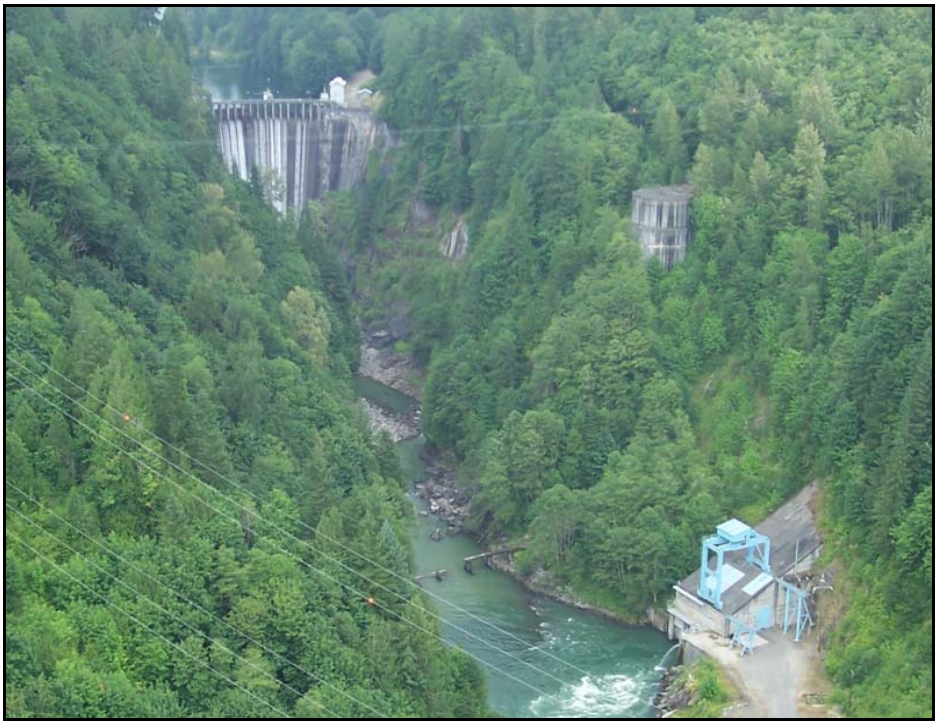
PRELIMINARY DRAFT

RESERVOIR MANAGEMENT RELATED TO IMMINENT FLOOD CONDITIONS

SETTLEMENT AGREEMENT ARTICLE 107C

BAKER RIVER HYDROELECTRIC PROJECT
FERC No. 2150



July 11, 2011

PUGET SOUND ENERGY

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1.0 Introduction

This report, "Reservoir Management Related to Imminent Flood Conditions," is prepared for the Baker River Hydroelectric Project, FERC Project No. 2150 (Baker River Project), pursuant to the *Order on Offer of Settlement, Issuing New License and Dismissing Amendment Application as Moot* dated October 17, 2008 (the License). Specifically, settlement agreement article 107c (SA 107c), "Flood Storage," at appendix A of the License and License article 305 (LA 305). The License requires PSE to consult with the ARG (Aquatics Resource Group), and specifically Skagit County and the Corps of Engineers (the Corps), to develop means and operational methods to operate the Project reservoirs in a manner addressing imminent flood events and consistent with the requirements of the License. SA 107c also requires PSE to submit to FERC a report within three years of License issuance describing any operational changes developed as a result of this consultation. LA 305 also speaks to the contents of this report.

PSE operates the Baker River Project as resource for generation of approximately 170 MW. The Corps of Engineers provides flood storage at Upper Baker from October 15 through March 1. The Corps assumes operation of the Upper Baker Dam for flood control operations when natural flows for the Skagit River at Concrete are forecast to exceed 90,000 cfs within 8 hours. Provisions directing the Corps' operations during floods are contained within the Water Control Manual (June 2000) for the project issued by the Corps of Engineers.

Settlement agreement article 107c provides as follows:

> Licensee shall consult with the ARG, and specifically Skagit County and the Corps of Engineers, to develop means and operational methods to operate the Project reservoirs in a manner addressing imminent flood events and consistent with the requirements of the license. Appropriate means and methods may include, without limitation, additional reservoir drawdown below the maximum established flood pool. Licensee shall submit a report to the Commission within three years following license issuance describing any operational changes developed as a result of this consultation.

The purpose of this report is to fulfill the requirements of SA 107c and LA 305, and to describe any changes in reservoir operations developed by PSE in consultation with the ARG, Skagit County, and the Corps of Engineers to address imminent flood events. Over the last two years, PSE held several meetings to consult with the ARG. Several ideas were explored, including those proposed by attendees who were not ARG members but who expressed interest in the subject and were allowed to attend the meetings and provide input. These options were considered, but as this report reflects, they ultimately were determined to be outside the scope of SA 107c and inconsistent with the license. However, as discussed further below, this report does recommend a communications protocol that was suggested during the consultation process.

1.1 Related License Articles and Agreements

The items below are related to the License, and specifically to SA 107c and LA 305.

- Baker River Hydroelectric Project Relicensing Comprehensive Settlement Agreement (November 24, 2004), section 4.1.1, articles 107 (SA 107) and 106 (SA 106)
- Washington Department of Ecology, Section 401 Water Quality Certification Conditions, Filed May 11, 2007
- U.S. Department of Commerce, National Marine Fisheries Service, Biological Opinion Terms and Conditions, Filed July 2, 2008
- U.S. Department of Agriculture, U.S. Forest Service, Section 4(e) Terms and Conditions, Filed November 7, 2006

1.2 Other Governing Documents

- Agreement for Flood Control and Replacement Power for the Baker River Project, by and between PSE and the Corps, dated September 5, 2009 (as amended)
- Baker River Project, Baker River Washington, Water Control Manual (WCM), USACOE June 2000

2.0 Background

The Baker River Project consists of the Lower Baker Development completed in 1925, and the Upper Baker Development completed in 1959 (figure 1). The Baker River Project includes facilities located on and adjacent to the Baker River, occupying about 8,527 acres of land including approximately 5,074 acres within the Mt. Baker-Snoqualmie National Forest. The Lower Baker Dam forms Lake Shannon and is located near Concrete, Washington, near the confluence of the Baker and Skagit rivers. Lake Shannon is approximately 7 miles long and covers about 2,278 acres at full pool. The Upper Baker Dam forms Baker Lake, located in Whatcom County near the border with Skagit County. Baker Lake is approximately 9 miles long and covers about 4,980 acres at full pool. The 2 existing hydroelectric facilities have been operating at a combined capacity of 170 megawatts.

