Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #96

Reporting Period: June 5-18, 2016

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
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Harriet VanWart	Lil'wat Nation	
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Owner Construction Permits and Approvals

Environmental Assessment Certificate No. E13-01 (Amendment 1, 2, 3, 4, 5, 6, 7)
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) No. L49717(Amendments 1, 2, 3, 4, 5, 6, 7)
Occupant Licence to Cut (BDRHEF – KM 38 laydown) No. L49698
Occupant Licence to Cut (BDRHEF) No. L49816 (Amendments 1, 2, 3)
Occupant Licence to Cut (TX Line) No. L49697 (Amendments 1, 2, 3, 4, 5, 6, 7, 8, 9)
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
SLRD Building Permit (10864) – Upper Lillooet River HEF Powerhouse
SLRD Building Permit (10865) – Boulder Creek HEF Powerhouse
Works Permit for Construction within FSR Right-of-Way No. 6123-14-01
Works Permit for Construction within FSR Right-of-Way No. 7977-15-01
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
Magazine Licence File No. UL76018 (Renewal 1)
Section 8 Approval – Short Term Use of Water File (Lillooet River and Tributaries) No. A2006123 (Amendment 1)
Section 8 - Special Use Permit issued for the operation of an avalanche weather station on Crown land (File No. S25988)

Contractor Construction Permits and Approvals

Waste Discharge under the Code of Practice for the Concrete and Concrete Products Industry under the Environmental Management Act (Authorization No. 107204) Tracking No. 349424 (Renewal 2)
Wildlife Act Permits – Pacific Tailed Frog Salvage Permit # SU15-164805; Fish Salvage Permit # SU15-174722
Fisheries and Oceans Canada – Anadromous Fish Salvage Permit #XR 178 2015
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
SLRD Building Permits for Mechanic Shop (10862) and Carpentry Shop (10836) March 18, 2015
SLRD Building Permit Stages 1 - 4 – Boulder Powerhouse Architectural, Electrical and Mechanical (10865) October 8, 2015
SLRD Building Permit Stages 1 - 4 – Upper Lillooet Powerhouse Architectural and Mechanical (10864) October 6, 2015
Water Sustainability Act Section 10(1) Use Approval dated March 24, 2016
Section 7 Explosives Act – Magazine Licence (U76018) Renewal April 30, 2016

ACRONYMS:

AMBNS	Active Migratory Bird Nesting Survey	**IE**	Independent Engineer (True North Energy)
Andritz	Andritz Hydro Canada Inc.	**IEM**	Independent Environmental Monitor
ANFO	Ammonia nitrate fuel oil (industrial explosive)	**INX**	Innergex Renewable Energy Inc.
ARD M/L	Acid Rock Drainage and Metal Leaching	**ISW**	Instream Works
BCEAO	British Columbia Environmental Assessment Office	**ITM**	Environmental Issue Tracking Matrix
BCWQG	British Columbia Water Quality Guidelines	**JEM**	JEM Energy Ltd. (Delegate Independent Engineer)
BDRHEF	Boulder Creek Hydroelectric Facility	**LTC**	Leave to Construct
BG	Background	**MFLNRO**	Ministry of Forests, Lands and Natural Resource Operations
BKL	BKL Consultants Ltd.	**MOE**	Ministry of Environment
CE	CRT-ebc Construction Inc.	**MOTI**	Ministry of Transportation and Infrastructure
CEMP	Construction Environmental Management Plan	**OGMA**	Old Growth Management Area
CTF	Coastal Tailed Frog	**OLTC**	Occupational License to Cut
DFO	Fisheries and Oceans Canada	**PAG**	Potentially Acid Generating
DS	Downstream	**QP**	Qualified Professional
EPP	Environmental Protection Plan	**ROW**	Right of Way
EAC	Environmental Assessment Certificate	**RVMA**	Riparian Vegetation Management Area
EAO	Environmental Assessment Office	**SES**	Sartori Environmental Services
Ecofish	Ecofish Research Ltd.	**SLRD**	Squamish-Lillooet Regional District
Ecologic	Ecologic Consulting	**TX Line**	Transmission Line
EIR	Environmental Incident Report	**ULRHEF**	Upper Lillooet Hydroelectric Facility
ESC	Erosion and Sediment Control	**UWR**	Ungulate Winter Range
FAM	Field Advice Memorandum	**VC**	Valued Component
FSR	Forest Service Road	**WEL**	Westpark Electric Ltd.
Golder	Golder Associates	**WEMR**	Weekly Environmental Monitoring Report
GWR	Mountain Goat Winter Range	**WHA**	Wildlife Habitat Area
Hedberg	Hedberg and Associates Ltd.		
HWM	High water mark		

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	Key Monitoring Locations & Activities
June 5 – 11, 2016	SE, MC, AS, TH, SS, TJ, DA, ML	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Road maintenance on the Lillooet River FSR ***ULRHEF Intake & Upstream Tunnel*** • Umbrella support system (lattice girders, meshing, shotcrete) installation, mechanical excavation, and canopy tube grout injection • Intake rebar, formwork, excavation, backfill and concrete works ***ULRHEF Downstream Tunnel*** • Drilling, blasting, shotcrete and tunnel stabilization ***ULRHEF Penstock*** • Excavation of Truckwash creek • Welding and coating works • Backfill, compaction and reclamation ***ULRHEF Powerhouse & Tailrace (above the HWM)*** • Tailrace rebar, formwork, backfill, compaction and concrete • Andritz mechanical works ***BDRHEF Intake & Upstream Tunnel Portal*** • Intake rebar, formwork and concrete • Blast for Upstream Tunnel Portal ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse & Tailrace (above the HWM)*** • Andritz electrical work ***TX-Line*** • Segment 9b – ground prep for structure 230 • Segment 11 – machine ground prep for structures 270 – 280; 272a bridge demobilization; backfill of an exposed waterline near Van's Creek • Segment 13 – machine ground prep for structure 317 • Segment 15 – ground prep, including digging and blasting throughout segment 15 with the exception of structure 376
June 12 – 18, 2016	SE, DA, ML, TH,	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Road maintenance on the Lillooet River FSR ***ULRHEF Intake & Upstream Tunnel Portal*** • Umbrella system excavation and consolidation (class 4CT) • Intake rebar, formwork, excavation, backfill and concrete works • Re-contouring of Soil Pile 02 ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting, shotcreting and tunnel stabilization • Sediment removal of Stormtec water treatment system ***ULRHEF Penstock*** • Excavation of Truckwash creek • Welding and coating works • Backfill, compaction and reclamation • Removal of soil within Mountain Goat Migration Corridor ***ULRHEF Powerhouse & Tailrace (above the HWM)*** • Tailrace rebar, formwork, backfill, compaction and concrete • Andritz mechanical works

Date	IEM Team Personnel	Key Monitoring Locations & Activities
		BDRHEF Intake & Upstream Tunnel Portal • Intake rebar, formwork and concrete • Construction of permanent concrete pump boom • Stormtec water treatment system maintenance • Blasting for Upstream Tunnel Portal ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse & Tailrace (above the HWM)*** • Andritz electrical work • Spot concrete pour at Switchyard ***TX-Line*** • Segment 9 – Road repairs of Salmon main, and Zorro access roads, pole setting • Segment 11 – O'Briens ground prep, including blasting • Segment 12 – Mumleqs road construction; drilling and blasting pole foundations • Segment 13 – Machine ground prep for poles 315 & 316 within RVMAs • Segment 15 – O'Briens ground prep; digging and blasting, pole setting • Segment 16 – Dressing, setting and framing poles

