

Columbia River Project Water Use Plan Kinbasket Fish and Wildlife Information Plan

Monitoring Programs Annual Report: 2013

Implementation Period: January 2012 to December 2012

- **CLBMON-1 – Mica Dam Total Gas Pressure Monitoring and Abatement Program**
- **CLBMON-2 – Kinbasket and Revelstoke Reservoirs Kokanee Population Monitoring**
- **CLBMON-3 – Kinbasket and Revelstoke Reservoirs Ecological Productivity Monitoring Program**
- **CLBMON-4 – Kinbasket Reservoir Fish Stranding Assessment**
- **CLBMON-5 – Kinbasket Reservoir Burbot Life History and Habitat Use Assessment**
- **CLBMON-6 – Kinbasket Reservoir Bull Trout Life History and Habitat Use Assessment**
- **CLBMON-7 – Kinbasket Reservoir Rainbow Trout Life History and Habitat Use Assessment**
- **CLBMON-8 – Kinbasket Reservoir Monitoring of the Valemount Peatland**
- **CLBMON-55 – Revelstoke Reservoir Macrophyte Overview**
- **CLBMON 56 – Ecological Productivity**
- **CLBMON 59 – Nagle Creek**
- **CLBMON 60 – Fish Indexing**
- **CLBMON 61 – Wetland Vegetation**

Conditional Water Licences for Kinbasket storage (27068 and 39432), Mica diversion (39431), and Revelstoke diversion and storage (47215)

January 31, 2013

BC Hydro Columbia River Project Water Use Plan Kinbasket Reservoir Fish and Wildlife Information Plan Monitoring Programs Annual Report: 2013

1 Introduction

This document represents a summary of the status and the results of the Kinbasket Reservoir Fish and Wildlife Information Plan Water Use Plan (WUP) monitoring programs to December 2012, as per the Columbia River WUP Order under the *Water Act*, dated January 26, 2007 and the Amended Order dated August 23, 2007. There are thirteen monitoring programs.

2 Status

The following table outlines the dates that TOR for the Kinbasket Reservoir Fish and Wildlife Information Plan WUP monitoring programs were submitted to and approved by the CWR.

Table: 2-1: Dates of Kinbasket Reservoir Fish and Wildlife Information Plan 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
CLBMON-1 Mica Dam Total Gas Pressure Monitoring and Abatement Program	Schedule A 5(a)	Oct 24, 2007	Dec 03, 2007	Feb 02, 2009	Mar 26, 2009
CLBMON-2 Kinbasket and Revelstoke Reservoirs Kokanee Population Monitoring	Schedule A 5(b) & Schedule B 1(a)	Oct 24, 2007	Dec 03, 2007	Jun 27, 2012	Jul 11, 2012
CLBMON-3 Kinbasket and Revelstoke Reservoirs Ecological Productivity Monitoring Program	Schedule A 5(c) & Schedule B 1(b)	Oct 24, 2007	Dec 03, 2007	-	-
CLBMON-4 Kinbasket Reservoir Fish Stranding Assessment	Schedule A 5(d)	Oct 24, 2007	Dec 03, 2007	Feb 02, 2009	Mar 26, 2009
		Oct 22, 2008	Dec 10, 2008		
CLBMON-5 Kinbasket Reservoir Burbot Life History and Habitat Use Assessment	Schedule A 5(e)	Oct 24, 2007	Dec 03, 2007	Oct 22, 2008	Dec 10, 2008
CLBMON-6 Kinbasket Reservoir Bull Trout Life History and Habitat Use Assessment	Schedule A 5(f)	Oct 24, 2007	Dec 03, 2007	-	-
CLBMON-7 Kinbasket Reservoir Rainbow Trout Life History and Habitat Use Assessment	Schedule A 5(g)	Oct 24, 2007	Dec 03, 2007	Feb 02, 2009	Mar 26, 2009
CLBMON-8 Kinbasket Reservoir Monitoring of the Valemount Peatland	Schedule A 5(h)	Oct 24, 2007	Dec 03, 2007	-	-
CLBMON-55 Revelstoke Reservoir Macrophyte Overview	Clause 2(f) Amended Order	Jan 07, 2009	Mar 19, 2009	-	-
CLBMON-56 Ecological Productivity	Clause 2(c) Amended Order	Aug 12, 2011	Nov 07, 2011		
CLBMON-59 Nagle Creek	Clause 1(d) Amended Order	Dec 15, 2011	Jan 20, 2012	Oct 01, 2012	Oct 16, 2012
CLBMON-60 Fish Indexing	Clause 1(b)	Aug 12, 2011	Nov 07, 2011		
	Amended Order				
CLBMON-61 Wetland Vegetation	Clause 1(a) Amended Order	Jan 16, 2012	Apr 19, 2012		

