Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #45

Reporting Period: October 26 – November 1, 2014

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

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Owner Construction Permits and Approvals

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

Contractor Construction Permits and Approvals

Magazine Licence File No. UL76018
Section 8 Approval – Short Term Use of Water File (Lillooet River and Tributaries) No. A2006123 (Amendment 1)
Waste Discharge under the Code of Practice for the Concrete and Concrete Products Industry under the Environmental Management Act (Authorization No. 107204) Tracking No. 326969
Wildlife Act Permits – Pacific Tailed Frog Salvage Permit # SU14-95304 & SU13-90538, Fish Salvage Permit # SU14-95329
Section 52 of the Fisheries (General) Regulations – Fish Salvage Licence # XR 139 2014
BC Safety Authority – Temporary Construction Electrical Service Permit EL-140698-2014
Municipal Wastewater Regulation - Authorization # 107032
Water Supply System Construction Permits – VCH-14-613 for Main Camp
Water Supply System Permit to Operate Issued July 30th, 2014 for Main Camp
Section 6(3) and Schedule 3 Wildfire Regulations Fire Exemption for Ryan River Bridge File No. 14350-07
SLRD Building Inspection Report dated August 13, 2014 - Construction Camp Building Permit No. 10830
Lillooet River FSR Temporary Road Closures Approval File No. 11250-32/6123 (Amendment 1, 2)
Lillooet South FSR Temporary Road Closures Approval File No. 11250-32/7977

ACRONYMS:

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

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 (on-site)	Weather Conditions	Key Monitoring Locations & Activities
Sunday, October 26	SS, KM, TJ	Overcast	***ULRHEF Intake Diversion Channel – South Side*** • Concrete works (Obermeyer left walls) ***ULRHEF Intake Open Cut – North Side*** • No activity ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel ***ULRHEF Penstock*** • Fill and grading works at station 2+800 • Grubbing and excavation between station 3+090 – 4+095 ***ULRHEF Powerhouse*** • Continued rebar installation and formwork ***BDRHEF Intake Access Road & Crane Pad*** • Continued excavation and consolidation works at crane pad • Continued rock bolt stabilization and scaling works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Continued rebar installation and formwork ***TX-Line*** • **Segment 6** ➢ Hazard tree removal near structure 150 (blasting) • **Segment 9** ➢ RVMA Falling ➢ Clean-up of sloughed material on Salmon Main
Monday, October 27	TH, SS, TJ, KM	Periods of rain	***ULRHEF Intake Diversion Channel – South Side*** • Continued rebar and formwork for Obermeyer weir ***ULRHEF Intake Open Cut – North Side*** • Installation of active dewatering system on pad above upstream portal excavation ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel ***ULRHEF Penstock*** • Fill and grading works at station 2+800 • Grubbing and excavation between station 3+090 – 4+095 ***ULRHEF Powerhouse*** • Concrete works ***BDRHEF Intake Access Road & Crane Pad*** • Continued excavation and consolidation works at crane pad • Continued rock bolt stabilization and scaling works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Continued rebar installation and formwork ***TX-Line*** • **Segment 4**

			➢ Framing structure 53 ➢ Heli-stringing structures 47 – 57 • **Segment 5** ➢ Setting structure 119 • **Segment 6** ➢ Groundworks at structure 149 and 154 -156 ➢ Hazard tree removal near structure 150 (blasting) • **Segment 7** ➢ Grinder works near KM 2.5 on the Lillooet South FSR • **Segment 9** ➢ Clearing and groundworks near structure 216 ➢ Clean-up of sloughed material on Salmon Main • **Segment 14** ➢ Road upgrades on road 371.1
Tuesday, October 28	TH, SS, AA, KM	Periods of rain	***ULRHEF Intake Diversion Channel – South Side*** • Continued rebar and formwork for Obermeyer weir ***ULRHEF Intake Open Cut – North Side*** • Installation of active dewatering system on pad above upstream portal excavation ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel ***ULRHEF Penstock*** • Grubbing and excavation between station 3+090 – 4+095 • Culvert installation at ULL-ASTR04 ***ULRHEF Powerhouse*** • Continued rebar installation and formwork ***BDRHEF Intake Access Road & Crane Pad*** • Continued excavation and consolidation works at crane pad • Continued rock bolt stabilization and scaling works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Continued rebar installation and formwork ***TX-Line*** • **Segment 4** ➢ Stringing from structures 47 - 57 • **Segment 5** ➢ Straightening poles near structure 111 • **Segment 6** ➢ Clean-up works at structures 146 and 156 • **Segment 7** ➢ Blasting at structure 178 ➢ Spreading wood chips near KM 2.5 of Lillooet South FSR • **Segment 9** ➢ Clearing near structure 216 ➢ RVMA hand falling at the end of Salmon Main • **Segment 14** ➢ Road upgrades on road 371.1
Wednesday, October 29	TH, ML, AA, KM	Rain	***ULRHEF Intake Diversion Channel – South Side*** • Continued rebar and formwork for Obermeyer weir ***ULRHEF Intake Open Cut – North Side*** • Sump construction and standpipe installation at upstream portal excavation • Initiation of active dewatering system • Bulk excavation (including drilling and blasting) below elevation 666m

			ULRHEF Downstream Tunnel Portal • Drilling, blasting and stabilization of the tunnel ***ULRHEF Penstock*** • Grubbing and excavation between station 3+090 – 4+095 ***ULRHEF Powerhouse*** • Continued rebar installation and formwork ***BDRHEF Intake Access Road & Crane Pad*** • Continued stabilization and scaling works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Continued rebar installation and formwork ***TX-Line*** • **Segment 6** ➢ Clean-up works at structures 146 and 156 • **Segment 8** ➢ Final approach grading works for Black Creek Bridge • **Segment 9** ➢ Clearing near structure 216 ➢ RVMA hand falling at the end of Salmon Main • **Segment 14** ➢ Road upgrades on road 371.1
Thursday, October 30	TH, ML	Periods of rain	***ULRHEF Intake Diversion Channel – South Side*** • Continued rebar and formwork for Obermeyer weir ***ULRHEF Intake Open Cut – North Side*** • Dewatering upstream portal excavation with active water treatment system • Bulk excavation (including drilling and blasting) below elevation 666m ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel ***ULRHEF Penstock*** • Grubbing and excavation between station 3+090 – 4+095 ***ULRHEF Powerhouse*** • Concrete works ***BDRHEF Intake Access Road & Crane Pad*** • Stabilization and scaling works on right and left bank at intake • Hydroseeding along intake access road ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization • Sediment pond deficiency repair works ***BDRHEF Powerhouse*** • Continued rebar installation and formwork ***TX-Line*** • **Segment 6** ➢ Clean-up works at structures 146 and 156 • **Segment 9** ➢ Clearing near structure 216 • **Segment 14** ➢ Road upgrades on road 371.1
Friday, October 31	TH, KM, AS	Overcast	***ULRHEF Intake Diversion Channel – South Side*** • Continued rebar and formwork for Obermeyer weir ***ULRHEF Intake Open Cut – North Side*** • Dewatering upstream portal excavation with active water treatment system

