



# Upper Lillooet Hydro Project

## Weekly Environmental Monitoring Report #50

Reporting Period: December 1 – December 31, 2014

Upper Lillooet River Hydroelectric Facility (Water File No. 2002561, Water licence No. C130613), Boulder Creek Hydroelectric Facility (Water File No. 2003049, Water licence No. C129969) & Transmission Line (TX Line)

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		<b>Date Prepared:</b> January 19, 2015 <b>Date Submitted:</b> January 23, 2015

## Owner Construction Permits and Approvals

Environmental Assessment Certificate No. E13-01 (Amendment 1, 2, 3, 4 & 5)  
 Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-000303 (Amendment 1, 2)  
     Letter of Advice for the Transmission Line No. 09-HPAC0-PA2-000303  
         Leave To Commence Construction (ULRHEF) File No. 2002561  
         Leave To Commence Construction (BDRHEF) File No. 2002453  
     Leave To Commence Construction (TX Line) File No. 2002561/2002453  
         Conditional Water Licence (ULRHEF C130613) File No. 2002561  
         Conditional Water Licence (BDRHEF C129969) File No. 2002453  
         Conditional Water Licence (BDRHEF C131153) File No. 2003601  
         Licence of Occupation (ULRHEF #232384) File No. 2409871  
         Licence of Occupation (BDRHEF #232386) File No. 2409998  
         Licence of Occupation (TX Line #2423386) File No. 2410654  
     Occupant Licence to Cut (ULRHEF Amendments 1, 2, 3, 4, 5) No. L49717  
     Occupant Licence to Cut (BDRHEF – KM 38 laydown) No. L49698  
     Occupant Licence to Cut (BDRHEF Amendments 1, 2, 3) No. L49816  
     Occupant Licence to Cut (TX Line Amendment 1, 2, 3, 4, 5) No. L49697  
 General Wildlife Measure Exemption Approval Letter (TX Line & BDRHEF) File No. 78700-35/06 UWR and 39585-20 WHA  
     Heritage Conservation Act – Alteration Permit (ULRHEF) File No. 11200-03/2014-0033  
 Road Use Permit No. 6123-13-02 (Lillooet River FSR); 5673-13-01 (Rutherford Creek FSR); 7977-13-01 (Lillooet South FSR); 8015-13-01 (Ryan River); 8188-13-01 (Pemberton Creek FSR); and 9717-13-01 (Miller Bench FSR)  
     Junction Permit (ULRHEF & BDRHEF) File No. 11250-32/6123 (Amendment 1)  
     Aeronautical Obstruction Approval (Tx Line - Lillooet River Crossing) File No. 2013-004  
         Aeronautical Obstruction Approval (Tx Line - Ryan River) File No. 2013-005  
         Aeronautical Obstruction Approval (Tx Line - North Miller) File No. 2013-006  
         Aeronautical Obstruction Approval (Tx Line - South Miller) File No. 2013-007  
         Aeronautical Obstruction Approval (Tx Line - Pemberton Creek) File No. 2013-008  
         Aeronautical Obstruction Approval (Tx Line - Lillooet River near Pemberton) File No. 2013-009  
         Aeronautical Obstruction Approval (Tx Line - Lillooet River near Meager Creek) File No. 2013-010  
     Navigable Water Protection Act (ULRHEF) File No. 8200-2009-500434-001  
     Navigable Water Protection Act (BDRHEF) File No. 8200-2012-501-032-001  
     Navigable Water Protection Act (Tx Line – North Creek) File No. 8200-2013-500103-001  
     Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500101-001  
     Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500102-01  
     Navigable Water Protection Act (Tx Line – Ryan River) File No. 8200-2013-500104-001  
     Navigable Water Protection Act (Tx Line – South Miller River) File No. 8200-2013-500100-001  
     Navigable Water Protection Act (Tx Line – Boulder Creek) File No. 8200-2013-500099-001  
     Navigable Water Protection Act – Extension Approval (ULRHEF, BDRHEF, Tx Line)  
     Navigable Water Protection Act (Bridge – Ryan River) File No. 8200-2013-500381  
 Navigable Water Protection Act (Bridge – Upper Lillooet Side Channel; Extension Approval) File No. 8200-2013-500383  
     Section 57 Authorization (ULRHEF) File No. 16660-20/REC202717  
     SLRD Temporary Use Permit No. 34 – Boulder Creek HEF  
     SLRD Temporary Use Permit No. 35 – Upper Lillooet River HEF  
     Works Permit for Construction within FSR Right-of-Way No. 6123-14-01  
     Section 52(1)(b) FRPA Authorization for Ryan River Wet Crossing File No. FOR-19400-01/2014  
 MOTI Permit to Construct, Use and Maintain Works Upon the Right-Of-Way of a Provincial Public Highway No. 2014-06099

