
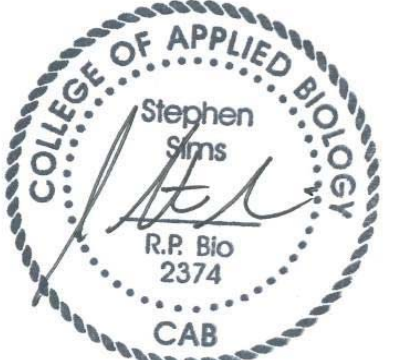


Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #34

Reporting Period: August 10th – August 16th, 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)

Distribution List		Prepared By
Name	Organization	
Trevor Andrews	Fisheries and Oceans Canada	 <p>J. Alex Sartori, RPBio Independent Environmental Monitor (IEM)</p>  <p>J. Stephen Sims, RPBio Delegated IEM</p> <p>Date Prepared: August 27, 2014 Date Submitted: August 29, 2014</p>
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Danielle Cunningham	MFLNRO – Land and Resources	
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Nathan Braun	BC Environmental Assessment Office	
George Steeves	True North Energy – Independent Engineer	
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D'Arcy Soutar	CRT-ebc Construction Inc.	
Pontus Lindgren	Westpark Electric Ltd.	
Harriet VanWart	Westpark Electric Ltd.	
	Lil'wat Nation	

Owner Construction Permits and Approvals

Environmental Assessment Certificate No.E13-01 (Amendment 1, 2, 3 & 4)
Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-000303 (Amendment 1)
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) No. L49717
Occupant Licence to Cut (BDRHEF – km 38 laydown) No. L49698
Occupant Licence to Cut (BDRHEF Amendments 1, 2) No. L49816
Occupant Licence to Cut (TX Line Amendment 1, 2, 3) 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

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*

ACRONYMS:

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

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:

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Sunday August 10	MS	Sun and Cloud	<p><i>BDRHEF Tunnel Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>BDRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Powerhouse excavation <p><i>BDRHEF Intake Access Road</i></p> <ul style="list-style-type: none"> • New road – remained closed due to IE issued Stop Work order, no construction activities (Stop Work Order rescinded) <p><i>ULRHEF Downstream Tunnel Portal</i></p> <ul style="list-style-type: none"> • No construction activities <p><i>ULRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Dewatering – No construction activities <p><i>ULRHEF Intake Diversion Channel</i></p> <ul style="list-style-type: none"> • Closed due to landslide risk – No construction activities <p><i>FSR</i></p> <ul style="list-style-type: none"> • Clearing for 8.5km snowmobile parking lot <p><i>TX-Line</i></p> <ul style="list-style-type: none"> • Segment 5 – Ground works from structures 114-121 • Segment 10 – Formula installing Ryan River bridge
Monday August 11	MS,TH	Sun and Cloud	<p><i>BDRHEF Tunnel Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>BDRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Powerhouse excavation <p><i>BDRHEF Intake Access Road</i></p> <ul style="list-style-type: none"> • No construction activities, pre-activity meeting following rescission of Stop Work Order) <p><i>ULRHEF Downstream Tunnel Portal</i></p> <ul style="list-style-type: none"> • Excavation of sedimentation ponds • Tunnel portal construction works <p><i>ULRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Dewatering – No construction activities <p><i>ULRHEF Intake Diversion Channel</i></p> <ul style="list-style-type: none"> • Closed due to landslide risk – No construction activities <p><i>FSR</i></p> <ul style="list-style-type: none"> • Clearing for 8.5km snowmobile parking lot <p><i>TX-Line</i></p> <ul style="list-style-type: none"> • Segment 5 – O'Brien Bros conducting ground works at structures 116 and 117 • Segment 10 – Formula installing Ryan River bridge