			• Bulk excavation (including drilling and blasting) below elevation 666m ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel • Ditching on downstream tunnel portal access road ***ULRHEF Penstock*** • Grubbing and excavation between station 3+090 – 4+095 ***ULRHEF Powerhouse*** • Concrete works ***BDRHEF Intake Access Road & Crane Pad*** • Continued stabilization and scaling works on right and left bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Continued rebar installation and formwork ***TX-Line*** • **Segment 7** ➢ Blasting at structure 177 and 178 • **Segment 9** ➢ Clearing near structure 216 ➢ Log loading at the end of Salmon Main • **Segment 14** ➢ Road upgrades on road 371.1
Saturday, November 1	TH, KM, AS	Sun	***ULRHEF Intake Diversion Channel – South Side*** • Concrete works ***ULRHEF Intake Open Cut – North Side*** • Dewatering upstream portal excavation with active water treatment system • Bulk excavation (including drilling and blasting) below elevation 666m ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel ***ULRHEF Penstock*** • Grubbing and excavation between station 3+090 – 4+095 ***ULRHEF Powerhouse*** • Continued rebar installation and formwork ***BDRHEF Intake Access Road & Crane Pad*** • Continued stabilization and scaling works on right bank at intake location • Hydroseeding along intake access road ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization • Sediment pond deficiency repair works ***BDRHEF Powerhouse*** • Continued rebar installation and formwork ***TX-Line*** • No activity

IEM Team Personnel: *TH – Tom Hicks; KM – Kathy Mai; SS – Stephen Sims; BA – Blake Aleksich; VD – Vanessa Dan; AA – Anthony Andrews; AS—Anne Sutherland; DA – Danita Abraham; TJ – Tammie Jenkins*

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.
October 27, 2014	*Email*	WEL, INX, SES	Submission by WEL of the 2014 Active Bird Nest Summary Report dated October 27, 2014.	-
	Email	INX, Blackcomb Aviation, WEL, CE, SES, JEM, Ecofish,	ULHP Flight Path Restrictions Start November 1 – INX provided the Blackcomb Aviation and Project contractors with a reminder of the flight plans coming into effect as of November 1.	-
	Email	INX, SES, JEM, Ecofish, WEL	ULHP Tx Line EAC Amendment & Snow Monitoring Update – INX provided an update to the IEM regarding the proposed amendment which included an indication of MFLNRO, EAO, and Lil'wat support, and draft EAC conditions.	-
October 27 – 31, 2014	*Emails*	CE, INX, SES	ULHP Gate for the BDR Intake Access Road - Approved Location – Issued discussed included Work Plan and permit compliance, gate installation location and methodology and required confirmation via photodocumentation.	-
October 28, 2014	*Email*	INX, SES, JEM	BDRHEF Intake Access Road and Impact to Ungulate Winter Range Polygon UWR 012 – INX provided the IE and IEM with a letter sent to CE indicating that insufficient information is currently available to move forward with permitting amendments associated with the component-specific OLTC and General Wildlife Measure Exemption approval, and therefore have retained the services of additional QP's to complete assessment to further clarify the extents of the impacts caused by unintentional construction impacts to vegetation.	-
	Emails	INX, CE, SES JEM	Following confirmation that a water treatment system was in place and ready for use at the ULRHEF intake (north side), INX issued a letter to CE rescinding the Stop Work Order issued on October 21, 2014 (*ULR#22 – Closed)*	*ULR#22 – Closed*
October 29, 2014	*Email*	SES, CE, INX	Site-wide ESC concerns – The IEM provided an email directly to CE's Environmental Managers intended to reinforce and reiterate the immediate need to improve onsite ESC measures and drainage control for the purpose of preventing the mobilization of sediments and potential turbid water inputs to watercourses. Additional action items related to the identified ESC issues have been added by the IEM to *ULR#20*.	*ULR#20 - Open*
October 30, 2014	*Email*	INX, WEL, SES, Ecofish	ULHP EAC E13-01 Amendment No. 5 Approved for Tx Line Segments 5 & 7 Early Winter Work.	-
	Email	Ecofish, CE, SES, INX	Approval for Concrete Trucks to Travel during the Daily Shutdown through Mountain Goat Migration Corridor on November 1 – An adjustment to approved	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
			mitigations was requested in order to successfully and safely transport approximately 200m^3 of concrete (four trucks) to the ULRHEF intake diversion channel for continuous pouring of the Obermeyer weir. Based on snow conditions and historical observations it was deemed by Ecofish that the movement of concrete trucks on November 1 was unlikely to have an adverse effect on migrating mountain goats. The IEM agreed with the conclusions and mitigations and travel was permitted for the limited period.	
October 31, 2014	*Email*	INX, MFLNRO, DFO, EAO, SES, JEM, Ecofish	ULRHEF ISW Extension - 2 Weeks Prior Submission – INX provided an update to regulatory MFLNRO, DFO and EAO including an updated ULRHEF intake flow graph and Cofferdam Construction Monitoring Plan. The ULRHEF intake diversion flip is currently scheduled for November 15.	-
	Email	SES, CE, INX	Truckwash Creek Mountain Goat Migration Corridor sunrise and sunset shutdowns – The IEM sent an email to CE in reminder of the sunrise/sunset shutdown requirements starting on November 1 as per the Mountain Goat Management Plan.	-
	LTC	INX, CE, SES, JEM, MFLNRO	LTC for the BDRHEF Intake Diversion Tunnel was issued by the IE and provided to CE via INX. A pre-work meeting will be held on-site to discuss construction activities, proposed mitigations, Hold Points and environmental sensitive features prior to commencing construction.	-
	EIR	CE, SES, INX	2014-10-31CE-EIR-013 was finalized by CE and reviewed by the IEM (*ULR#21 – Closed)*. EIR is attached to this report.	*ULR#21 – Closed*
November 1, 2014	*Pre-work meeting and email*	CE, SES, INX, Ecofish	Following issuance of the LTC for the BDRHEF Intake Diversion Tunnel, a pre-work meeting was held to discuss construction activities and associated environmental mitigations and constraints. Environmental items discussed included the requirements for amphibian sweeps/salvage, IEM presence and woody debris removal methods.	-

