

## **Clowhom Project Water Use Plan**

### **Monitoring Programs**

**Annual Report: 2013**

**Implementation Period: May 2012 to April 2013**

- **COMMON-1 Monitor of Aquatic Wildlife in Wetlands Affected by Dam Operations**
- **COMMON-2 Role of Littoral Zone in Governing Clowhom Reservoir Productivity Capacity**
- **COMMON-3 Validation of the Effective Littoral Zone Performance Measure**
- **COMMON-4 Archaeological Sites Monitoring**

**For Water Licences 120562, 120565, and Conditional Water Licence 119822**

**May31, 2013**

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

### 1 Introduction

This document represents a summary of the status and the results of the Clowhom Project Water Use Plan (WUP) monitoring programs to April 20, 2013, as per the Clowhom Order under the *Water Act*, dated April 20, 2005. There are four monitoring programs.

### 2 Status

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

Leave to commence was not received for the COMMON-4 Archaeological Sites Monitoring TOR. As per the October 28, 2005 letter, this work will proceed under the *Heritage Conservation Act*.

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

Monitoring Program & Physical Works TOR	Order Clause (optional)	Original ToR Submission		Most Recent ToR Resubmission	
		Date Submitted	Date Approved	Date Submitted	Date Approved
COMMON-1 Monitor of Aquatic Wildlife in Wetlands Affected by Dam Operations	Schedule A.1.a	Sep 23, 2005	Oct 28, 2005		
COMMON-2 Role of Littoral Zone in Governing Clowhom Reservoir Productivity Capacity	Schedule A.1.b	Sep 23, 2005	Oct 28, 2005		
COMMON-3 Validation of the Effective Littoral Zone Performance Measure	Schedule A.1.c	Sep 23, 2005	Oct 28, 2005		
COMMON-4 Archaeological Sites Monitoring	Schedule A.2	Sep 23, 2005	Oct 28, 2005		

### 3 Schedule

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

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

Monitoring Program	Study	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		WLR YR1	WLR YR2	WLR YR3	WLR YR4	WLR YR5	WLR YR6	WLR YR7	WLR YR8	WLR YR9	WLR YR10	WLR YR11	WLR YR12	WLR YR13	WLR YR14	WLR YR15	WLR YR16	WLR YR17	WLR YR18	WLR YR17	WLR YR17
COMMON-1 Monitor of Aquatic Wildlife in Wetlands Affected by Dam Operations	Wildlife Census	✓	✓	✓	✓	✓	✓	✓	u/w	■	■	■	■	■	■	■	■	■	■	■	■
	Air Photography	✓				✓	✓				■					■					■
COMMON-2 Role of Littoral Zone in Governing Clowhom Reservoir Productive Capacity	Fish Survey	✓		✓	✓	✓	✓				■					■					■
	Juvenile Habitat Use Survey		X	✓	X	✓	✓														
COMMON-3 Validation of the Effective Littoral Zone Performance Measure		✓	✓	✓	✓	✓	✓				■					■					■
COMMON-4 Archaeological Sites Monitoring			X	✓	✓																

Legend: □ = Project timing subject to change according to maintenance schedule  
 ■ = Project to be undertaken/initiated in identified year  
 uw = Project is underway  
 ✓ = Project is complete for the year  
 X = Encountered operational or hydrological delays

## **4 Monitoring Programs Terms of Reference**

The Monitoring Programs being implemented under the Clowhom Project 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/clowhom.html](http://www.bchydro.com/toolbar/about/sustainability/conservation/water_use_planning/lower_mainland/clowhom.html)

## **5 Summary of Monitoring Programs**

### **5.1 COMMON-1 Monitor of Aquatic Wildlife in Wetlands Affected by Dam Operations**

#### **5.1.1 Status**

This monitoring program was initiated in 2006 and will be carried out over 20 years. The draft report for 2011 has been received and comments have been returned to the contractor. The final report has not been received but it is expected in June 2013. The draft 2012 report is also expected in June 2013. The 2011 and 2012 reports will be submitted with next year's annual report.

### **5.2 COMMON-2 Role of Littoral Zone in Governing Clowhom Reservoir Productivity Capacity**

#### **5.2.1 Status**

This monitoring program was initiated in 2006 and will be carried out over 20 years. The draft report for 2011 has been received and comments have been returned to the contractor. The final report has not been received but it is expected in June 2013. The 2011 report will be submitted with next year's annual report. The next report is expected in 2015.

### **5.3 COMMON-3 Validation of the Effective Littoral Zone Performance Measure**

#### **5.3.1 Status**

This monitoring program was initiated in 2006 and will be carried out over 20 years. The draft report for 2011 has been received and comments have been returned to the contractor. The final report has not been received but it is expected in June 2013. The 2011 report will be submitted with next year's annual report. The next report is expected in 2015.

### **5.4 COMMON-4 Archaeological Sites Monitoring**

#### **5.4.1 Status**

This monitoring program was initiated in 2008 and was carried out over 2 years. This monitor is completed.

## **6 Monitoring Programs Costs**

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

**Table 6-1: Clowhom Project 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
<b>Clowhom WUP Annual Report</b>	\$43,186	\$9,186	\$18,222	\$27,408	\$15,778		
<b>COMMON#1 MONITOR OF AQUATIC WILDLIFE IN WETLANDS AFFECTED BY DAM OPERATIONS</b>	\$364,673	\$78,986	\$210,473	\$289,459	\$75,214	Efficiencies found during project implemetation	
COMM01A Mon Aquatic Wildlife - ONR DM	\$174,773	\$13,554	\$85,173	\$98,727	\$76,046		
COMM01A Mon Aquatic Wildlife - ONR Imp	\$189,900	\$65,432	\$125,300	\$190,732	(\$832)		
<b>COMMON#2 ROLE OF LITTORAL ZONE IN GOVERNING CLOWHOM RESERVOIR PRODUCTIVE CAPACITY</b>	\$188,424	\$50,339	\$89,484	\$139,823	\$48,601	Efficiencies found during project implemetation	
COMM02A Role Littoral Zone - ONR DM	\$85,324	\$18,349	\$32,945	\$51,294	\$34,030		
COMM02A Role Littoral Zone - ONR Imp	\$103,100	\$31,990	\$56,539	\$88,529	\$14,571		
<b>COMMON#3 VALIDATION OF THE EFFECTIVE LITTORAL ZONE PERFORMANCE MEASURE</b>	\$155,909	\$102,187	\$8,107	\$110,294	\$45,615	Efficiencies found during project implemetation	
COMM03A Valid Littoral Zone - ONR DM	\$57,909	\$15,443	\$6,107	\$21,550	\$36,359		
COMM03A Valid Littoral Zone - ONR Imp	\$98,000	\$86,744	\$2,000	\$88,744	\$9,256		
OR - Ordered Remissible							
ONR - Ordered Non-Remissible							