the other parties to this proceeding raise concerns regarding the inclusion of modeling changes in the initial filing in general and the Lydia 2.0 update in particular?

A. No. Neither Staff nor CUB raised any procedural issues regarding PGE's inclusion of modeling changes in the April 1, 2021 initial filing or with regards to the Lydia 2.0 proposed update. In fact, Staff performed a thorough review of the Lydia 2.0 methodology and concluded that "Staff supports this change as Lydia 2.0 captures the price volatility related to wind generation […] and will improve the Company's Mid-C price shaping."[27]

Q. What technical issues does AWEC raise with regards to the Lydia 2.0 update?

A. While agreeing that there is a correlation between Mid-C prices and wind generation, AWEC is recommending that the Lydia 2.0 update be rejected because it overestimates the relationship between wind and market prices. In support of this recommendation AWEC states that: 1) the Lydia 2.0 update represents "ad-hoc modeling" and the "methodology is not derived from analysis;" 2) Lydia 2.0 is "double counting hourly price shapes;" and 3) "PGE

[27] Staff/200, Cohen/20

does not weight normalized wind or prices when generating the quartile shapes" within Lydia 2.0.[28]

Q. Did AWEC provide analysis to support their statement that Lydia 2.0 overestimates the relationship between wind generation and market prices?

A. In support of this assertion, AWEC points to a regression modeling that uses the same five-year historical Mid-C price and wind generation data as used in the Lydia 2.0 methodology, for the month of July. AWEC's analysis resulted in a reduced impact of wind generation on power prices for the month of July, compared to PGE's method. AWEC provided input data and the regression model in response to PGE Data Request No. 001 on July 21, 2021.[29] In this response, AWEC clarified that they understated the $12/MWh "maximum price effect of wind in July" [30] provided in opening testimony. AWEC notes that the regression analysis actually results in a $15/MWh price effect of wind generation.[31]

Q. Did PGE identify any issues with AWEC's analysis?

A. Yes. PGE finds AWEC's regression analysis rather simplistic as it implies wind production is the only variable that impacts Mid-C price movements. After reviewing AWEC's analysis we identified the following issues:

- AWEC's regression analysis, which is performed without normalizing historical actual Mid-C price and wind generation data, assumes that other market fundamentals, such as hydro forecast,[32] remain constant across all five years.

[28] AWEC/200, Kaufman/14-15
[29] PGE Exhibit 305
[30] AWEC/200, Kaufman/14, lines 4-6
[31] PGE Exhibit 305 at 3
[32] Hydro forecast results in regional price volatility in the mid-term time frame (three to nine months ahead)

- Although wind generation impacts regional energy prices in the day-ahead market, the impact is not just driven by the daily average wind generation volume, but also by hour-to-hour wind generation volatility, which is not accounted for in AWEC's regression analysis.
- AWEC's method fails to capture the asymmetrical impact that wind generation has on energy market prices. That is, the wind generation impact is more pronounced during periods of high-power prices, or scarcity pricing periods.
- Finally, as mentioned above, AWEC only used the month of July for the regression analysis and not the other months of the year. When asked why, AWEC explained that "July is used as a reference month because July commonly displays the greatest price range and as such was expected to capture the largest potential price impact of wind."[33] Performing analysis for only the month of July further limits the scope of AWEC's analysis and diminishes the validity of AWEC's proposed adjustment.

Q. AWEC asserts that PGE's method is forcing the majority of wind to be produced during lower power price hours.[34] Is this accurate?

A. AWEC's statement is not accurate. PGE's method is built with the goal to incorporate empirically observed intra-month wind uncertainty and its relative impact on intramonth power prices in the NVPC forecast and does not artificially force the wind generation to be produced during periods with low market prices. To ensure reliable and unbiassed results, PGE applied normalization and calibration calculations on the wind generation power price data:

[33] id
[34] AWEC/200, Kaufman/13, lines 13-14

1. The normalization of the data is performed to ensure all year-months are comparable and to prevent exclusion of data points where the actual hourly Mid-C prices are negative because the MONET model is not set up to operate with negative power prices.
2. The calibration ensures that the price and wind shaping model is mean reverting. This allows for intramonth redistribution of wind generation and Mid-C prices while keeping the methodology deterministic and mean reverting.

Q. Do you agree with AWEC's description of PGE's method as "ad-hoc"?

A. No. First, AWEC did not define the term "ad-hoc" in opening testimony so it was not clear to PGE the argument AWEC was trying to make. AWEC attempted to define the term "ad-hoc" in response to PGE Data Request No. 002:

> "In this context, AWEC interprets ad-hoc modeling as modeling that does not follow from a mathematical analysis of the impact of wind on pricing and does not attempt to reconcile the final result of the model with expected outcomes. AWEC also interprets ad-hoc modeling in this context to refer to modeling that accounts for hourly price correlations in only one dimension, without accounting for hourly correlations in other dimensions, such as COB transactions."[35]

AWEC's interpretation continues to be unclear to PGE. First, as described in PGE Exhibit 100 and in this testimony, the Lydia 2.0 method update was developed to incorporate the observed correlation between wind generation and Mid-C market power prices and PGE performed a very thorough analysis in support of the update. As part of this case, PGE provided extensive supporting testimony, work papers, and documentation. Second, it is not correct that PGE's Lydia 2.0 modeling "accounts for hourly price correlation in only one dimension." The COB trading margin is calculated outboard of the MONET model but uses the Lydia 2.0 implied hourly Mid-C prices against a COB forward price curve shaped using

[35] Exhibit 305, at 4

three years of actual COB market prices, which inherently incorporate the impact of variable energy resources in the region. Thus, the COB trading margin does account for the wind variability impact on hourly power prices. Making this argument, AWEC appears to further and inappropriately imply that the Lydia modeling update should be accepted only if a discretionary offset related to the COB trading margin is applied.

Q. AWEC also argues that PGE's method is over shaping the hourly inputs to Lydia and "does not weight normalized wind or prices when generating the quartile shapes."[36] Do you agree?

A. No. Other than directing PGE to the hourly wind and price data used for the Lydia modeling, AWEC does not provide any supporting analysis or evidence to demonstrate "over shaping" and how that impacts the modeling. Also, AWEC fails to articulate the benefit of weighting normalized wind or prices when generating quartiles shapes.

Q. Please summarize PGE's response to AWEC's Lydia 2.0 adjustment?

A. PGE finds AWEC's analysis to be opportunistic in nature, based on incomplete data, and not supporting the recommendation that the Commission should reject the Lydia 2.0 methodology. PGE performed analysis to determine the correlation between wind generation and Mid-C market prices and updated the Lydia model to incorporate this relationship in the forward hourly power prices used by MONET to forecast NVPC. Furthermore, OPUC Staff performed a thorough review of the Lydia model update and supports the change. In conclusion, Lydia 2.0 improves the MONET model, and the Commission should approve it.

[36] AWEC/200, Kaufman/14-15

J. Other Items

1. PTC Rate

Q. AWEC proposes an adjustment because it believes that the PTC rate will increase to 2.6 cents per kilowatt-hour due to projected inflation in 2021.[37] Do you agree with AWEC's adjustment?

A. Yes. PGE agrees that the PTC rate is likely to increase, and we plan to incorporate this change in our October 1, 2021 MONET update filing.

2. Carty, Colstrip, Beaver FOR

Q. Please summarize Staff's recommendations regarding the modeling of forced outage rates for Colstrip, Carty, and Beaver plants.

A. Staff is recommending the following:

1. PGE should remove the 2018 Colstrip forced outage due to emissions exceeding compliance limits from the Colstrip 2022 FOR calculation.
2. PGE should update the Carty FOR in the October 1 MONET update to use three years and eight months of actual forced outage data.
3. Staff raised concerns regarding the impact of the Beaver Unit plant upgrade on the calculation of the plant FOR.

Q. What is Staff's stated basis for its recommended changes to the Colstrip 2022 FOR calculation?

A. Staff is contending that this issue was not resolved in PGE's 2021 AUT (Docket No. UE 377) when it was raised by AWEC and therefore, an adjustment is appropriate in this proceeding.

[37] AWEC 100, Mullins/3

Q. Does Staff provide other arguments in support of this adjustment?

A. No. Staff does not provide any evidence or other arguments to support this adjustment.

Q. When would it be appropriate to remove forced outages from the FOR calculation?

A. In accordance with Commission Order No. 10-414, establishing the FOR calculation methodology, "If the Commission finds that any plant outage in the previous four years was due to utility imprudence, the FOR(s) for the year(s) of the outage shall be replaced in the four-year average by the historical average FOR […]."[38]

Q. Did the Commission make a determination that PGE's actions with regard to the 2018 Colstrip forced outage were imprudent?

A. No. There has been no determination by the Commission that PGE's actions were imprudent regarding Colstrip's 2018 June and July outages to warrant removal of Colstrip's 2018 FOR from the four-year average. Moreover, as noted above, Staff provides no evidence to support the premise that PGE acted imprudently in 2018. Therefore, Staff's recommendation has no reasonable basis and should be rejected.

Q. What is the basis for Staff's recommended changes to the Carty 2022 FOR calculation?

A. Similar to the Colstrip recommendation, Staff references AWEC's concern raised in PGE's 2021 AUT, where AWEC recommended an adjustment based on removing Carty FOR estimates from the four-year rolling average that calculates the forecast FOR. For the 2022 NVPC forecast, PGE is using three years of actuals and one year of estimated FOR and Staff recommends, instead that PGE use three years and eight months of actuals. As with the Colstrip recommendation, Staff does not provide any arguments or evidence in support of the proposed change to the Carty FOR calculation.

[38] Commission Order No. 10-414, page 5.

Q. Is PGE's FOR calculation compliant with Commission Order No. 10-414?

A. Yes, Commission Order No. 10-414 provides that gas plant's FOR be calculated based on a four-year rolling average of actual FORs. Because PGE does not have four years of actuals for Carty, we used one year of initial FOR estimate and three years of actuals between 2018 and 2020.

Q. Does Staff propose this change to be applied to all PGE's thermal plants?

A. No, Staff recommends a departure from the Commission Order 10-414 FOR methodology and PGE Schedule 125 only for Carty. Doing so, Staff's recommendation appears to be opportunistic in nature and only be applied to seek a reduction to the NVPC forecast, and not necessarily to improve PGE's forecast.

Q. Is it reasonable to change the Carty FOR methodology in this year's proceeding?

A. No. Staff's proposed change comes only one cycle before the plant will have four years of actual data and is inconsistent with the clear application of the FOR methodology outlined Commission Order No. 10-414 and followed by PGE for over 10 years, including for prior resource additions, such as Port Westward 2. It is not reasonable to propose a purely results-based change to a firmly established method.

Q. How does PGE respond to Staff's concerns regarding the Beaver FOR methodology considering the 2022 Beaver Unit 6 upgrade?

A. As described in PGE Exhibit 100, the Beaver Modernization Project will upgrade the existing Beaver gas turbine combustion systems from a dual fuel system to a single fuel dry low NOx system to reduce the overall emissions for the plant as turbines are upgraded. The single fuel will be natural gas and the upgraded units will be prevented from operating on fuel oil as an alternative. The project is expected to start in spring 2022, beginning with a single upgrade to

Beaver Unit 6 for 2022, with the expectation of completing upgrades to all Beaver units by the end of 2025. For the 2022 test year, given that the upgrade is performed on a single unit and it does not change the way Beaver currently operates other than removing the unit 6 capability to run on fuel oil, PGE does not find it necessary at this time to modify the FOR methodology. However, should Beaver's operations change significantly, PGE may propose a different FOR method in future filings.

Q. Please summarize PGE's position with regards to Staff's recommended changes to Colstrip, and Carty FOR.

A. PGE does not agree with the proposed changes. The Commission made no determination that PGE acted imprudently in the matter of the June and July Colstrip outages to warrant the removal of the 2018 FOR from the Colstrip 2022 FOR calculation. Additionally, there is no reasonable basis to change the FOR method for Carty with just one year before PGE can use four years of actuals. Staff did not provide any evidence or arguments in support of these recommendations other than referencing AWEC's testimony in Docket No. UE 377.

3. Faraday Repowering Project

Q. What is Staff's recommendation with regards to the Faraday Repowering Project.

A. Staff recommends that PGE update the Faraday H/K coefficients to reflect the expected increase in average production at the Faraday hydro plant after the Repowering project is completed.

Q. Did PGE update the average energy production at Faraday in the July 15, 2021 MONET update?

A. Yes, PGE adjusted the average energy production at Faraday in the July 15, 2021 MONET update, to reflect the expected total annual generation from the Faraday Repowering Project.

[BEGIN CONFIDENTIAL] [redacted] **[END CONFIDENTIAL]** PGE provided additional details in the July 15, 2021 MFRs, model update step 17.

Q. Did PGE also include Production Tax Credits (PTCs) associated with the Faraday Repowering Project incremental energy?

A. Yes, PGE also included the associated PTCs in the July 15, 2021 MONET update. The combined update including the incremental generation and associated PTCs reduced the 2022 NVPC forecast by approximately $0.2 million.

4. Schedule 125 Changes

Q. Please summarize parties' recommendations with regard to PGE's proposed changes to Schedule 125.

A. Staff and CUB reviewed PGE's proposed changes to Schedule 125 and had the following recommendations:

1. CUB recommends minor changes to PGE's proposed November 6 MONET update language to ensure clarity regarding the fact that PGE is not allowed to update thermal and hydro maintenance schedules after the October MONET update.
2. In the initial April 1, 2021 filing, PGE proposed to update the Schedule 125 language from "costs associated with integrating wind resources" to "costs associated with integrating variable energy resources". Staff and CUB recommend an alternative language that allows PGE to update "costs associated with integrating wind and solar resources" in the AUT.

[39] As determined per the Northwest Power Pool's 2019 Headwater Benefit Study

Q. Do you agree with Staff's and CUB's above recommendations to PGE's proposed Schedule 125 modifications?

A. Yes. PGE agrees with Staff's and CUB's recommended changes.

Q. Do parties have other recommendations regarding Schedule 125?

A. Yes, parties have two additional recommendations. First, Staff recommends a one-time modification to Schedule 125 to allow PGE to include in the November MONET update filing for the 2022 AUT "an update to the expected online dates of Faraday Units 7 and 8, the facility's generation forecast, and PTCs."[40] Second, CUB recommends that "the Schedule 125 language be changed to include the dispatch of energy storage systems on NVPC in the annual updates sections."[41]

Q. What is PGE's position regarding these recommendations?

A. PGE agrees with Staff's and CUB's additional recommendations.

5. <u>Wheatridge Facility Performance Report</u>

Q. What does Staff recommend with regards to the Wheatridge Performance Report?

A. Staff recommends that PGE make two additions to the report:

1. "Include the initial forecast of Wheatridge benefits for PTC and NVPC that is filed contemporaneously with the report;"[42] and
2. "Include a short narrative description of any large deviations between forecasts and actuals in the preceding calendar year."[43]

Q. Does PGE agree with Staff's recommendations?

A. Yes. PGE will include the additional information starting with the 2023 AUT filing.

[40] Staff/100, Enright/46
[41] CUB/100, Gehrke/4, lines 8-10
[42] Staff/900, Gibbens/5
[43] Id.

Q. Did other parties provide recommendations regarding the Wheatridge Facility?

A. Yes. CUB is seeking clarification from the Commission on Order No. 20-231 issued in Docket No. UE 370. Specifically, they seek clarification regarding parties' ability to propose modifications to Wheatridge facility parameters during a non-GRC year, should circumstances arise where the facility's actual performance departs significantly from forecast benefits.

Q. Does PGE have a position on CUB's request for clarification?

A. PGE is not opposed to CUB's request for Commission clarification.

6. Wheatridge Battery Storage Optimization

Q. Please summarize AWEC's recommendation regarding the Wheatridge Battery Storage modeling.

A. AWEC argues that PGE's approach to modeling the Wheatridge Battery Storage is sub-optimal because it does not "consider how market prices impact the timing of when it is most cost effective to charge or discharge". AWEC recommends an approximate $0.1 million adjustment to reflect a more economic battery storage dispatch.

Q. Does PGE agree with AWEC's adjustment?

A. Partially. PGE agrees that more detailed modeling of the battery dispatch could be warranted. As such, we propose to re-evaluate the Wheatridge battery dispatch modeling and propose updated modeling in the 2023 AUT filing instead of adopting AWEC's proposed modeling assumptions directly. There are alternate dispatch scenarios that we intend to evaluate and compare with operational experience in order to ensure the most representative assumptions are used for the next AUT filing (i.e., 2023 AUT).

Q. Does AWEC raise other questions on the Wheatridge Battery Storage?

A. Yes. AWEC is requesting that PGE identify the flexibility benefits associated with Wheatridge included in the NVPC forecast, compared to what was assumed in the 2018 Renewable RFP.

Q. What is PGE's response?

A. A project's flexibility value within the RFP (evaluated with the Aurora model and ROM) and a project's value within MONET are not directly comparable. Aurora, ROM, and MONET are different models, used for different purposes, in order to answer different questions.

The RFP performs a long-term project evaluation of the resource expected benefits, and the flexibility value reflects any value the project may bring to PGE's generation portfolio due to its ability to ramp, respond to forecast errors, and/or provide ancillary services that are not captured by its energy value. This flexibility value may evolve over the term of the project based on the portfolio needs and project criteria. The 2018 Renewable RFP attributed approximately $0.8 million/year real levelized over project life for flexibility across day-ahead, hour-ahead, and real-time scheduling.

Q. Does MONET have the capability to model Wheatridge battery flexibility reserve benefits?

A. No. MONET is a perfect hindsight, single-stage model that does not have insight into resource flexibility across various time frames. Thus, the 2022 NVPC forecast does not include a benefit for Wheatridge battery flexibility reserves. MONET only captures the economic value of the battery storage dispatch.

7. <u>Energy Storage Systems modeling in MONET</u>

Q. Please summarize CUB's recommendations.

A. CUB has three recommendations regarding energy storage systems:

1. CUB recommends that PGE create a new volume in its MFRs for Energy Storage Systems.
2. CUB recommends that PGE change Schedule 125 language to allow for battery storage updates in AUT years. See PGE's position on this recommendation in Section II-K(3) above.
3. CUB recommends that PGE include the dispatch of energy storage systems approved by the Commission in Docket No. UM 1856 in the 2022 NVPC forecast.

Q. How does PGE respond to CUB's recommendations?

A. While we agree with the first two recommendations in their entirety, PGE only partially agrees with the third. PGE agrees to include the expected energy benefits associated with the PW2 generation kickstart and the Anderson Readiness Center projects in the 2022 NVPC forecast in either the October 1 or the November 6 MONET update. However, the Coffee Creek and the Baldock Mid-Feeder energy storage systems are not expected to come online in 2022 so we will not include expected benefits from the two projects in the 2022 NVPC forecast.

Q. When are the PW2 generation kickstart and the ARC projects expected to come online?

A. The PW2 generation kickstart project is forecast to come online at the end of 2021 while the ARC energy storage microgrid will come online in Q1 of 2022.

Q. Is there an alternate mechanism to ensure customers receive expected benefits from these energy storage systems outside of an annual power cost proceeding?

A. Yes. Commission Order No. 20-279 adopted a stipulation in Docket No. UE 370 wherein the stipulating parties agreed not to oppose a proposed cost recovery mechanism that will include the use of an automatic adjustment clause restricted to the cost recovery of investments made

in compliance with House Bill 2193 and approved by the Commission in Docket No. UM 1856.[44] This mechanism would also include the expected energy benefits of these projects.

Q. Did PGE submit a request for a new tariff schedule to implement the cost recovery mechanism mentioned above?

A. Yes. PGE proposed a new tariff Schedule 138 to allow recovery of costs associated with energy storage systems approved by the Commission in Docket No. UM 1856 with our initial filing of the 2022 GRC in Docket No. UE 394.

[44] See Commission Order No. 20-279, Appendix A, page 2

III. Summary and Conclusion

Q. In closing, please summarize your proposals regarding the issues identified by parties.

A. With the exceptions discussed above, we recommend the Commission reject the parties' positions regarding the issues identified. The parties largely propose adjustment that are based on incomplete and faulty analysis and inaccurate or misguided assumptions. Parties' recommended reductions would unfairly introduce a significant downward bias on PGE's NVPC forecast, making it unlikely that PGE would recover its prudently incurred NVPC for 2022.

Q. Does this conclude your testimony?

A. Yes.

List of Exhibits

Exhibit	Description
301C	EIM Market Cutoffs
302	Pelton-Round Butte Hydro License Articles
303C	Gas Storage Optimization Impact in MONET
304C	COB Transaction Volumes
305	AWEC's Response to PGE Data Requests No 1 - 3
306C	Daily Average Power Prices and Gas Prices 2017-2019

Exhibit 301 contains confidential information and is subject to General Protective Order 21-099.

Information provided in electronic format only.

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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Pat Wood, III, Chairman;
Nora Mead Brownell, Joseph T. Kelliher,
and Suedeen G. Kelly.

Portland General Electric Company and Confederated Tribes of the Warm Springs Reservation of Oregon — Project No. 2030-036

ORDER APPROVING SETTLEMENT AND ISSUING NEW LICENSE

(Issued June 21, 2005)

1. On December 16 and 17, 1999, Portland General Electric Company (PGE) and the Confederated Tribes of the Warm Springs Reservation of Oregon (Tribes), respectively, filed competing applications to continue operation and maintenance of the 366.82-megawatt (MW) Pelton Round Butte Hydroelectric Project No. 2030 (Pelton Round Butte Project), located on the Deschutes River[1] in Jefferson County, Oregon. The project occupies 3,503.74 acres of federal and tribal lands administered by the U.S. Forest Service (Forest Service), U.S. Bureau of Land Management (BLM), and U.S. Bureau of Indian Affairs (BIA).[2]

2. On June 29, 2001, PGE and the Tribes jointly filed an amendment to combine their license applications and become co-applicants for a new license. Subsequently, on July 30, 2004, PGE and the Tribes filed a comprehensive Settlement Agreement signed by PGE, the Tribes, and 20 stakeholders. The Settlement Agreement includes proposed license articles embodying the provisions of the agreement. For the reasons discussed below, this order incorporates most of the Settlement Agreement's proposed license

[1] Parts of the project backwaters extend 7 miles into the Crooked River and 13 miles into the Metolius River.

[2] Federal Power Act (FPA) section 23(b)(1), 16 U.S.C. 817 (1), requires the project to be licensed because of its location on federal lands.

articles and issues a new license for the Pelton Round Butte Project. Issuing a new license is in the public interest because it would allow the project to continue generating electric energy to serve growing regional demand while protecting and enhancing environmental, recreational, and cultural resources.

BACKGROUND

3. The original license for the Pelton Round Butte Project was issued to PGE on December 21, 1951, with a term expiring on December 31, 2001.[3] In 1979, PGE and the Tribes applied to amend the license to permit the Tribes to construct and operate a 15-MW powerhouse at the project's Reregulating Dam. In 1980, the Commission approved the amendment, pursuant to which the Tribes became a joint licensee for the project to the extent of their interests.[4] On November 21, 2000, the Commission amended the license to designate PGE and the Tribes co-licensees without limitation.[5] Since expiration of the existing license, PGE and the Tribes have operated the project under annual licenses.[6]

4. On April 20, 2000, PGE, the Tribes, and the U.S. Department of the Interior (Interior) filed a request for approval of a Long-Term Global Settlement and Compensation Agreement (Global Agreement). The Global Agreement resolved long-standing issues between PGE and the Tribes regarding the project's use and occupancy of 2,161.9 acres of Tribal reservation lands. The Global Agreement stipulated, among other things, that PGE and the Tribes would merge their competing relicense applications into one and become co-applicants, thereby eliminating the competition for a new license. The Commission approved the Global Agreement on November 21, 2000, and noted that once the relicense application amendment was filed, the Commission would merge the two proceedings into one.[7] On July 11, 2001, subsequent to the filing of the joint relicense application amendment, the Commission issued a notice merging both license applications into one docket, P-2030-036.

5. On August 10, 2001, the Commission issued a notice accepting the joint relicense application amendment and setting a deadline of October 10, 2001, for filing protests and motions to intervene. Timely motions to intervene were filed by Jefferson County, Oregon; the U.S. Department of Agriculture; Interior; Trout Unlimited; American Rivers;

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[3] 10 FPC 450 (1951).

[4] 10 FERC ¶ 62,142. The Commission no longer approves segregated license interests of this kind.

[5] 93 FERC ¶ 61,183 (2000).

[6] *See* Section 15(a)(1) of the FPA, 16 U.S.C. § 808(a)(1).

[7] 93 FERC ¶ 61,183.

Native Fish Society; Oregon Trout; WaterWatch of Oregon; and the National Marine Fisheries Service (NOAA Fisheries).[8] Late motions to intervene were filed by the State of Oregon on October 23, 2001, and jointly by the Cities of Bend, Redmond, and Madras, Oregon, and the Deschutes Valley Water District (Cities and District) on April 25, 2003. The State of Oregon and the Cities and District were granted late intervention on November 21, 2001, and July 1, 2003, respectively. None of the motions to intervene were in opposition to the project. Comments in response to the notice were filed by the Forest Service, BLM, and Interior.

6. On August 29, 2003, the Commission staff issued, for public comment, a draft Environmental Impact Statement (EIS) that evaluated the potential impacts of continued operation of the Pelton Round Butte Project. Comments on the draft EIS were filed by WaterWatch of Oregon, Oregon Water Resources Department on behalf of the Oregon Department of Fish and Wildlife (Oregon DFW), PGE and the Tribes jointly, the Tribes' Natural Resources Departments, Forest Service, Interior, U.S. Environmental Protection Agency, NOAA Fisheries, and Jefferson County.

7. On December 29, 2003, PGE and the Tribes filed a Description of Proposed Preferred Alternative, describing an agreement in principle on environmental measures that the parties were intending to include in a final Settlement Agreement. PGE and the Tribes stated that they were offering the Description of Proposed Preferred Alternative prior to the execution of the final settlement to enable Commission staff to analyze an alternative in the final EIS that corresponded to the intent of many of the parties working to reach final settlement.[9]

8. On June 7, 2004, the Commission staff issued a final EIS that recommended adopting most of the measures included in the Description of Proposed Preferred Alternative, along with additional measures recommended by staff.

9. On July 30, 2004, PGE and the Tribes filed a Settlement Agreement that proposes measures consistent with the Description of Proposed Preferred Alternative and resolves various issues related to the relicensing of the Pelton Round Butte Project. The Settlement Agreement, which was signed by PGE, the Tribes, and all of the other entities

[8] The motions were timely and unopposed, and therefore, automatically granted pursuant to Rule 214(c)(1) of the Commission's Rules of Practice and Procedure. 18 CFR § 385.214(c)(1) (2004).

[9] PGE and the Tribes filed an updated Description of Proposed Preferred Alternative on April 27, 2004.

who are parties to the relicensing proceeding, with the exception of the Deschutes Valley Water District, [10] effectively amends the relicense application and constitutes PGE's and the Tribe's proposed action. The Commission issued notice of the Settlement Agreement on August 4, 2004. Oregon DFW, Oregon DEQ, Oregon WRD, Oregon Parks, American Rivers, Oregon Trout, Trout Unlimited, and Native Fish Society all filed comments in support of the Settlement Agreement. No entity opposed the agreement.

10. The motions to intervene and comments received from interested agencies and individuals throughout the proceeding, as well as the provisions of the Settlement Agreement, have been fully considered in determining whether, and under what conditions, to issue this license.

PROJECT DESCRIPTION

A. Project Facilities

11. The 366.82-MW Pelton Round Butte Project consists of three developments located on the Deschutes River, Crooked River, and Metolius River. The powerhouses for all three developments are integral with each of the three project dams. The 247.12-MW Round Butte Development is the uppermost development and includes the 4,000-acre Lake Billy Chinook, the project's largest storage reservoir. Lake Billy Chinook is located on the Deschutes, Metolius, and Crooked Rivers. The dam for the 100.8-MW Pelton Development is located on the Deschutes River about 7 miles downstream from the Round Butte Dam. The 540-acre Pelton reservoir, known as Lake Simtustus, begins at the base of the Round Butte Dam. The 18.9-MW Reregulating Development is the most downstream development; its 190-acre reservoir on the Deschutes River extends from the tailwater of the Pelton Dam 2.5 miles downstream to the Reregulating Dam.

12. The principal features of the Round Butte Development are: (1) a 1,382-foot-long, 440-foot-high compacted, rock-filled embankment dam; (2) a 535,000-acre-foot reservoir (Lake Billy Chinook); (3) a powerhouse containing three 82.35-MW turbine generating units and one 70-kilowatt generating unit with a total installed capacity of 247.12 MW;

[10] The 20 signatories are U.S. Bureau of Indian Affairs (BIA); BLM; U.S. Fish and Wildlife Service (FWS); NOAA Fisheries; Forest Service; Oregon Department of Environmental Quality (Oregon DEQ); Oregon DFW; Oregon Water Resources Department (Oregon WRD); Oregon Parks and Recreation Department (Oregon Parks); Deschutes County, Oregon; Jefferson County, Oregon; City of Bend, Oregon; City of Madras, Oregon; City of Redmond, Oregon; Avion Water Company (Avion); American Rivers; The Native Fish Society; Oregon Trout; Trout Unlimited; and WaterWatch of Oregon.

(4) three 2,800-foot-long, 230-kilovolt (kV) transmission lines extending from the powerhouse to the Round Butte Switchyard; (5) a fish hatchery (Round Butte Hatchery) located adjacent to the dam; and (6) appurtenant facilities.

13. The principal features of the Pelton Development are: (1) a 636-foot-long, 204-foot-high concrete arch dam with a crest elevation of 1,585 feet mean sea level (msl); (2) 7-mile-long, 540-acre reservoir (Lake Simtustus) with a gross storage capacity of 31,000 acre-feet at a normal maximum water surface elevation of 1,580 feet msl; (3) a powerhouse with three turbine generating units with a total installed capacity of 100.8 MW; (4) a 7.9-mile-long, 230-kV transmission line extending from the powerhouse to the Round Butte Switchyard; and (7) other appurtenances.

14. The principal features of the Reregulating Development are: (1) a 1,067-foot-long, 88-foot-high rock-filled embankment dam with a spillway crest elevation of 1,402 feet msl; (2) a 2.5-mile-long, 190-acre reservoir with a gross storage capacity of 3,500-acre-feet and a useable storage capacity of 3,270 acre-feet at a normal maximum water surface elevation of 1,435 feet msl; (3) a non-operating 3-mile-long fishway extending from the tailrace upstream to the forebay of the Pelton Development; (4) a powerhouse containing one 18.9-MW, bulb-type turbine generating unit; (5) a 200-foot-long, 6.9 kV primary transmission line extending from the generator to a step-up transformer located adjacent to the powerhouse; and (7) other appurtenances.

15. A complete description of the Pelton Round Butte project facilities can be found in ordering paragraph (B).

B. Project Operation

16. The Round Butte and Pelton developments are operated as peaking facilities, typically generating between the hours of 6 a.m. and 11 p.m. daily. Lake Billy Chinook provides seasonal storage and is currently drawn down as much as 85 feet, to elevation 1,860 feet msl, in the winter, although typically the lake is only drawn down about 10 feet, to elevation 1,935 feet. The lake is typically refilled during the months of April and May. During the summer, the reservoir is held at the highest practicable level with a relatively stable pool elevation that usually does not fluctuate more than 1.0 feet below the normal maximum pool elevation of 1,945 feet msl. The surface elevation of Lake Simtustus usually fluctuates less than 0.75 feet per day but exceeds 3.5 feet per day about 25 percent of the time due to flow fluctuations produced by Round Butte.

17. The Reregulating Development is operated to attenuate high and low peak flows produced by the upstream developments. Flow releases are controlled to maintain an average daily flow in the Deschutes River downstream of the Reregulating Dam that approximates the average daily inflow to the project. The Reregulating Reservoir surface elevation fluctuates as much as 27 feet (between 1,435 feet msl and 1,408 feet msl) daily;

however, typical fluctuations are about 15 feet daily. The turbine and spillway gates automatically respond to river stage measurements recorded at a United States Geological Survey (USGS) gage (No. 14092500) located at the dam.[11]

18. Under the original license, flows downstream of the Reregulating Dam are kept at or above a minimum flow of: (1) 3,000 cfs or inflow, if less, from July 1 through February 28; and (2) 3,500 cfs or inflow, if less, from March 1 through June 30.[12] Ramping rates below Reregulating Dam are limited to 0.1 feet per hour and 0.4 feet per day, except from May 15 to October 15, when ramping rates are limited to 0.1 feet per hour and 0.2 feet per day.

SETTLEMENT AGREEMENT

A. Contents

19. The Settlement Agreement establishes measures for the protection, mitigation, and enhancement of resources affected by the project under a new license, and specifies procedures to be used by the parties to ensure the implementation of the license articles contained in the new license, including an adaptive management framework for future collaborative efforts. The Settlement Agreement is divided into eight sections and includes twelve exhibits and six appendices.

20. Sections 1 through 6 establish the general terms and conditions that govern the relationship among the parties and provide for implementation of the Agreement. Section 3 in particular expresses the parties' intent for the Commission to include in the project license proposed articles contained in Exhibit A of the Agreement, and establishes Implementation Committees to work with the licensees in implementing a number of the articles.

[11] The project and the USGS have separate sensing tapes and electrical transmitters connected to the gage's measuring apparatus. The project's transmitter provides flow information for the project operator for control of the Reregulating Development while the USGS's transmitter provides stage and flow data for gage reporting purposes (*See* Settlement Agreement, Appendix C, pp. 1-2).

[12] Under certain circumstances when the inflow to the project has been less than the prescribed minimum flow, discharge below Reregulating Dam has been reduced to a flow less than that of inflow to maintain targeted reservoir surface elevations. *See* EIS at 11-12 and Exhibit B of the license application at B-5.

21. The four types of committees specified by Exhibit K are: the Fish Committee, Terrestrial Resources Working Group, Recreation Resources Working Group, and Shoreline Management Working Group. Each of the committees includes representatives from the licensees, Forest Service, BIA, BLM, the Tribes Branch of Natural Resources, and Oregon DFW. The Fish Committee, Recreation Resources Work Group, and Shoreline Management Work Group include additional entities.[13] The committees are consulted entities in the development and implementation of various study plans, reports, facility designs, and operational plans and are meant to have a pivotal role in the administration of a large variety of post-licensing activities, including changes in protection and enhancement measures on behalf of fish and wildlife, water quality, and recreation.

22. Section 7 establishes a dispute resolution process for purposes of resolving disputed actions and otherwise keeping the Agreement in effect.

23. Section 8 sets forth the general provisions of the Agreement and lists the parties to the Agreement and their primary contacts.

24. The proposed license articles in Exhibit A of the Settlement Agreement, summarized below, specify general license provisions (Proposed Articles 1-7); operating conditions (Proposed Articles 8-16); aquatic resource measures (Proposed Articles 17-41); terrestrial resource measures (Proposed Articles 42-44); recreation, aesthetic, and cultural resource measures (Proposed Articles 45-57); Deschutes River fish habitat studies and enhancement measures (Proposed Articles 58-60); and establishment of a fish and wildlife enhancement fund (Pelton Round Butte Fund) (Proposed Article 61).

25. Proposed Article 1 provides for PGE and the Tribes to establish a Fish Committee, Terrestrial Resources Working Group, Recreation Resources Working Group, Shoreline Management Working Group, and Pelton Round Butte Fund Governing Board, each of which would consist of the licensees and specified agencies and non-governmental organizations. The Fish Committee and Terrestrial Resources, Recreation Resources, and Shoreline Management Working Groups would be responsible for commenting and making recommendations on study plans, reports, facility designs, and operating and implementation plans. The Pelton Round Butte Fund Governing Board would be responsible for making decisions on the use of the Pelton Round Butte Fund.

26. Proposed Article 2 provides the Settlement Agreement parties access to, through, and across the project lands and waters for purposes of inspecting the project facilities and records.

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[13] *See* Exhibit K of the Agreement for a complete listing of parties comprising each of the four committees.

27. Proposed Article 3 provides for PGE and the Tribes to enter into an agreement with Jefferson County pursuant to which PGE and the Tribes would fund an additional land-based law enforcement officer and two additional part-time marine or law enforcement personnel to patrol project lands and waterways. The unspecified funding amount would be used for salaries, benefits, training, watercraft, vehicles, and associated law enforcement equipment and supplies.

28. Proposed Article 4 provides for PGE and the Tribes to take immediate action to prevent fish, wildlife, and plant species from being killed, harmed, or endangered due to unanticipated or emergency situations associated with project facilities or project operations. The proposed article also provides for PGE and the Tribes to notify fish and wildlife agencies within 6 hours of the onset of situations that affect federally listed, threatened and endangered species and within 48 hours for non-federally listed species.

29. Proposed Article 5 provides for PGE and the Tribes to obtain a special use authorization from the Forest Service or BLM, as appropriate, for the occupancy and use of federal lands added to the project boundary due to any future amendment of the license. The proposed article also provides for PGE and the Tribes to: (1) obtain written approval from the Forest Service and BLM prior to making changes to project facilities located on federal lands; (2) participate with the Forest Service or BLM in resolving any potential conflicts between project activities and any other authorized activities on federal lands; (3) prepare site-specific plans for habitat and ground-disturbing activities on federal lands as required by the license; and (4) conduct or fund any environmental analysis deemed by the Forest Service or BLM, as appropriate, for site-specific activities or plans associated with the license.

30. Proposed Article 6 establishes a procedure for escalating costs associated with the various funding provisions contained in other proposed articles.

31. Proposed Article 7 provides for PGE and the Tribes, when conducting habitat or ground-disturbing activities on tribal reservation lands, to comply with the requirements of the Tribes' Integrated Resources Management Plan.

32. Proposed Article 8 provides for PGE and the Tribes to implement a project operating plan included with the Settlement Agreement as Exhibit C. Proposed Articles 9-14 specify the plan's operational provisions including stage change limits (Proposed Article 9), gaging of project inflow and outflow (Proposed Articles 10 and 11), minimum operating flows (Proposed Article 12), procedures during long-term low flow conditions (Proposed Article 13), and seasonal drawdown and fluctuation limits (Proposed Article 14).

33. Proposed Article 15 provides for PGE and the Tribes to develop and implement an Operations Compliance Plan to monitor compliance with the operational conditions specified in Proposed Articles 9, 12, and 14.

34. Proposed Article 16 provides for PGE and the Tribes to conduct water quality monitoring pursuant to a water quality monitoring and management plan required by the section 401 of the Clean Water Act certifications for the project.

35. Proposed Article 17 provides for PGE and the Tribes to implement a Fish Passage Plan attached as Exhibit D to the Settlement Agreement.

36. Proposed Article 18 establishes fish passage criteria and goals for the upstream and downstream fish passage facilities specified in Proposed Article 17.

37. Proposed Article 19 provides for PGE and the Tribes to design, construct, operate, and monitor the fishways specified in Proposed Article 17 according to an implementation schedule attached to the Settlement Agreement as Exhibit D.

38. Proposed Article 20 provides for a design and schedule for phased construction of selective water withdrawal and downstream fish passage facilities at the Round Butte dam.

39. Proposed Article 21 provides for PGE and the Tribes to submit all downstream fish design investigations, preliminary design plans and specifications, and final design plans and specifications associated with temporary and permanent downstream fishways at Round Butte dam to the Fish Committee for review and to specified fish agencies for approval. The proposed article also provides for PGE and the Tribes to take a number of modeling and design steps prior to constructing the selective water withdrawal and downstream fish passage facilities.

40. Proposed Article 22 establishes screening criteria for the downstream passage facilities.

41. Proposed Article 23 provides for PGE and the Tribes to evaluate the hydraulic performance of a deep exclusion screen specified in Proposed Article 17 and to conduct fish screen impingement studies.

42. Proposed Article 24 specifies that the design of the permanent downstream collection facility specified in Proposed Article 17 include the ability to add pumps in the future for providing attraction flows.

43. Proposed Article 25 provides for PGE and the Tribes to provide upstream passage using a trap-and-haul process until permanent upstream passage would be implemented per Proposed Article 17. Proposed Article 25 also provides for the development and implementation of a monitoring plan for trap-and-haul upstream passage.

44. Proposed Article 26 provides for preliminary and final design and construction plans for an Adult Release Facility at the Round Butte forebay. The proposed article also provides for the development and implementation of operation and evaluation plans for the facility.

45. Proposed Article 27 provides for PGE and the Tribes to, upon installation of permanent downstream passage facilities at Round Butte dam and within 24 months of achieving downstream survival targets specified in the Fish Passage Plan for Lake Billy Chinook, conduct a study of the feasibility of volitional upstream fish passage at the project and provide a report of the results to the Fish Committee. Proposed Article 27 further provides for PGE and the Tribes to develop and submit to the Fish Committee a plan to implement volitional upstream passage at the project, including testing and verification studies, unless the Fish Committee and specified agencies decide that volitional upstream passage should not be installed. The plan for constructing volitional upstream passage at the project would be due within 24 months of a decision by specified fish agencies that volitional upstream passage at the project should be provided by PGE and the Tribes. In the event the fish agencies decide volitional upstream passage should not proceed as contemplated, the proposed article provides for PGE and the Tribes to file a plan with the Commission to continue trap-and-haul operations and conduct a future feasibility investigation. During any such trap-and-haul operations, PGE and the Tribes would monitor survival and take any feasible measures necessary to comply with the survival standards specified in Proposed Article 25.

46. Proposed Article 28 provides for PGE and the Tribes to transport all juvenile salmonids captured at Round Butte dam between February 1 and July 31 to the lower Deschutes River, bypassing Lake Simtustus and the Reregulating Reservoir. During the remainder of the year, the proposed article provides for PGE and the Tribes, upon the request of the Fish Committee, to transport the juvenile salmonids to Lake Simtustus. If the juveniles would be transported to Lake Simtustus, Proposed Article 28 provides for PGE and the Tribes to file a plan with the Commission to upgrade the east-side upstream fish trap at the Round Butte dam and operate it annually for part or all of the period May 1 through September 30 to capture and return maturing adult resident salmonids back into Lake Billy Chinook.