3.0 Current Work Restrictions and Timing Windows

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

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
Tx-Line	Segments 1 –11, & 14	Within 150m of wetlands or 100m of Coastal Tailed-Frog Streams	IEM presence is required when clearing within 150m of wetlands or 100m of Coastal Tailed-Frog Streams, to ensure clearing area is minimized.
		Riparian Vegetation Management Areas (RVMA)	IEM monitoring is required during clearing within RVMAs.
		Old Growth Management Areas (OGMAs)	IEM monitoring is required when clearing within legally designated OGMAs, to ensure clearing area is minimized.
		Ungulate Winter Range (UWR)	IEM monitoring is required when clearing within identified deer and moose UWR, to ensure clearing area is minimized.
		Suitable Class 1 & 2 Grizzly Bear forage habitat	IEM monitoring is required when clearing within identified Class 1 & 2 Grizzly Bear forage habitat, to ensure clearing area is minimized. Blasting mats (or other noise reduction methods) are to be employed within 500m of Class 1 and Class 2 grizzly bear forage habitat during critical seasonal foraging periods (fall, September – October).
		Salmon Migration Period and Bald Eagle Roosts	Construction of the transmission line within 500m of Alena Creek, 29.2 km Tributary, South Creek, Rohb Creek must be conducted outside of October 15 – December 31 and Sampson Creek and Railroad Creek must be conducted outside of August 15 to December 31.
		Wildlife Habitat Area (WHA) 2-399	Construction of the transmission line within the Grizzly Bear WHA 2-399 must be construction outside of April 1 to June 1 and October 15 to December 31 to minimize disturbance to Grizzly Bears expected to use the WHA during spring and fall.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
Tx-Line	Segment 5 & 7	Ungulate Winter Range (UWR)	According to EAC #E13-01 Amendment 5 and the General Wildlife Exemption Measures Approval dated October 28, 2014, the following mitigation measures must be enacted to extend Tx-line construction activities beyond November 1 and up to December 15 within Moose Winter Range Forest Management Zone u-5-002 J55/54-204-RE in Segment 5 & up to December 31 within MWRFMZ u-5-002 J55/54-204-RO in Segment 7: 1. The IEM must oversee all construction activities in Segment 5 & 7. 2. Helicopter flight paths must be determined by a QP in order to avoid, as much as possible, wildlife and wildlife habitat within the vicinity of proposed works. 3. Snow fall accumulation within the Moose Winter Range Forest Management Zone (u-5-002 J55/54-204-RO; Segment 7) must be monitored daily along the Lillooet South FSR. If snow depth exceeds 30 cm and remains at that depth for 8 hours, construction must be suspended immediately and may not resume in 2014.
ULRHEF powerhouse, and Intake diversion channel	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 50m of the EdRu-3 site boundaries.
	Within 30m of the Upper Lillooet River	Riparian area and fish bearing streams	IEM presence is required when working within 30m of the Upper Lillooet River. Instream acoustic pressure monitoring required when blasting within 30m of the Upper Lillooet River.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
Lillooet River FSR; ULRHEF downstream tunnel portal and penstock alignment	Access roads above the lower limit of the 200m buffer Truckwash Creek Migration Corridor to the ULRHEF intake; including FSR realignment at Truckwash Creek	Mountain Goat UWR and Migration Corridor	IEM was onsite to oversee daily construction equipment shutdowns (November 1 - 30) beginning one hour before and two hours after sunrise as well as two hours before and one hour after sunset. Noise monitoring equipment was installed to monitor background noise levels and exceedances of the 75dbA noise level maximum resulting from blasting activities. Initial data will be analyzed during the following reporting period and, if required, adaptive drilling/blasting noise mitigation strategies will be implemented. Daily snow depth monitoring will commence within the Truckwash Creek Migration Corridor once snow fall accumulations persist according to the Project's Mountain Goat Management Plan. A two week shutdown of work activities will occur once a significant snowfall is recorded (average snow depth of 10cm in forested habitat or 30cm in open terrain). Mountain Goat monitoring activities commenced on October 31, at three established observation stations (MG-OBS01, MG-OBS02 & MG-OBS03). Stations are established to monitor three Mountain Goat critical winter habitats (UL 11, UL 19, and Migration Corridor), and each station was visited for a minimum of two hours daily on a rotating schedule. If a 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.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
BDRHEF intake	Portion of intake access road and crane pad within UWR	Mountain Goat UWR	IEM monitoring is required when clearing within UWR to ensure that clearing areas are minimized. During winter months (November 1 – April 30), access to BDRHEF intake must be gated at least 500m from UWR to restrict motorized use within the UWR, unless otherwise directed by MFLNRO. If a 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 MFLNRO within 48 hours.

4.0 Upper Lillooet River HEF – Monitoring Results

4.1 Intake (North & South Sides), Access Roads and Upstream Tunnel Portal

Construction Activities:

- Bulk excavation, including drilling and blasting, continued at the ULRHEF upstream tunnel portal (north side) below elevation 666m (Photo 1 and Photo 2).
- Continued rebar and formworks at the Obermeyer Weir (south side diversion channel). Concrete works included one structure pour occurring on October 26 (Photo 3 and Photo 4).

Environmental Summary:

- An active water treatment system was installed (October 27) and activated (October 29) on the pad above the ULRHEF upstream portal excavation (Photo 5). Following the recommencement of drilling and excavation works in the upstream portal the treatment system discharge was measured by the IEM to be 21.0 NTU (October 29) and 14.8 NTU (October 30).
- Outstanding issues from *FAM04* (issued September 29, 2014) remain in the Project's ITM under *ULR#20 – open.* In addition to the *FAM04* issues, ESC concerns observed during this reporting period have been added to the ITM. Outstanding and additional ESC concerns include:
  - ULRHEF intake north side cofferdam access road – Ditching is currently inadequate and is leading to increased erosion of the running surface.
  - ULRHEF north side spoil area – Spoil area requires attention prior to the onset of winter as slopes are unconsolidated and no ESC measures are currently in place. A winterization plan for the ULRHEF spoil area was submitted to the IEM on October 17, however the ITM will remain open until works are complete and slopes are stabilized.

- ULRHEF north side access road – Curlex sediment log installation was completed on slope above access road (Photo 6). The logs will reduce rill erosion and mobilization of sediment. This action item has been completed to the satisfaction of the IEM and marked accordingly in the Project's ITM.
- Lillooet River FSR KM 48 box culvert – Silt fencing repairs and road grading are required to prevent sediments from entering tributary (Photo 7). This ESC issue and required action item has been added in the ITM.

- The IEM was onsite for works (including concrete pours) within 30m of the Lillooet River.

Photos:

Photo 1 – Current conditions at ULRHEF intake (October 26, 2014).

Photo 2 – Excavation continued, including drilling and blasting, at the ULRHEF upstream tunnel portal (October 27, 2014).

Photo 3 – Current conditions in ULRHEF intake diversion channel (October 27, 2014).

Photo 4 – ULRHEF intake diversion channel Obermeyer weir concrete works (Obermeyer left walls) (October 26, 2014).

Photo 5 – Active water treatment system installed to dewater ULRHEF upstream portal excavation (October 27, 2014).

Photo 6 – Curlex sediment logs installed on north side access road slope; sediment logs will reduce rill erosion and mobilization of sediment (October 31, 2014).

Photo 7 – Failing silt fence and rilling on road at KM 48 box culvert (October 31, 2014).

4.2 Downstream Tunnel Portal

Construction Activities:

- Drilling, blasting, mucking and stabilization (anchoring and shotcrete application) continued within the tunnel (Photo 8). Seepage water from the tunnel portal was conveyed effectively through an oil water separator and into the settling ponds (Photo 9) for treatment and storage.

Environmental Summary:

- Ditching works were completed on downstream tunnel portal access road (Photo 10) to improve water conveyance and reduce erosion.

- No environmental issues were observed at the ULRHEF downstream tunnel portal during this reporting period. The settling ponds installed adjacent to Truckwash Creek were used to treat the seepage and process water emanating from the tunnel. No surface discharge from the sediment ponds was observed this week; therefore no WQ measurements were taken by the IEM.
- The constructed slope at KM 43.5 on the Lillooet River FSR was observed to be failing (Photo 11) following a series of significant rain events. The slope needs to be re-graded in order to prevent future failures. This ESC issue and required action item has been added in the ITM.
- A gravity fed water extraction system was used for drilling activities according to the conditions of the Short Term Water Use Approval (No.A2006123).

Photos:

Photo 8 – Current conditions at the ULRHEF downstream tunnel portal (October 31, 2014).

Photo 9 – ULRHEF downstream portal settling ponds (October 29, 2014).

Photo 10 – Ditching works at bottom of ULRHEF downstream portal access road (October 31, 2014).

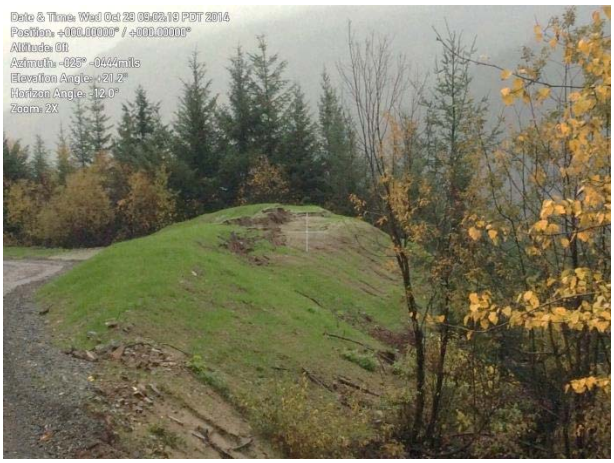


Photo 11– Failing material at KM 43.5 on Upper Lillooet FSR (October 29, 2014).

