

Alouette Water Use Plan

Monitoring Programs

Annual Report: 2014

Implementation Period: May 2013 to April 2014

- **ALUMON-1 Smolt Enumeration**
- **ALUMON-2 Kokanee Out-migration**
- **ALUMON-3 Substrate Quality**
- **ALUMON-4 Sockeye Adult Enumeration**
- **ALUMON-5 Water Temperature**
- **ALUMON-6 Kokanee Age Structure Analysis**
- **ALUMON-7 Archaeological Monitoring**

For Water Licences 124724, 124725, 124726

May 31, 2014

BC Hydro Alouette Project Water Use Plan Monitoring Programs Annual Report: 2014

1 Introduction

This document represents a summary of the status and the results of the Alouette Water Use Plan (WUP) monitoring programs to April 30, 2014, as per the Alouette Project Order under the *Water Act*, dated April 20, 2009. There are seven monitoring programs.

2 Status

The following table outlines the dates that TOR for the Alouette WUP monitoring programs were submitted to and approved by the CWR.

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

Monitoring Program TORs	Order Clause	Original ToR Submission		Most Recent ToR Resubmission	
		Date Submitted	Date Approved	Date Submitted	Date Approved
ALUMON-1 Smolt Enumeration	Clause 16.a	Oct 19, 2009	Nov 16, 2009	Nov 03, 2010	Nov 16, 2010
ALUMON-2 Kokanee Out-migration	Clause 16.b	Oct 19, 2009	Nov 16, 2009	Nov 03, 2010	Nov 16, 2010
ALUMON-3 Substrate Quality	Clause 16.c	Oct 19, 2009	Nov 16, 2009		
ALUMON-4 Sockeye Adult Enumeration	Clause 16.d	Oct 19, 2009	Nov 16, 2009		
ALUMON-5 Water Temperature	Clause 16.e	Oct 19, 2009	Nov 16, 2009		
ALUMON-6 Kokanee Age Structure Analysis	Clause 16.f	Oct 19, 2009	Nov 16, 2009		
ALUMON-7 Archaeological Monitoring	Clause 16.g	Oct 19, 2009	Nov 16, 2009		

3 Schedule

The following table (Table 3-1) outlines the current schedule for the monitoring programs being delivered for the Alouette WUP.

The Order will be implemented until 2014, when BC Hydro will assess the results of the monitoring programs and merge the Stave and Alouette into a single Water Use Plan that better reflects the integrated nature of the Alouette, Stave Falls, and Ruskin hydroelectric power developments.

Table 3-1: Table of WUP Schedule

Monitoring Programs	2008	2009	2010	2011	2012	2013	2014	
	WLR YR1 ¹	WLR YR2 ¹	WLR YR3	WLR YR4	WLR YR5	WLR YR6	WLR YR7	
ALUMON-1 Smolt Enumeration	✓	✓	✓	✓	✓	✓	■	
ALUMON-2 Kokanee Out-migration	✓	✓	✓	✓	✓	✓	■	
ALUMON-3 Substrate Quality	✓	✓	✓	✓	✓	✓	■	
ALUMON-4 Sockeye Adult Enumeration	✓	✓	✓	✓	✓	✓	■	
ALUMON-5 Water Temperature	✓	✓	✓	✓	✓	✓	■	
ALUMON-6 Kokanee Age Structure Analysis	✓	✓	✓	✓	✓	✓	■	
ALUMON-7 Archaeological Monitoring	× ²	✓	✓	✓	✓			
Legend:	□	= Project timing subject to change according to maintenance schedule						
	■	= Program to be undertaken/initiated in identified year						
	✓	= Program completed for the year						
	×	= Program started, but encountered operational or hydrological delays						
Footnotes:	1	Programs initiated prior to receipt of monitoring program leave to commence from CWR.						
	2	Archaeological Monitoring delay until 2009 based on delayed TOR approval by Katzie First nation and BC Archaeological Branch						

3.1 Monitoring Programs Terms of Reference

The Monitoring Programs being implemented under the Alouette WUP are described in Terms of Reference. These Terms of Reference and the reports for work completed to date can be found here:

http://www.bchydro.com/toolbar/about/sustainability/conservation/water_use_planning/lower_mainland/alouette.html

4 Summary of Monitoring Programs

4.1 ALUMON-1 Smolt Enumeration

4.1.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. Attached is the report for Year 2011 dated February 2012. The report for year 2012 was submitted with last year's annual report. The 2013 draft report is expected June 2014 and will be submitted with next year's annual report.