47. Proposed Article 29 provides for PGE and the Tribes to file a schedule for the development of plans for testing and verification studies described in the Fish Passage Plan included in Exhibit D of the Settlement Agreement. Upon Commission approval of the schedule, Proposed Article 29 provides for PGE and the Tribes to develop the testing

and verification study plans, and implement them upon the approval of specified fish agencies and the Commission. Proposed Article 29 further provides for PGE and the Tribes to file plans with the Commission for making any modifications to facilities needed to ensure safe, timely, and effective fish passage.

48. Proposed Article 30 provides for PGE and the Tribes to develop plans for measures or modifications to the downstream facilities needed to achieve the criteria and goals set forth in Proposed Articles 18 and 22.

49. Proposed Article 31 provides for long-term monitoring of downstream collection facilities as described in the Fish Passage Plan in Exhibit D of the Settlement Agreement.

50. Proposed Article 32 provides for the utilization of annual work plans to document actions consistent with the Fish Passage Plan in Exhibit D of the Settlement Agreement. The proposed article also provides for the filing of annual reports with the Commission documenting Fish Passage Plan activities that occurred during the previous year.

51. Proposed Article 33 provides for PGE and the Tribes to maintain the fishways by keeping them clear of debris and other material that could hinder fish passage.

52. Proposed Article 34 provides for PGE and the Tribes to implement a number of steps in the event that the criteria and goals of Proposed Article 18, as related to temporary downstream facilities, have not been achieved. These steps include notifying the Fish Committee and Commission that the criteria and goals have not been achieved, and as directed by the Fish Committee, either develop a plan to continue operation and testing of temporary downstream passage facilities, begin implementing an alternative fish passage plan, or pursue non-passage mitigation. After approval by the specified fish agencies, the selected plan would be filed with the Commission for its approval.

53. Proposed Article 35 is similar to Proposed Article 34, but applies to contingency actions to be taken in the event that permanent downstream passage facilities do not meet the criteria and goals specified in Proposed Article 18.

54. Proposed Article 36 provides for PGE and the Tribes to enter into an agreement with Oregon DFW to develop a plan for a fish health management program at the project. The plan would include funding for fish health services and supplies associated with production of salmon and steelhead eggs and fry at the project's Round Butte Hatchery, diagnosis of disease in mortalities at fish facilities, and monitoring of disease agents in wild fish populations. Proposed Article 36 further provides for PGE and the Tribes to enter into another agreement with Oregon DFW pursuant to which PGE and the Tribes

would fund one full-time Oregon DFW fish health specialist and one seasonal Oregon DFW Experimental Biological Aide for the interim and part of the final fish passage phases. Funding would be applied to salaries, benefits, training, vehicles, travel, supplies, equipment, and overhead to support the Oregon DFW personnel.

55. Proposed Article 37 provides for PGE and the Tribes to enter into an agreement with Oregon DFW to fund hatchery operations at no more than the current production levels of spring Chinook salmon and summer steelhead for the term of the license. Proposed Article 37 further provides for PGE and the Tribes, within 6 months of entering into the hatchery agreement, to file with the Commission a hatchery improvement plan. In addition, PGE and the Tribes are to file, upon the request of the Fish Committee, a plan with the Commission to undertake changes in equipment to support production of sockeye salmon. PGE and the Tribes, in cooperation with Oregon DFW and the Tribes' BNR, would periodically review the hatchery program to determine whether the program is meeting its goals. The reviews would be funded by PGE and the Tribes. Draft and final reviews would be provided to the Fish Committee.

56. Proposed Article 38 provides for PGE and the Tribes to conduct a Pacific lamprey passage evaluation and mitigation plan as described in the Fish Passage Plan.

57. Proposed Article 39 provides for PGE and the Tribes to develop and implement a native fish monitoring plan to evaluate the effects of reintroducing anadromous fish upstream of the project on resident fish populations.

58. Proposed Article 40 provides for PGE and the Tribes to enter into agreements with Oregon DFW to provide funding for one full-time Oregon DFW fisheries biologist and 10 percent of the cost of an Oregon DFW Facilities Engineer. Funding would be provided for salaries, benefits, training, vehicles, travel, supplies, and equipment and overhead to support the employees. The agreements would specify that the funding is to be used to support Oregon DFW's involvement in fisheries and terrestrial projects conducted pursuant to the terms of the license.

59. Proposed Article 41 provides for PGE and the Tribes to file with the Commission a report documenting the status of interim measures related to fish passage and water rights acquisition on a non-project tributary (Squaw Creek) to the Deschutes River.[14]

[14] The interim measures are listed in Exhibit B of the Settlement Agreement.

60. Proposed Article 42 provides for the development and implementation of a terrestrial resources management plan that includes provisions stipulated in Exhibit E to the Settlement Agreement. The proposed article also requires annual reports documenting implementation of the management plan, implementation of an adaptive management process, and funding of wildlife staff at the project.

61. Proposed Article 43 provides for the implementation of interim terrestrial resource measures while the terrestrial resources management plan is being developed. The measures would include upland vegetation management; exotic and invasive vegetation management; various bald eagle, golden eagle, osprey, and waterfowl surveys; avian power line electrocution assessments; and Pelton fish ladder wildlife protection.

62. Proposed Article 44 provides for PGE and the Tribes to enter into an agreement with the Forest Service pursuant to which PGE and the Tribes would provide the Forest Service with no more than $15,000 annually for the purpose of supporting the Forest Service's and BLM's participation in the development of the Terrestrial Resources Management Plan.

63. Proposed Article 45 provides for the development and implementation of a Recreation Resources Implementation Plan that includes recreation measures described in Exhibit G to the Settlement Agreement as well as measures designed to mitigate for project-related recreation authorized or implemented by entities other than PGE and the Tribes.

64. Proposed Article 46 provides for PGE and the Tribes to fund various recreation measures at the project, including entering into an agreement with the Tribes to provide funding for operation and maintenance of the Tribes' Indian Park Campground and Chinook Island Day-Use Area.

65. Proposed Article 47 provides for PGE and the Tribes to conduct an emergency communications coverage study addressing the ability of emergency response personnel at the project to contact each other and external emergency services and file a report of the results. Based on the results of the study, Proposed Article 47 provides for PGE and the Tribes to fund measures necessary to provide for emergency and safety communications at the project.

66. Proposed Article 48 provides for PGE and the Tribes to develop and implement an Integrated Interpretation and Education Plan to inform the public about resource and project features in the project area. The proposed article provides for a cap of no more than $75,000 for plan development and no more than $20,000 annually (adjusted for inflation) for plan implementation.

67. Proposed Article 49 provides for PGE and the Tribes to develop and implement a Shoreline Management Plan that includes standards and guidelines for shoreline development, installation of new docks, and modification of existing docks.

68. Proposed Article 50 provides for PGE and the Tribes to develop and implement a Shoreline Erosion Plan to monitor and control stream and reservoir shoreline erosion at the project.

69. Proposed Article 51 provides for PGE and the Tribes to develop and file an Aesthetic Resources Protection Plan that includes measures to improve the existing project fish ladder, Pelton Dam Road, Round Butte Switchyard, Pelton Park, Round Butte Overlook Park, and Round Butte dam and powerhouse area. The plan includes measures to improve non-project, non-licensee-owned facilities.

70. Proposed Article 52 provides for PGE and the Tribes to either negotiate an agreement with the Forest Service that would provide for PGE and the Tribes to collect and retain revenue from and operate and maintain specified Forest Service-owned recreation facilities at the project, or to develop a mechanism that would provide for PGE and the Tribes to pay the Forest Service specified percentages of the operation and maintenance costs of the facilities that would exceed revenue produced at the facilities.

71. Proposed Article 53 provides for PGE and the Tribes to enter into an agreement with the Forest Service to provide both annual and one-time funding for upgrades to and maintenance of specified Forest Service roads that lead to the project.

72. Proposed Article 54 provides for PGE and the Tribes to enter into an agreement with the Forest Service to make three payments to the Forest Service for infrastructure maintenance or improvements to the non-project Haystack Reservoir.

73. Proposed Article 55 provides for PGE and the Tribes to enter into an agreement with the BLM to implement measures at and provide funding for various BLM-managed recreation sites located downstream of the project.

74. Proposed Article 56 provides for PGE and the Tribes to enter into an agreement with Jefferson County, Oregon, pursuant to which PGE and the Tribes would fund road maintenance activities on Jefferson County roads affected by the project.

75. Proposed Article 57 provides for implementation of a Programmatic Agreement (PA), including a Cultural Resources Management Plan.

76. Proposed Article 58 provides for PGE and the Tribes to develop and implement a Lower River Gravel Study Plan that includes provisions to study gravel transport downstream of the project and augment gravel where necessary to enhance spawning habitat.

77. Proposed Article 59 provides for PGE and the Tribes to develop and implement a Large Wood Management Plan for the collection, transport, and placement of large wood entering Lake Billy Chinook. Placement of large wood would occur along the reservoir shorelines or in the Deschutes River downstream of the project.

78. Proposed Article 60 provides for PGE and the Tribes to develop and implement a plan for habitat improvements in the Trout Creek watershed located downstream of the project.

79. Proposed Article 61 provides for PGE and the Tribes to establish the Pelton Round Butte Fund with an initial amount of $3.5 million (2003 dollars) and four additional payments in 2007, 2011, 2013, and 2020 totaling $21,500,000 (2003 dollars) subject to adjustment for escalation at specified percentages. The funds would be used for acquisition of water rights and for aquatic, riparian, and wetland habitat protection and enhancements in the basin both upstream and downstream of the project. Distribution and use of funds would be decided by a Governing Board made up of PGE and the Tribes and various specified federal and state fish and wildlife agencies and non-governmental organizations.

80. On October 19, 2004, Commission staff held a technical conference with most of the Settlement Agreement parties to discuss the Settlement Agreement and proposed articles.[15]

B. Discussion

81. The Settlement Agreement addresses the signatories' various environmental concerns while preserving power production at the project. Overall, the terms of the Settlement Agreement achieve an appropriate balance between continued project generation and environmental measures. We commend the parties for their successful efforts to reach consensus on the broad range of issues involved in the operation of this project and the development of a sound framework for a continuing collaborative approach to the management of the project and its resources.

[15] Staff noticed the meeting on September 30, 2004, and invited all interested parties to participate.

82. The new license order we issue today includes the substance of most of the license articles proposed by the Settlement Agreement, with certain modifications as described next.[16] We also discuss those proposed license articles that we do not adopt and the reasons for not doing so.

83. The Settlement Agreement's Proposed Article 1 provides for the establishment of various implementation committees consisting of the licensees and specified agencies and non-governmental organizations. The committees would be responsible for consulting on the development of various plans, reports, and designs specified in the Settlement Agreement, reviewing reports, and making decisions with regard to the distribution of monies from the Pelton Round Butte Fund. Although the license includes the substance of the proposal as Article 402 of the license, we remind the Settlement Agreement parties that the Commission only has jurisdiction over the licensees, and therefore, can only require the licensees' participation on the committees.

84. The Settlement Agreement's Proposed Article 1 also provides that, in the event that consensus among members of the implementation committees with regard to studies, plans, designs, and reports cannot be reached, PGE and the Tribes will delay filing the disputed study, plan, design, or report until the completion of a dispute resolution process specified in section 7.5 of the Settlement Agreement. Although we are including the Proposed Article 1 provisions, including the dispute resolution process, in Article 402 of the license, we are also including a requirement in Article 402 for PGE and the Tribes to file the disputed material prior to the completion of the dispute resolution process if the Commission directs the licensees to do so. We envision the Commission needing to invoke this reservation as a very rare occurrence; however, we are including this requirement to ensure that the Commission's responsibility to administer the terms of the license and ensure accomplishment of project purposes in a timely fashion is not frustrated by an extraordinarily lengthy dispute resolution process.

85. The Settlement Agreement provides for possible modifications to project structures and operations during the license term. For example, certain of the proposed articles contain provisions to implement additional mitigation measures and update plans. While such adaptive management provisions are not uncommon in licenses issued in recent years, some of the proposed articles would put project modifications under the direction of entities comprising the implementation committees. It is, however, the

[16] The specific conditions of the license that incorporate the substance of most of the Settlement Agreement's proposed license articles include ordering paragraphs (H) and (I) and Articles 401 through 436.

licensees' responsibility to obtain the Commission's approval, through appropriate license amendments, for all material amendments to the project and license.[17] The Commission is charged with determining whether amendments will meet the comprehensive development/public interest standards of Federal Power Act (FPA) section 10(a)(1), which continues to govern regulation of a project throughout the term of its license.[18] For this reason, the articles of this license provide for Commission review and approval of any material changes to the project.[19]

86. The Settlement Agreement's Proposed Article 7 provides for PGE and the Tribes, prior to commencing habitat- or ground-disturbing activities on tribal reservation lands, to comply with the Tribes' Integrated Resources Management Plan. The Integrated Resources Management Plan was filed with the Commission by the Tribes on June 13, 2005. Article 408 requires PGE and the Tribes to file an explanation of the relevance of the plan with regard to project-related habitat- or ground-disturbing activities on tribal reservation lands, and reserves the Commission's authority to require them to comply with the plan.

87. The Settlement Agreement's Proposed Article 8 provides for implementation of a Project Operation Plan found in Exhibit C of the Settlement Agreement and as set forth in Proposed Articles 9 through 14 of the Settlement Agreement. We are including the substance of Proposed Articles 9-14 as Articles 409-414 of the license, but we are not including Proposed Article 8, because we find the proposed article to be redundant with the individual operational requirements stipulated in the license.

88. The Settlement Agreement includes provisions for plans to be approved by various Settlement Agreement parties before the plans are filed with the Commission. The Commission has held that the requirement for an entity's prior approval of plans submitted to the Commission is substantially satisfied by a license requirement to consult

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[17] *See*, *e.g.*, Standard Articles 2 and 3 of the license, Form L-5, which is published at 54 FPC 1799, 1799-1800 (1975) and incorporated by reference in ordering paragraph (K) below.

[18] *See*, *e.g.*, *S.D. Warren Co*., 68 FERC ¶ 61,213 at 62,022 (1994).

[19] *See*, *e.g.*, *PacifiCorp*, 105 FERC ¶ 62,207 at 64,460 (2003). A license article cannot provide for the automatic amendment of the license based upon future occurrences. Rather, the licensee is free to file with the Commission an application for amendment of its license, if future conditions warrant.

with various entities prior to plan submission to the Commission for approval and a requirement to explain how it has accommodated the concerns of the consulted entity.[20] Therefore, in those articles requiring the licensees to file a plan with the Commission for approval, we are including our consultation requirement rather than a requirement to obtain prior approval of the plan.

89. The Settlement Agreement's Proposed Articles 34 and 35 provide for PGE and the Tribes to implement alternative mitigation in the event that fish passage for some or all species would ultimately be found to be infeasible at the Round Butte development. The alternative mitigation would be "consistent with the fish passage objective of providing ecosystem integrity and self-sustaining harvestable populations of fish," and would be implemented in place of constructing, operating, and maintaining, or if already constructed, continuing to operate and maintain the permanent downstream fish passage facilities. The amount of mitigation would be equivalent to the remaining net present value of the costs for constructing, operating, and maintaining the permanent downstream passage facilities that would otherwise have been incurred by PGE and the Tribes.

90. We are unable to make a public interest determination with regard to the proposed alternative mitigation measures, because the measures have yet to be identified, and there is uncertainty with regard to the need for the measures. Further, such a license provision would presume a cost for as yet unidentified measures. Therefore, we are not including the alternative mitigation provisions of Proposed Articles 34 and 35 in the license. As discussed below, we are including an article in the license that reserves the Commission's authority to require fishways that may be prescribed by NOAA Fisheries or Interior for the Pelton Round Butte Project. Future fish passage needs could be addressed via this fishway reservation article. Further, the license includes by reference in ordering paragraph (K), Standard Article 15 of Form L-5, which allows fish and wildlife agencies to petition the Commission to reopen the license to include additional measures for fish and wildlife.

[20] *See P.U.D. No. 1 of Okanogan County, WA*, 88 FERC ¶ 61,040 (1999), *order on reh'g*, 90 FERC ¶ 61,169 (2000) (Project No. 10536).

91. The Settlement Agreement's Proposed Article 41 provides for PGE and the Tribes to file a report with the Commission documenting the status of interim fish passage and water acquisition measures listed in Appendix B of the Settlement Agreement.[21] Section 3.3 of the Settlement Agreement states that these measures are to be undertaken prior to issuance of any new license for the project and promptly upon the effective date of the Settlement Agreement. Because PGE and the Tribes have agreed to commence implementation of these measures outside of the license, and therefore, apart from Commission oversight, we see no purpose in requiring PGE and the Tribes to document with the Commission the status of the implementation of the measures.

92. The Settlement Agreement's Proposed Article 42 provides for PGE and the Tribes to file a Terrestrial Resources Implementation Plan (TRMP) for Commission approval to carry out terrestrial resource protection, mitigation, and enhancement measures set forth in Exhibit E of the Settlement Agreement. Management and maintenance activities under the plan would be applied to lands both within and outside of the project boundary, and would include any lands acquired by PGE and the Tribes during the license term.[22] The TRMP would be updated every five years as approved by the Commission. We are including the substance of Proposed Article 42 as Article 422 of the license to the extent the measures apply to lands within the project boundary.[23] We are also including a requirement in Article 422 that the TRMP clearly indicate those lands within the project boundary to which the measures apply.

93. The Settlement Agreement's Proposed Article 43 provides for PGE and the Tribes to implement various interim measures for terrestrial resources while the TRMP is being developed. These interim measures include: upland vegetation management; exotic and

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[21] These measures include: (1) constructability/feasibility designs for the selective water withdrawal facility; (2) assistance to Oregon DFW on bull trout spawning surveys in the Metolius River; (3) a determination of the timing and relative numbers of juvenile, non-anadromous sockeye salmon (kokanee) migrating into Lake Billy Chinook; (4) estimation of the spawning escapement of kokanee in the Metolius River and tributaries; (5) radio-tagging of steelhead smolts from the Crooked River basin; and (6) acquiring water rights on Squaw Creek, a tributary to the Deschutes River upstream of the project, to transfer to the state of Oregon to be held as instream water rights.

[22] Non-project lands include Forest Service and BLM roads, campgrounds, trails, and adjacent lands.

[23] At this time, PGE and the Tribes have not stated their intent for the non-project lands, much of which are federal lands, to be brought into the project boundary, with the exception of 10,797 acres of jointly held lands for which we approve inclusion in the project boundary in ordering paragraph (C) of the license.

invasive plant control; raptor nesting, winter use, and roost surveys; avian powerline electrocution and collision surveys and mitigation; waterfowl surveys; and installation of small animal crossings over the Pelton Fish Ladder. Plans for the surveys and design drawings for the construction activities at the Pelton Fish Ladder have not been filed with the Commission. We note that we cannot authorize the activities without knowing the specific steps that PGE and the Tribes will take to implement the measures, which include making changes to project facilities; therefore, although we are including the interim measures to the extent they apply to project lands in Article 423 of the license, we are requiring PGE and the Tribes to file a plan for Commission approval describing the activities and including design drawings for the construction of the wildlife crossings prior to implementing the measures.

94. The Settlement Agreement's Proposed Articles 45, 46, 52, 54, and 55 provide for recreation mitigation or enhancement measures at non-project sites. The final EIS recommended the measures at the non-project sites specified in Proposed Articles 45, 46, and 52,[24] and we are requiring these measures, which will enhance public recreation in the project area. Given our conclusion that these recreation areas are necessary for the project purpose of recreation, we further require that these areas be included within the project boundary.[25]

95. The Settlement Agreement's Proposed Article 45 also provides for PGE and the Tribes to fund a study designed to evaluate the technical feasibility of an off-shore boat moorage program and fund the installation of up to 50 moorages in Lake Billy Chinook if unspecified land management agencies agree to develop, implement, and enforce regulations regarding the use of the moorages and enforce the closure of other areas where boats tie-up to the shore. Although we are including in Article 424 a requirement for PGE and the Tribes to evaluate the technical feasibility of implementing an off-shore boat moorage program at Lake Billy Chinook, we cannot require the installation of up to

[24] The final EIS did not recommend funding of recreation-related measures at the Forest Service-managed Haystack Reservoir and BLM-managed lower Deschutes Wild and Scenic river sites, as set forth in Proposed Articles 54 and 55. The final EIS concluded these measures would not address project-related effects on recreation resources. *See* final EIS at 242-244 and 320. Further, sufficient recreation is provided at the project through the other measures required in this license. Accordingly, the license does not include the measures specified in Proposed Articles 54 and 55.

[25] *See, e.g., Kennebec Water Power Company,* 102 FERC ¶ 61,259 at 61,798 (2003) ("Lands dedicated to project purposes must be included in the project boundary . . ."). The fact that the lands in question are to be within the project boundary does not, however, mean that PGE and the Tribe must acquire title to them; rather, they must have sufficient interests to carry out project purposes. *See Wisconsin Public Service Corporation,* 104 FERC ¶ 61,295 at n.16.

50 moorages to be contingent upon the actions of other entities. Therefore, we are instead requiring PGE and the Tribes to include with the evaluation of the program, any recommendations for the installation and maintenance of up to 50 offshore moorages in Lake Billy Chinook.

96. The Settlement Agreement's Proposed Article 53 provides for PGE and the Tribes to enter into an agreement with the Forest Service whereby PGE and the Tribes would make one-time payments and annual contributions to upgrade and maintain non-project, Forest Service roads leading to the western, Metolius River arm of Lake Billy Chinook. The EIS concluded that upgrading and maintaining these roads would provide for continued public access to the Metolius River arm of Lake Billy Chinook, would help the Forest Service maintain the roads, and would address some of the effects associated with recreational access to remote areas of Lake Billy Chinook.[26] Based on the conclusion that these roads are necessary to support recreation at, and provide access to, the project, in Article 431 we require a plan to provide project-related road upgrades and maintenance, which will address the need for maintenance at project access roads identified by Proposed Article 53. We will not require ongoing actions requiring Commission oversight of non-project lands without those lands being brought into the project boundary. Because we are requiring PGE to take actions with respect to these roads throughout the term of the license, Article 431 requires that they be included within the project boundary.

97. The Settlement Agreement's Proposed Article 54 provides for PGE and the Tribes to enter into an agreement with Jefferson County to upgrade and maintain county-owned roads in the project area. The EIS noted that various of these roads (including Jordan Road, Dizney Lane, and Pelton Dam Road) provide important access to the project area.[27] Therefore, as discussed above with respect to the Forest Service roads, we include in license Article 431 provisions providing for project-related upgrades and maintenance of county roads identified in Proposed Article 431, and will require that these roads be included in the project boundary.

98. The Settlement Agreement's Proposed Article 61 provides for the establishment of the Pelton Round Butte Fund for fish and wildlife habitat enhancements and mitigation throughout the basin. Decisions on fund distribution, including selection of mitigation or enhancement projects, would take place at a future date by a Governing Board composed of various Settlement Agreement parties, including PGE and the Tribes. PGE and the Tribes would be under no ongoing obligation to maintain funded projects once they would be completed.

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[26] *See* EIS at 254-55.

[27] *Id.* at 254.

99. The Commission has stated that it generally does not favor such funds but prefers to require licensees to undertake specific measures to resolve project effects, especially in cases where it is not clear to what extent the funds will be used for activities related to the project.[28] In this case, the types of measures that would be funded have been stipulated in section II.B of Exhibit H of the Settlement Agreement and include: land acquisition or lease of riparian lands, wetlands, and uplands; water rights acquisition or lease for instream flows; water conservation; conservation easements, construction of non-project fish passage facilities and removal of non-project barriers to fish migrations; instream habitat improvements; riparian and wetland protection and enhancement; and restoration of fish and wildlife habitats adversely affected by recreation.

100. We note that habitat alteration owing to beaver trapping, agricultural stream diversions, and construction of small hydroelectric dams has been extensive in the Deschutes River basin.[29] Implementation of the funded measures would improve habitat conditions upstream and downstream of the project for aquatic species, including federally listed steelhead, and would increase the likelihood that self-sustaining runs of spring Chinook salmon and summer steelhead would be restored in the upper basin,[30] both of which are goals of the Fish Passage Plan component of the Settlement Agreement.[31] Implementation of the funded measures would also enhance riverine, riparian, and wetland habitats for wildlife.[32] While as noted, we prefer the implementation of specific measures to the establishment of general funds, the parties here have made clear many of the measures which will be paid for by the fund, and have satisfied us that the fund will be used for environmental measures related to the project, including the protection and enhancement of federally listed species. For these reasons, we are including establishment of the Pelton Round Butte Fund in the license as Article 436.

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[28] *See*, *e.g.*, *Alcoa Power Generating, Inc.*, 110 FERC ¶ 61,056 (2005) (P-2169, Tapoco Hydroelectric Project).

[29] *See* final EIS at 100-101.

[30] *See* final EIS at 142-149.

[31] *See* Exhibit D of the Settlement Agreement at 4.

[32] *See* final EIS at 186-187. The fund could be used for terrestrial resource enhancements related to wildlife affected by reservoir operations. However, use of the fund for activities upstream and downstream of the project that support anadromous fish reintroduction has a higher priority. *See* Exhibit H of the Settlement Agreement ("The Pelton Round Butte Fund Implementation Plan") at 5.

101. The Settlement Agreement includes specific dollar limitations (*e.g.*, PGE and the Tribes are to implement an Integrated Interpretation and Education Plan for the project to inform the public about resources and project features in the project area at a total expense to the licensees of no more than $75,000). The Commission has stated that it is important for all entities involved in settlements to know that the Commission considers it the licensee's obligation to complete the measures required by license articles, in the absence of authorization from the Commission to the contrary, and that dollar figures agreed to by the parties are not absolute limitations.[33] Therefore, we are including Article 438 to reserve the Commission's authority to require the licensees to fulfill the requirements of this license notwithstanding the limitations on expenditures included in this license.

WATER QUALITY CERTIFICATION

102. Under Section 401(a)(1) of the Clean Water Act (CWA),[34] the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA[35] provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project.

103. The Pelton Round Butte Project has identifiable discharges in the State of Oregon and on tribal lands within the Warm Springs Reservation of Oregon. Therefore, both the State of Oregon and the Confederated Tribes of Warm Springs Water Control Board (Tribes' Water Board), the tribal entity that has regulatory authority to administer a water quality standards program, are empowered by Section 401(a)(1) of the CWA to issue water quality certification.

104. On June 26, 2001, PGE and the Tribes applied to the Tribes' Water Board and the Oregon Division of Environmental Quality (Oregon DEQ) for certification for the Pelton Round Butte Project, which the Tribes' Water Board and Oregon DEQ received on June 25, 2001, and June 26, 2001, respectively. On June 24, 2002, both the Tribes' Water Board and Oregon DEQ issued certifications for the project. Oregon DEQ's

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[33] *See Virginia Electric Power Co.*, 110 FERC ¶ 61, 241 (2005) (P-2009, Roanoke Rapids and Gaston Hydroelectric Project).

[34] 33 U.S.C. § 1341(a)(1).

[35] 33 U.S.C. § 1341(d).

certification includes 20 conditions and the Water Board's certification includes 16 conditions, which are set forth in Appendix A and B of this order and incorporated into the license (*see* ordering paragraphs (F) and (G)). The certifications include requirements for water quality management and monitoring (water temperature, dissolved oxygen, pH, total dissolved gases, turbidity, toxic substances, bacteria); nuisance phytoplankton growth control; oil and hazard substances spill prevention and control; ramping rates; reservoir operating levels; minimum flows; project operations; gaging; fish passage; large woody debris management; sediment transport studies; fish habitat enhancements upstream of the project area; and compliance and administration. Article 401 requires the licensees to file, for Commission approval, a plan for mitigation of total dissolved gas noncompliance as stipulated by the Oregon DEQ conditions.

SECTION 4(E) FINDINGS AND CONDITIONS

105. Section 4(e) of the FPA,[36] states that the Commission may issue a license for a project located within a reservation only if it finds that the license will not interfere or be inconsistent with the purposes for which the reservation was created or acquired. Section 3(2) of the FPA[37] defines "reservations" as including national forests, which in some regions encompass grasslands. Portions of the Pelton Round Butte Project occupy lands located within the Deschutes, Mt. Hood, and Willamette National Forests, and the Crooked River National Grassland. These federal lands are under the supervision of the Forest Service.[38]

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[36] 16 U.S.C. § 797(e).

[37] 16 U.S.C. § 796(2).

[38] Portions of the headwaters of the project's largest reservoir, Lake Billy Chinook, are located in the Deschutes National Forest. Other portions of Lake Billy Chinook as well as Lake Simtustus (the next reservoir downstream) and part of the Pelton development transmission line, are located in the Crooked River National Grassland.

Portions of Lake Billy Chinook, Lake Simtustus, and the Reregulating Reservoir, along with parts of Pelton Dam and powerhouse, Round Butte Dam and powerhouse, Pelton fish ladder, and the Round Butte transmission lines are located on lands under the supervision of BLM.

The 100-mile-long transmission line from the Round Butte switchyard to PGE's substation occupies 475.3 acres of lands of the Mt. Hood and Willamette National Forests. By order issued August 28, 2002, the Commission determined that it does not have jurisdiction over this line, because it is not the project's primary transmission line, and amended the license to delete the line from the project description (*See* 100 FERC ¶ 62,147). The order provided, however, that the line will remain within the project boundary until the licensees obtain all necessary permits and approvals from the Forest

106. We have reviewed the Organic Administration Act of 1897,[39] which established the purposes for forest reservations, and the presidential proclamations that created the Deschutes,[40] Mt. Hood,[41] and Willamette National Forests,[42] and the Crooked River National Grassland[43] within which the project is located.[44] There is no evidence in this proceeding to indicate that relicensing of the Pelton Round Butte Project would interfere

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Service and BLM for continued use of the federal lands. Article 201 of this license provides for the licensees' payment of annual charges for the use, occupancy, and enjoyment of 475.3 acres of federal lands for the 100-mile-long transmission line right-of-way until the licensees receive all necessary permits and approvals from the Forest Service and BLM.

[39] 16 U.S.C. § 473 *et seq*.

[40] The Deschutes National Forest was created by executive order issued June 13, 1908 (Executive Order No. 816), as part of the Cascade Range Forest Reserve.

[41] The Mt. Hood National Forest was created in 1908 when the northern portion of the Cascade Range Forest Reserve was merged with the Bull Run Reserve and named the Oregon National Forest. The forest was renamed Mt. Hood by executive order issued January 21, 1924 (Executive Order No. 3944).

[42] The Santiam National Forest and the Cascade National Forest were combined to form the Willamette National Forest by executive order issued April 6, 1933 (Executive Order No. 6104).

[43] By administrative order issued June 20, 1960, the Secretary of Agriculture designated 3,804,000 acres of land as national grasslands within the National Forest System under Section 31, Title III of the Bankhead-Jones Farm Tenant Act, 7 U.S.C. §§ 1011 *et seq*, which governs the purchase, conservation, and development of farm land that is considered submarginal or not primarily suitable for cultivation and has been retired from production and made available for Indian, park, forest, migratory bird refuge and agricultural adjustment purposes. *See* United States Department of Agriculture, Forest Service, *The Establishment and Modification of National Forest Boundaries and National Grasslands – A Chronological Record: 1891-1996*, Addendum 1-1 and 1-2 (1997). The Crooked River National Grassland is one of the 19 units permanently held for these purposes by the Department of Agriculture under the Bankhead-Jones Farm Tenant Act.

[44] At the time the forests were created, the Organic Administration Act of 1897, 16 U.S.C. § 475, stipulated that all national forest lands were established and administered only for watershed protection and timber production.

with the purposes of the Deschutes, Mt. Hood, and Willamette National Forests and the Crook River National Grassland. Therefore, we find that this license, as conditioned, will not interfere or be inconsistent with the purposes for which those reservations were created.

107. The Pelton Round Butte Project occupies 2,161.9 acres of tribal lands within the Tribes' Warm Springs Reservation of Oregon,[45] which is under the supervision of Interior's BIA. The Warm Springs Reservation was established by the Treaty of June 25, 1855, between the Tribes and Bands of Middle Oregon and the United States. The Treaty provides that the primary purpose of the reservation is to reserve to the tribes the exclusive right of taking fish in streams running through and bordering the reservation. No allegations have been made that the project would have any adverse effect upon the reservation. As discussed below, Interior has submitted 4(e) conditions for the protection and utilization of the reservation. The environmental measures required in the license will provide additional environmental benefits. We, therefore, find that the license will not interfere or be inconsistent with the purposes for which the reservation was created.

108. Section 4(e) also requires that the Commission include in licenses for projects located within a federal reservation all conditions that the Secretary of the department under whose supervision the reservation falls shall deem necessary for the adequate protection and utilization of the reservation.[46]

109. On November 12, 2002, the Forest Service, a signatory to the Settlement Agreement, filed 23 preliminary conditions.[47] The Forest Service included a schedule for filing final conditions within 90 days of the June 10, 2004, *Federal Register* notice for the final EIS, which would have been September 8, 2004.

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[45] The western side of the project boundary along the Deschutes River from just upstream of the Reregulating Dam to Round Butte Dam and continuing along the northern side of Lake Billy Chinook on the Metolius River arm are tribal reservation lands. Project facilities on reservation lands include portions of the Reregulating Reservoir, Lake Simtustus and the Metolius River arm of Lake Billy Chinook, as well as parts of Pelton Dam and powerhouse and Round Butte Dam and powerhouse. The Reregulating Dam and powerhouse are located entirely on lands jointly owned by PGE and the Tribes.

[46] *Escondido Mutual Water Co. v. LaJolla Band of Mission Indians*, 466 U.S. 765 (1984).

[47] A summary of the preliminary 4(e) conditions is provided in the final EIS at 24-26.

110. On October 4, 2004, the Forest Service filed correspondence concerning its section 4(e) conditions. The Forest Service indicated that it was not modifying its preliminary section 4(e) conditions, but instead filing three new conditions as final 4(e) conditions. Condition No. 1 requires the licensees to comply fully with all provisions of the Settlement Agreement relating to protection, mitigation, and enhancement measures and commitments that implement activities on or affect forest lands and resources. Condition No. 2 requires the Commission's acceptance and incorporation of the Settlement Agreement and the licensees' immediate and complete implementation of the Settlement Agreement measures in accordance with the schedule set forth in the Settlement Agreement. Condition No. 2 further states that in the event either of the requirements is not met, the Forest Service reserves its right to supplement or modify the final 4(e) conditions at a later time. Condition No. 3 reserves the Forest Service's right to add, delete, or revise conditions in the event the licensees, the Forest Service, or other parties withdraw from the Settlement Agreement prior to issuance of a license for the project.

111. Because the Forest Service submitted the final 4(e) conditions after the September 8, 2004, deadline, they are untimely. Typically, in a case where an agency has previously filed preliminary section 4(e) conditions and a schedule for submitting final section 4(e) conditions, and either files the final 4(e) conditions late or does not file them at all, the Commission recognizes the preliminary 4(e) conditions as final conditions.[48] In this instance, however, we do not believe that the Forest Service intends for its preliminary conditions to be included as final conditions, because they are substantially different from the Settlement Agreement. Therefore, we have considered the Forest Service's untimely conditions as recommendations under section 10(a)(1), 16 U.S.C. § 803(a)(1).[49] Conditions 1 and 2 call for the Commission to include in the license the provisions of the Settlement Agreement relating to project lands and facilities located on federal reservations administered by the Forest Service. We are including in the license most of the Proposed License Articles that pertain to project lands and facilities located on federal reservations administered by the Forest Service.

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[48] *See, e.g., City of Springville,* 101 FERC ¶ 62,160 (2002) (In the absence of final section 4(e) conditions, the Forest Service's preliminary 4(e) conditions were adopted as final 4(e) conditions and included in the license).

[49] Section 10(a)(1) requires that any project for which the Commission issues a license shall be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

112. On November 12, 2002, Interior, also a signatory to the Settlement Agreement, filed on behalf of BIA, BLM, and the U.S. Fish and Wildlife Service (FWS), 31 preliminary conditions for the project pursuant to section 4(e). Interior included a schedule for filing final conditions within 60 days of the December 31, 2003, close of the comment period for the draft EIS, which would have been March 1, 2004. Interior subsequently requested an extension of the schedule to allow time for settlement negotiations, and staff extended the due date for Interior's final conditions to October 1, 2004.

113. Interior timely filed final section 4(e) conditions for the protection and utilization of the Warm Springs Indian Reservation[50] and for the federal lands managed by Interior through BLM[51] on September 30, 2004. In its filing, Interior also asked that the Commission adopt all of the Proposed License Articles in the Settlement Agreement in lieu of its preliminary section 4(e) conditions and that the Commission adopt the license articles and approve the Settlement Agreement without material modification. Interior's 4(e) conditions are set forth in Articles 441 and 442 of the license. A discussion of the Settlement Agreement Proposed License Articles included in the license can be found earlier in the order in the *Settlement Agreement* section.

SECTION 18 FISHWAY PRESCRIPTIONS

114. Section 18 of the FPA, 16 U.S.C. § 811, provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.

115. NOAA Fisheries and Interior each filed preliminary fishway prescriptions for the Pelton Round Butte Project on November 12, 2002, along with a schedule for submitting final fishway prescriptions within 60 days of the close of the comment period on the draft EIS. A draft EIS for the project was issued on August 29, 2003, requesting that all comments be filed by December 31, 2004; therefore, the due date for filing final fishway prescriptions for both NOAA Fisheries and Interior was March 1, 2004.

116. On February 12, 2004, NOAA Fisheries requested a modification of their schedule for filing final section 18 fishway prescriptions to a due date of no later than 60 days after the filing of a settlement agreement for the project. On February 27, 2004, Interior requested that the schedule for filing its fishway prescriptions be extended

[50] *See* Attachment B of Interior's filing.

[51] *See* Attachment C of Interior's filing.

indefinitely to allow Interior time to continue settlement negotiations and arrange with the settlement parties a new deadline for filing the final prescriptions. On April 14, 2004, staff extended the due date to file final fishway prescriptions to November 1, 2004, for NOAA Fisheries and to October 1, 2004, for Interior.

117. Interior timely filed its final section 18 fishway prescriptions on September 30, 2004, and NOAA Fisheries timely filed its final prescriptions on October 27, 2004. Interior's and NOAA Fisheries' final fishway prescriptions, which comprise the Settlement Agreement's fish passage requirements, are set out in Appendices C and D to this order, and are made requirements of the license by ordering paragraphs (H) and (I), respectively.

118. Certain of the NOAA Fisheries' and Interior's fishway prescriptions contemplate unspecified, long-term changes to project operations or facilities for the purpose of facilitating safe passage for anadromous salmonids past the project. Article 401 requires the licensees to receive Commission approval through the filing of an application to amend the license prior to implementation of the measures.

119. With their filing of the final fishway prescriptions, both Interior and NOAA Fisheries requested reservation of authority to prescribe fish passage for the project. Consistent with Commission policy, Article 437 of this license reserves the Commission's authority to require fishways that may be prescribed by NOAA Fisheries or Interior for the Pelton Round Butte Project.

ESSENTIAL FISH HABITAT

120. Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Stevens Act), 16 U.S.C. § 1855(b)(2), requires federal agencies to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat identified under the Act. Under section 305(b)(4)(A) of the Magnuson Stevens Act, NOAA Fisheries is required to provide Essential Fish Habitat Conservation Recommendations for actions that would adversely affect Essential Fish Habitat. Under Section 305(b)(4)(B) of the Magnuson Stevens Act, an agency must, within 30 days after receiving recommended conservation measures from NOAA Fisheries or a Regional Fishery Management Council, describe the measures proposed by the agency for avoiding, mitigating, or offsetting the effects of the agency's activity on the Essential Fish Habitat.

121. The Pacific Fisheries Management Council (PFMC) has designated Essential Fish Habitat for three species of Pacific salmon: coho, Chinook, and Puget Sound pink salmon.[52] Essential Fish Habitat includes all those streams, ponds, lakes, wetlands, and other waterbodies currently or historically accessible to coho and Chinook salmon in Oregon, Washington, Idaho, and California, except upstream of impassable barriers identified by the PFMC. Essential Fish Habitat in the project area includes the Deschutes River and tributaries from the confluence with the Columbia River upstream to Round Butte dam (Chinook and coho salmon) and Lake Billy Chinook (Chinook salmon).

122. On June 18, 2004, Commission staff sent NOAA Fisheries a Biological Evaluation addressing project effects on among other things, Essential Fish Habitat, and concluding that the project would not adversely affect Essential Fish Habitat. On February 28, 2005, NOAA Fisheries filed a response concluding that the project, as proposed by the Settlement Agreement, would adversely affect designated Essential Fish Habitat for Chinook and coho salmon. NOAA Fisheries proposed that the following Essential Fish Habitat conservation measures be included as license conditions:[53]

> (1) The Commission must require the licensees to construct and operate the project facilities identified in the Settlement Agreement; carry out the Fish Passage Plan; adhere to the Fish Passage Schedule; implement the Testing and Verification studies, Long Term Monitoring, Annual Work Plans and Reports, and Native Fish Monitoring Program; implement the Trout Creek Restoration Project, LWD management plan, and gravel augmentation study; and "other measures" identified in the Settlement Agreement.
>
> (2) The Commission must require the licensees to establish the Fish Committee required by the Settlement Agreement, and to adhere to the consultation and dispute resolution provisions of the Settlement Agreement.
>
> (3) The Commission must require the licensees to comply with all project construction activity best management practices (Appendix F of the Settlement Agreement), including measures to control erosion and sedimentation, and measures to control pollutants of any kind.

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[52] *See* Pacific Fishery Management Council. 1999. Amendment 14 to the Pacific salmon plan. Appendix A: Description and identification of essential fish habitat, adverse impacts and recommended conservation measures of salmon. Portland, Oregon.