4.3 Penstock

Construction Activities:

- ULRHEF penstock fill works continued at station 2+800 (Photo 12).
- Grubbing and bulk excavation/fill continued from penstock station 2+725 to 3+025m (Photo 13 and Photo 14) and from 3+090 to 4+095m.
- Culvert installation at ASTR04 (Photo 16 and Photo 17).

Environmental Summary:

- The IEM observed erosion and mobilization of sediment at the 2+800 fill slope during a significant rain event (Photo 15). Consolidation of site surfaces, drainage improvements and slope stabilization are required to prevent further sediment mobilization.
- On October 28, a culvert was installed at watercourse ASTR04 (Photo 16 and Photo 17). An Ecofish crew completed a Coastal Tailed Frog salvage prior to culvert installation works. A turbid pulse was experienced in the watercourse during works in exceedance of BCWQG. The pulse persisted for approximately 20 minutes until flows were observed to be visibly clear. The IEM was onsite to monitor works and conduct water quality (see Section 4.5 *Water Quality Results*).
- No environmental issues were observed along the ULRHEF penstock alignment during this reporting period.

Photos:

Photo 12 – ULRHEF penstock fill works at station 2+800 (October 26, 2014).

Photo 13 – ULRHEF penstock bulk excavation from station 2+725 to 3+090m (October 26, 2014).

Photo 14 – ULRHEF penstock grubbing and bulk excavation from 2+725 to 3+090m (October 29, 2014).

Photo 15 – Conditions at 2+800 fill slope during significant rain event (October 31, 2014).

Photo 16– Culvert staged prior to installation at ASTR04 (October 28, 2014).

Photo 17–ASTR04 culvert installation site (October 28, 2014).

4.4 Powerhouse & Access Road

Construction Activities:

- Continued rebar installation and formworks for the powerhouse structure. Structure pours were completed on October 27, October 30 and October 31 (Photo 18 and Photo 20). The IEM conducted water quality during concrete works; all samples were measured to be within BCWQG (see Section 4.5 *Water Quality Results*).
- Two pumps (6" and 10") previously installed in the sump draining seepage waters in the powerhouse excavation continued to convey water to the existing settling ponds. No flowing surface water was observed within the excavation and pump capacity appears to be adequate to maintain isolation from active work areas (Photo 19).

Environmental Summary:

- Dewatering of the ULRHEF powerhouse continued without environmental concerns. The IEM will continue to monitor the works area to confirm that future concrete pours are adequately isolated from flowing waters and protected from precipitation during curing.

Photos:

Photo 18 – Continued concrete works at ULRHEF powerhouse (October 30, 2014).

Photo 19 – Current conditions at ULRHEF powerhouse settling ponds (October 29, 2014).

Photo 20 – Current conditions at ULRHEF powerhouse (October 30, 2014).

4.5 Water Quality Results

The following table presents the results of the routine water quality sampling program for the ULRHEF. The IEM is undertaking a weekly monitoring program according to the conditions outlined in the Surface Water Quality Protection Plan. The regular monitoring sites have been selected to quantify WQ conditions within the Lillooet River upstream and downstream of active

construction areas. The IEM acknowledges the natural variability of instream WQ conditions in the Lillooet River due to seasonal melt fluctuations and large tributary inputs. In the event that an exceedance of *in-situ* water quality (turbidity or pH) is deemed to be caused by project-related activities, the IEM will highlight the exceedance, discuss the cause, and outline measures undertaken by the Contractor to correct the issue. When an exceedance cannot be attributed to project related activities, the exceedance will be marked by an asterisk (*).

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (*u*S)	Temp (°C)
Routine Water Quality						
October 29, 2014	11:55	**ULR Background** – ULRHEF Intake	7.46	35.1	-	5.9
	-	**ULR #0.5** – Downstream of ULRHEF intake at Keyhole Bridge ***Station not available during this reporting period**	-	-	-	-
	11.25	**ULR #1** – Upstream of ULRHEF Powerhouse	7.47	31.7	-	6.1
	11.12	**ULR #2** – Downstream of ULRHEF Powerhouse between 40.5k and 41k	7.39	33.5	-	5.9
	12.55	**ULR #**3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	7.31	18.2	-	6.8
	-	**ULR #4** – Lillooet River FSR 24km – D/S of all works and Meager confluence ***Station not available during this reporting period**	-	-	-	-
Water Quality for Specific Works						
ULRHEF Powerhouse concrete works						
October 27, 2014	9:30	ULRHEF Powerhouse settling pond outlet	7.4	3.3	-	-
	10:30	ULRHEF Powerhouse settling pond inlet	6.94	3.2	-	-
October 31, 2014	13:30	ULRHEF Powerhouse settling pond inlet	6.72	8.42	-	-
	13:40	ULRHEF Powerhouse settling pond outlet	7.02	4.86	-	-

4.6 Recommendations

IEM recommendations for the ULRHEF are as follows:

- As a follow up to FAM04 (issued September 29, 2014) and additional ESC issues identified in this reporting period, the IEM continues to recommend that all necessary measures be implemented to mitigate sediment mobilization and provide for adequate treatment capacity and efficiency prior to conveyance towards the Upper Lillooet River.

4.7 Upcoming Works

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

- Continued bulk excavation at the north side ULRHEF intake open cut below elevation 666m will continue.
- Structure works at the ULRHEF intake Obermeyer weir will continue for the structure foundation and walls.
- Winterization of ULRHEF downstream tunnel portal will commence.
- Continued cut/fill along the ULRHEF penstock alignment.
- Completion of outstanding ESC items outlined in FAM04 will continue.

5.0 Boulder Creek Hydroelectric Facility – Monitoring Results

5.1 Intake Access Road & Crane Pad

Construction Activities:

- Slope protection measures were installed above crane pad on right bank at BDRHEF intake (Photo 21).
- Rope access technicians conducted right and left bank scaling and stabilization works (including grouting of anchor bolts) at BDRHEF intake (Photo 22, Photo 23 and Photo 24).

Environmental Summary:

- Hydroseeding was completed on slopes below intake access road near KM 4 (Photo 25). This action item has been completed to the satisfaction of the IEM and marked accordingly in the Project's ITM.
- Construction activities occurred along the BDRHEF intake access road and at the intake with the IEM onsite for construction activities within 30m of Boulder Creek. No environmental issues were observed.

Photos:

Photo 21 – Slope protection measures at BDRHEF crane pad (October 27, 2014).

Photo 22 – Rope access crews conduct stabilization works on right bank at BDRHEF intake (October 26, 2014).

Photo 23 – Grouting anchor bolts for stabilization works (October 27, 2014).

Photo 24 – Rope access crews conduct scaling works on left bank at BDRHEF intake (October 30, 2014).

Photo 25 – Hydroseeding on BDRHEF intake access road (October 29, 2014).

5.2 Downstream Tunnel Portal and Powerhouse

Construction Activities:

- Rebar installation and formworks at the powerhouse continued throughout the reporting period.
- Drilling, blasting, mucking and stabilization (anchoring and shotcrete application) continued within the tunnel.

Environmental Summary:

- On October 30, the IEM observed turbid seepage exiting below the BDRHEF downstream tunnel portal settling ponds (Photo 26 and Photo 27). Drainage should be formalized to ensure that sediment laden water is not entering nearby watercourses.

- Turbid road drainage is at risk of entering the fish bearing tributary at KM 39.7 on the Lillooet River FSR. The sediment fencing on both sides of the box culvert should be repaired (Photo 28). This ESC issue and required action item has been added in the ITM.