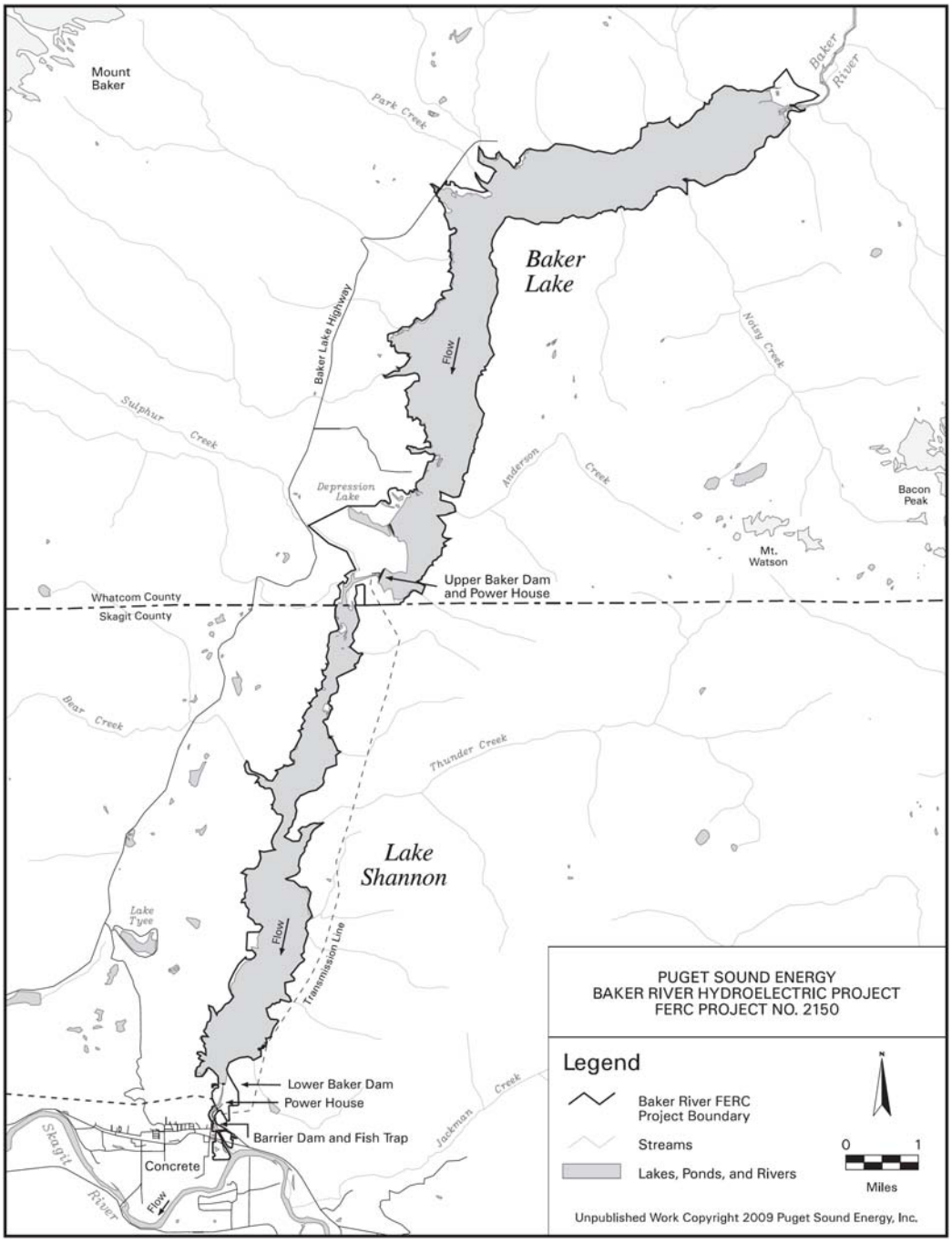

Figure 1. Baker River Hydroelectric Project, Concrete, Washington.

2.1 Hydrologic Setting

The Baker River watershed is a tributary to the Skagit River. Percentages of contribution from the Baker and Skagit Rivers vary from season to season and are influenced by the reregulation capability of the reservoirs. USGS gages measure the flow in several locations (figure 2) to contribute to the database for basin hydrology.