## *Contractor Construction Permits and Approvals*

*Magazine Licence File No. UL76018*

*Section 8 Approval – Short Term Use of Water File (Lillooet River and Tributaries) No. A2006123 (Amendment 1)  
Waste Discharge under the Code of Practice for the Concrete and Concrete Products Industry under the Environmental  
Management Act (Authorization No. 107204) Tracking No. 326969*

*Wildlife Act Permits – Pacific Tailed Frog Salvage Permit # SU14-95304 & SU13-90538, Fish Salvage Permit #SU14-95329*

*Section 52 of the Fisheries (General) Regulations – Fish Salvage Licence # XR 139 2014*

*BC Safety Authority – Temporary Construction Electrical Service Permit EL-140698-2014*

*Municipal Wastewater Regulation - Authorization # 107032*

*Water Supply System Construction Permits – VCH-14-613 for Main Camp*

*Water Supply System Permit to Operate Issued July 30th, 2014 for Main Camp*

*Section 6(3) and Schedule 3 Wildfire Regulations Fire Exemption for Ryan River Bridge File No. 14350-07*

*SLRD Building Inspection Report dated August 13, 2014 - Construction Camp Building Permit No. 10830*

*Lillooet River FSR Temporary Road Closures Approval File No. 11250-32/6123 (Amendment 1, 2)*

*Lillooet South FSR Temporary Road Closures Approval File No. 11250-32/7977*

### **ACRONYMS:**

<b>AMBNS</b>	Active Migratory Bird Nesting Survey	<b>ISW</b>	Instream Works
<b>ASMP</b>	Archaeological Sites Management Plan	<b>ITM</b>	Environmental Issue Tracking Matrix
<b>ARD/ML</b>	Acid Rock Drainage and Metal Leaching	<b>JEM</b>	JEM Energy Ltd. (Delegate Independent Engineer)
<b>BCEAO</b>	British Columbia Environmental Assessment Office	<b>LTC</b>	Leave to Construct
<b>BCWQG</b>	British Columbia Water Quality Guidelines	<b>MFLNRO</b>	Ministry of Forests, Lands and Natural Resource Operations
<b>BDRHEF</b>	Boulder Creek Hydroelectric Facility	<b>MOE</b>	Ministry of Environment
<b>BG</b>	Background	<b>NCD</b>	Non Classified Drainage
<b>BKL</b>	BKL Consultants Ltd.	<b>OLTC</b>	Occupational License to Cut
<b>CE</b>	CRT-ebc Construction Inc.	<b>PAG</b>	Potentially Acid Generating
<b>DFO</b>	Fisheries and Oceans Canada	<b>RoW</b>	Right of Way
<b>DS</b>	Downstream	<b>RVMA</b>	Riparian Vegetation Management Area
<b>Ecofish</b>	Ecofish Research Ltd.	<b>SES</b>	Sartori Environmental Services
<b>Ecologic</b>	Ecologic Consulting	<b>Stringer Line</b>	Temporary Backfeed Transmission Line
<b>EDI</b>	Environmental Dynamics Inc.	<b>TX Line</b>	Transmission Line
<b>EIR</b>	Environmental Incident Report	<b>ULRHEF</b>	Upper Lillooet Hydroelectric Facility
<b>ESC</b>	Erosion and Sediment Control	<b>UWR</b>	Ungulate Winter Range
<b>FAM</b>	Field Advice Memorandum	<b>VC</b>	Valued Component
<b>FSR</b>	Forest Service Road	<b>WEL</b>	Westpark Electric Ltd.
<b>GWR</b>	Mountain Goat Winter Range	<b>WEMR</b>	Weekly Environmental Monitoring Report
<b>Hedberg</b>	Hedberg and Associates Ltd.	<b>WHA</b>	Wildlife Habitat Area
<b>IE</b>	Independent Engineer (True North Energy)	<b>WQ</b>	Water Quality
<b>IEM</b>	Independent Environmental Monitor		
<b>INX</b>	Innergex Renewable Energy Inc.		