IEM Team Personnel: *TH – Tom Hicks; SS – Stephen Sims; DA – Danita Abraham; SE – Stephanie Ellis; AS – Anne Sutherland; ML – McKenzie Lee; TJ – Tammie Jenkins; MC – Mike Champion*

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.
June 6	*Email*	SES, CE, INX	RE: Truckwash Stand Watch – The IEM provided results of a modified AMBNS (stand watch) performed at Truckwash Creek, confirming that no active or inactive nests were present and that CE could proceed with minor clearing operations.	-
June 7 & 9	*Email*	CE, SES, INX, BCEAO, MFLNRO, DFO, Lil'wat Nation, JEM	RE: Goat Sighting – CE reported the sighting of a mountain goat within 500m (line of sight) of construction activities. The sighting occurred at 11:00 but was not reported to the IEM until 14:00, which is contrary to the reporting and shutdown protocols outlined in the Mountain Goat Management Plan; therefore, the IEM requested that CE prepare an EIR to document the incident of non-compliance and to present strategies to prevent a repeat occurrence. CE prepared an incident report, which was reviewed by INX and SES prior to submission to agencies on June 9.	*EIR023*
	Email	CE, SES, INX	RE: Pump Watch at Truckwash – CE confirmed that a crewmember would monitor the oil water separator at Truckwash Creek to ensure that additional water from the penstock excavation would not result in overflow of the oil water separator and erosion of the right bank of Truckwash Creek.	-
June 8	*Email*	SES, WEL, INX	RE: Segment 15 UWRs and Mountain Goat Mitigation Measures – SES provided WEL and INX with notification that IEM mountain goat monitoring of UWRs SO-04 and SO-08 (Segment 15) would no longer be	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
			required. The winter ranges were confirmed to be absent during a helicopter survey prior to the start of works (May 2, 2016) and during 14 days of mountain goat monitoring via ground based spotting scope. The IEM suspended mountain goat monitoring of Segment 15 UWRs, based on the monitoring effort completed to date, low likelihood of presence and/or kidding on the UWRs, and mitigation measures to be employed during the remainder of the kidding period (until June 15).	
June 9	*Site Inspection*	BCEAO, INX, SES, CE	BC EAO compliance and enforcement officer conducted a site inspection of the hydroelectric facilities with members of the IEM, INX, and CE environment team in attendance.	-
	Email	CE, SES, INX, JEM	RE: ULHP BCEAO site inspection summary – INX provided an email summarizing the BCEAO compliance and enforcement site audit. Generally, the construction site was in good shape, however there were 4 concerns raised by the BCEAO: 1. Improper Waste Management – A number of boxes and trash receptacles labeled "construction waste only" contained domestic food waste and american martens were trapped within the disposal bins. The BCEAO raised this as an environmental non-compliance as well as a safety issue (human wildlife interaction). Because this issue was previously noted in 2015, the BCEAO issued a Minister's Order to Remedy. 2. Machinery not kept in good working order (leaks creating hazardous soil) – The BCEAO noted that equipment maintenance and storage needed to be improved throughout the site. 3. Wildfire preparedness – Fire caches were present at all main work areas, but were insufficiently stocked with firefighting equipment (i.e., no water in hand pump tanks and dull axes). 4. Erosion and sediment control – In general, the BCEAO was pleased with ESC, but noted three areas of improvement: Boulder Intake access road, Keyhole falls bridge, and the Penstock slope above the powerhouse.	*ULR#56, EIR024*
June 10	*Site Inspection*	BCEAO, INX, WEL	BC EAO compliance and enforcement officer conducted a site inspection of the ULHP transmission line with members of the INX and WEL environmental team in attendance.	-
June 12	*Email*	INX, WEL, SES, BCEAO, MFLNRO, DFO, Lil'wat Nation, JEM	RE: CE-EIR-024 – CE prepared an incident report for the improper management of food waste at the ULRHEF Intake, resulting in the entrapment of amercian martens within waste disposal containers. SES and INX reviewed the incident report prior to submission to agencies. See Section 4.2 for further details.	*ULR#56, EIR024*
June 13	*Email*	CE, SES, INX	RE: Clean-up of the UWR Replacement Area – CE notified the IEM that CE would continue to remove snow and associated sediment plowed into the mountain goat UWR replacement area near the UL lower tunnel parking area.	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
June 14	*Email*	CE, SES, INX	RE: IEM presence for roadwork –Stabilization of the downslope side of the Lillooet River FSR at KM45.8. The IEM requested that the following concerns be addressed prior to the commencement of construction: 1. Identify how much area of the road requires stabilization and what type of material will be used (if the material is generated by the use of ANFO it should be tracked and not exposed to road-side drainage paths) 2. Rock armouring should be placed with an excavator capable of placing rock armouring without it rolling downslope (excavator equipped with a thumb). 3. Specify the environmental concerns associated with the works and how impacts will be minimized (shutdown if mountain goats are observed from the construction area and how impacts to old growth trees with UWR UL-11 will be prevented). 4. Outline how the energized cable will be protected during the works. 5. Duration and timing of works. CE responded to the satisfaction of the IEM.	-
June 16	*Email*	INX, MFLNRO, SES	RE: ULHP RSTBC Key Principle Agreements – INX requested an update on when trail maintenance and re-routing would occur on the Lillooet River Trail. Additionally, INX notified MFLNRO that a bear had been acting aggressively towards tourists on the RSTBC trail. INX installed signs stating “bear in area” in May when INX first raised the issue but requested additional help from them in managing the public human-bear conflict at the hot springs.	-
	Email	CE, SES, INX	RE: Use of non-bio excavator at Upper Lillooet Intake – CE requested to use an excavator not equipped with biodegradable hydraulic oil within an environmentally sensitive area of the ULRHEF intake. The IEM reminded CE that the project CEMP requires all machinery working within 30m of a watercourse to be equipped with biodegradable hydraulic oil, in good working order, and free of leaks. Additionally, the IEM noted that prior to this request; the excavator had been operating within the ULRHEF intake for two days. Lastly, CE is to give the IEM advance notice if deviations from the CEMP are needed, or the operation will be considered to be in contravention of the project CEMP. The IEM granted CE permission to use a non-bio-oil excavator if these additional mitigation measures were implemented: 1. The operator of the equipment will perform regular testing and document inspections of the equipment outside of 30m of the Lillooet River prior to resuming works in the morning and following any breaks in the work. 2. The equipment must not be parked within 30m of the Lillooet River 3. If any leaks in the equipment are detected during the inspection, work with that machine must cease until the leak is repaired.	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
	Email	SES, CE, INX	RE: ULHP Mountain Goat Management post June 15, 2016 – CE requested confirmation that the daily sunrise and sunset shutdowns ended as of midnight June 15. In response, the IEM outlined additional mitigations that must be undertaken to protect two mountain goats that remained at the lower UWR near Keyhole Falls (UL-11) after June 15. As of midnight June 15th, the IEM ceased daily mountain goat monitoring and noise monitoring programs. After June 15th the following mitigation measures were implemented, to prevent impacting mountain goat movement through the migration corridor at Truckwash Creek: 1. If a mountain goat is seen within 500m line-of sight of construction activities at TWC or the lower tunnel portal, work activities in these areas must cease for a minimum of 48hrs, until permission is granted from the IEM to resume works. 2. The construction works have been sequenced and planned to prevent complete obstruction of the migration corridor (see work plan). Firstly, the works will be staged and focused on distinct areas. Second, excavation of the barrier will be done in a manner to permit goat access, as noted above. Lastly, trenching and installation of the penstock on the west side of Truckwash Creek will be initiated outside the goat migration period (typically May 1-Jun 15). If not feasible, trenching will be staggered so that there will always be a backfilled section available to access the west side of Truckwash Creek. In addition to the staged approach, CRT-ebc Environmental Team in collaboration with IEM or designate, will continually evaluate the work site to ensure that unobstructed access is available. 3. Spot checks will be performed to verify the continued occupancy of UL-11 at Keyhole Falls. Our monitoring program has determined that the mountain goats are often resting in the early morning hours before moving into the trees and off sight to forage in the afternoon; therefore, our spot checks were concentrated during the morning hours.	-
June 17	*Email*	INX, WEL, SES, BCEAO, MFLNRO, Lil'wat Nation, JEM	RE: WEL-EIR-026 – WEL prepared an incident report for three (3) American martens found dead within the foundation excavation of the transmission line infrastructure. SES and INX reviewed the incident report prior to submission to agencies on June 17. See Section 6.1 for further details.	EIR026
	Email	CE. SES, INX, BCEAO	CE notified the IEM that three cinnamon coloured black bear cubs entered the lunchroom at the ULRHEF lower tunnel work area. The bears did not access food inside to the lunchroom, no crew members were injured and no damage was observed. CE will prepare an incident report for submission to agencies in the next monitoring period. INX notified BCEAO of the incident as soon as it occurred.	EIR027
	Email	BCEAO, INX, CE, SES, JEM	INX forwarded the Ministerial Order issued by the BCEAO to the Project. INX requested that CE provide	*ULR#56, EIR024*