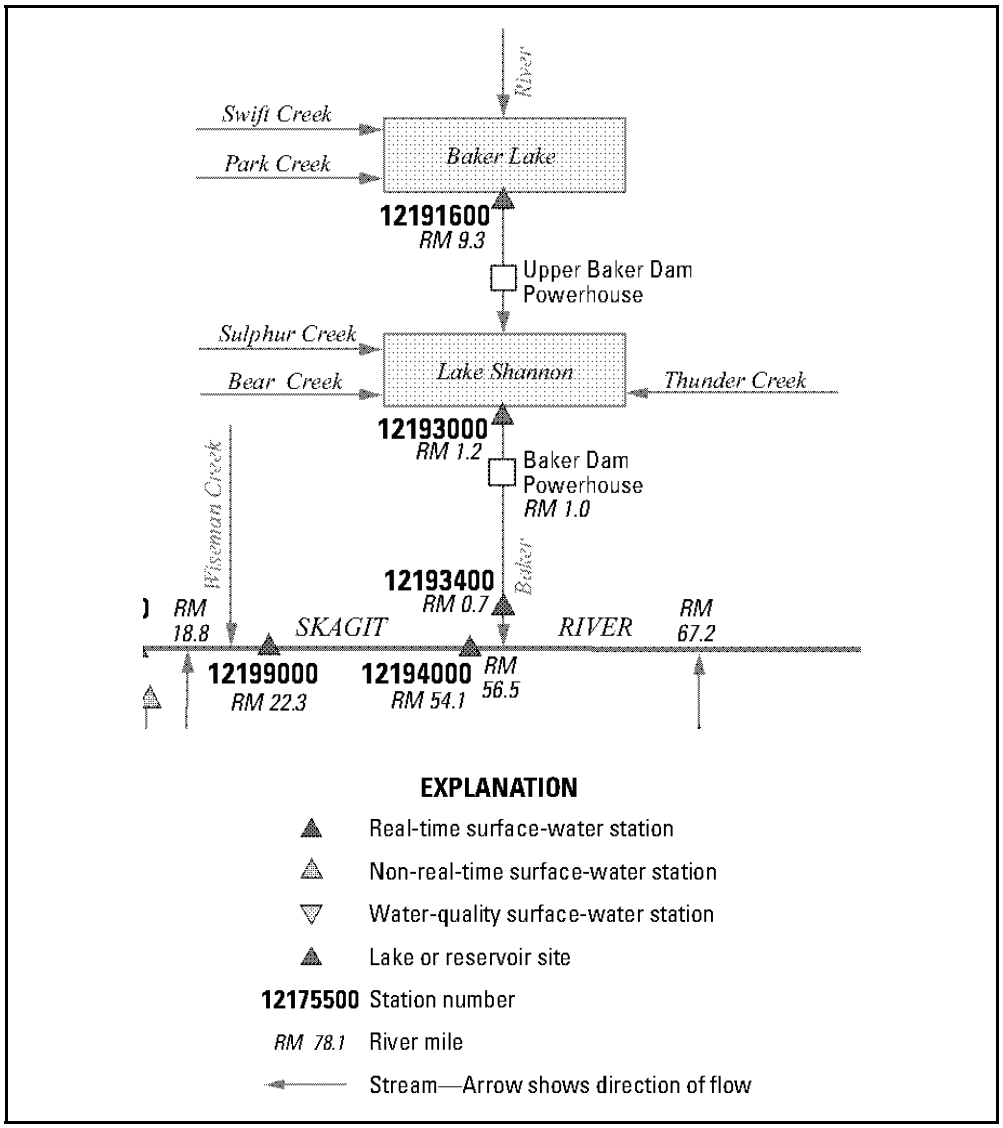

Figure 2. USGS gages at the Baker River Hydroelectric Project.

Gages used at the Baker River Project to monitor operations from upstream to downstream include:

- Baker Lake (USGS Gage 12191600).
- Lake Shannon (USGS Gage 12193000).
- Baker River at Henry Thompson Bridge (USGS Gage 12193500 pre-May 2009, or 12193400 post-May 2009).
- Skagit River near Concrete (USGS Gage 12194000).

Flows leaving the Baker River Project are monitored by the lowest two gages (figure 3):

- Baker River at Henry Thompson Bridge (USGS Gage 12193500 pre-May 2009, or 12193400, post-May 2009)
- Skagit River near Concrete (USGS Gage 12194000)

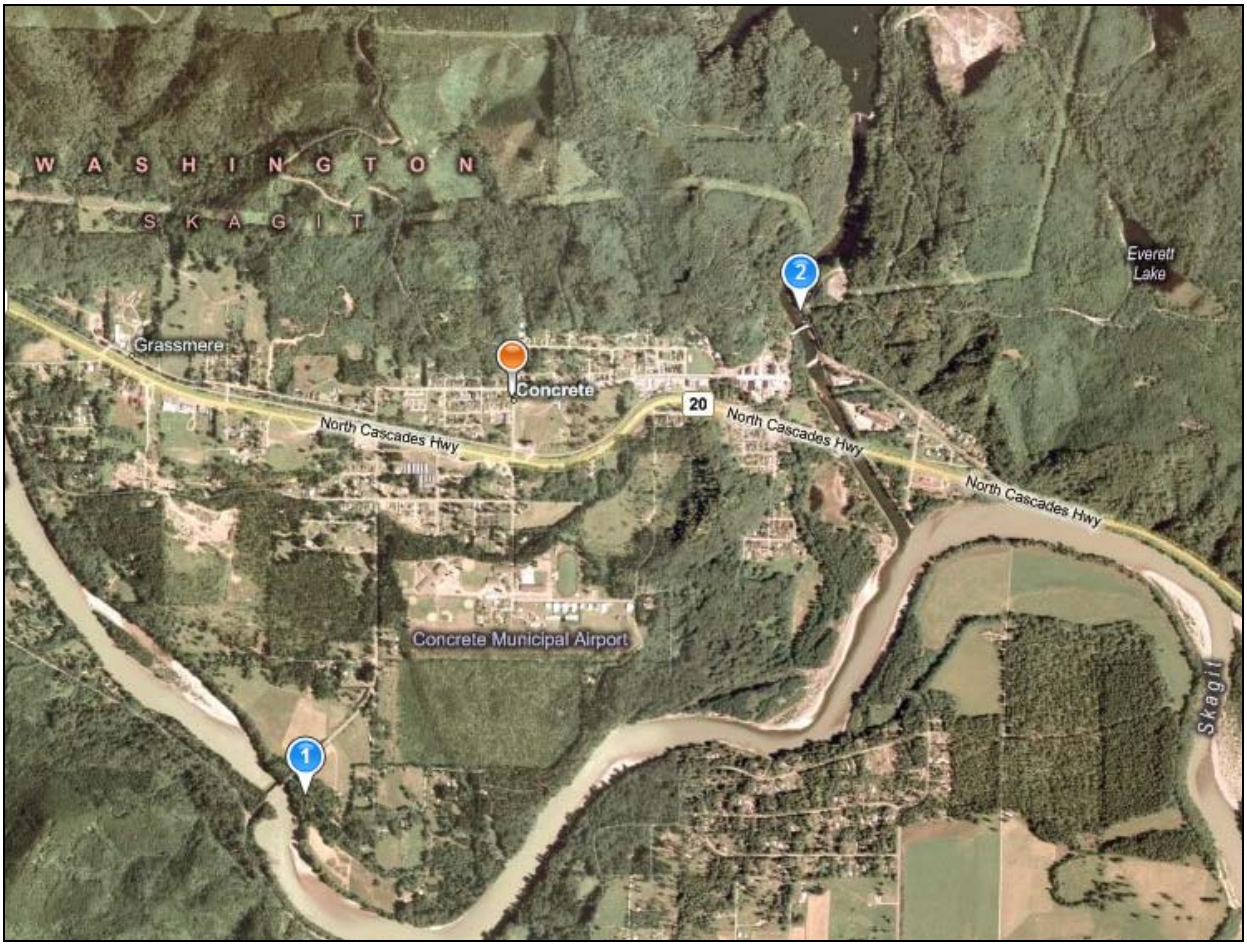

Figure 3. USGS gages monitoring discharge from the Baker River Project and the Skagit River (1. Skagit River near Concrete – USGS Gage 12194000, 2. Baker River at Henry Thompson Bridge – USGS Gage 12193500).

2.2 Relationship of Hydropower and Flood Control Operations in Flow Management

PSE operates the Baker River Project as a generation facility in accordance with the License and the settlement agreement. Flow directives and reservoir rule curves are contained in the License and reiterated in the settlement agreement (SA 106) and the 401 certification issued for the Baker River Project by the Washington State Department of Ecology. Seasonal limitations and requirements applicable to reservoir elevations and flow discharges are outlined in these documents. As a normal course of hydroelectric operations, temporal variations in instantaneous storage capacity and discharges occur within the limits specified by the License. A flood event triggers a departure from routine hydropower operations and overlays other operational constraints, as determined by the Corps, until general hydroelectric operations can resume. A generalized view of water management is provided in figure 4.