## 1.0 Summary of Site Inspections for Reporting Period

The table presented below summarizes the IEM team site presence, weather and monitoring locations by component:

Dates	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
December 1 – December 6	AA, DA, TH	See <i>Weather Notes</i> below table	<p><b>ULRHEF &amp; BDRHEF Winter Operations</b></p> <ul style="list-style-type: none"> <li>• All construction activities have been completed for 2014 – Winter operations include:               <ul style="list-style-type: none"> <li>➢ Routine equipment maintenance and repairs completed at the 38km laydown shop location</li> <li>➢ Snow management at camp facilities and within the 38km Laydown (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths)</li> </ul> </li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li>• Segment 5               <ul style="list-style-type: none"> <li>➢ Dressing pole structures 88 – 95</li> </ul> </li> <li>• Segment 7               <ul style="list-style-type: none"> <li>➢ Setting and dressing pole structures</li> </ul> </li> <li>• Stringer Line               <ul style="list-style-type: none"> <li>➢ Clearing of the RoW was completed this week with the exception of the 2 RVMAs and the on hold sections. All hand falling and topping within RVMAs and CTF stream buffers was monitored by the IEM</li> <li>➢ Ground works associated with pole foundation began, and included some works within RVMAs and CTF stream buffers</li> </ul> </li> </ul>
December 7 – December 13	AA, DA, TH	See <i>Weather Notes</i> below table	<p><b>ULRHEF &amp; BDRHEF Winter Operations</b></p> <ul style="list-style-type: none"> <li>• All construction activities have been completed for 2014 – Winter operations include:               <ul style="list-style-type: none"> <li>➢ Routine equipment maintenance and repairs completed at the 38km laydown shop location</li> <li>➢ Snow management at camp facilities and within the 38km Laydown (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths)</li> </ul> </li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li>• Segment 7               <ul style="list-style-type: none"> <li>➢ Setting and dressing pole structures</li> </ul> </li> <li>• Segment 9               <ul style="list-style-type: none"> <li>➢ Ground works were performed at structure 202</li> </ul> </li> <li>• Stringer Line               <ul style="list-style-type: none"> <li>➢ Ground works associated with pole foundation continued, and included some works within RVMAs and CTF stream buffers</li> </ul> </li> </ul>
December 14 – December 21	BA, DA, TH	See <i>Weather Notes</i> below table	<p><b>ULRHEF &amp; BDRHEF Winter Operations</b></p> <ul style="list-style-type: none"> <li>• All construction activities have been completed for 2014 – Winter operations include:               <ul style="list-style-type: none"> <li>➢ Routine equipment maintenance and repairs completed at the 38km laydown shop location</li> <li>➢ Snow management at camp facilities and within the 38km Laydown (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths)</li> </ul> </li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li>• Segment 7               <ul style="list-style-type: none"> <li>➢ Setting and dressing pole structures</li> </ul> </li> <li>• Stringer Line</li> </ul>

Dates	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
			<ul style="list-style-type: none"> <li>➤ Ground works associated with pole foundation continued, and included some works within RVMAs and CTF stream buffers</li> </ul>
December 22 – December 31	No IEM presence onsite	See <b>Weather Notes</b> below table	<p><b>ULRHEF &amp; BDRHEF Winter Operations</b></p> <ul style="list-style-type: none"> <li>• All construction activities have been completed for 2014.</li> <li>• Winter operations include:               <ul style="list-style-type: none"> <li>➤ Routine equipment maintenance and repairs completed at the 38km laydown shop location</li> <li>➤ Snow management at camp facilities and within the 38km Laydown (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths)</li> </ul> </li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li>• No construction activities were completed during this period – Works will resume in 2015</li> </ul>

**IEM Team Personnel:** TH – Tom Hicks; BA – Blake Aleksich; AA – Anthony Andrews; DA – Danita Abraham

**Weather Notes:** Site specific daily avalanche and weather forecasting was provided for WEL and CE sites throughout the reporting period. Notable weather events included heavy precipitation from December 8 – 10 which resulted in the exceedance of rainfall shutdown guidelines and subsequent suspension of all Tx-line activities from December 10 – 15. The heavy rains caused two debris flows which blocked the Lillooet River FSR at 25km and 26km, as well as road washouts and small slope failures along the Salmon Main road. Snow accumulations in Moose Winter Range Forest Management Zone (u-5-002 J55/54-204-RO) were monitored following each snow fall and remained below 30cm throughout the monitoring period.

## 2.0 Administrative Summary

Key communications and meetings the IEM team had with the licensees, contractors and/or environmental authorities:

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
December 1, 2014	Email	SES, INX, Blackcomb Aviation	INX submitted a helicopter flight plan for a tour of the hydroelectric facilities on December 2. The 1500m horizontal and 400m vertical buffers distances for all Mountain Goat winter ranges were included in the flight plan and were respected during the flight. No Mountain Goats were observed during the flight.	-
December 2, 2014	Email	EAO, MFLNRO, DFO, Lil'wat Nation, INX, SES, JEM, CE	INX submitted a high level summary of construction sequences and monitoring activities associated with the completion of the Upper Lillooet River HEF cofferdam and temporary river diversion.	-
December 2 - 4, 2014	Emails	SES, INX, CE	A lone deer was observed within the confines of the electric fence surrounding the construction camp foraging on the grass slopes. The deer entered during maintenance of the electric fence when the fence was not energized. CE installed electrified gates to replace the electrified mats at all entrances, and completed repairs on December 4. Once the repairs were complete CE confirmed that the fence was operational.	-
December 8, 2014	Email	SES, WEL, INX, MFLNRO	On behalf of WEL, INX submitted a finalized incident report to MFLNRO outlining the causes of a wood box culvert failure in Segment 8 during road upgrade activities on access road 197.2. A cross ditch was	TX#2 - Closed 8.2