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
			a formal response indicating what actions were taken to meet and maintain compliance with respect to wildlife attractant management onsite. CE will provide a formal response by June 24.	

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 Project Areas	TX Line, ULRHEF, & BDRHEF	Active Migratory Bird Nesting Period	AMBNS must occur prior to clearing vegetation in all Project areas according to the survey schedule and methods outlined in the Project's Active Migratory Bird Nest Survey Plan during the nesting period (May 1 – July 31). All nests identified as active must be protected by a no disturbance buffer until the nest is no longer deemed to be active by a QP (buffer distances vary by species and location; further details are provided in the AMBNS Plan).
Lillooet River FSR & ULRHEF	Access roads above the lower limit of the 200m buffer Truckwash Creek Migration Corridor to the ULRHEF intake	Mountain Goat UWR & Migration Corridor	Daily construction equipment shutdowns occurred in May & June beginning one hour before and two hours after sunrise as well as two hours before and one hour after sunset. CE had guards stationed on either side of the migration corridor 15 minutes before and during the morning and evening shutdown periods to stop all project related travel through the migration corridor. This timing restriction ceased within the Migration Corridor and 200m buffer on June 15. Noise monitoring equipment was in place to monitor background noise levels and exceedances of the 75dbA noise level maximum resulting from construction activities until June 15. Adaptive drilling/blasting noise mitigation strategies will be developed and implemented should activities show persistent exceedances of the noise level threshold. Mountain Goat monitoring activities ceased and the IEM began daily spot checks on June 15, as mountain goats remained present on UL-11. If a mountain goat is observed within 500m line of sight 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.
BDRHEF intake	Portion of intake access road and intake structure within UWR u-2-002 UL 12	Mountain Goat UWR	Access to BDRHEF intake must be gated at least 500m from UWR to restrict public access within the UWR u-2-002 UL 12 from November 1 – June 15, unless otherwise

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
			directed by MFLNRO. If a mountain goat is observed within a 500m line of site of a construction activity within UWR u-2-002 UL 12, construction activities will cease for at least 48 hours. Approval from the IEM must be obtained prior to recommencing construction activities.
TX Line	Segments 8 - 16	Mountain Goat UWRs SO-04 & SO-08	If a mountain goat is observed within 500m line of sight of construction operations, construction must cease for at least 48 hours. The IEM must record and submit all goat observations to MFLNR within 48 hours.
		Moose, Deer, & Mountain Goat UWRs	Helicopter flight paths will avoid UWRs and landing locations will be located further than 500m away from the UWRs during the sensitive late winter period and natal period (March 1 – May 15; May 15 – June 15).
		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 areas are minimized.
		Riparian Vegetation Management Areas (RVMA)	IEM monitoring is required during clearing within RVMAs.
		Ryan River Drainage	Construction of the TX Line into and across the Ryan River drainage will occur during the less critical Grizzly Bear summer foraging period (June 1 – September 1).
		Within 150m of wetlands or 100m of Coastal Tailed Frog Streams	IEM presence is required when clearing within 150m of wetlands or 100m of CTF Streams, to ensure clearing areas are minimized.

4.0 Upper Lillooet River HEF – Monitoring Results

4.1 *Construction Camp, KM38 Laydown, Access Roads & Lillooet River FSR*

Construction Activities:

- Routine maintenance of construction equipment within the mechanic shop and fuel management continued at the KM38 laydown. All hazardous substance materials (waste oil, contaminated soil, used oil/hydraulic fluid containers, etc.) were stored temporarily for off-site disposal in a designated area at the laydown. The materials were all well contained and protected from the weather.
- CE continued to apply water to the Lillooet River FSR and construction access roads to minimize fugitive dust production throughout the reporting period.

- The crusher and screener were operating throughout the reporting period to crush 0-28mm backfill aggregates (Photo 1).
- Reclamation and re-contouring works of the spoil pile SP-02 at KM48.5 occurred from June 9 – 18, 2016 (Photo 2).

Environmental Summary:

- All fire cashes were inspected during the BCEAO visit on June 8. The officer recommended that CE restock or replace defective equipment within each cache to ensure that they would be effective in the event of a forest fire (ITM ULR#56).
- On June 9, the BCEAO inspected all mechanic shops (KM38, BDRHEF powerhouse, and KM44.7). The officer was concerned that some machinery was in poor working order and lacked spill trays or pads underneath, potentially creating contaminated soil. The BCEAO noted that CE should improve the routine maintenance of equipment throughout the site (ITM ULR#56).

Photos:

Photo 1 – Crusher and Screener at the KM38 laydown (June 15, 2016).

Photo 2 – Reclamation works at spoil pile SP-02 at KM48.5 of the Lillooet River FSR (June 13, 2016).

4.2 *Intake, Concrete Arch Foundation Walls, and Upstream Tunnel*

Construction Activities:

- No activities occurred at the ULRHEF intake from June 6 - 8, 2016 due to elevated landslide risk according to the conditions of the Landslide Risk Management Plan.
- Grout injection operations and canopy tube installation at the ULRHEF upstream tunnel continued from June 5 & 9 – 18, 2016 (Photo 3).
- Formwork, rebar, and concrete works continue on the intake and sluiceway structures (Photo 4).