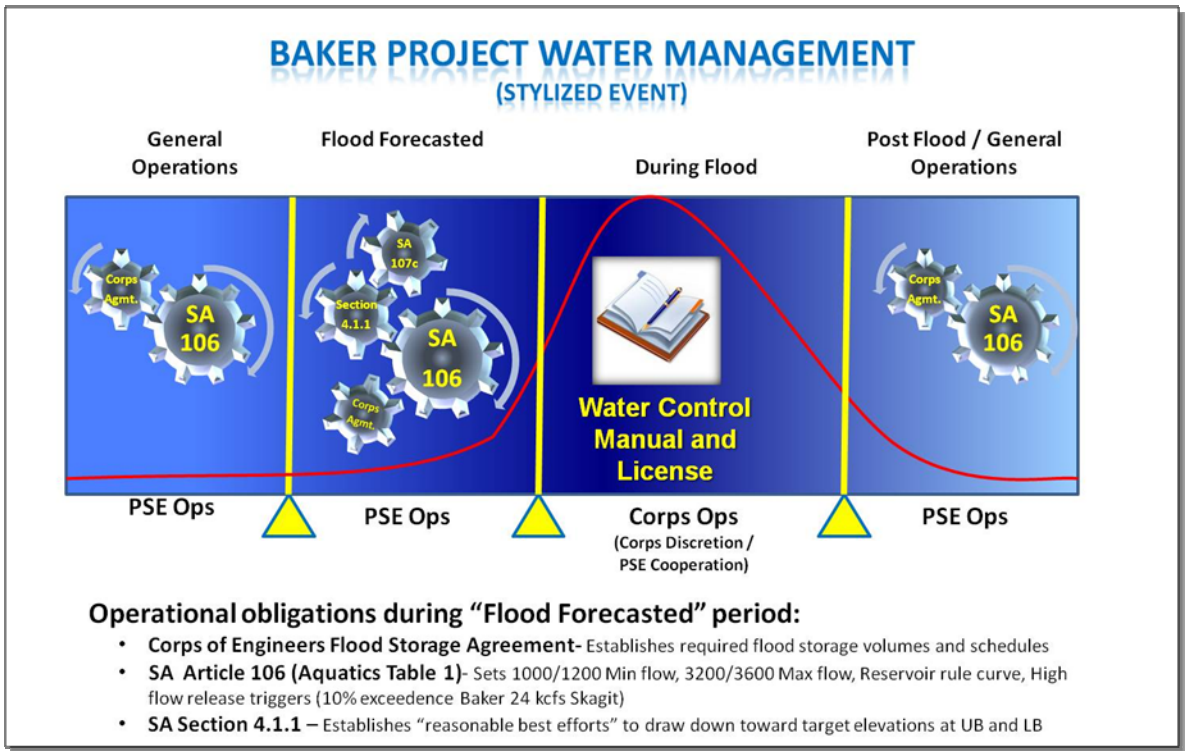

Figure 4. Stylized view of a high-water event at the Baker River Project transitioning between general hydroelectric operations directed by the licensee and flood control operations as directed by the Corps of Engineers.

There are several different phases of a high-water event, beginning with a general operational period wherein the License conditions outlined in SA 106 Aquatics Table 1 and the flood storage agreement with the Corps of Engineers establish the requirements for maximum and minimum reservoir elevations and discharge. Most days of the year are reflected in the general hydropower operational period. Flows in this period are relatively predictable and stable despite minor alterations in response to small precipitation events.

To avoid spill or encroachment into the Corps' flood storage volume, PSE typically utilizes operational "buffers" of approximately 5 feet (Lower Baker) and 8 feet (Upper

Baker). These buffers are typically maintained in anticipation of rainfall or other events (e.g., variable daily runoff from snowmelt) to be reregulated and utilized for generation rather than spilled. Actual buffer dimensions may vary moment-to-moment based on the expected need for the space and other factors bearing upon changing conditions and prudent operating practices.

When a flood is imminent during the flood control season,, settlement agreement section 4.1.1 requires PSE to employ reasonable best efforts to achieve target reservoir elevations (Upper Baker Reservoir is 704.92 [NAVD 88] and Lower Baker Reservoir is 423.66 [NAVD 88]). These drawdowns must be undertaken in a manner that is consistent with the License, other applicable laws, and PSE's contractual commitments to the Corps. These efforts are also influenced by other factors, such as the reliability of a given forecast, reasonable operator discretion, changing circumstances, and dam safety considerations. Each high-water event presents its own set of conditions, and prior events are not necessarily predictive of what may occur — or can be achieved — in the future.

When a flood occurs, the Corps, utilizing its Water Control Manual (WCM), directs project operations for flood control purposes. The WCM provides specific requirements that direct the Corps' operational control of the project. These requirements include the following.

- Flood forecasts – 8 hours in advance of (unregulated) 90,000 cfs on a rising flood.
- Minimum discharge of 5,000 cfs established at Upper Baker.
- Avoid discharge at Lower Baker that would cause Concrete to exceed zero damage discharge of 62,500 cfs.
- Flood storage evacuation: after peak, pass inflow and evacuate flood storage.
- Avoid drafting Lower Baker storage during a flood event to avoid increasing flood discharges in the Skagit River unnecessarily.
- Lower Baker must pass inflow and any releases from Upper Baker in a timely manner to avoid interference with the Corps' Upper Baker operation.
- If Lower Baker threatens to overfill, coordinate with the Corps prior to completing any gate operation.

During a flood, PSE operates the project at the Corps' direction and relies upon the expertise of the Corps as the federal flood control agency.

Following the flood event, the Corps relinquishes operational control to PSE to recover storage and resume hydropower operations per the License.

2.3 Flow-Related Operations and Constraints for Baker River Project Hydropower Operations

As stated above, PSE operates the Baker River Project in accordance with the License and the settlement agreement, including the flow directives and reservoir rule curves contained in SA 106.

There are two basic periods of flow operation identified in SA 106: interim conditions (before installation new generation at Lower Baker), and flow implementation (post unit installation) conditions. The genesis for the differences between these two periods

relates to the equipment available for flow management for the benefit of fish and wildlife, particularly fish species listed under the Endangered Species Act (ESA). Before the new generating capacity could be installed, interim measures were imposed that were limited by and compatible with existing equipment capabilities to protect listed species of salmon. Features of these interim measures include:

- Seasonal reservoir storage capacity to assist in reregulating high flow events that were outside the Corps of Engineers Flood Control operations.
- A no-generation period to reduce redd stranding potential.
- A flow supplementation budget for improved spawning habitat during drought periods.