<b>Date</b>	<b>Communication Type</b>	<b>Participants</b>	<b>Issues Discussed</b>	<b>ITM ID No.</b>
			installed as a temporary fix and all road upgrade activities have been suspended until a permanent culvert is installed. See Section 8.2 for further details	
December 9, 2014	<i>Email</i>	CE, SES, INX, MOE	CE submitted a Notification of Independent Remediation for the reportable diesel spill that occurred on October 6, 2014. Submission of this notification signals the completion of the all reporting requirements associated with the EIR (2014-10-31 CE-EIR-013).	-
December 10, 2014	<i>Email</i>	WEL, SES, INX	WEL submitted an email notification of two debris flows blocking the Lillooet River FSR at 25km and 26km, and exceedance of the rainfall shutdown guidelines. WEL has temporarily suspended all Tx-Line works until an assessment is completed by a geotechnical engineer.	-
December 17, 2014	<i>Email</i>	INX, WEL, SES, JEM, MOTI	INX received and distributed the approval to construct temporary power poles on the MOTI portion of the Salmon Main road along the Stringer Line alignment (Permit No. 2014-06099)	-
December 19, 2014	<i>Email</i>	INX, SES, JEM, MFLNRO	INX submitted a report outlining recommendations for unanticipated forested habitat impacts outside the OLTC and within Mountain Goat UWR u-2-002 UL12 associated with construction of the Boulder Creek HEF intake access road and crane pad that occurred in July, 2014. Follow-up meetings with MFLNRO will be held in 2015 to discuss permitting implications and next steps.	-
December 19, 2014	<i>Email</i>	DFO, MFLNRO, EAO, JEM, Li'wat Nation, INX, SES, CE, Ecofish	INX submitted a ULRHEF Cofferdam Construction Instream Works: Monitoring Report detailing the monitoring results of the diversion flip and cofferdam construction.	-

### 3.0 Current Work Restrictions and Timing Windows

The table presented below outlines work restrictions applicable during the reporting period for each active<sup>1</sup> Project component location:

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
Tx-Line	Segment 5, 7, 8 & Stringer Line Alignment	Within 150m of wetlands or 100m of Coastal Tailed-Frog Streams	IEM presence is required when clearing within 150m of wetlands or 100m of Coastal Tailed-Frog Streams, to ensure clearing area is minimized.
		Riparian Vegetation Management Areas (RVMA)	IEM monitoring is required during clearing within RVMAs.
		Salmon Migration Period and Bald Eagle Roosts	Construction of the transmission line within 500m of Alena Creek, 29.2 km Tributary, South Creek, Rohb Creek must be conducted outside of October 15 – December 31 and Sampson Creek and Railroad Creek must be conducted outside of August 15 to December 31.
		Ungulate Winter Range (UWR)	<p>According to EAC #E13-01 Amendment 5 and the General Wildlife Exemption Measures Approval dated October 28, 2014, the following mitigation measures must be enacted to extend Tx-line construction activities beyond November 1 and up to December 15 within Moose Winter Range Forest Management Zone u-5-002 J55/54-204-RE in Segment 5 &amp; up to December 31 within MWRFMZ u-5-002 J55/54-204-RO in Segment 7:</p> <ul style="list-style-type: none"> <li>• The IEM must oversee all construction activities in Segment 5 &amp; 7.</li> <li>• Helicopter flight paths must be determined by a QP in order to avoid, as much as possible, wildlife and wildlife habitat within the vicinity of proposed works.</li> <li>• Snow fall accumulation within the Moose Winter Range Forest Management Zone (u-5-002 J55/54-204-RO) must be monitored daily along the Lillooet South FSR. If snow depth exceeds 30 cm and remains at that depth for 8 hours, construction must be suspended immediately and may not resume in 2014.</li> </ul>

<sup>1</sup> CE did not perform construction activities in the month of December; therefore timing restrictions related to the power generating components of the Project have been omitted from this table.