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Tuesday August 12	DA, KC, MS	Sun and Cloud	<p><i>BDRHEF Tunnel Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>BDRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Powerhouse excavation <p><i>BDRHEF Intake Access Road</i></p> <ul style="list-style-type: none"> • New intake access road open, mobilizing of equipment to site <p><i>ULRHEF Downstream Tunnel Portal</i></p> <ul style="list-style-type: none"> • Finishing sedimentation ponds • Tunnel portal construction works <p><i>ULRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Dewatering – no construction activities <p><i>ULRHEF Intake Diversion Channel</i></p> <ul style="list-style-type: none"> • Closed due to landslide risk – No construction activities <p>FSR</p> <ul style="list-style-type: none"> • Construction of 8.5km snowmobile parking lot <p><i>TX-Line</i></p> <ul style="list-style-type: none"> • Segment 5 – O'Brien Bros conducting ground works • Segment 10 – Formula installing Ryan River bridge
Wednesday August 13	DA, KC, MS	Sun and cloud	<p><i>BDRHEF Tunnel Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>BDRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Powerhouse construction activities <p><i>BDRHEF Intake Access Road</i></p> <ul style="list-style-type: none"> • Mobilization of equipment • Road works commenced <p><i>ULRHEF Downstream Tunnel Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>ULRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Dewatering – No construction activities <p><i>ULRHEF Intake Diversion Channel</i></p> <ul style="list-style-type: none"> • Closed due to landslide risk – No construction activities <p>FSR</p> <ul style="list-style-type: none"> • Construction of 8.5km snowmobile parking lot <p><i>TX-Line</i></p> <ul style="list-style-type: none"> • Segment 1, 2 and 5 – O'Brien Bros conducting ground works • Segment 4 – Line crews framing at structures 60-65 • Segment 5 – Spider how working at structure 123 • Segment 10 – Formula installing Ryan River bridge

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Thursday August 14	DA, VD	Sun and cloud	<p><i>BDRHEF Tunnel Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>BDRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Powerhouse excavation works <p><i>BDRHEF Intake Access Road</i></p> <ul style="list-style-type: none"> • Road construction • Lizzie Bay fallers clearing the crane pad <p><i>ULRHEF Downstream Tunnel Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>ULRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Dewatering – No construction activities <p><i>ULRHEF Intake Diversion Channel</i></p> <ul style="list-style-type: none"> • Closed due to landslide risk – no construction activities <p><i>TX-Line</i></p> <ul style="list-style-type: none"> • Segment 2 – O'Brien Bros conducting ground works at structure 36 • Segment 3 – GMS clearing a trail from structure 41-43 • Segment 4 – Line crews conducting ground works at structures 57, 58, and 59 • Segment 5 – Line crews framing at structure 123, spider hoe working at structure 115 • Segment 10 – Formula installing Ryan River bridge
Friday August 15	DA,SS,VD	Sunshine	<p><i>BDRHEF Tunnel Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>BDRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Powerhouse excavation works <p><i>BDRHEF Intake Access Road</i></p> <ul style="list-style-type: none"> • Road construction works <p><i>ULRHEF Downstream Portal</i></p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p><i>ULRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Dewatering – No construction activities <p><i>ULRHEF Intake Diversion Channel</i></p> <ul style="list-style-type: none"> • Re-opened – Mobilizing equipment to site • Drilling, blasting and excavating diversion channel <p><i>TX-Line</i></p> <ul style="list-style-type: none"> • Segment 2 – O'Brien Bros conducting ground works • Segment 4 – Line crews conducting ground works • Segment 5 – Line crews framing at structure 123, spider hoe working • Segment 10 – Formula installing Ryan River bridge

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Saturday August 16	DA, TH, VD	Sun and cloud	<p>BDRHEF Tunnel Portal</p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse construction works <p>BDRHEF Intake Access Road</p> <ul style="list-style-type: none"> • Road construction <p>ULRHEF Downstream Portal</p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Dewatering – No construction activities <p>ULRHEF Intake Diversion Channel</p> <ul style="list-style-type: none"> • Drilling, blasting and excavating of diversion channel <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 2 – O'Brien Bros conducting ground works • Segment 4 – Line crews conducting ground works • Segment 5 – Line crews framing and spider hoe working • Segment 10 – Formula installing Ryan River bridge

IEM Team Personnel: DA – Danita Abraham; KC – Kirsten Cornwall; MS – Mandala Smulders; TH – Tom Hicks; SS – Stephen Sims; VD – Vanessa Dan