3 Schedule

The following table (Table 3-1) outlines the current schedule for the monitoring programs and physical works being delivered for the Kinbasket Reservoir Fish and Wildlife Information Plan WUP.

Table 3-1: Table of WUP Schedule

Monitoring Programs	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	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 Final Review
CLBMON-1 Mica Dam Total Gas Pressure Monitoring and Abatement Program			✓	x	✓	■	■						
CLBMON-2 Kinbasket and Revelstoke Reservoirs Koknaee Population Monitoring	✓	✓	✓	✓	u/w	■	■	■	■	■	■	■	
CLBMON-3 Kinbasket and Revelstoke Reservoirs Ecological Productivity Monitoring Program	✓	✓	✓	✓	u/w	■	■	■	■	■	■	■	
CLBMON-4 Kinbasket Reservoir Fish Stranding Assessment			✓								■	■	
CLBMON-5 Kinbasket Reservoir Burbot Life History and Habitat Use Assessment							■	■	■				
CLBMON-6 Kinbasket Reservoir Bull Trout Life History and Habitat Use Assessment								■	■	■			
CLBMON-7 Kinbasket Reservoir Rainbow Trout Life History and Habitat Use Assessment							■	■	■				
CLBMON-8 Kinbasket Reservoir Monitoring of the Valemout Peatland	✓	✓							■				
CLBMON-55 Revelstoke Reservoir Macrophyte Overview		✓	✓				■						
CLBMON-56 Addendum to CLBMON-3 Kinbasket and Revelstoke Reservoirs Ecological Productivity Monitoring					u/w	■	■	■	■	■	■	■	
CLBMON-59 Monitoring of Impacts on Nagle Creek Wetland from Mica Units 5 and 6					u/w								
CLBMON-60 Mica Tailrace Fish Indexing Study					u/w	■				■	■		
CLBMON-61 Wetland Vegetation					u/w	■	■	■	■	■			

Legend:

- = Program to be undertaken/initiated in identified year
- u/w = Project is under way
- ✓ = Program completed for the year
- x = Program started, but encountered operational or hydrological delays

4 Monitoring Programs Terms of Reference

The monitoring programs and Physical Works being implemented under the Kinbasket Reservoir Fish and Wildlife Information Plan 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/about/sustainability/conservation/water_use_planning/southern_interior/columbia_river/kinbasket-fish-wildlife.html

5 Summary of Monitoring Programs

5.1 CLBMON-1 Mica Dam Total Gas Pressure Monitoring and Abatement Program

5.1.1 Status

This monitoring program was initiated in 2010 with data collected in Fall 2010, Spring 2011, Fall of 2012 and will be carried out and finalized with spring data collection in 2013 providing sync condense operations occur.

A new final report date has been set for December 31, 2013 and will be submitted in next year's annual report.

5.2 CLBMON-2 Kinbasket and Revelstoke Reservoirs Kokanee Population Monitoring

5.2.1 Status

This monitoring program was initiated in 2008 and will be carried out over 12 years. Attached is the report for Year 4 (2011) dated December 2012.

The 2008-2011 Synthesis Report for CLBMON-2 and CLBMON-3 is scheduled for completion in June 2013.

5.3 CLBMON-3 Kinbasket and Revelstoke Reservoirs Ecological Productivity Monitoring Program

5.3.1 Status

This monitoring program was initiated in 2008 and will be carried out over 12 years. Attached is the report for Year 4 (2011) dated January 2013.

The 2008-2011 Synthesis Report for CLBMON-2 and CLBMON-3 is scheduled for completion in June 2013.

5.4 CLBMON-4 Kinbasket Reservoir Fish Stranding Assessment

5.4.1 Status

This monitoring program was initiated in 2010. The next implementation period is currently scheduled for 2018 and 2019.