These features were adopted into provisions of the Interim Protection Plan (IPP) contained in appendix H of the License. The interim conditions under SA 106 rely on the IPP the plus certain other measures for non-listed species. Importantly, these conditions were determined and imposed to protect ESA listed species of salmon, not to maximize opportunity for generation or as measures to provide flood control.

The measures imposed by the IPP and interim operations under SA 106 are to be replaced with superior protective measures resulting from installation of the new generating facilities and associated flow control capabilities outlined in the new License in SA 106. As with the interim measures, these conditions were determined and imposed to protect ESA-listed species of salmon, not to maximize opportunity for generation or as measures to provide flood control.

It is important to highlight the constraints contained in Aquatics Table 1 as they may relate to reservoir operations that can be employed to address an imminent flood event. The first feature is reservoir rule curves. The Baker River Project serves a number of competing uses, including fish and wildlife resources, cultural and historic resource protection, recreation interests, and flood storage. The development of reservoir rule curves considered all of these values and, through a collaborative, detailed, and thoughtful effort, produced the features highlighted in table 1 below. These values were carefully considered to balance the competing interests.

Table 1. Seasonal minimum and maximum reservoir elevations (in feet) in the Lower Baker and Upper Baker reservoirs from September 1 to March 1 (adapted from SA 106 Aquatics Table 1 of the Baker River Project License).

Date	Lower Baker max elevation	Lower Baker min elevation	Upper Baker max elevation	Upper Baker min elevation
Sep 1–3	442.35	404.75	727.77	724.8
Sep 4 – 9	442.35	404.75	727.77	720.8
Sep 10 –30	442.35	404.75	727.77	718.8
Oct 1–7	442.35	389	727.11	713.8
Oct 7–	442.35	389	726.23	685
Oct 16–20	442.35	389	725.68	685
Oct 21–31	442.35	389	724.47	685
Nov 1–15	442.35	389	712.42	685

Date	Lower Baker max elevation	Lower Baker min elevation	Upper Baker max elevation	Upper Baker min elevation
Nov 16–30	442.35	389	711.56	685
Dec 1–31	442.35	389	711.56	685
Jan 1–31	442.35	389	711.56	685
Feb 1–15	442.35	389	711.56	685
Feb 16–28	442.35	389	711.56	685

A second controlling feature is limitations on discharge. Flows leaving the Lower Baker Development are limited in both minimum and maximum discharges (table 2). Minimum flows of 1,000 to 1,200 cfs and maximums flow of generally 3,200 to 3,600 cfs exist during the fall. Maximum discharges increase to 5,600 cfs after the first of the year, when power needs tend to increase and the risk to fish spawning is reduced.

Table 2. Seasonal minimum and maximum discharges (in cfs) from the Lower Baker Development, October 1 through March 1(adapted from SA 106 Aquatics Table 1 of the Baker River Project license).

Date	Minimum Flow	Maximum Flow
Oct 1–7	1,000	3,200
Oct 8–15	1,000	3,200
Oct 16–20	1,000	3,200
Oct 21–31	1,200	3,600
Nov 1–15	1,200	3,600
Nov 16–30	1,200	3,600
Dec 1–31	1,200	3,600
Jan 1–31	1,200	5,600
Feb 1–28	1,200	5,600

However, maximum release constraints do not apply under prescribed flow conditions. These are:

- Baker Lake inflow > 10 % monthly exceedance flow.

– or –

- Skagit River above the Baker River confluence > 24,000 cfs October through December.

These reservoir and discharge constraints are in effect prior to the point in time when the Corps exercises its authority to direct flood operations.

Operating the Baker River Project in a manner that is consistent with these constraints can be challenging to PSE's operators, due in part to the reliability of the information available and the dynamic nature of the basin. Stream gage reliability varies, is amplified by rapid flow fluctuation during precipitation events, and is further exacerbated by periodicity of gage reporting that delays information transfer. There is, however, much greater variability in the information concerning when and how much precipitation is expected to occur in the future.

PSE looks to and relies upon the Northwest River Forecast Center (NWRFC) for flood forecasts, and consults with the Corps as to changing circumstances that could develop into a flood event resulting in the Corps assuming operational control of the Baker River Project. Additionally, these hydrologic and operational conditions are not static. Forecasts and river conditions may be constantly and rapidly changing, especially in the context of a high-water event.

The constraints to discharging water from Lower Baker established by the License are tied to actual river conditions, not flood forecasts. A forecast flood does not allow PSE to discharge water in disregard of these constraints. The discharge limitations established by the License were determined by FERC, resource agencies, and other parties to be necessary to protect aquatic resources (including ESA-listed species).

In addition to these License constraints, during a high water event PSE's operators may be constrained by other factors bearing upon prudent utility practices, such as the integrity of equipment, the functional capabilities and capacities of available equipment, third-party influences, and circumstances that may affect the safety and wellbeing of PSE's employees or others. As noted above, each high-water event presents its own set of circumstances, and prior events are not necessarily predictive of what may occur — or can be achieved — in the future.

3.0 SA 107c Process to Develop Means and Operational Methods to Operate the Project Reservoirs in a Manner Addressing Imminent Flood Events

3.1 Initial Consultation

PSE initiated consultation regarding SA 107c with the ARG (including Skagit County and the Corps of Engineers) in 2009. The initial goal was to gain a better understanding of how reservoir operations potentially influence flood storage. To support this effort, data gathering and baseline hydrologic modeling were undertaken (table 3).

Table 3. Consultation relating to reservoir operations in advance of imminent flood.

Date	Description
Apr. 14, 2009	USACE, presentation to ARG re: the Corps' operations related to flood damage reduction
Aug. 11, 2009	Inform ARG of plan to convene Article 107c teamlet Fall 2009, including Stan W., Bob H., USACE, Skagit Co., and a PSE hydrologist(s) and biologist(s) (Anticipate at Oct 13, 2009 ARG meeting)
Oct. 13, 2009	1st teamlet meeting with presentations on License/settlement requirements, sample PSE regulation of past flood events and environmental effects associated with high flows
May 11, 2010	Tetra Tech (modeling consultant) presentation to ARG re: Drawdowns consistent with Articles 106 and 107
Jul. 13, 2010	Tetra Tech review of study status
Oct. 12 2010	Shared draft communication protocol and update on progress
Nov. 9 2011	Updated progress in getting synthetic hydrographs from Corps of Engineers
Jan. 11, 2011	Tetra Tech presentation re: review of study status
Mar. 8, 2011	Tetra Tech review of study status

PSE retained Tetra Tech as a technical resource to model various flood scenarios and assumed reservoir operations. This work prompted interesting discussions and may have helped the ARG members and other outside parties to better understand the potential of reservoir operations to provide flood storage under a limited number of theoretical conditions.