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.
August 10	<i>Email</i>	<i>SES, JEM, CRT-ebc, Innergex,</i>	The IE submitted a letter rescinding the Stop Work Order for the Boulder Creek Intake Access Road and Crane Pad as CRT-ebc had adequately address the 6 conditions outlined in the Stop Work Order	<i>ULR#17 & ULR#18</i>
August 11	<i>Pre-work meeting</i>	<i>SES, CRT-ebc, Hedberg, Innergex,</i>	Pre-activity meeting to review the revised work plan for the new Boulder Creek Intake Access Road and Crane Pad. Discussion focused on access to steep slopes for removing unstable fill and steep terrain safety requirements.	<i>N/A</i>
	<i>Pre-work meeting</i>	<i>SES, Innergex, CRT-ebc</i>	Pre-activity meeting to discuss the ULR HEF Downstream Tunnelling work plan. Discussions focused on construction of sediment treatment/infiltration ponds to be constructed and used for the management of anticipated seepage water.	<i>N/A</i>
August 14	<i>Email</i>	<i>CRT-ebc, SES, Innergex,</i>	SES was informed of the commissioning of the new section of the Lillooet River FSR (Truckwash Creek Pass & Bridge).	<i>N/A</i>

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
August 15	Pre-work meeting	SES, WEL, Mumleqs, Innergex	Pre-activity meeting to discuss the specific requirements of the Segment 3 Tx-line construction work plan and review falling boundaries.	N/A
August 16	Pre-work meeting	SES, CRT-ebc, Innergex	Pre-activity meeting to discuss the BDR powerhouse concrete foundation construction work plan. Discussions confirmed that all concrete pours and machinery will work outside of 30m from Boulder Creek, and dewatering and pH management plans were reviewed.	N/A
			Pre-activity meeting to discuss the ULR powerhouse concrete foundation construction work plan. Discussions focused on dewatering plans and pH affected water management during concrete pours and green cutting works.	

3.0 Current Work Restrictions and Timing Windows

The table presented below outlines work restrictions applicable during the reporting period for each active Project component location:

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
Tx-Line	Segments 1 – 7, & 9-10	Suitable Raptor Nesting Habitat	IEM presence is required when clearing within suitable Northern Goshawk (NOGO), Spotted Owl (SPOW), and Western Screech-Owl (WESO) nesting habitat during the breeding period. A nest survey is required by WEL QPs prior to clearing within 600m of suitable Peregrine Falcon (PEFA) nesting habitat.
		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.
		Old Growth Management Areas (OGMAs)	IEM monitoring is required when clearing within legally designated OGMAs, to ensure clearing area is minimized.
		Ungulate Winter Range (UWR)	IEM monitoring is required when clearing within identified deer and moose UWR, to ensure clearing area is minimized.
		Suitable Class 1 & 2 Grizzly Bear forage habitat	IEM monitoring is required when clearing within identified Class 1 & 2 Grizzly Bear forage habitat, to ensure clearing area is minimized.
Lillooet River FSR Snowmobile parking area	8.5km of the Lillooet River FSR	Grizzly Bear WHA 2-399	IEM monitoring is required when clearing within the WHA polygon at any time of year, to ensure clearing boundaries are respected and minimized to the extent possible.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
<i>ULRHEF powerhouse, and Intake diversion channel</i>	<i>Within 50m of identified archeologically significant area</i>	<i>Archaeologically significant site EdRu-3</i>	<i>The ASMP recommends that an archaeological technician from the Lil'wat Nation be present to monitor initial ground-disturbance activities within 50 m of the EdRu-3 site boundaries.</i>
	<i>Within 30m of the Upper Lillooet River</i>	<i>Riparian area and fish bearing streams</i>	<i>IEM presence is required when working within 30m of the Upper Lillooet River. Instream acoustic pressure monitoring required when blasting within 30m of the Upper Lillooet River.</i>
<i>Lillooet River FSR; ULRHEF intake access; FSR realignment at Truckwash Creek</i>	<i>Access roads above the lower limit of the 200m buffer Truckwash Creek Migration Corridor to the ULRHEF intake; including FSR realignment at Truckwash Creek</i>	<i>Mountain Goat UWR</i>	<i>If a goat is observed within 500 m of construction operations, construction must cease for at least 48 hours. The IEM must record and submit all goat observations to FLNR within 48 hours.</i>

4.0 Hydroelectric Facilities

4.1 Ancillary Components – Monitoring Results

38km Laydown

- Material crushing and screening plant operation continued this week. A watering hose was used effectively for dust control at the screening plant. No environmental concerns were noted.

