Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #20

Reporting Period: May 4th – May 10th, 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)

Environmental Assessment Certificate No.E13-01 (Amendment 3)
Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-00303
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
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) No. L49717
Occupant Licence to Cut (BDRHEF – km 38 laydown) No. L49698
Occupant Licence to Cut (Additional Area for HEFs Amendment 2) No. L49816
Occupant Licence to Cut (TX Line \$.1-\$5, Heli Pads) No. L49697 (Amendment 1)

General Wildlife Measure Exemption Approval Letter (TX Line & BDRHEF) File No. 78700-35/06 UWR and 39585-20 WHA Road Use Permit No. 6123-13-02

	Distribution List	Prepared By			
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Matt Kennedy Claude Denault Éric Ayotte Jordan Gagne Ian McKeachie	Innergex Renewable Energy Inc. CRT-ebc Construction Inc. CRT-ebc Construction Inc. CRT-ebc Construction Inc. CRT-ebc Construction Inc.	Delegated Environmental Monitor Date Prepared: May 15, 2014			
D'Arcy Soutar Pontus Lindgren Harriet VanWart	Westpark Electric Ltd. Westpark Electric Ltd. Lil'wat Nation	Date Submitted: May 16, 2014			



ACRONYMS:

AMBNS Active Migratory Bird Nesting Survey
ASMP Archaeological Sites Management Plan

BCEAO British Columbia Environmental Assessment Office

BCWQG British Columbia Water Quality Guidelines

BDRHEF Boulder Creek Hydroelectric Facility

BG Background

BKL Consultants Ltd.

CRT-ebc Construction Inc.

DFO Fisheries and Oceans Canada

DS Downstream

Ecofish Ecofish Research Ltd.
Ecologic Ecologic Consulting

ESC Erosion and Sediment Control

FSR Forest Service Road

GWR Mountain Goat Winter Range Hedberg and Associates Ltd.

IEM Independent Environmental Monitor Innergex Renewable Energy Inc.

ITM Issue Tracking Matrix LTC Leave to Construct

MFLNRO Ministry of Forests, Lands and Natural Resource Operations

MOE Ministry of Environment

RVMA Riparian Vegetation Management Area

SES Sartori Environmental Services

TX Line Transmission Line

ULRHEF Upper Lillooet River Hydroelectric Facility

UWR Ungulate Winter Range VC Valued Component

WQ Water Quality

WEL Westpark Electric Ltd.

WEMR Weekly Environmental Monitoring Report



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:

Day	Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Sunday	May 4	MS	Sunny	Construction Camp Site grading and sub-grade preparation Boulder Powerhouse Stripping and grubbing of the spoil area and powerhouse footprint Upper Lillooet Powerhouse Stripping and grubbing of the powerhouse footprint
Monday	May 5	MS	Sunny	 Construction Camp Site grading and sub-grade preparation Boulder Powerhouse Stripping and grubbing of the spoil area and powerhouse footprint completed Upper Lillooet Powerhouse Stripping and grubbing of the powerhouse footprint
Tuesday	May 6	ТН	Sun and Cloud	 Construction Camp Site grading and final capping material installation Upper Lillooet Powerhouse Stripping and grubbing of the powerhouse footprint
Wednesday	May 7	TH	Sun and Cloud	Construction Camp Site grading and final capping material installation Upper Lillooet Powerhouse Stripping and grubbing of the powerhouse footprint
Thursday	May 8	TH,MS	Sun and Cloud	Construction Camp Site grading and final capping material installation Boulder Intake Access Road Access road and roadside ditch repair Upper Lillooet Powerhouse Stripping and grubbing of the powerhouse footprint
Friday	May 9	TH,MS	Sun and Cloud	 Construction Camp Site grading and final capping material installation Boulder Intake Access Road Access road and roadside ditch repair Boulder HEF and Blasting Material Magazine Area Clearing within approved OLTC boundaries Upper Lillooet Powerhouse Stripping and grubbing of the powerhouse footprint
Saturday	May 10	MS	Sun and Cloud	 Construction Camp Site grading and final capping material installation Boulder Intake Access Road Access road and roadside ditch repair Upper Lillooet Powerhouse Stripping and grubbing of the powerhouse footprint Spoil area re-contouring