Environmental Summary:

- During grout injection, and tunnel excavation rounds in the upstream tunnel, all seepage water was directed to the ULRHEF intake sediment basins for treatment (Photo 5). CE's environmental management team ensured that the active treatment system was functioning and well maintained. Water quality sampling results are available upon request (Photo 6).
- On June 9, a BCEAO compliance and enforcement officer identified the improper disposal of food waste in construction waste bins at a number of locations throughout the civil construction site. The BCEAO had previously noted minor issues during a site inspection in 2015, resulting in the officer issuing the Project a Ministerial Order to remedy site wide wildlife attractant management on June 17, 2016. CE is required to:
  - **Provide an environmental incident report for attracting and entrapping american martens within the construction waste bin at KM48.5 of the Lillooet River FSR.**
  - **To prepare and execute a strategy on how to improve attractant management on site to be compliant with the project CEMP and EPPs.**
- CE immediately instituted the following corrective measures:
  - **Released the pine martens from the construction bins by opening the doors.**
  - **Removed the food waste from the bins.**
  - **Arranged for the removal and replacement of all construction waste bins.**
  - **Provided additional training on proper disposal of food waste, reviewed the conditions of the Human-Wildlife, Human-bear, and Waste Management Plans with all CE staff and subcontractors.**
- The IEM and CE environmental staff conducted daily site inspections to inspect sites for proper wildlife attractant management daily following the BCEAO inspection on June 9. Crews were implementing corrective measures and wildlife attractant management improved during the latter half of the reporting period.

Photos:

Photo 3 – Upper tunnel portal and BEBO wall (June 6, 2016).

Photo 4 – Rebar, formwork, and concrete works at the ULRHEF sluiceway and intake (June 14, 2016).

Photo 5 – ULRHEF water treatment ponds (June 15, 2016).

Photo 6 – Discharge of ULRHEF intake water treatment system (June 18, 2016).

4.3 *Downstream Tunnel Portal*

Construction Activities:

- Drilling, blasting, mucking and stabilization works (shotcrete application) within the tunnel.
- Removal of snow and sediment deposited within the mountain goat UWR replacement area at lower portal parking area.

Environmental Summary:

- Water quality discharged from the downstream tunnel portal water-treatment system was monitored daily for compliance with BCWQG. Water quality discharged to ASTR – 03 remained within BCWQG during this monitoring period. Additional water quality sampling results are available upon request.

- On June 13, CE continued to remove snow and associated material sediment deposited within the mountain goat UWR replacement area at the lower portal parking area with an excavator. Not all material was removed. A QP assessment of impacts to the area remains outstanding.
- Maintenance and sediment removal from the active water treatment system installed near ASTR-03 (Photo 7).

Photos:

Photo 7 – Sediment removal from the lower tunnel water treatment system (June 17, 2016).

4.4 *Penstock and Truckwash Creek Penstock Crossing*

Construction Activities:

Excavation of the audio-visual barrier and the penstock trench in the mountain goat migration corridor at Truckwash Creek (Photo 8 & Photo 9).

Welding, coating, backfill, and compaction of penstock east of Truckwash Creek.

Environmental Summary:

Excavation of the audio-visual barrier and the penstock trench, within the Truckwash Creek mountain goat migration corridor, occurred throughout the monitoring period. Crews pumped water from the excavation into the ULRHEF lower-tunnel active water treatment system via the lower tunnel oil-water separator. Increased flows, from the penstock excavation, caused the oil-water separator to overflow during nightshift on June 6-7, resulting in sediment-laden water entering Truckwash Creek (non-fish bearing and non-CTF). CE immediately stationed a crewmember to monitor the oil-water separator until June 9, when they completed the installation of a higher volume pump. The IEM continued to monitor construction activities and did not observe any additional overflow events or environmental incidents during the reporting period.

On June 6, a CE crewmember observed two sub-adult mountain goats traveling along

a scree slope within 500m (line-of-sight) of construction activities, on the right bank above Truckwash Creek. The crewmember observed the goats at approximately 11:00, but CE did not report the sighting until 14:00. Upon notification, the IEM immediately stopped all construction activities within 200m of the Truckwash Creek mountain goat migration corridor, as per the Mountain Goat Management Plan. CE prepared EIR024 to document the non-compliance of failing to halt works upon the sighting of a mountain goat within 500m line-of-sight of construction activities. The IEM monitored the scree slope during the evening of June 6 and on the morning of June 7 to ensure that construction activities were not impeding mountain goats from migrating to their upslope summer range (UL-19). The IEM verified that the two sub-adult individuals were not within 500 m line-of-sight of the work area on the morning of June 7, prior to allowing CE to resume construction activities within the migration corridor. The IEM instructed CE that any further sightings would result in a shutdown of all construction activities within 500m of the migration corridor for a minimum of 48 hours. The IEM increased goat monitoring efforts of the scree slope during the reporting period with no additional observations recorded.

During the BCEAO site inspection on June 9, the EAO officer recommended that sediment and erosion control measures along the Keyhole Falls bridge approach and penstock slope, above the ULRHEF powerhouse, be improved (i.e. re-install and/or remove unnecessary silt fences) (Photo 10).

Photos:

Photo 8 – Excavation of the Truckwash Creek mountain goat migration corridor audio-visual barrier (June 7, 2016).

Photo 9 – Penstock excavation through Truckwash Creek (June 16, 2016).

Photo 10 – Penstock slope above ULRHEF powerhouse (June 13, 2016).

4.5 *Powerhouse, Tailrace & Access Road*

Construction Activities:

- Backfill and compaction for tailrace footing.
- Rebar, formwork, and concrete works for the tailrace (Photo 11).
- Andritz mechanical works in the ULRHEF powerhouse (Photo 12).

Environmental Summary:

- The IEM monitored water quality, from the outlet of the active water treatment system during all tailrace concrete pours during the reporting period. Water discharged to the Lillooet River remained within BCWQG throughout the reporting period. Additional water quality sampling results are available upon request.

Photos:

Photo 11– Concrete pour for the ULRHEF tailrace footing (June 5, 2016).

Photo 12 – Mechanical works in the ULRHEF powerhouse (June 8, 2016).

4.6 *Water Quality Results*

The following table presents the results of the routine WQ 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 fluctuations in snowmelt. In the event that an exceedance of *in-situ* WQ (turbidity and/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 (*u*S)	Temp (°C)
Routine Water Quality						
June 7, 2016	11:45	ULR Background – ULRHEF Intake	7.74	77.0	-	8
	12:05	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	7.75	69.5	-	8.4
	12:41	ULR # 1 – Upstream of ULRHEF Powerhouse	7.74	89.7*	-	9.4
	13:05	ULR #2 – Downstream of ULRHEF Powerhouse between KM 40.5 and KM 41	7.65	84.9	-	9.6
	15:12	ULR #3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	7.65	51.6	-	12.5
	18:33	ULR #4 – Lillooet River FSR KM 24 – D/S of all works and Meager confluence	7.72	688 AU*	-	13.3
June 15, 2016	16:20	ULR Background – ULRHEF Intake	7.41	19.8	53	7.4
	16:05	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	7.38	21.9	57	7.2
	14:53	ULR # 1 – Upstream of ULRHEF Powerhouse	7.50	22.7	55	7.4
	14:25	ULR #2 – Downstream of ULRHEF Powerhouse between KM 40.5 and KM 41	7.39	21.7	56	7.0
	10:15	ULR #3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	7.41	22.3	52	4.8
	8:45	ULR #4 – Lillooet River FSR KM 24 – D/S of all works and Meager confluence	7.33	21.2	63	5.3

4.7 *Recommendations*

IEM recommendations for the ULRHEF are as follows:

- All water from the ULRHEF upstream tunnel heading should be conveyed to the sediment basins for treatment. CE should perform regular monitoring to ensure that the water treatment system is functioning as intended and that discharge to the Lillooet River continues to meet BCWQGs.
- CE should regularly monitor the new water treatment system installed to treat water emanating from the downstream tunnel to ensure the system is functioning as intended and that discharge into ASTR-03 (non-fish bearing and non-CTF) continues to meet

BCWQGs. The water treatment system capacity should be regularly assessed to ensure the system can handle the necessary volumes of water and to prevent discharging process water above BCWQGs offsite. An assessment of the Lillooet River Trail has determined that the trail must be re-routed around the section impacted by erosion and/or the trail needs to be repaired along its existing alignment. Work to repair/re-route the trail is scheduled to occur in late August or early September 2016.