Lillooet River FSR (8.5 km) Snowmobile Parking Area

- Clearing continued on August 10th, within the Grizzly Bear WHA 2-399 polygon. The IEM was present to ensure clearing boundaries were respected and verify that clearing was minimized to the extent possible. Stripping and grubbing, grading and capping were completed following clearing during this reporting period.

4.2 Boulder Creek Hydroelectric Facility – Monitoring Results

BDRHEF Downstream Portal and Powerhouse

- Tunneling activities (including: drilling, blasting, excavation, rock bolts and shotcrete/mesh installation) continued.

- The settling ponds were effectively used to manage water from seepages encountered during tunnelling activities and to manage excess process water this week. No discharge from the sediment ponds occurred this week; therefore, no WQ samples were collected.
- The powerhouse excavation was completed and concrete form works began in preparation for the mud slab concrete pour, following a pre-activity meeting on August 16th. Seepage water from the excavation seepage is being directed to a central sump and pumped to the sediment ponds currently being used to manage seepage/process water from the tunneling operations (Photo 2).

BDRHEF Intake Access Road & Crane Pad

- A Stop Work Order was issued by the Owner on July 25th, 2014 and by the IE (True North Energy), on July 26th for all activities at the Boulder Creek Intake New Access Road and Crane Pad (*ULR#18*). On August 10th the Owner and IE rescinded their respective Stop Work Orders as CRT-ebc was able to provide all information requested by the IE. On August 11th, a pre-activity meeting was held to review the repair and stabilization works to be executed as outlined in the revised work plan. Mobilization of equipment occurred following the pre-activity meeting and repair work resumed under IEM supervision for the remainder of the week. The IEM can confirm that all excavator operators performing the repair and stabilization works demonstrated due care when operating on and adjacent to steep slopes. To the extent possible operators prevented rocks and debris from rolling downhill during the repair works to prevent additional impacts to standing timber outside of the approved OLTC boundaries.

Environmental Summary:

- Seepage flowing out of the tunnel continues to be collected at the portal tunnel entrance in a sump and this water is then pumped from the sump to the oil/water separator, pH adjustment holding tank, and settlement ponds for treatment. The pH was monitored daily by the contractor and a CO₂ diffuser was used as necessary to ensure pH was within acceptable surface water quality guidelines (pH 6.5 – 9). No discharge from the treatment ponds occurred during this reporting period; therefore, the IEM did not collect WQ results.
- Hydro-seeding of exposed slopes at the downstream tunnel portal face has not resulted in vegetation growth that will help to stabilize the slope. Additional hydro-seeding applications during appropriate weather conditions or other slope stabilization measures (e.g. poly sheeting, coco matting, etc.) may be required to ensure slopes are protected prior to fall rain events.
- Water from the Boulder Creek water withdrawal site authorized in the Short Term Water Use Approval (*No.A2006123*) was used effectively for dust suppression above 37.5km of the Lillooet River FSR and on active construction site access roads.
- The gravity fed water diversion system was used in tunneling and shotcrete process works in accordance with Short Term Water Use Approval (*No.A2006123*). No WQ or environmental concerns were noted.

Photos:



Photo 1. Ditching and slope stabilization along the new Boulder Intake access road following prescription outlined in the work plan. (August 15, 2014).



Photo 2. Dewatering of seepage from within the powerhouse excavation was pumped to the sediment ponds. Water has not yet reached the second treatment pond (August 15, 2014).

Water Quality Results

The following table presents the results of the routine water quality sampling program for the BDRHEF. The IEM is undertaking a weekly monitoring program according to the conditions outlined in the Surface Water Quality Protection Plan. The regular monitoring sites have been selected to quantify WQ conditions within the Lillooet River upstream and downstream of active construction areas. The IEM acknowledges the natural variability of instream WQ conditions in Boulder Creek due to seasonal fluctuations in snowmelt. In the event that an exceedance of *in-situ* water quality (turbidity or pH) is deemed to be caused by project-related activities, the IEM will highlight the exceedance, discuss the cause, and outline measures undertaken by the Contractor to correct the issue. When an exceedance cannot be attributed to project related activities, the exceedance will be marked by an asterisk (*).