Photos:

Photo 26 – BDRHEF downstream tunnel portal settling pond (October 29, 2014).

Photo 27 – Turbid seepage discharging from below BDRHEF downstream tunnel portal sediment pond (October 30, 2014).

Photo 28 – Box culvert at KM 39.7 on the Upper Lillooet FSR; sediment fencing requires repair (October 29, 2014).

5.3 Water Quality Results

The following table presents the results of the routine water quality sampling program for the BDRHEF. The IEM is undertaking a weekly monitoring program according to the conditions outlined in the Surface Water Quality Protection Plan. The regular monitoring sites have been selected to quantify WQ conditions within the Lillooet River upstream and downstream of active construction areas. The IEM acknowledges the natural variability of instream WQ conditions in Boulder Creek due to seasonal fluctuations in snowmelt. In the event that an exceedance of *in-*

situ water quality (turbidity or pH) is deemed to be caused by project-related activities, the IEM will highlight the exceedance, discuss the cause, and outline measures undertaken by the Contractor to correct the issue. When an exceedance cannot be attributed to project related activities, the exceedance will be marked by an asterisk (*).

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
Routine Water Quality						
October 29, 2014	9:05	**BDR Background** –Upstream of BDRHEF intake	8.01	11.0	-	4.8
	9:15	**BDR #1** – Downstream of BDRHEF intake	7.83	9.5	-	4.8
	10:45	**BDR #2** – Upstream of BDRHEF Powerhouse	7.45	8.4	-	5.9
	10:55	**BDR #3** – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.38	8.4	-	5.9

5.4 Recommendations

IEM recommendations for the BDRHEF are as follows:

- The IEM recommends that the BDRHEF downstream tunnel portal sediment pond seepage be managed through treatment (*e.g.* active water treatment system) and drainage formalized.

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

- Continued scaling and stabilization works at BDRHEF intake.
- Removal of log jam from BDRHEF intake diversion channel site.
- Construction of BDRHEF intake diversion channel pad.

6.0 Transmission Line – Monitoring Results

6.1 Transmission Line Construction Activities

Right-of-Way Clearing:

- RVMA hand falling occurred in Segment 9.
- ROW falling occurred in Segment 9 and Segment 14.
- A grinder continued processing slash in Segment 7 (KM 2.5 of the Lillooet South FSR).

Existing Road Upgrades and Access Road Construction

- Transmission line access road upgrades/construction (including brushing, ballasting and drilling/blasting where necessary) were conducted in Segment 9 (Salmon Main) and Segment 14 (road 371.1).
- Bridge installation works were completed at Black Creek (Photo 30).

Transmission Line Pole Installation, Line Stringing and Clipping

- Foundation construction (ground works including blasting and use of heavy machinery) was conducted in Segments 6 – 7.
- Structure framing, steel hanging and stringing occurred in Segments 4 – 5 (Photo 29).

Environmental Summary:

- A hazard tree was removed near structure 150 in Segment 6.
- The IEM was present as required when clearing activities occurred within 150m of wetlands, 15m RVMAs (30m for CTF streams), 100m of Coastal Tailed Frog Streams, Class 1 & 2 suitable Grizzly Bear WHA and/or suitable forage habitat, moose and deer UWR, and within legally designated Old Growth Management Areas (OGMAs). All flagged boundaries were respected during clearing activities. No environmental issues were observed.

Photos:

Photo 29 – Setting poles in Segment 4 (October 28, 2014).

Photo 30 – Segment 8 Black Creek Bridge final approach grading works (October 29, 2014)

6.2 Water Quality Results

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

6.3 Recommendations

- The IEM has no recommendations at this time.

6.4 Upcoming Works

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

- Road upgrades will continue in Segments 8, 9 and 14.

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) 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

8.0 Mountain Goat Monitoring Program

As of October 31, the IEM initiated a Mountain Goat Monitoring program. The IEM or designate was on site to monitor Mountain Goat activity within 500m of clearing/construction activities surrounding the ULRHEF downstream tunnel portal. Mountain Goats will be observed from three 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).

Monitoring effort will be split between all three sites between sunrise and sunset, unless safety concerns preclude from doing so. The order of site visits will rotate daily. Construction activities will cease if a goat(s) are observed moving towards the migration corridor at MG-OBS01 and/or if a goat(s) are observed within a 500m line of site of a construction activity, and/or moving towards the migration corridor from MG-OBS03 or other location.

Please refer to the attached Mountain Goat Monitoring Daily Observation Forms for a summary of observations from this reporting period.

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#20	**Open**	Various location at ULRHEF, BDRHEF and along the Lillooet FSR	FAM04 (issued September 29, 2014) was issued to the contractor to address ESC concerns at HEF component sites. Since the issuing of FAM04 additional ESC concerns have been identified and added by the IEM	4. ULRHEF Intake (north and south sides) a. Ditch installation/maintenance b. Slope protection c. Spoil area winterization (plan submitted October 17, 2014) 5. ULRHEF Powerhouse a. Slope protection 6. BDRHEF Intake Access Road a. Slope protection 7. Upper Lillooet FSR a. KM 48 box culvert - reinstallation of silt fence and grading b. KM 43.5 - stabilization of failing material c. KM 39.7 box culvert – reinstallation of silt fence and grading	September 29, 2014	October 17, 2014	-
ULR#21	**Closed**	38km Laydown	Reportable spill – 300L of diesel spilled to ground at the fueling station	1. Prepare and submit EIR#013 outlining the root cause of the incident and how it will be avoided in future. 2. Provide confirmation that the spill has been fully remediated through the lab analyses of the confirmatory samples. Lab results were submitted to INX and the IEM along with a draft EIR on October 25, 2014.	October 6, 2014	October 21, 2014	October 31, 2014

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#22	**Closed**	ULRHEF intake	Written Stop Work Order issued by INX – CE must cease all work at the ULRHEF intake (north side) and upstream tunnel portal excavation following prolonged inadequate ESC measures and a second failure of the settling pond.	1. Submission of a long-term plan for an active dewatering treatment plan for review and approval by the IE, IEM and INX. 2. Implementation of an approved dewatering treatment system to the satisfaction of the IE, IEM and INX.	October 21, 2014	October 28, 2014	October 28, 2014
							next ITM – ULR#23

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#2)

Environmental Incident Reporting Form

General Information

Project Name: Upper Lillooet Hydro Project	**Project Component:** Laydown area at km38 of Lillooet River FSR
Time/Date of Incident Start: 01:30/2014-10-06	**Time/Date Incident Stopped:** 05:30/2014-10-06
Date of Report: Draft Submitted: 2014-10-24 Final Submitted: 2014-10-31	**Project Incident Report Number:** 2014-10-31 CE-EIR-013 **Incident Description:** 300L spill of Diesel Fuel at the Laydown area
Report Prepared By: Jordan Gagné	
Contractors Environmental Manager: Jordan Gagné / Ian McKeachie	
Independent Environmental Monitor (Sartori Environmental Services): Stephen Sims/ Tom Hicks	
Initial IEM Contact: 2014-10-06, the IEM was informed of the incident by email.	
Licensee's Environmental Manager: Julia Mancinelli	

Contact Information for Company Involved in Incident

Company: CRT-EBC	**Address:** 11-7339 Old Mill Road, PO Box 585, Pemberton, BC, V0N 2L0
Phone #: 604-894-5002	**Email:** jgagne@crtconstruction.ca/imckeachie@crtconstruction.ca/
Contact Person: Ian McKeachie/Jordan Gagné	**Position:** Environmental 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.**	☐	**Potential 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	☐	**Air Quality** **Please provide details in "Description" section below.**	☐