- CE should continue to remove deposited material within the mountain goat UWR replacement area, as the snow melts. Once CE has removed as much of the deposited material as possible, and the snow is fully melted, the area should be inspected by a QP to determine what remedial actions are needed (ITM ULR#49; FAM#11).
- CE should perform regular inspections at all parking areas and ensure all spilled fuel and/or oil is cleaned up and disposed of in the proper disposal container, as per the Human-Bear Conflict Management Plan, and Hazardous Materials Management Plan.
- CE should continue to remind crews and enforce food and wildlife attractant management practices that adhere to the Human – Bear and Human – Wildlife Interaction Management Plans.

4.8 *Upcoming Works*

The following new and/or environmentally sensitive construction activities are scheduled to occur at the ULRHEF:

- Canopy tube installation, lattice girder installation, grout injection, drilling, and blasting in class 4CT material, will continue in the ULRHEF upstream tunnel.
- Drilling, blasting and tunnel stabilization at the ULRHEF downstream tunnel.
- Excavation through the Truckwash Creek crossing for penstock installation.
- Formwork, rebar, and concrete works at the ULRHEF tailrace.
- Pump removal and backfill at ULRHEF tailrace.
- Sandblasting of ULRHEF powerhouse turbine inlet valve.
- Use of the ULRHEF intake sediment basins will continue.

5.0 Boulder Creek Hydroelectric Facility – Monitoring Results

5.1 *Access Road & Intake*

Construction Activities:

- Formwork, rebar, and concrete works began on the intake and sluiceway structures (Photo 13 & Photo 14)
- Construction of a permanent concrete placing boom for reinforced concrete works. The placement boom will be located away from Boulder Creek and will allow the mixer trucks to park further away; removing the likelihood of spills caused by the steep incline of the

access road (Photo 15).

- Blasting and excavation of the first 10 metres of the upstream tunnel was performed, following consolidation of the tunnel portal face, to allow for the construction of the intake-tunnel transition structure.

Environmental Summary:

- Water quality of the discharge from the Boulder Creek intake water treatment system was monitored daily for compliance with BCWQG. Water quality discharged to Boulder Creek remained within BCWQG during this monitoring period. Additional water quality sampling results are available upon request.
- Mitigation measures outlined in the Blast Management Plan and CEMP were followed and the IEM was present for all surface blasts within 30m of Boulder Creek.
- During the site inspection on June 8, the BCEAO officer recommended that ditching from KM3.5 to KM4.5 of the BDRHEF intake access road be re-established and protected from erosion. Additionally, that the access road should be graded and/or capped to minimize erosion during rain events.

Photos:

Photo 13 – Ground preparation for footings of Boulder Creek Intake structure (June 5, 2016).

Photo 14 – Formwork, rebar, and concrete works at Boulder Creek Intake Structure (June 13, 2016).

Photo 15 – Installation of placing boom for reinforced concrete works (June 15, 2016).

5.2 *Downstream Tunnel Portal and Powerhouse*

Construction Activities:

- Drilling, blasting, and tunnel stabilization in the downstream tunnel portal.
- Fish exclusion boxes surrounding the tunnel intake pumps were replaced (Photo 16).
- Electrical component installation in the BDRHEF powerhouse (Photo 17).
- Concrete works at BDRHEF switchyard (Photo 18).

Environmental Summary:

- All wastewater related to the BDRHEF tunnelling works was contained and pumped to the downstream portal settling ponds for treatment (Photo 19).

Photos:

Photo 16 – New fish exclusion boxes in Boulder Creek (June 15, 2016).

Photo 17 –Electrical component installation in BDRHEF powerhouse (June 15, 2016).

Photo 18– Concrete works at BDRHEF switchyard (June 15, 2016).

Photo 19 – BDRHEF downstream portal settling ponds (June 14, 2016).

5.3 *Water Quality Results*

The following table presents the results of the routine WQ 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 Boulder Creek 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* WQ (turbidity and/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 exceedances are marked by an asterisk (*).

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
Routine Water Quality						
June 7, 2016	13:45	BDR BG – Upstream of BDRHEF intake	7.48	36.6	-	10.0
	13:50	BDR #1 – Downstream of BDRHEF intake	7.49	38.3	-	9.8
	14:39	BDR #2 – Upstream of BDRHEF Powerhouse	7.54	47.0*	-	10.6
	14:52	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.59	47.3*	-	10.7
June 15, 2016	13:52	BDR BG – Upstream of BDRHEF intake	7.39	7.9	54	6.4
	13:55	BDR #1 – Downstream of BDRHEF intake	7.45	8.3	53	5.9
	10:50	BDR #2 – Upstream of BDRHEF Powerhouse	7.34	8.1	51	4.6
	10:37	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.43	7.6	51	4.6

5.4 *Recommendations*

IEM recommendations for the BDRHEF are as follows:

- All construction related wastewater should continue to be directed to the water treatment systems. CE to continue regular inspections of the water treatment systems to ensure that the systems are in good condition, and all maintenance activities are performed as outlined in the work plan.
- CE should regularly monitor the BDRHEF intake active water treatment system to ensure the system is functioning as intended and that discharge into Boulder Creek is within BCWQGs. The water treatment system capacity should be regularly assessed to ensure the system can handle the necessary volumes of water.
- CE should ensure that all surface blasts continue to follow the Blast Management Plan by adding blast mats and any other mitigations necessary to protect Boulder Creek and the intake structure from fly-rock.
- Ditches along the BDRHEF intake access road should be re-established, armoured with non-ANFO rock, and check dams should be installed where necessary to prevent erosion and promote sediment deposition.
- CE should ensure that their domestic and construction waste are properly disposed of in the appropriate containers to avoid animal attractants, and to continue to abide by the Human-Wildlife Interaction Plan.
- CE should perform regular inspections at all parking areas and ensure spilled fuel and/or oil is cleaned up and disposed of in the proper disposal container, as per the Human-Bear Conflict Management Plan, and Hazardous Materials Management Plan.

5.5 *Upcoming Works*

The following new and/or environmentally sensitive construction activities are scheduled to occur at the BDRHEF during the next reporting period:

- BDRHEF downstream tunnelling works will continue.
- Electrical component installation will continue at the BDRHEF powerhouse.
- Rebar, formwork, and concrete works will continue for the Intake structures.
- Excavation, blasting, and consolidation will continue for the upstream tunnel portal and tunnel entrance.

6.0 Transmission Line – Monitoring Results

6.1 *Transmission Line Construction Activities*

Construction Activities:

Segment 9

- Ground prep for structure 230.
- Road re-activation for the Salmon main, Zorro access roads, and pole setting.