## 4.0 Upper Lillooet River Hydroelectric Facility & Boulder Creek Hydroelectric Facility – Monitoring Results

### 4.1 Construction Camp & 38 km Laydown

#### Winter Operations:

- All CE winter operations are restricted to the Construction Camp (Photo 1) and 38 km laydown (Photo 2) areas. Works included snow removal (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths), and routine maintenance of construction equipment within the mechanic shop at the 38 km laydown.
- Signs have been posted at all construction areas where works have been closed for the winter to notify the public of the dangers of entering closed construction sites (Photo 3).

#### Environmental Summary:

- The IEM performed an inspection of the active ULRHEF and BDRHEF sites on December 2 and December 18, 2014. The inspections showed that CE was adhering to their Winter Operations Plan.
- CE performed daily inspections of the electric fence and fuel storage areas and recorded results in a daily inspection log. Weekly reports were prepared by CE to report on site activities and conditions onsite. These reports were provided to the IEM, for review. No concerns were noted.

#### Photos:



Photo 1 – Conditions at the construction camp pad #3 (December 18, 2014).



Photo 2 – Conditions at fuel storage area at the 39 km laydown (December 18, 2014).





Photo 3 – Example of sign boards posted at all closed construction areas (December 18, 2014).

## 4.2 *Water Quality Results*

The IEM has suspended the weekly WQ monitoring program for the remainder of the winter shutdown period. Weekly water quality monitoring will resume at the start of the 2015 construction season according to the conditions outlined in the Surface Water Quality Protection Plan.

## 4.3 *Recommendations*

IEM recommendations for the ULRHEF and BDRHEF are as follows:

- The IEM recommends that work sites are closely monitored during the spring melt period to verify the effectiveness of installed winterization and ESC measures, and ensure that regular maintenance is performed as needed.

## 4.4 *Upcoming Works*

All construction activities have now ceased for 2014 and will resume in the spring of 2015. A small crew will work to monitor and maintain the construction camp and 38km laydown area during the winter months. The IEM will perform at minimum bi-monthly audits during the winter shutdown period to document compliance with the Winter Operations Plan.

## 5.0 **Transmission Line – Monitoring Results**

### 5.1 *Transmission Line Construction Activities*

#### Right-of-Way Clearing:

- Clearing the Stringer Line RoW occurred from December 1 – 6, 2014. Clearing included hand falling and tree topping within RVMAs and clearing within 100m of CTF streams.
- Brushing of a helipad along a Segment 11 access road was completed on December 15.

#### Existing Road Upgrades and Access Road Construction

- Transmission line access road upgrades/construction activities were suspended in Segment 8 following the failure of a wood box culvert during road upgrade activities on access road 197.2. WEL prepared and submitted a finalized EIR on December 8, 2014 (*EIR014*, See Section 8.2). Works required for temporary deactivation/winterization of Segment 8 access road 197.2 was assessed during a site inspection on December 12, and works were completed under IEM supervision on December 15 (Photo 4).
- Repairs to the Salmon Main road were completed from December 16 – 19, and included inlet culvert repairs, three culvert installations, road resurfacing, and the repair of small roadside slope failures.

#### Transmission Line Pole Installation, Line Stringing and Clipping

- Construction of the Stringer Line pole foundations began during this reporting period. All excavation within RVMAs and CTF stream buffers was monitoring by the IEM.
- Foundation construction and structure framing works were performed in Segments 5 (Photo 5) & 7, and in Segment 9 at structure 202.

#### Environmental Summary:

- Heavy rains from December 8 – 10 resulted in the exceedance of the rainfall shutdown guidelines and subsequent suspension of all Tx-line activities from December 10 – 15. The heavy rains caused road washouts and small slope failures along the Salmon Main road. Affected areas were assessed by WEL, their subcontractors, and the IEM on December 12. Mumleqs completed the repair works as planned from December 16 – 19, and the IEM completed water quality monitoring during all activities involving water management. Berm and pump diversions were installed prior to each culvert installation and culvert inlet repair to ensure works were performed in the dry (Photo 6). No water quality exceedances were noted in receiving waters during road drainage repair works along the Salmon Main, and no works were completed within CTF streams. Temporarily elevated turbidity pulses were noted in road side drainages and ephemeral watercourses during commissioning of newly installed culverts on December 17 (54.0 NTU) and 19 (57.5 and 43.7 NTU); however, these drainages flowed subsurface prior to reaching fish or CTF habitats. Water quality in Salmon Slough remained unaffected throughout the work activities. Water quality results are presented in Section 5.2.
- Water quality was also monitored during seasonal deactivation/winterization of access road 197.2 in Segment 8. Two temporary turbidity pulses were noted by the IEM during the road deactivation works, including a peak of 15.1 NTU in Stream 185a and a peak of 26.9 NTU in Hillaby Creek. Temporarily elevated turbidity lasted for less than 25 minutes in both instances. The cross ditch excavations were performed through the dry sections of the access road prior to connecting the road side drainage to the newly installed cross ditch. The elevated turbidity pulses were observed to be caused by the washing of the bottom of the new cross ditches. Water quality results are presented in Section 5.2.
- According to EAC #E13-01 Amendment 5, the IEM was onsite to oversee construction activities in Segment 5 & 7 during this reporting period. Snow fall accumulation was recorded following new snow fall, within the Moose Winter Range Forest Management Zone (u-5-002

J55/54-204-RO) at 2.5km of the Lillooet South FSR, and did not exceed 30cm during this reporting period.

