

PUBLIC UTILITY DISTRICT NO. 1 *of* CHELAN COUNTY
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February 26, 2010

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary
Nathaniel J. Davis, Sr., Deputy Secretary
FEDERAL ENERGY REGULATORY COMMISSION
888 First Street, NE
Washington, DC 20426

Re: **Lake Chelan Hydroelectric Project No. 637**
Article 405 – 2009 Annual Flow Report

Dear Secretary Bose and Deputy Secretary Davis:

The Federal Energy Regulatory Commission (Commission) issued the "Order Modifying and Approving Operations Compliance and Monitoring Plan (Plan), Article 405" on November 30, 2007. The Plan satisfied the License Article 405 requirement of the "Order on Offer of Settlement and Issuing New License"[1] (License) and "Order on Rehearing"[2] for the Lake Chelan Hydroelectric Project (Project) on November 6, 2006, and April 19, 2007, respectively.

Under Ordering Paragraph (B) modifying the Plan under Article 405, Chelan PUD is required to file the following report with the Commission.

> (B) The licensee shall file annually with the Commission by February 28, beginning 2008, their Annual Flow Report. If construction of the low level outlet is not completed as scheduled and corresponding flow data is not available for the 2008 Annual Flow Report (to be filed with the Commission by February 28, 2009), the licensee shall provide a status update regarding associated construction activities and applicable extension of time request(s) in their associated report. Additionally, the report shall be coordinated with the reporting of water quality data and biological evaluations required under the Washington Department of Ecology's 401 Water Quality Certificate Condition V.B and associated Quality Assurance Project Plan under license Article 401. The licensee shall allow the resource agencies, Tribes and non-governmental organizations specified under Article 405, 30 days to provide comments and/or recommendations on

[1] 117 FERC ¶ 62,129
[2] 119 FERC ¶ 61,055

filing with the Commission. The filing shall include comments and/or recommendations from the consulted entities and the licensee's response to any comments. If the licensee does not adopt a recommendation, the report shall include the licensee's reasons, based on project-specific information. Based on review of the report, the Commission reserves the right to require changes to the project to ensure compliance with the license.

In accordance with the above Order requirement, Chelan PUD hereby files the 2009 Annual Flow Report. A final draft of this report was provided to the resource agencies, Tribes and non-governmental organizations specified under Article 405 for a 30-day review period ending February 25, 2010. Appendix C provides the record of consultation.

Please do not hesitate to contact me or Steve Hays (509-661-4181) of my office regarding any questions or comments regarding this report.

Sincerely,

Michelle Smith
Licensing and Compliance Manager
michelle.smith@chelanpud.org
(509) 661-4180

cc: Erich Gaedeke, FERC-PRO

Enclosure: Lake Chelan 2009 Annual Flow Report

LAKE CHELAN
ANNUAL FLOW REPORT
2009

LICENSE ARTICLES 405 & 408

Final

LAKE CHELAN HYDROELECTRIC PROJECT
FERC Project No. 637

February 26, 2010

Public Utility District No. 1 of Chelan County
Wenatchee, Washington

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EXECUTIVE SUMMARY

Chelan PUD received a new license (License) from the Federal Energy Regulatory Commission (FERC)[1] on November 6, 2006, authorizing Chelan PUD to operate the Lake Chelan dam and powerhouse for a period of 50 years. License Article 405 required Chelan PUD to file an Operations Compliance Monitoring Plan (OCMP), which describes how Chelan PUD will comply with the instream flows, ramping rates, and tailrace flows required in the License. License Article 408 requires monitoring of flows in the project tailrace and in Reach 4 of the Chelan River and annual reporting of the monitoring results. The FERC order that modified and approved the OCMP requires that Chelan PUD file an Annual Flow Report with the FERC.

FERC, by order issued March 20, 2008, granted a two year extension of time for completion of structures needed to provide the new minimum flows required under Article 408 and Washington Department of Ecology 401 Water Quality Certification Condition III.A.(ii). The extension allowed Chelan PUD until November 6, 2010 to complete construction of the required facilities to provide the new minimum flows in the Chelan River and Reach 4, and improvements to fish habitat in the powerhouse tailrace. Chelan PUD completed the flow release structures and fish habitat enhancements in Reach 4 of the Chelan River and initiated minimum flows on October 14, 2009. Spawning flows for late-run Chinook salmon were provided to the Reach 4 enhanced salmon and steelhead habitat during the Chinook spawning period (10/15 – 11/30). In 2009, both the tailrace habitat (completed in 2008) and Reach 4 habitat channel were extensively used for spawning by Chinook salmon. A peak count of 266 Chinook and coho redds were estimated to have been deposited in the Chelan River Reach 4 (79), tailrace (129), and downstream in the Chelan/Columbia River confluence and Columbia River (58).

The Chelan River had continuous flow from spillway releases from June 8 – August 7. Since the flow release structures necessary to provide minimum flows were under construction and not operational until October 14, 2009, there was no need for ramping rates in the Chelan River during spillway flow releases that occurred prior to that time. Ramping rates in Reach 4 were implemented during the December 1 reduction in flows at the end of the Chinook spawning period. In Reaches 1-3, there were no flow reductions from October 15 – December 31 that were of sufficient magnitude to approach ramping rate limitations.

Powerhouse operations to support Chinook spawning and redd protection were implemented in 2009. Powerhouse daily average flows during the incubation period for Chinook redds deposited in 2008 were maintained at no less than 250 cfs. During the Chinook spawning period in 2009, powerhouse daily average flows were maintained above 1000 cfs from October 15 – December 31. During the March 15 – May 15 spawning period for steelhead, daily average powerhouse flows were also maintained above 1,000 cfs, except for March 22 when flows averaged 805 cfs. No steelhead spawning was observed to have occurred in 2009.

[1] Federal Energy Regulatory Commission Order on Offer of Settlement and Issuing New License and Order on Rehearing for the Lake Chelan Hydroelectric Project No. 637 were issued November 6, 2006, and April 19, 2007, respectively, to the Public Utility District No. 1 of Chelan County.

SECTION 1: INTRODUCTION

The Lake Chelan Hydroelectric Project (Project) is owned and operated by the Public Utility District No. 1 of Chelan County (Chelan PUD). Chelan PUD recently a new license (License) from the Federal Energy Regulatory Commission (FERC) on November 6, 2006, authorizing Chelan PUD to operate the Lake Chelan dam and powerhouse for a period of 50 years. As part of the normal operation of the Project, Chelan PUD withdraws water from Lake Chelan for power generation and discharges that water through the powerhouse into an excavated tailrace, which leads to the confluence of the Chelan River and the Columbia River. Spillway flows follow the natural channel of the Chelan River, joining with the powerhouse tailrace flows and discharging to the Columbia River. As a requirement of the new License, minimum flows were established for the Chelan River and that flow was initiated on October 14, 2009.

License Article 405 required Chelan PUD to file an Operations Compliance Monitoring Plan (OCMP), which was to describe how Chelan PUD will comply with: (1) the instream flows, ramping rates, and tailrace flows as set forth in Article 7 of the Lake Chelan Settlement Agreement and Chapter 7 of the Comprehensive Plan attached to the Settlement Agreement; (2) and the lake levels as set forth in Article 8 of the Settlement Agreement and Chapter 8 of the Comprehensive Plan. The OCMP was to include the specifics of flow measurement techniques, electronic flow data posting, quarterly and annual reporting requirements, and an implementation schedule.

License Article 408 required Chelan PUD to file a Threatened and Endangered Species Protection Plan (TESPP), which was to: (1) describe how Chelan PUD will implement provisions for timely development of a system to release water at the Lake Chelan Dam or pump water from the project powerhouse tailrace to the Chelan River, and subsequent operation of that system at rates sufficient to continuously maintain flows equal to or greater than the flows required for Chelan River Reach 4; and (2) provide for monitoring of flows in the project tailrace and in Reach 4 of the Chelan River and annual reporting of the monitoring results, as set forth in Article 7 of the Lake Chelan Settlement Agreement and Chapter 7 of the Comprehensive Plan attached to the Settlement Agreement.

The OCMP and TESPP were submitted to FERC on May 4, 2007 and FERC issued an order approving the TESPP on November 28, 2007 and an order modifying and approving the OCMP on November 30, 2007. Both the OCMP and TESPP require the recording and reporting of flows in the Chelan River, as related to meeting minimum flow requirements, protection of fish habitat and protection of salmon and steelhead eggs incubating in the tailrace. The FERC order approving the OCMP requires that Chelan PUD shall file an Annual Flow Report with the FERC by February 28 of each year. This Annual Flow Report meets the flow reporting requirements of License Articles 405 and 408.

Chelan PUD manages the level of Lake Chelan and flow releases through the powerhouse and spillway for power generation and other purposes. License Article 405 requires management of lake levels with priority given to maintaining minimum flows in the Chelan River (initiated in 2009) and reducing high spillway flows into the Chelan River to protect fish habitat. The Annual

Lake Level Report documents Chelan PUD's decisions regarding operation of the powerhouse for lake level management to meet these Chelan River objectives, as well as recreation and other requirements. The Annual Lake Level Report for the September 2008 – August 2009 Operating Cycle will be filed with FERC by March 1, 2010.

FERC, by order issued March 20, 2008, granted a two year extension of time for completion of structures needed to provide the new minimum flows required under Article 408 and Washington Department of Ecology 401 Water Quality Certification Condition III.A.(ii). The extension allows Chelan PUD until November 6, 2010 to complete construction of the required facilities to provide the new minimum flows in the Chelan River and Reach 4, and improvements to fish habitat in the powerhouse tailrace. Chelan PUD completed the flow release structures and fish habitat enhancements in Reach 4 of the Chelan River and initiated minimum flows on October 14, 2009. Spawning flows for late-run Chinook salmon were provided to the Reach 4 enhanced salmon and steelhead habitat during the October 15 – November 30 Chinook spawning period. Fish habitat in the powerhouse tailrace was completed prior to October 2008. In 2009, both the tailrace habitat and Reach 4 habitat channel were extensively used for spawning by Chinook salmon.

This Annual Flow Report includes two sections that correspond to the flow reporting requirements of the FERC order: Section 2, Chelan River Instream Flows and Section 3, Powerhouse Tailrace Security Flows. Since the flow release structures necessary to provide minimum flows were under construction and not operational until October 14, 2009, there was no need for ramping rates in the Chelan River during spillway flow releases that occurred prior to that time. Ramping rates in Reach 4 were implemented during the December 1 reduction in flows, at the end of the Chinook spawning period. In Reaches 1-3, there were no flow reductions from October 15 – December 31 that were of sufficient magnitude to approach ramping rate limitations.

Powerhouse operations to support Chinook spawning and redd protection were implemented in 2009. Powerhouse daily average flows during the incubation period for Chinook redds (deposited in 2008) were maintained at no less than 250 cfs. During the Chinook spawning period in 2009, powerhouse daily average flows were maintained above 1,000 cfs from October 15 – December 31. During the March 15 – May 15 spawning period for steelhead, daily average powerhouse flows were also maintained above 1,000 cfs, except for March 22 when flows averaged 805 cfs. No steelhead spawning was observed to have occurred in 2009.

