

# **Wahleach Project Water Use Plan**

## **Monitoring Program and Physical Works**

**Annual Report: 2015**

**Implementation Period: February 2014 to January 2015**

- **WAHMON-1 Lower Jones Creek Fish Productivity Indices**
- **WAHMON-2 Channel Stability Assessment**
- **WAHMON-3 Herrling Island Sidechannel Chum Spawning Success Monitoring**
- **WAHWORKS-1 Boulder Creek Diversion Bypass**
- **WAHWORKS-2 Wahleach Reservoir Fertilization Program**
- **WAHWORKS-3 Lower Wahleach (Jones) Creek Channel Enhancement Project**

**For Water Licences 119711, 119709 and 119710**

**February 28, 2015**

## **BC Hydro Wahleach Project Water Use Plan Monitoring Programs and Physical Works Annual Report: 2015**

### **1 Introduction**

This document represents a summary of the status and the results of the Wahleach Project Water Use Plan (WUP) monitoring programs and physical works to January 31, 2015, as per the Wahleach Order under the *Water Act*, dated January 25, 2005. There are three monitoring programs and three physical works.

### **2 Status**

The following table outlines the dates that Terms of Reference (TOR) for the Wahleach Project WUP monitoring programs and physical works were submitted to and approved by the CWR.

**Table: 2-1: Dates of Wahleach Project WUP TOR Submissions and Approvals by the Comptroller of Water Rights**

Monitoring Program & Physical Works TOR	Order Clause	Original ToR Submission		Most Recent ToR Resubmission	
		Date Submitted	Date Approved	Date Submitted	Date Approved
WAHMON-1 Lower Jones Creek Fish Productivity Indices	Schedule B.1.a	Aug 24, 2005	Sep 27, 2005	Feb 24, 2011	Oct 01, 2012
WAHMON-2 Channel Stability Assessment	Schedule B.1.a	Aug 24, 2005	Sep 27, 2005	Feb 24, 2011	Oct 01, 2012
WAHMON-3 Herring Island Sidechannel Chum Spawning Success Monitoring	Schedule B.1.b	Aug 24, 2005	Sep 27, 2005	Feb 24, 2011	Oct 01, 2012
WAHWORKS-1 Boulder Creek Diversion Bypass	Schedule A.2.a.ii	Aug 24, 2005	Oct 28, 2005	Feb 24, 2011	Oct 01, 2012
		Jul 16, 2007	Jul 26, 2007		
WAHWORKS-2 Wahleach Reservoir Fertilization Program	Schedule C	Aug 24, 2005	Oct 28, 2005	Feb 09, 2012	Feb 10, 2012
WAHWORKS-3 Lower Wahleach (Jones) Creek Channel Enhancement Project	Schedule D	Jun 15, 2006	Aug 02, 2006	Nov 03, 2014	Nov 26, 2014

### **3 Schedule**

The following table (Table 3-1) outlines the current schedule for the monitoring programs and physical works being delivered for the Wahleach Project WUP.

**Table 3-1: Table of WUP Schedule**

Study/Physical Work	Component	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
		WLR YR1	WLR YR2	WLR YR3	WLR YR4	WLR YR5	WLR YR6 Interim Review	WLR YR7	WLR YR8	WLR YR9	WLR YR10	WLR YR11	WLR YR11	WLR YR11
WAHMON-1 Lower Jones Creek Fish Productivity Indices	Fry Outmigration Assessment	✓	✓	✓	✓	✓	X	✓	X	✓	X	FR		
	Smolt Outmigration Assessment	✓	✓	✓	✓	✓	X	X	X	X	X			
	Adult Salmon Escapement	✓	✓	✓	✓	✓	X	✓	X	✓	X			
	Adult Steelhead Escapement	✓	✓	✓	✓	✓	X	X	X	X	X			
WAHMON-2 Channel Stability Assessment	✓		✓			✓		✓		✓		FR		
WAHMON-3 Herring Island Sidechannel Chum Spawning Success Monitoring	Behaviour Assessments	✓	✓	✓	✓	✓	X	X	X	X	X	FR		
	Stranding Assessments	✓	✓	✓	✓	✓	X	X	X	X	X			
	Water level fluctuation monitoring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
WAHWORKS-1 Boulder Creek Diversion Upgrade	Temporary Upgrade	✓	✓	✓	□	□	X	X	X	X	X			
	Final Upgrade						X							
WAHWORKS-2 Wahleach Reservoir Fertilization	Fertilization and Basic Monitoring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	■	■	■
	Hydroacoustic Monitoring		✓	✓	✓	✓	✓	✓	✓	✓	✓	■	■	■
WAHWORKS-3 Lower Wahleach Creek Channel Enhancement Project		DEL	✓	✓	✓	□	□	□	□	□	□			