- The IEM was present as required when clearing activities occurred within 150m of wetlands, 15m RVMAs (30m for CTF streams), 100m of Coastal Tailed Frog Streams, Class 1 & 2 suitable Grizzly Bear WHA and/or suitable forage habitat, moose and deer UWR, and within legally designated Old Growth Management Areas (OGMAs). All flagged boundaries were respected during clearing activities. No environmental issues were observed.

Photos:



Photo 4 – Segment 8 crossing ditching above Hillaby Creek (December 15, 2014).



Photo 5 – Segment 5 pole dressing works (December 2, 2014).



Photo 6 – Example of a sand bag berm and pump diversion installed to divert water around the work area during culvert installations along the Salmon main road (December 19, 2014).

## 5.2 Water Quality Results

The following table presents the results of water quality sampling collected during Tx-line water management activities according to the conditions outlined in the Surface Water Quality Protection Plan. Exceedances of *in-situ* water quality (turbidity) deemed to be caused by project-related activities are highlighted in bold font and are discussed above in Section 5.1.

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
<b>Segment 8 – access road 197.2 seasonal deactivation works</b>						
December 15, 2014	09:31	Background - cross ditch above Hillaby Creek	-	0.35	-	-
	09:46	Hillaby Creek - downstream of works	-	<b>26.9</b>	-	-
	10:10	Hillaby Creek - downstream of works	-	2.03	-	-
	10:40	Background - cross ditch above Stream 185a	-	0.22	-	-
	11:02	Stream 185a – downstream of works	-	<b>15.1</b>	-	-
	11:27	Stream 185a – downstream of works	-	1.9	-	-
<b>Salmon Main Road – road drainage culvert installations</b>						
December 16, 2014	8:51	Background – road side drainage above works	-	1.57	-	-
	10:37	Salmon Slough – downstream of works	-	2.48	-	-
	10:49	Salmon Slough – downstream of works	-	0.74	-	-
December 17, 2014	13:51	Background during culvert install – ephemeral drainage *no surface water connection to salmon slough	-	0.28	-	-
	15:02	Downstream - during culvert commissioning	-	<b>54.0</b>	-	-
	15:30	Downstream - during culvert commissioning	-	3.9	-	-
December 19, 2014	11:12	Background during culvert install – ephemeral drainage *no surface water connection to salmon slough	-	2.88	-	-
	12:50	Downstream - during culvert commissioning	-	<b>57.5</b>	-	-
	13:05	Downstream - during culvert commissioning	-	9.80	-	-
December 19, 2014	13:30	Background during culvert install – road side ditch *no surface water connection to salmon slough	-	3.21	-	-
	14:55	Downstream - during culvert commissioning	-	<b>43.7</b>	-	-
	15:35	Downstream - during culvert commissioning	-	8.32	-	-

### 5.3 Recommendations

- Pre-existing water crossing structures, specifically culvert and bridge crossings, should be regularly inspected prior to and during their use in conjunction with road upgrade activities. Once identified, suspect or inadequate crossing structures should be repaired and/or replaced prior to being crossed.

### 5.4 Upcoming Works

The following new and/or environmentally sensitive construction activities are scheduled to occur along the Tx line in the upcoming reporting period(s):

- Transmission line construction activities will continue in Segment 7 outside of the 200m no disturbance buffer associated with Moose Winter Range Forest Management Zone (u-5-002 J55/54-204-RO).



- Construction of the Stringer Line will continue in 2015. Pole structure installation will begin once the pole foundations are complete. Pole structures 1 – 5 are currently on hold and clearing will begin for this section in 2015.

## 6.0 Wildlife Sightings

As per the CEMP, a wildlife sightings record has been implemented and will be updated regularly by Project Personnel. It is mandatory for all personnel to report wildlife sightings including, but not limited to bears, cougars, mountain goats and deer. Wildlife sighting will be reported and recorded by the contractor(s) and will submitted to the IEM on a weekly basis. Observation or detection of the following species will trigger notification to identified parties according to the following table. No wildlife observations were reported to the IEM in the month of December 2014.