Please provide details in "Description" section below.			
Spill reported to external agencies **If yes, describe the receiving environment and substance/quantity spilled.** Provincial Emergency Program (PEP) – 300L of diesel fuel	☑	**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:
ULR FSR – km38 Laydown Area

Description and Cause of Incident:

Description:

- On October 6th, at approximately 12:40AM Luc Lavertu (CRT-ebc Fuel truck operator) was about to start refuelling the fuel truck at CRT-ebc laydown area (fuelling station, km38 of Lillooet River FSR).
- He received a call from Claude Côté (Superintendent) who needed him to perform another task, which was not supposed to take long.
- Because he had to leave, he decided to turn off the pump so the refuelling was being done by gravity. This would have given him more time to perform other tasks, as the truck fills up.
- Before leaving, he asked Luc Gagnon (mechanic) to keep an eye on the truck in case he was not going to be back in time to remove the hose once it has filled up.
- 50 minutes later, Luc Lavertu came back and noticed that the fuel truck was overflowing.
- They immediately closed the valve and started to clean up. They started by pumping the fuel, which was mixed with rainwater, in empty totes. They then used the septic truck to pump the rest of the spill. They also used up to 4 bags of absorbent pads to remove as much fuel as possible. It is important to note that an impermeable liner was previously installed under the soil surface directly under the area where the spill occurred, which prevented the spill from penetrating into the soil. .
- They finished cleaning up at 5:30AM.

Cause:

- There was negligence from the workers. They left the hose unattended.

Incident Witness: Luc Lavertu, Luc Gagnon & Claude Côté.

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: The spill exceeded the 100L reportable volume and had the potential to cause contamination of the soil in the vicinity of the spill (fueling area). The spill was contained in the area surrounding the fueling station and immediate spill response measures were enacted to mitigate the risk of soil contamination.		

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

As soon as the spill occurred:

- They immediately closed the valve and started to clean up. They started by pumping the fuel with small, which was mixed with rainwater, in empty totes. They then used the septic truck to pump the rest of the spill. They also used up to 4 bags of absorbent pads to remove as much fuel as possible. It is important to note that an impermeable liner was previously installed under the soil surface directly under the area where the spill occurred, which prevented the spill from penetrating into the soil.
- CRT-ebc superintendent (Gaétan Turgeon) & environmental manager (Jordan Gagné) were informed of the spill during the morning meeting at 5:45AM.
- CRT-ebc environment manager (Jordan Gagné) contacted the Provincial Emergency Program (PEP) to inform them of the incident. ***DGIR #142-102.*** Necessary steps (forms, notifications, confirmation that the cleanup was done) will be taken to follow-up with PEP within 60 days following the incident.
- Written notification was provided to the IEM (Tom Hicks) and Owner (Innergex) at 6:40AM.
- The septic truck was emptied and all contaminated liquid was put into empty drums, which were picked up by Safety-Kleen for proper disposal. The septic truck was also washed by using pressure water and bleach, which was also put into empty drums for disposal.
- On October 9th, the contaminated material was excavated and stored in 2 mega-trucks on site. An impermeable membrane was put on top to avoid contact with rain water. The material has been transported by Alchemist Special Carriers (contact: Heather Morais, 604-882-1518) and disposed of at Safety Kleen System Inc. (contact: Trevor Jaster, 604-834-7695) at this address: Delta (Vancouver, BC), 7803 PROGRESS WAY LADNER, BC V4G 1A3. The membrane, where the spill occurred, was also removed, and replaced by a new one.
- The contaminated site was cleaned up in accordance with the *Remediation of Sites Contaminated by a Spill.*

- Soil samples were taken on October 9th at different locations (see attached document) where the spill occurred to make sure all of the contaminated material was removed from the area. CRT-ebc received the results, and are all within acceptable limits from the *Environmental Management Act - Contaminated Sites Regulation* which states that for an industrial contaminated site the limits of LEPHs is 2000ug/g and HEPHs is 5000ug/g. (see results attached)

Actions to Prevent Incident Recurrence

Before the incident the mitigation measures in place were:

- All CRT-ebc employees and sub-contractors during mandatory orientation, and at frequent safety meetings, are educated on how to respond to a spill.
- A membrane was installed under the area where re-fuelling occurs.
- Spill kits are available in every piece of equipment, as well as on site next to the re-fuelling area.

After the incident, additional mitigation measures were put in place:

- Superintendents, foremen and crew have been reminded of not leaving equipment unattended while re-fuelling at the mass safety meeting held on Wednesday October 8th. They have also been reminded of the spill response procedure, which was well followed, in case of another spill.
- CRT-ebc superintendents and environmental managers met with the 2 persons involved in the incident, to make sure this kind of negligence does not happen again on site.

Notification Record

Agency Reported to	Contact Information	Agency Contacted		Date and Time Reported	Reported By	Method of Reporting
		Yes	No			
External Notifications						
MFLNRO BC EAO	James Davies	☑	☐	EIR Submitted on November 3, 2014	Julia Mancinelli	Email
	Chris Parks	☑	☐	EIR Submitted on November 3, 2014	Julia Mancinelli	Email
PEP	1-800-663-3456	☑	☐	2014-10-06 6:20AM File close-up on 2014-11-10	Jordan Gagné & Ian McKeachie	Phone
MOE Staff	Conservation Officer Service 1-877-952-7277	☐	☑			

Notification Record						
Agency Reported to	**Contact Information**	**Agency Contacted**		**Date and Time Reported**	**Reported By**	**Method of Reporting**
		Yes	**No**			
DFO		☐	☑			
Environment Canada	604-666-6100	☐	☑			
Canadian Coast Guard	604-666-6011	☐	☑			
Local Fire Rescue	911	☐	☑			
Reported to	**Contact Information**	**Contacted**		**Date and Time Reported**	**Reported By**	**Method of Reporting**
		Yes	**No**			
Internal Notifications						
CRT-EBC	Jordan Gagné	☑	☐	2014-10-06 5:45AM	Gaétan Turgeon	In person
IEM	Tom Hicks tom@sartorienv.com	☑	☐	2014-10-06 6:40AM	Jordan Gagné	Email
Owner Innergex	Julia Mancinelli jmancinelli@innergex.com	☑	☐	2014-10-06 6:40AM	Jordan Gagné	Email

Contractor's Environmental Manager:

Jordan Gagné	Environmental Manager, CRT-EBC		2014-10-31
Print Name	Position and Company	Signature	Date

Ian McKeachie	Environmental Manager, CRT-EBC		2014-10-31
Print Name	Position and Company	Signature	Date

Reviewed by:

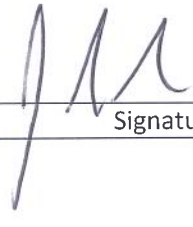
J. Stephen Sims	Independent Environmental Monitor, Sartori Environmental Services		2014-10-31
Print Name	Position and Company	Signature	Date

Table 1: Samples analysis - Results

CLIENT : **CRT - ebc**
PROJECT : **Upper Lillooet Soil Sample**
SGS Project # : **1421**
Test : **Heavy and Light Hydrocarbons**
Received : **October 10/14**
Date Reported : **October 22/14**