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
ROUTINE WQ LOCATIONS						
August 13	N/A	BDR Background – BRDHEF upstream of intake *not currently accessible*	N/A	N/A	N/A	N/A
August 13	N/A	BDR #1 – Downstream of BDRHEF intake *not currently accessible*	N/A	N/A	N/A	N/A
August 13	11:30	BDR #2 – Upstream of BDRHEF Powerhouse	7.7	30.1	28	12.1
August 13	11:41	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.7	26.7	28	13.4

4.3 Upper Lillooet River Hydroelectric Facility – Monitoring Results

ULRHEF Powerhouse and Access Road

- Excavation is complete and work is on hold pending the ULR powerhouse concrete LTC.
- Sediment ponds were used to treat seepage water from within the powerhouse excavation (Photo 3). Water from the ponds discharged to vegetation prior to reaching the Lillooet River. Water quality was taken upstream and downstream of the discharge point (within the mixing zone) daily when water reached the Lillooet River. No WQ concerns were noted (see Results below)

ULRHEF Intake and Access Roads

- Works associated with the intake diversion channel resumed on August 15th once the landslide risk fell to within acceptable limits. Works included mobilization, drilling, blasting, excavation, and slope stabilization.

ULRHEF Downstream Portal

- Drilling & blasting of exposed bedrock surrounding the tunnel portal was completed and tunneling began following the pre-activity meeting on August 11th. Sediment ponds were installed adjacent to Truckwash Creek on August 11th and 12th as outlined on the work plan. The IEM was onsite to oversee the sediment pond construction. The pond outlet is directed to a vegetated area away from Truckwash creek. Blast rock was hauled to the lower spoil area and managed according to the ARD management plan. No environmental concerns were noted.

Environmental Summary:

- On August 15th and 16th work resumed at the intake diversion channel. The IEM scheduled a monitor to be onsite full time for all blasts and excavation activities to document that all efforts to prevent rocks from entering the Lillooet River were made and to record approximate quantities in the event rocks do enter the River. The IEM recognizes that large rocks are not a deleterious substance and that rock entering the river at this location is unlikely to cause serious harm to fish given the marginal fish habitat present at this location due to the water velocity bed materials within the rock canyon.
- A gravity feed water extraction system was used for drilling activities according to the conditions of the Short Term Water Use Approval (No.A2006123) (Photo 4).
- Dewatering of the powerhouse excavation into the sediment ponds will be monitored daily and WQ will be recorded when discharge to vegetation reaches the Lillooet River.

Photos:



Photo 3. Constructed sediment ponds to be used for treatment of seepage water emanating from the ULRHEF downstream tunnel portal. (August 15, 2014).



Photo 4. Tunnel stabilization activities at the ULR downstream portal. (August 15, 2014).

Water Quality Results

The following table presents the results of the routine water quality sampling program for the ULRHEF. The IEM is undertaking a weekly monitoring program according to the conditions outlined in the Surface Water Quality Protection Plan. The regular monitoring sites have been selected to quantify WQ conditions within the Lillooet River upstream and downstream of active construction areas. The IEM acknowledges the natural variability of instream WQ conditions in the Lillooet River due to seasonal melt fluctuations and large tributary inputs. In the event that an exceedance of *in-situ* water quality (turbidity or pH) is deemed to be caused by project-related activities, the IEM will highlight the exceedance, discuss the cause, and outline measures undertaken by the Contractor to correct the issue. When an exceedance cannot be attributed to project related activities, the exceedance will be marked by an asterisk (*).

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
ROUTINE WQ LOCATIONS						
August 13	10:00	ULR Background – ULRHEF Intake	8.2	72.1	56	14.2
August 13	10:15	ULR # 1 – Upstream of ULRHEF Powerhouse	7.9	70.0	40	11.4
August 13	11:02	ULR #2 – Downstream of ULRHEF Powerhouse between 40.5k and 41k	7.7	68.3	35	15.2
August 13	11:20	ULR #3 – Upper Lillooet FSR 38km Laydown – D/S of Boulder confluence	7.7	43.6	30	14.9
August 13	17:50	ULR #4 – Upper Lillooet FSR 24km – D/S of all works and Meager confluence	8.0	103*	47	13.1