Species Observed or Detected	Notification Period	Agencies to be Notified
Northern Rubber Boa	Immediately	IEM, Owner
Grizzly Bear	24hrs	IEM, Safety Officer, Conservation Officer, Owner
Wolverine Den	24hrs	IEM, MFLNRO, Owner
Spotted Owls	24hrs	IEM, MOE, Owner
Mountain Goats	48hrs	IEM, MFLNRO, Owner

## 7.0 Mountain Goat Monitoring Program

The daily Mountain Goat Monitoring program has been suspended as no construction activities have occurred within 500m of Mountain Goat winter range habitats in December. Daily monitoring will resume in the spring of 2015, once construction activities resume.



## 8.0 Environmental Issues Tracking Matrix (ITM)

### 8.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

ITM Tracking Legend:		Work Item Open					
		Work Item Complete					
		Issue Closed					
Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
<i>next ITM – ULR#23</i>							

### 8.2 Transmission Line

ITM Tracking Legend:		Work Item Open					
		Work Item Complete					
		Issue Closed					
Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
TX#2	Open	Segment 8 – Access road 197.2/tributary to Hillaby Creek	Wood box culvert failure during road upgrade works	1 Prepare and submit EIR#014 outlining the root cause of the incident and how it will be avoided in future.	November 28, 2014	November 30, 2014	December 8, 2014
				2 A cross ditch was installed in the dry across the road surface to permit the area upstream of the access road to drain without causing significant erosion. The cross ditch was installed as temporary mitigation immediately following the wood box culvert failure. An appropriately sized culvert will be installed to replace the failed wood box culvert prior to resuming road upgrade works along access road 197.2.			
<i>No outstanding environmental issues (next ITM – Tx#3)</i>							









## Environmental Incident Reporting Form

<b>General Information</b>	
<b>Project Name:</b> Upper Lillooet Hydro Project	<b>Project Component:</b> ULHP Transmission Line Access Road 197.2
<b>Time/Date of Incident Start:</b> 10:00 am/ November 28, 2014	<b>Time/Date Incident Stopped:</b> 10:10 am/ November 28, 2014
<b>Date of Report:</b> December 1, 2014	<b>Project Incident Report Number:</b> WEL_EIR 02/WEL-EIR-014
<b>Report Prepared By:</b> Robert Taylor	
<b>Contractors Environmental Manager:</b> Pontus Lindgren	
<b>Independent Environmental Monitor (Sartori Environmental Services):</b> Stephen Sims/Tom Hicks	
<b>Licensee's Environmental Manager:</b> Julia Mancinelli	

<b>Contact Information for Company Involved in Incident</b>	
<b>Company:</b> Mumleqs	<b>Address:</b> PO Box 187, Pemberton, BC, V0N 2L0
<b>Phone #:</b> 604-894-3353	<b>Email:</b> dave@lizziebay.com
<b>Contact Person:</b> Dave Paterson	<b>Position:</b> Project Manager

<b>Incident Type (check all that apply)</b>			
<b>Encroachment of an Environmentally Sensitive Area (e.g. Riparian/Wildlife Buffer)</b> Please provide details in "Description" section below.	<input checked="" type="checkbox"/>	<b>Adverse Impacts to Fish/Wildlife (e.g. Mortality/Injury)</b> Please provide details in "Description" section below.	<input type="checkbox"/>
<b>Water Quality/Quantity</b> Please provide details in "Description" section below.	<input checked="" type="checkbox"/>	<b>Hazardous Material Spills (to ground or water)</b> Please provide details in description section in regards to the: <ul style="list-style-type: none"> <li>perceived extent of damage,</li> <li>type, quantity and area of the spill,</li> <li>containment procedures, and</li> <li>environmental features in close proximity to the spill.</li> </ul>	<input type="checkbox"/>
<b>Disturbance of known or unknown archeological /heritage site</b> Please provide details in "Description" section below.	<input type="checkbox"/>	<b>Air Quality</b> Please provide details in "Description" section below.	<input type="checkbox"/>
<b>Spill reported to external agencies</b> If yes, describe the receiving environment and substance/quantity spilled.	<input type="checkbox"/>	<b>Other</b> Please provide details in "Description" section below.	<input type="checkbox"/>

**Incident Profile**

<b>Weather at time of incident</b>	 <input type="checkbox"/> Clear	 <input checked="" type="checkbox"/> Partly Cloudy/ Variable	 <input type="checkbox"/> Cloudy	 <input type="checkbox"/> Showers/ Periods of Rain	 <input type="checkbox"/> Rain	 <input type="checkbox"/> Heavy Rain (>25mm in 24hr)	 <input type="checkbox"/> Storm (Heavy rain and high winds)	 <input type="checkbox"/> Snow
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**Specific Location:** Road 197.2, 1+911

**Description and Cause of Incident:**  
Description:

- Wood box culvert failed during road resurfacing works. The stream flow was partially blocked causing the stream to back water. The excavator operator dug a cross ditch (in the dry) parallel to the culvert through the road surface to channel flow over the road without eroding the running surface.
- The rock truck was able to drive away from the WBC.
- Works were halted, equipment was parked and workers left the site once they were confident the site was stable.
- The work site is out of a mobile service area. Once the workers were in communication range, they were not able to contact the supervisor due to the power outage issues in Pemberton from the extreme weather occurrences.
- The IEM was notified late in the day due to the break in communication between the workers and the appropriate supervisors.