[53] These conservation measures are identical to those required in the Incidental Take Statement included with NOAA Fisheries Biological Opinion filed on February 28, 2005.

123. NOAA Fisheries' conservation recommendations are included in this license as part of the Threatened and Endangered Species Plan required by Article 440.

ENDANGERED SPECIES ACT ISSUES

124. Section 7(a)(2) of the Endangered Species Act of 1973[54] requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

125. Three federally listed species are known to occur in the project vicinity: bald eagle (threatened); the Columbia River bull trout Distinct Population Segment (DPS) (threatened); and the Middle Columbia River steelhead Evolutionarily Significant Unit (ESU) (threatened). Designated critical habitat for bull trout includes Heising Spring, the confluence of Jack Creek with the Metolius River, and a short reach of the Metolius River just upstream of the confluence with Abbot Creek, all of which are located in the Metolius River subbasin upstream of the project. Designated critical habitat downstream of the project is located on the Deschutes River and includes fragmented reaches from the mouth upstream to the project's Reregulating Dam at river mile 100.

126. On April 27, 2004, PGE and the Tribes filed a Biological Evaluation that concluded that licensing the project as proposed by the Settlement Agreement[55] is likely to adversely affect Middle Columbia River steelhead ESU and Columbia River bull trout DPS; may affect, but is not likely to adversely modify or destroy, bull trout critical habitat; and may affect, but is not likely to adversely affect, the bald eagle. Staff's findings in the final EIS for the project were consistent with the Biological Evaluation.

[54] 16 U.S.C. § 1536(a).

[55] At the time, the Settlement Agreement had not been finalized; however, draft environmental measures anticipated to be included in the final settlement had been crafted by the settlement parties.

127. The Commission initiated formal consultation with NOAA Fisheries and Interior by letters dated June 18, 2004.[56] On November 2, 2004, Interior filed a biological opinion that concludes that issuing a license for the project, as recommended by Commission staff, is not likely to jeopardize the continued existence of the Columbia River bull trout DPS. In the same filing, Interior concurred with staff that the proposed project may affect, but is not likely to adversely affect, the bald eagle. On February 28, 2005, NOAA Fisheries filed a biological opinion that concludes that issuing a license for the project, as recommended by Commission staff, is not likely to jeopardize the continued existence of the Middle Columbia River steelhead ESU.

128. As part of their biological opinions, both Interior and NOAA Fisheries included incidental take statements with reasonable and prudent measures to minimize incidental take of bull trout and steelhead, along with terms and conditions to implement the measures. These terms and conditions included requirements to: (1) implement the Settlement Agreement measures that "avoid or minimize affects to" bull trout and steelhead;[57] (2) establish a Fish Committee as set forth by the Settlement Agreement; and (3) implement best management practices, as stipulated by the Settlement Agreement, during construction activities. The terms and conditions are attached to this license as Appendices E and F, and Article 440 of this license requires the licensees to develop a plan, for Commission approval, to comply with the terms and conditions of the incidental take statements.

NATIONAL HISTORIC PRESERVATION ACT ISSUES

129. On December 6, 2004, the Commission, the Advisory Council on Historic Preservation, the Oregon Historic Preservation Officer, and the Tribes' Tribal Historic Preservation Officer executed a Programmatic Agreement (PA) for managing historic properties that may be affected by the relicensing and continued operation of the Pelton Round Project. Article 432 of the new license requires the licensees to implement the

[56] Staff initially attempted to initiate formal consultation with Interior and NOAA Fisheries on September 24, 2003; however, both agencies denied staff's request by letters filed November 6 and November 12, 2003, respectively, because they felt staff did not provide them with sufficient information with regard to project effects on the species and that the time was not yet ripe to initiate consultation in light of settlement negotiations that were occurring at the time.

[57] NOAA Fisheries and FWS did not specify the exact Settlement Agreement terms that "avoid or minimize affects to" bull trout and steelhead.

agreement, including but not limited to a final Cultural Resources Management Plan (CRMP) for the project. This provides protection for all existing and future cultural sites located within the project boundary, and satisfies the Commission's responsibilities under section 106 of the National Historic Preservation Act.[58]

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

130. Section 10(j)(1) of the FPA,[59] requires the Commission, when issuing a license, to include conditions based on recommendations by federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act,[60] to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

131. Interior filed its initial fish and wildlife recommendations on November 12, 2002. These consisted of 24 detailed recommendations addressing minimum flows; project operations (ramping and reservoir drawdown limits); operations monitoring; water quality monitoring; fish habitat protection and enhancement; fish passage; fish habitat surveys and monitoring; spread of fish diseases; fish genetics in terms of appropriate stocks to reintroduce upstream of the project; fish predation; large woody debris placement; project effects on sediment transport; project effects on Pacific lamprey; effects of anadromous fish reintroduction on resident fish populations; terrestrial resources management; protection of wildlife at fishways; shoreline management; wildlife habitat connectivity; transmission line effects on birds; and project effects on threatened and endangered species, including bald eagle management and protection. On September 30, 2004, Interior filed modifications to its recommendations to incorporate Proposed Articles 8-16, 34-37, 39, 41-43, 49-50, and 58-61 of Exhibit A of the Settlement Agreement.

132. On November 12, 2002, NOAA Fisheries adopted all of Interior's initial section 10(j) recommendations that include provisions for the protection, mitigation, and enhancement of Chinook salmon, sockeye salmon, and steelhead. NOAA Fisheries filed revised recommendations on December 31, 2003, consistent with measures included in

[58] 16 U.S.C. § 470s.

[59] 16 U.S.C. § 803(j)(1).

[60] 16 U.S.C. §§ 661, *et seq*.

an agreement-in-principle that was reached with the settlement parties. On October 27, 2004, NOAA Fisheries filed modifications to its revised recommendations to incorporate Proposed Articles 1-2, 4, 6, 8-13, 15-16, 34-37, 39, and 58-61 of Exhibit A of the Settlement Agreement.

133. Oregon DFW filed fish and wildlife recommendations on November 12, 2002. These consisted of 33 recommendations addressing minimum flows; project operations (ramping and reservoir drawdown limits); operations monitoring; fish habitat protection and enhancement; fish passage; fish habitat surveys and monitoring; fish health monitoring; fish entrainment monitoring; fish predation; fish hatchery upgrades; large woody debris placement; project effects on sediment transport; effects of anadromous fish reintroduction on resident fish populations; terrestrial resources management; off-site terrestrial habitat acquisition; mule deer winter range studies; protection of wildlife at fishways; effectiveness monitoring of existing wildlife crossings; shoreline management; riparian and wetland habitat restoration and improvements; invasive weed management; project effects on threatened and endangered species, including bald eagle management and protection and bat habitat improvements; funding for Jefferson County personnel to patrol the project area; project removal and site restoration in the event of project decommissioning; license term limits; and reserved authority to file modified recommendations. Oregon DFW filed revised recommendations on December 29, 2003, consistent with measures included in an agreement-in-principle that was reached with the settlement parties. On August 18, 2004, Oregon DFW filed modifications to its revised recommendations to incorporate Proposed Articles 1-4, 6, 8-15, 17-43, 45, 49-50, and 58-61 of Exhibit A of the Settlement Agreement.

134. The Settlement Agreement's proposed articles are generally consistent with the 110 separate recommendations that Commission staff considered in the final EIS.[61] The final EIS found certain recommendations to be outside of the scope of section 10(j), because they are not specific measures to protect fish and wildlife. These include recommendations for the establishment of a shoreline working group; funding of law enforcement officials at the project; funding of Oregon DFW personnel to coordinate Oregon DFW's involvement in the implementation of fisheries and terrestrial license requirements; development and implementation of recreation, shoreline management, and shoreline erosion plans; development and implementation of plans for off-site fish and wildlife habitat; and establishment of funds to be directed toward off-site fish and wildlife habitat enhancements.

[61] Table 35 of the final EIS lists each of the recommendations and the agency or agencies that recommended it. Table 35 also specifies, as to each recommendation, whether it is within the scope of section 10(j) and whether staff recommended its adoption.

135. The recommendations reflect the provisions of the Settlement Agreement, which we adopt as license conditions through ordering paragraphs incorporating mandatory license conditions or through license articles. Those recommendations that do not fall within the scope of section 10(j) are instead considered under section 10(a)(1), 16 U.S.C. § 803(a)(1). The extent to which the license adopts those measures is discussed earlier in this order in the *Settlement Agreement* section.

COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM

136. Under section 4(h) of the Pacific Northwest Power Planning and Conservation Act, 16 U.S.C. § 839(h), the Northwest Power Planning Council (Council) developed the Columbia River Basin Fish and Wildlife Program (Program) to protect, mitigate, and enhance the fish and wildlife resources associated with development and operation of hydroelectric projects within the Columbia River Basin. Section 4(h) states that responsible federal and state agencies should provide equitable treatment for fish and wildlife resources, in addition to other purposes for which hydropower is developed, and that these agencies should take into account, to the fullest extent practicable, the program adopted under the Pacific Northwest Power Planning and Conservation Act. Specific provisions affecting non-federal hydropower projects are outlined in Appendix B of the Program.

137. The license, which among other things, includes reservoir stage change limits (Article 409); minimum flows (Article 412); reservoir drawdown and fluctuation limits (Article 414); fish passage requirements (ordering paragraphs (H) and (I)); native fish monitoring (Article 421); terrestrial resources management (Articles 422 and 423); fish spawning gravel augmentation (Article 433); large river wood management (Article 434), lower Deschutes River habitat enhancements (Article 435); and threatened and endangered species protection (Article 440) is consistent with the applicable provisions of the Program, as discussed in more detail in the final EIS. Article 439 reserves to the Commission the authority to require future alterations in project structures and operations to take into account, to the fullest extent practicable, the applicable provisions of the Program.

WILD AND SCENIC RIVER DESIGNATIONS

138. Section 7(a) of the Wild and Scenic Rivers Act (Rivers Act), 16 U.S.C. § 1278(a), bars the Commission from licensing "the construction of" any dam, water conduit, or other project works "on or directly affecting any river which is designated as a component of the national wild and scenic rivers system" or from licensing any project

works below or above a wild or scenic river that would "invade" or "unreasonably diminish" the scenic, recreational and fish and wildlife values there. Section 7(a) does not bar the issuance of a license for the continued operation of the project, provided no new construction is proposed in the wild and scenic river.[62]

Lower Deschutes River

139. The Pelton Reregulating Dam is located near a portion of the lower Deschutes River that Congress designated a Wild and Scenic River under the Omnibus Oregon Wild and Scenic Rivers Act of 1988 (Oregon River Act).[63] In relationship to the Pelton Round Butte Project, the Wild and Scenic River corridor is immediately upstream and downstream of the project, but no part of the project is located in the corridor.

140. PGE and the Tribes propose replacement of an existing intake tower at the Reregulating Dam with a new intake tower, which will serve as a selective water withdrawal facility and fishway. The entrance to the proposed fishway is at the boundary of the lower Deschutes Wild and Scenic River corridor.

141. BLM and the Forest Service have determined that the proposed project will not invade the lower Deschutes Wild and Scenic River area, because the licensees do not propose construction of any new project works in the corridor. BLM and the Forest Service have also determined that the proposed project should not unreasonably diminish scenic and wildlife values in the area or have a negative effect on the fisheries resources and wildlife habitat. BLM and the Forest Service further find that the adverse effects of the proposed project, *i.e.*, sediment conditions, which existed at the date of the river's designation, will not unreasonably diminish recreation and fisheries values provided the license articles proposed in the Settlement Agreement are adopted in their entirety.

Middle Deschutes, Lower Crooked, and Metolius Rivers

142. In relationship to the Pelton Round Butte Project, the Wild and Scenic River corridors of the Middle Deschutes, Lower Crooked, and Metolius Rivers are upstream of the project and outside of the project boundary.

143. Pursuant to section 7, BLM and the Forest Service jointly determined for the Middle Deschutes and Lower Crooked Rivers, and the Forest Service determined for the Metolius River, that the proposed project will not invade the designated areas, because the licensees do not propose construction of any project works in the wild and scenic

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[62] *See Northern States Power Company*, 67 FERC ¶ 61,282 (1994).

[63] *See* Omnibus Oregon Wild and Scenic Rivers Act of 1988, Pub. L. No. 100-557.

river corridors and do not plan to raise the height of any dams or other project facilities. BLM and the Forest Service further determined for the respective rivers that the potential adverse effects of the project will not unreasonably diminish the scenic, recreation, wildlife, and fisheries values present in the areas.

TRANSMISSION LINES

144. On January 30, 2002 (supplemented April 19, 2002), PGE and the Tribes filed an amendment application to delete the 100-mile-long, 230-kV Bethel-Round Butte transmission line from the project. The transmission line is partially located on federal lands managed by the Forest Service. By order issued August 28, 2002,[64] the Chief of the Engineering & Jurisdiction Branch, Division of Hydropower Administration and Compliance, issued an order finding that the transmission line is not required to be licensed. The amendment order removed the transmission line from the project description but, to prevent any gap in federal authorization for the portion of the transmission line on federal lands (475.3 acres), the order kept the line in the project boundary and under Commission jurisdiction until PGE and the Tribes obtained the necessary permits for the use and occupancy of National Forest Lands.

145. To date, PGE and the Tribes have not filed copies of the necessary permits with the Commission; therefore, ordering paragraphs (D) and (E) of the new license require that the facilities and lands deleted from the project by the April 28, 2002, amendment remain within the project boundary and under Commission jurisdiction until PGE and the Tribes file the required permits with the Commission.

146. In a March 29, 2002, letter to the Commission, PGE and the Tribes notified the Commission that Exhibit A of the license application should be corrected to indicate that the only primary transmission lines for the Reregulating development are 6.9-kV leads (about 200 feet in length) from the generator to a 6,900-volt bus at the step-up transformer located adjacent to the powerhouse. The approvals of Exhibits A, F, and G in order paragraph B reflect this change.

STATE AND FEDERAL COMPREHENSIVE PLANS

147. Section l0(a)(2)(A) of the FPA, 16 U.S.C. § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways

[64] 100 FERC ¶ 62,147.

affected by the project.[65] Under Section 10(a)(2)(A), federal and state agencies filed 137 comprehensive plans that address various resources in Oregon. Of these, the staff identified and reviewed 65 comprehensive plans that are relevant to this project.[66] No conflicts were found.

APPLICANTS' PLANS AND CAPABILITIES

148. In accordance with sections 10(a)(2)(c) and 15(a) of the FPA,[67] staff evaluated PGE's and the Tribes' record as licensees with respect to the following: (A) conservation efforts; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission service; (G) cost effectiveness of plans; and (H) actions affecting the public. We accept the staff's findings in each of the following areas.

A. Conservation Efforts

149. FPA section 10(a)(2)(C) requires the Commission to consider the extent of electric consumption efficiency programs in the case of license applicants primarily engaged in the generation or sale of electric power. PGE is such an applicant. PGE has engaged in energy efficiency programs since 1970 and continues to offer programs that promote the use of energy efficient lighting and appliances. PGE's integrated resource planning program proposes other demand side energy consumption efficiency measures such as time-of-use metering and direct load control to better manage peak demand by its customers. Through these programs, PGE is making satisfactory efforts to conserve electricity and reduce peak hour demands.

B. Compliance History and Ability to Comply with the New License

150. Based on a review of PGE's and the Tribes' compliance with the terms and conditions of the existing license, staff found that PGE's overall record of making timely filings and of compliance with its license is satisfactory.

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[65] Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19.

[66] *See* final EIS at Appendix D for a list of the applicable plans.

[67] 16 U.S.C. §§ 803(a)(2)(C) and 808(a).

C. Safe Management, Operation, and Maintenance of the Project

151. Staff reviewed PGE's and the Tribes' management, operation, and maintenance of the Pelton Round Butte Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines and periodic Independent Consultant's Safety Inspection Reports. The project dam has a high hazard potential classification. Staff concluded that the dam and other project works are safe, and that there is no reason to believe that PGE cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Electric Service

152. Staff reviewed PGE's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. Staff found that PGE has been operating the project in an efficient manner within the constraints of the existing license and is likely to continue to do so under a new license.

E. Need for Power

153. PGE is an integrated electric utility serving nearly 1.4 million people in the Portland, Oregon, metropolitan area. PGE has over 730,000 retail residential, commercial, and industrial customers. Power from the Pelton and Round Butte developments is sold to PGE customers and is transmitted via PGE's transmission and distribution system. The 247.12-MW Round Butte and 100.8-MW Pelton developments provide approximately 20 percent of PGE's 2,022-MW generating capability, which includes hydroelectric, coal, and gas facilities (PGE, 2003). The project, with its large storage reservoir, is typically operated to provide power during daily load peaks. The operational flexibility of the project is used by PGE to maintain the stability and reliability of the PGE system.

154. The Tribes market the power from the 18.9-MW generating facilities at the Reregulating development as a wholesale utility and sell the power to PGE or to others on the open market.

155. PGE is part of the Western Electricity Coordinating Council (WECC), which is composed of generators and suppliers in 12 western states, Canada, and Mexico. PGE and its resources are located within the northwest subregion of the WECC. In its 10-year Coordinated Plan Summary for the period 2004-2013, the WECC estimates that its peak summer demand will increase by an average annual compound rate of 2.2 percent to about 171,000 MW by 2013. For the 10-year period, the region projects

the addition of a net amount of about 23,000 MW of new resources, 96 percent of which is combined cycle combustion turbine capacity. With these additions, WECC projects adequate capacity to meet its estimated summer load, including a 15-percent reserve margin, through 2013.

156. In summary, the electric power provided by the Pelton Round Butte Hydroelectric Project supplies part of the current need for power by PGE's customers and the region, and can continue to contribute to meeting those needs with a clean source of energy, thereby avoiding the use of a like amount of fossil-fueled generation and its associated atmospheric emissions.

F. Transmission Services

157. The project's transmission facilities that are required to be licensed include the three 230-kV lines each extending about 2,800 feet from the Round Butte powerhouse to the Round Butte switchyard; the 230-kV primary transmission line that extends south about 7.9 miles from Pelton Development's powerhouse to the Round Butte Switchyard; and the 6.9-kV leads that extend about 200 feet connecting the generator of the Pelton Re-regulating Development to the 6.9-kV bus at the step-up transformers located adjacent to the powerhouse. PGE proposes no changes that would affect transmission facilities.[68]

G. Cost Effectiveness of Plans

158. The Pelton Round Butte Project develops nearly 100 percent of the hydropower flow potential of the site and, as such, represents a cost-effective level of development. In addition, PGE is proposing and this license requires several modifications to project facilities for more efficient operation, and for the protection and enhancement of fish and other environmental resources. PGE's past record as a licensee indicates it is likely to carry out these measures in a cost-effective manner.

[68] As noted above, on August 28, 2002, under the previous license, the Commission approved a license amendment deleting the 100-mile-long, 230-kV Bethel to Round Butte transmission line from the project license. The amendment order requires that this transmission line remain under Commission jurisdiction until PGE accepts a special use permit from the appropriate federal land management agencies.

H. Actions Affecting the Public

159. In its license application, PGE and the Tribes cited numerous examples of actions they have taken which benefit natural resources and the economy of the Deschutes River Basin including working cooperatively with fish and wildlife agencies on research and enhancement of fish and wildlife resources, and development of recreation facilities to improve public access to and enjoyment of project lands and waters.

PROJECT ECONOMICS

160. In determining whether to issue a new license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,[69] the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

161. As licensed herein under the terms of the Settlement Agreement as incorporated into this license, the Pelton Round Butte Hydroelectric Project will generate an average of 1,591,000 megawatt-hours (MWh) of electricity a year at a total annual cost of about $26.3 million (about $17/MWh). Based on recent market prices in the northwest region, the annual value of the project power is about $76.1 million (about $48/MWh), resulting in a net annual benefit of about $49.8 million (about $31/MWh).

162. In analyzing public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary benefits). These benefits include their value as almost instantaneous load-following response to dampen voltage and frequency instability on the transmission system, system-power-factor correction through condensing operations, and a source of power available to help in quickly putting fossil-fuel based generating stations back on line following a major utility system or regional blackout.

163. Ancillary services are now mostly priced at rates that recover only the cost of providing the electric service at issue, which do not resemble the prices that would occur in competitive markets. As competitive markets for ancillary services begin to develop, the ability of hydro projects to provide ancillary services to the system will increase the

[69] 72 FERC ¶ 61,027 (1995).

benefits of the project. The Pelton Round Butte Project, with the large amount of storage available in Lake Billy Chinook, is PGE's primary load following resource for meeting the daily peak demands of its customers. The project will retain these valuable ancillary service benefits under the terms of the Settlement Agreement and this license.

COMPREHENSIVE DEVELOPMENT

164. Sections 4(e) and 10(a)(1) of the FPA,[70] respectively, require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

165. The EIS for the Pelton Round Butte Project contains background information, analysis of effects, support for related license articles, and the basis for a finding that the project will not result in any major, long-term adverse environmental effects. The project would be safe if operated and maintained in accordance with the requirements of this license.

166. Based on our independent review and evaluation of the Pelton Round Butte Project, recommendations from the resource agencies and other stakeholders, the Settlement Agreement, and the no-action alternative, as documented in the EIS, we have selected the Settlement Agreement with modifications, as discussed herein, as the preferred alternative, which we conclude is best adapted to a comprehensive plan for developing the Deschutes, Crooked and Metolius Rivers. We selected this alternative because: (1) issuance of a new license would serve to maintain a beneficial, dependable, and an inexpensive source of electric energy; (2) the required environmental measures would protect and enhance fish and wildlife resources, water quality, recreational resources and historic properties; and (3) the 366.82-MW of electric energy generated from renewable resource would continue to offset the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable resources and reducing atmospheric pollution.

[70] 16 U.S.C. §§ 797(e) and 803(a)(1).

LICENSE TERM

167. Section 15(e) of the FPA,[71] provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.[72]

168. This license authorizes an extensive amount of environmental measures, including new construction. As part of the Settlement Agreement, the signatories agree to a new 50-year license term. For the above reasons, and because the term of license was likely an important element in the negotiations that led to the Settlement Agreement, we are issuing this new license for a term of 50 years.

The Commission orders:

(A) This license is issued to PGE and the Tribes (licensees) to operate and maintain the Pelton Round Butte Project for a period of 50 years, effective the first day of the month in which this order is issued. The license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, enclosed by the project boundary shown by Exhibit G included in the application for new license, filed on June 29, 2001, to the Commission Secretary.

Exhibit G-	FERC Drawing No. 2030-	Showing
1	1023	Project Boundary and Location Map - Round Butte Development
2	1024	Project Boundary and Location Map - Round Butte Development
3	1025	Project Boundary and Location Map - Round Butte Development

[71] 16 U.S.C. § 808(e).

[72] *See Wisconsin Power Company*, 94 FERC ¶ 61,164 (2001).

Exhibit G-	FERC Drawing No. 2030-	Showing
4	1026	Project Boundary and Location Map - Round Butte Development
5	1027	Project Boundary and Location Map - Round Butte Development
6	1028	Project Boundary and Location Map - Round Butte Development
7	1029	Project Boundary and Location Map - Round Butte Development
8	1030	Project Boundary and Location Map - Round Butte Development
9	1031	Project Boundary and Location Map - Round Butte Development
10	1032	Project Boundary and Location Map - Round Butte Development
11	1033	Project Boundary and Location Map - Round Butte Development
12	1034	Project Boundary and Location Map - Round Butte Development
13	1035	Project Boundary and Location Map - Pelton Development
14	1036	Project Boundary and Location Map - Pelton Development
15	1037	Project Boundary and Location Map - Pelton Development
16	1038	Project Boundary and Location Map - Pelton Development
17	1039	Project Boundary and Location Map - Pelton Development
18	1040	Project Boundary and Location Map - Pelton Development
19	1041	Project Boundary and Location Map - Pelton Development
20	1042	Project Boundary and Location Map - Wildlife Mitigation Lands
21	1043	Project Boundary and Location Map - Wildlife Mitigation Lands
22	1044	Project Boundary and Location Map - Wildlife Mitigation Lands
23	1045	Project Transmission Line - Pelton Development
24	1046	Project Transmission Line - Pelton Development
25	1047	Pelton-Round Butte Project Service Road
26	1048	12.5-kV Pelton-Round Butte Service Line
27	1049	12.5-kV Pelton-Round Butte Service Line

The following Exhibit G drawings show the location of the non-project Bethel-Round Butte transmission line which remains under Commission jurisdiction until PGE and the Tribes receive all necessary permits and approvals from the U.S. Forest Service and the U.S. Bureau of Land Management, as appropriate, for the continued use of federal lands.

Exhibit G-	FERC Drawing No. 2030-	Showing
28	1050	Bethel-Round Butte Transmission Line
29	1051	Bethel-Round Butte Transmission Line
30	1052	Bethel-Round Butte Transmission Line
31	1053	Bethel-Round Butte Transmission Line
32	1054	Bethel-Round Butte Transmission Line
33	1055	Bethel-Round Butte Transmission Line
34	1056	Bethel-Round Butte Transmission Line
35	1057	Bethel-Round Butte Transmission Line

(2) Project works consisting of:

The **Round Butte Development** consisting of: (1) a 440-foot-high, 1,382-foot-long rockfill, embankment dam; (2) a 4,000 acre reservoir (Lake Billy Chinook) with a gross storage capacity of 535,000-acre-feet and a maximum useable storage volume of 274,000 acre-feet (limited by this license to 76,000 acre-feet with a maximum drawdown of 20 feet) at a normal pool elevation at 1,945.0 feet mean sea level; (3) a concrete spillway intake structure topped with a 30-foot-high, 36-foot-wide radial gate; (4) an 1,800-foot-long, 21-foot-diameter spillway tunnel; (5) an 85-foot-long, varying in height and width, concrete, powerhouse intake structure; (6) a 1,425-foot-long, 23-foot-diameter power tunnel; (7) a 170-foot-long, 116-foot-wide, concrete powerhouse containing three Francis-type, turbine generating units with a total capacity of 247.050 MW and one 70-kilowatt (kW) turbine generating unit for a total installed capacity of 247.12 MW; (8) a 30-inch-diameter intake pipe and support structure, a 10-foot square platform, and a turbine discharge pipe for the 70-kW turbine; (9) three 2,800-foot-long, 230-kV primary transmission lines that extend from the transformers at the powerhouse to the Round Butte Switchyard; and (10) appurtenant facilities.

The **Pelton Development** consisting of: (1) 636-foot-long, 204-foot-high, concrete arch dam with a crest elevation of 1,585 feet msl; (2) a 7-mile-long, 540 acre reservoir (Lake Simtustus) with a gross storage capacity of 31,000 acre-feet and useable storage volume of 3,700 acre-feet at normal maximum water surface elevation of 1,580 feet mean sea level; (3) a concrete spillway equipped with two, 34-foot-wide, 22-foot-high steel Tainter gates; (4) a turbine intake system built into the upstream face of the dam and consisting of three 16-foot-diameter, approximately 100-foot-long, penstocks, equipped with trash racks and inlet gates at the face of the dam; (5) a 76-foot-long, 168-foot-wide, semi-outdoor type powerhouse containing three, Francis-type turbine generating units with a total installed capacity of 100.8 MW; (6) a 7.9-mile-long, 230-kV primary transmission line from the Pelton powerhouse to the Round Butte Switchyard; and (7) appurtenant facilities.

The **Reregulating Development** consisting of: (1) a 1,067-foot-long, 88-foot-high rockfill dam with a crest elevation of 1,402 feet msl; (2) a 2.5-mile-long, 190 acre reservoir with a gross storage capacity of 3,500 acre-feet and useable storage volume of 3,270 acre-feet at normal maximum water surface elevation of 1,435 feet mean sea level; (3) a concrete spillway equipped with four, 20-foot-wide, 14-foot-high steel gates; (4) a non-operating 3-mile-long fishway extending from the tailrace upstream to the forebay of the Pelton development; (5) a turbine intake on the upstream face of the dam, equipped with a 55-foot-high, 34-foot-wide trash rack; (6) a 159-foot-long, 44-foot-wide concrete powerhouse containing a single, 18.9-MW bulb-type turbine generator; (7) the 6.9-kV leads that extend about 200 feet connecting the generator of the Pelton Re-regulating Development to the 6.9-kV bus at the step-up transformers located adjacent to the powerhouse; and (8) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibits A and F shown below:

Exhibit A:

All of Exhibit A, modified by deleting from the description of project facilities those portions describing the 100-mile-long, 230-kV transmission line from the Round Butte switchyard to Bethel, a 3.2-mile-long, 69-kV transmission line from the Reregulating Development to the Warm Springs Substation, and the 10.5-mile-long, 12.5-kV transmission line from the Round Butte switchyard to the Reregulating Development.

Exhibit F:

Exhibit F-	FERC Drawing No. 2030-	Showing
1	1001	Round Butte - General Plan, Dam and Powerhouse
2	1002	Round Butte - Dam Sections
3	1003	Round Butte - Spillway Diversion and Power Tunnels
4	1004	Round Butte - Spillway and Power Tunnel Intake
5	1005	Round Butte - Powerhouse Plans and Sections
6	1006	Round Butte - Fish Facilities, Upstream Migrant Structure
7	1007	Round Butte - Fish Facilities, Downstream Migrant Structures
8	1008	Round Butte - Fish Facilities, Downstream Migrant Lock Tank
9	1009	Round Butte - Fish Hatchery
10	1010	Round Butte - Single Line Electrical Diagram
11	1011	Round Butte - Single Line Electrical Diagram
12	1012	Round Butte - Switchyard Arrangement
13	1013	Pelton - General Plan and Sections
14	1014	Pelton - Powerhouse Plans
15	1015	Pelton - Powerhouse Cross-Section
16	1016	Pelton - Round Butte - Single Line Electrical Diagram
17	1017	Reregulating - Powerhouse and Fish Facilities
18	1018	Reregulating - Powerhouse Plan
19	1019	Reregulating - Powerhouse Transverse Section
20	1020	Reregulating - Fish Ladder/Rearing Ponds and Waterfowl Pond
21	1021	Reregulating - Single Line Electrical Diagram

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project and located within or outside the project boundary, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Exhibits A, F, and G, as designated in ordering paragraph (B) above, are approved and made a part of this license. Exhibits F and G shall be filed in the Commission's electronic file format as specified in Article 203. The project boundary in Exhibit G shall include 10,797 acres of lands proposed in Exhibit A, section I.D and approved by this license for inclusion in the project boundary.

(D) Commission jurisdiction over the non-project Bethel-Round Butte transmission line deleted from the project by amendment order 100 FERC ¶ 62,147 (2002), is terminated, effective on the date the licensees receive all necessary permits and approvals from the U.S. Forest Service and Bureau of Land Management, as applicable, for the continued use of federal lands. The licensees shall file copies of all permits and approvals with the Commission within 30 days of receiving the permits or approvals.

(E) Within 60 days of the termination of Commission jurisdiction over the Bethel-Round Butte transmission line as specified in ordering paragraph (D), the licensees shall file for Commission approval, revised exhibits A, F, and G drawings showing and describing the project features, boundaries, and facilities, as well as a statement indicating the revised amount of federal lands occupied by the project so the Commission can amend Article 201 of the license regarding the licensees' payment for the use of federal lands.

(F) This license is subject to the conditions submitted by the Oregon Division of Environmental Quality under section 401 of the Clean Water Act, as those conditions are set forth in Appendix A to this order.

(G) This license is subject to the conditions submitted by the Water Control Board of the Confederated Tribes of the Warm Springs Reservation of Oregon under section 401 of the Clean Water Act, as those conditions are set forth in Appendix B to this order.

(H) This license is subject to the conditions submitted by the Secretary of the U.S. Department of the Interior under section 18 of the FPA, as set forth in Appendix C to this order.

(I) This license is subject to the conditions submitted by the Secretary of the U.S. Department of Commerce under section 18 of the FPA, as set forth in Appendix D to this order.

(J) The following plans filed with the Settlement Agreement on July 30, 2004, as modified by the articles of this license, are approved and made a part of the license: (1) Project Operating Plan (Exhibit C to the Settlement Agreement); (2) Fish Passage Plan (Exhibit D to the Settlement Agreement); (3) Pelton Round Butte Fund Implementation Plan (Exhibit H to the Settlement Agreement); and (4) Cultural Resources Management Plan (Exhibit J to the Settlement Agreement).

(K) This license is subject to the articles set forth in Form L-5, entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters and Lands of the United States," 54 FPC 1792, 1799 (October 1975), and the following additional articles:

Article 201. ***Administrative Annual Charges***. The licensees shall pay the United States the following annual charges, effective as of the first day of the month in which this license is issued, for the purposes of:

(A) Reimbursing the United States for the Commission's administrative costs, pursuant to Part I of the Federal Power Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 366,820 kilowatts.

(B) Recompensing the United States for the use, occupancy and enjoyment of 3,022.60 acres of its lands, other than for transmission line right-of-way.

(C) Recompensing the United States for the use, occupancy and enjoyment of 481.14 acres of its lands, for transmission line right-of-way. Upon compliance with ordering paragraphs (D) and (E) of this order, the Commission will issue an order revising this article of the license, changing the amount of federal lands for transmission line use from 481.14 to 5.84 acres, or such other acreage as is determined at that time.

(D) All annual charges for the project's use of 2,161.9 acres of tribal reservation lands is deemed satisfied by fulfillment of the applicable terms of the Long-Term Global Settlement and Compensation Agreement, dated April 12, 2000, and approved by the Commission on November 21, 2000 (100 FERC ¶ 62,147).

(E) If modifications are made to the project boundary that involve federal lands during the license term, the Commission will adjust the annual charges accordingly.

Article 202. ***Amortization Reserves.*** Pursuant to section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensees shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus

earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensees shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensees shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensees shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included in the licensees' long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 203. ***Exhibit Drawings.*** Within 45 days of the date of issuance of the license, the licensees shall file the approved exhibit drawings in aperture card and electronic file formats.

(a) Four sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Drawing Number (i.e., P-1234-1001 through P-1234-###) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., F-1, G-1, etc.), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.

Two of the sets of aperture cards along with form FERC-587 shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections Portland Regional Office. The remaining set of aperture cards and a copy of Form FERC-587 shall be filed with the Bureau of Land Management office at the following address:

State Director
Bureau of Land Management
PO Box 2965
Portland, OR 97208-2965

(b) The licensees shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections Portland Regional Office. Exhibit F drawings must be identified as (CEII) material under 18 CFR §388.113(c). Exhibit G drawings must be identified as (NIP) material under 18 CFR §388.112. Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-1234-####, G-1, Project Boundary, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY - black & white raster file
FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4
RESOLUTION – 300 dpi desired, (200 dpi min)
DRAWING SIZE FORMAT – 24” X 36” (min), 28” X 40” (max)
FILE SIZE – less than 1 MB desired

Each Exhibit G drawing that includes the project boundary must contain a minimum of three known reference points, arranged in a triangular format for GIS geo-referencing to vector data. The latitude and longitude coordinates, or state plane coordinates, of each reference point must be shown and identified on the drawing. In addition, each project boundary drawing must be stamped by a registered land surveyor.

(c) The licensees shall file three separate sets of the project boundary data in a geo-referenced vector electronic file format (such as ArcView shape files, GeoMedia files, MapInfo files, or any similar GIS format) with the Secretary of the Commission, ATTN: OEP/DHAC. The file name shall include: FERC Project Number, data description, date of this license, and file extension in the following format [P-1234, boundary vector data, MM-DD-YYYY.SHP]. The geo-referenced electronic boundary data file must be positionally accurate to ±40 feet in order to comply with National Map Accuracy Standards for maps at a 1:24,000 scale. A single electronic boundary data file is preferred and must contain all reference points shown on the individual project boundary drawings. The latitude and longitude coordinates, or state plane coordinates, of each reference point must be shown. The data must be accompanied by a separate text file describing the map projection used (i.e., UTM, State Plane, Decimal Degrees, etc), the map datum (i.e., North American 27, North American 83, etc.), and the units of measurement (i.e., feet, meters, miles, etc.). The text file name shall include: FERC Project Number, data description, date of this license, and file extension in the following format [P-1234, project boundary metadata, MM-DD-YYYY.TXT].

Article 204. ***Headwater Benefits.*** If the licensees' project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensees shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 301. ***Revised Exhibits***. Within 90 days of the completion of any construction of facilities, modification of project boundaries, or any other action required by this license that results in changes to Exhibits A, F and G, the licensees shall file for Commission approval revised Exhibits A, F, and G, as appropriate, to show those project facilities and lands as built or modified. The exhibits shall have sufficient detail to adequately delineate the relative location of project features. The licensees shall submit six copies to the Commission, one copy to the Commission's Portland Regional Engineer, and one to the Director, Division of Hydropower Administration and Compliance.

Article 302. ***Review and Approval of Final Plans and Specifications.*** At least 60 days before starting any license-related construction activities, the licensees shall submit one copy to the Division of Dam Safety and Inspections, Portland Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of a supporting design report and final contract plans and specifications. The Commission may require changes to the plans and specifications to assure the work is completed in a safe and environmentally sound manner. Construction may not commence until authorized by the Regional Engineer.

Article 303. ***Quality Control and Inspection Program.*** At least 60 days before starting any license-related construction activities, the licensees shall submit one copy to the Division of Dam Safety and Inspections, Portland Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the Quality Control and Inspection Program (QCIP) for the Commission's review and approval. The QCIP shall include a sediment and erosion control plan.

Article 304. ***Cofferdam Construction Drawings.*** Before starting construction, the licensees shall review and approve the design of contractor designed cofferdams and deep excavations. At least 30 days before starting construction of the cofferdams, the licensees shall submit one copy to the Division of Dam Safety and Inspections, Portland Regional Engineer and two copies to the Commission (one of these copies shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the approved cofferdam construction drawings and specifications and the letters of approval.

Article 305. ***Temporary Emergency Action Plan.*** At least 60 days before starting construction, the licensees shall submit one copy to the Division of Dam Safety and Inspections, Portland Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the Temporary Emergency Action Plan (TEAP) for the Commission's review and approval. The TEAP shall describe emergency procedures in case failure of a cofferdam, large sediment control structure, or any other water retaining structure could endanger construction workers or the public. The TEAP shall include a notification list of emergency response agencies, a plan drawing of the proposed cofferdam arrangement, the location of safety devices and escape routes, and a brief description of testing procedures.

Article 401. ***Supplemental Requirements to Mandatory Conditions.***

(a) Requirement to File Plan for Commission Approval.

Condition H.2 of Appendix A requires the licensees to prepare a Total Dissolved Gas Noncompliance Mitigation Plan within 60 days of identifying excessive total dissolved gas concentrations. The plan shall also be submitted to the Commission for approval and must be approved by the Commission before being implemented by the licensees.

The licensees shall submit to the Commission documentation of its consultation, copies of comments and recommendations made in connection with the plan, and a description of how the plan accommodates the comments and recommendations. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information. The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the plan becomes a requirement of the license, and the licensees shall implement the plan, including any changes required by the Commission.

(b) Requirement to File Documentation of Completion

The licensees shall file with the Commission documentation of completion of the following activities.

Appendix	Condition No.	Facility or Activity	Due Date
A and B	G.12 (App. A) and 1.A (App. B)	Funding of a minimum of $1.475 million for upper basin habitat enhancement measures	Within 5 years of license issuance
A	L	Request and file National Pollutant Discharge Elimination System permit applications with Oregon DEQ.	Within 30 days of license issuance
A and B	T (App. A) and 13 (App. B)	Oregon DEQ and Tribal oversight fees for § 401 certification	By July 1 of years 1 through 10 (App. A and B) and by July 1 of each year thereafter for the term of license (App. B)
B	5	Survey of users of the project reservoirs	Within 30 days of a finding of nuisance phytoplankton growth

(c) Requirement to File Amendment Applications

Certain conditions in Appendices A, B, C, and D contemplate unspecified, long-term changes to project operations or facilities for the purpose of mitigating environmental effects. These changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license. The conditions are listed below.

Appendix	Condition	Modification
A	C.4, E.4, F.4, H.2, and N	Additional measures to reduce the project's contribution to exceedances of state water quality

		criteria
A	G.9	Modifications of fish passage facilities
A	G.11	Additional mitigation measures to improve fish habitat quality or quantity
B	1.D.5	Additional mitigation measures to improve fish habitat
B	1.F	Additional or modified fish passage measures
B	3, 4, and 10	Additional measures to protect water quality and beneficial uses
C and D	7(a)	Modification of deep exclusion screen to meet smolt criteria
C and D	7(d)	Measures to reduce impingement on the deep exclusion screen
C and D	9(c) and 11(c)	Measures or modifications to meet smolt survival standards

(d) Agency Coordination

In conjunction with the Fish Passage Plan required by Ordering Paragraphs (H) and (I), the licensees shall include agency coordination provisions specified by Proposed Article 40 of the Settlement Agreement filed on July 30, 2004.

Article 402. ***Implementation Committees.***

(a) The licensees shall establish a Fish Committee as provided in the Settlement Agreement filed on July 30, 2004. The Fish Committee shall consist of the licensees; and to the extent of their interests in participating, the National Marine Fisheries Service (NOAA Fisheries); U.S. Fish and Wildlife Service (USFWS); U.S. Forest Service (USFS); Bureau of Indian Affairs (BIA); Bureau of Land Management (BLM); Confederated Tribes of the Warm Springs Reservation Branch of Natural Resources (CTWS BNR); Confederated Tribes of the Warm Springs Reservation Water Control Board (CTWS WCB); Oregon Department of Fish and Wildlife (ODFW); Oregon Department of Environmental Quality (ODEQ), and a representative of the following non-governmental organizations: Trout Unlimited, American Rivers, Oregon Trout, and

the Native Fish Society. The licensees' development and implementation of study plans, reports, facility designs, and operating and implementation plans submitted to the Fish Committee pursuant to the terms of this license shall comply with the requirements of the Settlement Agreement, to the extent such requirements are approved by this license. The licensees' implementation of measures pursuant to this license shall be reported to the Fish Committee as provided in the Settlement Agreement and any applicable implementation plan. Copies of all filings with the Commission following consultation with the Fish Committee shall be provided to each member of the Fish Committee.