However, Tetra Tech's modeling also provided limited value. Modeling efforts and their results were necessarily based upon speculative antecedent assumptions and conditions. The modeling captured a limited range of potential constraints and variables that affect project operations, and discussion of these preliminary theoretical results led some outside reviewers to propose to optional methods of reservoir operations that were inconsistent with the License and, in some cases, inconsistent with the Corps' Water Control Manual. While some of these interested parties may have wished to entertain the merits of amending the License and/or the Water Control Manual to provide additional flood control, this was not the consensus of the ARG, and pursuing such matters is clearly beyond the scope of SA 107c.

To refocus efforts to complete the tasks set forth by SA 107c and LA 305, the ARG convened a workshop (which included other interested parties who were invited to

attend for informational purposes). The workshop proved to be a useful tool to take comments and suggestions for consideration in the SA 107c report.

3.2 Workshop

The workshop was held on May 10, 2011 with the ARG, Skagit County, the Corps and invited guests. The purpose was to take input on potential operational changes and to revisit operational constraints — such as the License — applicable to reservoir operations. Stakeholder input included the following.

Table 4. Stakeholder input and options for consideration in the SA 107c report.

- Reconsider maximum outflow constraints in anticipation of extreme, infrequent flood events.
- Whose forecast do we follow? Can we better understand forecast reliability?
- Consider zero outflow at Lower Baker during flood peak.
- Convene the ARG when a flood is first forecast to communicate about options.
- Conduct additional studies. What studies would be necessary to support changing the flow regime? (ARG would need to be involved with study development.)
- How do outages influence drawdown protocol?
- Do we need to "violate" License-defined maximum flows to get to the targets?
- Determine needed base information to inform the conversations at the time of a forecasted event.

This list was then refined to focus on those items that were consistent with the License, summarized in table 5.

Table 5. Stakeholder input and options for consideration relative to SA 107c, and their consistency with the Baker River Project License.

Item for consideration	Consistent with License?	Comment
1. Reconsider maximum outflow constraints in anticipation of extreme, infrequent flood events	No	Item would require amendment of License, Water quality certification, and Settlement agreement
2. Whose forecast do we follow? Can we better understand forecast reliability?	Yes	PSE relies upon agencies with expertise (i.e., NWRFC and the Corps). ARG may/may not choose to designate representative to follow up with relevant agencies
3. Consider zero outflow at Lower Baker during flood peak	No	Issue relates to the Water Control Manual; Corps in operational control
4. Convene the ARG when a flood is first forecast to communicate about options	Yes	License does not prohibit meeting to communicate regarding operations
5. Conduct additional studies	Yes	ARG may request additional studies. However, funding sources for studies, not required by License would also need to be determined.
6. How do outages influence drawdown protocol?	Yes	ARG may request additional information.

Item for consideration	Consistent with License?	Comment
7. Do we need to "violate" License-defined maximum flows to get to the targets?	No	PSE will not intentionally violate the conditions in its Baker River Project License. License does not allow for variance; would require amendment.
8. Determine needed base information to inform the conversations at the time of a forecasted event	Yes	Scope and purpose of such information would need to be defined and requested by the ARG.

4.0 Recommendations

The consultations suggested a need for clarification of the responsibilities and constraints applicable to reservoir operations in advance of and during a flood event. Several suggestions raised in the workshop were inconsistent with the License and are beyond the scope of SA 107c. Other items are information-based and do not constitute reservoir operations. The ARG may or may not decide to pursue these inquiries, but there is no consensus to do so, or agreement as to the scope, purpose, or value of this information.

When a flood is imminent, the settlement agreement (section 4.1.1) requires PSE to employ reasonable best efforts to achieve target reservoir elevations (Upper Baker Reservoir is 704.92 [NAVD 88] and Lower Baker Reservoir is 423.66 [NAVD 88]). These drawdowns must be undertaken in a manner that is consistent with the License, other applicable laws, and PSE's contractual commitments to the Corps. To date, these efforts have provided additional storage. In a given case, the amount of additional storage that may be available is influenced by many factors (e.g., License constraints, the reliability and changing nature of the information available to PSE's operators, environmental dynamics, and other factors bearing upon prudent utility practices such as the integrity of equipment, the functional capabilities and capacities of available equipment, third-party influences, and circumstances that may affect the safety and wellbeing of PSE's employees). As noted above, each high-water event presents its own set of conditions, and prior events are not necessarily predictive of what may occur — or can be achieved — in the future.

These established means and methods of reservoir operations can, however, be augmented with guidelines for improved communications. During consultation, it was suggested that an additional process for communications when an imminent flood event arises could be beneficial. As a result, we propose a communications protocol as follows.

- **Meeting request.** Any member of the ARG may, upon their own knowledge of a forecasted flood, request a meeting of the ARG to discuss the forecast, to inform other members of the ARG of the requesting member's role and interest in responding to a flood event, to offer technical assistance to other members of the ARG, and to discuss the status of the reservoirs and any License requirements that may constrain reservoir drawdowns in advance of the forecasted flood event. .
- **Notification.** Upon receiving a request, the licensee (PSE) will notify designated ARG representatives and the Corps of Engineers by e-mail and convene a

conference call, or as appropriate, assemble a meeting within 24 hours of such request. The ARG member requesting the meeting shall be responsible for circulating and updating the forecast information that it desires to discuss with the ARG and the Corps prior to the conference call (or the meeting, as the case may be).

- **Meeting discussion.** During the conference call or at the meeting, the ARG member requesting the meeting shall present the forecast and address any matters that it believes are unique to this event. Any member of the ARG may offer technical assistance to any other member of the ARG in responding to the flood event. PSE may also provide information concerning the status of the reservoirs and any License requirements that may constrain reservoir drawdowns in advance of the forecasted flood event.
- **Follow-up.** If the ARG deems it appropriate, and if to do so would not interfere with any member's ability to discharge any responsibilities that they may have in connection with the forecasted flood event, additional conference calls or meetings may be scheduled by the ARG to reconvene these discussions with the ARG and the Corps or to provide technical assistance (if requested). As a general matter, such calls or meetings need not occur after the point in time when the Corps assumes control of project operations, or the flood risk diminishes.