Sample ID **Sample Date/Time**		Analysis Start Date	Analysis Approval Date	MDL	QC - Blank	QC - DUP % RPD	QC - STD % Recovery	Comp 1 11:30am 14-Oct-14	Comp 2 11:30am 14-Oct-14	Comp 3 11:35am 14-Oct-14	Comp 4 11:40am 14-Oct-14	Comp 5 11:45am 14-Oct-14	Comp 6 11:45am 14-Oct-14
Analysis	**Units**												
Moisture Content	%	17-oct-14	22-oct-14	---	---	---	---	4,7	6,9	6,1	5,7	5,9	6,1
F1 (C6-C10)	µg/g	16-oct-14	22-oct-14	10	< 10	ND	93%	< 10	< 10	< 10	< 10	< 10	< 10
F2 (C10-C16)	µg/g	17-oct-14	22-oct-14	10	< 10	ND	111%	< 10	140	290	< 10	15	< 10
F3 (C16-C34)	µg/g	17-oct-14	22-oct-14	50	< 50	ND	111%	< 50	303	648	< 50	< 50	72
F4 (C34-C50)	µg/g	17-oct-14	22-oct-14	50	< 50	ND	111%	< 50	< 50	< 50	< 50	< 50	< 50
Baseline at nC50	Yes / No	17-oct-14	22-oct-14		---	---	---	YES	YES	YES	YES	YES	YES
							Total	<2000	<2000	<2000	<2000	<2000	<2000

Note:
The YES in the Baseline at nC50 means there are no hydrocarbons greater than C50 such as wax or grease.
All results are on a dry weight basis.