IEM Team Personnel: MS - Mandala Smulders; TH - Tom Hicks



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.
May 4 May 5	Email and Letter	Lil'wat Nation, Arrowstone, SES, CRT-ebc, Innergex	An exemption to the presence of an archaeological monitor was granted by Lil'wat Nation and Arrowstone Consulting for weekend work on Sunday May 4 th as no archaeological monitor was available. It is a recommendation to have an archaeological monitor as per the ASMP, but is not a legal requirement under the <i>Heritage Conservation Act</i> . Condition of the exemption was that work would not occur within the fenced-off 10 m buffer zone around archaeological site EdRu-3, mitigation measures outlined in the ASMP would be implemented and that future monitoring works would require an archaeological monitor be on site.	N/A
May 6	Site inspection	Innergex, Hedberg, SES, CRT-ebc	Reviewed decked merchantable timber and woody debris piles in order to assess quantity of waste wood present onsite.	N/A
May 8	Pre-work Meeting	CRT- ebc, SES, Innergex	Reviewed the BDRHEF intake access road upgrade work plan, highlighting road drainage improvements & permanent culvert locations.	N/A
May 9	Pre-work Meeting	CRT- ebc, SES, Innergex, Ecofish	Reviewed the BDRHEF powerhouse and blasting magazine area clearing, stripping and grubbing work plan, highlighting results of AMBNS and merchantable timber and woody debris management.	N/A



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
All ULRHEF and BDRHEF areas	All ULRHEF and BDRHEF areas	Nesting Birds	Vegetation clearing must take place outside of the breeding bird season (May 1 – July 31) to prevent disturbance of bird nests. If not feasible, nest surveys must be conducted by qualified professionals following the Active Migratory Bird Nest Surveys prior to clearing and protective buffers surrounding discovered nests will be maintained until young are fledged and approval has been obtained from the IEM or designate.
ULRHEF	Within 50m of identified archeologically significant area	Archaeologically significant site EdRu-3	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.
powerhouse	Within 30m of the Upper Lillooet River	Riparian area	IEM presence is required when working within 30m of the Upper Lillooet River as outlined in the ULRHEF Powerhouse Stripping and Grubbing work plan.
Lillooet River FSR; ULRHEF intake access; FSR realignment at Truckwash Creek	Access roads above ULRHEF Powerhouse to the ULRHEF intake; including FSR realignment at Truckwash Creek	Mountain Goat UWR	Construction noise must be minimized within 500 m of legally established UWR during winter (November 1 – April 30) to the satisfaction of the IEM or designate. All drilling and construction associated activities will cease for a minimum of two consecutive week periods at the Upper Lillooet River HEF downstream portal near Truckwash Creek and at the intake after snow levels have begun to recede in the spring. Snow depths measured on May 3, 2014 resulted in the implementation of the 2 week spring shutdown as detailed in the Mountain Goat Management Plan. Additional information is provided in Section 6.0. 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.



4.0 Boulder Creek Hydroelectric Facility

4.1 Monitoring Results

4.1.1 Active Construction Areas

Construction Camp

Site grading and sub-grade construction continued and was completed this week.
 Final road ditching and site capping began and will continue next week. No environmental concerns were noted.

BDRHEF Intake Access Road (i.e. Athel Main Line Road)

 Access road repair and drainage ditch installation began following the May 8th kickoff meeting. The road upgrade works occurred concurrently with the removal of trees that were hand felled during the previous monitoring period.

BDRHEF Powerhouse and Blasting Magazine Area

Stripping and grubbing of the previously cleared powerhouse and spoil area was completed this week. Additional authorized areas were cleared (OLTC L49816; Amendment 2) following the completion of AMBNS (performed by Ecofish), and a pre-work kick-off meeting conducted to review the work plan with the CRT-EBC's, field engineer and environmental lead prior to beginning clearing and grubbing (May 9th, 2014). Merchantable timber and woody debris was removed and stripping and grubbing of newly cleared areas began on May 10th, 2014.

Environmental Summary:

 The IEM was onsite to monitor all drainage and road repair work along the BDRHEF intake access road between 0-3.8km and verified that bio-degradable hydraulic oil was used in excavators involved in drainage ditch construction. No spills or leaks were observed. No water quality concerns were noted.



Photos:



Photo 1. Nearing completion of site grading and subgrade preparation at the Construction Camp work area. (May 6, 2014).