5.0 Actions from SA107c That Relate to LA 305

License article 305, "Imminent Flood Event Report," directs the licensee to:

> Incorporate into the imminent flood event report required by Settlement Agreement article 107 in Appendix A of this license, the following measures:
>
> (1) an analysis of how any specific procedures used to address imminent flood events would affect the safety and adequacy of project structures;
>
> (2) a provision to allow the licensee to temporarily modify storage requirements if required by an emergency and if the U.S. Army Corps of Engineers mutually agrees to the temporary modification; and
>
> (3) a provision to notify the Commission as soon as possible, but not later than 10 days after each such temporary modification

These three requirements are addressed in sections 5.1–5.3 below.

5.1 Analysis of Effects of Procedures in 107c on Safety and Adequacy of Project Structures

The proposed plan for implementing SA107c involves measures that are consistent with the current License and applicable FERC dam safety requirements. As such, there are no actions in the resulting plan that would affect the safety and adequacy of project structures or affect any change to project works. Consequently, no further analyses were required.

5.2 Temporary Modification of Storage Requirements

On September 5, 2009, PSE and the Corps entered into a long-term Agreement for Flood Control and Replacement Power. This agreement addresses the Corps' rights and obligations relative to the Corps' operation of the Baker River Project for flood control

purposes. Under this agreement, PSE makes available to the Corps 74,000 acre-feet of flood storage from November 1 to March 1 of each year. Additionally, the agreement provides at paragraph 2(a) that "such flood control operations shall be at the direction of the Corps on terms and conditions to be mutually agreed to by the Corps and Puget." The vast majority of these terms and conditions are set forth in the Corps' Water Control Manual. However, the agreement does contemplate that in a given case, other measures, such as temporarily modifying storage requirements in the event of an emergency, may be implemented if the Corps agrees to such modifications. The flood control agreement in place with the Corps is sufficient to address any such circumstances, should they arise. Were such circumstances to arise, PSE would take direction from the Corps in reliance upon the expertise of the Corps as the federal flood control agency.

5.3 Notification of Commission

In the event that an emergency requiring temporary modification of storage requirements as identified in section 5.2 above occurs, PSE will notify the FERC within 10 days after the modified condition is terminated.

Appendix A: Related License Articles and Mandatory Conditions

Introduction to the License (Excerpt)

2. Puget's license application is based on a comprehensive Settlement Agreement filed November 30, 2004, and signed by Puget, 11 government agencies, three tribes, eight non-government organizations, and one citizen representative. For the reasons discussed below, this order issues a new license for the Baker River Project and incorporates the Settlement Agreement's proposed measures.

Settlement Agreement Article 107

Article 107
Flood Storage

(a) The licensee shall so operate the Upper Baker River reservoir as to provide each year 16,000 acre-feet of space for flood regulation between October 15 and March 1 as replacement for the valley storage eliminated by the development. Utilization of this storage space shall be as directed by the District Engineer, Corps of Engineers. In addition to the above-specified 16,000 acre-feet, the licensee shall provide in the Upper Baker River reservoir space for flood control during the storage drawdown season (about September 1 to April 15) up to a maximum of 58,000 acre-feet as may be requested by the District Engineer, provided that suitable arrangements shall have been made to compensate the licensee for the reservation of flood control space other than the 16,000 acre-feet specified herein.

(b) Additionally, from October 1 to March 1, licensee shall operate the Lower Baker storage reservoir to provide up to 29,000 acre-feet of storage for flood regulation, at the direction of the District Engineer, Corps of Engineers, acting on behalf of the Secretary of the Department of the Army, subject to the following: (i) such storage shall be provided only in accordance with arrangements that are acceptable to the Corps of Engineers; and (ii) such storage shall be provided only after suitable arrangements have been made to compensate the licensee for the 29,000 acre-feet of storage for flood regulation specified herein.

(c) Licensee shall consult with the ARG, and specifically Skagit County and the Corps of Engineers, to develop means and operational methods to operate the Project reservoirs in a manner addressing imminent flood events and consistent with the requirements of the license. Appropriate means and methods may include, without limitation, additional reservoir drawdown below the maximum established flood pool. Licensee shall submit a report to the Commission within three years following license issuance describing any operational changes developed as a result of this consultation.

License Article 305

Article 305. *Imminent Flood Event Report.* The licensee shall incorporate into the imminent flood event report required by Settlement Agreement article 107 in Appendix A of this license, the following measures:

(1) an analysis of how any specific procedures used to address imminent flood events would affect the safety and adequacy of project structures;

(2) a provision to allow the licensee to temporarily modify storage requirements if required by an emergency and if the U.S. Army Corps of Engineers mutually agrees to the temporary modification; and

(3) a provision to notify the Commission as soon as possible, but not later than 10 days after each such temporary modification.

Settlement Agreement Section 4 (Excerpt)

4.0 COORDINATION, DECISION MAKING, AND DISPUTE RESOLUTION

4.1 Ongoing Collaboration

The Parties intend to act collaboratively and to cooperate in the performance of this Settlement.

4.1.1 Cooperation regarding Flood Control – Drawdown Target Elevations

PSE typically utilizes operational reservoir buffers of approximately eight (8) feet in the Upper Baker Reservoir and approximately five (5) feet in the Lower Baker Reservoir. PSE and Skagit County agree that during the flood control season, PSE shall employ reasonable best efforts to achieve reservoir drawdown targets when a flood event is imminent that are within the operational buffer range used by PSE. The drawdown target elevation for Upper Baker Reservoir is 704.92 (NAVD 88) and the drawdown target elevation for Lower Baker Reservoir is 423.66 (NAVD 88). PSE shall maintain such drawdown for the duration of time as determined by the ACOE. PSE shall not seek compensation for operating the reservoirs in accordance with the foregoing protocol for reservoir drawdown.

4.1.2 Cooperation regarding Flood Control – Amendment to the Water Control Manual

PSE and Skagit County shall seek an agreement with the ACOE to amend the ACOE Baker River Project "Water Control Manual" to reflect the following protocol for reservoir drawdown when a flood event is imminent:

Upon receipt of notification from the National Weather Service or such other service as ACOE may rely upon to initiate flood control operations indicating that a significant storm with a reasonable likelihood of causing a flood event is imminent, the ACOE shall notify PSE per established communications protocol, and upon receipt of such notice per established communications protocol, PSE shall initiate drawdown, by all currently available and practicable means and methods, at the Upper Baker River reservoir to a

target elevation of 704.92 (NAVD 88), and at the Lower Baker River reservoir to a target elevation of 423.66 (NAVD 88). PSE shall maintain such drawdown for the duration of time determined by ACOE in response to such notification and ensuing events. In the implementation of the foregoing protocol, PSE shall pursue such target reservoir levels, at the ACOE's direction, by employing its reasonable best efforts.

