

Alouette Water Use Plan

Monitoring Programs

Annual Report: 2013

Implementation Period: May 2012 to April 2013

- **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, 2013

BC Hydro Alouette Project Water Use Plan Monitoring Programs Annual Report: 2013

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, 2013, 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 & Physical Works TOR | 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 | ✓ | ✓ | ✓ | ✓ | ✓ | u/w | ■ |
| ALUMON-2 Kokanee Out-migration | ✓ | ✓ | ✓ | ✓ | ✓ | u/w | ■ |
| ALUMON-3 Substrate Quality | ✓ | ✓ | ✓ | ✓ | ✓ | u/w | ■ |
| ALUMON-4 Sockeye Adult Enumeration | ✓ | ✓ | ✓ | ✓ | ✓ | u/w | ■ |
| ALUMON-5 Water Temperature | ✓ | ✓ | ✓ | ✓ | ✓ | u/w | ■ |
| ALUMON-6 Kokanee Age Structure Analysis | ✓ | ✓ | ✓ | ✓ | ✓ | u/w | ■ |
| ALUMON-7 Archaeological Monitoring | DEL ² | ✓ | ✓ | ✓ | ✓ | | |

| | | | | | | | |
|---------|-----|---|--|--|--|--|--|
| Legend: | ■ | = Program to be undertaken/initiated in identified year | | | | | |
| | u/w | = Project is under way | | | | | |
| | DEL | = Project is delayed for this year | | | | | |
| | ✓ | = Program completed for the year | | | | | |
| | × | = Program started, but encountered operational or hydrological delays | | | | | |

4 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

5 Summary of Monitoring Programs

5.1 ALUMON-1 Smolt Enumeration

5.1.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. The 2011 study program report has been received in draft and comments have been returned to the contractor. The 2011 final report will be submitted with the next year's annual report. Attached is the report for Year 2012 dated December 2012.

5.2 ALUMON-2 Kokanee Out-migration

5.2.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. Attached are the final reports for Year 2011 and 2012 dated February 2012 and March 2013 respectively.

5.3 ALUMON-3 Substrate Quality

5.3.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. Attached is the report for Year 2011 dated May 2012. The draft 2012 study program report has not yet been submitted by the contractor and is expected July 2013. The final 2012 report will be submitted with the 2014 annual report.

5.4 ALUMON-4 Sockeye Adult Enumeration

5.4.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. Attached is the report for Year 2011 dated June 2012. The 2012 study program report has been received in draft. The final report will be submitted with the 2014 report.

5.5 ALUMON-5 Water Temperature

5.5.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years.

The 2011 study program report has been received in draft and comments will be returned to the contractor June 2013. The 2011 final report will be submitted with the

2014 report. The draft 2012 study program report has not been submitted by the contractor. The final report will be submitted with the 2014 report.

5.6 ALUMON-6 Kokanee Age Structure Analysis

5.6.1 Status

This monitoring program was initiated in 2008 and will be carried out over 7 years. Attached are the reports for Year 2011 and 2012 dated March 2012 and March 2013 respectively.

5.7 ALUMON-7 Archaeological Monitoring

5.7.1 Status

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

6 Monitoring Programs Costs

The following table summarizes the Alouette WUP monitoring program costs approved by the Comptroller and the Actual Costs to April 30, 2013.

Table 6-1: 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 |
|--|-----------------------|----------------------------|----------------------------------|-----------------------------------|----------------------------|---|-------------------|
| Alouette Annual Report | \$3,100 | \$1,834 | \$1,520 | \$3,354 | (\$254) | | |
| ALUMON#1 SMOLT ENUMERATION | \$852,546 | \$624,196 | \$202,400 | \$826,596 | \$25,950 | Efficiencies found during project implementation. | |
| ALUMON#1 Direct Management 001 | \$25,928 | \$18,492 | \$7,200 | \$25,692 | \$236 | | |
| ALUMON#1 Implementation 002 | \$826,618 | \$605,704 | \$195,200 | \$800,904 | \$25,714 | | |
| ALUMON#2 KOKANEE OUT MIGRATION | \$453,982 | \$306,943 | \$135,903 | \$442,845 | \$11,137 | Efficiencies found during project implementation. | |
| ALUMON#2 Direct Management 001 | \$29,191 | \$17,444 | \$7,791 | \$25,235 | \$3,957 | | |
| ALUMON#2 Implementation 002 | \$424,791 | \$289,499 | \$128,112 | \$417,611 | \$7,180 | | |
| ALUMON#3 SUBSTRATE QUALITY | \$82,012 | \$48,481 | \$26,171 | \$74,652 | \$7,360 | Efficiencies found during project implementation. | |
| ALUMON#3 Direct Management 001 | \$17,774 | \$5,035 | \$5,671 | \$10,706 | \$7,068 | | |
| ALUMON#3 Implementation 002 | \$64,238 | \$43,446 | \$20,500 | \$63,946 | \$292 | | |
| ALUMON#4 SOCKEYE ADULT ENUMERATION | \$164,184 | \$99,222 | \$42,421 | \$141,643 | \$22,541 | Efficiencies found during project implementation. | |
| ALUMON#4 Direct Management 001 | \$25,351 | \$8,558 | \$8,771 | \$17,329 | \$8,022 | | |
| ALUMON#4 Implementation 002 | \$138,833 | \$90,664 | \$33,650 | \$124,314 | \$14,519 | | |
| ALUMON#5 WATER TEMPERATURE | \$57,974 | \$26,830 | \$17,100 | \$43,930 | \$14,044 | Efficiencies found during project implementation. | |
| ALUMON#5 Direct Management 001 | \$17,925 | \$2,287 | \$7,060 | \$9,347 | \$8,578 | | |
| ALUMON#5 Implementation 002 | \$40,049 | \$24,543 | \$10,040 | \$34,583 | \$5,466 | | |
| ALUMON#6 KOKANEE AGE STRUCTURE | \$95,162 | \$43,428 | \$33,965 | \$77,393 | \$17,769 | Efficiencies found during project implementation. | |
| ALUMON#6 Direct Management 001 | \$10,769 | \$3,192 | \$7,107 | \$10,299 | \$470 | | |
| ALUMON#6 Implementation 002 | \$84,393 | \$40,236 | \$26,858 | \$67,094 | \$17,299 | | |
| ALUMON#7 ARCHAEOLOGICAL IMPACT ASSESSMENT - RESERVOIR | \$124,208 | \$120,383 | \$0 | \$120,383 | \$3,825 | Efficiencies found during project implementation. | |
| ALUMON#7 Direct Management 001 | \$7,806 | \$10,131 | \$0 | \$10,131 | (\$2,325) | | |
| ALUMON#7 Implementation 002 | \$116,402 | \$110,252 | \$0 | \$110,252 | \$6,150 | | |
| OR - Ordered Remissible | | | | | | | |
| ONR - Ordered Non-Remissible | | | | | | | |