**Legend:**

- = Project timing subject to change according to maintenance schedule
- = Project to be undertaken/initiated in identified year
- ✓ = Project field work/data collection is complete for the year
- X = Project field work/data collection discontinued based on outcome of interim review
- FR = Final Reporting planned for the project

**4 Monitoring Programs and Physical Works Terms of Reference**

The monitoring programs and physical works being implemented under the Wahleach Project WUP are described in TOR. These TOR and the reports for work completed to date can be found here:

[http://www.bchydro.com/about/sustainability/conservation/water\\_use\\_planning/lower\\_mainland/wahleach.html](http://www.bchydro.com/about/sustainability/conservation/water_use_planning/lower_mainland/wahleach.html)

## **5 Summary of Monitoring Programs**

### **5.1 WAHMON-1 Lower Jones Creek Fish Productivity Indices**

#### **5.1.1 Status**

This monitoring program was initiated in 2005 and all field work will be completed by March 31, 2015. The remainder of the 2015 year will consist solely of final reporting on the results of the study. Additional incubation data collection identified during 2014 is still underway and the project report for the 2013/14 season, including the incubation data, will be included with next year's annual report. The submission of the 2013/14 project report is expected to conclude the requirements for this project.

### **5.2 WAHMON-2 Channel Stability Assessment**

#### **5.2.1 Status**

This monitoring program was initiated in 2005 and field work was completed in spring 2014. The 2015 year will consist solely of final reporting on the results of the study. The 2013-2014 project report has been delayed due to additional data analysis requirements and will be included in next year's annual report. The final project report is expected in September 2015 and will be submitted with the subsequent annual report.

### **5.3 WAHMON-3 Herrling Island Sidechannel Chum Spawning Success Monitoring**

#### **5.3.1 Status**

This monitoring program was initiated in 2005 and was completed in 2010 based on the outcome of the interim review. However, annual Herrling Sidechannel hydrometric data collection will continue through to 2015 to monitor the sidechannel water level fluctuation in response to both Wahleach Generating Station and Fraser River discharge. Annual summary reports of this continued data collection have not been submitted with annual reports to date. An overall summary report will be submitted following conclusion of this project in April 2015.

## **6 Summary of Physical Works**

### **6.1 WAHWORKS-1 Boulder Creek Diversion Bypass**

#### **6.1.1 Status**

No new updates from previous annual report.

### **6.2 WAHWORKS-2 Wahleach Reservoir Fertilization Program**

#### **6.2.1 Status**

This physical works was initiated in 2005 and Terms of Reference were prepared to continue the project until 2014. However, upon review of this project, BC Hydro, in consultation with MOE, has determined that the fertilization program will need to continue until completion of the WUP Order Review when a long-term decision can be made on the reservoir fertilization. A TOR addendum is required to continue

fertilization until the WUP Order Review is completed. This addendum will be submitted to the CWR in the spring of 2015.

The next project report for the 2013 and 2014 field seasons will be combined and included with the 2015 annual report.

### **6.3 WAHWORKS-3 Lower Wahleach Creek Enhancement Channel**

#### **6.3.1 Status**

This physical works was initiated in 2006 and maintenance continued to 2009. Formal approval to discontinue monitoring of the enhancement channels was received from the CWR in October 2014.