License Appendix C, Washington Department of Ecology Section 401 Water Quality Certification Conditions (Excerpt)

5.2 INSTREAM FLOWS AND RAMPING RATES

8) Temporary Modification to Flows and Ramping Rates – Natural Events. The flow regime required by this certification may be temporarily suspended and modified in the event that drought conditions, or some other natural event outside of the control of PSE, limit PSE's ability to comply with the requirements of this article. Prior to operating outside of the conditions of this article, PSE shall: 1) notify the ARG and, at least, NOAA Fisheries, USFWS, Ecology, WDFW, the Sauk-Suiattle Indian Tribe, the Swinomish Indian Tribal Community, the Upper Skagit Indian Tribe, and Skagit County; 2) hold a meeting to identify potential options and solutions, which may include, but not be limited to, controlled generation and specified release patterns to protect fish to the extent practicable; and 3) obtain approval from Ecology. An example of controlled generation and specified release pattern solutions is as follows:

   If the total Project live storage (Baker Lake and Lake Shannon combined) drops below 160,000 acre-feet, PSE shall notify the ARG and reduce generation at the Lower Baker Development to the minimum instream flow in effect at that time until Project storage has been restored above 160,000 acre-feet.

9) Temporary Modification to Flows and Ramping Rates – Emergencies. In the event that a condition affecting the safety of the Project or Project works, as defined by 18 C.F.R. § 12.3(b)(4), occurs and does not allow for consultation to occur before responding, then flows and ramping rates may be temporarily modified following any consultation with Ecology that is possible given the exigencies of the event. If the flow is so modified, PSE shall notify Ecology, FERC and the ARG as soon as practicable after the condition is discovered, without unduly interfering with any necessary or appropriate emergency repair, alarm, or other emergency action procedure. PSE shall provide all members of the ARG with a copy of any written report required by 18 C.F.R. § 12.10(a)(2) within ten (10) days of filing with FERC.

10) Flow modifications. Flows in Table 1 may be modified, as appropriate to protect, mitigate, and enhance aquatic resources. If PSE obtains or receives new information that suggests different flows may better protect, mitigate, and enhance aquatic resources, then PSE will provide the new information to the ARG to allow consideration of a modification to Table 1. The ARG may

propose a modification provided that the modification shall not require PSE to make additional funds available or to increase the total expected cost or other impact on Project generation or capacity, subject to the reserved authority of FERC or Ecology. Modifications may be proposed at any time prior to completion of the FIP or through the plan amendment process thereafter. Following approval by FERC, PSE shall implement the modifications as required by the FIP.

License Appendix B, U.S. Department of Agriculture, U.S. Forest Service Section 4(e) Terms and Conditions, filed November 7, 2006 (Excerpt)

LICENSE CONDITIONS NECESSARY FOR PROTECTION AND UTILIZATION OF THE MT. BAKER-SNOQUALMIE NATIONAL FOREST IN CONNECTION WITH THE APPLICATION FOR LICENSE AND SETTLEMENT AGREEMENT FOR PROJECT NO. 2150, BAKER RIVER HYDROELECTRIC PROJECT.

Condition No. 1 - Compliance with the Settlement Agreement

The Licensee shall completely and fully comply with all provisions of the November 30, 2004 Settlement Agreement Concerning the Relicensing of the Baker River Hydroelectric Project – FERC Project No. 2150 Whatcom and Skagit Counties, Washington (Settlement Agreement) relating to:

1. All protection, mitigation and enhancement measures and other obligations of the Licensee identified in the Settlement Agreement, Appendices, Exhibits and Schedules which are on or affect National Forest System (NFS) lands and resources.
2. All commitments in each and every plan referenced in the Settlement Agreement, Appendices, Exhibits and Schedules which implement activities on or affecting NFS lands and resources.

Condition No. 2 - Acceptance and Implementation of the Settlement Agreement

The above Condition is premised on two requirements:

1. The Commission's acceptance and incorporation of the Settlement Agreement, Appendices, Exhibits and Schedules, without material modification, as license articles; and
2. The Licensee's immediate and complete implementation of the obligations in accordance with the November 30, 2004 Settlement Agreement.

In the event either of these requirements are not met, the USDA-FS reserves its authority to supplement or modify its terms and conditions at a later time.

Condition No. 36 - Flow Implementation

The licensee shall use best efforts to manage lake elevations at Upper Baker Reservoir during the interim operating period (see paragraph A of Article 106) consistent with Aquatics Table 1, Article 106. Upon Commission approval of the Flow Implementation Plan (see paragraph B of Article 106), the licensee shall manage lake elevations at Upper Baker Reservoir consistent with Aquatics Table 1, or Aquatics Table 2 if directed by the Army Corps of Engineers.

License Appendix G, U.S. Department of Commerce, National Marine Fisheries Service, Biological Opinion Terms and Conditions, filed July 2, 2008 (Excerpt)

8.2 Reasonable and Prudent Measures

RPMs are non-discretionary measures to be taken in addition to the proposed action in order to satisfy the ESA's requirement to minimize incidental take. RPMs must be carried out as binding conditions if the proposed action is to enjoy the exemption from the prohibition of take in Section 7(o)(2) of the ESA. FERC has the continuing duty to regulate the activities of the Licensee covered in this Incidental Take Statement. If FERC or the Licensee fails to adhere to the terms and conditions of the Incidental Take Statement, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) will lapse. Activities carried out in a manner consistent with these RPMs, except those otherwise identified, will not necessitate further site-specific consultation. Activities that do not comply with all relevant RPMs will require reinitiation of consultation.

FERC must require the Licensee to carry out the following necessary and appropriate RPMs to minimize the effect of anticipated incidental take of PS Chinook salmon and steelhead. FERC must require the Licensee to:

1) Maintain and operate a real-time streamflow gaging station in the Baker River.

Data from this gage will provide reliable information about modifications to the river environment by Project operations, which the fishery resource agencies will use in advising the Licensee how to manipulated flows in a manner that will minimize incidental take.

2) Modify the Lower Baker Dam powerhouse as described in Article 106 by adding two 750 cfs capacity units to improve PSE's ability to comply with minimum flow and downramping restrictions for the project. Until completion of the modification, continue to comply with minimum flow and downramping restrictions in the Interim Protection Plan.