SITE-SPECIFIC WQ LOCATIONS						
August 10	13:32	Lillooet River – Upstream of powerhouse dewatering input	8.0	69	38	15.1
August 10	13:30	Lillooet River – Downstream of powerhouse dewatering input	7.9	60.4	37	15.8
August 13	10:40	Lillooet River – Upstream of powerhouse dewatering input	8.2	72.1	47	12.3
August 13	10:47	Lillooet River – Downstream of powerhouse dewatering input	7.9	78.1	31	11.2

4.4 Hydroelectric Facilities – Recommendations

The installation of ESC measures (including hydro-seeding, protection with poly-sheeting) should be performed on all cut-slopes at risk of eroding during rain events. In particular, the steep cut slopes at the ULRHEF diversion channel, ULRHEF downstream tunnel portal, ULRHEF powerhouse, and BDRHEF tunnel portal, are all at risk of developing rills during heavy rain events. Where these cut slopes are permanent a permanent solution is recommended.

The IEM recommends that a shallow interception ditch or swale be installed at the top of the ULRHEF intake diversion channel cut-slope. This ditch/swale should be installed to direct the surface runoff towards the adjacent forested area for infiltration, and prevent it from flowing over the slope. The intent is to prevent further generation of rills that have already begun to develop.

4.5 Hydroelectric Facilities – Upcoming Works

CRT-ebc has confirmed that the failed crossing at 39.7km (*ULR#8*) will be repaired and/or replaced, and the failed culvert at 47km (*ULR#4*) will be remediated by removing debris from within the stream. This work will be completed during the 2014 instream work window following the preparation of a work plan and approval by MFLNRO.

Excavation of the intake diversion channel is scheduled to continue next week at the ULRHEF intake provided the landslide hazard rating is at suitable levels to permit works to continue. Tunneling at the BDRHEF and ULRHEF downstream tunnel portals will continue for the remainder of the season. Foundation preparations at the ULRHEF and BDRHEF powerhouses will continue for the next two weeks. Repair work and slope stabilization of the new sections of the BDRHEF intake access road will continue for the next 4-6 weeks.

5.0 Transmission Line

5.1 Monitoring Results

Segment 1-7 & 9-10

- Pole installation and foundation works continued in Segment 1, 2, 4, & 5 this week.

- Hand clearing occurred along an access trail in Segment 3. No further falling was completed on the TX-Line during this reporting period due primarily to fire hazard.
- Access roads were upgraded/constructed in Segments 7 & 10 this week. The Ryan River bridge footing placement (Photo 5) and abutment construction was completed. Riprap armouring placement occurred above highwater mark (Photo 6) and the bridge was launched (Photo 7) during this reporting period. No environmental concerns were noted during environmental monitoring inspections.

Environmental Summary:

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

Photos:



Photo 5. Placement of Ryan River bridge footing (August 12, 2014).



Photo 6. Riprap placement adjacent to the Ryan River (August 14, 2014).



Photo 8. Ryan River Bridge girders (August 16, 2014).

Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Temperature (°C)
No WQ measurements were recorded at active Tx-line work areas during this reporting period. Construction and clearing activities had no visual effect on WQ.					

5.2 Transmission Line – Recommendations

No recommendations are provided for this reporting period.

5.3 Transmission Line – Upcoming Works

Pole installation and dressing is scheduled to continue in Segment 4 & 5 next week. Clearing is scheduled to continue in Segment 3, 4, 5 & 7 and in Segment 9 and 10. Upcoming transmission line works will be focused on road construction and the Ryan River Bridge deck installation and grouting, pole installation, and completing the clearing within the Segments 3-10.

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. Wildlife Observation forms will be summarized on a monthly basis and appended to the first WEMR of the following month. Observation or detection of the following species will trigger notification to identified parties according to the following table.

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 critical early summer forage period for Mountain Goats has now ended; therefore Mountain Goat Monitoring has been temporarily suspended until the fall monitoring period as outlined in the Mountain Goat Management Plan.

No Mountain Goats were observed within 500m line of sight of construction activities during this reporting period; therefore no work stoppages were required.