(1) Unless a different time period is specifically established pursuant to another provision of this license, the licensees shall, where consultation with the Fish Committee is required, allow a minimum of 30 days for the Fish Committee members to comment, work to achieve consensus, and to make recommendations before filing any study, operating or implementation plan, report, or facility design with the Commission. If after consideration by the Fish Committee of all comments or recommendations, consensus is not achieved regarding the study, operating or implementation plan, report, or facility design, and any member of the Fish Committee invokes dispute resolution pursuant to section 7.5 of the Settlement Agreement, the licensees shall not file any study, operating or implementation plan, report, or facility design with the Commission until the dispute resolution process has been completed, unless otherwise directed by the Commission. The licensees shall notify the Commission of the dispute prior to the commencement of the dispute resolution process. The licensees shall include with the study, operating or implementation plan, report, or facility design: documentation of consultation with the Fish Committee, copies of committee member comments and recommendations on the study, operating or implementation plan, report, or facility design after it has been prepared and provided to the Fish Committee, and specific descriptions of how the comments are accommodated by the study, operating or implementation plan, report, or facility design.

(2) NOAA Fisheries, USFWS, ODFW, and CTWS BNR are collectively referred to as the Fish Agencies. Each Fish Agency has separate and distinct statutory authorities and no agency is deemed, by virtue of concurrent approvals, to be sharing its statutory authority with any other agency or to be conceding that the approval of any other agency is required for exercise of that agency's authority. Where consultation with the Fish Committee and approval by the appropriate Fish Agencies pursuant to their respective statutory authorities is required, the licensees shall allow the Fish Agencies a minimum of 30 days to provide such approval prior to submitting the final study, operating or implementation plan, report, or facility design with the Commission. If a Fish Agency disapproves a study, operating or implementation plan, report, or facility design, the licensees shall not file the disapproved study, operating or implementation plan, report, or design with the Commission until the dispute resolution process specified in section 7.5 of the Settlement Agreement has been completed, unless otherwise directed by the Commission or the matter in dispute was addressed pursuant to section 4.3.2 of the

Settlement Agreement, in which case no further dispute resolution shall be required before such study, operating or implementation plan, report, or design is filed with the Commission.

(b) The licensees shall establish a Terrestrial Resources Working Group as provided in the Settlement Agreement. The Terrestrial Resources Working Group shall consist of the licensees; and to the extent of their interest in participating, USFWS; USFS; BIA; BLM; CTWS BNR; and ODFW. The licensees' development and implementation of study plans, reports, facility designs, and operating and implementation plans submitted to the Terrestrial Resources Working Group pursuant to the terms of this license shall comply with the requirements of the Settlement Agreement and the applicable License Implementation Plan, to the extent such requirements are approved by this license. Unless a different time period is specifically established pursuant to another provision of this License, the licensees shall, where consultation with the Terrestrial Resources Working Group is required, allow a minimum of 30 days for the Terrestrial Resources Working Group members to comment, work to achieve consensus, and to make recommendations before filing any study, operating or implementation plan, report, or facility design with the Commission. If after consideration by the Terrestrial Resources Working Group of all comments or recommendations, consensus is not achieved regarding the study, operating or implementation plan, report, or facility design, and any member of the Terrestrial Resources Working Group invokes dispute resolution pursuant to section 7.5 of the Settlement Agreement, the licensees shall not file any study, operating or implementation plan, report, or facility design with the Commission until the dispute resolution process has been completed, unless otherwise directed by the Commission. The licensees shall include with the study, operating or implementation plan, report, or facility design: documentation of consultation with the working group, copies of comments and recommendations by working group members, and specific descriptions of how the comments and recommendations are accommodated by the study, operating or implementation plan, report, or facility design.

(c) The licensees shall establish a Recreation Resources Working Group as provided in the Settlement Agreement. The Recreation Resources Working Group shall consist of the licensees; and to the extent of their interest in participating, USFS; BIA; BLM; CTWS BNR; ODFW; and Oregon Parks and Recreation Department (OPRD). The licensees' development and implementation of study plans, reports, facility designs, and operating and implementation plans submitted to the Recreation Resources Working Group pursuant to the terms of this license shall comply with the requirements of the Settlement Agreement and the applicable License Implementation Plan, to the extent such requirements are approved by this license. Unless a different time period is specifically established pursuant to another provision of this License, the licensees shall, where consultation with the Recreation Resources Working Group is required, allow a minimum of 30 days for the Recreation Resources Working Group members to comment, work to achieve consensus, and to make recommendations before filing any study, operating or

implementation plan, report, or facility design with the Commission. If after consideration by the Recreation Resources Working Group of all comments or recommendations, consensus is not achieved regarding the study, operating or implementation plan, report, or facility design, and any member of the Recreation Resources Working Group invokes dispute resolution pursuant to section 7.5 of the Settlement Agreement, the licensees shall not file any study, operating or implementation plan, report, or facility design with the Commission until the dispute resolution process has been completed, unless otherwise directed by the Commission. The licensees shall include with the study, operating or implementation plan, report, or facility design: documentation of consultation with the working group, copies of comments and recommendations by working group members, and specific descriptions of how the comments and recommendations are accommodated by the study, operating or implementation plan, report, or facility design.

(d) The licensees shall establish a Shoreline Management Working Group as provided in the Settlement Agreement. The Shoreline Management Working Group shall consist of the licensees, and to the extent of their interest in participating, USFS; BIA; BLM; CTWS BNR; ODFW; OPRD; and Jefferson County. Licensees' development and implementation of study plans, reports, facility designs, and operating and implementation plans submitted to the Shoreline Management Working Group pursuant to the terms of this license shall comply with the requirements of the Settlement Agreement and the applicable License Implementation Plan, to the extent such requirements are approved by the license. Unless a different time period is specifically established pursuant to another provision of this license, the licensees shall, where consultation with the Shoreline Management Working Group is required, allow a minimum of 30 days for the Shoreline Management Working Group members to comment, work to achieve consensus, and to make recommendations before filing any study, operating or implementation plan, report, or facility design with the Commission. If after consideration by the Shoreline Management Working Group of all comments or recommendations, consensus is not achieved regarding the study, operating or implementation plan, report, or facility design, and any member of the Shoreline Management Working Group invokes dispute resolution pursuant to section 7.5 of the Settlement Agreement, the licensees shall not file any study, operating or implementation plan, report, or facility design with the Commission until the dispute resolution process has been completed, unless otherwise directed by the Commission. The licensees shall include with the study, operating or implementation plan, report, or facility design: documentation of consultation with the working group, copies of comments and recommendations of working group members on the completed study, operating or implementation plan, report, or facility design after it has been prepared and provided to the working group, and specific descriptions of how the comments of the Shoreline Management Working Group members are accommodated by the study, operating or implementation plan, report, or facility design.

(e) The licensees shall establish the Pelton Round Butte Fund Governing Board as provided in the Pelton Round Butte Fund Implementation Plan, Exhibit H to the Settlement Agreement, to the extent of the interest of the members in participating. As such, the Pelton Round Butte Fund Governing Board shall be comprised of eleven signatories of the Settlement Agreement, including one representative or designee from the following agencies or organizations: Licensees (one representative collectively); CTWS BNR; CTWS WCB; USFWS; NOAA Fisheries; BIA; USFWS/BLM (one representative collectively); ODFW; ODEQ; OWRD; and non-governmental organizations (American Rivers, Oregon Trout, Trout Unlimited, Native Fish Society, WaterWatch of Oregon (one representative collectively)). If during the term of the license any party specified by this article decides it does not wish to participate or continue participating on the Governing Board, the Governing Board shall consist of those remaining signatory representatives or designees that wish to continue participating, and the licensees shall provide written notification to the Commission identifying the party that has decided it no longer wishes to have a representative or designee on the Governing Board and their reasons, if known.

Article 403. ***Project Inspections.*** The licensees shall allow parties to the Settlement Agreement filed on July 30, 2004, access to, through, and across Pelton Round Butte Hydroelectric Project lands and works for the purpose of inspecting facilities and records, including monitoring data, to monitor compliance with the license. The licensees shall allow such inspections only after the entity requesting the inspection provides the licensees reasonable notice of such inspections and agrees to follow the licensees' standard safety and security procedures when engaged in such inspections.

Article 404. ***Enforcement Plan.*** Within one year of license issuance, the licensees shall file for Commission approval, an Enforcement Plan which shall include how the licensees will ensure enforcement with relevant provisions of the Terrestrial Resources Management Plan required by Article 422, including, but not limited to, seasonal and permanent road closures, all-terrain vehicle use, eagle nest sites and winter range area protection, dispersed camping, shooting ordinances, wildlife harassment, and coordination with Oregon State Police and Coordinated Enforcement Programs. Enforcement may be accomplished through an agreement with Jefferson County. The plan shall include an implementation schedule.

The licensees shall prepare the plan after consultation with Jefferson County. The licensees shall include with the plan, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the county, and specific descriptions of how the county's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the county to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 405. ***Emergency or Special Conditions.***

(a) If at any time, unanticipated circumstances or emergency situations arise in which Endangered Species Act (ESA) listed fish or wildlife are being killed, harmed or endangered by any of the project facilities or as a result of project operation, the licensees shall immediately take appropriate action to prevent further loss in a manner that does not pose a risk to human life, limb, or property. The licensees shall, within 6 hours, notify the nearest office of the Oregon Department of Fish and Wildlife (ODFW), National Marine Fisheries Service (NOAA Fisheries), U.S. Fish and Wildlife Service (USFWS), Confederated Tribes of the Warm Springs Reservation Branch of Natural Resources (CTWS BNR), Confederated Tribes of the Warm Springs Reservation Water Control Board (CTWS WCB), Oregon Department of Environmental Quality (ODEQ), and Oregon Water Resources Department (OWRD), as appropriate, and comply with any restorative measures required by the resource agencies to the extent such measures do not conflict with the conditions of this license. The licensees shall notify the Commission as soon as possible but no later than 10 days after each occurrence and inform the Commission as to the nature of the occurrence and restorative measures taken.

(b) If at any time, unanticipated circumstances or emergency situations arise in which non-ESA listed fish or wildlife are being killed, harmed or endangered by any of the project facilities or as a result of project operation, the licensees shall immediately take appropriate action to prevent further loss in a manner that does not pose a risk to human life, limb, or property. The licensees shall, within 48 hours, notify the nearest office of the ODFW, NOAA Fisheries, USFWS, CTWS BNR, CTWS WCB, ODEQ, and OWRD, as appropriate, and comply with any restorative measures required by the resource agencies to the extent such measures do not conflict with the conditions of this license. The licensees shall notify the Commission as soon as possible but no later than 10 days after each occurrence and inform the Commission as to the nature of the occurrence and restorative measures taken.

Article 406. ***Activities on Forest Service or Bureau of Land Management Lands.***

(a) Additional lands of the US Forest Service (USFS) or Bureau of Land Management (BLM) that are authorized for use by the licensees in a license amendment shall be subject to laws, rules, and regulations applicable to the USFS or BLM, as appropriate. Within six months of such a license amendment, the licensees shall obtain a special use

authorization from the USFS or BLM, as applicable, for occupancy and use of any lands added to the project boundary by the license amendment and file it with the Commission. The special use authorization also shall be subject to applicable enforcement procedures of the Commission at the request of the USFS or BLM.

(b) The licensees shall not make changes in the location of any constructed Project features or facilities located on National Forest System (NFS) or BLM lands, or make any departure from the requirements of any approved exhibits authorizing use or occupancy of NFS or BLM lands filed with the Commission and authorized by the new license as issued and amended before receiving comments from the USFS or BLM and approval from the Commission. Following receipt of such comments from the agency, and at least 60 days prior to initiating any such changes or departure, the licensees shall file a report with the Commission and with USFS or BLM as appropriate, describing the changes, the reasons for the changes, and showing the comments of the agency for such changes.

(c) After consultation with the USFS or BLM and before starting any activity on NFS or BLM land that USFS or BLM, as appropriate, determines may affect another federally authorized activity on those lands, the licensees shall participate with USFS or BLM in attempting to resolve any potential conflicts with representatives of those permitted uses.

(d) The licensees shall prepare site-specific plans for comment by USFS or BLM and Commission approval for habitat-disturbing and ground-disturbing activities on NFS or BLM lands required by the license, including activities contained within resource management plans required by the license that shall be prepared subsequent to license issuance. The licensees shall prepare such site-specific plans as defined in this license. The licensees shall include in such site-specific plans the following:

(1) a map depicting the location of the proposed activity;

(2) a description of the land management area designation for the location of the proposed activity and applicable standards and guidelines;

(3) a description of alternative locations, designs, mitigation measures considered, and implementation and effectiveness monitoring designed to meet applicable standards and guidelines; and

(4) data collected from surveys, biological evaluations or consultation as required by regulations applicable to ground or habitat disturbing activities on National Forest System or BLM lands in existence at the time the plan is prepared and

(i) When surveys indicate the activity may affect a species proposed for listing or listed under the federal Endangered Species Act, or that may affect that species' critical habitat, the licensees shall prepare a Biological Assessment evaluating the potential impact of the action on the species or its critical habitat and submit it to the USFS or BLM, as appropriate, for review prior to submission to the Commission.

(ii) When surveys indicate the activity may affect a USFS Regional Forester sensitive species, or a BLM Special Status species, or their habitat, the licensees shall prepare a Biological Evaluation evaluating the potential impact of the action on the species or its habitat and submit it to the USFS or BLM, as appropriate, for approval. In consultation with the Commission, the USFS or BLM may require mitigation measures for the protection of the sensitive species; however, measures which constitute long-term changes to project operations and facilities may not be implemented without prior Commission authorization granted after the filing of an application to amend the license.

Article 407. ***Escalation of Costs.*** Unless otherwise indicated, all costs or payment amounts specified in dollars in the license shall be deemed to be stated as of the year 2004, and the licensees shall escalate such sums as of January 1 of each following year (starting in January 2005) according to the following formula:

AD = D x (NGDP)/(IGDP)

Where:

AD	=	Adjusted dollar amount as of January 1 of the year in which the adjustment is made.
D	=	Dollar amount prior to adjustment.
IGDP	=	"GDP-IPD" for the third quarter of the year before the previous adjustment date (or, in the case of the first adjustment, the third quarter of the year before the Effective Date).
NGDP	=	"GDP-IPD" for the third quarter of the year before the adjustment date.

"GDP-IPD" is the value published for the Gross Domestic Product Implicit Price Deflator by the U.S. Department of Commerce, Bureau of Economic Analysis in the publication *Survey of Current Business*, Table 7.1 (being on the basis of the year 2000 = 100), in the third month following the end of the applicable quarter. If that index ceases to be published, any reasonably equivalent index published by the Bureau of Economic Analysis may be substituted upon approval by the Commission. If the base year for "GDP-IPD" is changed or if publication of the index is discontinued, the licensees shall

notify the Commission as soon as possible and recommend, after consultation with the Settlement Agreement parties, adjustments or an alternative index that achieves the same economic effect.

Article 408. ***Tribal Integrated Resources Management***. Within 90 days of license issuance, the licensees shall file a written explanation of those portions of the Confederated Tribes of the Warm Springs Reservation of Oregon's "Integrated Resources Management Plan" that apply to the project.

The Commission reserves the right, upon review of the licensees' filing, to require the licensees to comply with applicable portions of the plan.

Article 409. ***Stage Change Limits.***

(a) The licensees shall operate the project with the following limits for stage changes below the Reregulating development: 0.1 foot/hour and 0.4 foot/day from October 16 to May 14, and 0.05 foot/hour and 0.2 foot/day from May 15 to October 15, except during certain extraordinary conditions, including: (1) flood events; (2) any event that triggers the Project Emergency Action Plan; (3) rapid changes in project inflows, when the rate of inflow change exceeds the proposed stage change limits; and (4) equipment failures or emergencies at the project facilities. During such extraordinary conditions, the licensees may deviate from these stage change limits. If the stage change limits are so modified, the licensees shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

(b) To monitor compliance with this requirement, the licensees shall record the time and control signal value for all stage change instructions at the Reregulating development and shall report any stage change control signals that are greater than the stage change limitations identified above to the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Bureau of Indian Affairs, Bureau of Land Management, Oregon Department of Fish and Wildlife, and Oregon Department of Environmental Quality (collectively, "agencies"); the Confederated Tribes of the Warm Springs Reservation (CTWS) Water Control Board (WCB); CTWS Branch of Natural Resources (BNR); and the Commission. In addition, the licensees shall provide written documentation to the agencies, CTWS WCB, CTWS BNR, and the Commission of all measured stage changes at the U.S. Geological Survey Madras gage that deviate more than 0.15 ft from the control set-point value.

Article 410. ***Measurement of Flows at the U.S. Geological Survey Madras Gage.***

For determining compliance with the minimum flow requirements in the license, the licensees shall implement a protocol for measuring flows at the U.S. Geological Survey (USGS) gage at Madras, Oregon (gage no. 14092500), that includes the following elements:

(a) ***Measured Madras Flow****:* The real-time flow release at the USGS Madras gage shall be the most recent 15-minute interval USGS gage reading, converted to flow using the USGS level vs. flow rating table. The real time flow setpoint for the USGS Madras gage shall be the most recent 15-minute interval water level setpoint in the Reregulating development control system, converted to flow using the USGS level versus flow rating table. The daily outflow of the project is defined as the average flow measured at the USGS Madras gage each calendar day. This daily outflow shall be calculated from the average of the day's 96 quarter-hour (15-minute interval) flow release readings.

(b) ***Determination of Allowed Minimum Flow:*** The daily allowed minimum flow shall be determined each day by the licensees, based on the provisions of the Project Operating Plan, Exhibit C to the Settlement Agreement, including monthly minimum flows, refill allowances, the plus or minus (±) 10-percent rule, measured inflows and other constraints. The allowed minimum flow shall be the calculated flow in cubic feet per second (cfs) adjusted up or down to match the nearest 0.01-foot measurement increment of the USGS level vs. flow rating table. The allowed minimum flow shall be calculated and recorded by the licensees before 6 a.m. of each day. Adjustment of the flow setpoint for each day shall be completed by 9 a.m. of each day.

(c) ***License Compliance for Minimum Flows****:* The project shall be deemed to be in compliance with the minimum flow requirements whenever the flow setpoint equals or exceeds the allowed minimum flow. In order to accommodate flow measurement inaccuracies, control-system variations, and the inability of the turbine and spillway gates to exactly produce the flow setpoint, non-compliance with this minimum flow requirement is deemed to be any event where the 15-minute measured flow release falls more than 0.10 foot (approximately 260 cfs) below the allowed minimum flow for more than 30 minutes.

Article 411. ***Measurement of Project Inflows.*** The licensees shall improve the accuracy of project inflow monitoring through a combination of upstream U.S. Geological Survey (USGS) gage improvements and the installation of additional lake level monitoring stations in Lake Billy Chinook. Estimates of inflow shall be made using a combination of the "Storage Change" and "Average Ungaged" estimating methods as defined in the Project Operating Plan, Exhibit C to the Settlement Agreement.

(a) *System Modifications and Improvements:* Within six months of license issuance, the licensees shall file a plan for Commission approval to: (1) fund work by the USGS as needed at the three upstream tributary gages (Crooked River – gage no. 14087400, Deschutes River – gage no. 14076500, and Metolius River – gage no. 14091500) to allow real-time telemetry of hourly inflow data from these gages to the licensees' project control facility; and (2) install two or more new lake level monitoring stations in Lake Billy Chinook at locations selected to reduce level measurement errors. The plan shall include an implementation schedule and provisions to install data acquisition equipment, recording hardware and software as needed to calculate inflows on a timely basis and to document the inflow record.

The licensees shall prepare the plan after consultation with the USGS and the Fish Committee established by Article 402. The licensees shall include with the plan, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the USGS and Fish Committee, and specific descriptions of how the USGS' and Fish Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the USGS and Fish Committee to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

(b) ***Inflow Estimating Method*****:** The licensees shall estimate total project inflow every 6 hours using the "Storage Change" method. This method shall calculate inflow from measured water levels in the three project reservoirs, reservoir storage versus elevation tables, and the USGS Madras gage hourly flow record. The Lake Billy Chinook water level used in this calculation shall be the average of the level monitors in Lake Billy Chinook. The Lake Simtustus and Reregulating Reservoir water levels shall be the level recorded by the existing lake level monitors in these two impoundments.

The inflow from the three upstream USGS gages on the Crooked, Deschutes, and Metolius Rivers shall be summed every 6 hours, and this sum shall then be subtracted from the 6-hour total inflow estimate to provide an estimate of the ungaged inflow to Lake Billy Chinook. The single 6-hour estimate of ungaged inflow shall be combined with prior 6-hour estimates of the ungaged inflow (using a rolling average) to estimate the "Average Ungaged" project inflow. The net estimated hourly inflow to the project shall then be calculated by the sum of the average ungaged inflow and the hourly flows measured at the three upstream USGS gages. In the event the upstream USGS gages or communication systems fail, the licensees shall use the 6-hour total project inflow

calculation to substitute for the hourly inflow estimate, until the real-time gage monitoring can be restored. The estimated daily inflow shall be the average of the day's 24 estimated hourly inflow values.

(c) ***Schedule*****:** The inflow monitoring system, including all system modifications and improvements shall be installed and operational within two years of license issuance, unless otherwise directed by the Commission.

(d) ***Modifications of Inflow Estimating Method*****:** At any time, the licensees may propose modifications regarding the inflow estimating method to improve the accuracy of the system, or to simplify the system if such simplification will not result in less accuracy. If the licensees would like to modify the estimating method or simplify the system, the licensees shall develop a plan in consultation with the Fish Committee for such modifications for Commission approval. The licensees shall include with the plan, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee, and specific descriptions of how the Fish Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 412. ***Required Minimum Flows Below the Reregulating Development.***

(a) The licensees shall operate the project to provide flow releases below the Reregulating development that equal or exceed the following minimum flows:

(1) *Target Flows:* The following table shows the target flows below the Reregulating development for each calendar month. The allowed minimum flow shall equal the target flow when project inflows exceed the target flows and the "Refill Allowance" provision is not in effect. When the "Or Inflow" or "Refill Allowance" provisions are in effect, the allowed minimum flow shall be determined pursuant to subsections (2) and (3) below.

Target flow in cubic feet per second, measured at the USGS Madras Gage No. 14092500.

	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Target Flow	4,500	4,500	4,571	4,170	4,000	4,000	4,000	3,500	3,800	3,800	4,049	4,500

(2) ***"Or Inflow" Provision:*** In order to prevent drawdown of Lake Billy Chinook, the allowed minimum flow shall be reduced below the target flow when project inflows are less than the target flow. The allowed minimum flow shall be reduced in this case, according to the following protocol: when the lowest daily inflow during the previous 7 days is below the target flow, the allowed minimum flow shall be equal to the lowest daily inflow recorded over the past 7 days. The allowed minimum flow shall be calculated each day when the "Or Inflow" provision is in effect and the allowed minimum flow shall be changed daily, as defined by the inflow estimate.

(3) ***"Refill Allowance" Provision*****:** The project shall be allowed a "refill allowance" between November 15 and June 15 (the reservoir refill season) to store water in Lake Billy Chinook to ensure that Lake Billy Chinook is filled to its summer operating level (minimum elevation 1,944.0 feet above mean sea level) by May 15. The "refill allowance" shall be 150 cubic feet per second (cfs) less than the lowest daily inflow recorded over the past 7 days, except under the following conditions: (i) from November through February, if daily inflows are less than 3,150 cfs and greater than 3,000 cfs, the refill allowance shall be the difference between the daily inflow and 3,000 cfs; however, in instances where the daily inflows are 3,000 cfs or less, the refill allowance shall be 0; and (ii) from March through June, if daily inflows are less than 3,650 cfs and greater than 3,500 cfs, the refill allowance shall be the difference between the daily inflow and 3,500 cfs; however, in instances where the daily inflows are 3,500 cfs or less, the refill allowance shall be 0.

(4) ***Extension of Refill Allowance Provision****:* If the refill allowance is less than 150 cfs during the reservoir refill season, the Refill Allowance Provision shall be extended from May 15 to June 15. During this additional month the refill allowance shall be determined based on the provisions in (a)(3) above. If the refill allowance is extended, the licensees shall notify the Commission by May 15 of the year in which the extension is made.

(b) ***Fall Flow Augmentation in Lower River for Fall Chinook****:* If project inflows fall below 3,000 cfs between September 16 and November 15, the licensees shall release up to 200 cfs from storage in Lake Billy Chinook to maintain a daily release of 3,000 cfs. This augmentation flow is limited to a drawdown of 4 feet measured from the average Lake Billy Chinook water surface elevation recorded on September 15. The licensees shall consult with the Fish Committee established by Article 402 regarding the amount of available water, rate of water release, and timing and duration of augmentation flows.

(c) ***Run of River Operation for Lower River Flows (+/- 10-percent Rule):*** The licensees shall hold river flows below the Reregulating development to within plus or minus (±) 10 percent of the measured project inflow, except under the following conditions: (1) days with measured inflow in excess of 6,000 cfs; (2) any event that triggers the Project Emergency Action Plan; (3) power emergencies, as defined in the

Western States Coordinating Council Minimum Operating Reliability Criteria (March 8, 1999), as such criteria may be amended during the license term; (4) equipment failures or emergencies at one of the project dams or power plants; or (5) reservoir drawdowns are needed for safe passage of anticipated flood flows to minimize damage to life and property.

If the Operating Reliability Criteria referenced above are amended during the license term, the licensee shall file the amended criteria with the Commission within 30 days of the licensees becoming aware of the amendment.

(d) ***Fish Emergency Clause:*** In years in which project inflow is expected to be below 3,000 cfs or flow may result in in-river conditions that the Fish Committee believes to be unacceptably poor, the licensees shall consult with the Fish Committee to determine if a deviation from the "Or Inflow" provisions above or a deviation from the flow blending scheme required by the water quality certificates issued by the Oregon Department of Environmental Quality (ODEQ) and the Confederated Tribes of the Warm Springs Reservation Water Control Board (CTWS WCB) would be likely to help avoid serious harm to native species. If the Fish Committee members agree, after consultation with ODEQ and the CTWS WCB, that a deviation is likely to help avoid such harm, and to be consistent with upstream and downstream beneficial uses, the licensees shall file for Commission approval a plan, prepared after consultation with the Fish Committee, to implement the deviation deemed necessary by the Fish Committee. The licensees shall include with the plan an implementation schedule, documentation of consultation, copies of Fish Committee comments and recommendations on the plan, and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Committee to comment and make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 413. ***Long-Term Flow Conditions.*** Within one year of license issuance, the licensees shall file for Commission approval a plan to track indicators of predicted long-term low flow (LTLF) conditions in the lower Deschutes River throughout the license term. The plan shall provide that: (1) an LTLF trigger or multiple LTLF triggers will be established, using the indicators, that signal predicted onset or realized onset of LTLF conditions in the river that are lower than historically observed at the U.S. Geological Service Madras gage; (2) certain remedial actions will be initiated if an LTLF trigger is reached; (3) these LTLF triggers will not be developed or implemented to

address low flows of a non-long-term nature that may otherwise be addressed by the Fish Emergency Clause in Article 412 subsection (d) above; and (4) the LTLF trigger(s) will be reviewed and, if necessary, modified after Commission approval, at least every ten years considering new information and changes in predictive capabilities. The licensees shall develop the plan after consultation with the Fish Committee established by Article 402. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of Fish Committee comments and recommendations on the plan, and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Committee to comment and make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

If the LTLF trigger is reached, the licensees shall consult with the Fish Committee, Oregon Department of Environmental Quality (Oregon DEQ), and the Confederated Tribes of the Warm Springs Reservation Water Control Board (CTWS WCB) to identify any negative effects to aquatic resources and federal wild & scenic river outstandingly remarkable values (ORV's) resulting from the lower river flows, to identify potential mitigation measures in the lower Deschutes River basin, and to determine if changes in project operations should be implemented to ameliorate such effects. The licensees shall also consult with the Oregon Parks and Recreation Department (OPRD) and, as appropriate, the Terrestrial, Recreation, and Shoreline Management Working Groups established by Article 402 regarding potential impacts to ORV's, scenic waterway values, lake recreation, cultural/archaeological resources, shoreline erosion and riparian habitat that may result from potential changes in project operations.

If changes in project operations are identified to mitigate any negative effects to aquatic resources and ORV's, the licensees shall, in consultation with the Fish Committee, Oregon DEQ, and CTWS WCB, prepare and file with the Commission a plan to implement such changes. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of consulted entities' comments and recommendations on the plan, and specific descriptions of how the consulted entities' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the consulted entities to comment and make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 414. ***Seasonal Drawdowns.***

(a) *Drawdown and Fluctuation Limits*: The licensees shall begin the seasonal drawdown of Lake Billy Chinook in the fall of each year followed by refill during the late fall, winter, and spring. The reservoir shall be refilled as follows:

(1) by May 1 when inflows exceed the target flows specified by Article 412;

(2) by May 15 when inflows are below the target flows; and

(3) by June 15 in years when the refill allowance is less than 150 cubic feet per second (cfs) as provided in Article 412, subsection (a)(3).

Drawdown and fluctuation limits for Lake Billy Chinook, Lake Simtustus, and the Reregulating Reservoir shall be as shown in the following table.

Seasonal drawdown and fluctuation limits for project reservoirs.		
	Operating Water Surface Elevation (feet)	
Reservoir	Minimum Summer	Winter
Lake Billy Chinook	1,944 (May 15* to Sept 15)	1,925 (Sept 16 to May 14)
Lake Simtustus	1,576 (June 1 to Aug 31)	1,573 (Sept 1 to May 31)
Reregulating Reservoir	1,414 (year round)	1,414 (year round)

*As provided in Article 412, in years when the refill allowance is less than 150 cfs, the refill date is June 15.

(b) During certain extraordinary situations, the licensees may exceed the normal seasonal drawdown limits for the project reservoirs. Such extraordinary situations include: (1) drawdown needed for safe passage of anticipated flood flows to minimize damage to life and property; (2) drawdown required to complete repairs on project facilities (including spillway gates, the intake structures, or other dam structures); and (3) power emergencies, as defined in the Western States Coordinating Council Minimum Operating Reliability Criteria (March 8, 1999), as such criteria may be amended during the license term. If the normal seasonal drawdown limits are exceeded, the licensees shall notify the Commission as soon as possible, but no later than 10 days after each such incident. If the Operating Reliability Criteria specified in item (3) are amended during the license term, the licensees shall file the amended criteria with the Commission within 30 days of the licensees' becoming aware of the amendment.

Article 415. ***Operations Compliance Plan.*** Within six months of license issuance, the licensees shall file with the Commission, for approval, an Operations Compliance Plan that describes how the licensees will comply with the operational requirements of this license. The plan shall include, but not be limited to:

(a) a provision to monitor compliance with the stage change limit requirements specified in Article 409, gaging requirements specified in Article 410, inflow estimation requirements specified by Article 411; minimum flow and reservoir refill requirements specified in Article 412, implementation of long-term flow triggers specified in Article 413, and lake level requirements specified in Article 414.

(b) a description of the exact location of all gages and/or measuring devices that would be used to monitor compliance, the method of calibration for each gage and/or measuring device, the frequency of recording for each gage and/or measuring device, and a monitoring schedule;

(c) provisions to notify the National Marine Fisheries Service (NOAA Fisheries), U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Indian Affairs (BIA), U.S. Bureau of Land Management (BLM), Oregon Department of Fish and Wildlife (Oregon DFW), Oregon Department of Environmental Quality (Oregon DEQ), Confederated Tribes of the Warm Springs Reservation Water Control Board (CTWS WCB), Confederated Tribes of the Warm Springs Reservation Branch of Natural Resources (CTWS BNR) and the Commission no later than 48 hours after the licensees become aware of any deviation from the requirements specified in part (a);

(d) a provision to maintain a log of project operation;

(e) provisions for issuance of an Annual Project Operations Report and incident reports documenting any events where the operation of the project deviated from the operational requirements of this license. The Annual Project Operations Report shall include hourly and daily inflow records for the reporting period. Incident reports shall include hourly and daily inflow records as appropriate to document compliance with the relevant project operating constraints. Copies of all reports shall be filed with the Commission and submitted to the Coordinating Committee established pursuant to the Settlement Agreement at the times specified in Exhibit C of the Settlement Agreement;

(f) a provision for an annual project review meeting with the Coordinating Committee defined in section 4.2 of the Settlement Agreement; and

(g) identification of a staff member of the licensees to serve as an operations compliance monitor with the responsibility for coordinating and ensuring the implementation of the Operations Compliance Plan and serving as a point of contact for compliance inquiry purposes, including a provision for notifying the Commission and the consulted agencies within 30 days if and when the compliance monitor designee changes.

The licensees shall prepare the plan after consultation with the Fish Committee established by Article 402, and the U.S. Geological Survey (USGS). The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and USGS, and specific descriptions of how the comments of Fish Committee members and USGS are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee members and the USGS to comment and to make recommendations before filing the plan with the Commission. If after consideration by the Fish Committee and USGS of all comments or recommendations, consensus is not achieved regarding the plan, and any member of the Fish Committee invokes dispute resolution pursuant to section 7.5 of the Settlement Agreement, the licensees shall not file the plan with the Commission until the dispute resolution process has been completed unless otherwise directed by the Commission. The licensees shall include with the plan, an implementation schedule, documentation of consultation with the Fish Committee and USGS, copies of committee member comments and recommendations on the plan after it has been prepared and provided to the Fish Committee and USGS, and specific descriptions of how the comments are accommodated by the plan.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 416. ***Water Quality Monitoring.*** The licensees shall conduct water quality monitoring pursuant to the Water Quality Management and Monitoring Plan (WQMMP) approved by the Oregon Department of Environmental Quality (Oregon DEQ) and the Confederated Tribes of the Warm Springs Reservation Water Control Board (CTWS WCB) as part of the water quality certifications issued by those agencies and attached to this license as Appendices A and B, respectively. Any subsequent amendments to the WQMMP approved by ODEQ and CTWS WCB shall also be approved by the Commission prior to implementation. Copies of the annual reports submitted to ODEQ and CTWS WCB shall be filed with the Fish Committee established by Article 402 and the Commission within 30 days of their filing with Oregon DEQ and CTWS WCB.

Article 417. ***Infeasibility of Temporary Downstream Facilities.*** In the event that all steps identified in the Fish Passage Plan (Condition 1 of Appendices C and D) to improve collection efficiency of the temporary downstream facilities and reservoir passage or survival have been implemented, and the criteria and goals for downstream passage stated in Condition 2 of Appendices C and D have not been achieved, the licensees shall implement the following processes:

(a) ***Notification.*** The licensees shall timely notify the Commission and the Fish Committee established by Article 402 that the temporary downstream passage facilities have not achieved the standards set out in the criteria and goals for downstream passage stated in Condition 2 of Appendices C and D and that all steps identified in the Fish Passage Plan designed to improve collection efficiency and reservoir passage or survival have been taken as prescribed in the Fish Passage Plan.

(b) ***Meeting.*** The licensees shall notice a meeting of the Fish Committee within 60 days of the notice in (a) to the Commission.

(c) ***Information and Analyses from Testing and Verification Studies.*** Not less than 45 days before the meeting, the licensees shall provide the Fish Committee and file with the Commission a report, including analysis of the information gathered during the operation of the temporary downstream passage facilities pursuant to the Testing and Verification provisions of the Fish Passage Plan, to inform an analysis by the Fish Committee and the Commission of whether (1) testing and/or modification of the temporary downstream passage facilities should continue, (2) an alternative fish passage methodology should be implemented, or (3) fish passage is currently scientifically and technologically infeasible.

(d) ***Plan with Passage Option***. If requested to do so by the Fish Committee or the Commission, the licensees shall develop a plan to implement the passage option selected under this paragraph according to the following procedures:

(1) ***Temporary Collection Facilities*****:** If the Fish Committee believes or the Commission finds that the information provided pursuant to paragraph (c) shows demonstrable progress related to reservoir passage and survival, the licensees shall, within 60 days following the meeting, develop a plan for the continued operation, any needed modification, and testing of the temporary downstream passage facilities. The licensees shall prepare the plan in consultation with the Fish Committee established by Article 402 and the Fish Agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and Warm Springs Reservation Branch of Natural Resources). The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and Fish Agencies, and specific descriptions of how the Committee's

and Agencies' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee and Fish Agencies to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

(2) ***Alternative Fish Passage Plan*****:** If the Fish Committee believes or the Commission finds that the information provided pursuant to paragraph (c) supports selection of an alternative fish passage plan, including but not limited to tributary trapping, substantially new proposals based on the selective water withdrawal system, or any other scientifically supported fish passage methodology, the licensees shall, within 12 months of the meeting, develop an alternative fish passage plan. Any alternative fish passage plan shall be consistent with maintaining relevant water quality standards, including, but not limited to, continued operation of the selective water withdrawal facility, if the selective water withdrawal facility is necessary to achieve water quality standards. The licensees shall prepare the plan in consultation with the Fish Committee and the Fish Agencies. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and Fish Agencies, and specific descriptions of how the Committee's and Agencies' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee and Fish Agencies to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

(e) ***Feasibility*****.** The licensees shall implement any plans developed under paragraph (d) of this article according to the schedule and procedures set out in those plans as approved by the Commission. If a plan to continue operation and testing of the temporary downstream passage facilities or an alternative fish passage plan is determined to be infeasible according to the schedule and procedures set out in any plan developed under paragraph (d) of this article, then the licensees shall utilize the procedures beginning with paragraph (a) of this article to initiate further proposals.

(f) ***New Information Regarding Fish Passage.*** If new information demonstrates that downstream fish passage may be feasible, the licensees shall, within 60 days of receiving such information, notice a meeting of the Fish Committee to determine whether downstream fish passage should be reinitiated. If the Fish Committee believes or the Commission finds that downstream fish passage should be reinitiated, the licensees shall develop a fish passage plan based on the new information then available. Such a plan shall be developed in consultation with the Fish Committee and Fish Agencies. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and Fish Agencies, and specific descriptions of how the Committee's and Agencies' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee and Fish Agencies to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 418. ***Infeasibility of Permanent Downstream Facilities.*** In the event that all steps identified in the Fish Passage Plan (Appendix C, Condition 1 and Appendix D, Condition 1) to improve collection efficiency of the permanent downstream facilities and reservoir passage or survival have been implemented, and the criteria and goals for downstream passage stated in Condition 2 of Appendices C and D have not been achieved, the licensees shall implement the following process:

(a) ***Notification.*** The licensees shall timely notify the Commission and the Fish Committee established by Article 402 that the permanent downstream passage facilities have not achieved the standards set out in the criteria and goals for downstream passage stated in Condition 2 of Appendices C and D and that all steps identified in the Fish Passage Plan designed to improve collection efficacy and reservoir passage or survival have been taken as prescribed in the Fish Passage Plan.

(b) ***Meeting.*** The licensees shall notice a meeting of the Fish Committee within 60 days of the notice to the Commission.

(c) ***Information and Analyses from Testing and Verification Studies.*** Not less than 45 days before the meeting, the licensees shall provide the Fish Committee and file with the Commission a report, including analysis of the information gathered during the operation of the permanent downstream passage facilities pursuant to the Testing and

Verification provisions of the Fish Passage Plan, to inform an analysis by the Fish Committee and the Commission whether (i) testing and/or modification of the permanent downstream passage facilities should continue, or (ii) fish passage is currently scientifically and technologically infeasible for some or all species.

(d) ***Plan with Passage Options*****.** If requested to do so by the Fish Committee or the Commission, the licensees shall develop a plan to implement the passage option selected under this paragraph according to the following procedures:

(1) ***Permanent Collection Facilities*****:** If the Fish Committee believes or the Commission determines that the information provided pursuant to paragraph (c) shows demonstrable progress related to reservoir passage and survival, the licensees shall, within 60 days following the meeting, develop a plan for the continued operation, any needed modification, and testing of the permanent downstream passage facilities. The licensees shall prepare the plan in consultation with the Fish Committee established by Article 402 and the Fish Agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and Warm Springs Branch of Natural Resources). The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and Fish Agencies, and specific descriptions of how the Committee's and Agencies' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee and Fish Agencies to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

(e) ***Feasibility*****.** The licensees shall implement any plan developed under paragraph (d)(1) of this article according to the schedule and procedures set out in that plan. If continued operation and testing of the permanent downstream passage facilities is determined to be infeasible according to the schedule and procedures set out in any plan developed under paragraph (d) of this article, then the licensees shall utilize the procedures beginning with paragraph (a) of this article to initiate further proposals.

(f) ***New Information Regarding Fish Passage*****.** If new information demonstrates that downstream fish passage may be feasible, the licensees shall, within 60 days of receiving such information, notice a meeting of the Fish Committee to determine whether downstream fish passage should be reinitiated. If the Fish Committee believes or the

Commission determines that downstream fish passage should be reinitiated, the licensees shall develop a fish passage plan based on the new information then available. Such plan shall be developed in consultation with the Fish Committee and Fish Agencies. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and Fish Agencies, and specific descriptions of how the Committee's and Agencies' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee and Fish Agencies to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 419. ***Fish Health Management Program.*** Within 18 months of license issuance, the licensees shall file for Commission approval a plan for a fish health management program at the project to support the fish passage effort, and to monitor disease incidence in Deschutes River fish populations and potential changes in the distribution of fish disease agents. The plan shall include provisions for fish health services and supplies associated with production of salmon and steelhead eggs and fry at Round Butte Hatchery as part of the Reintroduction Plan, diagnosis of disease in mortalities at fish facilities, and monitoring of disease agents in wild fish populations. The plan shall also include provisions for fish pathogen procedures developed in consultation with the Oregon Department of Fish and Wildlife Fish Health Services staff (ODFW) for trap-and-haul and volitional passage programs. The licensees shall include with the plan an implementation schedule that provides for implementation of the plan throughout the Interim Passage Phase and the first five years of the Final Passage Phase (or for the first 15 years of the Interim Passage Phase if transition to the Final Passage Phase does not occur).