SECTION 2: CHELAN RIVER INSTREAM FLOWS

2.1 Chelan River Instream Flows

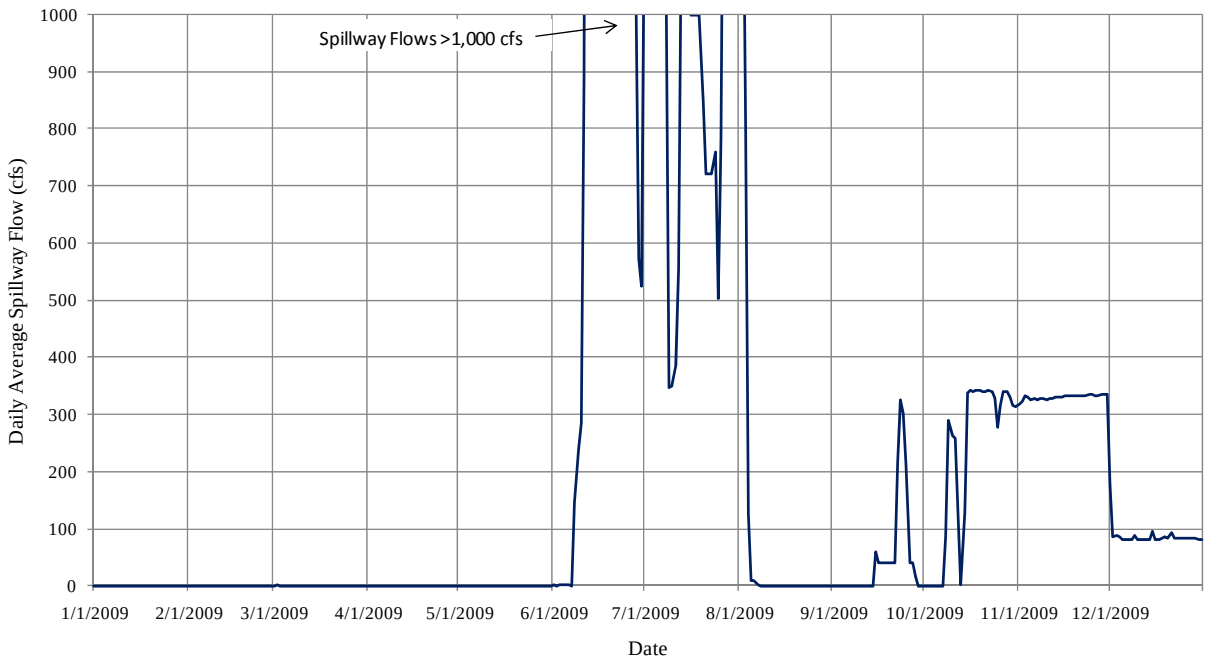
Flow releases for minimum flows were initiated on October 14, 2009, following completion of the construction and testing of the Low Level Outlet (for releases into Reach 1) and the Pump Station, which released additional water into Reach 4 for spawning flows. Flows of at least 80 cfs were provided to the Chelan River, Reaches 1-3, from initiation on October 14 – December 31, which met minimum flow requirements. Minimum flow requirements for Reaches 1-3 are 80 cfs throughout the year, with additional flow during average and high runoff years from May 15-July 15. Prior to October 15, minimum and additional flow requirements for Reaches 1-3 were not in effect due to ongoing construction activities for the Low Level Outlet and enhanced salmon and steelhead habitat channel in Reach 4.

Anadromous fish spawning flows were provided for late-run Chinook spawning in the newly completed enhanced salmon and steelhead habitat channel in Reach 4 for the October 15-November 30 spawning period. The spawning flows were provided through the combination of the Low Level Outlet flows of 80 cfs and Pump Station flows that ranged from 240 cfs – 262 cfs. Flows from the Pump Station were curtailed on December 1 following inspection of salmon redds to ensure that all redds in the Reach 4 habitat channel would have adequate flow coverage at the reduced flows.

Daily average spawning flow levels in Reach 4 were maintained at or above the minimum flow of 320 cfs, with the exception of 5 days between October 24 – November 1. Problems with the Pump Station intake screen air burst system caused a pump outage over the October 24 – 26 weekend, which resulted in hourly flows into Reach 4 that were below 300 cfs for a 34 hour period. Chelan PUD took corrective action to prevent further pump outages and reported minimum flow deviations to the Washington State Department of Ecology and FERC, as required in the License (Appendix B). During this time period, automated flow recording for the Low Level Outlet was not yet operational. The Low Level Outlet was set to assure that at least 80 cfs was provided, but only 80 cfs was entered into the flow record. The Reach 4 flows reported on October 30, 31 and November 1 were within 5 cfs of the 320 cfs minimum flow requirement, which Chelan PUD considered to be within the measurement variability for the Pump Station flow meter. Therefore, considering that Low Level Outlet flow was likely above 80 cfs, Chelan PUD did not report these days as having deviated from the minimum flow requirement. No adverse effect on Chinook spawning activity was observed to have resulted from the minimum flow deviation. Calibration of the flow metering and recording instruments for the Low Level Outlet subsequent to the October 24 – November 1 time period has demonstrated that the flow from the Low Level Outlet was greater than 80 cfs during that period of time.

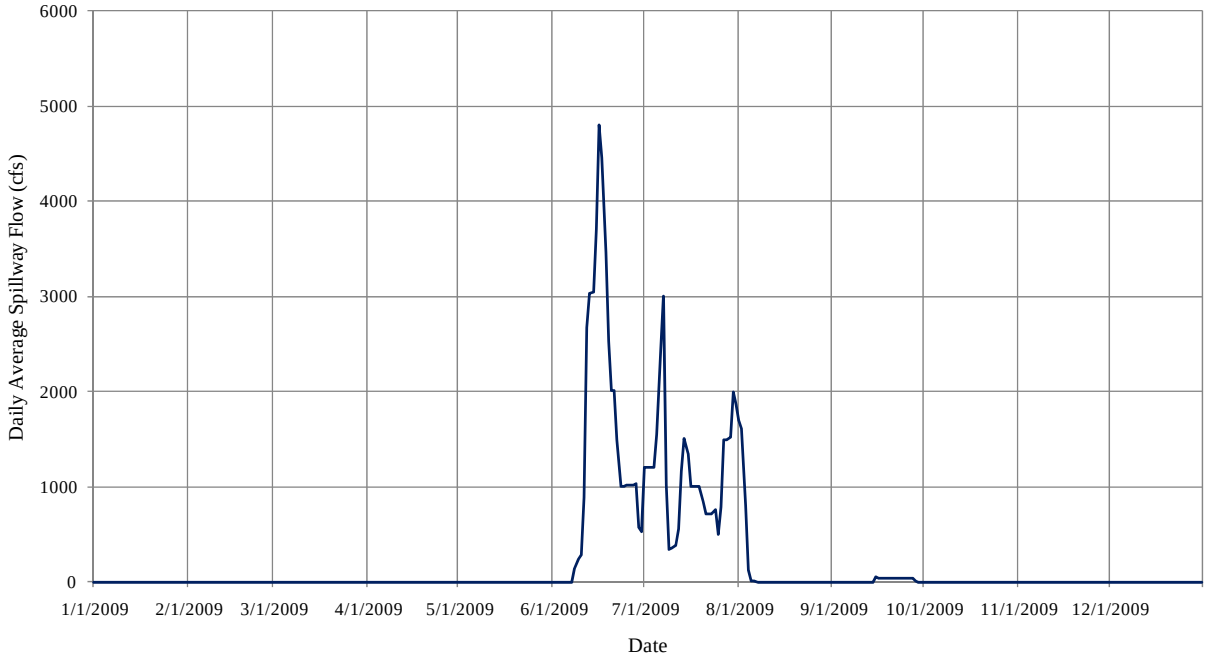
A tabulation of average daily flows from the Low Level Outlet, Pump Station, combined flows into Reach 4, powerhouse discharge, spill discharge and hourly lake levels and powerhouse tailwater levels are presented in Appendix A. Daily average flows in Reach 4 in 2009 are shown graphically in Figure 2-1. Quarterly hourly data is available at the following internet site: http://www.chelanpud.org/lc-Resource-Documents-CRFF.cfm.

Figure 2-1. Flow Releases to Reach 4 of the Chelan River, 2009.



Spillway flow releases lasted about two months in 2009, beginning on June 8 and ending on August 7. Hourly spillway discharge peaked at 5,510 cfs on June 16. Spill was increased or decreased, as needed to manage lake levels, until August 4. At the end of the spill season, spill was reduced to about 10 cfs until August 7 in order to encourage any fish inhabiting Reach 4 of the Chelan River channel to migrate out into the Columbia River. When spill ended on August 7, Chelan PUD conducted a fish rescue to remove fish from the spillway stilling basin and surveys to assure that no ESA listed salmon or steelhead were trapped in the lower Chelan River. No ESA listed fish were observed in the Chelan River channel when spill ended. Flows were released from the spillway, averaging 40 cfs, from September 15 – 28 in order to prevent stranding of adult Chinook and other fish during initial testing of the Low Level Outlet and Pump Station. Chelan PUD again conducted a fish rescue operation in Reach 4 to prevent mortality of adult salmonids and other fish that entered this section of the Chelan River following testing. Daily average spillway flow releases in 2009 are shown graphically in Figure 2-2.

Figure 2-2. Spillway Flow Releases to the Chelan River, 2009.



SECTION 3: POWERHOUSE TAILRACE SECURITY FLOWS

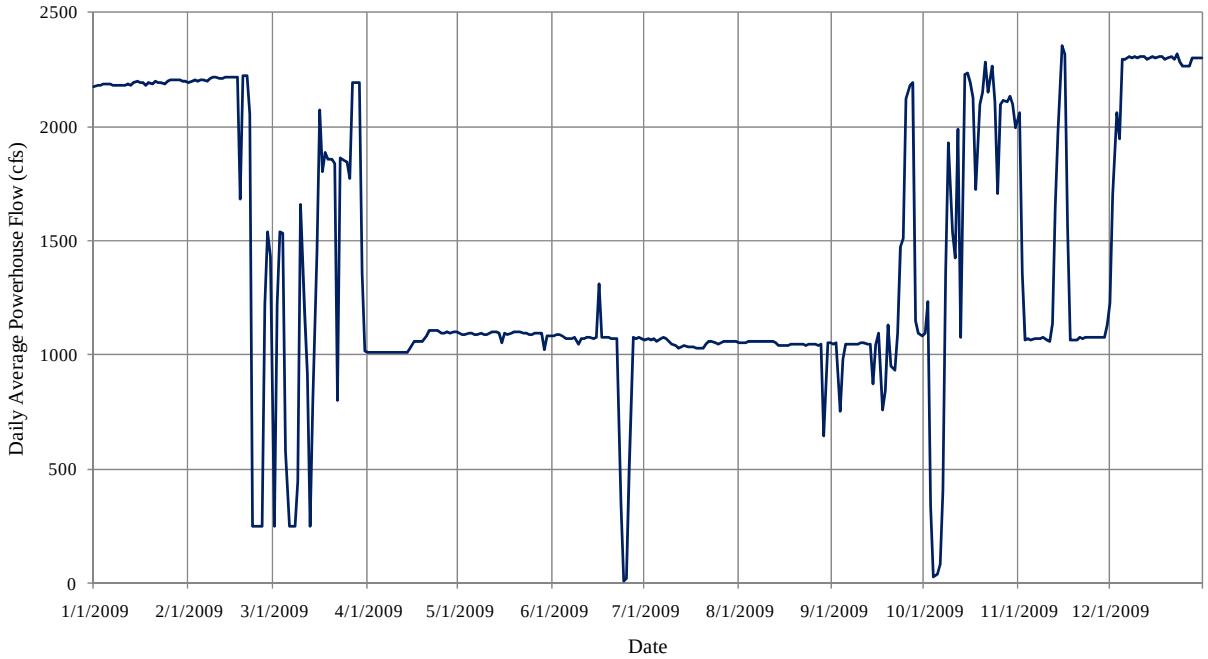
3.1 Powerhouse Operations

Powerhouse operations to support Chinook spawning and redd protection were implemented in 2009. Chinook and coho salmon were observed spawning on the enhanced spawning habitat in the tailrace between October 5 and November 8 of 2008. A combined total of 153 redds were counted in the enhanced tailrace habitat and downstream in the Chelan River/Columbia River confluence and in the Columbia River. Based on average water temperatures for the Chelan River at the Chelan Dam and powerhouse, the emergence of Chinook salmon from eggs deposited in 2008 should have occurred prior to May 1. Powerhouse daily average flows during the incubation period for Chinook redds deposited in 2008 were maintained at no less than 250 cfs from January 1 through May.