Segment 11

- Machine ground prep for structures 271-275 including blasting.
- Finalizing mechanically stabilized earthen wall at bridge 272a (Photo 20).

Segment 12

- Mumleqs – road construction and drilling.

Segment 13

- Machine ground prep including structure 317 within an RVMA.

Segment 15

- Ground prep and pole setting, including digging and blasting throughout Segment 15 with the exception of structure 376.

Segment 16

- Dressing, setting and framing poles.

Environmental Summary:

- On June 10, the BCEAO inspected the South Section of the ULHP Transmission Line. The officer only noted one minor erosion and sediment control item related to bridge 272a.
- On June 16, during a site inspection three dead American martens *(martes americana)* were discovered at the base of a hydro pole liner excavation (pit lined with vertically placed corrugated steel pipe). The martens became trapped after entering the uncovered excavation. WEL responded to this incident by preparing EIR-026, and by emailing all crews to request that they cover all open excavations with plywood, and by conducting inspections of uncovered pole liner excavations to ensure that no further wildlife mortalities had occurred.
- The IEM monitored the installation of the mechanically stabilized earthen wall on the west abutment of bridge 272a (Photo 20). No environmental issues were associated with these works.
- Pole anchor excavation with RVMA 269a were monitored part time by the IEM, since the work presented minimal risk to the riparian area of stream 269a (Photo 21).

Photos:

Photo 20 – Finalizing the installation of the mechanically stabilized wall on the west abutment of bridge 272a (June 7, 2016).

Photo 21 – Pole anchor excavations partially within 269a RVMA (June 7, 2016).

6.2 *Recommendations*

IEM recommendations for the Transmission Line are as follows:

- WEL's Environmental Manager continues to provide regular scheduling updates to permit the IEM to assess environmental risks and coordinate monitoring requirements. Any changes to the weekly schedule and/or updates should continue to be provided with a minimum of 48 hours' notice if the need for IEM presence is required or expected to be required.

6.3 *Upcoming Works*

The following new and/or environmentally sensitive construction activities are scheduled to occur for construction of the Transmission Line:

- Road repairs and pole installation via helicopter in Segment 9.
- Application of calcium chloride for dust control in Segment 12.

7.0 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). Wildlife Observation forms will be included in first reporting period following month end. 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

8.0 Mountain Goat Monitoring Program

The following mitigation measures related to mountain goats were implemented during this monitoring period:

- From May 1 to June 15, CE successfully implemented the daily sunrise/sunset equipment shutdown periods within the Truckwash Creek mountain goat migration corridor as outlined in the Mountain Goat Management Plan. CE staff were responsible and successful at stopping Project related access through the migration corridor during the shutdown periods.
- CE staff operated the BDRHEF intake access road gate to restrict motorized public access to the UWR (UL-12) until June 15, 2016, in accordance with the project permits.
- Noise level monitoring data continued to be collected and used to adaptively manage construction noise and ensure that the 75db noise level threshold was not exceeded as outlined in the Mountain Goat Management Plan. The noise monitoring equipment was removed on June 15, 2016 and will be re-installed for the fall monitoring period in November 2016, should construction activities occur that have yet to be characterized during previous seasons of construction noise level monitoring.
- The IEM or designate was on site to monitor Mountain Goat activity within 500m of construction activities at the ULRHEF intake and the ULRHEF downstream tunnel portal. Mountain goats were monitored from four sites:
    - Truckwash Creek viewing river right of the Migration Corridor– MG-OBS01 (10U 467955 5612773):
    - Keyhole Falls viewing the south side u-2-002 UL11 – MG-OBS02 (10U 466593 5613988); and,
    - Garibaldi Pumice mine site viewing u-2-002 UL 19 – MG-OBS03 (10U 467388 561408); and,
    - Salal Creek monitoring site viewing u-2-002 UL 8 – MG-OBS04 (10U 466133 5613991).

- The Monitoring effort was split between all sites during daylight hours, unless safety concerns or weather conditions interfered. The order of site visits rotated daily. Construction activities must cease if a goat(s) is/are observed moving towards the ULRHEF intake and/or if a goat(s) is/are observed within a 500m line of site of a construction activity.
- On June 6, a CE crewmember observed two sub-adult mountain goats traveling along a scree slope within 500m (line-of-sight) of construction activities, on the right bank above Truckwash Creek. The crewmember observed the goats at approximately 11:00, but CE did not report the sighting until 14:00. Upon notification, the IEM immediately stopped all construction activities within 200m of the Truckwash Creek mountain goat migration corridor, as per the Mountain Goat Management Plan. CE prepared EIR024 to document the non-compliance of failing to halt works upon the sighting of a mountain goat within 500m line-of-sight of construction activities.

9.0 Environmental Issues Tracking Matrix (ITM)

9.1 *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**
ULR#51	*OPEN*	*Woodbox Culvert at KM41.2 if the Lillooet River FSR*	*The watercourse over topped the woodbox culvert requiring emergency works to install an additional culvert next to the woodbox to handle the additional flow. The woodbox culvert may have been compromised by the additional flows and the temporary culvert installed as an emergency measure may need to be extended.*	1. *Assess the woodbox culvert and develop a plan to replace it with QP designed crossing structure during the instream work window or according to the recommendations of a QP if it has been compromised.* *Update June 8, 2016 – CE is working on a revised design for drainage currently being diverted to the crossing structure at KM41.2. A drainage plan and/or crossing structure repair or replacement remains outstanding. The IEM understands that the repairs must be completed prior to the delivery of the ULRHEF generators. This item will continue to be tracked until repairs are completed and the drainage design finalized; however the current conditions do not present an imminent risk to the environment. The ditch lines remain sufficiently armoured against erosion and the IEM has been informed that the crossing structure is currently stable.*	*April 8, 2016*	*April 22, 2016*	-
ULR#54	*Open*	*ULRHEF intake concrete sump pumping capacity & pumping shutdown*	*The IEM issued FAM#12 as untreated water that did not meet BCWQGs was discharged directly to the Lillooet River to prevent overtopping of the concrete sump.*	1. *Upgrade the pumping capacity in the concrete sump to ensure all water from the BEBO wall excavation, intake and upstream tunnel can be directed to the treatment ponds simultaneously when water quality conditions require. Update May 20 – CE has ordered pumps and will upgrade the pumping capacity once the material arrive. Update June 14, 2015 – Pumping capacity upgrades have yet to be finalized.* 2. *Stage work activities at the intake, sluiceway, tunnel and BEBO wall to ensure that all water not meeting BCWQGs can be pumped to the treatment ponds through the concrete sump. This may require that some work activities remain on hold until the pumping capacity of the system is increased. Update May 20 – CE confirmed that works will be staged to prevent exceeding the existing pumping capacity.*	*May 17, 2016*	*May 24, 2016*	- *May 20, 2016*

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#56	OPEN	All *ULRHEF and BDRHEF work areas.*	*BCEAO Inspection & Section 34 Order*	*1. Improper waste management*	*June 9, 2016*	*June 30, 2016*	
				a. Prepare EIR024 to document American marten attraction to waste in the KM48 construction waste.			*June 12, 2016*
				b. Prepare a Waste Management Protocol/Strategy to clean-up all mis-managed waste onsite and improve onsite waste management procedures.			-
				2. Improve equipment maintenance and storage practices to prevent soil contamination from small leaks (use spill trays/tarps/absorbent pads, etc.) and perform regular clean-up of any leaks or spills that reach the ground.			
				3. Improve ditches and road run-off management along the BDRHEF intake access road.			
No outstanding environmental issues (next ITM – BDR#28 & ULR#57)							