The program shall provide for the evaluation of disease as a mortality factor in downstream and upstream migrating anadromous salmonids, to reduce the risk of transmitting new serious disease pathogens upstream, and other fish health management activities associated with the fish passage program. This requirement may be accomplished through an agreement with ODFW.

The licensees shall prepare the plan in consultation with the Fish Committee established by Article 402 and the Fish Agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, ODFW, and Warm Springs Branch of Natural Resources). The licensees shall include with the plan documentation of consultation,

copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and Fish Agencies, and specific descriptions of how the Committee's and Agencies' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee and Fish Agencies to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 420. ***Round Butte Hatchery.***

(a) ***Hatchery Agreement*:** Within six months of license issuance, the licensees shall enter into with Oregon Department of Fish and Wildlife (ODFW) and file with the Commission, for approval, the "Agreement Related To The Operation Of The Round Butte Hatchery And Related Facilities" (the "Hatchery Agreement"), substantially consistent with the draft agreement included in Appendix B to the Settlement Agreement.

(b) ***Hatchery Operations*:** Within one year of license issuance, the licensees shall file for Commission approval a plan for hatchery operations at Round Butte Hatchery at no more than current production levels of spring Chinook and summer steelhead, as specified in section 8 of Appendix B of the Settlement Agreement, during the term of the license, which hatchery operations shall be consistent with: (1) the annual work plan developed under Condition 16 of Appendices C and D; (2) then-in-existence fish management policies and directives of ODFW and the Confederated Tribes of the Warm Springs Reservation Branch of Natural Resources (CTWS BNR); (3) any Hatchery Genetics Management Plan or other directive developed between ODFW and the National Marine Fisheries Service (NOAA Fisheries) pursuant to the Endangered Species Act (ESA); and (4) the priority objective of restoring and recovering wild stocks in the Deschutes River basin. To ensure consistency with the Fish Passage Plan, the licensees shall consult with the Fish Committee established by Article 402 regarding hatchery operations. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee, and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

(c) ***Hatchery Improvements:*** Within six months of entering into the Hatchery Agreement with ODFW or one year of license issuance if agreement is not reached, the licensees shall, after consultation with the Fish Committee, file for Commission approval a hatchery improvement plan to implement the hatchery improvements identified in the Hatchery Agreement if such an agreement is reached or the draft agreement included in Appendix B to the Settlement Agreement if agreement is not reached. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee, and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

(d) ***Sockeye*****:** If the Fish Committee believes that hatchery supplementation is necessary in order to reestablish an anadromous population of sockeye above Round Butte dam, the licensees shall file a plan with the Commission, for approval, to undertake the necessary changes in equipment to support hatchery capacity at the Round Butte Hatchery or provide funding to ODFW to undertake such changes for the production of sockeye. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee, and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Fish Committee to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

If the Fish Committee determines that hatchery supplementation is not necessary in order to reestablish an anadromous population of sockeye above Round Butte dam, the licensee shall file for Commission approval written notification of and justification for the Committee's decision.

(e) ***Periodic Review:*** Every five years after issuance of the license, the licensees, in cooperation with ODFW and CTWS BNR to the extent of their interests in participating, shall conduct a periodic review, to be funded by the licensees, of the hatchery program to determine whether it is meeting its goals. The review shall consider federal, ODFW and CTWS BNR fish management policies and directives, any Hatchery Genetics Management Plan or other directive developed between ODFW and NOAA Fisheries pursuant to the ESA, relevant best practices, and existing information regarding recent scientific advances, and shall include recommendations for ongoing management of the hatchery program for the next five years. The licensees shall make the draft hatchery review available to the Fish Committee for review and comment. The licensees also shall make the draft hatchery review available for public review and comment through an annual workshop or other appropriate forum. The licensees shall provide notice of the annual workshop to all Settlement Agreement parties and the Commission. The licensees shall allow a minimum of 30 days for the consulted parties to comment prior to finalizing the hatchery review and filing it with the Commission. The licensees shall specify in the final review how any comments and recommendations were addressed.

If the licensees, ODFW, and CTWS BNR believe in the final review that the hatchery program is not supporting the goals of the Fish Passage Plan or supporting the goals of self-sustaining harvestable fisheries in the lower Deschutes River, the licensees shall consult with ODFW and CTWS BNR regarding changes that may be made to hatchery operations. If ODFW and CTWS BNR believe that changes to hatchery operations are necessary, the licensees shall file a plan with the Commission, for approval, to undertake the necessary changes or provide funding to ODFW to undertake such changes for the purposes of supporting the goals of the Fish Passage Plan or self-sustaining harvestable fisheries in the lower Deschutes River. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agency and Tribe, and specific descriptions of how the agency's and Tribes' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the agency and the Tribe to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

(f) If the agreement specified in item (a) is not reached, the licensees shall file for Commission approval written explanation of the dispute, including the positions taken, in lieu of filing the agreement. In the event agreement is not reached, the licensees shall remain responsible for completing items (b) through (f) of this article. The Commission reserves the right to require additional measures consistent with the terms of this article or modifications to this article in the event the agreement in item (a) is not reached.

Article 421. ***Native Fish Monitoring Program.*** The licensees shall, within one year of license issuance, file for Commission approval, after consultation with the Fish Committee established by Article 402, a native fish monitoring plan to evaluate effects of reintroducing anadromous fish on resident fish populations. The plan shall include the following biological and habitat components:

(a) Biological Components:

(1) Sockeye, steelhead, and spring Chinook spawning surveys, at locations and times determined by the Fish Committee, to assess spawning escapement, distribution, and timing for fish passed above the dams; redd counts in tributaries to Lake Billy Chinook, including the Metolius River system and Squaw Creek; and annual salmon and steelhead spawning surveys and redd counts beginning the first year that returning adult anadromous fish are passed upstream of the project and continuing after initiation of downstream passage for the length of time (about 12 years) required for three generations of adults to return. This salmon/steelhead spawning monitoring shall continue on an annual basis until the ratio of recruits to spawners (R/S ratio) is $\geq$1, whereupon the licensees shall notify the Commission that an R/S ratio of $\geq$1 has been reached. Thereafter, as long as the R/S ratio remains $\geq$1, the licensees are under no obligation to continue the spawning monitoring unless recommended by the Fish Committee and approved by the Commission. In the event that the R/S ratio decreases to <1, the licensees shall notify the Commission, and annual spawning monitoring shall be resumed until the R/S ratio is again $\geq$1.

(2) Monitoring of competition among anadromous and resident fish species in the Metolius and middle Deschutes River systems and McKay Creek following reintroduction of steelhead and salmon upstream of the project, using a combination of population monitoring and redd counts, including the following:

(i) Annual population surveys of the resident redband trout population in Squaw Creek and McKay Creek beginning in the first year of the license; following reintroduction of anadromous fish above the project, redband trout monitoring surveys in five of the first ten years after reintroduction.

(ii) Counts of redband trout redds annually in Squaw Creek and the Metolius River basin, at locations and times determined by the Fish Committee, beginning in the first year of the license and continuing until initiation of upstream passage of returning anadromous adults; following the initiation of upstream passage, redband trout redd counts in five of the first ten years after the initiation of upstream passage.

(iii) Determination of the proportion of redband trout and steelhead in Squaw Creek and McKay Creek at years 5 and 10 after reintroduction of steelhead.

(iv) Annual (unless bull trout are delisted under the Endangered Species Act) evaluation of the bull trout population using Oregon Department of Fish and Wildlife's (Oregon DFW's) annual bull trout redd counts on Metolius River tributaries, annual reservoir angler surveys during the targeted March–April bull trout fishery at Lake Billy Chinook, and monitoring of bull trout at project fish passage facilities.

(v) Monitoring of sockeye and bull trout spawning interactions through redd counts and observations for spawning site overlap during five of the first ten years after the initiation of upstream passage of returning anadromous adults; if interactions are found, more intensive redd surveys and spawning observations assessing the effects of sockeye redd superimposition on bull trout redds.

(b) <u>Habitat Components:</u>

(1) Monitoring of the quantity of habitat available upstream of the project by surveying approximately 20 miles of accessible stream above the project each year. Milestones for habitat availability monitoring shall be (i) before upstream passage (as baseline), (ii) immediately after initiation of upstream passage, and (iii) whenever changes in the quantity of accessible habitat occur (e.g., in the event passage is initiated at upstream non-project facilities), or as otherwise approved by the Commission.

(2) Monitoring of habitat effectiveness and riparian conditions above the project, using commonly-accepted protocols and by surveying about 20 miles of accessible stream above the project each year at locations and times determined by the Fish Committee. Habitat effectiveness shall be monitored during the term of the new license through fish habitat surveys and production capacity estimates. Use of a

geographic information system (GIS) database to incorporate the information and to develop, prioritize, and implement fish habitat mitigation projects and evaluate success for passage efforts.

(3) Production capacity estimates for spring Chinook, summer steelhead, and sockeye habitat within two years of license issuance. Annual reevaluation for the first ten years of the new license, and every five years thereafter, incorporation of the estimates of production capacity into life cycle modeling, and evaluation of passage success for the reintroduction of anadromous fish species above the project.

(4) Monitoring of the condition of habitat for any riparian habitat restoration project undertaken by the licensees. Monitoring programs shall be consistent with the strategies detailed in the Terrestrial Resources Management Plan required by Article 423, and shall include the following parameters: vegetation species composition; bank stability; herbaceous cover; tree/juniper/shrub cover; height and diameter of trees; canopy cover; growth and physical condition of vegetation; and distribution of vegetation.

The plan shall also include a provision for the licensees to file for Commission approval an annual report describing the prior year's monitoring activities and indicating the monitoring activities that will be undertaken in the then current year. The annual report shall be filed by February 1 commencing the year following the first year of monitoring and continuing until the year following the last year of monitoring activities under this article. The licensees shall allow a minimum of 30 days for the Fish Committee to comment on a draft of the annual report and to make recommendations before filing the final annual report with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Committee to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 422. ***Terrestrial Resources Management Plan.***

(a) Within one year of license issuance, the licensees shall file with the Commission for approval a Terrestrial Resources Management Plan (TRMP) to implement terrestrial resource protection, mitigation, and enhancement (PME) measures as specifically set out and described in the TRMP Outline, Exhibit E to the Settlement Agreement to the extent such measures apply to lands within the project boundary. The TRMP shall clearly indicate those lands within the project boundary to which the measures apply. The TRMP shall be coordinated with the Recreation Resources Implementation Plan (Article 424), the Shoreline Management Plan (Article 428), and with existing laws and plans to ensure consistency among the plans' objectives. The TRMP shall be prepared after consultation with the Terrestrial Resources Working Group established by Article 402.

(b) The TRMP shall be the principal instrument for management of, implementation, monitoring and adaptation of PME measures for terrestrial resources affected by or related to the project. The TRMP shall include specific goals for terrestrial resources, as well as clearly defined objectives for achieving the goals. The licensees shall include in the TRMP the following resource management strategies for implementing specific PMEs:

(1) Riparian and wetland restoration and protection strategy;

(2) Vegetation management strategy;

(3) Exotic and invasive vegetation management strategy;

(4) Comprehensive bald eagle management strategy;

(5) Raptor protection strategy;

(6) Threatened, endangered, and sensitive (TES) species and habitats of special concern protection strategy;

(7) Wildlife control strategy;

(8) Travel and access management strategy;

(9) Public access strategy;

(10) Pelton Fish Ladder wildlife protection strategy; and

(11) Wildlife monitoring strategy

(c) The licensees shall, after consultation with the Terrestrial Resources Working Group, file with the Commission by June 1 of each year after Commission approval of the TRMP, an annual report documenting the implementation of the TRMP. The annual TRMP report shall:

(1) Document the implementation of PME measures as scheduled in the TRMP.

(2) Describe the coming year's proposals for implementing scheduled management actions pursuant to the TRMP.

(3) Document consultation activities related to the TRMP.

(4) Document the results of monitoring of completed actions (to the extent monitoring is required for any particular action) to ensure proper implementation and effectiveness.

(d) The licensees, as part of the TRMP, shall develop and implement an adaptive management process to monitor implementation and effectiveness of terrestrial resource PME measures, and adapt implementation measures as needed to meet resource specific goals and objectives. The licensees, in consultation with the Terrestrial Resources Working Group, shall develop adaptive management proposals, including protocols and schedules, in consultation and coordination with the Terrestrial Resources Working Group. The TRMP shall be updated every 5 years during the license term in consultation with the Terrestrial Resources Working Group as part of the adaptive management process. As appropriate, the licensees shall incorporate peer review into the adaptive management process to evaluate adaptive management actions and assess technical evaluations. The TRMP updates shall be filed with the Commission for approval. Upon Commission approval, the licensees shall implement the updated plan.

(e) The licensees shall include with the TRMP and any TRMP updates stipulated in item (d) above documentation of consultation, copies of comments and recommendations on the completed plan and plan updates after they have been prepared and provided to the Working Group, and specific descriptions of how the Working Group's comments are accommodated by the plan and plan updates. The licensees shall allow a minimum of 30 days for the Working Group to comment and to make recommendations before filing the plan and plan updates with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan and plan updates. Implementation of the plan and plan updates shall not begin until the plan and plan updates are approved by the Commission. Upon Commission approval, the licensees shall implement the plan and plan updates, including any changes required by the Commission.

Article 423. ***Terrestrial Resource Interim Measures.*** Within six months of license issuance, the licensees shall file for Commission approval a plan to implement the following measures within one year of license issuance while the Terrestrial Resources Management Plan (TRMP) is being developed as provided in Article 422 and to the extent such measures apply to lands within the project boundary:

(a) ***Upland Vegetation Management.*** The licensees shall implement upland vegetation management measures to improve, protect, and maintain terrestrial plant and wildlife habitat diversity on lands within the project boundary. The measures shall anticipate, and to the extent possible be consistent with, the TRMP Vegetation Management Strategy specified in Exhibit E of the Settlement Agreement.

(**b)** ***Exotic and Invasive Vegetation Management.*** The licensees shall inventory and map noxious weed presence, distribution and density, and control, suppress, or eradicate existing infestations at sites identified in the TRMP Outline, Exhibit E of the Settlement Agreement. The weed management measures shall anticipate, and to the extent possible be consistent with, the TRMP Exotic and Invasive Vegetation Management Strategy.

(c) ***Bald Eagle Nesting Productivity Surveys.*** The licensees shall conduct bald eagle nesting surveys to monitor trends in nesting productivity and success, and the status of bald eagle nesting pairs that use the project reservoirs. The nesting surveys shall be conducted using the protocol described in the TRMP Outline, Exhibit E of the Settlement Agreement.

(d) ***Bald Eagle Communal Roost Surveys.*** The licensees shall conduct fall and winter communal roost surveys at known bald eagle communal roosts associated with the project reservoirs. The surveys shall be conducted using the protocols described in the TRMP Outline, Exhibit E of the Settlement Agreement.

(e) ***Bald Eagle Winter Use Surveys.*** The licensees shall conduct winter use surveys to monitor bald eagle winter use of the project reservoirs. The surveys shall be conducted using the protocol described in the TRMP Outline, Exhibit E of the Settlement Agreement.

(f) ***Golden Eagle Nesting Productivity Surveys.*** The licensees shall conduct golden eagle nesting surveys to monitor trends in nesting productivity and success, and the status of golden eagle nesting pairs associated with the project reservoirs. The surveys shall be conducted using the protocols described in the TRMP Outline, Exhibit E of the Settlement Agreement.

(g) ***Osprey Nesting Productivity Surveys.*** The licensees shall conduct osprey nesting surveys to monitor trends in the nesting productivity of ospreys that nest in association with the project reservoirs. The licensees shall conduct the surveys using the protocol described in the TRMP Outline, Exhibit E of the Settlement Agreement.

(h) ***Avian Power Line Electrocution and Collision.*** The licensees shall survey project-related distribution lines to identify the potential for avian electrocution. These lines include the following: (1) 12.5-kilovolt (kV) line to Round Butte powerhouse (station service feeder); (2) 12.5-kV line to Round Butte dam, spillway, and auxiliary station feeder; and (3) 12.5-kV line to the Reregulating dam. To the extent practicable and following guidelines in the publication "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996" (APLIC 1996) (or the most current Avian Power Line Interaction Committee [APLIC] publication for avian protection), the licensees shall rebuild or retrofit any line or power pole involved in a bird fatality or injury or identified as a high risk for avian electrocution to render the facility raptor-safe. The plan shall include a provision for the licensees to notify the Commission prior to rebuilding or retrofitting the line or power pole.

(i) ***Waterfowl Surveys.*** The licensees shall conduct waterfowl nesting productivity and winter use surveys to monitor trends in waterfowl production and use associated with the project reservoirs. The surveys shall be conducted using the protocols described in the TRMP.

(j) ***Pelton Fish Ladder Wildlife Protection.*** The licensees shall install five small animal crossings over the Pelton Fish Ladder, remove the shotgun style outlets from six culverts that pass under the fish ladder, and install a wildlife diversion device in the dirt canal section of the fish ladder to improve crossing opportunities for small mammals, reptiles, and amphibians, and reduce the potential for animal entrapment. The plan shall include detailed design drawings for these activities.

(k) ***Agency Coordination.*** The licensees shall provide for agency coordination as specified in Proposed Article 44 of the Settlement Agreement file on July 30, 2004.

(l) ***Implementation Schedule.*** The licensees shall include an implementation schedule with the plan.

The licensees shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Terrestrial Resources Working Group established by Article 402 and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Working Group to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 424. ***Recreation Resources Implementation Plan.*** (a) Within one year of license issuance, the licensees shall file with the Commission, for approval, a Recreation Resources Implementation Plan (RRIP) to enhance recreation resources at the Pelton Round Butte Project. The licensees shall prepare the plan after consultation with the Recreation Resources Working Group established pursuant to Article 402 and in conjunction with the Terrestrial Resources Management Plan required by Article 422. The RRIP shall include the measures identified in the Exhibit G to the Settlement Agreement except that in lieu of funding the Lake Billy Chinook offshore boat mooring study, the RRIP shall include a provision for the licensees to file, after consultation with the Recreation Resources Working Group, an evaluation of the technical feasibility of implementing an off-shore boat moorage program at Lake Billy Chinook along with any recommendations for the installation and maintenance of up to 50 offshore moorages in Lake Billy Chinook.

In addition, operation and maintenance of Perry South Campground, Monty Campground, and Street Creek shall be provided for as stipulated in Proposed Article 52 of the Settlement Agreement filed on July 30, 2004.

(b) The RRIP shall include the following objectives:

(i) provide adequate and safe public access to the project lands and waters;

(ii) avoid or minimize recreation related impacts on sensitive resources; and

(iii) provide a range of feasible and desirable recreation opportunities based on information collected and filed pursuant to the reporting requirements for FERC Form 80 – Recreation Report, section 8 of the Commission's regulations (18 C.F.R. 8.11), and applicable existing management plans.

(c) In addition to the measures specifically identified in the "List of Measures to be included in the Recreation Resources Implementation Plan," (Exhibit G to the Settlement Agreement) with the exception noted in item (a) above, the licensees shall implement measures designed to mitigate for project-related recreation authorized or implemented by entities other than the licensees, provided however, that the actions taken by those entities are consistent with the applicable existing management plans. Such additional measures shall be developed as needed in consultation with the Recreation Resources Working Group.

(d) Every 10 years beginning in the tenth year following license issuance, the licensees shall convene a meeting of the Recreation Resources Working Group to discuss unforeseen impacts of recreation patterns in the project area (if any) and to agree upon appropriate management actions or mitigation measures.

(e) The licensees shall file with the Commission, after consultation with the Recreation Resources Working Group, an annual report documenting the implementation of the RRIP. The annual RRIP report shall:

(i) Identify the measures implemented as scheduled in the RRIP.

(ii) Identify next year's proposals for implementing scheduled recreation management actions.

(iii) Reconcile and document differences between each year's proposals and any replacement or additional measures agreed upon by the licensees and the affected agencies.

(iv) Document consultation related to the RRIP.

(v) Document the results of monitoring of completed actions (to the extent monitoring is necessary for any particular action) to ensure proper implementation and effectiveness.

The licensees shall include with the plan, an implementation schedule, documentation consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Recreation Resources Working Group, and specific descriptions of how the Working Group's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Working Group to comment before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Some of the measures specified in the RRIP apply to lands that are located outside of the project boundary. These measures include: (1) funding improvements and annual maintenance of dispersed campsites at BLM Beach, the cove area downstream from Cove Marina, west shore area of the Crooked River arm downstream from the bridge, and west shore of the Deschutes River arm downstream from the bridge; (2) making improvements to and funding NEPA compliance for Monty Campground; and (3) making improvements to and funding activities at Cove Palisades State Park. These lands in which the activities will take place shall be brought into the project boundary and the exhibit G drawings shall be revised and filed pursuant to Article 301. The 90-day deadline for filing the revised exhibits stipulated in Article 301 shall be referenced to the completion date of the specified improvements (*e.g.*, construction, modification, etc.). All structures or facilities constructed or installed in accordance with this plan shall be shown on the exhibit drawings filed pursuant to Article 301.

Article 425. ***Recreation Funding Measures.*** Within one year of license issuance, the licensees shall, for the enhancement of recreation resources at the Pelton Round Butte Project:

(a) Enter into an agreement with the Confederated Tribes of the Warm Springs to provide annual funding for maintenance and operation of Indian Park Campground and Chinook Island Day-Use Area;

(b) Provide annual funding for operation and maintenance (O&M) of Pelton and Round Butte Overlook parks, and Pelton Wildlife Overlook;

(c) Fund a project staff person to coordinate implementation of the Recreation Resources Implementation Plan required by Article 424 and to provide for necessary resource coordination pursuant to the terms of this license;

(d) Fund seasonal O&M costs for one new, self-contained floating restroom for use by boaters on the Metolius River arm of Lake Billy Chinook near the Bureau of Land Management beach east of Three Rivers Recreation Area; and

(e) Close and rehabilitate the road leading into the Balancing Rocks area, develop a trail, and provide a small roadside parking area. The trail and small roadside parking area shall be brought into the project boundary and shown on the exhibit drawings filed

pursuant to Article 301. The 90-day deadline for filing the revised exhibits stipulated in Article 301 shall be referenced to the completion date of the specified improvements (*e.g.*, construction, modification, etc.).

Within one year of license issuance, the licensees shall file with the Commission for approval a copy of the agreement specified in item (a) and documentation that the requirements of items (b) through (e) have been completed. If the agreement specified in item (a) is not reached, the licensees shall provide written explanation of the dispute, including the positions taken, in lieu of the agreement. The Commission reserves the right to require additional measures consistent with the terms of this article in the event an agreement is not reached.

Article 426. ***Emergency Communications.*** Within six months of license issuance, the licensees shall:

(a) file with the Commission, for approval, a report detailing the results of a communications coverage study designed to address the following objectives:

(i) Emergency/Safety (ability for emergency response personnel to contact each other and to contact external emergency services);

(ii) Day-to-day management; and

(iii) General public communication outside of the immediate Pelton Round Butte Project reservoir areas.

The report shall be prepared after consultation with the Recreation Resources Working Group established by Article 402. The licensees shall include with the report documentation of consultation, copies of comments and recommendations on the completed report after it has been prepared and provided to the Working Group, and specific descriptions of how the Working Group's comments are accommodated by the report. The licensees shall allow a minimum of 30 days for the Working Group to comment before filing the report with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the report. Implementation of measures specified in the report shall not begin until the report is approved by the Commission. Upon Commission approval, the licensees shall implement measures specified by the report, including any changes required by the Commission, and as provided in paragraph (b) of this article.

(b) Within one year of license issuance, fund measures identified in the communications coverage study as necessary for emergency/safety communications, including measures to provide coverage of existing "dead areas" on project reservoirs using two-toned radio frequencies.

Article 427. ***Programs for Interpretation and Education.*** Within five years of license issuance, the licensees shall file for Commission approval an Integrated Interpretation and Education Plan (I & E Plan) for the Pelton Round Butte Project to inform the public about resource and project features in the project area at a total expense to the licensees of no more than $75,000 in then-current dollars (unless otherwise directed by the Commission under Article 438). The I & E Plan shall be developed in consultation with the Recreation Resources Working Group established pursuant to Article 402 and the Oregon State Historic Preservation Officer.

The I&E Plan shall address resources in the project area, including but not limited to fishery and aquatic resources, terrestrial and wildlife resources, cultural resources, tribal culture and history, project history, and energy production. Themes related to terrestrial and wildlife resources may include resource stewardship; threatened, endangered and sensitive species biology and protection; protection of sensitive plant communities; riparian habitat restoration; winter range protection; mule deer biology and habitat requirements; and causes and effects of human disturbance. Implementation elements may include signs and signboards at designated campgrounds and at other recreation facilities within the project area. Annually, for the term of the license, the licensees shall implement agreed-upon elements of the I & E plan at an annual cost of not more than $20,000 (unless otherwise directed by the Commission under Article 438), which amount shall be escalated as provided in Article 407.

The licensees shall include with the plan, an implementation schedule, documentation of agency and tribe consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and tribe, and specific descriptions of how the agencies' and tribe's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the agencies and tribe to comment before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 428. ***Shoreline Management Plan.*** Within one year of license issuance, the licensees shall, after consultation with the Shoreline Management Working Group established pursuant to Article 402, file for Commission approval a Shoreline Management Plan (SMP) for the Pelton Round Butte Project. The SMP shall include standards and guidelines for new shoreline development, installation of new docks, and modification of existing docks.

The licensees shall include with the SMP, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed SMP after it has been prepared and provided to the Shoreline Management Working Group, and specific descriptions of how the Working Group's comments are accommodated by the SMP. The licensees shall allow a minimum of 30 days for the Working Group to comment before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the SMP. Implementation of the SMP shall not begin until the SMP is approved by the Commission. Upon Commission approval, the licensees shall implement the SMP, including any changes required by the Commission.

Article 429. ***Shoreline Erosion Plan.*** Within one year of license issuance, the licensees shall, in consultation with the Shoreline Management Working Group established pursuant to Article 402, file for Commission approval, a Shoreline Erosion Plan to monitor and control stream and impoundment shoreline erosion at the Pelton Round Butte Project. The plan, at a minimum, shall include the following objectives and measures listed below.

(1) The following objectives of the plan shall be to:

(a) Discuss the conditions and probable causes of, as well as potential measures for, shoreline erosion;

(b) Describe agreed upon actions, including, but not limited to the measures described herein; and

(c) Provide that all actions conducted under the shoreline erosion plan shall be developed and implemented in consultation with the Shoreline Management Working Group established pursuant to Article 402.

The licensees shall develop the plan using the annotated outline in Section E-V11 – Land Management and Use of the Final Joint Application Amendment, and any other applicable information, in consultation with the Shoreline Management Working Group.

(2) Within three years of license issuance, the licensees shall commence rehabilitation at, but not limited to, the following existing erosion sites:

(a) Chinook Island;

(b) Indian Park Campground;

(c) Juniper Canyon;

(d) Big Canyon;

(e) Dispersed sites on the east bank just south of Round Butte dam;

(f) Shoreline of the cove at Perry South Campground and along Spring Creek;

(g) Shoreline upstream of the Upper Deschutes Day-Use Area;

(h) Pelton Park;

(i) Bureau of Land Management Beach east of the Three Rivers Marina; and

(j) shoreline and access road at Monty Campground.

(3) The licensees shall conduct, or provide for an entity to conduct, a baseline survey of the project area to identify, map, and assess existing erosion sites that are project-related and are significantly affecting terrestrial habitats, fish habitats or water quality; or that, if the site is located on the Confederated Tribes of the Warm Springs Reservation, is causing or is likely to cause significant loss of shoreline. For each erosion site identified, the licensees shall include a re-locatable topographic survey transect, notes on sediment types, vegetative condition or fish or wildlife habitat existing on the site, photographic documentation, and an analysis of the probable causes of the erosion.

(4) Beginning in the first year following license issuance, and after consultation with the Shoreline Management Working Group, the licensees shall conduct annual monitoring of the project area to monitor existing erosion sites and identify and map any new project-related erosion sites. This annual monitoring shall follow the pattern and standards established by the baseline survey performed above and shall include the opportunity for the Shoreline Management Working Group to accompany the licensees' survey crew in the field. Information that is unchanged from any prior year's survey shall be noted, but need not be repeated. Annual monitoring of sites shall occur until

documentation of stable or improved conditions, after which additional monitoring can be changed based on consultation with the Shoreline Management Working Group and Commission approval. Annual monitoring shall also include an assessment of ongoing mitigation activities.

(5) No later than March 31 of each year after Commission approval of the Shoreline Erosion Plan, the licensees shall file with the Commission an annual report, prepared after consultation with the Shoreline Management Working Group, which identifies soil erosion control measures; describes annual maintenance of erosion control sites; identifies any other soil erosion control measures including those undertaken during emergency situations; describes coordination with other resource management plans, such as the Cultural Resources Management Plan required by Article 429 of this license; and documents consultation. Any proposed changes in the treatment or monitoring status of the erosion control site shall include the rational for such changes.

(6) Further, the licensees shall monitor identified erosion sites following (i) any event at the Round Butte development where the outflow exceeds inflow by more than the maximum turbine flow, (ii) any drawdown of Lake Simtustus resulting in 7 or more feet of reservoir elevation change in a 24-hour period, or (iii) other events that could rapidly change the shoreline condition.

(7) The licensees shall develop site-specific measures for the erosion sites listed in (2) above, and for any project-related erosion sites identified during the baseline survey or subsequent annual monitoring. The licensees shall give preference to “soft” erosion control techniques including, bioengineering, planting and seeding of appropriate native riparian species, sediment replenishment, or anchored woody debris, but may, when necessary, utilize “hard” erosion control, including use of geotextiles, rock armoring, or other hard surfaces. The licensees shall develop the site-specific measures after consultation with the Shoreline Management Working Group.

The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Shoreline Management Working Group, and specific descriptions of how the Working Group's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Working Group to comment before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees’ reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 430. ***Aesthetic Resources Protection Plan.*** Within one year of license issuance, the licensees shall, after consultation with the Recreation Resources Working Group established pursuant to Article 402, file with for Commission approval, an Aesthetic Resources Protection Plan (ARPP) to protect and enhance aesthetic resources at the Pelton Round Butte Project.

The ARPP shall include, but not necessarily be limited to, provisions for the following:

(1) Fish Ladder: Coat the outside surface that is visible from the wildlife viewing platform (approximately 0.25 mile) with Permeon.

(2) Pelton Dam Road: (a) Investigate, in the 10th year following license issuance, whether feasible and economic solutions exist to reduce the color contrast associated with the road cuts; and (b) within 10 years of license issuance, replace existing guardrail material with "rusted rail" guardrail material.

(3) Round Butte Switchyard: When transformers are being replaced for regular maintenance and replacement, replace them with grey transformers, whenever available.

(4) Pelton Park and Round Butte Overlook Park: (a) Apply compatible paint color on Pelton Park store and apartment building; (b) treat interior of Overlook building with compatible colors; and (c) when replacement is otherwise required, phase out existing fencing to non-galvanized, vinyl-coated fencing adjacent to the licensees' recreation sites or project maintained public access roads to the parks.

(5) Round Butte Dam and the Round Butte Powerhouse Area: (a) Paint the Jefferson County Sheriff's boat house with a color agreed upon with the U.S. Forest Service; and (b) consult with the Recreation Resources Working Group regarding (i) appropriate colors for any fish facilities constructed pursuant to the Fish Passage Plan (Condition 1 of Appendices C and D), and (ii) appropriate treatments for any existing fish facilities on the top of Round Butte dam or in the forebay that remain as long-term components of the fish passage program.

The licensees shall prepare the plan after consultation with the Recreation Resources Working Group. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and tribe, and specific descriptions of how the Working Group's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Working Group to comment before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 431. ***Project-related Road Maintenance.*** Within one year of license issuance, the licensees shall file for Commission approval a plan to provide for upgrades and maintenance of roads necessary for project purposes, which may include, but are not limited to, relevant portions of U.S. Forest Service (Forest Service) roads FS 11 and FS 1170, Dizney Lane, Pelton Dam Road, Jordan Road, and other roads adjacent to the project contemplated by Appendix D of the Settlement Agreement filed on July 20, 2004, that are required for access to project lands, waters, and facilities. The plan shall include provisions to bring into the project boundary any roads on which ongoing maintenance is to be provided under the license; such roads shall be shown on the exhibit drawings filed pursuant to Article 301. For each road, the 90-day deadline stipulated in Article 301 for filing the revised exhibits shall be referenced to the completion date of the initial maintenance activity.

The licensees shall prepare the plan after consultation with the Forest Service and Jefferson County. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Forest Service and the county, and specific descriptions of how the entities' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the entities to comment before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 432. ***Historic Properties.*** The licensees shall implement the "Programmatic Agreement (PA) among the Federal Energy Regulatory Commission, the Advisory Council on Historic Preservation, the State of Oregon, State Historic Preservation Officer, and the Confederated Tribes of the Warm Springs Reservation, Tribal Historic Preservation Officer for Managing Historic Properties That May be Affected By A License Issuing to Portland General Electric Company and the Confederated Tribes of the Warm Springs Reservation of Oregon for the Continued Operation of the Pelton Round Butte Hydropower Project in Jefferson County Oregon", executed on December 6, 2004, including but not limited to the final Cultural Resources Management Plan (CRMP) for the Project (Exhibit J of the Settlement Agreement filed on July 30, 2004). In the event that the Programmatic Agreement is terminated, the

licensees shall implement the provisions of the final CRMP. The Commission reserves the authority to require changes to the CRMP at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the CRMP, the licensees shall obtain approval before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the Project's area of potential effect.

Article 433. ***Lower River Gravel Study.***

(a) Within one year of license issuance, the licensees shall file for Commission approval a detailed Lower River Gravel Study Plan, as described in the Lower River Gravel Study Design, Exhibit I to the Settlement Agreement. The plan shall evaluate gravel mobility, supply, and use by spawning salmonids in the lower Deschutes River from the Reregulating Dam (RM 100) to the Trout Creek confluence (RM 87.3) and shall be developed in consultation with the Fish Committee established pursuant to Article 402.

(b) As provided in the Lower River Gravel Study Design, Exhibit I to the Settlement Agreement, the study plan shall include a geomorphic component and a biological monitoring component.

(1) The geomorphic component of the study shall assess the impacts of the project on downstream gravel availability and channel morphology and to test the dynamics and quality of augmented gravels and shall include the following elements:

(i) Sediment transport monitoring.

(a) Placement of radio-tagged and colored tracer rocks (or rocks with exotic lithologies) at six to seven cross sections between the Reregulating dam and Trout Creek.

(b) Establishment of survey cross sections at the tracer gravel sites to monitor whether tracer particles had been displaced by that year's flow, or by flows greater than 6,500 cubic feet per second (cfs).

(c) Measurement of bedload transport at the Warm Springs Bridge (U.S. Highway 26) on rising and falling limbs of flows exceeding 5,500 cfs.

(d) Placement of columns of painted rocks or scour chains at each cross section to determine depth of scour and any subsequent filling.

(e) If annual monitoring described in paragraphs (a) – (d) show that sediment transport is occurring, a provision for the licensees to develop a plan for Commission approval and in consultation with the Fish Committee and Fish Agencies referenced in Article 402 to resample bed material size at the sample sites previously studied by the licensees.

(ii) Experimental Gravel Augmentation Program.

(a) The experimental gravel augmentation program shall provide for the addition, starting one year prior to the initiation of selective water withdrawal, of a total of 300 cubic yards of gravel distributed amongst at least three sites between the Reregulating dam and Shitike Creek. Sites shall be chosen in consultation with the Fish Committee to minimize potential adverse effects of the augmented gravel, including disturbance to existing spawning habitat.

(b) The licensees shall obtain all necessary tribal, federal and state permits or approvals, including but not limited to Wild and Scenic River Act Section 7 consistency determinations and Clean Water Act Section 404 (dredge/fill) permits, prior to any test gravel placement.

(2) The biological monitoring component shall monitor the quality of the augmented gravels to determine if the addition of new gravel between the Reregulating dam (RM 100) and the mouth of Shitike Creek (RM 97) would be necessary and beneficial to salmonid populations and shall include the following elements:

(i) Determination of relative use of spawning sites above and below Shitike Creek to determine if relative spawner use is shifting downstream as spawning habitat quality and quantity changes upstream.

(ii) Measurement of steelhead and rainbow spawning habitat area above and below Shitike Creek.

(iii) Measurement of spawner use of experimental gravel augmentation sites compared to use of other spawning areas upstream of Shitike Creek.

(iv) Measurement of spawning gravel quality parameters including permeability, and inter-gravel dissolved oxygen (IGDO).

(v) Comparison of the survival of rainbow trout embryos within redds at the three study sites above Shitike Creek and the three study sites below Shitike Creek.

(vi) Comparison of invertebrate populations at the gravel augmentation sites and non-augmented control sites.

(c) After five years of study, the licensees shall submit annual monitoring results of the gravel study to the Commission and a three-member expert review panel consisting of experts in geomorphology and fisheries selected by the licensees, in consultation with the Fish Committee.

(d) The licensees shall request that the expert review panel believes: (1) the gravel study should be continued; (2) the licensees should implement a long-term gravel augmentation program, or (3) no further study or augmentation is needed. If the expert panel believes that (1) the project is causing impacts that could be mitigated by gravel augmentation, including examination of whether the project may be having deleterious effects on channel bedforms and spawning gravel quantity and quality, (2) that the augmentation test did not adversely affect downstream bank stability or cause downstream pool filling, and (3) that augmentation would be beneficial to fish habitat and fish populations, the licensees shall request that the expert review panel notify the Fish Committee of its conclusion that a long-term gravel augmentation action plan should be implemented or that the current study program should be extended. If, after consideration of the report of the expert panel, the Fish Committee believes that a long-term gravel augmentation program is required or that an extended study program is required, the licensees shall, after consultation with the Fish Committee develop and file a plan for Commission approval to implement such program.

(e) The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Committee to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 434. ***Lower River Wood Management.*** Within one year of license issuance, the licensees shall file for Commission approval a Large Wood Management Plan (LWMP), developed in consultation with the Fish Committee established pursuant to Article 402. The purpose of the LWMP is to provide for (i) the management of floating wood greater than 8 inches in diameter (at the small end) by 10 feet long that enters Lake Billy Chinook and (ii) the placement of large wood along the project reservoir shorelines for the protection of riparian plantings. The LWMP shall include a monitoring plan to be conducted through the term of the license, for the evaluation of the effectiveness of placed wood, including river transport (for wood moved below the project), use by wildlife and fish, and as appropriate, erosion control for the establishment of shoreline riparian vegetation. The LWMP shall provide that the management of large wood be adapted to reflect improvements identified through monitoring to improve the erosion control function of shoreline wood and the habitat value of all wood placements for riparian vegetation, fish and wildlife. At a minimum, the plan shall include:

(a) Description of methods to be used for collection, transport and placement of large wood entering Lake Billy Chinook (minimum size of 8 inches in diameter (at the small end) by 10 feet long);

(b) Guidelines for placement of large wood in the Lower Deschutes River or Lake Billy Chinook;

(c) Notification and reporting requirements, for when wood is collected, transferred and placed;

(d) Guidelines to transfer large wood entering Lake Billy Chinook. At a minimum these guidelines shall include:

(1) Transfer of floating wood collected east of Rattlesnake Point in the Metolius Arm, and the Deschutes and Crooked River Arms of Lake Billy Chinook to the Lower Deschutes River for fish habitat improvement;

(2) Anchoring wood found floating west of Rattlesnake Point in the Metolius Arm of Lake Billy Chinook for shoreline wildlife loafing sites, riparian vegetation plantings, erosion control, or shallow water juvenile salmonid cover;

(3) Replacement of an equal volume, type and sizes of wood that is retained in the Metolius Arm of Lake Billy Chinook; and

(4) Logs found in Lake Billy Chinook that were found to have been illegally cut from the Metolius River will be replaced in the Metolius River, if feasible.

(e) Integration with the assessment of the Terrestrial Resources Work Group established pursuant to Article 402 of available sites for riparian vegetation establishment; and

(f) Monitoring plan for the evaluation of the effectiveness of placed wood, including river transport (for wood moved below the project), use by wildlife and fish, and as appropriate, erosion control for the establishment of shoreline riparian vegetation. If improvements are identified through monitoring, then the management of wood shall be adapted to improve the erosion control function of shoreline wood and habitat value of all wood placements for riparian vegetation, fish, and wildlife, after Commission approval.

The plan shall be developed in consultation with the Fish Committee. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and specific descriptions of how the Committee's comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Committee to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 435. ***Lower River Fish Habitat Enhancement.*** Within one year of license issuance, the licensees shall file for Commission approval a plan to implement the Trout Creek habitat enhancement project described in the Exhibit F to the Settlement Agreement. The plan shall be consistent with the requirements of Article 406 for those portions of the project on U.S. Forest Service or Bureau of Land Management lands. The plan shall be developed in consultation with the Fish Committee established pursuant to Article 402 and Fish Agencies referenced in Article 402.

The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the Fish Committee and Fish Agencies and specific descriptions of how the Committee's and Agencies' comments are accommodated by the plan. The licensees shall allow a minimum of 30 days for the Committee and Agencies to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 436 . ***Pelton Round Butte Fund.***

(a) Within 6 months of license issuance, the licensees shall establish the Pelton Round Butte Fund (the "Fund") in the initial amount of a $3.5 million credit (2003 dollars) to fund enhancement projects for fish and wildlife resources and habitats in the Deschutes River Basin. The Fund shall be a tracking account held by licensees with all accrued interest being credited to the Fund. The Fund shall be dedicated to the funding of enhancement projects in accordance with this license article. Following this initial credit, the licensees shall make periodic credits as specified in the Pelton Round Butte Fund Implementation Plan, Exhibit H to the Settlement Agreement. Amounts credited to the Fund shall be escalated as provided in the Pelton Round Butte Fund Implementation Plan.