5.5 CLBMON-5 Kinbasket Reservoir Burbot Life History and Habitat Use Assessment

5.5.1 Status

This monitoring program has not yet been initiated. It is currently scheduled for implementation in 2014 to 2016.

5.6 CLBMON-6 Kinbasket Reservoir Bull Trout Life History and Habitat Use Assessment

5.6.1 Status

This monitoring program has not yet been initiated. It is currently scheduled for implementation in 2015 to 2017.

5.7 CLBMON-7 Kinbasket Reservoir Rainbow Trout Life History and Habitat Use Assessment

5.7.1 Status

This monitoring program has not yet been initiated. Implementation is currently scheduled for 2014 to 2016.

5.8 CLBMON-8 Kinbasket Reservoir Monitoring of the Valemount Peatland

5.8.1 Status

This monitoring program was initiated in 2008, and two of the three years of study are now complete. The final year of the monitoring program is scheduled for 2016. The final program report is expected in December 2016.

5.9 CLBMON-55 Revelstoke Reservoir Macrophyte Overview

5.9.1 Status

Year 1 of this study is now complete. Year 2 is scheduled for implementation in 2014, four years after the In Service Date for the fifth unit at Revelstoke.

Final report is due in October 2014.

5.10 CLBMON-56 Ecological Productivity

5.10.1 Status

This monitoring program was initiated in 2012 and will be carried out over 9 years.

There are no data yet; the first study report will be prepared for next year.

5.11 CLBMON-59 Monitoring of Impacts on Nagle Creek Wetland from Mica Units 5 and 6

5.11.1 Status

This monitoring program was initiated in 2012 and the field component of this project is complete. The final report is due July 2013 and will be submitted in next year's Annual Report.

5.12 CLBMON-60 Mica Tailrace Fish Indexing Study

5.12.1 Status

This monitoring program was initiated in fall 2012 and will be carried out in fall 2013, 2017, and 2018. The final report is due March 2013 and will be submitted in next year's Annual Report.

5.13 CLBMON-61 Wetland Vegetation

5.13.1 Status

This monitoring program was initiated in 2012 and will be carried out over 6 years. The final report is due March 2013 and will be submitted in next year's Annual Report.

The first year of baseline collection commenced in 2012; unfortunately the duration of the surcharge on Kinbasket Reservoir prevented data collection in the late summer of 2012. We are planning to modify the schedule to supplement the baseline information by doing some monitoring in 2014, just prior to the In Service Date; this may have some cost implications. We will resubmit once we have the 2012 final report in March 2013.

6 Monitoring Programs Costs

The following table summarizes the Kinbasket Reservoir Fish and Wildlife Information Plan WUP monitoring programs costs approved by the Comptroller and the Actual Costs to December 31, 2012.

Table 6-1: Kinbasket Reservoir Fish and Wildlife Information Plan WUP Monitoring Programs Costs