During the March 15 – May 15 spawning period for steelhead, daily average powerhouse flows were also maintained above 1,000 cfs, except for March 22 when flows averaged 805 cfs. No steelhead spawning was observed to have occurred in 2009.

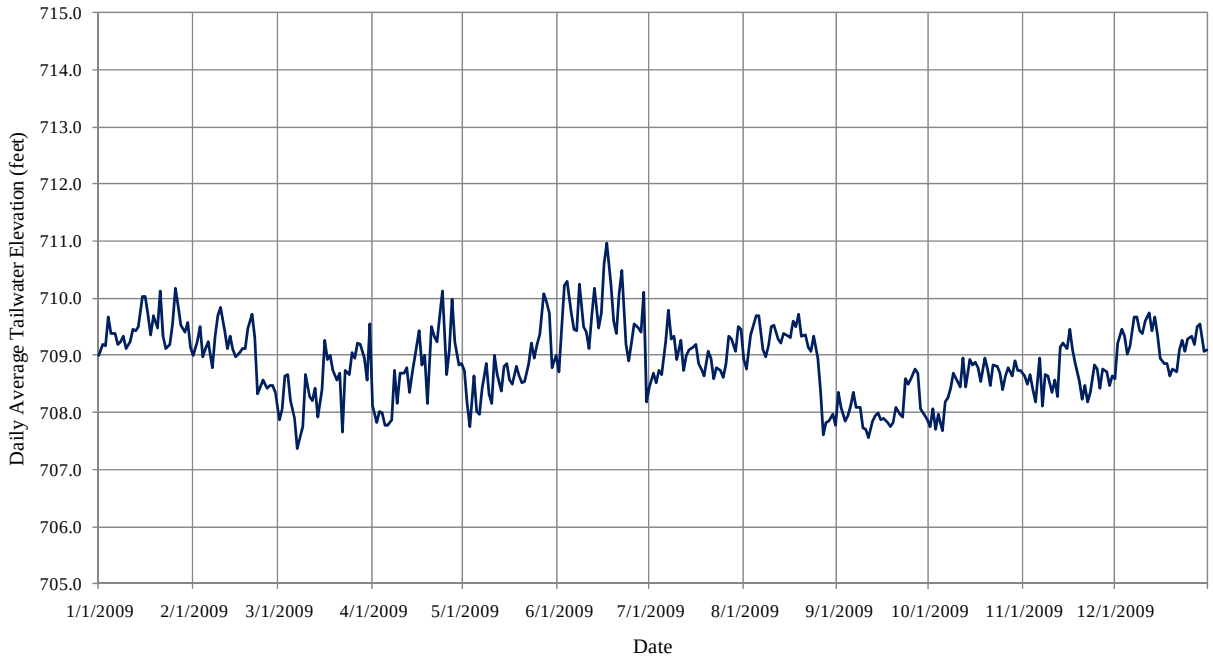
During the Chinook spawning period in 2009, powerhouse daily average flows were maintained above 1000 cfs from October 15 –December 31. A peak count of 266 Chinook and coho redds were estimated to have been deposited in the Chelan River Reach 4 (79), tailrace (129), and downstream in the Chelan/Columbia River confluence and Columbia River (58). Powerhouse daily average flows in 2009 are shown in Figure 3-1.

Figure 3-1. Chelan Powerhouse Daily Average Flows, 2009.



Water surface elevations in the tailrace can fluctuate by several feet over the course of a day due to changes in Columbia River flows that affect the backwater curve of the Rocky Reach reservoir. The water level fluctuations in the tailrace are somewhat reduced when the Chelan Powerhouse is operating. In past years, temporary dewatering of a few Chinook redds in shallow areas has been observed when the powerhouse was not operating and Columbia River flows were low. During tailrace spawning habitat construction in 2008 these areas were graded to prevent dewatering. The water levels in the tailrace remained above 708 feet most of the time and never dropped below 707 feet from January 1 – May 31. The daily average tailwater levels measured at the powerhouse are shown in Figure 3-2.

Figure 3-2. Chelan Powerhouse Daily Average Tailwater Elevations, 2008.



SECTION 4: SUMMARY

Flow releases for minimum flows in the Chelan River were initiated on October 14, 2009. Flows of at least 80 cfs were provided to the Chelan River, Reaches 1-3, from initiation on October 14 – December 31, which met minimum flow requirements. Prior to October 15, minimum flow requirements for Reaches 1-3 were not in effect due to ongoing construction activities for the Low Level Outlet and enhanced salmon and steelhead habitat channel in Reach 4.

Anadromous fish spawning flows were provided from October 15-November 30 for late-run Chinook spawning in the newly completed enhanced salmon and steelhead habitat channel in Reach 4. The spawning flows were provided through the combination of the Low Level Outlet flows of 80 cfs and Pump Station flows that ranged from 240 cfs – 262 cfs. Flows from the Pump Station were curtailed on December 1 following inspection of salmon redds to insure that all redds in the Reach 4 habitat channel would have adequate flow coverage at the reduced flows.

The Chelan River had continuous flow from spillway releases from June 8 – August 7. Since the flow release structures necessary to provide minimum flows were under construction and not operational until October 14, 2009, there was no need for ramping rates in the Chelan River during spillway flow releases that occurred prior to that time. Ramping rates in Reach 4 were implemented during the December 1 reduction in flows, at the end of the Chinook spawning period. In Reaches 1-3, there were no flow reductions from October 15 – December 31 that were of sufficient magnitude to approach ramping rate limitations.

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During the March 15 – May 15 spawning period for steelhead, daily average powerhouse flows were also maintained above 1,000 cfs, except for March 22 when flows averaged 805 cfs. No steelhead spawning was observed to have occurred in 2009.

APPENDIX A: DAILY AVERAGE LAKE CHELAN ELEVATIONS, POWERHOUSE FLOWS, TAILWATER ELEVATIONS AND CHELAN RIVER FLOWS FROM SPILL, LOW LEVEL OUTLET AND PUMPING STATION

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
1/1/2009	1091.4	2177	709.0	N/A	0	0	N/A	0
1/2/2009	1091.4	2178	709.2	N/A	0	0	N/A	0
1/3/2009	1091.2	2183	709.2	N/A	0	0	N/A	0
1/4/2009	1091.1	2189	709.7	N/A	0	0	N/A	0
1/5/2009	1091.1	2188	709.4	N/A	0	0	N/A	0
1/6/2009	1091.0	2188	709.4	N/A	0	0	N/A	0
1/7/2009	1091.3	2183	709.2	N/A	0	0	N/A	0
1/8/2009	1091.2	2179	709.2	N/A	0	0	N/A	0
1/9/2009	1091.2	2180	709.3	N/A	0	0	N/A	0
1/10/2009	1091.2	2182	709.1	N/A	0	0	N/A	0
1/11/2009	1091.2	2180	709.2	N/A	0	0	N/A	0
1/12/2009	1091.1	2184	709.4	N/A	0	0	N/A	0
1/13/2009	1091.1	2182	709.4	N/A	0	0	N/A	0
1/14/2009	1091.1	2191	709.5	N/A	0	0	N/A	0
1/15/2009	1091.0	2197	710.0	N/A	0	0	N/A	0
1/16/2009	1091.0	2193	710.0	N/A	0	0	N/A	0
1/17/2009	1090.9	2190	709.7	N/A	0	0	N/A	0
1/18/2009	1090.9	2183	709.4	N/A	0	0	N/A	0
1/19/2009	1090.8	2190	709.7	N/A	0	0	N/A	0
1/20/2009	1090.7	2189	709.5	N/A	0	0	N/A	0
1/21/2009	1090.6	2197	710.1	N/A	0	0	N/A	0
1/22/2009	1090.6	2191	709.3	N/A	0	0	N/A	0
1/23/2009	1090.5	2190	709.1	N/A	0	0	N/A	0
1/24/2009	1090.4	2189	709.2	N/A	0	0	N/A	0
1/25/2009	1090.3	2195	709.6	N/A	0	0	N/A	0
1/26/2009	1090.2	2204	710.2	N/A	0	0	N/A	0
1/27/2009	1090.1	2204	709.9	N/A	0	0	N/A	0
1/28/2009	1090.1	2203	709.5	N/A	0	0	N/A	0
1/29/2009	1090.0	2206	709.4	N/A	0	0	N/A	0
1/30/2009	1089.9	2198	709.6	N/A	0	0	N/A	0
1/31/2009	1089.8	2196	709.2	N/A	0	0	N/A	0
2/1/2009	1089.7	2194	709.0	N/A	0	0	N/A	0
2/2/2009	1089.6	2196	709.2	N/A	0	0	N/A	0
2/3/2009	1089.5	2202	709.5	N/A	0	0	N/A	0
2/4/2009	1089.4	2200	709.0	N/A	0	0	N/A	0
2/5/2009	1089.3	2205	709.1	N/A	0	0	N/A	0
2/6/2009	1089.2	2207	709.2	N/A	0	0	N/A	0
2/7/2009	1089.1	2200	708.8	N/A	0	0	N/A	0
2/8/2009	1089.0	2209	709.3	N/A	0	0	N/A	0
2/9/2009	1088.9	2215	709.7	N/A	0	0	N/A	0
2/10/2009	1088.8	2218	709.9	N/A	0	0	N/A	0
2/11/2009	1088.7	2213	709.4	N/A	0	0	N/A	0
2/12/2009	1088.6	2212	709.1	N/A	0	0	N/A	0
2/13/2009	1088.5	2217	709.3	N/A	0	0	N/A	0
2/14/2009	1088.4	2214	709.1	N/A	0	0	N/A	0