(b) Amounts credited to the Fund shall not be used to defray the cost of administrative, legal, and overhead costs associated with the management of the Fund, which shall be borne by the licensees. Any funds remaining unexpended at the end of the license term, including any annual licenses, shall be returned to the licensees.

(c) The licensees shall utilize the Fund in accordance with the provisions of the Pelton Round Butte Fund Implementation Plan, Exhibit H of the Settlement Agreement. Any revisions to the criteria and evaluation system as contemplated by section II.D.4 of Exhibit H shall only be implemented after Commission approval.

(d) By March 31 of each year during the license term, licensees shall provide the Commission for approval and the parties to the Settlement Agreement with an annual written report setting forth and describing all Fund activity during the previous calendar year. In addition to any other Fund activity, this report shall list withdrawals from the Fund for mitigation and enhancement projects and itemize costs associated with each project. The licensees shall prepare the report in accordance with the Pelton Round Butte Fund Implementation Plan, Exhibit H to the Settlement Agreement, after consultation with the Governing Board provided for in Exhibit H of the Settlement Agreement, or, if the Settlement Agreement has become void, in consultation with Bureau of Indian Affairs, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Oregon Department of Fish and Wildlife, Oregon Water Resources Department, Oregon Department of Environmental Quality, U.S. Forest Service, and Branch of Natural Resources and Water Control Board of the Confederated Tribes of the Warm Springs Reservation of Oregon, and any non-governmental organizations previously represented on the Governing Board (the Successor Agencies). When a draft report has been prepared, it shall be provided to the Governing Board or the Successor Agencies, as

applicable, for 30-day review and comment. The licensees shall include with the final report documentation of consultation and copies of comments and recommendations, and specific descriptions of how the final report accommodates all comments and recommendations. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

Article 437. ***Reservation of Authority-Fishways.*** Pursuant to section 18 of the Federal Power Act, authority is reserved to the Commission to require the licensees to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways as may be prescribed by either the Secretary of the Interior or the Secretary of Commerce.

Article 438. ***Expenditures.*** Notwithstanding the limitation on expenditures included in this license, the Commission reserves the right to require the licensees to undertake such measures as may be appropriate and reasonable to implement approved plans and other requirements in this license.

Article 439. ***Columbia River Basin Fish and Wildlife Program.*** The Commission reserves the authority to order, upon its own motion or upon the recommendation of federal and state fish and wildlife agencies, affected Indian Tribes, and the Northwest Power Planning Council, alterations of project structures and operations to take into account to the fullest extent practicable the regional fish and wildlife program developed and amended pursuant to the Pacific Northwest Electric Power Planning and Conservation Act.

Article 440. ***Threatened and Endangered Species Protection Plan.*** Within six months of license issuance, the licensees shall file for Commission approval a Threatened and Endangered Species Protection Plan. The plan shall include: (1) provisions for all measures stipulated in the terms and conditions implementing the reasonable and prudent measures filed by the U.S. Fish and Wildlife Service and National Marine Fisheries Service on November 3, 2004, and February 28, 2005, respectively and (2) an implementation schedule. The reasonable and prudent measures and terms and conditions are attached to this license as Appendices E and F for reference.

As part of the plan, the licensees may reference measures implemented under other articles and ordering paragraphs of this license, as applicable, in lieu of including the measures as provisions of the plan.

The licensees shall prepare the plan after consultation with the Fish Committee and Terrestrial Resources Working Group. The licensees shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations of the plan after it has been prepared and provided to the consulted entities, and specific descriptions of how the consulted entities' comments are

accommodated by the plan. The licensees shall allow a minimum of 30 days for the consulted entities to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing shall include the licensees' reasons, based on project –specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the plan is approved by the Commission. Upon Commission approval, the licensees shall implement the plan, including any changes required by the Commission.

Article 441. ***Reservation of Authority-Land Reservations.*** The licensees shall implement, upon order of the Commission, such additional measures as may be identified by the Secretary of the Interior pursuant to the authority provided in section 4(e) of the Federal Power Act, as necessary to ensure the adequate protection and utilization of the public land reservations under the authority of the Department of the Interior, Bureau of Land Management.

Article 442. ***Reservation of Authority-Indian Reservation.*** The licensees shall implement, upon order of the Commission, such measures as may be identified by the Secretary of the Interior, pursuant to section 4(e) of the Federal Power Act, 16 U.S.C. § 797(e), as necessary for the protection and utilization of the Warm Springs Indian Reservation.

Article 443. ***Use and Occupancy.*** (a) In accordance with the provisions of this article, the licensees shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensees may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensees shall also have continuing responsibility to supervise and control the use and occupancies, for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensees for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensees shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensees may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement.

To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensees shall require multiple use and occupancy of facilities for access to project lands or waters. The licensees shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensees shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensees may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensees' costs of administering the permit program. The Commission reserves the right to require the licensees to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensees may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and Federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensees may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and Federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary Federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary Federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is 5 acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year.

At least 60 days before conveying any interest in project lands under this paragraph (d), the licensees must submit a letter to the Director, Office of Energy Projects, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any Federal or state agency official consulted, and any Federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensees to file an application for prior approval, the licensees may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensees shall consult with Federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensees shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation,

and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensees to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundary. The project boundary may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensees under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(L) The licensees shall serve copies of any Commission filing required by this order on any entity specified in the order to be consulted on matters relating to that filing. Proof of service on these entities must accompany the filing with the Commission.

(M) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in section 313(a) of the FPA. The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. The licensees' failure to file a request for rehearing shall constitute acceptance of this order.

By the Commission. Commissioner Kelliher concurring with a separate statement attached.

(S E A L)

Magalie R. Salas,
Secretary.

APPENDIX A

Oregon Division of Environmental Quality
Section 401 of the Clean Water Act
Terms and Conditions

A. Water Quality Management and Monitoring Plan

Within 90 days of issuance of the §401 certification, the Joint Applicants, in consultation with ODEQ, shall revise the Water Quality Management and Monitoring Plan attached to these certification conditions as Exhibit A and submit the revised plan to ODEQ for approval.[73] The plan as approved by ODEQ is hereafter referred to in these certification conditions as the "WQMMP." Upon ODEQ approval, the WQMMP becomes a part of the §401 certification for the Project for purposes of any federal license or permit thereafter issued.

B. Selective Water Withdrawal Facility Construction and Operation

By no later than five years from the date of receiving a new FERC license for the Project, the Joint Applicants shall construct, test, and commence operation of the Selective Water Withdrawal (SWW) facility described in the Joint Applicants' §401 application.

C. Temperature

1. The SWW facility shall be operated in accordance with the Temperature Management Plan (TMP) contained in the WQMMP. The TMP shall identify those measures that the Joint Applicants will undertake to reduce the Project's contribution to exceedances of water quality standard criteria for temperature.

2. Upon issuance of a new FERC license for the Project, the Joint Applicants shall implement the Water Quality Monitoring Plan (WQMP) contained in the WQMMP. The WQMP shall specify the temperature monitoring reasonably needed to determine (a) whether the temperature criteria continue to be exceeded in waters affected by the Project, (b) the success of the TMP in reducing the Project's contribution to any continued exceedances of the criteria, and (c) any additional measures that may be needed to reduce the Project's contribution to exceedances of the criteria.

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[73] The revised Water Quality Management and Monitoring Plan (WQMMP) has been completed by the licensees and can be found in Appendix C of this license.

3. Upon the U.S. Environmental Protection Agency's final approval or adoption of a Total Maximum Daily Load (TMDL) for temperature in the portion of the Deschutes River affected by the Project, ODEQ may reevaluate the Joint Applicants' TMP in light of information acquired since the certification of the Project. If additional temperature reduction measures are feasible and necessary to meet a Load Allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), ODEQ may require submittal of a revised TMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of the attached Exhibit A and incorporated into the WQMMP. If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project-related thermal contributions to waters affected by the Project.

4. At the end of the period determined by ODEQ to be necessary to implement the TMDL for temperature in waters affected by the Project, ODEQ may:

(a) Determine whether the LA for the Project has been achieved.

(b) If the LA for the Project has been achieved, the Joint Applicants shall continue to implement the TMP unless, at the Joint Applicants' request, ODEQ approves a modification or termination of the TMP.

(c) If the LA for the Project has not been achieved, ODEQ may reevaluate the TMP to determine whether additional measures to reduce the Project's contribution to exceedances of the temperature criteria are necessary and feasible. If additional measures are necessary and feasible, ODEQ may require submittal of a revised TMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the TMP that would require the Project to reduce water temperatures beyond what would be required by the LA for the Project shall be effective only upon modification of the LA to reflect the reduced load allocation.

(d) If (i) additional measures to reduce the Project's contribution to exceedances of the temperature criteria are necessary to achieve the LA but the measures are not feasible, and (ii) the water quality standard has not been achieved for waters affected by the Project, ODEQ shall verify whether all feasible measures have been undertaken by all required parties within the Deschutes River Basin to achieve the TMDL for waters affected by the Project. If all feasible measures have not been undertaken, ODEQ, in conjunction with designated management agencies, shall take steps to ensure that

all feasible measures are undertaken. If all feasible measures have been undertaken, ODEQ shall determine whether designated beneficial uses of waters affected by the Project are adversely affected by the failure to achieve the TMDL. If the designated beneficial uses are not adversely affected by the failure to achieve the TMDL, the Joint Applicants shall continue to implement the TMP unless, at the Joint Applicants' request, ODEQ approves modification or termination of the TMP. If the designated beneficial uses are adversely affected by the failure to achieve the TMDL, ODEQ may modify the TMP to require additional temperature measures, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the TMP that would require the Project to reduce water temperatures beyond what would be required by the LA for the Project shall be effective only upon modification of the TMDL to reflect the reduced load allocation.

5. Any Project-related instream temperature increase of 0.25°F or less above the relevant criterion shall not be deemed to contribute to an exceedance of the temperature criterion or to a violation of the temperature water quality standard.

6. ODEQ may make or require reasonable modifications to the WQMP that it considers to be reasonable and feasible if:

(a) The WQMP proves inadequate to provide the data needed to make the determinations described in certification condition 2, above; or,

(b) Modifications to the TMP require or indicate a need for modification to the WQMP.

7. With the approval of ODEQ, the Joint Applicants may cease implementing the TMP and WQMP or may implement a modified TMP and WQMP. ODEQ may approve termination or modification if ODEQ determines that it will not impair the achievement of any LA for the Project for temperature and will not contribute to the exceedance of the relevant temperature criterion in waters affected by the Project.

8. The Joint Applicants shall implement modifications requested by ODEQ in accordance with these certification conditions and the WQMMP.

D. Dissolved Oxygen

1. The SWW facility shall be operated in accordance with the Dissolved Oxygen Management Plan (DOMP) contained in the WQMMP. The DOMP shall identify those measures that the Joint Applicants will undertake to reduce the Project's contribution to violations of water quality standard criteria for dissolved oxygen.

2. Upon issuance of a new FERC license for the Project, the Joint Applicants shall implement the Water Quality Monitoring Plan (WQMP) contained in the WQMMP. The WQMP shall specify the dissolved oxygen monitoring reasonably needed to determine (a) whether the dissolved oxygen criteria continue to be violated in waters affected by the Project, (b) the success of the DOMP in reducing the Project's contribution to any continued violations of the criteria, and (c) any additional measures that may be needed to reduce the Project's contribution to violations of the criteria.

3. Upon the U.S. Environmental Protection Agency's final approval or adoption of a Total Maximum Daily Load (TMDL) for dissolved oxygen in the portion of the Deschutes River affected by the Project, ODEQ may reevaluate the DOMP in light of information acquired since the certification of the Project. If additional dissolved oxygen improvement measures are feasible and necessary to meet a Load Allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), ODEQ may require submittal of a revised DOMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project-related impacts on dissolved oxygen concentrations in waters affected by the Project.

4. At the end of the period determined by ODEQ to be necessary to implement the TMDL for dissolved oxygen in waters affected by the Project, ODEQ may:

(a) Determine whether the LA for the Project has been achieved.

(b) If the LA for the Project has been achieved, the Joint Applicants shall continue to implement the DOMP unless, at the Joint Applicants' request, ODEQ approves a modification or termination of the DOMP.

(c) If the LA for the Project has not been achieved, ODEQ may reevaluate the DOMP to determine whether additional measures to reduce the Project's contribution to exceedances of the dissolved oxygen criteria are necessary and feasible. If additional measures

are necessary and feasible, ODEQ may require submittal of a revised DOMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the DOMP that would require the Project to increase dissolved oxygen concentrations beyond what would be required by the LA for the Project shall be effective only upon modification of the LA to reflect the reduced load allocation.

(d) If (i) additional measures to reduce the Project's contribution to violations of the dissolved oxygen criteria are necessary to achieve the LA but the measures are not feasible, and (ii) the water quality standard for dissolved oxygen has not been achieved for waters affected by the Project, ODEQ shall verify whether all feasible measures have been undertaken within the Deschutes River Basin to achieve the LA for waters affected by the Project. If all feasible measures have not been undertaken by all required parties, ODEQ, in conjunction with designated management agencies, shall take steps to ensure that all feasible measures are undertaken. If all feasible measures have been undertaken, ODEQ shall determine whether designated beneficial uses of waters affected by the Project are adversely affected by the failure to achieve the TMDL. If the designated beneficial uses are not adversely affected by the failure to achieve the TMDL, the Joint Applicants shall continue to implement the DOMP unless, at the Joint Applicants' request, ODEQ approves modification or termination of the DOMP. If the designated beneficial uses are adversely affected by the failure to achieve the TMDL, ODEQ may modify the DOMP to require additional dissolved oxygen measures, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the DOMP that would require the Project to increase dissolved oxygen concentrations beyond what would be required by the LA for the Project shall be effective only upon modification of the TMDL to reflect the reduced load allocation.

5. ODEQ may make or require reasonable modifications to the WQMP that it considers to be reasonable and feasible if:

(a) The WQMP proves inadequate to provide the data needed to make the determinations described in certification condition 2, above; or,

(b) Modifications to the DOMP require or indicate a need for modification to the WQMP.

6. With the approval of ODEQ, the Joint Applicants may cease implementing the DOMP and WQMP or may implement a modified DOMP and WQMP. ODEQ may approve termination or modification if ODEQ determines that it will not impair the achievement of any LA for the Project for dissolved oxygen and will not contribute to violation of dissolved oxygen criteria in waters affected by the Project.

7. The Joint Applicants shall implement modifications requested by ODEQ in accordance with these certification conditions and the WQMMP.

E. Hydrogen Ion Concentration (pH)

1. The SWW facility shall be operated in accordance with the pH Management Plan (PHMP) contained in the WQMMP. In accordance with Oregon Administrative Rule (OAR) 340-04l-0565(2Xd), the PHMP shall identify those measures (including "all practicable measures" in impoundments) that the Joint Applicants will undertake to reduce the Project's contribution to exceedances of the water quality criterion for pH.

2. Upon issuance of a new FERC license for the Project, the Joint Applicants shall implement the Water Quality Monitoring Plan (WQMP) contained in the WQMMP. The WQMP shall specify the pH monitoring reasonably needed to determine (a) whether the pH criterion continue to be exceeded in waters affected by the Project, (b) the success of the PHMP in reducing the Project's contribution to any continued exceedances of the criterion, and (c) any additional measures that may be needed to reduce the Project's contribution to exceedances of the criterion.

3. Upon the U.S. Environmental Protection Agency's final approval or adoption of a Total Maximum Daily Load (TMDL) for pH in waters affected by the Project, ODEQ may reevaluate the PHMP in light of information acquired since the certification of the Project. If additional pH measures are feasible and necessary to meet a Load Allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), ODEQ may require submittal of a revised PHMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project-related pH contributions to waters affected by the Project.

4. At the end of the period determined by ODEQ to be necessary to implement the TMDL for pH in waters affected by the Project, ODEQ may:

(a) Determine whether the LA for the Project has been achieved.

(b) If the LA for the Project has been achieved, the Joint Applicants shall continue to implement the PHMP unless, at the Joint Applicants' request, ODEQ approves a modification or termination of the PHMP.

(c) If the LA for the Project has not been achieved, ODEQ may reevaluate the PHMP to determine whether additional measures to reduce the Project's contribution to exceedances of the pH criterion are necessary and feasible. If additional measures are necessary and feasible, ODEQ may require submittal of a revised PHMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the PHMP that would require the Project to reduce pH beyond what would be required by the LA for the Project shall be effective only upon modification of the LA to reflect the reduced load allocation.

(d) If (i) additional measures to reduce the Project's contribution to exceedances of the pH criterion are necessary to achieve the LA but the measures are not feasible, and (ii) the pH water quality standard has not been achieved for waters affected by the Project, ODEQ shall verify whether all feasible measures have been undertaken by all required parties within the Deschutes River Basin to achieve the TMDL for waters affected by the Project. If all feasible measures have not been undertaken, ODEQ, in conjunction with designated management agencies, shall take steps to ensure that all feasible measures are undertaken. If all feasible measures have been undertaken, ODEQ shall determine whether designated beneficial uses of waters affected by the Project are adversely affected by the failure to achieve the TMDL. If the designated beneficial uses are not adversely affected by the failure to achieve the TMDL, the Joint Applicants shall continue to implement the PHMP unless, at the Joint Applicants' request, ODEQ approves modification or termination of the PHMP. If the designated beneficial uses are adversely affected by the failure to achieve the TMDL, ODEQ may modify the PHMP to require additional pH measures, subject to the

limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the PHMP that would require the Project to reduce pH beyond what would be required by the LA for the Project shall be effective only upon modification of the TMDL to reflect the reduced load allocation.

5. ODEQ may make or require reasonable modifications to the WQMP that it considers to be reasonable and feasible if:

(a) The WQMP proves inadequate to provide the data needed to make the determinations described in certification condition 2, above; or,

(b) Modifications to the PHMP require or indicate a need for modification to the WQMP.

6. With the approval of ODEQ, the Joint Applicants may cease implementing the PHMP and WQMP or may implement a modified PHMP and WQMP. ODEQ may approve termination or modification if ODEQ determines that it will not impair the achievement of any LA for the Project for pH and will not contribute to the exceedance of the relevant pH criterion in waters affected by the Project.

7. The Joint Applicants shall implement modifications requested by ODEQ in accordance with these certification conditions and the WQMMP.

F. <u>Nuisance Phytoplankton Growth and Aesthetic Conditions</u>

1. The SWW facility shall be operated in accordance with the Nuisance Phytoplankton Growth Management Plan (NPGMP) contained in the WQMMP. The NPGMP shall identify those measures that the Joint Applicants will undertake to reduce the Project's contribution to exceedances of the nuisance phytoplankton growth standard criteria in the event nuisance conditions develop.

2. Upon issuance of a new FERC license for the Project, the Joint Applicants shall implement the Water Quality Monitoring Plan (WQMP) contained in the WQMMP. The WQMP shall specify the nuisance phytoplankton growth monitoring reasonably needed to determine (a) whether the nuisance phytoplankton trigger criterion is exceeded in the Project reservoirs, (b) the success of the NPGMP in reducing the Project's contribution to excessive phytoplankton levels that might lead to nuisance conditions within the Project reservoirs, and (c) any additional measures that may be needed to reduce the Project's contribution to nuisance phytoplankton conditions.

3. Upon the U.S. Environmental Protection Agency's final approval or adoption of a Total Maximum Daily Load (TMDL) for nuisance phytoplankton growth in the portion of the Deschutes River affected by the Project, ODEQ may reevaluate the NPGMP in light of information acquired since the certification of the Project. If additional nuisance phytoplankton growth reduction measures are technically and economically practicable and necessary to meet a Load Allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), ODEQ may require submittal of a revised NPGMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project-related impacts to nuisance phytoplankton growth within the Project reservoirs.

4. At the end of the period determined by ODEQ to be necessary to implement the TMDL for nuisance phytoplankton growth in the portion of the Deschutes River affected by the Project, ODEQ may:

(a) Determine whether the LA for the Project has been achieved.

(b) If the LA for the Project has been achieved, the Joint Applicants shall continue to implement the NPGMP unless, at the Joint Applicants' request, ODEQ approves a modification or termination of the NPGMP.

(c) If the LA for the Project has not been achieved, ODEQ may reevaluate the NPGMP to determine whether additional measures to reduce the Project's contribution to exceedances of the nuisance phytoplankton growth criteria are technically and economically practicable and necessary. If additional measures are technically and economically practicable and necessary, ODEQ may require submittal of a revised NPGMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the NPGMP that would require the Project to reduce nuisance phytoplankton growth beyond what would be required by the LA for the Project shall be effective only upon modification of the LA to reflect the reduced load allocation.

5. ODEQ may make or require reasonable modifications to the WQMP that it considers to be reasonable and feasible if:

(a) The WQMP proves inadequate to provide the data needed to make the determinations described in certification condition 2, above; or,

(b) Modifications to the NPGMP require or indicate a need for modification to the WQMP.

6. With the approval of ODEQ, the Joint Applicants may cease implementing the NPGMP and WQMP or may implement a modified NPGMP and WQMP. ODEQ may approve termination or modification if ODEQ determines that it will not impair the achievement of any LA for the Project for nuisance phytoplankton growth and will not contribute to the exceedance of the relevant nuisance phytoplankton growth criteria in the Project reservoirs.

7. The Joint Applicants shall implement modifications requested by ODEQ in accordance with these certification conditions and the WQMMP.

G. Biological Criteria, Deleterious Conditions, and Protection of Designated Beneficial Uses of Salmonid Spawning, Salmonid Rearing, Resident Fish, Aquatic Life, and Wildlife, and other water quality-related state laws for the protection of fish, aquatic life and wildlife:

1. **SWW Facility:** The Joint Applicants shall operate the Selective Water Withdrawal (SWW) facility in accordance with conditions C, D, and E of this certification.

2. **Monitoring:** Upon issuance of a new FERC license for the Project, the Joint Applicants shall conduct all monitoring, record keeping, and reporting of all parameters in accordance with the WQMP contained in the WQMMP. The WQMP shall specify monitoring sufficient to determine compliance with § 401 certification requirements for water quality, Project operations, streamflow, ramping rates, and reservoir levels.

3. **Spill Management:** The Joint Applicants shall maintain and implement current Spill Prevention, Control, and Countermeasure (SPCC) plans for oil arid hazardous materials prepared in accordance with the Clean Water Act requirements of 40 CFR 112. These plans shall address all locations at the Project where Project operations may potentially result in a spill of these materials to the reservoirs or the lower

Deschutes River. In the event of a spill or release or threatened spill or release to Project reservoirs or the lower Deschutes River, the Joint Applicants shall immediately implement the site's SPCC plans and notify the Oregon Emergency Response System (OERS) at 1-800-452-0311.

4. **Ramping Rates in the lower Deschutes River:** The Joint Applicants shall operate the project with the following criteria for ramping rates: 0.1 foot/hour and 0.4 foot/day from October 16 to May 14, and 0.05 foot/hour and 0.2 foot/day from May 15 to October 15, except during certain extraordinary conditions. These extraordinary conditions are: (1) flood events; (2) any event that triggers the Project Emergency Action Plan; (3) rapid changes in Project inflows, when the rate of inflow change exceeds the proposed stage change limits; and (4) equipment failures or emergencies at the Reregulating Development. To monitor compliance with this requirement, the Joint Applicants shall record the time and control signal value for all state change instructions at the Reregulating Development and shall report any control signal changes that are greater than the ramping limitations identified above.

5. **Reservoir Levels:** The Joint Applicants shall operate Lake Billy Chinook to maintain a stable pool level between 1,944 ft. mean sea level (MSL) and 1,945 ft. MSL during the period June 15 to September 15 of each year. If it is forecasted that Lake Billy Chinook will not fill by June 15 of any year, then the Joint Applicants shall immediately notify the state Hydroelectric Application Review Team (HART) and advise of the expected refill date. If the reservoir has not been filled to normal operating pool level by June 15 of any year, this provision shall not prevent filling if water is available for storage while maintaining the minimum flow. Except during certain extraordinary circumstances described below, the Joint Applicants shall restrict the drawdown of Lake Billy Chinook to a maximum of 20 ft (elevation 1,925 ft MSL) with a target of 10 feet drawdown during normal winter operations; Lake Simtustus to a maximum drawdown limit of elevation of 1,576 ft MSL between June 1 and August 31, and elevation 1,573 ft MSL between September 1 and May 31; and the Reregulating Reservoir to 1,414 ft MSL year-round. Extraordinary circumstances allowing deviation from maximum allowable drawdowns are: (a) flood events in which drawdown is needed for safe passage of flood flows to minimize damage to life and property; (b) unforeseen occurrences in which drawdown is required to complete emergency repairs on Project facilities; (c) periodic scheduled maintenance activities that require drawdown to complete normal repairs on Project facilities (including spillway gates, the intake structure, or other dam structures); and (d) regional power system emergencies. In instances where the Joint Applicants exceed maximum drawdowns, the Joint Applicants shall provide immediate written justification to FERC and notification to HART describing cause and need for the deviation, extent of deviation, and expected timeline for bringing the reservoir(s) back to minimum allowable pool levels. If the pool level of Lake Billy Chinook is projected to be below the summer operating level (minimum elevation 1,944.0 ft MSL) between June 15 and September 15, the Joint Applicants may reduce the flow release to ensure the

reservoir reaches the minimum pool elevation of 1944.0 ft MSL. When inflows to the Project under this condition are less than target flows plus 150 cfs, then the flow release at the USGS Madras Gage No.14092500 shall be defined as the daily inflow less 150 cfs. The referenced target flows are defined in the next condition.

6. **Minimum Streamflows:** The Joint Applicants shall maintain minimum flows on a weekly basis equal to specified target flows or inflows, whichever is less. The target flows, as measured at the USGS Madras Gage No.14092500, are as follows: January 4,500 cfs, February 4,500 cfs, March 4,500 cfs, April 4,000 cfs, May 4,000 cfs, June 4,000 cfs, July 4,000 cfs, August 3,500 cfs, September 3,800 cfs, October 3,800 cfs, November 3,800 cfs, and December 4,500 cfs. During the period September 16 through November 15, the Joint Applicants shall supplement inflows as necessary to ensure a minimum flow release to the lower river of at least 3,000 cfs, subject to a maximum required supplementation of 200 cfs and cap on required drawdown of Lake Billy Chinook to achieve such supplementation equal to four feet.

7. **Run-of-River Operations:** The Joint Applicants shall hold river flows below the Reregulating Development to within ± 10 percent of the measured Project inflow under most conditions. Conditions or events where these criteria may not be followed include days with measured inflow in excess of 6,000 cfs when at least one of the following conditions exists: (1) any event that triggers the Project Emergency Action Plan; (2) power emergencies, as defined in the WSCC Minimum Operating Reliability Criteria (March 8, 1999); (3) equipment failures or emergencies at one of the Project dams or powerplants; or (4) reservoir drawdowns are needed for safe passage of anticipated flood flows to minimize damage to life and property. At times when flows are in excess of 6,000 cfs and one or more of the above exception conditions apply, the Joint Applicants shall minimize the variation beyond the ±10% criterion as can be done safely.

8. **Stream Gaging:** By no later than one year from the date of receiving a new FERC license for the Project, the Joint Applicants shall fund improvements at the existing USGS gaging stations on the Crooked (Gage No.14087400), Deschutes (Gage No.14076500) and Metolius (Gage No.14091500) rivers upstream of the Project. These improvements shall include radio, telephone, or other telemetry systems to provide recording and transmission of hourly stream temperature and streamflow data to the Pelton control room.

9. **Fish Passage:** The Joint Applicants shall construct, maintain and operate, or shall arrange for the construction, maintenance and operation of such facilities and equipment for fish migration, propagation or conservation consistent with the proposed Fish Passage Plan and amendments thereto. In the event any modifications in the fish

facilities are deemed necessary, the Joint Applicants shall cooperate with Oregon Department of Fish and Wildlife (ODFW) in the design of such modifications or operation of the facilities.

10. **Large Wood:** All large wood (greater than 20 cm by 3 m) entering Lake Billy Chinook shall be removed by the Joint Applicants and placed into the lower Deschutes River below the Reregulating Dam. Following a flow event that results in the transport of significant amounts of large wood into Lake Billy Chinook, the Joint Applicants shall consult with ODFW and the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWS) Natural Resources Department to obtain specific guidance pertaining to the placement and monitoring of that large wood in the lower Deschutes River below the Project's Reregulating Dam. The Joint Applicants shall obtain all necessary regulatory licenses, permits, or approvals from tribal, federal, state and local authorities prior to large wood placement.

11. **Sediment Transport/Spawning Gravel**: The Joint Applicants shall perform the following studies with regard to sediment transport and spawning gravel:

- Verify the sediment transport model developed by Fassnacht (1998) by placing radio-tagged and/or colored rocks on selected bars in the Deschutes River below the Reregulating Dam. Determine at which flow levels these rocks are mobilized by checking their positions after each flow event greater than 7,000 cfs. The Joint Applicants may submit to ODEQ for approval a proposal for an alternate flow value for commencement of this monitoring pending the results of the AIR process. Buried columns of colored rocks will be utilized to determine the depth of scour at different flow levels.

- Resurvey channel cross sections at five locations utilized by Fassnacht (1998). Resurvey these annually for 5 years to determine if there is any active channel change associated with years having high flow events. If no change is detected after 5 years, resurvey them every 10 years, or after events greater than 15,000 cfs.

- If monitoring sediment transport and channel change shows significant transport or change at flows lower than predicted by Fassnacht (1998), initiate a program to measure actual bedload transport at different flow levels at the Warm Springs Bridge (US Highway 26).

- If monitoring of channel change and measuring bedload shows significant transport at levels significantly below those predicted by the geomorphology study, revisit the sites used by McClure (1998) for particle size measurements and replicate these particle surveys.

- Coordinate and lead a study of historical fish counts and spawning data directed toward determination of the cause of anadromous spawning reduction in the Lower Deschutes River from below the Reregulation Dam downstream to the mouth of Shitike Creek. In addition, the Joint Applicants shall conduct a study to determine the quality of gravel habitat for anadromous fish in this river reach. The results of this study shall be used by the Joint Applicants to determine if additional mitigation measures are necessary to improve habitat quality or quantity.

12. **Upper Basin Habitat Enhancement and Restoration:** The Joint Applicants shall work with private and governmental entities in the Deschutes River Basin to implement cost-effective habitat enhancement and restoration measures to improve the quality of water flowing into the Project. These upper basin measures shall include, but not be limited to, the creation of riparian refugia, as well as improvements such as livestock exclusion, placement of large woody debris, planting of grass, shrubs, trees, and the maintenance and creation of wetlands.

The Joint Applicants shall expend a minimum of $1.475 million for these upper basin measures over the first 5 years of the new license in accordance with the following table.

Required Mitigation Measure	**Minimum Required Expenditure**
Improved Riparian Corridor Management	$750,000
Community Habitat Education Activities	$25,000
Establishment of Reserves and Refugia	$700,000
Total	$1,475,000

H. Total Dissolved Gas

1. The Joint Applicants shall monitor total dissolved gas at the Reregulating Dam tailrace in accordance with the WQMP contained in the WQMMP.

2. If monitoring of total dissolved gas at the Reregulating Dam tailrace at times of spill indicates noncompliance with the total dissolved gas standard, then the Joint Applicants shall immediately develop a plan and schedule for assessing the problem and developing a remedy. Such plan and schedule shall be submitted to ODEQ for

approval within 60 days of identifying the excessive total dissolved gas concentrations via monitoring. Upon approval of the remedial plan by ODEQ, the Joint Applicants shall implement the plan in accordance with the approved schedule.

I. Turbidity

1. The Joint Applicants shall implement the erosion control measures for erosionally-sensitive shoreline areas of the Project reservoirs as proposed in the Final Joint Application Amendment, Exhibit E-VII-13.

2. The Joint Applicants shall continue the Shoreline Planting Program at all three Project reservoirs to enhance on-site riparian habitat, as proposed in the Final Joint Application Amendment, Exhibit E-IV-41.

3. The Joint Applicants shall monitor turbidity in accordance with the WQMP contained in the WQMMP.

J. Toxic Substances; Discoloration, Scum, Oily Sleek; Aesthetic Conditions; Deleterious Conditions

The Joint Applicants shall maintain and implement current Spill Prevention, Control, and Countermeasure (SPCC) plans for oil, hazardous materials, and non-hazardous materials prepared in accordance with the Clean Water Act requirements of 40 CFR 112. These plans shall address all locations at the Project where Project operations may potentially result in a spill of these materials to the reservoirs or the lower Deschutes River. In the event of a spill or release or threatened spill or release to Project reservoirs or the lower Deschutes River, the Joint Applicants shall immediately implement the site's SPCC plan and notify the Oregon Emergency Response System (OERS) at 1-800-452-0311.

K. Bacteria

The Joint Applicants shall monitor for E. coli bacteria in accordance with the WQMP contained in the WQMMP.

L. Cooling Water Discharge Permits

Upon issuance of a new FERC license for the Project, the Joint Applicants shall within 30 days request and file National Pollutant Discharge Elimination System (NPDES) permit applications with ODEQ for cooling water discharges at each of the three powerhouses. This condition will be considered null and void if the Joint Applicants, prior to FERC license issuance, have applied to ODEQ for these NPDES permits.

M. § 401 Certification Compliance Schedules

If any event occurs that is beyond the Joint Applicants' reasonable control and that causes or may cause a delay or deviation in compliance with schedules contained in this § 401 Certification, the Joint Applicants shall immediately notify ODEQ in writing of the cause of delay or deviation and its anticipated duration; the measures that have been or will be taken to prevent or minimize the delay or deviation; and the timetable by which the Joint Applicants propose to carry out such measures. It is the Joint Applicants' responsibility in the written notification to demonstrate to ODEQ's satisfaction that the delay or deviation has been or will be caused by circumstances beyond the control and despite due diligence of the Joint Applicants. If the Joint Applicants so demonstrates, ODEQ shall extend times of performance of related activities under this condition, as appropriate. Circumstances or events beyond the Joint Applicants' control include, but are not limited to, acts of nature, unforeseen strikes, work stoppages, fires, explosion, riot, sabotage, or war. ODEQ may also consider other circumstances or events as beyond the Joint Applicants' control. These other circumstances or events may include, but not be limited to, changes in state statutes; delays in the receipt of necessary approvals for construction design or permits; or delays that ODEQ agrees the Joint Applicants would not have been expected to anticipate. These other circumstances or events will only be considered if they are not due to the actions or inactions of the Joint Applicant. Increased cost of performance or consultant's failure to provide timely reports may not be considered circumstances beyond the Joint Applicants' control.

N. § 401 Certification Modification

ODEQ, in accordance with OAR Chapter 340, Division 48, and, as applicable, 33 USC 1341, may modify this Certification to add, delete, or alter Certification conditions as necessary and feasible to address:

(a) adverse or potentially adverse Project effects on water quality or designated beneficial uses that did not exist or were not reasonably apparent when this Certification was issued;

(b) TMDLs (not specifically addressed above in these Certification Conditions);

(c) changes in water quality standards;

(d) any failure of Certification conditions to protect water quality or designated beneficial uses as expected when the Certification was issued; or

(e) any change in the Project or its operations that was not contemplated by this Certification that might adversely affect water quality or designated beneficial uses.

O. Project Changes

The Joint Applicants shall obtain ODEQ review and approval before undertaking any change to the Project that might significantly affect water quality (other than project changes required by or considered in this Certification), including changes to Project structures, operations, and flows.

P. Project Repair or Maintenance

The Joint Applicants shall obtain ODEQ review and approval before undertaking Project repair or maintenance activities that might significantly affect water quality (other than repair or maintenance activities required by or considered in this Certification). ODEQ may, at the Joint Applicants' request, approve specified repair and maintenance activities on a periodic or ongoing basis.

Q. Project Inspection

The Joint Applicants shall allow ODEQ such access as necessary to inspect the Project area and Project records required by this Certification at reasonable times as necessary to monitor compliance with § 401-certification conditions.

R. Posting of § 401 Certification

The Joint Applicants shall post a copy of these certification conditions in a prominent location at the Pelton Powerhouse Control Center.

S. Water Quality Standards Compliance

Notwithstanding the conditions of this certification, no wastes shall be discharged and no activities shall be conducted which will violate state water quality standards.

T. Project Specific Fees

In accordance with Oregon Revised Statutes (ORS) 543.080, the Joint Applicants shall pay a project-specific fee for ODEQ's costs of overseeing implementation of adaptive management provisions of this § 401 certification. The fee shall be $25,000 (2002 dollars) annually, made payable to "State of Oregon, Department of Environmental Quality", and due on July 1 of each year after issuance of the new FERC license. This fee will not pay ODEQ's costs of participation, before or after issuance of the new FERC license, on the Fisheries Technical Subcommittee established by the Joint Applicants for the Project; such costs shall be paid by Joint Applicants by arrangement separate from this Certification condition. ODEQ shall credit against the fee amounts required under this Certification condition any fee or other compensation paid or payable

to ODEQ, directly or through other agencies of the State of Oregon, during the preceding year (July 1 to June 30) for ODEQ's cost of oversight of adaptive management. The fee shall expire 10 years after the first July 1 following issuance of this certification, unless terminated earlier by ODEQ because oversight of adaptive management is no longer necessary. One year before the tenth-anniversary expiration of the fee, or earlier if mutually agreed, ODEQ and the Joint Applicants shall review the need, if any, to modify, extend, or terminate the fee, in accordance with ORS 543.080. The Joint Applicants shall continue to pay any project-specific fee required after such review.

APPENDIX B

The Water Control Board
Confederated Tribes of the Warm
Springs Reservation of Oregon

Section 401 of the Clean Water Act
Terms and Conditions

1. Protection of beneficial uses of anadromous fish passage, salmonid spawning, salmonid rearing, and resident fish and aquatic life

Upon FERC's issuance of a new license for the Project, the Joint Applicants shall comply with the following provisions related the Biological Criteria water quality standard and other appropriate requirements of Tribal law:

A. Habitat Improvement Projects

The Joint Applicants will work with private and governmental entities in the Deschutes River Basin to implement cost-effective habitat enhancement and restoration measures to improve the quality of water flowing into, through or below the Project. These measures will include, but not be limited to, the creation of riparian refugia, as well as improvements such as livestock exclusion, placement of large woody debris, planting of grass, shrubs, trees, and the maintenance and creation of wetlands. The Joint Applicants will expend a minimum of $1.415 million for these measures over the first 5 years of the new license.

Proposed Mitigation Measure	Proposed Expenditure
Improved Riparian Corridor Management	$750,000
Community Habitat Education Activities	$25,000
Establishment of Reserves and Refugia	$700,000
Total	$1,475,000

B. Long-Term Water Quality Monitoring and Adaptive Management

The selective water withdrawal facility, to be built as a means to address water quality and fish passage issues, may adversely affect specific water quality parameters such as turbidity and pH. Therefore, the WCB requires a comprehensive water quality monitoring and management plan be implemented to monitor physical, chemical, and biological parameters. Implementation of this plan along with adaptive management will allow rigorous evaluation of progress towards achieving defined measures of success; and utilization of gained knowledge to make necessary modifications through time.

Knowledge gained from the water quality monitoring and management plan will receive broad review from resource managers and the public leading to informed decisions by an Implementation Oversight Committee representing the WCB, DEQ, and the Joint Applicants. The Implementation Oversight Committee will be involved in the administration of the Water Quality Management and Monitoring Plan attached hereto as Appendix A[74] and the adaptive management provisions of this Certification.

The Tribal Council of the Confederated Tribes of Warm Springs has delegated the responsibility and accountability to implement the Policy Statements listed in Tribal Ordinance 80 and 81 to the Water Control Board. Therefore the WCB will be responsible for all decisions requiring the exercise of delegated authority from the Federal Environmental Protection Agency under the Federal Clean Water Act and for implementing Tribal Ordinances 45, 80 and 81.

In the WCB's view the biological criteria also includes consideration of the Project's ongoing impacts on the lower Deschutes River in terms of increased recreational use of the reservoirs, increased development along reservoir shorelines, interception of large woody materials, interception of gravel and finer materials, flow modification (instream flows, ramping rates, and attenuation of flood peaks), disconnection of populations for resident fish species, and prevention of anadromy. This document addresses each of these factors insofar as they affect the support of designated beneficial uses as specified by the Tribes in the Reservoirs and the lower Deschutes River. Designated beneficial uses most sensitive to the above-listed impacts include anadromous fish passage, salmonid rearing, salmonid spawning, and resident fish and aquatic life.

The WCB therefore requires the Joint Applicants to implement a long-term monitoring program to address water quality, water quantity, biological parameters and environmental factors related to resource management objectives in the tribal waters affected by the Project. This monitoring program will provide the data necessary to assess whether the Project attains and maintains compliance with the appropriate water quality standards. The information gathered in this program will also be used in the adaptive management of project operations to meet Tribal water quality standards.

The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

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[74] The revised Water Quality Management and Monitoring Plan (WQMMP) has been completed by the licensees and can be found in Appendix C of this license.

C. Large Wood

The WCB requires all large wood naturally entering the Reservoirs of the Project to be collected and reintroduced below the Project. Mitigation projects to reintroduce large wood back into the lower Deschutes River will be coordinated with all appropriate agencies and approved by the Implementation Oversight Committee. Projects to replace large wood in the lower river will include addition of large wood to the waters in the way of installed structures along the banks to provide for habitat diversity, streambank stability and enhancement of the environment. In addition, some large wood reintroduction projects could be coordinated with normal high flow events to allow the large wood to find its' own "home" in the lower river.

Based on the fact that there is a lack of the "ideal quality" of large wood naturally entering the Project due to riparian management activities in the upper watershed, the WCB recommends use of proposed habitat improvement mitigation funds to supplement the large wood naturally entering the reservoirs. Typically this material would be anchored or placed along shorelines or riverbanks to add stability and habitat quality. All applicable licenses, permits and clearances for mitigation or monitoring projects will be obtained prior to any activity taking place in Tribal Waters.