Cause:

- Rock truck tire punched through the wood box culvert while traveling unloaded along road.

**Incident Witness:** Mumleqs excavator and rock truck operators.

<b>Were there any Potential Environmental impacts as a result of the incident?</b> (e.g., surface contamination, storm sewers, or fish/wildlife mortalities)	<b>Yes</b> <input checked="" type="checkbox"/>	<b>None Observed</b> <input type="checkbox"/>
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**If Yes, please describe:**

- There was a plume of sediment introduced into the stream when the culvert collapsed and again once the stream redirected through the cross-ditch.
- No hydrocarbon spills occurred.

<b>Has Wildlife Salvage Protocol been followed?</b>	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input checked="" type="checkbox"/>	<b>N/A</b> <input type="checkbox"/>
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**If No, please explain:**  
 No salvage was necessary. This was an S6 stream (non-fish bearing and no Coastal Tailed Frog presence)

<b>Water Quality Samples Collected?</b>	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input checked="" type="checkbox"/>	<b>N/A</b> <input type="checkbox"/>
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**If yes, attach results of water quality analysis to report in table format. Include Laboratory analysis if completed.**  
**If No please explain:**  
 The scheduled works were only road resurfacing. There was not a requirement for WQ sampling or to have an IEM on site.

Have applicable photos and/or drawings been attached to the incident report?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
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**Incident Response Measures**

The excavator operator built a cross ditch to allow stream flow to continue across the road and back into the channel downstream. Works were halted once the area was stabilized.  
 Workers travelled to a location within mobile service, however, due to the extreme weather conditions Pemberton's power was sporadically in and out. This caused a delay with communications between workers and supervisors. The incident notification was not issued until after 6pm.

**Actions to Prevent Incident Recurrence**

Before the incident, mitigation measures were:

- Prior to works commencing, there was a review of the work plan between the site supervisor and the workers.
- Mumleqs workers were oriented and, therefore, aware of the requirements detailed within the CEMP and all of the associated EPPs.

After the incident, additional mitigation measures are or will be:

- Improvement with efficiency in communication.
- A satellite phone is issued to the on-site first aid attendant and workers will be advised to use the sat-phone to attempt contacting the supervisor and/or the IEM.

**Notification Record**

Reported to	Contact Information	Contacted		Date and Time Reported	Reported By	Method of Reporting
		Yes	No			
<b>External</b>						
MFLNRO	Jim Davies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	December 4, 2014	Julia Mancinelli	Email
BC EAO	Chris Parks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	December 4, 2014	Julia Mancinelli	Email
PEP	1-800-663-3456	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
MOE Staff		<input type="checkbox"/>	<input checked="" type="checkbox"/>			
DFO		<input type="checkbox"/>	<input checked="" type="checkbox"/>			
DFO		<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Environment Canada	604-666-6100	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Canadian Coast Guard	604-666-6011	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Local Fire Rescue	911	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

Notification Record						
Reported to	Contact Information	Contacted		Date and Time Reported	Reported By	Method of Reporting
		Yes	No			
<b>Internal</b>						
Owner Innergex	604-894-6862 Liz Scroggins	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/11/14 6:20pm	Robert Taylor	Email
IEM Sartori	604-987-5588 Tom Hicks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/11/14 6:20pm	Robert Taylor	Email
Owner Innergex	604-633-9990 Julia Mancinelli	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/11/14 10:01 pm	Liz Scroggins	Email
		<input type="checkbox"/>	<input type="checkbox"/>			
		<input type="checkbox"/>	<input type="checkbox"/>			
		<input type="checkbox"/>	<input type="checkbox"/>			

**Contractor's Environmental Manager:**

Robert Taylor	Clearing Coordinator, Westpark	<i>Robert Taylor</i>	2014-01-04
Print Name	Position and Company	Signature	Date

**Reviewed by:**

Tom Hicks	Lead Environmental Monitor, Sartori Environmental Services	<i>Tom Hicks</i>	2014-01-04
Print Name	Position and Company	Signature	Date



**Photo documentation:**



Collapsed WBC in foreground, cross-ditch in background.





Cross-ditch