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
2/15/2009	1088.3	2215	709.0	N/A	0	0	N/A	0
2/16/2009	1088.2	2215	709.1	N/A	0	0	N/A	0
2/17/2009	1088.1	2218	709.1	N/A	0	0	N/A	0
2/18/2009	1088.0	1685	709.1	N/A	0	0	N/A	0
2/19/2009	1088.0	2222	709.5	N/A	0	0	N/A	0
2/20/2009	1087.9	2225	709.7	N/A	0	0	N/A	0
2/21/2009	1087.7	2053	709.3	N/A	0	0	N/A	0
2/22/2009	1087.7	253	708.3	N/A	0	0	N/A	0
2/23/2009	1087.7	252	708.4	N/A	0	0	N/A	0
2/24/2009	1087.7	251	708.6	N/A	0	0	N/A	0
2/25/2009	1087.7	252	708.4	N/A	0	0	N/A	0
2/26/2009	1087.7	1223	708.5	N/A	0	0	N/A	0
2/27/2009	1087.7	1540	708.5	N/A	0	0	N/A	0
2/28/2009	1087.6	1430	708.4	N/A	0	0	N/A	0
3/1/2009	1087.6	250	707.9	N/A	0	0	N/A	0
3/2/2009	1087.6	1220	708.1	N/A	2	2	N/A	2
3/3/2009	1087.6	1541	708.6	N/A	0	0	N/A	0
3/4/2009	1087.6	1536	708.7	N/A	0	0	N/A	0
3/5/2009	1087.5	583	708.2	N/A	0	0	N/A	0
3/6/2009	1087.5	250	707.9	N/A	0	0	N/A	0
3/7/2009	1087.6	250	707.4	N/A	0	0	N/A	0
3/8/2009	1087.6	250	707.6	N/A	0	0	N/A	0
3/9/2009	1087.5	450	707.8	N/A	0	0	N/A	0
3/10/2009	1087.5	1659	708.7	N/A	0	0	N/A	0
3/11/2009	1087.5	1194	708.3	N/A	0	0	N/A	0
3/12/2009	1087.5	918	708.2	N/A	0	0	N/A	0
3/13/2009	1087.4	254	708.4	N/A	0	0	N/A	0
3/14/2009	1087.4	804	707.9	N/A	0	0	N/A	0
3/15/2009	1087.4	1453	708.4	N/A	0	0	N/A	0
3/16/2009	1087.4	2073	709.3	N/A	0	0	N/A	0
3/17/2009	1087.3	1802	708.9	N/A	0	0	N/A	0
3/18/2009	1087.2	1886	709.0	N/A	0	0	N/A	0
3/19/2009	1087.1	1855	708.7	N/A	0	0	N/A	0
3/20/2009	1087.0	1860	708.6	N/A	0	0	N/A	0
3/21/2009	1087.0	1840	708.7	N/A	0	0	N/A	0
3/22/2009	1086.9	805	707.7	N/A	0	0	N/A	0
3/23/2009	1086.9	1860	708.7	N/A	0	0	N/A	0
3/24/2009	1086.8	1850	708.7	N/A	0	0	N/A	0
3/25/2009	1086.7	1845	709.1	N/A	0	0	N/A	0
3/26/2009	1086.6	1773	709.0	N/A	0	0	N/A	0
3/27/2009	1086.5	2190	709.2	N/A	0	0	N/A	0
3/28/2009	1086.4	2190	709.2	N/A	0	0	N/A	0
3/29/2009	1086.3	2190	709.0	N/A	0	0	N/A	0
3/30/2009	1086.2	1357	708.6	N/A	0	0	N/A	0
3/31/2009	1086.2	1017	709.6	N/A	0	0	N/A	0

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
4/1/2009	1086.1	1013	708.1	N/A	0	0	N/A	0
4/2/2009	1086.1	1011	707.8	N/A	0	0	N/A	0
4/3/2009	1086.1	1011	708.0	N/A	0	0	N/A	0
4/4/2009	1086.1	1011	708.0	N/A	0	0	N/A	0
4/5/2009	1086.0	1010	707.8	N/A	0	0	N/A	0
4/6/2009	1086.0	1011	707.8	N/A	0	0	N/A	0
4/7/2009	1086.0	1011	707.9	N/A	0	0	N/A	0
4/8/2009	1086.0	1013	708.7	N/A	0	0	N/A	0
4/9/2009	1086.0	1010	708.2	N/A	0	0	N/A	0
4/10/2009	1086.0	1012	708.7	N/A	0	0	N/A	0
4/11/2009	1086.0	1011	708.7	N/A	0	0	N/A	0
4/12/2009	1086.1	1011	708.8	N/A	0	0	N/A	0
4/13/2009	1086.1	1010	708.3	N/A	0	0	N/A	0
4/14/2009	1086.1	1011	708.7	N/A	0	0	N/A	0
4/15/2009	1086.1	1031	709.0	N/A	0	0	N/A	0
4/16/2009	1086.2	1059	709.4	N/A	0	0	N/A	0
4/17/2009	1086.2	1060	708.8	N/A	0	0	N/A	0
4/18/2009	1086.2	1060	709.0	N/A	0	0	N/A	0
4/19/2009	1086.3	1058	708.2	N/A	0	0	N/A	0
4/20/2009	1086.3	1081	709.5	N/A	0	0	N/A	0
4/21/2009	1086.4	1110	709.3	N/A	0	0	N/A	0
4/22/2009	1086.5	1110	709.2	N/A	0	0	N/A	0
4/23/2009	1086.7	1107	709.7	N/A	0	0	N/A	0
4/24/2009	1086.8	1106	710.1	N/A	0	0	N/A	0
4/25/2009	1087.0	1096	708.7	N/A	0	0	N/A	0
4/26/2009	1087.1	1097	709.1	N/A	0	0	N/A	0
4/27/2009	1087.1	1101	710.0	N/A	0	0	N/A	0
4/28/2009	1087.2	1099	709.2	N/A	0	0	N/A	0
4/29/2009	1087.3	1099	708.8	N/A	0	0	N/A	0
4/30/2009	1087.4	1100	708.9	N/A	0	0	N/A	0
5/1/2009	1087.4	1095	708.7	N/A	0	0	N/A	0
5/2/2009	1087.5	1090	708.2	N/A	0	0	N/A	0
5/3/2009	1087.5	1090	707.7	N/A	0	0	N/A	0
5/4/2009	1087.6	1097	708.6	N/A	0	0	N/A	0
5/5/2009	1087.7	1095	708.0	N/A	0	0	N/A	0
5/6/2009	1087.8	1093	708.0	N/A	0	0	N/A	0
5/7/2009	1088.0	1091	708.4	N/A	0	0	N/A	0
5/8/2009	1088.1	1094	708.8	N/A	0	0	N/A	0
5/9/2009	1088.1	1093	708.3	N/A	0	0	N/A	0
5/10/2009	1088.2	1090	708.2	N/A	0	0	N/A	0
5/11/2009	1088.3	1095	709.0	N/A	0	0	N/A	0
5/12/2009	1088.4	1100	708.7	N/A	0	0	N/A	0
5/13/2009	1088.5	1100	708.4	N/A	0	0	N/A	0
5/14/2009	1088.7	1096	708.8	N/A	0	0	N/A	0
5/15/2009	1088.8	1057	708.9	N/A	0	0	N/A	0

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
5/16/2009	1088.8	1095	708.6	N/A	0	0	N/A	0
5/17/2009	1088.9	1092	708.5	N/A	0	0	N/A	0
5/18/2009	1089.1	1099	708.8	N/A	0	0	N/A	0
5/19/2009	1089.4	1102	708.6	N/A	0	0	N/A	0
5/20/2009	1089.8	1100	708.5	N/A	0	0	N/A	0
5/21/2009	1090.0	1100	708.6	N/A	0	0	N/A	0
5/22/2009	1090.2	1098	708.8	N/A	0	0	N/A	0
5/23/2009	1090.5	1095	709.2	N/A	0	0	N/A	0
5/24/2009	1090.8	1091	709.0	N/A	0	0	N/A	0
5/25/2009	1091.2	1090	709.2	N/A	0	0	N/A	0
5/26/2009	1091.5	1093	709.4	N/A	0	0	N/A	0
5/27/2009	1091.8	1097	710.1	N/A	0	0	N/A	0
5/28/2009	1092.1	1093	709.9	N/A	0	0	N/A	0
5/29/2009	1092.4	1025	709.7	N/A	0	0	N/A	0
5/30/2009	1093.0	1085	708.8	N/A	0	0	N/A	0
5/31/2009	1093.5	1083	709.0	N/A	0	0	N/A	0
6/1/2009	1093.9	1083	708.7	N/A	2	2	N/A	2
6/2/2009	1094.4	1088	709.5	N/A	0	0	N/A	0
6/3/2009	1094.8	1087	710.2	N/A	1	1	N/A	1
6/4/2009	1095.3	1082	710.3	N/A	2	2	N/A	2
6/5/2009	1095.8	1074	709.7	N/A	3	3	N/A	3
6/6/2009	1096.3	1071	709.5	N/A	1	1	N/A	1
6/7/2009	1096.8	1073	709.4	N/A	0	0	N/A	0
6/8/2009	1097.1	1078	710.3	N/A	146	146	N/A	146
6/9/2009	1097.5	1045	709.5	N/A	238	238	N/A	238
6/10/2009	1097.8	1074	709.4	N/A	284	284	N/A	284
6/11/2009	1098.1	1073	709.1	N/A	890	890	N/A	890
6/12/2009	1098.3	1075	709.7	N/A	2669	2669	N/A	2669
6/13/2009	1098.4	1076	710.2	N/A	3026	3026	N/A	3026
6/14/2009	1098.6	1070	709.5	N/A	3048	3048	N/A	3048
6/15/2009	1098.7	1076	709.7	N/A	3710	3710	N/A	3710
6/16/2009	1098.8	1313	710.6	N/A	4796	4796	N/A	4796
6/17/2009	1098.8	1080	711.0	N/A	4459	4459	N/A	4459
6/18/2009	1098.7	1080	710.2	N/A	3468	3468	N/A	3468
6/19/2009	1098.8	1076	709.6	N/A	2524	2524	N/A	2524
6/20/2009	1098.9	1074	709.4	N/A	2005	2005	N/A	2005
6/21/2009	1099.0	1070	710.1	N/A	2016	2016	N/A	2016
6/22/2009	1099.0	1073	710.5	N/A	1495	1495	N/A	1495
6/23/2009	1099.0	348	709.2	N/A	1003	1003	N/A	1003
6/24/2009	1099.1	14	708.9	N/A	1010	1010	N/A	1010
6/25/2009	1099.3	25	709.2	N/A	1016	1016	N/A	1016
6/26/2009	1099.4	506	709.5	N/A	1020	1020	N/A	1020
6/27/2009	1099.4	1075	709.5	N/A	1020	1020	N/A	1020
6/28/2009	1099.5	1074	709.4	N/A	1027	1027	N/A	1027
6/29/2009	1099.5	1078	710.1	N/A	572	572	N/A	572