Photo 2. Upgraded section of BDRHEF intake access road following ditch installation and tree removal. (May 8, 2014).

Water Quality Results

Date	Time	Sample Location Description	рН	Turbidity (NTU)	Temperature (°C)
No WQ measurements were recorded during this reporting period. Stripping, Grubbing, Grading and					
hand falling activities had no visual effect on WQ.					

5.0 Upper Lillooet River Hydroelectric Facility

5.1 Monitoring Results

5.1.1 Active Construction Areas

ULRHEF Powerhouse

 Clearing and grubbing of the powerhouse footprint and haul road upgrades continued this week. All organic soils were hauled and stockpiled at the base of the fill slope at the east heading of the realignment of the Lillooet River FSR, according to methods outlined in the approved work plan.

Environmental Summary:

• An archaeological monitor from the Lil'wat Nation was onsite to oversee initial ground disturbance within 50m of the archaeologically significant site adjacent to the powerhouse location (EdRu-3) this week. An exemption to the presence of an archaeological technician was granted for weekend work on Sunday May 4th as outlined in the letter issued by the Lil'wat Nation and Arrowstone Archaeological Research and Consulting Ltd. on May 5th, 2013.



 The IEM was present to oversee all grubbing activities within 30m of the Lillooet River and verified that bio-degradable hydraulic oil was used in excavators involved in works within the riparian area.

Photos:



Photo 3. Placing stripping and grubbing material from the ULRHEF powerhouse area work area at the base of the approved spoil area. (May 10, 2014).



Photo 4. Stripping and grubbing activity at the ULRHEF powerhouse location. (May 9, 2014).

Water Quality Results

Date	Time	Sample Location Description	рН	Turbidity (NTU)	Temperature (°C)
No WQ n		ents were recorded during this reporting perio	od. Strip	ping, Grubbir	ng, Grading had no

5.2 Recommendations

Spring has arrived at Upper Lillooet Hydro Project as evidenced by an increase in wildlife sightings and wildlife activity. At this time of year an increased level of vigilance while driving and adherence to the speed limits is critical to preventing wildlife collisions. All wildlife sightings, encounters, and collisions should continue to be reported to the IEM in a timely fashion.

5.3 Upcoming Works

All construction activities are now suspended for a minimum two week period within the 200m buffer surrounding the Mountain Goat migration corridor at Truckwash creek and at the ULRHEF intake. Additional clearing at the BDRHEF intake access road (beyond 3.8km) will be completed as authorized in the OLTC L49816; Amendment 2 dated May 6, 2014 following completion of AMBNS. Stripping and grubbing of the ULRHEF powerhouse is scheduled to continue next week. Transmission line construction activities are scheduled to begin next week. The transmission line works will be focused on road construction and clearing within the Segments 1-5.



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

Two Grizzly Bear sightings were reported during this monitoring period (May 9th and 10th). All parties identified in the above table were notified within 24hr of the sighting log submission. The sighting logs are appended to this report.

7.0 Mountain Goat Monitoring Program

No construction activities occurred within or beyond the 200m buffer to the Mountain Goat Migration corridor at Truckwash Creek; therefore no noise monitoring or Mountain Goat monitoring was required during this reporting period.

Snow depths measured on May 3rd, 2014 resulted in the implementation of the 2 week spring shutdown as detailed in the Mountain Goat Management Plan. All drilling and construction associated activities will now cease for a minimum of two consecutive week periods at the Upper Lillooet River HEF downstream portal near Truckwash Creek and at the ULRHEF intake. The IEM team will conduct Mountain Goat monitoring beginning next week at the identified observations stations during the minimum 2-week shutdown prior to May 18th, 2014, to detect the presence and observe behaviours of Mountain Goats within UL-11 (keyhole falls habitat) and UL-19. The monitoring results will be used to adaptively manage the spring shutdown period based on behaviours and conditions observed.



8.0 Environmental Issues Tracking Matrix (ITM)

8.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

Work Item Open

Work Item Open

17	ITM Tracking Legend: Work Item Complete Issue Closed						
Issue Tracking Environmental Issue		Mitigatio	on Measures				
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted/ Completion Date	Date Completed
			No outstand	ling environmental issues.	•		

8.2 Transmission Line

ITIV	ITM Tracking Legend:		Work Item Complete				
Issue	Issue Tracking Er		vironmental Issue	Miti	gation Measure	S	
ID No.	Status	Location	Issue Description	Action Taken/Recommended Date of Identification		Targeted Completion Date	Date Completed
			No o	utstanding environmental issues.			