4.2 ALUMON-2 Kokanee Out-migration

4.2.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. The 2013 study program report has been received in draft and will be submitted with next year's annual report.

4.3 ALUMON-3 Substrate Quality

4.3.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. Attached is the report for Year 2012 dated May 2013. The 2013 study program report has been received in draft and will be submitted with next year's annual report.

4.4 ALUMON-4 Sockeye Adult Enumeration

4.4.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. Attached is the report for Year 2012 dated May 2013. The 2013 study program report has been received in draft and will be submitted with next year's annual report.

4.5 ALUMON-5 Water Temperature

4.5.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. The 2011 and 2012 data reports have been received in draft and comments have been returned to the contractor. The draft 2013 data report is expected in June 2014. The 2011, 2012 and 2013 final data reports will be submitted with next year's annual report. A final summary report for the program is due following the program completion in 2014.

4.6 ALUMON-6 Kokanee Age Structure Analysis

4.6.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. The draft 2013 study program report is expected June 2014 and will be submitted with next year's annual report.

4.7 ALUMON-7 Archaeological Monitoring

4.7.1 Status

This monitoring program was initiated in 2009 and was carried out over 2 years. This monitor is completed.

5 Monitoring Programs Costs

The following table summarizes the Alouette WUP monitoring program costs approved by the Comptroller and the Actual Costs to April 30, 2014.

Table 5-1: Alouette WUP Monitoring Program 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
ALUPrepareAnnualReport	\$3,100	\$2,934	\$1,019	\$3,953	(\$853)	Direct Management costs higher than expected	Resubmission letter to be submitted by November 28
ALUM01ASmoltEnumeration	\$852,546	\$722,461	\$91,401	\$813,862	\$38,684	Efficiencies found during project implementation	
ALUM01ASmoltEnumeration-ONRDM	\$25,928	\$20,299	\$4,473	\$24,771	\$1,157		
ALUM01ASmoltEnumeration-ONRImp	\$826,618	\$702,163	\$86,928	\$789,091	\$37,527		
ALUM02AKokaneOutMigration	\$453,982	\$379,576	\$65,245	\$444,821	\$9,161	Efficiencies found during project implementation	
ALUM02AKokaneOutMigration-ONRDM	\$29,191	\$19,979	\$3,655	\$23,634	\$5,557		
ALUM02AKokaneOutMigration-ONRImp	\$424,791	\$359,597	\$61,590	\$421,188	\$3,603		
ALUM03ASubstrateQuality	\$82,012	\$57,995	\$15,684	\$73,679	\$8,333	Efficiencies found during project implementation	
ALUM03ASubstrateQuality-ONRDM	\$17,774	\$6,849	\$3,784	\$10,633	\$7,141		
ALUM03ASubstrateQuality-ONRImp	\$64,238	\$51,146	\$11,900	\$63,046	\$1,192		
ALUM04ASockeyeAdultEnumer	\$164,184	\$117,264	\$26,677	\$143,940	\$20,244	Efficiencies found during project implementation	
ALUM04ASockeyeAdultEnumer-ONRDM	\$25,351	\$10,834	\$3,947	\$14,781	\$10,570		
ALUM04ASockeyeAdultEnumer-ONRImp	\$138,833	\$106,430	\$22,729	\$129,159	\$9,674		
ALUM05AWaterTemperature	\$57,974	\$33,037	\$8,676	\$41,713	\$16,261	Efficiencies found during project implementation	
ALUM05AWaterTemperature-ONRDM	\$17,925	\$4,880	\$3,656	\$8,536	\$9,389		
ALUM05AWaterTemperature-ONRImp	\$40,049	\$28,157	\$5,020	\$33,177	\$6,872		
ALUM06AKokaneeAgeStructure	\$95,162	\$67,845	\$23,451	\$91,295	\$3,867	Efficiencies found during project implementation	
ALUM06AKokaneeAgeStructure-ONRDM	\$10,769	\$5,179	\$4,235	\$9,413	\$1,356		
ALUM06AKokaneeAgeStructure-ONRImp	\$84,393	\$62,666	\$19,216	\$81,882	\$2,511		
ALUM07AArchImpactAssessmnt	\$124,208	\$120,383	\$0	\$120,383	\$3,825	Efficiencies found during project implementation	
ALUM07AArchImpactAssessmnt-ONRDM	\$7,806	\$10,131	\$0	\$10,131	(\$2,325)		
ALUM07AArchImpactAssessmnt-ONRImp	\$116,402	\$110,252	\$0	\$110,252	\$6,150		
OR - Ordered Remissible							
ONR - Ordered Non-Remissible							

* Red values in parentheses denote overage.