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
6/30/2009	1099.6	1073	708.2	N/A	525	525	N/A	525
7/1/2009	1099.6	1068	708.4	N/A	1199	1199	N/A	1199
7/2/2009	1099.6	1070	708.7	N/A	1200	1200	N/A	1200
7/3/2009	1099.7	1067	708.5	N/A	1200	1200	N/A	1200
7/4/2009	1099.7	1069	708.7	N/A	1202	1202	N/A	1202
7/5/2009	1099.8	1062	708.7	N/A	1556	1556	N/A	1556
7/6/2009	1099.8	1070	709.2	N/A	2433	2433	N/A	2433
7/7/2009	1099.8	1076	709.8	N/A	2999	2999	N/A	2999
7/8/2009	1099.7	1074	709.3	N/A	1021	1021	N/A	1021
7/9/2009	1099.7	1063	709.3	N/A	347	347	N/A	347
7/10/2009	1099.7	1050	708.9	N/A	350	350	N/A	350
7/11/2009	1099.8	1040	709.3	N/A	386	386	N/A	386
7/12/2009	1099.8	1032	708.7	N/A	555	555	N/A	555
7/13/2009	1099.9	1033	709.0	N/A	1163	1163	N/A	1163
7/14/2009	1099.9	1043	709.1	N/A	1503	1503	N/A	1503
7/15/2009	1099.8	1033	709.1	N/A	1350	1350	N/A	1350
7/16/2009	1099.9	1035	709.2	N/A	1000	1000	N/A	1000
7/17/2009	1099.9	1033	708.9	N/A	1000	1000	N/A	1000
7/18/2009	1099.9	1030	708.8	N/A	1000	1000	N/A	1000
7/19/2009	1099.9	1031	708.6	N/A	1000	1000	N/A	1000
7/20/2009	1099.8	1030	709.1	N/A	848	848	N/A	848
7/21/2009	1099.8	1045	708.9	N/A	720	720	N/A	720
7/22/2009	1099.9	1057	708.6	N/A	720	720	N/A	720
7/23/2009	1099.9	1057	708.8	N/A	720	720	N/A	720
7/24/2009	1099.9	1053	708.7	N/A	759	759	N/A	759
7/25/2009	1099.9	1050	708.6	N/A	504	504	N/A	504
7/26/2009	1100.0	1053	708.9	N/A	783	783	N/A	783
7/27/2009	1099.9	1058	709.3	N/A	1497	1497	N/A	1497
7/28/2009	1099.9	1059	709.3	N/A	1495	1495	N/A	1495
7/29/2009	1099.9	1062	709.1	N/A	1522	1522	N/A	1522
7/30/2009	1099.9	1061	709.5	N/A	1990	1990	N/A	1990
7/31/2009	1099.9	1059	709.5	N/A	1865	1865	N/A	1865
8/1/2009	1099.8	1054	708.9	N/A	1697	1697	N/A	1697
8/2/2009	1099.8	1055	708.8	N/A	1613	1613	N/A	1613
8/3/2009	1099.8	1057	709.3	N/A	799	799	N/A	799
8/4/2009	1099.7	1060	709.5	N/A	127	127	N/A	127
8/5/2009	1099.7	1059	709.7	N/A	10	10	N/A	10
8/6/2009	1099.8	1058	709.7	N/A	10	10	N/A	10
8/7/2009	1099.8	1059	709.1	N/A	2	2	N/A	2
8/8/2009	1099.8	1060	709.0	N/A	0	0	N/A	0
8/9/2009	1099.7	1060	709.2	N/A	0	0	N/A	0
8/10/2009	1099.7	1060	709.5	N/A	0	0	N/A	0
8/11/2009	1099.7	1060	709.5	N/A	0	0	N/A	0
8/12/2009	1099.7	1060	709.3	N/A	0	0	N/A	0
8/13/2009	1099.7	1053	709.2	N/A	0	0	N/A	0

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
8/14/2009	1099.7	1043	709.4	N/A	0	0	N/A	0
8/15/2009	1099.7	1042	709.4	N/A	0	0	N/A	0
8/16/2009	1099.7	1040	709.3	N/A	0	0	N/A	0
8/17/2009	1099.6	1040	709.6	N/A	0	0	N/A	0
8/18/2009	1099.6	1047	709.5	N/A	0	0	N/A	0
8/19/2009	1099.6	1050	709.7	N/A	0	0	N/A	0
8/20/2009	1099.6	1050	709.3	N/A	0	0	N/A	0
8/21/2009	1099.6	1050	709.4	N/A	0	0	N/A	0
8/22/2009	1099.6	1047	709.1	N/A	0	0	N/A	0
8/23/2009	1099.6	1040	709.1	N/A	0	0	N/A	0
8/24/2009	1099.5	1046	709.3	N/A	0	0	N/A	0
8/25/2009	1099.5	1046	709.0	N/A	0	0	N/A	0
8/26/2009	1099.5	1046	708.4	N/A	0	0	N/A	0
8/27/2009	1099.4	1042	707.6	N/A	0	0	N/A	0
8/28/2009	1099.4	1045	707.8	N/A	0	0	N/A	0
8/29/2009	1099.4	648	707.9	N/A	0	0	N/A	0
8/30/2009	1099.3	1051	708.0	N/A	0	0	N/A	0
8/31/2009	1099.3	1053	707.8	N/A	0	0	N/A	0
9/1/2009	1099.3	1047	708.3	N/A	0	0	N/A	0
9/2/2009	1099.3	1055	708.1	N/A	0	0	N/A	0
9/3/2009	1099.3	753	707.8	N/A	0	0	N/A	0
9/4/2009	1099.3	983	708.0	N/A	0	0	N/A	0
9/5/2009	1099.3	1050	708.1	N/A	0	0	N/A	0
9/6/2009	1099.3	1050	708.3	N/A	0	0	N/A	0
9/7/2009	1099.3	1050	708.1	N/A	0	0	N/A	0
9/8/2009	1099.3	1050	708.1	N/A	0	0	N/A	0
9/9/2009	1099.2	1050	707.7	N/A	0	0	N/A	0
9/10/2009	1099.2	1052	707.7	N/A	0	0	N/A	0
9/11/2009	1099.2	1052	707.6	N/A	0	0	N/A	0
9/12/2009	1099.1	1050	707.9	N/A	0	0	N/A	0
9/13/2009	1099.1	1050	707.9	N/A	0	0	N/A	0
9/14/2009	1099.1	875	708.0	N/A	0	0	N/A	0
9/15/2009	1099.1	1050	707.9	N/A	58	58	N/A	58
9/16/2009	1099.1	1096	707.9	N/A	40	40	N/A	40
9/17/2009	1099.1	760	707.8	N/A	40	40	N/A	40
9/18/2009	1099.0	842	707.8	N/A	40	40	N/A	40
9/19/2009	1099.0	1132	707.8	N/A	40	40	N/A	40
9/20/2009	1099.0	954	708.1	N/A	40	40	N/A	40
9/21/2009	1098.9	935	708.0	N/A	40	40	N/A	40
9/22/2009	1098.9	1093	707.9	56	40	96	119	215
9/23/2009	1098.8	1472	708.6	25	40	65	261	325
9/24/2009	1098.7	1507	708.5	0	40	40	260	300
9/25/2009	1098.7	2123	708.6	0	40	40	174	214
9/26/2009	1098.6	2181	708.8	0	40	40	0	40
9/27/2009	1098.4	2190	708.7	0	40	40	0	40

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
9/28/2009	1098.3	1151	708.1	0	15	15	0	15
9/29/2009	1098.3	1096	708.0	0	0	0	0	0
9/30/2009	1098.2	1086	707.9	0	0	0	0	0
10/1/2009	1098.1	1095	707.8	0	0	0	0	0
10/2/2009	1098.1	1236	708.1	0	0	0	0	0
10/3/2009	1098.0	343	707.7	0	0	0	0	0
10/4/2009	1098.0	30	708.0	0	0	0	0	0
10/5/2009	1098.0	40	707.7	0	0	0	0	0
10/6/2009	1098.0	80	708.2	0	0	0	0	0
10/7/2009	1098.0	409	708.3	0	0	0	0	0
10/8/2009	1098.0	1362	708.4	0	0	0	87	87
10/9/2009	1097.8	1927	708.7	0	0	0	290	290
10/10/2009	1097.7	1537	708.5	0	0	0	263	263
10/11/2009	1097.6	1428	708.4	0	0	0	259	259
10/12/2009	1097.5	1990	709.0	0	0	0	130	130
10/13/2009	1097.5	1080	708.5	0	0	0	2	2
10/14/2009	1097.4	2227	708.9	29	0	29	99	129
10/15/2009	1097.3	2233	708.8	80	0	80	257	337
10/16/2009	1097.2	2193	708.9	80	0	80	262	342
10/17/2009	1097.2	2126	708.8	80	0	80	261	341
10/18/2009	1097.2	1723	708.5	80	0	80	261	341
10/19/2009	1097.1	2094	709.0	80	0	80	262	342
10/20/2009	1097.1	2153	708.8	80	0	80	261	341
10/21/2009	1097.0	2283	708.5	80	0	80	261	341
10/22/2009	1096.9	2148	708.8	80	0	80	261	341
10/23/2009	1096.8	2263	708.8	80	0	80	260	340
10/24/2009	1096.8	2107	708.7	80	0	80	247	327
10/25/2009	1096.8	1706	708.4	80	0	80	197	277
10/26/2009	1096.8	2096	708.6	80	0	80	237	317
10/27/2009	1096.8	2115	708.8	80	0	80	260	340
10/28/2009	1096.7	2108	708.6	80	0	80	260	340
10/29/2009	1096.6	2130	708.9	80	0	80	251	331
10/30/2009	1096.6	2099	708.7	80	0	80	235	315
10/31/2009	1096.7	1997	708.7	80	0	80	234	314
11/1/2009	1096.8	2061	708.7	80	0	80	238	318
11/2/2009	1096.8	1360	708.5	80	0	80	242	322
11/3/2009	1096.8	1068	708.7	80	0	80	252	332
11/4/2009	1096.8	1070	708.4	80	0	80	249	329
11/5/2009	1096.8	1068	708.2	80	0	80	246	326
11/6/2009	1096.9	1070	709.0	80	0	80	248	328
11/7/2009	1096.9	1070	708.1	80	0	80	245	325
11/8/2009	1096.9	1070	708.7	80	0	80	249	329
11/9/2009	1096.8	1080	708.7	80	0	80	248	328
11/10/2009	1096.8	1068	708.4	80	0	80	246	326
11/11/2009	1096.9	1060	708.6	80	0	80	247	327