In the fall of 2014, during the chum spawning window, BC Hydro and DFO visited the Lorenzetta Creek gravel spawning platforms that were constructed as part of these works. The platforms are continuing to function well and provide effective spawning habitat. No maintenance was required at the time of site visit. BC Hydro intends to inspect the platforms again prior to the Wahleach WUP Order review. Another update will be provided at that time.

## **7 Monitoring Programs and Physical Works Costs**

The following table summarizes the Wahleach Project WUP monitoring programs and physical works costs approved by the Comptroller and the Actual Costs to January 31, 2015.

**Table 7-1: Wahleach Project WUP Monitoring Programs and Physical Works Costs**

Monitoring Programs	Costs approved by CWR	Life to Date Actuals (LTD)	Estimated to Complete (Forecast)	Total Forecast (LTD and Forecast)	Variance Total to Approved	Explanation	Corrective Action
<b>WAH Prepare Annual Report</b>	\$14,359	\$12,089	\$2,270	\$14,359	\$0		
<b>WAHM01A Fish Productivity Ind</b>	\$1,335,486	\$483,557	\$4,623	\$488,180	\$847,306	Efficiencies found due to outcome of interim review.	
WAHM01A Fish Productivity Ind - ONR DM	\$147,986	\$46,010	\$4,361	\$50,371	\$97,615		
WAHM01A Fish Productivity Ind - ONR Imp	\$1,187,500	\$437,547	\$262	\$437,809	\$749,691		
<b>WAHM02A Channel Stability Ass</b>	\$227,278	\$159,570	\$10,982	\$170,552	\$56,726	Efficiencies found due to outcome of interim review.	
WAHM02A Channel Stability Ass - ONR DM	\$74,678	\$20,133	\$4,639	\$24,771	\$49,907		
WAHM02A Channel Stability Ass - ONR Imp	\$152,600	\$139,437	\$6,343	\$145,780	\$6,820		
<b>WAHM03A Herring Island Side</b>	\$479,514	\$308,548	\$9,414	\$317,962	\$161,552	Efficiencies found due to outcome of interim review.	
WAHM03A Herring Island Side - ONR DM	\$141,814	\$40,295	\$3,218	\$43,513	\$98,301		
WAHM03A Herring Island Side - ONR Imp	\$337,700	\$268,253	\$6,196	\$274,449	\$63,251		
<b>WAHW01A Boulder Cr Flow Byp</b>	\$1,330,034	\$289,031	\$0	\$289,031	\$1,041,003	Efficiencies found due to outcome of interim review.	
WAHW01A Boulder Cr Flow Byp - ONR DM	\$265,918	\$40,612	\$0	\$40,612	\$225,306		
WAHW01A Boulder Cr Flow Byp - ONR Imp	\$283,116	\$179,728	\$0	\$179,728	\$103,388		
WAHW01A Boulder Cr Flow Byp - CAP Imp	\$781,000	\$68,692		\$68,692	\$712,308		
<b>WAHW02A Fertilization Progr</b>	\$1,145,052	\$1,047,420	\$287,866	\$1,335,285	(\$190,233)	The program will continue until Order Review process complete. Additional spend to continue the program for minimum two additional years (until 2017).	Resubmit TOR in spring 2015.
WAHW02A Fertilization Progr - ONR DM	\$54,058	\$37,039	\$8,558	\$45,596	\$8,462		
WAHW02A Fertilization Progr - ONR Imp	\$1,090,994	\$1,010,381	\$279,308	\$1,289,689	(\$198,695)		
<b>WAHW03A Lower WAH Channel</b>	\$241,609	\$108,033	\$0	\$108,033	\$133,576	Efficiencies found due to outcome of interim review.	
WAHW03A Lower WAH Channel - ONR DM	\$67,659	\$28,005	\$0	\$28,005	\$39,654		
WAHW03A Lower WAH Channel - ONR Imp	\$173,950	\$80,028	\$0	\$80,028	\$93,922		

**OR - Ordered Remissible**  
**ONR - Ordered Non-Remissible**

\* Red values in parentheses denote overage.