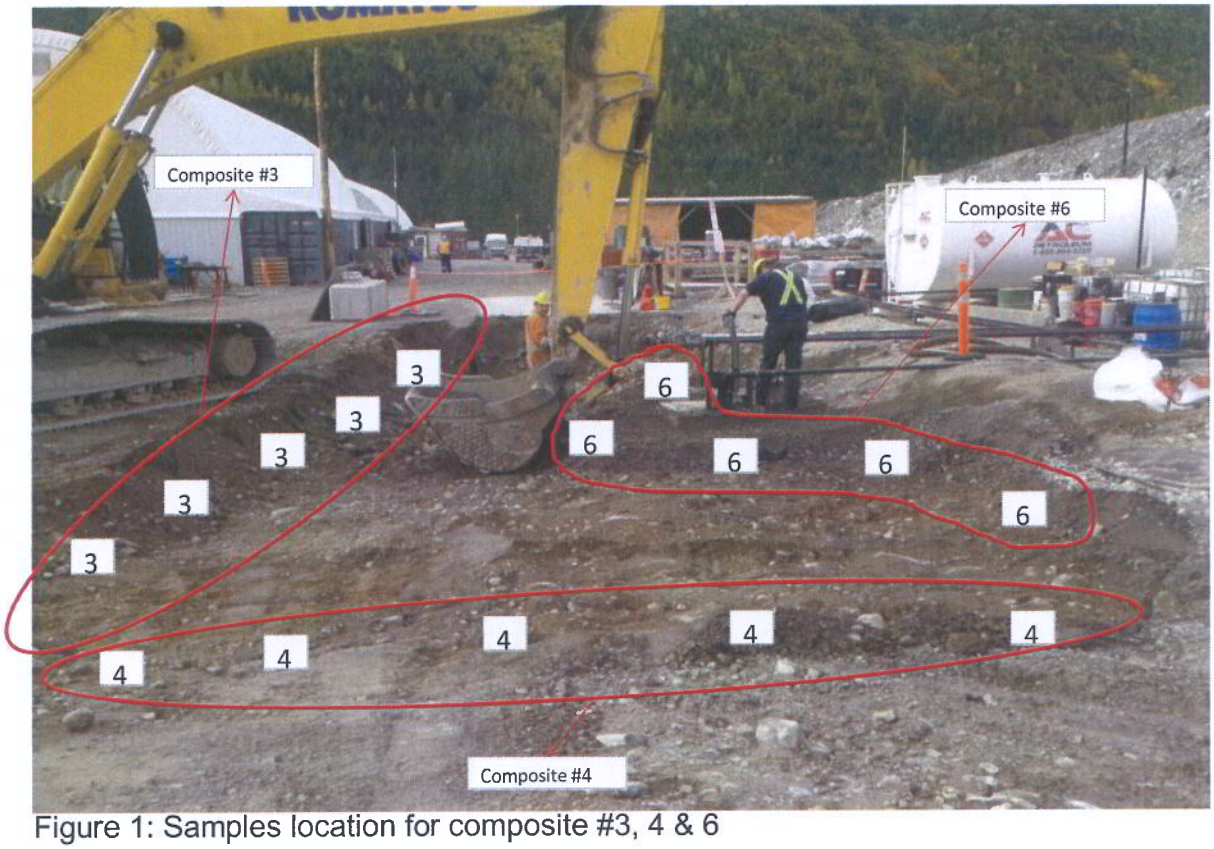


Figure 1: Samples location for composite #3, 4 & 6

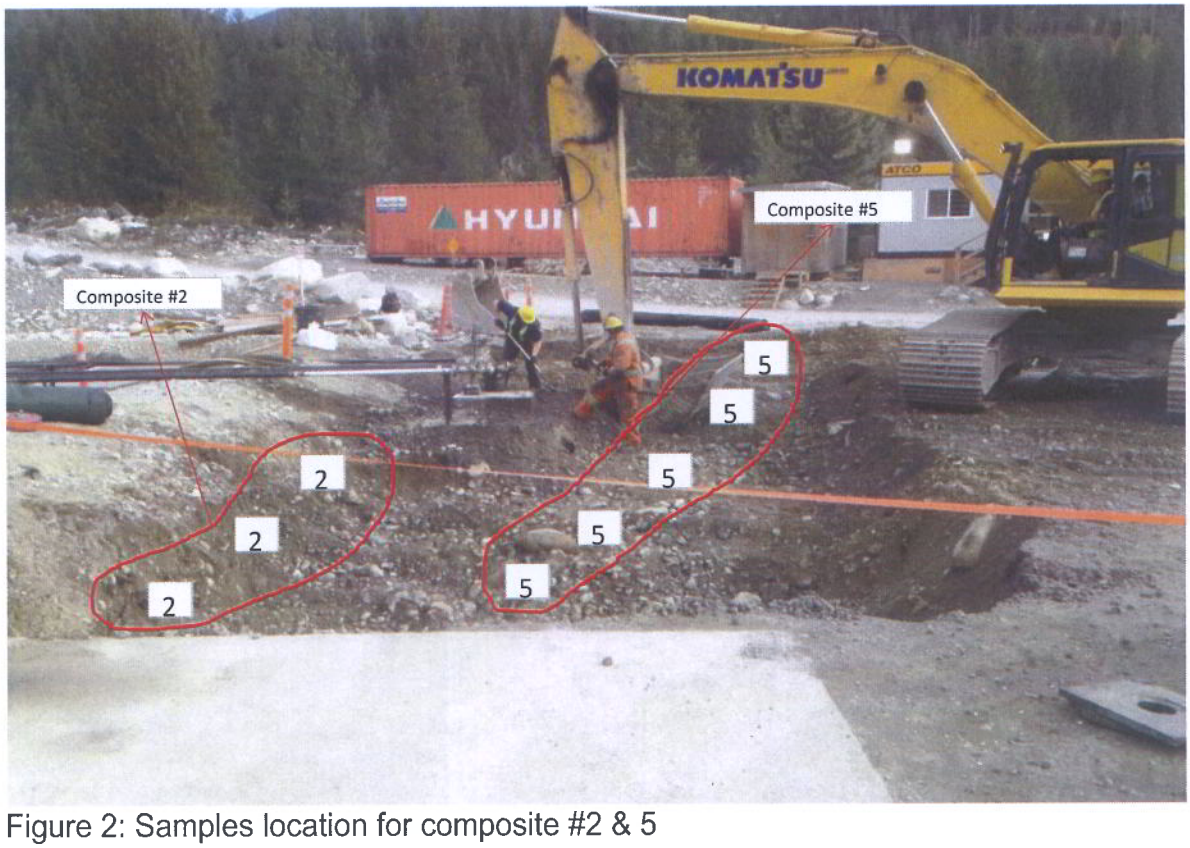


Figure 2: Samples location for composite #2 & 5

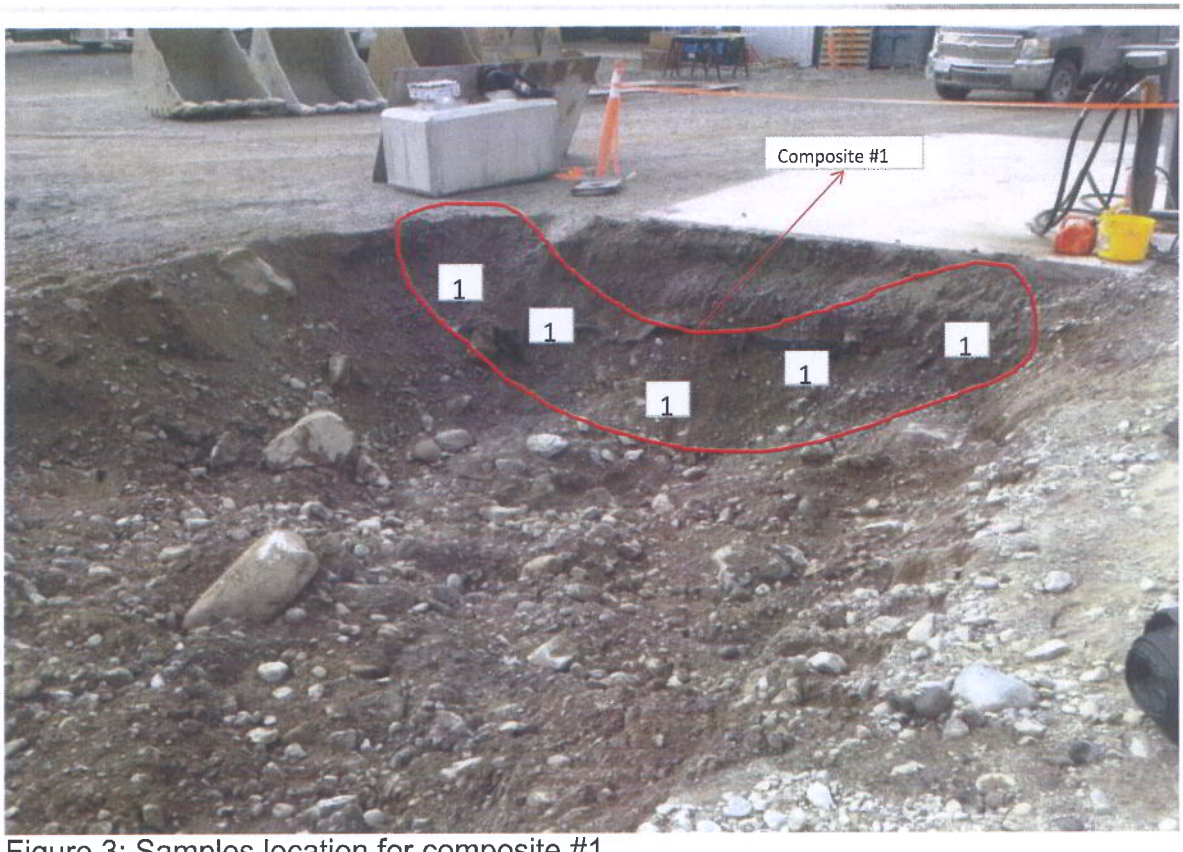


Figure 3: Samples location for composite #1

Upper Lillooet Hydro Project - Wildlife Observation Form (October 2014)

Required Data						Optional Data			
Date	Time	Observer (Company)	Species or Description	Location	Comments	Sex	Number	Activity*	Photos
10/6/2014	8:30:00 AI	Ian McKeachie (CRT-el	Moose	0.5km Camp Road		Male	1	TF	No
10/8/2014	4:28:00 PI	Matt Fuller (Sartori)	Harlequin Duck	ULRHEF PH settling ponds		Female	1	LI	Yes
		Species Observed or D	Notification Period	Agencies to be Notified					
		Northern Rubber Boa	Immediately	IEM, Owner					
		Grizzly Bear	24hrs	IEM, Safety Officer, Conservat					
		Wolverine Den	24hrs	IEM, MFLNRO, Owner					
		Spotted Owls	24hrs	IEM, MOE, Owner					
		Mountain Goats	48hrs	IEM, MFLNRO, Owner					
		* Activity :							
		BU: building nest							
		DI: disturbed							
		FD: feeding							
		EX: excreting							
		FL: fleeing							
		GR: grooming							
		IN: incubating							
		LI: unspecified							
		RR: rearing							
		ST: security/thermal							
		TE: territorial (singing)							
		TF: traveling,flying							

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Anne Sutherland

Date (YYYY-MM-DD): 2014-11-01

Weather (*cloud cover*, precipitation *and temperature*): Frost, clear sky, 0 wind

sartori environmental services

106-185 forester street, north vancouver, bc v7h 2m9
office tel 987.5588 fax 987.7740

Please submit **Mountain Goat Daily Observation Form** in person to a representative of Sartori Environmental Services (**Tom Hicks** or **Stephen Sims**) or by email to **steve@sartorienv.com** following each day of monitoring.

Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	08:30h	10:35h
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	13:40h	14:35h
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	10:45h	13:10h

Daily form #	1	of	1

If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.

Observation Site *(indicate if location other than OBS site)*	Time *(use 24hr clock)*	UTM Coordinates or Waypoint *(10U)*	Species Observed *(indicate Mountain Goat or other species)*	Observations *(be specific - visual sign, track, other sign)*	# of Animals	Age *(if known - refer to attached info sheet)*	Sex *(if known - refer to attached info sheet)*	Description of Activities *(feeding, moving, etc.)*	Comments *(habitat, snow conditions, etc.)*	Photo #s
MG - OBS01	10:30	10U 467898 5612845	None	No MG observed						
MG - OBS03	13:00	10U 469155 5614960	None	No MG observed						
MG - OBS02	14:30	10U 466760 5613967	None	No MG observed						

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Anne Sutherland

Date (YYYY-MM-DD): 2014-10-31

Weather (*cloud cover*, precipitation *and temperature*): Light rain 8 C 100 % cloud cover

sartori environmental services

106-185 forester street, north vancouver, bc v7h 2m9
office tel 987.5588 fax 987.7740

Please submit **Mountain Goat Daily Observation Form** in person to a representative of Sartori Environmental Services (**Tom Hicks** or **Stephen Sims**) or by email to **steve@sartorienv.com** following each day of monitoring.

Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	16:02h	16:48h
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	13:15h	14:15h
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	14:34h	15:30h

Daily form #	1	of	1

If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.

Observation Site *(indicate if location other than OBS site)*	Time *(use 24hr clock)*	UTM Coordinates or Waypoint *(10U)*	Species Observed *(indicate Mountain Goat or other species)*	Observations *(be specific - visual sign, track, other sign)*	# of Animals	Age *(if known - refer to attached info sheet)*	Sex *(if known - refer to attached info sheet)*	Description of Activities *(feeding, moving, etc.)*	Comments *(habitat, snow conditions, etc.)*	Photo #s
MG - OBS02									No Mtn. Goats observed	
MG - OBS03									No Mtn. Goats observed Fogged in but it cleared for short time	
MG - OBS01									No Mtn. Goats observed.	