9.2 *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
No outstanding environmental issues (next ITM – Tx#3)							

Environmental Incident Reporting Form

General Information

Project Name: Upper Lillooet Hydro Project	**Project Component**: Mountain Goat Migration Corridor at Truckwash Creek
Time/Date of Incident Start: 2016-06-06, around 11:00 AM	**Time/Date Incident Stopped**: 2016-06-06 around 4:00 PM
Date of Report: 2016-06-07	**Project Incident Report Number**: 2016-06-06 CE-EIR-023
Report Prepared By: Jean M. Pelletier	
Contractors Environmental Manager: Jean M. Pelletier	
Independent Environmental Monitor: Tom Hicks, Mike Champion	
Licensee's Environmental Coordinator: Julia Mancinelli	

Contact Information for Company Involved in Incident

Company: CRT-ebc, s. e. n. c.	**Address**: PO Box 585, Pemberton BC – V0N 2L0
Phone #: 604-894-5002	**Email**: jdrapeau@crtconstruction.ca
Contact Person: Jonathan Drapeau	**Position**: Project Manager

Incident Type *(check all that apply)*

Encroachment of an Environmentally Sensitive Area (*e.g.* Riparian/Wildlife Buffer) **Please provide details in "Description" section below.**	☑	**Adverse Impacts to Fish/Wildlife** **(*e.g.* Mortality/Injury)** **Please provide details in "Description" section below.**	☑
Water Quality/Quantity **Please provide details in "Description" section below.**	☐	**Hazardous Material Spills (to ground or water)** **Please provide details in description section in regards to:** • Perceives extent of damage • Type, quantity and area of the spill • Containment Procedures • Environmental features in close proximity to the spill	☐
Disturbance of known or unknown archeological /heritage site **Please provide details in "Description" section below.**	☐	**Air Quality** **Please provide details in "Description" section below.**	☐
Spill reported to external agencies **If yes, describe the receiving environment and substance/quantity spilled.**	☐	**Other** **Please provide details in "Description" section below.**	☐

Incident Profile

Weather at time of incident	 ☑ Clear	 ☐ Partly Cloudy/ Variable	 ☐ Cloudy	 ☐ Showers/ Periods of Rain	 ☐ Rain	 ☐ Heavy Rain *(>25mm in 24hr)*	 ☐ Storm *(Heavy rain and high winds)*	 ☐ Snow

Specific Location: ULRHEF penstock, near 2+800 of the penstock (within the mountain goat migration corridor)

Description and Cause of Incident:

Description: At 11:00 am, on June 6th, a worker spotted two goats (yearlings or sub-adults) walking along a scree slope on the right bank of Truckwash Creek. The slope is located within the identified mountain goat migration corridor, and is less than 500 meters from construction activities. He observed the goats for less than five minutes, at which point they walk out of his line of sight. He indicated that the goats did not appear to be distressed by the on going construction activities. The sighting was reported to SES staff three hours later, at approximately 2 pm. The Mountain Goat Management Plan requires immediate notification to the IEM or Contractor Environment Team and suspension of all construction activities within 200 meters of the mountain goat migration corridor, when goats are observed within 500 meters of line of sight ofconstruction.

Cause: Failure to immediately stop construction activities within 200 meters of the mountain goat migration corridor and inform the IEM or Contractor Environment Team of a mountain goat sighting.

Incident Witness:

Were there any Potential Environmental impacts as a result of the incident? (e.g., surface contamination, storm sewers, or fish/wildlife mortalities) **For incident # 1 only**	**Yes** ☐	**None Observed** ☑

If Yes, please describe:

Has Wildlife Salvage Protocol been followed?	**Yes** ☐	**No** ☐	**N/A** ☑

If No, please explain:

Water Quality Samples Collected?	**Yes** ☐	**No** ☐	**N/A** ☑

If yes, attach results of water quality analysis to report in table format. Include Laboratory analysis if completed.
If No please explain:

Have applicable photos and/or drawings been attached to the incident report?	**Yes** ☐	**No** ☑	**N/A** ☐

Incident Response Measures

1. Upon being informed by the IEM on site, CRT-EBC collaborated with the IEM for the investigation.
2. When the IEM concluded its investigation and ordered the shutdown of the affected area, CRT-EBC immediately shut

down all construction activities.
3. Construction activities did not resume until the IEM confirmed the absence of goats within 500 meters of the construction site.

Actions to Prevent Incident Recurrence

1. At the June 7th superintendent and foremen morning meeting, CRT-EBC Sr Env. Manager reminded everyone of the mandatory and immediate reporting of goat sightings.
2. It was also included in Tool Box Meeting held Tuesday morning by the foremen.
3. A general reminder of this requirement with be made at the weekly Mass Safety Meeting on Wednesday June 8th (day shift) and on Thursday June 9th (night shift)

Notification Record

Agency Reported to	Contact Information	Agency Contacted Yes	Agency Contacted No	Date Reported	Reported By	Method of Reporting
External						
MFLNRO	James Davies	☑	☐	June 8, 2016	Julia Mancinelli	Email
BCEAO	Justin Carlson	☑	☐	June 8, 2016	Julia Mancinelli	Email
Lil'wat Nation	Harriet VanWart	☑	☐	June 8, 2016	Julia Mancinelli	Email
PEP	1-800-663-3456	☐	☑			
DFO	Herb Klassen	☐	☑			
Environment Canada	604-666-6100	☐	☑			
Canadian Coast Guard	604-666-6011	☐	☑			
Local Fire Rescue	911	☐	☑			
Internal						
EC	Julia Mancinelli	☑	☐	June 6th 2016	J M. Pelletier	Email
IEM	Tom Hicks	☑	☐	June 6th 2016	J. M. Pelletier	Email

Independent Environmental Monitor:

Tom Hicks	Lead Monitor - SES		
Print Name	Position and Company	Signature	Date

Contractor's Manager:

S. Moalli for Jonathan Drapeau	Project Manager – CRT-ebc		2016.06.08
Print Name	Position and Company	Signature	Date

Julia Mancinelli

Subject: FW: CONFIRM ULHP EIR 023 final-signed.pdf

Hello Julia,

This version of the EIR is acceptable to the IEM and can be submitted to agencies.

A few details are missing however.

The IEM shutdown works within 200m the migration corridor (truckwash creek penstock excavation and lower tunnel) following our investigation with CE on the afternoon of June 6 as indicated in the environmental incident report that has been prepared.

The IEM indicated that work must be suspended according to conditions of the Mountain Goat Management plan within 200m of the migration corridor until the following morning when our mountain goat monitor could visit the monitoring station and confirm that mountain goats were absent from 500m line of sight of the construction site.

The intent and goal was that if the mountain goats observed were trying to access the migration corridor then they would be afforded the opportunity during the remainder of the day shift and night shift while all activities were suspended.