D. Gravel

The reservoirs act as a settling basin not only for gravel-sized sediment but also for finer sand and silt. This may have some adverse effects to the fisheries habitat in the lower river from the Reregulating Dam to the mouth of Shitike Creek. The level of anadromous fish spawning in this area has been documented as being lower over the last 20 years.

As a result, the Joint Applicants will take the following measures with regard to sediment transport and spawning gravel in the Deschutes River downstream of the Project:

1. Verify the sediment transport model developed by Fassnacht (1998) by placing radio-tagged and/or colored rocks on selected bars in the Deschutes River below the Reregulating Dam. Determine at which flow levels these rocks are mobilized by checking their positions after each major flow event. Initiate study at flows greater than 6,500 cfs. As data is collected at this flow level, adjustments can be made to the flow level event that would trigger future data collection needs. Buried columns of colored rocks may be utilized to determine the depth of scour at different flow levels.

2. Resurvey channel cross sections at five locations utilized by Fassnacht (1998). Resurvey these annually for 5 years to determine if there is any active channel change associated with years having high flow events. If no change is detected after 5 years, re-survey them every 5 years, or after events greater than 15,000 cfs.

3. If monitoring sediment transport and channel change shows significant transport and/or changes at flows lower than predicted by Fassnacht (1998), initiate a program to measure actual bed load transport at different flow levels at the Warm Springs bridge.

4. If monitoring of channel change and measuring bedload shows significant transport at low levels significantly below those predicted by the geomorphology study, revisit the sites used by McClure (1998) for particle size measurements and replicate these particle surveys.

5. Coordinate and lead a study of historical fish counts and spawning data to determine the cause of anadromous spawning reduction in the Lower Deschutes River from below the Reregulating Dam down to the mouth of Shitike Creek. In addition, the Applicants will conduct a study to determine anadromous gravel habitat quality in the Lower Deschutes River from below the Reregulating Dam down to the mouth of Shitike Creek.

The results of these studies and other appropriate information generated in the FERC re-licensing process will be used to determine if additional mitigation measures (such as gravel augmentation) are necessary to improve habitat quality. The Joint Applicants will consult with the appropriate regulatory authorities as to the results and findings of these studies.

E. Flow Modification

The WCB requires that the Reregulating Reservoir be used to redistribute upstream peaking flows and maintain nearly steady discharge into the Deschutes River, approximately equal to the daily average inflow to Lake Billy Chinook. Project operations will closely mimic inflows (surface and groundwater) so that the project functions as a “run of the river” system under most operational conditions. There will be no more than a 10% variation between Project inflow and Project outflow under most conditions.

SAFETY

Project inflows above 6,000 cfs will be used as a trigger value whereby the project operators will:

1. Evaluate if the Project Emergency Action Plan needs to be implemented.

2. Determine if a power emergency exists (as defined in the Western Systems Coordinating Council Minimum Operating Reliability Criteria (WSCC 1999)).

3. Determine if equipment failures or emergencies exist at one of the Project dams or power plants.

4. Determine reservoir drawdown needs for safe passage of anticipated floods to minimize damage to life and property.

If any of these steps warrant a change to the outflow policy of being within plus or minus 10% of inflow, the Joint Applicants may take whatever steps are necessary to minimize impacts to the Project while protecting public health and safety. Overall direction is to minimize changes to inflow so as to provide the lower river a more normal flow regime.

NORMAL OPERATIONS

These operational requirements will allow for higher peak flows to occur in the Lower River allowing for more natural channel maintenance processes. The Joint Applicants will implement the following:

1. Institute real time flow monitoring at each of the inflows to provide hourly records of flow. This will be required to ensure compliance with the "run of the river" mandate.

2. Institute real time flow monitoring at the Madras Gauge that will offer better control of flows and a significant enhancement in accurate monitoring of actual stream flows in the lower Deschutes River. This system will enable the Project to operate as "run of the river" and comply with other operational guidelines.

3. Project operations will closely mimic inflows (surface and groundwater) so that the Project functions as a "run of the river" system under most operational conditions. There will be no more than a 10% variation between Project inflow and Project outflow under most conditions. These changes will allow for higher peak flows to occur in the Lower River allowing for more natural channel maintenance processes.

4. The WCB requires that the Q80 flows for the full period of record for the Madras Gauge (1925-1999) be used as the target "minimum flow" to be released from the project to the Lower Deschutes River. In the event inflows to the Project are lower than the target "minimum flow" then inflow volumes must be released to the Lower Deschutes River. The required "minimum flow" may be reduced up to 150 cfs to ensure the refilling of Lake Billy Chinook to reach its normal minimum summer operational level of 1944 feet. The recommended target Q80 "minimum flows" are summarized below by month.

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1924-1999 Q80	3512	4049	4225	4263	4267	4571	4170	3721	3686	3540	3446	3431

5. Seasonal operation of Lake Billy Chinook to allow for no more than a 10 foot draw down during normal winter months with an absolute maximum drawdown of 20 feet. Lake Billy Chinook should be filled and at normal operation level of 1944 feet by 1st of April. However, if this is not possible, the reservoir must be at normal operation level of 1944 feet by June 15. The "minimum" level required to be maintained at 1944 feet from June 15 to September 15, for Lake Billy Chinook. During the fall months Lake Billy Chinook should be maintained at the 1944 feet operation level so as to provide continued protection of riparian vegetation and cultural resources.

6. Seasonal operation of Lake Simtustus to allow for a minimum elevation of 1,576 feet from June 1 to August 31 and 1,573 feet elevation from September 1 to May 31.

7. Seasonal operation of the Reregulating Reservoir to allow for a minimum elevation of 1,414 feet year round.

8. Limits on river stage changes below the Reregulating Development will be as follows:

a. From May 15 to October 15, hourly stage control limit will be 0.05 feet with a daily stage change control limit of 0.2 feet.

b. From October 16 to May 14, hourly stage control limit will be 0.1 feet with a daily stage change control limit of 0.4 feet. Only during extraordinary or emergency situations can the Joint Applicants deviate from these stage change limits.

F. Fish Passage

The WCB requires the Joint Applicants implement mitigation measures that will effectively enable fish passage and allow for re-connection of harvestable fish populations and anadromy. The WCB requires that these measures do not adversely impact the thriving populations of resident fish species in the Project Reservoirs and the healthy populations of anadromous and resident fish species in the lower Deschutes River.

The Joint Applicants are proposing the construction of a selective water withdrawal facility at Round Butte Dam to address the effects of the Project on water quality and also as a means to enable fish passage. The Joint Applicants have modeled the facility's impacts on water quality and have provided enough information to show that the water quality effects of the project can be mitigated. Fish passage issues are being studied and results may not be known for many years. If the selective water withdrawal facility on Round Butte Dam will not adequately address fish passage, the Joint Applicants still have the responsibility to implement mitigation measures that will effectively enable fish passage and allow for re-connection of fish populations and anadromy within a reasonable period of time not to exceed 10 years from issuance of FERC license. If current modeling of volitional passage has not been successfully completed after 10 years, alternative methods of re-connecting the fish populations will be developed and approved by the managing agencies having regulatory authority for fisheries in the Deschutes River and the Joint Applicants, and implemented by year 15 of the new license. The Joint Applicants may request that these time frames be adjusted by the WCB after due consultation with appropriate agencies.

The Joint Applicants will continue existing fisheries mitigation programs and evaluation of fish passage projects until the fish passage issue has been resolved.

The WCB is reasonably assured that the discussed biological criteria standard as applied to fish passage will be met with implementation of mitigation measures outlined above and with the implementation of the Water Quality Monitoring Plan and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

2. Dissolved Oxygen Conditions

The Joint Applicants shall comply with the following provisions related to dissolved oxygen levels in the lower Deschutes River.

The WCB requires additional data be collected at appropriate locations to determine the correlation of the Intergravel Dissolved Oxygen (IGDO) and ambient Dissolved Oxygen (DO) for a period of 3 years following issuance of this Certificate. Until the correlation between IGDO and DO has been established and it supports a change in the applicable DO Standard, the WCB will use of the ambient DO levels (11 mg/l) as the appropriate standard. The methodology to be used in monitoring IGDO will be approved by the WCB prior to any activity taking place.

The Joint Applicants will begin construction of selective water withdrawal facilities at the Round Butte Dam within 3 years of FERC license being issued and operational to meet water quality standards by end of year five. The Joint Applicants may petition the WCB to adjust these timeframes as appropriate.

Joint Applicants will implement a combination of selective water withdrawal and operational changes to keep the river immediately below the Project within range of the relevant water quality criteria for dissolved oxygen.

The WCB is reasonably assured that the discussed dissolved oxygen criteria will be met with implementation of mitigation measures outlined above and with the implementation of a Water Quality Monitoring and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

3. Temperature Management Conditions

Upon FERC's issuance of a new license for the Project, the Joint Applicants shall comply with the following provisions related to water temperatures in the Deschutes River Basin:

- Joint Applicants will begin construction of selective water withdrawal facilities at the Round Butte Dam within 3 years of FERC license being issued and operational to meet water quality standards by end of year five. The Joint Applicants may petition the WCB to adjust these timeframes as appropriate.

- Implementation of the Water Quality Monitoring and Management Plan and the Implementation Management Plan will continue to help ensure that project operations do not violate the temperature criteria.

    1. Upon the U.S. Environmental Protection Agency's (EPA's) final approval or adoption of a Total Maximum Daily Load (TMDL) for temperature in the portion of the Tribal waters affected by the Project, the WCB :

        (a) Will seek, in conjunction with designated management agencies and in accordance with applicable law, other anthropogenic sources within the Deschutes River Basin to implement measures to reduce their contribution to exceedances of the temperature criteria; and

        (b) May reevaluate the Water Quality Monitoring and Management Plan in light of information acquired since the certification of the Project and in light of the temperature modification measures sought to be implemented by other sources in the basin, whether or not such implementation is underway or completed for all other sources. If additional temperature improvement measures are feasible and necessary to meet a load allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), the WCB may require submittal of a revised temperature management plan that insures attainment of the LA, subject to limits set forth in the Water Quality Monitoring and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

    2. At the end of the period determined by WCB to be necessary to implement the TMDL for temperature in the portion of the Tribal waters affected by the Project, the WCB may:

        (a) Determine whether the TMDL and LA for the Project have been achieved.

(b) If the TMDL and LA for the Project have been achieved, the Joint Applicants shall continue to implement the Temperature Management Plan (TMP) unless, at the Joint Applicant's request, the WCB approves a modification of the Water Quality Monitoring and Management Plan.

(c) If the TMDL or LA for the Project has not been achieved, the WCB may require submittal of a revised temperature management plan that insures attainment of the LA, subject to limits set forth in the Water Quality Monitoring and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

3. Any Project-related in stream temperature increase of 0.25 ºF, or less above the relevant criterion shall not be deemed to contribute to an exceedance of the temperature criterion or to a violation of the temperature water quality standard.

4. <u>pH (hydrogen ion concentration)</u>

Upon FERC's issuance of a new license for the Project, the Joint Applicants shall comply with the following provisions related to pH in the Deschutes River:

The Joint Applicants will implement the construction and operation of the selective water withdrawal facilities. Modeling results have indicated that discharges from the Reregulating Dam will continue to meet the pH criterion, with the possible exception of minor, brief, arid isolated instances during the summer months. The exceedances that are predicted are within the error of the model, and the model predictions themselves are conservative in that they are at the upper end of the error range.

Conditions in Lake Billy Chinook will improve and will meet the relevant pH criterion where the associated beneficial uses occur or are expected to occur. Any increases that occur within Lake Simtustus will be minor and will not cause a failure to comply with water quality standards in that reservoir. Moreover, Lake Billy Chinook and Lake Simtustus will continue to fall within the exemption from the pH standard. Specifically, the reservoirs existed as of January 1, 1996, and the exceedance of the pH standard occurs as a result of the impoundment in response to primary productivity

supported by nutrients that arise from sources not associated with the impoundment. With the implementation of selective water withdrawal, the Joint Applicants will have taken all practicable measures to bring pH in the impounded waters into compliance with the criterion.

The WCB is reasonably assured that the discussed pH criteria will be met with implementation of mitigation measures outlined above and with the implementation of the Water Quality Monitoring and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

(a) Upon EPA's final approval or adoption of a TMDL for pH in the Deschutes River, the WCB will determine whether the Project needs to provide additional measures to achieve an LA for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL). If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project contributions to pH exceedances in the Deschutes River below the Project or within the Projects' reservoirs. The determination shall be based on data provided through the Water Quality Monitoring Plan and other relevant information and on an analysis of the extent to which measures employed by or required of other sources within the Deschutes River Basin will result in achievement of the TMDL.

(b) If the TMDL or LA for pH has not been achieved, the WCB may require submittal of a revised pH management plan that insures attainment of the LA, subject to limits set forth in the Water Quality Monitoring and Management Plan attached to this § 401 Certification as Exhibit A.

(c) The WCB may approve cessation or modification of components of the Water Quality Monitoring Plan if the WCB determines that it will not impair the achievement of any pH TMDL or LA for the Project and will not contribute to the exceedance of the pH criterion in waters affected by the Project. Among other circumstances, the WCB may approve a request for termination of pH monitoring if the Deschutes River does not show pH exceedances for at least three consecutive years.

5. <u>Nuisance Phytoplankton Growth</u>

Although the nuisance phytoplankton standard is exceeded in the surface waters of Lake Billy Chinook and Lake Simtustus, the WCB believes that this condition is not adversely affecting any beneficial use of either impoundment, and that the condition is due to elevated inputs of nutrients from tributaries.

There are no technically and economically practicable strategies to control this condition in the Project itself, although the implementation of selective water withdrawal may tend to reduce measured chlorophyll *a* levels. However, due to unknown effects of the selective withdrawal facility on the chlorophyll *a* levels, the WCB recommends that a reference value for current conditions be established (average chlorophyll *a* levels taken for a period of 5 years). This value will be compared against annual measurements of chlorophyll *a*. If the reference value is exceeded by more than 10% in any given sample, a replication or verification sample will be collected and analyzed within 30 days. If this verification sample also exceeds the reference value by 10%, a survey of water users will be conducted to determine the level of nuisance within the next 30 days.

The WCB is reasonably assured that the discussed nuisance phytoplankton criteria will be met with implementation of mitigation measures outlined above and with the implementation of the Water Quality Monitoring and Management Plan described in Exhibit A. The WCB however does require the Joint Applicants to conduct a survey of users of Project Reservoirs based on criteria listed above to ensure that beneficial uses are not being adversely impacted by nuisance phytoplankton.

6. Total Dissolved Gas

The WCB is reasonably assured that the total dissolved gas standard will be met without special requirements. The WCB will require implementation of the Water Quality Monitoring and Management Plan for DO and Total Dissolved Gas to ensure compliance with this standard.

7. Antidegradation Policy

With the implementation of the mitigation measures listed above, the WCB believes that overall water quality in and below the Project will be improved. As noted earlier, the modeled shift in temperature back toward pre-Project conditions will cause an increase over existing conditions during the first half of the year; but as this represents a reversal of a Project impact, this does not constitute a violation of the antidegradation policy. Current modeling results indicate that DO levels will improve throughout the year. The pH levels in the lower Deschutes River may increase slightly for brief periods of time, but these increases, if they occur, are not predicted to have any adverse impact on water quality or on compliance with other standards, particularly the biological criteria standard. As shown by the recently completed modeling of the lower river, the overall impact on water quality will be beneficial. Accordingly, the WCB believes that there will be a reasonable assurance that Project operations, coupled with the mitigation measures listed above, will comply with the Tribal antidegradation policies. The WCB will require implementation of the Water Quality Monitoring and Management Plan to ensure compliance with the antidegradation policy.

8. Naturally-Occurring Conditions

There are a number of issues related to natural conditions that need to be understood and recognized.

(a) Water temperatures are in excess of the current bull trout standard upstream of Lake Billy Chinook in the upper Deschutes River, Crooked River, and Metolius River sub-basins. It is evident that temperatures in the streams of the Deschutes River Basin naturally exceed the temperature standard set for bull trout. Groundwater entering the Crooked River at Opal Springs runs at an average temperature of 53ºF (11.67ºC) year round according to the Tribal Water Quality Monitoring Program. In the late summer and fall months, groundwater provides the majority of the surface flows entering Lake Billy Chinook from the Crooked River and Deschutes River arms. Therefore, surface water temperatures are naturally above the standard temperature for bull trout.

The spring fed Metolius River temperatures are also in excess of the current bull trout standard during this period. The water entering Lake Billy Chinook has a hydraulic residence time of approximately 2 months, and since the tributary streams exceed 10°C for nearly this long during the summer, it is unlikely that the temperature in the reservoir could remain below 10°C. Lake Simtustus receives nearly all of its inflow from Lake Billy Chinook, so it, too, is unlikely to remain below 10°C. Therefore, stream temperatures in the lower Deschutes River are unlikely to remain below 10 ºC.

(b) Dissolved oxygen concentration in the hypolimnion of Lake Billy Chinook and Lake Simtustus follows a pattern that is typical of highly productive lakes. Biological oxidation of organic matter in the hypolimnion during the period of stratification results in depletion of oxygen. In many productive lakes, DO concentration in the hypolimnion can approach zero. In Lake Billy Chinook, however, this extreme condition is avoided because oxygen-containing water from the tributaries flows into the hypolimnion and provides a source of oxygen. In Lake Simtustus, the flow into the hypolimnion comes from the relatively well-aerated mid-depths of Lake Billy Chinook.

(c) The pattern of pH seen in the Project reservoirs and in the Deschutes River below the Project is, like the DO pattern in the reservoirs, a function of the high productivity of the water bodies. Intense photosynthetic activity results in elevated pH levels in the water. This occurs in the reservoirs, in the lower Deschutes River, and in the Deschutes and Crooked rivers above the Project. It is a consequence of the relatively high nutrient concentration in the waters of the Project, which acts to increase biological activity resulting in an increase in pH.

(d) As stated earlier, the Metolius River may be representative of the "natural" nutrient conditions of the steams flowing into the Project reservoirs. The Meltolius River is low in nitrogen and relatively high in phosphorus. The Deschutes and Crooked rivers have similar phosphorus concentrations but higher nitrogen concentrations, suggesting that they are being artificially enriched in nitrogen. The resulting high nutrient concentrations support the profuse algal production, which results in the patterns of DO and pH seen in the Project reservoirs and in the lower Deschutes River. Dense algal blooms would occur even in the absence of nitrogen enrichment because species of cyanobacteria (blue-green algae) present in Lake Billy Chinook are capable of meeting their nitrogen needs from the atmosphere in the presence of sufficient phosphorus. It is unlikely that phosphorus input could be reduced sufficiently to limit the growth of phytoplankton because of the naturally high concentration in inflowing streams.

(e) The current conditions regarding stream flow entering the Project Area may be deemed to be naturally occurring in that the Project does not regulate legal water rights obtained under State Law nor does the Project generate or create additional water above what nature delivers within the context of the entire Deschutes Basin. Given the current appropriations and their individual supporting water right certificate with corresponding priority date, the WCB is convinced that the most effective, equitable and efficient way to increase stream flow below the project is to work within the legal framework to increase flows entering the Project area. This could include use of market based incentives, land acquisitions, water right transfers and other legal methods to secure more water.

(f) Increases in surface stream flow entering the Project due to mitigation measures in the upper basin may increase temperature regimes in the reservoirs and ultimately the Lower Deschutes.

(g) The stability of the Lower Deschutes River is attributable to significant ground water sources within and immediately above the Project area. The lower Deschutes River flows are dominated by groundwater contributions in the late summer and fall months. Diurnal fluctuations are small immediately below the Project mainly due to constant groundwater contributions and present Project Operations. Although both the Deschutes and Crooked Rivers are highly managed in the upper basin, water quality within the Project is moderated to a great extent by the excellent quality and quantity of groundwater entering within the vicinity of the Project.

The WCB believes that naturally-occurring temperatures and nutrient levels may be adversely and indirectly affecting water quality within and downstream of the Project. The WCB has taken these facts into account in making their findings.

9. Spill and Waste Management

The Joint Applicants shall implement its Project-specific Oil Spill Prevention, Control and Countermeasure (SPCC) Plan and Waste Management Guidelines. The SPCC Plan and Waste Management Guidelines shall be kept current. In the event of a spill or release or threatened spill or release to Tribal waters, Joint Applicants shall immediately implement the site's SPCC plan, modified SPCC plan or other applicable contingency plan and notify the Oregon Emergency Response System (OERS) at 1-800-452-0311, Tribal Fire & Safety Office at (541) 553-1634, and the Natural Resources Department at (541) 553-2001.

10. § 401 Certification Modification

Subject to the provisions of Ordinance 80 and 81, the WCB may reconsider and add or alter conditions to the §401 Certification as necessary to address changes in conditions or knowledge or to address any failure of conditions herein to protect water quality and beneficial uses. In accordance with the Clean Water Act §401, any added or altered condition shall, so long as it is in effect, become a condition of any federal license or permit that is thereafter issued for the Project. Ordinance 81 provides a mechanism for appropriate changes to the conditions established in this §401 Certificate. With respect to an existing federal license or permit for the Project, the WCB may petition the federal agency to incorporate the added or altered condition in the federal license or permit.

11. Project Changes

The Joint Applicants must obtain the WCB review and approval before undertaking any change to the Project that might significantly affect water quality, including changes to Project operation and flows.

12. Project Repair or Maintenance

The Joint Applicants must obtain the WCB review and approval before undertaking Project repair or maintenance activities that might significantly affect water quality. The WCB may, at Joint Applicants' request, provide prior approval of such repair and maintenance activities on a periodic or ongoing basis.

13. Costs for TEO and WCB Oversight

In accordance with Tribal Ordinances 80 and 81, Joint Applicants shall pay a project-specific fee for the WCB and the TEO's costs of overseeing implementation of this §401 Certification. The fee shall be $24,000 annually (2002 dollars indexed to the Federal Inflation Rate) made payable to "Tribal Environmental Office, Natural Resource Department" and due on July I of each year after issuance of this Certificate. If this fee

amount is found to be in excess of needs or inadequate to cover costs incurred, the Water Control Board may change the annual fee charged after consultation with the Joint Applicants.

14. Project Inspection

The Joint Applicants shall allow the WCB and TEO or other designated representative such access as necessary to inspect the Project area at reasonable times to monitor compliance with certification conditions.

15. Notification

The Joint Applicants will notify the WCB and the TEO of any future changes in the project or operation of the project.

16. Posting of Certification

A copy of this certification shall be prominently posted within the project powerhouse.

The Joint Applicants have provided reasonable assurances that the Project will be managed and operated in a manner that win not violate applicable tribal water quality standards. The Water Control Board as the delegated authority of Tribal Council of the Confederated Tribes of the Warm Springs Reservation of Oregon is reasonably assured that compliance with the certification conditions contained herein will maintain the Project consistent with applicable provisions of Sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, Tribal water quality standards, and other appropriate requirements of Tribal law related to water quality. No additional special requirements, aside from those already listed above, are needed to meet the requirements of the Tribal Water Code.

APPENDIX C

U.S. Fish and Wildlife Service
Section 18 Fishway Prescriptions

The fishway prescriptions are identical to Proposed Articles 17-33 and 38 of Exhibit A of the Settlement Agreement. For ease of reference, we include the numbering system used in the Settlement Agreement.

1. Fish Passage Plan (Proposed Article 17)

The Licensees shall implement the Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)], including but not limited to the measures described in paragraphs (a) through (d) of this article.

(a) The Licensees shall implement the Fish Passage Plan to establish self-sustaining harvestable anadromous fish runs of Chinook, steelhead and sockeye above the Project. The anadromous fish that are reintroduced shall pose acceptable minimal risks of fish disease agent introduction. The target population sizes to be used for self-sustaining harvestable runs of each species will be those developed by the Oregon Department of Fish and Wildlife (ODFW) and Confederated Tribes of the Warm Springs Reservation Branch of Natural Resources (CTWS BNR), in conjunction with the Licensees and the Fish Committee, based on historic information, modeling, habitat production capacity estimates, and research results.

(b) The Licensees shall provide for safe, timely and effective upstream and downstream fish passage of adult and juvenile life stages of spring and fall Chinook, summer steelhead, sockeye salmon, bull trout, rainbow trout, and mountain whitefish.

(c) The Licensees shall implement a three-phase fish passage program, including sequential step-by-step implementation with clearly stated targets, accomplishments, consultation, and prerequisite requirements for each phase. The three phases are Experimental, Interim, and Final.

(i) The Experimental Passage Phase is the current stage of fish passage at the Project and includes but is not limited to modeling of currents in and water withdrawal from Lake Billy Chinook, conceptual designs for downstream passage facilities at Round Butte Dam, Pelton Fish Trap improvements, juvenile migration studies in Lake Billy Chinook, fish health monitoring, approval of the Fish Health Management program and stock selection of species.

(ii) The Interim Passage Phase shall include investigations of fish passage methods and construction of selective water withdrawal (SWW) facilities and temporary and permanent downstream passage facilities at Round Butte Dam. Actions and adaptive management studies for this phase shall include but are not limited to:

(1) Evaluation of the Round Butte Dam SWW system;

(2) Hydraulic and biological evaluation of the Round Butte Dam temporary and permanent downstream collection and fish handling facilities;

(3) Biological evaluation of the adult fish release facility;

(4) Modification and reactivation of the Pelton Dam historical downstream migrant facility;

(5) Conducting predation studies in Lake Billy Chinook; and

(6) Conducting fish health monitoring and evaluation.

(iii) The Final Passage Phase shall include actions and adaptive management studies for feasibility determination, development and construction of permanent upstream fish passage facilities, contingent on the achievement of successful downstream passage at the Project. These actions and studies shall include:

(1) Reactivation and evaluation of the Pelton Fish Ladder for volitional upstream fish passage;

(2) Construction of new ponds or facilities to rear juvenile spring Chinook or construction of a new ladder to retain or replace existing spring Chinook rearing capacity;

(3) Construction of a new fish ladder, or other volitional upstream fish passage facility, at Round Butte Dam; and

(4) Continued monitoring of the success, and improvement if necessary, of fish passage for all species.

(d) The Licensees shall conduct effectiveness monitoring, annual work plans, and a phased approach that includes:

(i) A specific schedule of timelines, including Testing and Verification studies, study results, and decisions;

(ii) Analysis of self-sustaining harvestable anadromous fish runs with the use of life cycle models and evaluation of passage efficiencies and survival estimates for the different life history stages of each species;

(iii) Establishment of performance measures and monitoring success towards achieving performance measures;

(iv) Evaluation of spawning and rearing and movement of re-introduced fish species;

(v) Evaluation of movement of native resident fish species upstream and downstream through Project facilities and reservoirs;

(vi) Trap and haul of adult fish subject to the long-term goal of volitional upstream fish passage, which will eventually require construction, evaluation, and monitoring of upstream collection facilities, if determined to be feasible;

(vii) During initial implementation, capturing and marking out migrating smolts from above the Project so that they may be differentiated from other returning adults in subsequent years;

(viii) Continued reservoir and drogue studies to refine operations and implementation of structural changes that will assist juvenile migration through Lake Billy Chinook;

(ix) Annual evaluation of stock performance success via outmigrant escapement and adult returns, including periodic evaluation and validation of the model results to determine the efficacy of the passage program;

(x) Preparation of design specifications for fish passage facilities in consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities; and

(xi) Fish passage standards and monitoring, evaluation and reporting requirements.

2. Fish Passage Criteria and Goals (Proposed Article 18)

(a) The Licensees shall provide that upstream and downstream passage facilities will be functional during all months of the year to provide safe, timely and effective passage for resident and anadromous fish.

(b) The following table summarizes the criteria and goals for safe, timely and effective downstream and upstream passage for fish.

Criteria And Goals For Safe, Timely And Effective Downstream And Upstream Passage	
Item	**Criteria and Goals**
1. Screen Hydraulic Criteria	NOAA Fisheries smolt criteria (as provided in Article 22)
2. Downstream Passage Facility Survival (from Round Butte collection to lower Deschutes River release point)	93 percent smolt survival for temporary facility during first five years of operations. 96 percent smolt survival for permanent facility.
3. Upstream Passage Facility Survival (from lower Deschutes River collection point through Adult Release Facility)	95 percent during first five years of operations. 98 percent after five years.
4. Round Butte Reservoir Downstream Passage Associated with Temporary Passage Facilities	>50 percent of a statistically significant sample of tagged steelhead or spring Chinook outmigrants from any Project tributary averaged over four years of study.
5. Round Butte Reservoir Downstream Passage Associated with Permanent Collection Facilities	>75 percent survival of PIT-tagged smolts calculated as a rolling 4-year average during the first 12 years.

3. Fish Passage Schedule (Proposed Article 19)

The Licensees shall implement the comprehensive schedule for design, construction, operations and monitoring of upstream and downstream passage facilities included in the Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)].

4. Phased Construction of Selective Water Withdrawal and Downstream Fish Passage Facilities (Proposed Article 20)

(a) The Licensees shall prepare, in consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, and file with the Commission a design and schedule to construct the selective water withdrawal and downstream passage facilities in the following two phases in accordance with the approved schedule: (1) construction of the selective water withdrawal structure, which shall include a temporary downstream passage facility and (2) construction of the permanent downstream passage facility. The temporary and permanent facilities shall both include a sampling area to support biological evaluation of the fish screens and fish bypass facilities, and a mechanical screen cleaner or some other suitable device to prevent the accumulation of sediment and debris that might otherwise impair screen function and cause the delay, injury, or mortality of downstream migrating fish at Round Butte Dam. Upon Commission approval, the Licensees shall construct the selective water withdrawal ("SWW") and downstream passage facilities.

(b) The Licensees shall install and operate a permanent downstream fishway that meets National Marine Fisheries Service smolt criteria within the forebay at the Round Butte Dam, including fish screens, guidance devices, and fish bypass facilities as described in the Fish Passage Plan. The Licensees shall construct permanent downstream passage facilities after determining, in consultation with the Fish Committee, Oregon Department of Environmental Quality, and CTWS Water Control Board, that the blend of surface/deep water withdrawal through the selective water withdrawal facility will: (a) satisfy the criteria for safe, timely and effective downstream passage associated with temporary passage facilities set forth in Article 18; and (b) currently meet water quality criteria set forth in the 401 certificates, or likely meet the water quality criteria within a reasonable time through continued iterative adjustments of the SWW system as constructed with permanent downstream passage facilities and/or through implementation of other water quality management strategies. The Licensees shall evaluate downstream movement as described in the Fish Passage Plan.

(c) The Licensees shall notify the Fish Committee in writing when the downstream fishways are fully operational. Operation, maintenance, and monitoring of downstream fishways shall be conducted in accordance with the Downstream Fishway Operation and Maintenance Plan and Downstream Fishway Monitoring Plan, which the Licensees shall file with the Commission after consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities. Upon Commission approval and coincident with the initiation of downstream fishway operations, the Licensees shall begin implementation of the plans.

5. <u>Downstream Passage Facilities At Round Butte Dam (Proposed Article 21)</u>

The Licensees shall submit for the review by the Fish Committee, and for approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, the results of all downstream fishway design investigations, preliminary design plans and specifications, and final design plans and specifications for the construction and operation of temporary and permanent downstream fishways at Round Butte Dam to meet National Marine Fisheries Service smolt criteria. To the extent not otherwise completed as Interim Measures as described in Exhibit B to the Settlement Agreement and reported to the Commission pursuant to Article 41, the Licensees shall complete the following modeling and design steps prior to the construction of the selective water withdrawal (SWW) facilities and the downstream fish passage facilities:

(a) ***Constructability and Feasibility*****:** Constructability/feasibility design is the first step needed to select a design option and facility location.

(b) ***Design Consultation*****:** After the constructability/feasibility design is complete and a preferred option is selected, the Licensees shall consult with the Fish Committee, Oregon Department of Environmental Quality, and the Confederated Tribes of the Warm Springs Water Control Board prior to starting detailed design.

(c) ***Modeling*****:** If the constructability/feasibility studies do not result in a clear cut recommended design selection, then computational fluid dynamics (CFD) modeling may be used to provide additional input into the selection.

(d) ***Design selection*****:** If the CFD modeling is not required to make the design selection, CFD modeling and the progression to the 25% design stage will be conducted concurrently. The CFD modeling results will be used to optimize facility geometry and to review design features to provide the best attraction currents in the forebay and around the facility.

(e) ***Physical Model*****:** After the 25% design stage and the CFD modeling have been completed, the results will be used to construct a physical model of the structure. The primary purpose of the physical modeling is to investigate the internal hydraulics of the structure and to evaluate entrance hydraulic conditions. Concurrently, the design will progress to the 50% stage.

(f) ***Design Consultation and Review*****:** After the physical modeling is complete and the design has progressed to 50%, consultation with the Fish Committee (and with the Commission for dam safety purposes) will be undertaken prior to proceeding with further design.

(g) ***Final Consultation*****:** After consultation is complete, the design will progress to 90%, and then to final status. The Licensees shall file the final design with the Commission after consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities. Upon Commission approval, the Licensees shall construct the SWW and temporary downstream passage facilities.

6. Criteria for Downstream Passage Screen Design (Proposed Article 22)

(a) The downstream passage facilities at Round Butte Dam shall meet the National Marine Fisheries Service (NOAA Fisheries) smolt criteria; however, the facilities' exclusion plates do not have to meet the NOAA Fisheries criteria for sweeping velocity and contact time.

(b) The smolt criteria include, but are not limited to, a maximum approach velocity perpendicular to the screens and exclusion plate of 0.80 feet per second (fps), screen openings no larger than 0.25 inches, a screen sweeping velocity component no less than 0.80 fps, and a screen contact time no greater than 60 seconds. Due to the size of the structure and the experimental nature of safely attracting and capturing juvenile migrants from Lake Billy Chinook, some components of the fish screen and bypass system may require flexibility to design and construct to NOAA Fisheries smolt criteria, and the Licensees shall design the fish screening and collection facilities in consultation with the Fish Committee based on the best available scientific information.

(c) The Licensees shall design screening facilities to screen less than 14,000 cfs only if water quality modeling verifies that flows above 9,000 cfs can be routed through the deep intake without impact to the Project's ability to meet water quality standards and without detrimental impact to the flow pattern and fish attraction in Lake Billy Chinook.

7. Round Butte Deep Exclusion Screen (Proposed Article 23)

(a) The Licensees shall design the Round Butte deep exclusion screen to meet National Marine Fisheries Service (NOAA Fisheries) smolt criteria except for the criteria for sweeping velocity and contact time. In addition, outmigrant collection facilities will not be required at the deep exclusion screen. The Licensees shall evaluate hydraulic performance as soon as possible after the deep exclusion screen has been installed. If the screen does not meet applicable NOAA Fisheries smolt criteria at full hydraulic capacity, the Licensees shall take any necessary measures to meet applicable NOAA Fisheries smolt criteria. The Licensees shall continuously monitor differential pressure though the deep exclusion screen while the lower withdrawal system is in operation.

(b) The Licensees shall conduct studies of fish impingement at the Round Butte deep exclusion screen. Monitoring will be conducted during the first year after installation of the deep exclusion screen when deepwater withdrawal has been initiated, and when deepwater withdrawal is maximized. The duration of monitoring will depend on the monitoring method selected, but must be for a period sufficient for evaluating the possibility of impingement.

(c) The Licensees shall monitor the hydrodynamic and biological effects of Project operations during the first season after installation of permanent screens for the Round Butte downstream fish passage facility, and at least once every five years thereafter. The Licensees shall, in consultation with the Fish Committee, evaluate the need for additional monitoring based on the previous monitoring data.

(d) If the monitoring indicates that there is impingement of fish at the Round Butte deep exclusion screen, the Licensees shall consult with the Fish Committee to determine if impingement is significant because it impedes the Licensees' ability to achieve the objectives for Interim and Permanent Downstream Passage. If the Fish Committee determines that the effects are significant, the Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective authorities, take any feasible measures or implement modifications within their control that are necessary to reduce impingement below the level of significance. These measures include but are not limited to operations modifications, cleaning system modifications, louver adjustments, and deterrent systems such as strobe lights or sound to keep fish away from the exclusion screening. The Licensees shall re-evaluate the facility the next time deepwater withdrawal has been initiated or maximized. If there are no feasible structural or operational measures within the Licensees' control that will reduce impingement below significant levels, the Licensees shall, in consultation with the Fish Committee, investigate and implement alternative mitigation measures.

8. Downstream Passage Facility Pumped Attraction (Proposed Article 24)

The Licensees shall design the permanent downstream collection facility at Round Butte Dam to include the ability to add pumps with a total capacity of 3,000 cfs and all appurtenant devices. The Licensees shall, before construction of the permanent downstream collection facility, prepare and provide the Fish Committee a report on the need to add pumped attraction flow. The report shall be based on information gathered during the Testing and Verification studies pursuant to Article 29 and prepared in consultation with the Fish Committee. If the Fish Agencies conclude that it is necessary to add pumped attraction flow, the Licensees shall, in consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, develop a plan to design, construct, and operate pumps to provide appropriate attraction flow to the permanent downstream collection facilities. Upon approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, the Licensees shall submit the plan to the Commission for approval. Upon Commission approval, the Licensees shall implement the plan.

9. Trap and Haul Facilities (Proposed Article 25)

(a) The Licensees shall provide upstream passage using trap and haul until volitional upstream passage is implemented pursuant to provisions of the Fish Passage Plan.

(b) The Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a final monitoring plan for the operation and maintenance of trap-and-haul fishways at the Pelton Round Butte Project. The plan shall

provide for the submission of an annual monitoring report to the Fish Committee for the duration of the operation of the interim trap-and-haul fishways. Upon Commission approval, the Licensees shall implement the plan.

(c) The Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a plan for conducting tests of upstream passage facility survival using standard methodology for evaluation of direct injury and mortality, and other factors. The plan shall provide that, in consultation with the Fish Committee the Licensees shall take any feasible measures or implement modifications within their control that are necessary to meet the 95 percent survival standard during the first five years of operations, and the 98 percent survival standard after five years. This survival standard applies to collection at the Pelton Trap, transportation to the adult release facility, and release through the adult release facility. After correcting any deficiencies, the Licensees shall re-test the facilities to ensure compliance with the applicable upstream passage facility survival standard. After compliance with the upstream passage facility survival standard is verified, additional re-testing will only be required if deficiencies are observed. The plan will identify the methods of observation used to detect deficiencies through long-term monitoring. Upon Commission approval, the Licensees shall implement the plan.

10. <u>Adult Release Facility (Proposed Article 26)</u>

(a) ***Design and Construction of Adult Release Facility*****.** The Licensees shall, in consultation with the Fish Committee and with approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, develop and file with the Commission preliminary design, final design, and construction plans for an Adult Release Facility at the Round Butte forebay. Upon Commission approval, the Licensees shall implement the plans.

(b) ***Operation of Adult Release Facility*****.** The Licensees shall, in consultation with the Fish Committee and with approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, develop and file with the Commission an operation and maintenance plan for the Adult Release Facility for the safe, timely and effective upstream passage of anadromous fish when Lake Billy Chinook is thermally stratified. Upon Commission approval, the Licensees shall implement the plan.

(c) ***Monitoring and Evaluation of Adult Release Facility*****.** The Licensees shall, in consultation with the Fish Committee and with approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, develop and file with the Commission a monitoring and evaluation plan for the Adult Release Facility. Upon Commission approval, the Licensees shall implement the plan.

(d) ***Modifications to Adult Release Facility*****.** The Licensees shall prepare and provide the Fish Committee reports in accordance with the monitoring and evaluation plan for the Adult Release Facility. The reports shall be based on monitoring of the Adult Release Facility, shall describe any possible need to modify the Adult Release Facility, and shall be prepared in consultation with the Fish Committee. If the Fish Agencies conclude that the Adult Release Facility must be modified to ensure safe, timely, and effective upstream passage, the Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, develop a plan to modify the Adult Release Facility to ensure safe, timely, and effective upstream passage, which plan may include, but need not be limited to, measures or modifications required to meet the survival standard applicable to collection at the Pelton Fish Trap, transportation to the Adult Release Facility, and release through this facility into Lake Billy Chinook. Upon approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, the Licensees shall submit the plan to the Commission for approval. Upon Commission approval, the Licensees shall implement the plan.

11. Volitional Upstream Passage (Proposed Article 27)

(a) Following the installation of the permanent downstream passage facilities at Round Butte Dam and within 24 months of when the downstream survival targets in the Fish Passage Plan for Lake Billy Chinook have been achieved, the Licensees shall conduct a study and provide the Fish Committee a report on the feasibility of volitional upstream passage. The scope of the feasibility study shall be determined in consultation with the Fish Committee. Factors to be addressed in the study, shall include, but not be limited to:

(i) Engineering feasibility;

(ii) Biological effectiveness, including but not limited to risk of disease transfer and stray rate for out-of-basin fish;

(iii) Cost;

(iv) Performance, including efficiency, of the existing trap-and-haul operation.

(b) Following submission of this report to the Fish Committee, the Licensees shall prepare a plan to implement volitional upstream passage at the Project, which plan shall include appropriate testing and verification studies, unless the appropriate Fish Agencies determine pursuant to their respective statutory authorities that volitional upstream passage facilities should not be installed because:

(i) Oregon Department of Fish and Wildlife (ODFW) and Confederated Tribes of the Warm Springs Reservation Branch of Natural Resources (CTWS BNR) have determined that the risk of disease transfer is too great,

(ii) The stray rate for out of basin fish is not acceptable,

(iii) Volitional upstream passage is infeasible, as determined utilizing the results of the feasibility study, or

(iv) It is preferable, due to concerns with the state of the art for volitional upstream passage facilities combined with high efficacy of trap and haul operations, to continue the trap-and-haul operation for some additional specified period of time.

The plan shall be completed within 24 months of the Fish Agencies' determination that volitional upstream passage should proceed, and shall be prepared in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities. Upon approval by the Fish Agencies, the Licensees shall file the plan with the Commission. Upon Commission approval, the Licensees shall implement the plan.