Monitoring Programs	Activity	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
COLUMBIA RIVER KINBASKET FISH & WILDLIFE MANAGEMENT PLAN ANNUAL REPORT	OR	\$10,022	\$4,428	\$5,594	\$10,022	\$0		
CLBMON#1 MICA DAM TGP MONITORING & ABATEMENT PROGRAM	OR	\$100,425	\$23,171	\$77,254	\$100,425	\$0		
CLBMON#1 Direct Management 001	OR	\$20,758	\$14,956	\$5,802	\$20,758	\$0		
CLBMON#1 Implementation 002	OR	\$79,667	\$8,215	\$71,452	\$79,667	\$0		
CLBMON#2 KIN & REV KOKANEE POPULATION MONITORING	OR	\$1,362,811	\$418,220	\$944,591	\$1,362,811	\$0		
CLBMON#2 Direct Management 001	OR	\$28,502	\$8,171	\$20,331	\$28,502	\$0		
CLBMON#2 Implementation 002	OR	\$1,334,309	\$410,049	\$924,260	\$1,334,309	\$0		
CLBMON#3 KIN & REV ECOLOGICAL PRODUCTIVITY MONITORING	OR	\$4,313,829	\$1,409,401	\$2,904,428	\$4,313,829	\$0		
CLBMON#3 Direct Management 001	OR	\$157,106	\$65,529	\$91,577	\$157,106	\$0		
CLBMON#3 Implementation 002	OR	\$4,156,723	\$1,343,872	\$2,812,851	\$4,156,723	\$0		
CLBMON#4 KIN FISH STRANDING ASSESSMENT	OR	\$253,427	\$21,082	\$232,345	\$253,427	\$0		
CLBMON#4 Direct Management 001	OR	\$29,033	\$13,522	\$15,511	\$29,033	\$0		
CLBMON#4 Implementation 002	OR	\$224,394	\$7,560	\$216,834	\$224,394	\$0		
CLBMON#5 KIN BURBOT LIFE HISTORY & HABITAT USE ASSESSMENT	OR	\$573,070	\$7,393	\$565,677	\$573,070	\$0		
CLBMON#5 Direct Management 001	OR	\$42,658	\$7,393	\$35,265	\$42,658	\$0		
CLBMON#5 Implementation 002	OR	\$530,412		\$530,412	\$530,412	\$0		
CLBMON#6 KIN BULL TROUT LIFE HISTORY & HABITAT USE ASSESSMENT	OR	\$512,596	\$6,176	\$506,420	\$512,596	\$0		
CLBMON#6 Direct Management 001	OR	\$38,207	\$6,176	\$32,031	\$38,207	\$0		
CLBMON#6 Implementation 002	OR	\$474,389		\$474,389	\$474,389	(\$0)		
CLBMON#7 KIN RAINBOW TROUT LIFE HISTORY & HABITAT USE ASSESSMENT	OR	\$519,961	\$6,118	\$513,843	\$519,961	\$0		
CLBMON#7 Direct Management 001	OR	\$39,617	\$6,118	\$33,499	\$39,617	\$0		
CLBMON#7 Implementation 002	OR	\$480,344		\$480,344	\$480,344	(\$0)		
CLBMON#8 KIN MONITORING OF VALEMONT PEATLAND	OR	\$143,546	\$116,934	\$26,612	\$143,546	\$0		
CLBMON#8 Direct Management 001	OR	\$34,593	\$27,683	\$6,910	\$34,593	\$0		
CLBMON#8 Implementation 002	OR	\$108,953	\$89,251	\$19,702	\$108,953	\$0		
CLBMON#55 REV RESERVOIR MACROPHYTE OVERVIEW	ONR	\$147,184	\$66,639	\$80,545	\$147,184	\$0		
CLBMON#55 Direct Management 001	ONR	\$28,017	\$14,103	\$13,914	\$28,017	\$0		
CLBMON#55 Implementation 002	ONR	\$119,167	\$52,536	\$66,631	\$119,167	\$0		
CLBMON#56 ECO PRODUCTIVITY	ONR	\$816,901	\$83,869	\$733,032	\$816,901	\$0		
CLBMON#56 Direct Management 001	ONR	\$31,371	\$7,920	\$23,451	\$31,371	\$0		
CLBMON#56 Implementation 002	ONR	\$785,530	\$75,949	\$709,581	\$785,530	\$0		
CLBMON#59 Nagle Creek	ONR	\$69,185	\$39,413	\$29,772	\$69,185	\$0		
CLBMON#59 Direct Management 001	ONR	\$17,426	\$9,720	\$7,706	\$17,426	\$0		
CLBMON#59 Implementation 002	ONR	\$51,759	\$29,693	\$22,066	\$51,759	\$0		
CLBMON#60 FISH INDEXING	ONR	\$553,666	\$123,123	\$430,543	\$553,666	(\$0)		
CLBMON#60 Direct Management 001	ONR	\$39,620	\$21,654	\$17,966	\$39,620	(\$0)		
CLBMON#60 Implementation 002	ONR	\$514,046	\$101,469	\$412,577	\$514,046	\$0		
CLBMON#61 WETLAND VEGETATION	ONR	\$795,159	\$167,026	\$628,133	\$795,159	\$0		Budget to be reassessed following receipt of 2012 Final Report.
CLBMON#61 Direct Management 001	ONR	\$72,200	\$14,238	\$57,962	\$72,200	\$0		
CLBMON#61 Implementation 002	ONR	\$722,959	\$152,788	\$570,171	\$722,959	\$0		
OR - Ordered Remissible								
ONR - Ordered Non-Remissible								