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May 5, 2014

Julia Mancinelli Innergex Renewable Energy Inc. 1168 Hamilton St., Suite 403 Vancouver, BC V6B 2S2 jmancinelli@innergex.com

Tom Hicks
Sartori Environmental Services
Unit 106 – 185 Forester Street
North Vancouver, BC V7H 0A6
tom@sartorienv.com

Ian Mckeachie CRT-EBC 11-7339 Old Mill Road PO Box 585 Pemberton, BC V0N 2L0 imckeachie@crtconstruction.ca

We are writing this letter with respect to construction work for the Upper Lillooet Hydro Project and the archaeological monitoring recommendations set out in the *Archaeological Sites Management Plan for the Upper Lillooet Hydro Project* prepared by the Lil'wat Nation and Arrowstone Archaeological Research Consulting Ltd.

On May 1 and 2, 2014, construction for the Upper Lillooet Hydro Electric Facility commenced within 50 meters of archaeological site EdRu-3. In compliance with the recommendation in the *Archaeological Sites Management Plan for the Upper Lillooet Hydro Project*, a Lil'wat Nation archaeological technician was present for archaeological monitoring for both days. At the end of the day on May 2, the Lil'wat Nation archaeological monitor was informed by CRT-EBC that no monitoring work would be required for Saturday, May 3.

On Saturday May 3, at 6:20 pm, Ian Mckeachie from CRT-EBC phoned Harriet VanWart, Consultation Manager for the Lil'wat Nation. Ian stated that construction within the 50 meter buffer zone of EbRu-3 was not able to occur on Saturday as planned

because no archaeological monitor was present. Ian requested that an archaeological monitor be on site for 7:00 am on Sunday, May 4, so that construction within the 50 meter buffer zone may occur. Given the late notice, and that no previous notification was given that archaeological monitoring may be required over the weekend, Harriet was not able to confirm that a monitor would be available for Sunday morning as requested.

An exemption from archaeological monitoring for Sunday May 4, 2014, was approved by the Lil'wat Nation and communicated to Ian Mckeachie via email from Harriet VanWart. The exemption was based on the following reasons:

- 1) that no archaeological monitor was available for Sunday May 4, 2014;
- 2) that delaying construction work within the 50 meter zone of EdRu-3 for another day would be problematic;
- 3) that work would not occur within the fenced-off 10 meter buffer zone around archaeological site EdRu-3; and
- 4) that the 50 meter buffer zone for archaeological monitoring is a recommendation by the Lil'wat Nation and Arrowstone Archaeological Research and Consulting Ltd., but is not a legal requirement under the Heritage Conservation Act.

For further clarification, the exemption from archaeological monitoring for Sunday, May 4, was a one-time approval. Lil'wat Nation and Arrowstone Archaeological Research and Consulting Ltd. maintain the recommendations set out in the Archaeological Site Management Plan for the Upper Lillooet Hydro Project. Any future exemptions must be confirmed in writing by the Lil'wat Nation and provided to Julia Mancinelli, Innergex Renewable Energy Inc., Tom Hicks, Sartori Environmental Services, and Ian Mckeachie, CRT-ECB.

To avoid the re-occurrence of the incident over the weekend we ask that the Lil'wat Nation Land and Resources Department be given at least 48 hours' notice of construction work that will require archaeological monitoring, and that notice occur during Monday to Friday working hours.

Sincerely,

Harriet VanWart, Consultation Manager Department of Land Resources and Public

Infrastructure

Lil'wat Nation

Dave Hall, MA, RPCA

Arrowstone Archaeological Research and

Consulting Ltd.



Appendix B. Bear sighting log.