(c) Upon any determination pursuant to paragraph (b) that volitional upstream passage should not be installed for the reasons specified in paragraph (b), the Licensees shall, within six months of such determination, and in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a plan to continue trap-and-haul operations for a specified number of years and to conduct a future feasibility investigation as provided in paragraph (a). During any such continued trap-and-haul operation, the Licensees shall continue to monitor survival as required by Article 25 and shall take any feasible measures or implement modifications within their control to the trap-and-haul facilities that are necessary to comply with the survival standard in Article 25. Upon Commission approval, the Licensees shall implement the plan.

12. <u>Passage at Pelton Dam (Proposed Article 28)</u>

(a) The Licensees shall transport all juvenile salmonids captured at the Round Butte downstream passage facility during the primary emigration period (February 1 through July 31) to the lower Deschutes River, bypassing Lake Simtustus and the Reregulating Reservoir. During the remainder of the year (August 1 through January 31), the Licensees shall, at the request of the Fish Committee, transport downstream-migrating salmonids into Lake Simtustus to utilize the lentic habitat it provides.

(b) If downstream-migrating salmonids are transported into Lake Simtustus, the Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a plan to upgrade the Round Butte Dam east side upstream fish trap at the head of Lake Simtustus, and operate it annually for part or all of the period May 1 through September 30 to capture and transport maturing adult resident salmonids upstream for release into Lake Billy Chinook. Upon Commission approval, the Licensees shall implement the plan.

(c) If downstream-migrating salmonids are transported into Lake Simtustus, the Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a plan to install a guidance net system at the Pelton Dam and shall operate the Pelton downstream passage facility (Pelton Skimmer) during part or all of the primary migration season (February 1 through July 31) to transport downstream migrants to the lower Deschutes River. Upon Commission approval, the Licensees shall implement the plan.

13. <u>Testing and Verification Studies (Proposed Article 29)</u>

(a) The Licensees shall, within one year of license issuance, file with the Commission a schedule for the development of plans for Testing and Verification studies as described in this Article and in Appendix III of the Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)]. The Licensees shall develop the schedule in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities.

(b) Upon Commission approval of the schedule, the Licensees shall develop the Testing and Verification study plans in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities. The study plans shall provide that the Licensees shall conduct these studies with continued involvement of the Fish Committee through the annual work planning and reporting process. Each study plan will include objectives, tasks and evaluation/decision criteria. Where appropriate, study plans will be designed to evaluate the effectiveness of individual fish passage facilities in achieving the criteria and goals set forth in Articles 18 and 22. Such effectiveness evaluations shall include, at a minimum, the number of fish, by species and life stage, captured and released by the facility and a record of observations on the physical condition of the fish using the facility fishways. The Licensees shall develop Test and Verification study plans for the following study areas:

(i) Facility Evaluation;

(ii) Physical Reservoir Changes with Selective Water Withdrawal;

(iii) Juvenile Salmonid Studies – Reintroduction of Anadromous Stocks Upstream of the Project;

(iv) Juvenile Salmonid Studies – Rearing, Juvenile Densities, Habitat;

(v) Juvenile Salmonid Studies – Juvenile Migration;

(vi) Juvenile Salmonid Studies – Reservoir Survival/Predation, Fishery, Disease;

(vii) Juvenile Salmonid Studies – Round Butte Dam Juvenile Collection, Downstream Transportation and Release;

(viii) Adult Salmonid Studies – Adult Upstream Trap-and-Haul and Adult Release Facility; and

(ix) Adult Salmonid Studies – Adult Migration/Survival/Spawning.

Study plans for multi-year studies shall provide that the Licensees may implement minor modifications to the study methodology in consultation with the Fish Committee. The need for any such minor modifications to the study methodology will be described in the annual progress report and will be based on the results of the study to date. Following approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, the Licensees shall file the study plans with the Commission. Upon Commission approval, the Licensees shall implement the plans.

(c) Based on results of the individual Testing and Verification studies, the Licensees shall, after consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file plans with the Commission for making any modifications to the facilities needed to ensure safe, timely and effective fish passage. Upon Commission approval, the Licensees shall implement the plans.

14. Modification of Downstream Facilities (Proposed Article 30)

The Licensees shall, in consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, develop plans for measures or modifications to the existing facilities needed to achieve the criteria and goals for safe, timely and effective fish passage set forth in Articles 18 and 22. The Licensees shall file such plans with the Commission and upon approval implement the measures or modifications.

15. Long-Term Monitoring of Downstream Collection Facilities (Proposed Article 31)

Within one year after activating the permanent downstream collection facilities at Round Butte Dam, the Licensees shall file with the Commission, after consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, a plan for a long-term program to monitor downstream fish passage performance, as described in Appendix IV of the approved Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)]. The plan shall provide that the Licensees shall begin the long-term monitoring of the downstream passage facilities as soon as practicable after the Testing and Verification studies have demonstrated that the permanent downstream collection facilities are meeting the survival criteria and goals set forth in Article 18. Upon Commission approval, the Licensees shall implement the plan.

16. Annual Work Plans and Reports (Proposed Article 32)

(a) The Licensees shall utilize annual work plans to document actions to be implemented, develop monitoring and evaluation studies, and propose management, monitoring and evaluation strategies for the coming year consistent with the Fish Passage Plan. The annual work plans shall include separate study plans for each Testing and Verification study being conducted. The Licensees shall issue a draft annual work plan to the Fish Committee for review by no later than January 1, and based on consultation with the Fish Committee shall issue to the Fish Committee a final annual work plan by April 1.

(b) The Licensees shall also file an annual report with the Commission before June 1 of each year, documenting the activities of the previous year. The annual report will follow the format of the previously approved annual work plan. The annual report will include, but not be limited to:

(i) Numbers of fish by species moved upstream and downstream.

(ii) Upstream and downstream passage survival rates.

(iii) Estimates of fish mortality by species associated with the fish passage facilities.

(iv) A description and evaluation of any supplementation programs.

(v) Any changes in the work plan from adaptive management recommendations to the fish passage program that might resolve problems that have been identified.

17. Fishway Maintenance (Proposed Article 33)

The Licensees shall keep all fishways in proper order and shall keep all fishway areas clear of trash, sediment, logs, debris, and other material that would hinder passage. The Licensees shall perform maintenance in sufficient time before a migratory period such that fishways can be tested and inspected and will operate effectively prior to and during the migratory periods.

18. Pacific Lamprey (Proposed Article 38)

The Licensees shall, within one year of license issuance, file with the Commission, after consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, a Pacific lamprey passage evaluation and mitigation plan as described in the approved Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)]. Upon Commission approval, the Licensees shall implement the plan.

APPENDIX D

National Marine Fisheries Service
Section 18 Fishway Prescriptions

The fishway prescriptions are identical to Proposed Articles 17-33 of Exhibit A of the Settlement Agreement. For ease of reference, we include the numbering system used in the Settlement Agreement.

1. Fish Passage Plan (Article 17)

The Licensees shall implement the Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)], including but not limited to the measures described in paragraphs (a) through (d) of this article.

(a) The Licensees shall implement the Fish Passage Plan to establish self-sustaining harvestable anadromous fish runs of Chinook, steelhead and sockeye above the Project. The anadromous fish that are reintroduced shall pose acceptable minimal risks of fish disease agent introduction. The target population sizes to be used for self-sustaining harvestable runs of each species will be those developed by the Oregon Department of Fish and Wildlife (ODFW) and Confederated Tribes of the Warm Springs Reservation Branch of Natural Resources (CTWS BNR), in conjunction with the Licensees and the Fish Committee, based on historic information, modeling, habitat production capacity estimates, and research results.

(b) The Licensees shall provide for safe, timely and effective upstream and downstream fish passage of adult and juvenile life stages of spring and fall Chinook, summer steelhead, sockeye salmon, bull trout, rainbow trout, and mountain whitefish.

(c) The Licensees shall implement a three-phase fish passage program, including sequential step-by-step implementation with clearly stated targets, accomplishments, consultation, and prerequisite requirements for each phase. The three phases are Experimental, Interim, and Final.

(i) The Experimental Passage Phase is the current stage of fish passage at the Project and includes but is not limited to modeling of currents in and water withdrawal from Lake Billy Chinook, conceptual designs for downstream passage facilities at Round Butte Dam, Pelton Fish Trap improvements, juvenile migration studies in Lake Billy Chinook, fish health monitoring, approval of the Fish Health Management program and stock selection of species.

(ii) The Interim Passage Phase shall include investigations of fish passage methods and construction of selective water withdrawal (SWW) facilities and temporary and permanent downstream passage facilities at Round Butte Dam. Actions and adaptive management studies for this phase shall include but are not limited to:

(1) Evaluation of the Round Butte Dam SWW system;

(2) Hydraulic and biological evaluation of the Round Butte Dam temporary and permanent downstream collection and fish handling facilities;

(3) Biological evaluation of the adult fish release facility;

(4) Modification and reactivation of the Pelton Dam historical downstream migrant facility;

(5) Conducting predation studies in Lake Billy Chinook; and

(6) Conducting fish health monitoring and evaluation.

(iii) The Final Passage Phase shall include actions and adaptive management studies for feasibility determination, development and construction of permanent upstream fish passage facilities, contingent on the achievement of successful downstream passage at the Project. These actions and studies shall include:

(1) Reactivation and evaluation of the Pelton Fish Ladder for volitional upstream fish passage;

(2) Construction of new ponds or facilities to rear juvenile spring Chinook or construction of a new ladder to retain or replace existing spring Chinook rearing capacity;

(3) Construction of a new fish ladder, or other volitional upstream fish passage facility, at Round Butte Dam; and

(4) Continued monitoring of the success, and improvement if necessary, of fish passage for all species.

(d) The Licensees shall conduct effectiveness monitoring, annual work plans, and a phased approach that includes:

(i) A specific schedule of timelines, including Testing and Verification studies, study results, and decisions;

(ii) Analysis of self-sustaining harvestable anadromous fish runs with the use of life cycle models and evaluation of passage efficiencies and survival estimates for the different life history stages of each species;

(iii) Establishment of performance measures and monitoring success towards achieving performance measures;

(iv) Evaluation of spawning and rearing and movement of re-introduced fish species;

(v) Evaluation of movement of native resident fish species upstream and downstream through Project facilities and reservoirs;

(vi) Trap and haul of adult fish subject to the long-term goal of volitional upstream fish passage, which will eventually require construction, evaluation, and monitoring of upstream collection facilities, if determined to be feasible;

(vii) During initial implementation, capturing and marking out migrating smolts from above the Project so that they may be differentiated from other returning adults in subsequent years;

(viii) Continued reservoir and drogue studies to refine operations and implementation of structural changes that will assist juvenile migration through Lake Billy Chinook;

(ix) Annual evaluation of stock performance success via outmigrant escapement and adult returns, including periodic evaluation and validation of the model results to determine the efficacy of the passage program;

(x) Preparation of design specifications for fish passage facilities in consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities; and

(xi) Fish passage standards and monitoring, evaluation and reporting requirements.

2. Fish Passage Criteria and Goals (Article 18)

(a) The Licensees shall provide that upstream and downstream passage facilities will be functional during all months of the year to provide safe, timely and effective passage for resident and anadromous fish.

(b) The following table summarizes the criteria and goals for safe, timely and effective downstream and upstream passage for fish.

Criteria And Goals For Safe, Timely And Effective Downstream And Upstream Passage	
Item	**Criteria and Goals**
1. Screen Hydraulic Criteria	NOAA Fisheries smolt criteria (as provided in Article 22)
2. Downstream Passage Facility Survival (from Round Butte collection to lower Deschutes River release point)	93 percent smolt survival for temporary facility during first five years of operations. 96 percent smolt survival for permanent facility.
3. Upstream Passage Facility Survival (from lower Deschutes River collection point through Adult Release Facility)	95 percent during first five years of operations. 98 percent after five years.
4. Round Butte Reservoir Downstream Passage Associated with Temporary Passage Facilities	>50 percent of a statistically significant sample of tagged steelhead or spring Chinook outmigrants from any Project tributary averaged over four years of study.
5. Round Butte Reservoir Downstream Passage Associated with Permanent Collection Facilities	>75 percent survival of PIT-tagged smolts calculated as a rolling 4-year average during the first 12 years.

3. Fish Passage Schedule (Proposed Article 19)

The Licensees shall implement the comprehensive schedule for design, construction, operations and monitoring of upstream and downstream passage facilities included in the Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)].

4. Phased Construction of Selective Water Withdrawal and Downstream Fish Passage Facilities (Proposed Article 20)

(a) The Licensees shall prepare, in consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, and file with the Commission a design and schedule to construct the selective water withdrawal and downstream passage facilities in the following two phases in accordance with the approved schedule: (1) construction of the selective water withdrawal structure, which shall include a temporary downstream passage facility and (2) construction of the permanent downstream passage facility. The temporary and permanent facilities shall both include a sampling area to support biological evaluation of the fish screens and fish bypass facilities, and a mechanical screen cleaner or some other suitable device to prevent the accumulation of sediment and debris that might otherwise impair screen function and cause the delay, injury, or mortality of downstream migrating fish at Round Butte Dam. Upon Commission approval, the Licensees shall construct the selective water withdrawal ("SWW") and downstream passage facilities.

(b) The Licensees shall install and operate a permanent downstream fishway that meets National Marine Fisheries Service smolt criteria within the forebay at the Round Butte Dam, including fish screens, guidance devices, and fish bypass facilities as described in the Fish Passage Plan. The Licensees shall construct permanent downstream passage facilities after determining, in consultation with the Fish Committee, Oregon Department of Environmental Quality, and CTWS Water Control Board, that the blend of surface/deep water withdrawal through the selective water withdrawal facility will: (a) satisfy the criteria for safe, timely and effective downstream passage associated with temporary passage facilities set forth in Article 18; and (b) currently meet water quality criteria set forth in the 401 certificates, or likely meet the water quality criteria within a reasonable time through continued iterative adjustments of the SWW system as constructed with permanent downstream passage facilities and/or through implementation of other water quality management strategies. The Licensees shall evaluate downstream movement as described in the Fish Passage Plan.

(c) The Licensees shall notify the Fish Committee in writing when the downstream fishways are fully operational. Operation, maintenance, and monitoring of downstream fishways shall be conducted in accordance with the Downstream Fishway Operation and Maintenance Plan and Downstream Fishway Monitoring Plan, which the Licensees shall file with the Commission after consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities. Upon Commission approval and coincident with the initiation of downstream fishway operations, the Licensees shall begin implementation of the plans.

5. <u>Downstream Passage Facilities At Round Butte Dam (Proposed Article 21)</u>

The Licensees shall submit for the review by the Fish Committee, and for approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, the results of all downstream fishway design investigations, preliminary design plans and specifications, and final design plans and specifications for the construction and operation of temporary and permanent downstream fishways at Round Butte Dam to meet National Marine Fisheries Service smolt criteria. To the extent not otherwise completed as Interim Measures as described in Exhibit B to the Settlement Agreement and reported to the Commission pursuant to Article 41, the Licensees shall complete the following modeling and design steps prior to the construction of the selective water withdrawal (SWW) facilities and the downstream fish passage facilities:

(a) ***Constructability and Feasibility*****:** Constructability/feasibility design is the first step needed to select a design option and facility location.

(b) ***Design Consultation*****:** After the constructability/feasibility design is complete and a preferred option is selected, the Licensees shall consult with the Fish Committee, Oregon Department of Environmental Quality, and the Confederated Tribes of the Warm Springs Water Control Board prior to starting detailed design.

(c) ***Modeling*****:** If the constructability/feasibility studies do not result in a clear cut recommended design selection, then computational fluid dynamics (CFD) modeling may be used to provide additional input into the selection.

(d) ***Design selection*****:** If the CFD modeling is not required to make the design selection, CFD modeling and the progression to the 25% design stage will be conducted concurrently. The CFD modeling results will be used to optimize facility geometry and to review design features to provide the best attraction currents in the forebay and around the facility.

(e) ***Physical Model*****:** After the 25% design stage and the CFD modeling have been completed, the results will be used to construct a physical model of the structure. The primary purpose of the physical modeling is to investigate the internal hydraulics of the structure and to evaluate entrance hydraulic conditions. Concurrently, the design will progress to the 50% stage.

(f) ***Design Consultation and Review*****:** After the physical modeling is complete and the design has progressed to 50%, consultation with the Fish Committee (and with the Commission for dam safety purposes) will be undertaken prior to proceeding with further design.

(g) ***Final Consultation*****:** After consultation is complete, the design will progress to 90%, and then to final status. The Licensees shall file the final design with the Commission after consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities. Upon Commission approval, the Licensees shall construct the SWW and temporary downstream passage facilities.

6. Criteria for Downstream Passage Screen Design (Proposed Article 22)

(a) The downstream passage facilities at Round Butte Dam shall meet the National Marine Fisheries Service (NOAA Fisheries) smolt criteria; however, the facilities' exclusion plates do not have to meet the NOAA Fisheries criteria for sweeping velocity and contact time.

(b) The smolt criteria include, but are not limited to, a maximum approach velocity perpendicular to the screens and exclusion plate of 0.80 feet per second (fps), screen openings no larger than 0.25 inches, a screen sweeping velocity component no less than

0.80 fps, and a screen contact time no greater than 60 seconds. Due to the size of the structure and the experimental nature of safely attracting and capturing juvenile migrants from Lake Billy Chinook, some components of the fish screen and bypass system may require flexibility to design and construct to NOAA Fisheries smolt criteria, and the Licensees shall design the fish screening and collection facilities in consultation with the Fish Committee based on the best available scientific information.

(c) The Licensees shall design screening facilities to screen less than 14,000 cfs only if water quality modeling verifies that flows above 9,000 cfs can be routed through the deep intake without impact to the Project's ability to meet water quality standards and without detrimental impact to the flow pattern and fish attraction in Lake Billy Chinook.

7. Round Butte Deep Exclusion Screen (Proposed Article 23)

(a) The Licensees shall design the Round Butte deep exclusion screen to meet National Marine Fisheries Service (NOAA Fisheries) smolt criteria except for the criteria for sweeping velocity and contact time. In addition, outmigrant collection facilities will not be required at the deep exclusion screen. The Licensees shall evaluate hydraulic performance as soon as possible after the deep exclusion screen has been installed. If the screen does not meet applicable NOAA Fisheries smolt criteria at full hydraulic capacity, the Licensees shall take any necessary measures to meet applicable NOAA Fisheries smolt criteria. The Licensees shall continuously monitor differential pressure though the deep exclusion screen while the lower withdrawal system is in operation.

(b) The Licensees shall conduct studies of fish impingement at the Round Butte deep exclusion screen. Monitoring will be conducted during the first year after installation of the deep exclusion screen when deepwater withdrawal has been initiated, and when deepwater withdrawal is maximized. The duration of monitoring will depend on the monitoring method selected, but must be for a period sufficient for evaluating the possibility of impingement.

(c) The Licensees shall monitor the hydrodynamic and biological effects of Project operations during the first season after installation of permanent screens for the Round Butte downstream fish passage facility, and at least once every five years thereafter. The Licensees shall, in consultation with the Fish Committee, evaluate the need for additional monitoring based on the previous monitoring data.

(d) If the monitoring indicates that there is impingement of fish at the Round Butte deep exclusion screen, the Licensees shall consult with the Fish Committee to determine if impingement is significant because it impedes the Licensees' ability to achieve the objectives for Interim and Permanent Downstream Passage. If the Fish Committee determines that the effects are significant, the Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their

respective authorities, take any feasible measures or implement modifications within their control that are necessary to reduce impingement below the level of significance. These measures include but are not limited to operations modifications, cleaning system modifications, louver adjustments, and deterrent systems such as strobe lights or sound to keep fish away from the exclusion screening. The Licensees shall re-evaluate the facility the next time deepwater withdrawal has been initiated or maximized. If there are no feasible structural or operational measures within the Licensees' control that will reduce impingement below significant levels, the Licensees shall, in consultation with the Fish Committee, investigate and implement alternative mitigation measures.

8. Downstream Passage Facility Pumped Attraction (Proposed Article 24)

The Licensees shall design the permanent downstream collection facility at Round Butte Dam to include the ability to add pumps with a total capacity of 3,000 cfs and all appurtenant devices. The Licensees shall, before construction of the permanent downstream collection facility, prepare and provide the Fish Committee a report on the need to add pumped attraction flow. The report shall be based on information gathered during the Testing and Verification studies pursuant to Article 29 and prepared in consultation with the Fish Committee. If the Fish Agencies conclude that it is necessary to add pumped attraction flow, the Licensees shall, in consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, develop a plan to design, construct, and operate pumps to provide appropriate attraction flow to the permanent downstream collection facilities. Upon approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, the Licensees shall submit the plan to the Commission for approval. Upon Commission approval, the Licensees shall implement the plan.

9. <u>Trap and Haul Facilities (Proposed Article 25)</u>

(a) The Licensees shall provide upstream passage using trap and haul until volitional upstream passage is implemented pursuant to provisions of the Fish Passage Plan.

(b) The Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a final monitoring plan for the operation and maintenance of trap-and-haul fishways at the Pelton Round Butte Project. The plan shall provide for the submission of an annual monitoring report to the Fish Committee for the duration of the operation of the interim trap-and-haul fishways. Upon Commission approval, the Licensees shall implement the plan.

(c) The Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a plan for conducting tests of upstream passage facility survival using standard methodology for evaluation of direct injury and mortality, and other factors. The plan shall provide that, in consultation with the Fish Committee the Licensees shall take any feasible measures or implement modifications within their control that are necessary to meet the 95 percent survival standard during the first five years of operations, and the 98 percent survival standard after five years. This survival standard applies to collection at the Pelton Trap, transportation to the adult release facility, and release through the adult release facility. After correcting any deficiencies, the Licensees shall re-test the facilities to ensure compliance with the applicable upstream passage facility survival standard. After compliance with the upstream passage facility survival standard is verified, additional re-testing will only be required if deficiencies are observed. The plan will identify the methods of observation used to detect deficiencies through long-term monitoring. Upon Commission approval, the Licensees shall implement the plan.

10. <u>Adult Release Facility (Proposed Article 26)</u>

(a) ***Design and Construction of Adult Release Facility***. The Licensees shall, in consultation with the Fish Committee and with approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, develop and file with the Commission preliminary design, final design, and construction plans for an Adult Release Facility at the Round Butte forebay. Upon Commission approval, the Licensees shall implement the plans.

(b) ***Operation of Adult Release Facility*.** The Licensees shall, in consultation with the Fish Committee and with approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, develop and file with the Commission an operation and maintenance plan for the Adult Release Facility for the safe, timely and effective upstream passage of anadromous fish when Lake Billy Chinook is thermally stratified. Upon Commission approval, the Licensees shall implement the plan.

(c) ***Monitoring and Evaluation of Adult Release Facility*.** The Licensees shall, in consultation with the Fish Committee and with approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, develop and file with the Commission a monitoring and evaluation plan for the Adult Release Facility. Upon Commission approval, the Licensees shall implement the plan.

(d) ***Modifications to Adult Release Facility*.** The Licensees shall prepare and provide the Fish Committee reports in accordance with the monitoring and evaluation plan for the Adult Release Facility. The reports shall be based on monitoring of the Adult Release Facility, shall describe any possible need to modify the Adult Release Facility, and shall

be prepared in consultation with the Fish Committee. If the Fish Agencies conclude that the Adult Release Facility must be modified to ensure safe, timely, and effective upstream passage, the Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, develop a plan to modify the Adult Release Facility to ensure safe, timely, and effective upstream passage, which plan may include, but need not be limited to, measures or modifications required to meet the survival standard applicable to collection at the Pelton Fish Trap, transportation to the Adult Release Facility, and release through this facility into Lake Billy Chinook. Upon approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, the Licensees shall submit the plan to the Commission for approval. Upon Commission approval, the Licensees shall implement the plan.

11. Volitional Upstream Passage (Proposed Article 27)

(a) Following the installation of the permanent downstream passage facilities at Round Butte Dam and within 24 months of when the downstream survival targets in the Fish Passage Plan for Lake Billy Chinook have been achieved, the Licensees shall conduct a study and provide the Fish Committee a report on the feasibility of volitional upstream passage. The scope of the feasibility study shall be determined in consultation with the Fish Committee. Factors to be addressed in the study, shall include, but not be limited to:

(i) Engineering feasibility;

(ii) Biological effectiveness, including but not limited to risk of disease transfer and stray rate for out-of-basin fish;

(iii) Cost;

(iv) Performance, including efficiency, of the existing trap-and-haul operation.

(b) Following submission of this report to the Fish Committee, the Licensees shall prepare a plan to implement volitional upstream passage at the Project, which plan shall include appropriate testing and verification studies, unless the appropriate Fish Agencies determine pursuant to their respective statutory authorities that volitional upstream passage facilities should not be installed because:

(i) Oregon Department of Fish and Wildlife (ODFW) and Confederated Tribes of the Warm Springs Reservation Branch of Natural Resources (CTWS BNR) have determined that the risk of disease transfer is too great,

(ii) The stray rate for out of basin fish is not acceptable,

(iii) Volitional upstream passage is infeasible, as determined utilizing the results of the feasibility study, or

(iv) It is preferable, due to concerns with the state of the art for volitional upstream passage facilities combined with high efficacy of trap and haul operations, to continue the trap-and-haul operation for some additional specified period of time.

The plan shall be completed within 24 months of the Fish Agencies' determination that volitional upstream passage should proceed, and shall be prepared in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities. Upon approval by the Fish Agencies, the Licensees shall file the plan with the Commission. Upon Commission approval, the Licensees shall implement the plan.

(c) Upon any determination pursuant to paragraph (b) that volitional upstream passage should not be installed for the reasons specified in paragraph (b), the Licensees shall, within six months of such determination, and in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a plan to continue trap-and-haul operations for a specified number of years and to conduct a future feasibility investigation as provided in paragraph (a). During any such continued trap-and-haul operation, the Licensees shall continue to monitor survival as required by Article 25 and shall take any feasible measures or implement modifications within their control to the trap-and-haul facilities that are necessary to comply with the survival standard in Article 25. Upon Commission approval, the Licensees shall implement the plan.

12. <u>Passage at Pelton Dam (Proposed Article 28)</u>

(a) The Licensees shall transport all juvenile salmonids captured at the Round Butte downstream passage facility during the primary emigration period (February 1 through July 31) to the lower Deschutes River, bypassing Lake Simtustus and the Reregulating Reservoir. During the remainder of the year (August 1 through January 31), the Licensees shall, at the request of the Fish Committee, transport downstream-migrating salmonids into Lake Simtustus to utilize the lentic habitat it provides.

(b) If downstream-migrating salmonids are transported into Lake Simtustus, the Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a plan to upgrade the Round Butte Dam east side upstream fish trap at the

head of Lake Simtustus, and operate it annually for part or all of the period May 1 through September 30 to capture and transport maturing adult resident salmonids upstream for release into Lake Billy Chinook. Upon Commission approval, the Licensees shall implement the plan.

(c) If downstream-migrating salmonids are transported into Lake Simtustus, the Licensees shall, in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file with the Commission a plan to install a guidance net system at the Pelton Dam and shall operate the Pelton downstream passage facility (Pelton Skimmer) during part or all of the primary migration season (February 1 through July 31) to transport downstream migrants to the lower Deschutes River. Upon Commission approval, the Licensees shall implement the plan.

13. Testing and Verification Studies (Proposed Article 29)

(a) The Licensees shall, within one year of license issuance, file with the Commission a schedule for the development of plans for Testing and Verification studies as described in this Article and in Appendix III of the Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)]. The Licensees shall develop the schedule in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities.

(b) Upon Commission approval of the schedule, the Licensees shall develop the Testing and Verification study plans in consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities. The study plans shall provide that the Licensees shall conduct these studies with continued involvement of the Fish Committee through the annual work planning and reporting process. Each study plan will include objectives, tasks and evaluation/decision criteria. Where appropriate, study plans will be designed to evaluate the effectiveness of individual fish passage facilities in achieving the criteria and goals set forth in Articles 18 and 22. Such effectiveness evaluations shall include, at a minimum, the number of fish, by species and life stage, captured and released by the facility and a record of observations on the physical condition of the fish using the facility fishways. The Licensees shall develop Test and Verification study plans for the following study areas:

(i) Facility Evaluation;

(ii) Physical Reservoir Changes with Selective Water Withdrawal;

(iii) Juvenile Salmonid Studies – Reintroduction of Anadromous Stocks Upstream of the Project;

(iv) Juvenile Salmonid Studies – Rearing, Juvenile Densities, Habitat;

(v) Juvenile Salmonid Studies – Juvenile Migration;

(vi) Juvenile Salmonid Studies – Reservoir Survival/Predation, Fishery, Disease;

(vii) Juvenile Salmonid Studies – Round Butte Dam Juvenile Collection, Downstream Transportation and Release;

(viii) Adult Salmonid Studies – Adult Upstream Trap-and-Haul and Adult Release Facility; and

(ix) Adult Salmonid Studies – Adult Migration/Survival/Spawning.

Study plans for multi-year studies shall provide that the Licensees may implement minor modifications to the study methodology in consultation with the Fish Committee. The need for any such minor modifications to the study methodology will be described in the annual progress report and will be based on the results of the study to date. Following approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, the Licensees shall file the study plans with the Commission. Upon Commission approval, the Licensees shall implement the plans.

(c) Based on results of the individual Testing and Verification studies, the Licensees shall, after consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, file plans with the Commission for making any modifications to the facilities needed to ensure safe, timely and effective fish passage. Upon Commission approval, the Licensees shall implement the plans.

14. Modification of Downstream Facilities (Proposed Article 30)

The Licensees shall, in consultation with the Fish Committee and with approval by the appropriate Fish Agencies pursuant to their respective statutory authorities, develop plans for measures or modifications to the existing facilities needed to achieve the criteria and goals for safe, timely and effective fish passage set forth in Articles 18 and 22. The Licensees shall file such plans with the Commission and upon approval implement the measures or modifications.

15. Long-Term Monitoring of Downstream Collection Facilities (Proposed Article 31)

Within one year after activating the permanent downstream collection facilities at Round Butte Dam, the Licensees shall file with the Commission, after consultation with the Fish Committee and with the approval of the appropriate Fish Agencies pursuant to their respective statutory authorities, a plan for a long-term program to monitor downstream fish passage performance, as described in Appendix IV of the approved Fish Passage Plan, Exhibit D to the Settlement Agreement, approved in Ordering Paragraph [B(2)]. The plan shall provide that the Licensees shall begin the long-term monitoring of the downstream passage facilities as soon as practicable after the Testing and Verification studies have demonstrated that the permanent downstream collection facilities are meeting the survival criteria and goals set forth in Article 18. Upon Commission approval, the Licensees shall implement the plan.

16. Annual Work Plans and Reports (Proposed Article 32)

(a) The Licensees shall utilize annual work plans to document actions to be implemented, develop monitoring and evaluation studies, and propose management, monitoring and evaluation strategies for the coming year consistent with the Fish Passage Plan. The annual work plans shall include separate study plans for each Testing and Verification study being conducted. The Licensees shall issue a draft annual work plan to the Fish Committee for review by no later than January 1, and based on consultation with the Fish Committee shall issue to the Fish Committee a final annual work plan by April 1.

(b) The Licensees shall also file an annual report with the Commission before June 1 of each year, documenting the activities of the previous year. The annual report will follow the format of the previously approved annual work plan. The annual report will include, but not be limited to:

(i) Numbers of fish by species moved upstream and downstream.

(ii) Upstream and downstream passage survival rates.

(iii) Estimates of fish mortality by species associated with the fish passage facilities.

(iv) A description and evaluation of any supplementation programs.

(v) Any changes in the work plan from adaptive management recommendations to the fish passage program that might resolve problems that have been identified.

17. Fishway Maintenance (Proposed Article 33)

The Licensees shall keep all fishways in proper order and shall keep all fishway areas clear of trash, sediment, logs, debris, and other material that would hinder passage. The Licensees shall perform maintenance in sufficient time before a migratory period such that fishways can be tested and inspected and will operate effectively prior to and during the migratory periods.

APPENDIX E

National Marine Fisheries Service
Endangered Species Act
Reasonable and Prudent Measures and Terms and Conditions

Filed February 28, 2005

Reasonable and Prudent Measures (Section 9.3 of the Biological Opinion)

(1) Carry out all protection, mitigation, and enhancement measures identified in the July 13, 2004, Settlement Agreement and its attachments which avoid or minimize effects to MCR steelhead.

(2) Use the best available science to adaptively manage Project operation, maintenance, and construction activities to avoid or minimize effects to MCR steelhead during the period of the new Project license.

Terms and Conditions (Section 9.3.1 of the Biological Opinion)

(1) FERC must require the Joint Applicants to construct and operate the Project facilities identified in the July 13, 2004, Settlement Agreement; carry out the Fish Passage Plan; adhere to the Fish Passage Schedule; implement the Testing and Verification studies, Long Term Monitoring, Annual Work Plans and Reports, and Native Fish Monitoring Program; implement the Trout Creek restoration Project, LWD management plan, and gravel augmentation study; and other measures identified in the July 13, 2004, Settlement Agreement.

(2) FERC must require the Joint Applicants to establish the Fish Committee required by the July 13, 2004, Settlement Agreement, and to adhere to the consultation and dispute resolution provisions of the Settlement Agreement.

(3) FERC must require the Joint Applicants to comply with all Project construction activity best management practices (App. F, Joint Applicants 2004), including measures to prevent concrete products from entering Project waters, measures to control erosion and sedimentation, and measures to control pollutants of any kind.

APPENDIX F

U.S. Fish and Wildlife Service
Endangered Species Act
Reasonable and Prudent Measures and Terms and Conditions

Filed November 3, 2004

Reasonable and Prudent Measures (Section 7.3 of the Biological Opinion)

(1) Implement all protection, mitigation, and enhancement measures identified in the July 13, 2004, Settlement Agreement and its attachments which avoid or minimize effects to bull trout.

(2) Use the best available science to adaptively manage Project operation, maintenance, and construction activities to avoid or minimize effects to the bull trout during the period of the new Project license.

Terms and Conditions (Section 7.4 of the Biological Opinion)

1. To implement reasonable and prudent measure 1:

   1.1 The Commission must require the JA's to construct and operate the Project facilities identified in the July 13, 2004, Settlement Agreement, implement the Fish Passage Plan, adhere to the Fish Passage Schedule, implement the Testing and Verification studies, Long-Term Monitoring, Annual Work Plans and Reports, Native Fish Monitoring Program, and other measures identified in the July 13, 2004, Settlement Agreement.

2. To implement reasonable and prudent measure 2:

   2.2 The Commission must require the JA's to establish the Fish Committee required by the July 13, 2004, Settlement Agreement, and to adhere to the consultation and dispute resolution provisions of the Settlement Agreement.

   2.3 To implement reasonable and prudent measure 2, the Commission must require the JA's to comply with all Project construction activity best management practices, including measures to prevent concrete products from entering Project waters, measures to control erosion and sedimentation, and measures to control pollutants of any kind.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Portland General Electric Company and Confederated Tribes of the Warm Springs Reservation of Oregon — Project No. 2030-036

(Issued June 21, 2005)

KELLIHER, Commissioner, *concurring*:

This order approves a comprehensive Settlement Agreement signed by Portland General Electric Company, the Confederated Tribes of the Warm Springs Reservation of Oregon, and 20 stakeholders in the relicensing process for the Pelton Round Butte Hydroelectric Project. The Settlement Agreement includes proposed license articles embodying the provisions of the Agreement. This order incorporates most of the Settlement Agreement's proposed license articles in the new license issued for the Pelton Round Butte Project.

I join my colleagues in approving the Settlement Agreement and the issuance of a new license for the project. I am writing separately, however, to express concern about the process for deciding whether certain proposed license articles should be incorporated in the license. In some instances, this decision appears to have been based on little more than whether the final environmental impact statement (EIS) found the underlying action to be acceptable.

An EIS is a document reflecting staff's analysis of environmental issues. It is not intended to assess whether a proposed license article should be incorporated into a license issued by the Commission. That decision should be made utilizing jurisprudential standards established by the Commission. The analysis of environmental issues in an EIS does not provide such standards or otherwise utilize them.

The issue of what provisions of settlements may be incorporated into license articles has bedeviled the Commission and the broader hydroelectric community for some time. Accordingly, I want to stress my belief that it is important that the Commission act promptly to provide guidance to parties on this important issue.

_____
Joseph T. Kelliher

Exhibit 303 contains confidential information and is subject to General Protective Order 21-099.

Information provided in electronic format only.

Exhibit 304 contains confidential information and is subject to General Protective Order 21-099.

Information provided in electronic format only.

Davison Van Cleve PC
Attorneys at Law
TEL (503) 241-7242 ● FAX (503) 241-8160 ● jog@dvclaw.com
1750 SW Harbor Way, Suite 450
Portland, OR 97201

July 21, 2021

Via Huddle

Jaki Ferchland
Portland General Electric Company
121 SW Salmon St, 1WTC-0306
Portland, OR 97204
jacquelyn.ferchland@pgn.com

Re: In the Matter of PORTLAND GENERAL ELECTRIC COMPANY, 2022 Annual Power Cost Update.
Docket No. UE 391

Dear Ms. Ferchland:

Please find enclosed the Alliance of Western Energy Consumers' Response to Portland General Electric Company's ("PGE") First Set of Data Requests in the above-referenced docket.

If you have any questions, please do not hesitate to call.

Sincerely,

/s/ Jesse O. Gorsuch
Jesse O. Gorsuch

Enclosure

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UE 391

In the Matter of	)	
	)	ALLIANCE OF WESTERN ENERGY
PORTLAND GENERAL ELECTRIC COMPANY,	)	CONSUMERS' RESPONSE TO PGE'S FIRST SET OF DATA REQUESTS
	)	
2022 Annual Power Cost Update Tariff.	)	
	)	

Dated: July 21, 2021

The Alliance of Western Energy Consumers ("AWEC") Responds to PGE's First Set of Data Requests as follows. Subject to the objections below, AWEC will provide responses and responsive documents to PGE's First Set of Data Requests. Further, any future responses and responsive documents from AWEC will also be subject to the objections below.

GENERAL OBJECTIONS

1. AWEC objects to the instructions set forth in PGE's Data Requests to the extent that these instructions impose obligations on AWEC that exceed, are unauthorized by, or are inconsistent with the discovery rules.

2. AWEC objects to the request to the extent that the data requested is not relevant to the issues identified in this proceeding.

3. AWEC objects to the request to the extent that production of the data requested would be unduly burdensome and that the request is overly broad.

4. AWEC objects to the request to the extent that production of the requested data would reveal information protected by the attorney-client privilege, and/or the work product doctrine, and/or any other relevant privilege.

5. Each of the preceding general objections is incorporated by reference in each specific response below.

PGE DATA REQUEST NO. 1 TO AWEC:

Please refer to the paragraph in AWEC/200 at page 14: "However, regression modeling does not support PGE's conclusion. Regression modeling of the same data used by PGE to compute Lydia 2.0 prices shows that the maximum price effect of wind in July, i.e., theprice impact of going from zero generation to maximum generation, is less than $12 per MWh."

a. Provide detailed narrative regarding all the steps AWEC pursued to perform the regression modeling mentioned in the paragraph.

b. Provide all the data used by AWEC to perform regression modeling.

c. Provide work papers with intact formulae that provide calculations supporting the statement that in July, "the price impact from zero generation to maximum generation, is less than $12 per MWh."

d. Please explain why AWEC is using July as a reference month for the analysis and not the other months of the year.

RESPONSE TO PGE DATA REQUEST NO. 1:

a. AWEC performed the regression modeling by converting the data in the "Data" tab of "#04NVPC methodology Update_AUT 2022_Lydia2.0.xlsx" into a comma delimited file. AWEC then imported the data into R, converted the Total Wind variable into a numeric field, converted the "Month", "YearMonth", and "Hour Ending" variables into factor variable types. AWEC then performed a linear regression of "Mid-C Price" on Total Wind interacted with Month, YearMonth, and Hour interacted with Month.

b. See Confidential Attachment "wind.data.csv".

c. See Attachment "Wind Regression.R". Please note that this file results in a value of $15 per MWh. AWEC will submit an erratum to its testimony to reflect this.

d. July is used as a reference month because July commonly displays the greatest price range and as such was expected to capture the largest potential price impact of wind.

Date: July 21, 2021
Respondent: Lance D. Kaufman

PGE DATA REQUEST NO. 2 TO AWEC:

Please refer to AWEC/200, page 14, lines 11-12: Please provide AWEC's interpretation for the term "ad-hoc modeling"

RESPONSE TO PGE DATA REQUEST NO. 2:

In this context, AWEC interprets ad-hoc modeling as modeling that does not follow from a mathematical analysis of the impact of wind on pricing and does not attempt to reconcile the final result of the model with expected outcomes. AWEC also interprets ad-hoc modeling in this context to refer to modeling that accounts for hourly price correlations in only one dimension, without accounting for hourly correlations in other dimensions, such as COB transactions.

Date: July 21, 2021
Respondent: Lance D. Kaufman

PGE DATA REQUEST NO. 3 TO AWEC:

Please refer to AWEC/200, page 14, lines 17-19, paragraph: "Double counting hourly price shapes. PGE's methodology creates an hourly shape by quartile for wind and prices, then multiplies these values by existing wind and prices that already have hourlyshapes. This results in over shaping."

Provide all work papers, documents, and analysis supporting AWEC's assertion that PGE's Lydia 2.0 methodology results in over shaping.

RESPONSE TO PGE DATA REQUEST NO. 3:

Please see AWEC workpaper "#Summary Tables.xlsx" sheets wind.summary.by.hour, Price Shape, Wind Shape, and AWEC response to PGE DR 1 Attachment "Wind Regression.R".

Date: July 21, 2021
Respondent: Lance D. Kaufman

Exhibit 306 contains confidential information and is subject to General Protective Order 21-099.

Information provided in electronic format only.