The IEM`s mountain goat monitoring team was onsite prior to resuming work the following morning (June 7) to verify that mountain goats were absent from within 500m line of site of construction activities. Work was permitted to resume once absence of mountain goats was verified. Throughout the day (June 7) and for the remainder of the mountain goat monitoring program (until June 15) our mountain goat monitors will be stationed at the lower truckwash monitoring station for the majority of their shift to ensure that works can be immediately suspended if mountain goats return to within 500m line of site of construction activities. We felt that this period of shutdown and the increased monitoring effort was adequate to satisfy the intent of the Mountain Goat management plan, which states:

Construction activities will cease for at least 48 hours if a goat(s) are observed moving towards the migration corridor at MG-OBS01 and/or if a goat(s) are observed within a 500 m line of site of a construction activity, and/or moving towards the migration corridor from MG-OBS03 or other location. Approval from the IEM must be obtained prior to recommencing construction activities.

A repeat sighting of mountain goats within 500m of the construction activity at truckwash creek will trigger a longer shutdown period (minimum 48hours). I trust that this provides the clarification that you were seeking. If you have any additional questions please let me know.

Tom

Tom Hicks, RPBio, BC-CESCL
Associate Partner

sartori
environmental services

E *tom@sartorienv.com* ***M*** *604.764.7652* ***O*** *604.987.5588* ***F*** *604.987.7740*

106-185 Forester Street, North Vancouver, V7H 0A6

Environmental Incident Reporting Form

General Information

Project Name: Upper Lillooet Hydro Project	**Project Component**: ULRHEF Intake near KM48.4
Time/Date of Incident Start: 2016-06-09, around 11:30 AM	**Time/Date Incident Stopped**: 2016-06-09 around 11:30 AM
Date of Report: 2016-06-10	**Project Incident Report Number**: 2016-06-09 CE-EIR-024
Report Prepared By: Jean M. Pelletier	
Contractors Environmental Manager: Jean M. Pelletier	
Independent Environmental Monitor: Tom Hicks, Mike Champion	
Licensee's Environmental Coordinator: Julia Mancinelli	

Contact Information for Company Involved in Incident

Company: CRT-ebc, s. e. n. c.	**Address**: PO Box 585, Pemberton BC – V0N 2L0
Phone #: 604-894-5002	**Email**: jdrapeau@crtconstruction.ca
Contact Person: Jonathan Drapeau	**Position**: Project Manager

Incident Type *(check all that apply)*

Encroachment of an Environmentally Sensitive Area (*e.g.* Riparian/Wildlife Buffer) **Please provide details in "Description" section below.**	☐	**Adverse Impacts to Fish/Wildlife** **(*e.g.* Mortality/Injury)** **Please provide details in "Description" section below.**	☑
Water Quality/Quantity **Please provide details in "Description" section below.**	☐	**Hazardous Material Spills (to ground or water)** **Please provide details in description section in regards to:** • Perceives extent of damage • Type, quantity and area of the spill • Containment Procedures • Environmental features in close proximity to the spill	☐
Disturbance of known or unknown archeological /heritage site **Please provide details in "Description" section below.**	☐	**Air Quality** **Please provide details in "Description" section below.**	☐
Spill reported to external agencies **If yes, describe the receiving environment and substance/quantity spilled.**	☐	**Other** **Please provide details in "Description" section below.**	☐

Incident Profile

Weather at time of incident	 ☑ Clear	 ☐ Partly Cloudy/ Variable	 ☐ Cloudy	 ☐ Showers/ Periods of Rain	 ☐ Rain	 ☐ Heavy Rain *(>25mm in 24hr)*	 ☐ Storm *(Heavy rain and high winds)*	 ☐ Snow

Specific Location: General Waste Container Location, Upper Lillooet Intake, km 48.4

Description and Cause of Incident:

Description: At 11:30 am, on June 9th, while inspecting with the EAO Compliance and Enforcement officer, two pine martens were found trapped in a general waste construction bin at the Upper Lillooet Intake laydown area near KM 48.4. Upon finding the pine martens, the contractor's Sr Env. Manager opened the bin door to allow the pine martens to escape. This waste bin was delivered on site the day before, and had only a small amount of waste in it. On the morning of June 10th when Env. Managers assessed the situation, the pine martens were gone. Env. Managers sifted through the waste and found a small amount of food waste in the bin. This waste was removed from the bin and the door was closed. See attached photo of the bin content.

Cause: How the pine martens got inside the 8 feet high container is still unknown. But pine martens were attracted to site and this waste bin location because of inadequate application of mitigation measures outlined in the Human-Bear Conflict Management Plan, Human-Wildlife Interaction Management Plan and Waste Management Plan.

Incident Witness: Julia Mancinelli and Josh Zandbergen from Innergex, Justin Carlson, from the EAO. Tom Hicks from SES and Jean M. Pelletier from CRT-EBC

Were there any Potential Environmental impacts as a result of the incident? (e.g., surface contamination, storm sewers, or fish/wildlife mortalities)	**Yes** ☐	**None Observed** ☑

If Yes, please describe:

Has Wildlife Salvage Protocol been followed?	**Yes** ☐	**No** ☐	**N/A** ☑

If No, please explain:

Water Quality Samples Collected?	**Yes** ☐	**No** ☐	**N/A** ☑

If yes, attach results of water quality analysis to report in table format. Include Laboratory analysis if completed.
If No please explain:

Have applicable photos and/or drawings been attached to the incident report?	**Yes** ☑	**No** ☐	**N/A** ☐

Incident Response Measures

1. When the presence of 2 pines martens inside the waste bin was detected, the contractor Sr Env. Manager opened the door of the waste bin to allow the martens to escape.
2. The next morning, Env. Managers inspected the bin, found out that the pine martens were gone and found a small amount of domestic waste.
3. On the next day, at the superintendent and foremen meeting, preliminary results of the inspection were conveyed to all in attendance, including the issue about the pine martens.

Actions to Prevent Incident Recurrence

1. At the June 10th superintendent and foremen morning meeting, CRT-EBC Sr Env. Manager informed everyone of the preliminary results of the EAO audit, and addressed the issue of pine martens and inadequate domestic waste management.
2. A plan to improve domestic waste management is being developed.
3. Subcontractor will be contacted and reminded of proper domestic waste management.

Notification Record

Agency Reported to	Contact Information	Agency Contacted		Date Reported	Reported By	Method of Reporting
		Yes	No			
External						
MFLNRO	James Davies	☑	☐		Julia Mancinelli	email
BCEAO	Justin Carlson	☑	☐	June 09th 2016	NA	Witnessed the event email
Lil'wat Nation	Harriet VanWart	☑	☐		Julia Mancinelli	email
PEP	1-800-663-3456	☐	☑			
DFO	Herb Klassen	☐	☑			
Environment Canada	604-666-6100	☐	☑			
Canadian Coast Guard	604-666-6011	☐	☑			
Local Fire Rescue	911	☐	☑			
Internal						
Innergex	Julia Mancinelli	☑	☐	June 9th 2016	J M. Pelletier	Witnessed the event
IEM	Tom Hicks	☑	☐	June 9th 2016	J. M. Pelletier	Witnessed the event
IE	Jenn McCash	☑	☐	June 9th 2016	Julia Mancinelli	email

Independent Environmental Monitor:

Print Name	Position and Company	Signature	Date
Stephen Sims	IEM - SES	J Stephen Sims	June 11th 2016

Contractor's Manager:

Print Name	Position and Company	Signature	Date
Serge Moalli	Project Director – CRT-ebc		June 11th 2016

Picture 1 – Pine marten in the bin