8.0 Environmental Issues Tracking Matrix (ITM)

8.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
ULR#4	Open	47km – Lillooet River FSR	A log box structure failed while being crossed by an excavator (<i>EIR002</i>).	1. CRT-ebc to prepare an EIR detailing the cause, description and actions items related to the incident.	May 23, 2014	May 26, 2014.	
				2. IEM to review and approved the EIR.			
				3. CRT-ebc employees will be reminded of spill response procedures and how to use the spill kits in a potential future event.			
				4. CRT-ebc to confirm that load ratings of equipment adhere to maximum crossing structure load ratings.			
				5. Complete FSR and temporary access road crossing assessment by a Qualified Professional.		June 26, 2014	
				6. Determine the requirements for crossing structure remediation or replacement			
				7. Develop a work plan to remediate the failed log box structure and execute the approved plan during the 2014 instream works window. On July 19 th , 2014 CRT-ebc confirmed that the failed crossing structure [at 47km of the Lillooet River FSR; a fish bearing stream] will be remediated by cleaning debris and material from the stream and banks. A work plan will be submitted and mitigation measures prescribed by a QP will be implemented. This work must occur during the instream works window.		September 15, 2014	

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Issue Closed
ULR#8	Open	39.7km – Lillooet River FSR	Stream 9 – log box structure failure (<i>EIR004</i>).	1. Develop a work plan to remediate the failed log box structure and execute during the 2014 instream works window. On July 19 th , 2014 CRT-ebc confirmed that this crossing structure will be repaired or replaced during the 2014 instream works window following MFLNRO approval.	May 28, 2014	September 15, 2014	
ULR#10	Open	Lillooet River FSR	Innergex issued stop work order for heavy hauling on Lillooet River FSR	Recommendations have been submitted to MFLNRO for review and approval. Work plan submission and repairs to be completed prior to September 15 for crossing structures at 39.7km and 47km of the Lillooet River FSR.	May 28, 2014	September 15, 2014	-
ULR#17	Open	BDR Intake Access Road	Damage to standing timber and impacts outside of minimized clearing boundary & approved OLTC limit (both within and adjacent to UWR)	1. Prepare and submit EIR#011 outlining the root cause of the incident and how it will be avoided in future.	July 25 th , 2014	July 30, 2014	August 1, 2014
				2. Assess damage to standing timber and impacts outside of the minimized clearing boundaries and approved OLTC (both within and adjacent to UWR). Preliminary information has been provided to satisfy the requirements of <i>ULR#18</i> , however detailed survey is necessary to confirm impacted areas and access is currently not available due to slope stability issues.	Confirmed in Hedberg report July 25 th , 2014	Pending safe work access – mid-September, 2014	-
ULR#18	Closed	BDR Intake Access Road	STOP WORK ORDER for Boulder Creek Intake Access Road and Crane Pad	Based on the recommendations by Hedberg Associates and the lack of following Work Plans the IE requests the following prior to re-authorizing the commencement of work on the Boulder Creek intake access:	July 26, 2014	July 30, 2014	August 1, 2014
				1. Complete an Environmental Incident Report (“EIR”) within 48 hours. The EIR should describe/quantify both the damage to standing merchantable and the impacts to the area outside the Occupant Licence to Cut (“OLTC”).	2. Submit to the IE a new/updated Work Plans prior to the IE removing the Stop Work Order and reissuing the Leave to Construct Authorization the following:	July 26, 2014	August 10, 2014
				a. encompasses the repair/remediation of the works completed to date;			
				b. implements the recommendations by Hedberg Associates; and			
				c. includes methods to execute to ensure that the road construction meets the approved “Issued for Construction” design.			

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Issue Closed
				3. A qualified professional be on site 2 to 3 times a week to assist with the direction and inspection of the road construction.	July 26, 2014		
				4. Provide as-built drawings of the clearing and impacted boundaries to date for both the access road and crane pad area.	July 26, 2014		
				5. Submission to the IE all site wide ARD rock testing results complete volumes, tracking records and a summary of mitigation where results were positive.	July 26, 2014	August 9, 2014	August 9, 2014
				6. Provide a work plan communication plan that ensures all staff are aware of the approved work plans and adhere to hold points.	July 26, 2014	August 4, 2014	August 4, 2014
<i>next ITM – ULR#19</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 Issue Closed
<i>No outstanding environmental issues (next ITM – Tx#2)</i>							