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
11/12/2009	1096.8	1135	708.3	80	0	80	247	327
11/13/2009	1096.8	1645	709.1	80	0	80	249	329
11/14/2009	1096.7	1978	709.2	80	0	80	250	330
11/15/2009	1096.6	2355	709.1	80	0	80	251	331
11/16/2009	1096.5	2316	709.4	82	0	82	250	332
11/17/2009	1096.5	1565	709.1	85	0	85	248	333
11/18/2009	1096.5	1068	708.8	85	0	85	247	332
11/19/2009	1096.5	1067	708.5	86	0	86	247	333
11/20/2009	1096.5	1069	708.2	87	0	87	246	333
11/21/2009	1096.5	1076	708.5	86	0	86	245	332
11/22/2009	1096.4	1074	708.2	86	0	86	247	333
11/23/2009	1096.4	1076	708.3	86	0	86	248	334
11/24/2009	1096.4	1078	708.8	86	0	86	249	335
11/25/2009	1096.4	1076	708.8	86	0	86	248	334
11/26/2009	1096.4	1075	708.4	86	0	86	247	333
11/27/2009	1096.4	1077	708.8	86	0	86	247	333
11/28/2009	1096.4	1078	708.7	86	0	86	248	334
11/29/2009	1096.3	1078	708.5	86	0	86	248	334
11/30/2009	1096.3	1131	708.6	86	0	86	248	334
12/1/2009	1096.3	1229	708.6	86	0	86	95	180
12/2/2009	1096.2	1700	709.2	85	0	85	0	85
12/3/2009	1096.1	2059	709.5	87	0	87	0	87
12/4/2009	1096.1	1948	709.3	87	0	87	0	87
12/5/2009	1096.0	2295	709.0	82	0	82	0	82
12/6/2009	1095.9	2294	709.2	82	0	82	0	82
12/7/2009	1095.7	2303	709.7	82	0	82	0	82
12/8/2009	1095.6	2302	709.7	82	0	82	0	82
12/9/2009	1095.5	2305	709.4	81	0	81	6	88
12/10/2009	1095.4	2302	709.4	81	0	81	0	81
12/11/2009	1095.3	2306	709.6	81	0	81	0	81
12/12/2009	1095.1	2305	709.8	81	0	81	0	81
12/13/2009	1095.0	2296	709.4	81	0	81	0	81
12/14/2009	1094.9	2300	709.7	80	0	80	0	80
12/15/2009	1094.9	2304	709.4	80	0	80	16	96
12/16/2009	1094.8	2301	709.0	80	0	80	0	80
12/17/2009	1094.7	2307	708.9	80	0	80	0	80
12/18/2009	1094.5	2305	708.9	82	0	82	0	82
12/19/2009	1094.5	2295	708.6	85	0	85	0	85
12/20/2009	1094.4	2303	708.8	84	0	84	0	84
12/21/2009	1094.3	2304	708.7	92	0	92	0	92
12/22/2009	1094.2	2296	709.1	84	0	84	0	84
12/23/2009	1094.0	2315	709.3	84	0	84	0	84
12/24/2009	1093.9	2283	709.1	84	0	84	0	84
12/25/2009	1093.8	2263	709.3	83	0	83	0	83
12/26/2009	1093.7	2265	709.3	83	0	83	0	83

Date	Lake Chelan Elevation (ft)	Powerhouse Tailrace Flow (cfs)	Powerhouse Tailwater Elevation (ft)	Low Level Outlet Flow (cfs)	Spillway Flow (cfs)	Chelan River Flow Reaches 1-3 (cfs)	Pump Station Flow (cfs)	Chelan River Flow Reach 4 (cfs)
12/27/2009	1093.5	2266	709.2	83	0	83	0	83
12/28/2009	1093.4	2298	709.5	83	0	83	0	83
12/29/2009	1093.3	2303	709.6	82	0	82	0	82
12/30/2009	1093.2	2299	709.1	82	0	82	0	82
12/31/2009	1093.1	2302	709.1	82	0	82	0	82

APPENDIX B: MINIMUM FLOW DEVIATION REPORTING

Bitterman, Deborah

From: Sokolowski, Rosana on behalf of Smith, Michelle
Sent: Wednesday, October 28, 2009 11:22 AM
To: 'Regan Pat (FERC)'; 'Erich Gaedeke'; 'pirl461@ecy.wa.gov'; Tebb Tom (WDOE)
Cc: 'stephen_lewis@fws.gov'; 'ramartinez@fs.fed.us'; 'Richard.Domingue@noaa.gov'; Yow, Gene; 'jkastenholz@fs.fed.us'; Osborn, Jeff; 'geedee@nwi.net'; Tidd, Scott; 'carlmerkle@ctuir.com'; 'mape461@ecy.wa.gov'; 'parchibald@fs.fed.us'; 'jerry.marco@colvilletribes.com'; Hill, Courtney; 'brose@yakama.com'; 'heinebah@dfw.wa.gov'; 'violaaev@dfw.wa.gov'; Chamberlain, Vern; 'Stan_Zyskowski@nps.gov'; 'brca461@ecy.wa.gov'; Hays, Steve
Subject: Lake Chelan No. 637: Minimum Flow Deviation Notice

PUBLIC UTILITY DISTRICT NO. 1 of CHELAN COUNTY
P.O. Box 1231, Wenatchee, WA 98807-1231 • 327 N. Wenatchee Ave., Wenatchee, WA 98801
(509) 663-8121 • Toll free 1-888-663-8121 • www.chelanpud.org

To: Patrick Regan and Erich Gaedeke, FERC-PRO
Pat Irle and Tom Tebb, WDOE

CC: Chelan River Fishery Forum

From: Michelle Smith
Licensing & Compliance Manager
Michelle.smith@chelanpud.org
(888)663-8121, Ext. 4180

Re: Lake Chelan Project No. 637
Minimum Flow Deviation Notice

This email is to provide you notification regarding a minimum flow deviation, which occurred in the Chelan River near Chelan Falls. The preliminary findings report is attached. A final report will be filed within 30 days. If you have any questions or require additional information, please contact Steven Hays at (509)661-4181 or me.

Thank you.

Minimum Flow 'iolation _2_.pdf..

Bitterman, Deborah

From: Sokolowski, Rosana on behalf of Smith, Michelle
Sent: Wednesday, November 25, 2009 10:44 AM
To: 'Regan Pat (FERC)'; 'Erich Gaedeke'; 'pirl461@ecy.wa.gov'; 'Tebb Tom (WDOE)'
Cc: 'stephen_lewis@fws.gov'; 'ramartinez@fs.fed.us'; 'Richard.Domingue@noaa.gov'; 'jkastenholz@fs.fed.us'; Osborn, Jeff; 'geedee@nwi.net'; 'carlmerkle@ctuir.com'; 'parchibald@fs.fed.us'; 'jerry.marco@colvilletribes.com'; 'brose@yakama.com'; 'heinebah@dfw.wa.gov'; 'violaaev@dfw.wa.gov'; 'Stan_Zyskowski@nps.gov'; 'brca461@ecy.wa.gov'; Hays, Steve; 'jome461@ecy.wa.gov'; Sokolowski, Rosana; Bitterman, Deborah
Subject: Lake Chelan No. 637: Chelan River Minimum Flow Deviation Report

Attached is the Chelan River Minimum Flow Deviation Report, which was electronically filed with FERC today. Thank you.

Michelle Smith
Licensing & Compliance Manager
Chelan PUD
(509) 661-4180

33632.pdf

From: Sokolowski, Rosana **On Behalf Of** Smith, Michelle
Sent: Wednesday, October 28, 2009 11:22 AM
To: 'Regan Pat (FERC)'; 'Erich Gaedeke'; 'pirl461@ecy.wa.gov'; Tebb Tom (WDOE)
Cc: 'stephen_lewis@fws.gov'; 'ramartinez@fs.fed.us'; 'Richard.Domingue@noaa.gov'; Yow, Gene; 'jkastenholz@fs.fed.us'; Osborn, Jeff; 'geedee@nwi.net'; Tidd, Scott; 'carlmerkle@ctuir.com'; 'mape461@ecy.wa.gov'; 'parchibald@fs.fed.us'; 'jerry.marco@colvilletribes.com'; Hill, Courtney; 'brose@yakama.com'; 'heinebah@dfw.wa.gov'; 'violaaev@dfw.wa.gov'; Chamberlain, Vern; 'Stan_Zyskowski@nps.gov'; 'brca461@ecy.wa.gov'; Hays, Steve
Subject: Lake Chelan No. 637: Minimum Flow Deviation Notice

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To: Patrick Regan and Erich Gaedeke, FERC-PRO
Pat Irle and Tom Tebb, WDOE

CC: Chelan River Fishery Forum

From: Michelle Smith
Licensing & Compliance Manager
Michelle.smith@chelanpud.org
(888)663-8121, Ext. 4180

Re: Lake Chelan Project No. 637
Minimum Flow Deviation Notice

This email is to provide you notification regarding a minimum flow deviation, which occurred in the Chelan River near Chelan Falls. The preliminary findings report is attached. A final report will be filed within 30 days. If you have any questions or require additional information, please contact Steven Hays at (509)661-4181 or me.

Thank you.

<< File: Minimum Flow Violation _2_.pdf >>



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November 25, 2009

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary
Nathaniel J. Davis, Sr., Deputy Secretary
FEDERAL ENERGY REGULATORY COMMISSION
888 First Street, NE
Washington, DC 20426

RE: Lake Chelan Hydroelectric Project No. 637
Report on Minimum Flow Deviation for Chelan River – Reach 4

Dear Secretary Bose and Deputy Secretary Davis:

This letter is to provide you with Public Utility District No. 1 of Chelan County's (Chelan PUD) follow-up report on an instream flow deviation that occurred over the weekend of October 24 – 26, 2009 on newly constructed fish habitat within Reach 4 of the Chelan River. This deviation was first reported by email to the Federal Energy Regulatory Commission (FERC) Portland Office and Washington Department of Ecology (Ecology) Central Regional Office on October 28, 2009.

Summary

Minimum spawning period flows for salmon spawning in Reach 4 of the Chelan River were not met for a number of hours over a three-day period between October 24-26, 2009. Failure to maintain the minimum flow of 320 cfs was determined to be caused by a problem with the pump station control system, which shut off one of the five pumps by tripping a protective circuit breaker. The flows in Reach 4 were reduced to levels between 273 cfs – 279 cfs during this time period. The pump was returned to service Monday morning (October 26) before 9:00 am and the 320 cfs minimum flows have been maintained since that date, within a plus/minus 10 cfs range of measurement accuracy. There was no evidence of any adverse biological effect since the flow reduction resulted in only about a one inch reduction in water levels and velocities were still adequate for salmon spawning at the reduced flows, which remained greater than 85 percent of the desired minimum flow rate. Failure to restart the pump over the weekend was due to several factors, including that the facility was new and had only been in operation for 10 days, training of personnel on rotating shifts regarding alarm

response procedures had not been completed, and the Lake Chelan powerhouse is unmanned and operated remotely from 4:00 pm – 8:00 am daily and during weekends.

License Requirement

Article 405 requires Chelan PUD to implement the instream flows, ramping rates, and tailrace flows as set forth in Article 7 of the Lake Chelan Settlement Agreement and Chapter 7 of the Comprehensive Plan attached to the settlement agreement. The specific flow requirement that is the subject of this deviation report is to maintain a minimum flow of 320 cfs into Reach 4 of the Chelan River for salmon spawning from October 15 – November 30.

Minimum flows in the Chelan River were initiated on October 14, 2009, as required under the FERC Order on Offer of Settlement and Issuing New License issued November 6, 2006, and as modified by Order Granting Extension of Time Under Article 408 and Ecology 40I Water Quality Certification Condition III.A.(ii) issued March 20, 2008. The extension of time allowed Chelan PUD until November 6, 2010, to complete construction and initiate minimum flows. Chelan PUD expedited construction efforts and initiated minimum flows over one year early in order to not miss a biological window for salmon spawning.

In accordance with FERC's Order Modifying and Approving Operations Compliance and Monitoring Plan, Article 405, issued November 30, 2007, when a flow deviation occurs, Chelan PUD is required to notify FERC and Ecology of the deviation within 48 hours of the time that Chelan PUD became aware of the deviation. FERC and Ecology were notified via electronic submittal on October 28, 2009. Following the initial notification, Chelan PUD is required to file a report, as follows:

> "The licensee shall file a report with the Commission within 30 days of any deviation from minimum flow requirements, lake levels or ramping rates. The report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report shall also include: 1) operational data necessary to determine compliance with the respective license requirements regarding minimum flows, lake levels, and ramping rates, as appropriate; 2) a description of any corrective measures implemented at the time of occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and 3) comments or correspondence, if any, received from the resource agencies and others regarding the incident."