BEAR OBSERVATION CARD
BC 9587 Return to: Local BC Parks Office
Collision
14 05 09 16 31 Upper Lillout Regiona District Name of Protected Area
Observer Name, Address and Phone Number: Tommy Lafond - Chouinard, (604) 894-5002
Location in protected area (i.e., name of campground, campsite, dayuse area, trail name, lake, stream, nearest geographic feature
etc.) @ 41km Lilloget River FSR NA NA NA
10 469061 S61100 Hervation (metres or feet) Observer Distance (metres or feet)
U.T.M. Zone Easting or Longitude Northing or Latinude
Weather: Rain, Overcast, Cloudy Clear Map Datum: NAD27 NAD83 GPS
Bear Species Grizzly bear Black bear Unknown ID Confidence: High Medium Low
Colour code: Reddish-brown Black, Grey, Dark brown, Light brown, Blond, Qther. Distinguishing features (tag, collar, scars): NA
Abundance: Common, Frequent, Occasional Rare
Observation Type: Sighting) track, scat, digging, hair, foraging sign, rub tree, bed, den
Number Observed: Adult Adult Young Sub- Unclas-
male fcm. of yr. Adult sified Was the bear aware of your presence No N/A
Food association: none odour unattended garbage vehicle cache
Bear(s) activity: a) feeding b) hunting c) fishing d) scavenging e) drinking () travelling g) bedded h) courtship/mating
i) playing j) call k) fighting Other: Reaction: a) indifferent of fice c) curious d) food seeking e) illegally fed f) threatening g) charge h) rut i) fight j) play k) travel
Other:
Estimated level of habituation: a sighting or sign b) normal behaviour - avoids people c) reacts defensively after surprise or
provocation d) tolerates but ignores people e) shows repeated interest in people f) habituated to people and their food g) displays
aggressive behaviour, threat to humans h) unknown
Repeat offender: Yes No If yes, provide background information (i.e., complaint/occurrence report)
A yes, provide background information (i.e., companied contence report)
Photographs: Yes No
Aspect Diagram Notes: As soon as the bear saw Tommy's truck,
ASPECT N he left the area.
27090
225 135
180
Slope%
180



Appendix B. Bear sighting log.

BEAR OBSERVATION CARD
BC 9587 Return to: Local BC Parks Office
14 05 10 06 311 Upper Lillaget River (Squamish-Lillaget Regional District) YYMMM/DD Time (24 hrs) District Name of Propogned Area
Observer Name, Address and Phone Number: Veronica Woodruff, (604) 966 - 8229
Location in protected area (i.e., name of campground, campsite, dayuse area, trail name, lake, stream, nearest geographic feature,
etc.) Near Truckwash creek
10 467980 561295 Elevation (metres or feet) Observer Distance (metres or feet)
U.T.M. Zone Easting or Longitude Northing or Latitude
Weather: Rain, Overcast, Cloudy, Clear Map Datum: NAD27 NAD83 GPS
Bear Species: Grizzly bear Black bear Unknown ID Confidence: High Medium Low
Colour code: Reddish-brown Black, Grey, Dark brown, Light brown, Blond, Other:
Distinguishing features (tag, coilar, scars):
Abundance: Common, Frequent, Occasional Kare
Observation Type Sighting, track, seat, digging, hair, foraging sign, rub tree, hed, den
Number Observed: Adult Adult Young Sub- Unclas-
male fem. of yr. Adult sified Was the bear aware of your presence? Yes No N/A
Food association: none odour unamended garbage vehicle cache
Bear(s) activity: a) feeding b) hunting c) fishing d) scavenging e) drinking () travelling g) bedded h) courtship/mating
i) playing j) call k) fighting Other:
Reaction: a) indifferent (1) flee c) curious d) food seeking e) illegally fed f) threatening g) charge h) rut i) fight j) play k) travel
Other:
Estimated level of habituation: (a) sighting or sign b) normal behaviour - avoids people c) reacts defensively after surprise or
provocation d) tolerates but ignores people e) shows repeated interest in people f) habituated to people and their food g) displays
aggressive behaviour, threat to humans h) unknown
Repeat offender: Yes No
If yes, provide background information (i.e., complaint/occurrence report)
Photographs: Yes No
Aspect Diagram Notes: The observer was inside her pick-up when
N She saw the boar. It fled as soon as he
ASPECT O SOW THE DICK-UP.
270 \$60
225 135
180
Slope%
N.B. Ensure complaint / occurrence report and BC problem wildlife form (if required) are completed, if there was property
damage or if further action required in dealing with bear sighting, i.e., destroy, relocation or aversive conditioning.