Record of Chelan River Flows into Reach 4

Minimum flows were provided by releasing 80 cfs into Reach 1 of the Chelan River from the Low Level Outlet (LLO) and 240 cfs or greater flow of tailrace water provided from the Pump Station into Reach 4. The combination of these flows meet the minimum flow

requirement of 320 cfs during the salmon spawning period. Daily average flows in Reach 4 have met or exceeded 320 cfs since initiation of the minimum flows, within a plus/minus 10 cfs range of measurement accuracy, with the exception of October 25 and October 26 (Table 1).

Table 1. Daily Average Flows (cfs) in Reach 4 of the Chelan River

Date	Pump Flow	LLO Flow	Reach 4 Flow
10/15/2009	257	80	337
10/16/2009	262	80	342
10/17/2009	261	80	341
10/18/2009	261	80	341
10/19/2009	262	80	342
10/20/2009	261	80	341
10/21/2009	261	80	341
10/22/2009	261	80	341
10/23/2009	260	80	340
10/24/2009	247	80	327
10/25/2009	197	80	277
10/26/2009	237	80	317
10/27/2009	260	80	340
10/28/2009	260	80	340
10/29/2009	251	80	331
10/30/2009	235	80	315
10/31/2009	234	80	314
11/1/2009	238	80	318
11/2/2009	246	80	326
11/3/2009	247	80	327
11/4/2009	247	80	327
11/5/2009	249	80	329
11/6/2009	250	80	330
11/7/2009	251	80	331
11/8/2009	250	80	330
11/9/2009	248	80	328
11/10/2009	247	80	327
11/11/2009	247	80	327
11/12/2009	242	80	322
11/13/2009	246	80	326
11/14/2009	245	80	325
11/15/2009	247	80	327
11/16/2009	248	80	328
11/17/2009	252	80	332

Date	Pump Flow	LLO Flow	Reach 4 Flow
11/18/2009	249	80	329
11/19/2009	246	80	326
11/20/2009	247	80	327
11/21/2009	245	80	325
11/22/2009	249	80	329

Cause of the Deviation

On the dates of the deviation from the daily average flow requirement of 320 cfs, problems with Pump Station control systems resulted in hourly flows that were below the level necessary to meet flow requirements, beginning on October 24, for a four-hour period, 0600-1000 hours, and then continuously from 1600 hours on October 24 to 0800 hours on October 26. Hourly average flows (end of hour) from the Pump Station during the incidents from October 24-26, shown in Table 2, remained above 150 cfs. The reduced flows resulted from pump 4 being out of service due to a tripped circuit breaker, in addition to other pumps being turned off in rotation, one at a time, for air burst cleaning cycles on the intake screens.

Table 2. Hourly Pump Station Flows (cfs) from October 24 – October 26 at 1000 Hours.

24-Oct-09 01:00:00	258	25-Oct-09 01:00:00	196	26-Oct-09 01:00:00	195
24-Oct-09 02:00:00	257	25-Oct-09 02:00:00	196	26-Oct-09 02:00:00	196
24-Oct-09 03:00:00	259	25-Oct-09 03:00:00	197	26-Oct-09 03:00:00	199
24-Oct-09 04:00:00	261	25-Oct-09 04:00:00	195	26-Oct-09 04:00:00	197
24-Oct-09 05:00:00	261	25-Oct-09 05:00:00	196	26-Oct-09 05:00:00	197
24-Oct-09 06:00:00	260	25-Oct-09 06:00:00	196	26-Oct-09 06:00:00	197
24-Oct-09 07:00:00	258	25-Oct-09 07:00:00	196	26-Oct-09 07:00:00	197
24-Oct-09 08:00:00	249	25-Oct-09 08:00:00	197	26-Oct-09 08:00:00	197
24-Oct-09 09:00:00	249	25-Oct-09 09:00:00	198	26-Oct-09 09:00:00	217
24-Oct-09 10:00:00	249	25-Oct-09 10:00:00	197	26-Oct-09 10:00:00	262
24-Oct-09 11:00:00	249	25-Oct-09 11:00:00	199	26-Oct-09 11:00:00	260
24-Oct-09 12:00:00	248	25-Oct-09 12:00:00	198	26-Oct-09 12:00:00	261
24-Oct-09 13:00:00	248	25-Oct-09 13:00:00	197	26-Oct-09 13:00:00	260
24-Oct-09 14:00:00	248	25-Oct-09 14:00:00	198	26-Oct-09 14:00:00	261
24-Oct-09 15:00:00	246	25-Oct-09 15:00:00	199	26-Oct-09 15:00:00	261
24-Oct-09 16:00:00	247	25-Oct-09 16:00:00	197	26-Oct-09 16:00:00	248
24-Oct-09 17:00:00	247	25-Oct-09 17:00:00	198	26-Oct-09 17:00:00	258
24-Oct-09 18:00:00	248	25-Oct-09 18:00:00	198	26-Oct-09 18:00:00	258
24-Oct-09 19:00:00	249	25-Oct-09 19:00:00	198	26-Oct-09 19:00:00	258
24-Oct-09 20:00:00	250	25-Oct-09 20:00:00	196	26-Oct-09 20:00:00	259
24-Oct-09 21:00:00	248	25-Oct-09 21:00:00	193	26-Oct-09 21:00:00	260
24-Oct-09 22:00:00	248	25-Oct-09 22:00:00	194	26-Oct-09 22:00:00	261
24-Oct-09 23:00:00	195	25-Oct-09 23:00:00	195	26-Oct-09 23:00:00	262
24-Oct-09 24:00:00	195	25-Oct-09 24:00:00	195	26-Oct-09 24:00:00	259

Biological and/or Environmental Impacts:

Visual inspection of Reach 4 and the spill overflow channel did not detect any adverse effects on the Chinook salmon spawning in Reach 4. No stranded fish were observed and spawning activity in Reach 4 and the tailrace was robust. A spawning survey conducted on Friday, October 23, counted 63 fish and 20 redds in the Reach 4 habitat channel and 98 fish and 64 redds in the tailrace area. Subsequent surveys observed additional spawning, with Reach 4 habitat channel redd counts peaking at 60 observed on the October 30 survey. Spawning in the tailrace habitat, completed in 2009, had a peak redd count of 129 redds. Total salmon redds in the Chelan River, including the pre-existing spawning areas in the confluence with the Columbia River, peaked at 259 redds.

No adverse environmental effects were observed and ramping rates were not exceeded during the flow deviation. Reduction of Pump Station flow by one pump results in approximately a 50 cfs flow reduction into the pool at the head of Reach 4. On October 26 at 1500 hours, a test was conducted to determine the amount of water level change in Reach 4 when a pump shuts off. Pump Station flows were at 260 cfs when one pump was turned off, with measured Pump Station flow ranging from 198 cfs – 215 cfs during the 15-minute test. Water levels in Reach 4 only declined by one inch during the test, which is less than the ramping rate allowance of two inches per hour. The shallowest redds were still 6-8 inches or more below the water surface, even at the reduced flow.

Corrective Measures

The exact cause of the breaker trip on pump 4 is unknown, but suspected to be related to excessive cycling of the air burst system. The air burst cleaning system has been placed on manual control until the cause of excessive cycling of the system has been determined. Investigations into the cause of the pump breaker trip and air burst cycling are ongoing and corrective programming measures are being implemented to prevent future occurrences. Operational plans call for release of additional water from the LLO in the event that pump failure(s) occurs in the future.

The Pump Station is a new facility, completed just prior to the salmon spawning period. Alarm systems were functioning at the time of the pump failure. However, the Lake Chelan Hydroelectric Station is unmanned and operated remotely from 4:00 p.m. to 8:00 a.m. daily and during weekends. Pump Station alarm status windows at Systems Operations and the Rocky Reach Project control room were somewhat obscure and few personnel had been trained at the time of the deviation. Control systems programmers have subsequently enhanced the visibility of the Pump Station alarms. Training of powerhouse operators and systems operations personnel has been ongoing during October and November. Due to the rotating shifts of these workers and minimum personnel requirements for operations throughout the day, it has been necessary to hold a number of on-site training sessions in order to cover all personnel. Training of all powerhouse and system operators is scheduled to be completed on December 1.

Calibration of flow release structures and comparison with stream channel measurements is ongoing. The LLO flow meter was calibrated with dye injection techniques and Chelan PUD is currently working with USGS to establish a telemetered streamflow gauge in the Chelan River a short distance downstream from the LLO. Currently, flow rates determined from the combination of the LLO gauge and the Pump Station canal gauge are believed to be accurate to within approximately 10 cfs. The results of final calibration will be reported in the 2009 Annual Flow Report, scheduled for submittal to FERC on February 28, 2010.

Conclusion

Minimum flow levels for salmon spawning in the Chelan River Reach 4 habitat channel were initiated on October 14, 2009, over one year prior to the date required by the March 20, 2008, FERC Order Granting Extension of Time. The early completion and initiation of minimum flows provided functional use of the new Reach 4 habitat channel in time for Chinook salmon spawning, and 60 salmon redds were constructed in the habitat channel. A flow deviation of less than 15 percent reduction in the minimum flow occurred over a part of the three-day period of time during the early part of Chinook spawning activity. No adverse environmental effects or disruption of Chinook spawning activity was observed to have resulted from the flow deviation. Corrective actions have been implemented and there have been no additional flow deviations since.

If you have any questions regarding this event, please contact me or Steven Hays at (509) 661-4181.

Sincerely,

Michelle Smith,
Licensing & Compliance Manager
(509) 661-4180
michelle.smith@chelanpud.org

Enclosure: E-mail correspondence with the agencies

cc: Washington Department of Ecology
Chelan River Fishery Forum

Sokolowski, Rosana

From: Sokolowski, Rosana on behalf of Smith, Michelle
Sent: Wednesday, October 28, 2009 11:22 AM
To: 'Regan Pat (FERC)'; 'Erich Gaedeke'; 'pirl461@ecy.wa.gov'; Tebb Tom (WDOE)
Cc: 'stephen_lewis@fws.gov'; 'ramartinez@fs.fed.us'; 'Richard.Domingue@noaa.gov'; Yow, Gene; 'jkastenholz@fs.fed.us'; Osborn, Jeff; 'geedee@nwi.net'; Tidd, Scott; 'carlmerkle@ctuir.com'; 'mape461@ecy.wa.gov'; 'parchibald@fs.fed.us'; 'jerry.marco@colvilletribes.com'; Hill, Courtney; 'brose@yakama.com'; 'heinebah@dfw.wa.gov'; 'violaaev@dfw.wa.gov'; Chamberlain, Vern; 'Stan_Zyskowski@nps.gov'; 'brca461@ecy.wa.gov'; Hays, Steve
Subject: Lake Chelan No. 637: Minimum Flow Deviation Notice

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To: Patrick Regan and Erich Gaedeke, FERC-PRO
Pat Irle and Tom Tebb, WDOE

CC: Chelan River Fishery Forum

From: Michelle Smith
Licensing & Compliance Manager
Michelle.smith@chelanpud.org
(888)663-8121, Ext. 4180

Re: Lake Chelan Project No. 637
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Thank you.

Minimum Flow Violation _2_.pdf...

Chelan River – Deviations from Minimum Flows for Reach 4, October 15 and 24-26, 2009

Minimum flows of 320 cfs for salmon spawning in Reach 4 of the Chelan River were initiated on October 14, 2009, at 1500 hours. Minimum flows were provided with flow of 80 cfs released into the Chelan River from the Low Level Outlet (LLO) and 240 cfs or greater flow of tailrace water provided from the Pump Station. Daily average flows in Reach 4 have exceeded 320 cfs since initiation of the minimum flows, with the exception of 10/25 and 10/26 (Table 1).

Table 1. Daily Average Flows (cfs) in Reach 4 of the Chelan River

Date	Pump Flow	LLO Flow	Reach 4 Flow
10/15/2009	257	80	337
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10/17/2009	261	80	341
10/18/2009	261	80	341
10/19/2009	262	80	342
10/20/2009	261	80	341
10/21/2009	261	80	341
10/22/2009	261	80	341
10/23/2009	260	80	340
10/24/2009	247	80	327
10/25/2009	197	80	277
10/26/2009	237	80	317
10/27/2009	260	80	340

Problems with pump station control systems have resulted in hourly flows below the minimum level during one hour on October 15, from 1300-1400, and, beginning on October 24, for a number of hours, 0600-1000 and continuously from 1600 on 10/24 – 0800 on 10/26. Hourly average flows (end of hour) from the pump station during the incidents from 10/24-26, shown in Table 2, remained above 150 cfs. The reduced flows resulted from pump 4 being out of service due to a tripped circuit breaker, with other pumps being turned off one at a time for air burst cleaning cycles on the intake screens.

The exact cause of the breaker trip on pump 4 is unknown, but suspected to be related to excessive cycling of the air burst system. The air burst cleaning system has been placed on manual control until the cause of excessive cycling of the system has been determined. Investigations into the cause of the pump breaker trip and air burst cycling are ongoing and corrective measures will be implemented to prevent future occurrences. Operational plans call for release of additional water from the LLO in the event that pump failure(s) occurs in the future.

Reduction of pump station flow by one pump results in approximately a 50 cfs flow reduction into the pool at the head of Reach 4. Currently, with 80 cfs flows coming into the pool from LLO releases, flows from the pump station in excess of 240 cfs are flowing over the hydraulic control structure and down the spill flow channel, thus loss of 50 cfs pump flow does not reduce flows in Reach 4 by the same amount, rather the flow over the hydraulic control structure stops first. On 10/26 at 1500, a test was conducted to determine the amount of water level change in Reach 4 when a pump shuts off. Pump station flows were at 260 cfs when one pump was turned off, with measured pump station flow ranging from 198 cfs – 215 cfs during the 15 minute test. Water levels in Reach 4 only declined by one inch during the test.

Visual inspection of Reach 4 and the spill overflow channel did not detect any adverse effects on the Chinook salmon spawning in Reach 4. No stranded fish were observed and spawning activity in Reach 4 and the tailrace is robust. A spawning survey conducted on Friday, 10/23 counted 63 fish and 20 redds in Reach 4 and 98 fish and 64 redds in the tailrace area. Spawning activity has increased since that date and both areas will be surveyed again on Friday, 10/30.

Table 2. Hourly Pump Station Flows (cfs) from October 24 – October 26.

24-Oct-09 01:00:00	258	25-Oct-09 01:00:00	196	26-Oct-09 01:00:00	195
24-Oct-09 02:00:00	257	25-Oct-09 02:00:00	196	26-Oct-09 02:00:00	196
24-Oct-09 03:00:00	259	25-Oct-09 03:00:00	197	26-Oct-09 03:00:00	199
24-Oct-09 04:00:00	261	25-Oct-09 04:00:00	195	26-Oct-09 04:00:00	197
24-Oct-09 05:00:00	261	25-Oct-09 05:00:00	196	26-Oct-09 05:00:00	197
24-Oct-09 06:00:00	260	25-Oct-09 06:00:00	196	26-Oct-09 06:00:00	197
24-Oct-09 07:00:00	258	25-Oct-09 07:00:00	196	26-Oct-09 07:00:00	197
24-Oct-09 08:00:00	249	25-Oct-09 08:00:00	197	26-Oct-09 08:00:00	197
24-Oct-09 09:00:00	249	25-Oct-09 09:00:00	198	26-Oct-09 09:00:00	217
24-Oct-09 10:00:00	249	25-Oct-09 10:00:00	197	26-Oct-09 10:00:00	262
24-Oct-09 11:00:00	249	25-Oct-09 11:00:00	199	26-Oct-09 11:00:00	260
24-Oct-09 12:00:00	248	25-Oct-09 12:00:00	198	26-Oct-09 12:00:00	261
24-Oct-09 13:00:00	248	25-Oct-09 13:00:00	197	26-Oct-09 13:00:00	260
24-Oct-09 14:00:00	248	25-Oct-09 14:00:00	198	26-Oct-09 14:00:00	261
24-Oct-09 15:00:00	246	25-Oct-09 15:00:00	199	26-Oct-09 15:00:00	261
24-Oct-09 16:00:00	247	25-Oct-09 16:00:00	197	26-Oct-09 16:00:00	248
24-Oct-09 17:00:00	247	25-Oct-09 17:00:00	198	26-Oct-09 17:00:00	258
24-Oct-09 18:00:00	248	25-Oct-09 18:00:00	198	26-Oct-09 18:00:00	258
24-Oct-09 19:00:00	249	25-Oct-09 19:00:00	198	26-Oct-09 19:00:00	258
24-Oct-09 20:00:00	250	25-Oct-09 20:00:00	196	26-Oct-09 20:00:00	259
24-Oct-09 21:00:00	248	25-Oct-09 21:00:00	193	26-Oct-09 21:00:00	260
24-Oct-09 22:00:00	248	25-Oct-09 22:00:00	194	26-Oct-09 22:00:00	261
24-Oct-09 23:00:00	195	25-Oct-09 23:00:00	195	26-Oct-09 23:00:00	262
24-Oct-09 24:00:00	195	25-Oct-09 24:00:00	195	26-Oct-09 24:00:00	259

FEDERAL ENERGY REGULATORY COMMISSION
Washington, DC 20426

OFFICE OF ENERGY PROJECTS

Project No. 637-069 -- Washington
Lake Chelan Hydroelectric Project
PUD No. 1 of Chelan County

Ms. Michelle Smith
Licensing & Compliance Manager
PUD No. 1 of Chelan County
P.O. Box 1231
Wenatchee, WA 98807

Subject: Instream Flow Deviation, Article 405

Dear Ms. Smith:

This regards your November 25, 2009 filing of an instream flow deviation in Reach 4 of the Chelan River on October 24-26, 2009 at the Lake Chelan Hydroelectric Project (FERC No. 637).

License Article 405 requires various minimum instream flows in accordance with Settlement Agreement Article 7. The Article 405 requires that you notify the Washington Department of Ecology and the Commission within 48 hours of the time that you become aware of the deviation, which you state was completed on October 28, 2009. Additionally, the Order Modifying and Approving Operations Compliance and Monitoring Plan, issued November 30, 2007, require that you file a report with the Commission within 30 days of any deviation from minimum flow requirements.

In your November 25, 2009 filing, you state that required minimum flows in Reach 4 of the Chelan River were not met for a number of hours over a three-day period between October 24 and 26, 2009. You state that the failure to maintain the required minimum flow of 320 cubic feet per second (cfs) during this period was a result of a malfunction of the pump station control system, which shut-off one of the five pumps by tripping a protective circuit breaker. The newly installed pumps help provide required fish spawning flows in the newly constructed fish habitat within Reach 4. You state that flows were reduced to levels between 273 cfs and 279 cfs before the pump was returned to service on the morning of October 26, 2009. Additionally, you state that there was no evidence of any adverse biological impacts since the flow reduction resulted in only about a one-inch reduction in water levels and velocities were still adequate for salmon spawning at the reduced flows.

You state that the facility has only been in operation for 10 days, training of personnel on rotating shifts regarding alarm response procedures had not been completed, and the powerhouse is unmanned and operated remotely from 4:00 p.m. to 8:00 a.m. daily and during weekends. Although the exact cause of the breaker trip is unknown, you state that it was likely related to the excessive cycling of the air burst system for the intake screens. Finally, you state that investigations into the cause of the pump breaker trip and air burst cycling are ongoing and corrective programming measures are being implemented to prevent such an event from occurring in the future.

Based on our review of the available information, the minimum flow deviation will not be considered a violation of Article 405. The malfunction was beyond your control, necessary personnel training was completed on December 1, 2009, and no adverse biological impacts were observed as a result of the incident.

Your filing adequately fulfills the reporting requirement set-forth under Article 405 and the November 30, 2007 order. If you have any questions, please contact Mr. Erich Gaedeke at (503) 552-2716 or via email at erich.gaedeke@ferc.gov.

Sincerely,

for Heather E. Campbell
Acting Director
Division of Hydropower Administration
and Compliance

APPENDIX C: CONSULTATION RECORD

Chelan PUD provided a draft of the 2009 Annual Flow Report to the USGS and members of the CRFF and LCRF in accordance with the requirements of the FERC Order Modifying and Approving Operations Compliance and Monitoring Plan, Article 405, under Ordering Paragraph (B):

> "The licensee shall allow the resource agencies, Tribes and non-governmental organizations specified under Article 405, 30 days to provide comments and/or recommendations on their report before filing with the FERC. The filing shall include comments and/or recommendations from the consulted entities and the licensee's response to any comments. If the licensee does not adopt a recommendation, the report shall include the licensee's reasons, based on project-specific information."

The following individuals were sent draft copies for review:

NAME	***AGENCY***	***Comments***
Armbruster, Lanny	Manson Parks and Recreation Department	
Caldwell, Brad	Washington State Department of Ecology	
Denniston, Gary	Lake Chelan Sportsman Association	
Domingue, Rich	National Marine Fisheries Services	
Drzymkowski, Robert	United States Geological Survey	
Eychner, Jim	Recreation and Conservation Office	
Fraser, Bill	Washington State Parks and Recreation Commission	
Glesne, Reed	National Park Service	
Goedde, Robert	City of Chelan	
Harris, Jim	Washington State Parks and Recreation Commission	
Heiner, Bruce	Washington State Department of Fish and Wildlife	
Irle, Pat	Washington State Department of Ecology	
Kastenholz, Joe	United States Department of Agriculture – Forest Service	
Lenz, Mallory	United States Department of Agriculture – Forest Service	
Lesmeister, Annelise	National Park Service	
Lewis, Steve	United States Fish and Wildlife Service	
Marco, Jerry	Confederated Tribes of the Colville Reservation	
Martinez, Alex	United States Department of Agriculture – Forest Service	
Merkle, Carl	Confederated Tribes of the Umatilla Indian Reservation	
Merz, Jonathan	Washington State Department of Ecology	
O'Keefe, Thomas	American Whitewater	
Rose, Bob	Yakama Indian Nation	
Uhlhorn, Richard	Lake Chelan Recreation Association	
Urness, Jim	Lake Chelan Recreation Association	
Viola, Art	Washington Department of Fish and Wildlife	

No comments were received.