Pacific Gateway Constructors		**Highway 91/17 Upgrade Project**	
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REVISION LOG

Version #	Date	Revised By	Approved By	Revised Section
1	10 December 2020	Gisele Rehe, P.Ag., B.I.T.	Patty Burt, RP Bio, AQP	
2	18 December 2020	Allegra Hollingbury, P.Eng		References added for Photos 1-10 Appendix 3 legend added
3	11 January 2021	Allegra Hollingbury, P.Eng		Issues tracking table updated

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CONTENTS

Appendices

1.0 INTRODUCTION

This report covers all activities from 02 to 29 November 2020. During this period works occurred in Areas C, D, E, F, G, H, and I. For the purposes of this report, the following areas shall be defined as:

- Area C: Portion of River Road West of Highway 17 (Includes L250, L275, L325, L350, part of L375)
- Area D: Portion of River Road East of Highway 17 (Includes L450, L475, part of L375).
- Area A: L100 North side of Hwy 17
- Area B: L100 South side of Hwy 17 including 96th Ditch
- Area E: Sunbury Mounds L500, L575, L550
- Area F: MKDelta (L1150S/1160/1170/1400) and C01 detour
- Area H: L1300 Weigh Scale
- Area G: Delta Nature Reserve (L2300/2400)
- Area I = West side of Hwy 91, truck parking area, E02 and E04 Detour
- Delta Nature Reserve Boardwalk
- Hwy 99 (Richmond)*

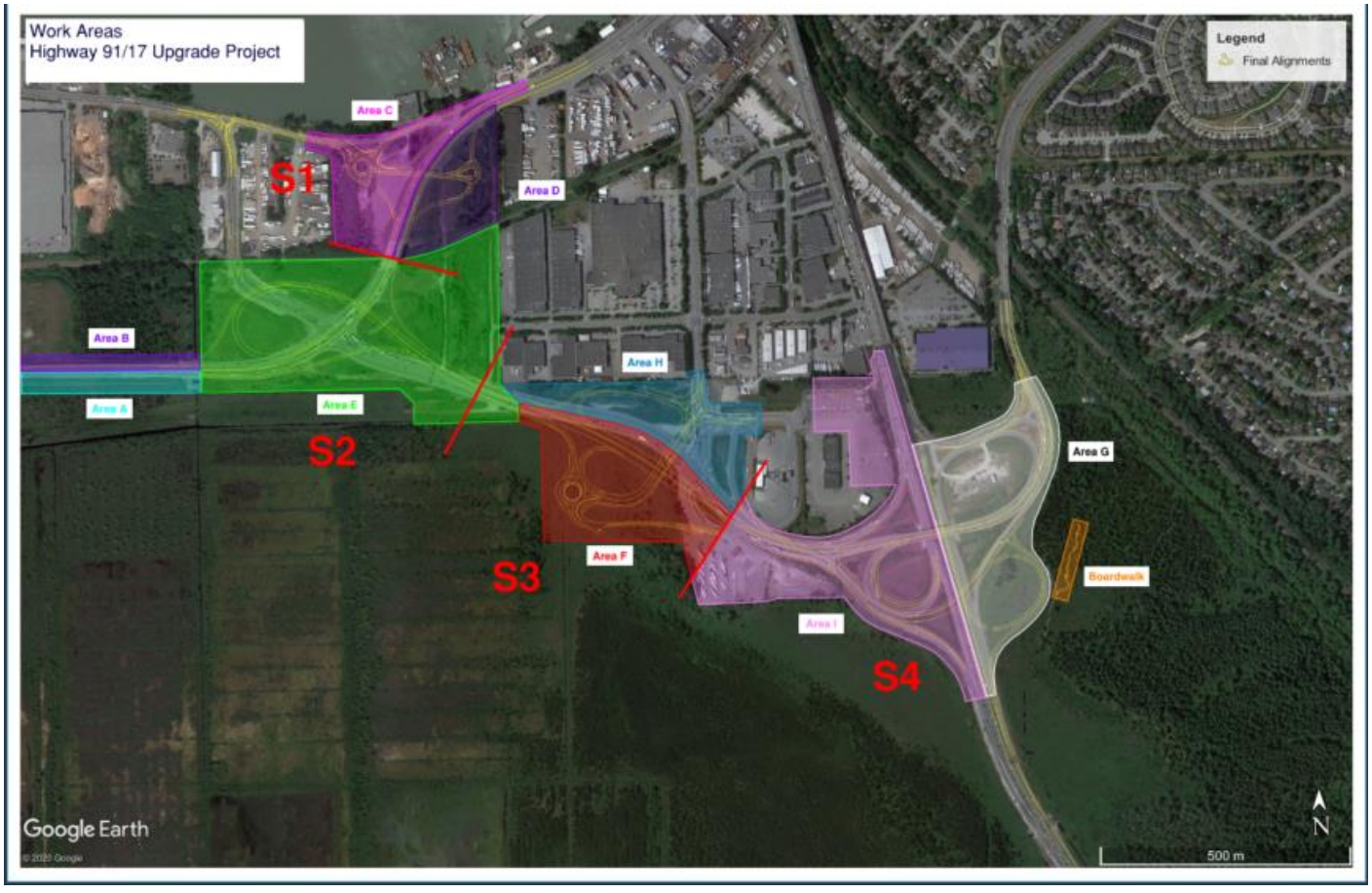


Figure 1: Approximate Work Area Locations *Hwy 99 (Richmond) location not shown in figure 12 km South

A Key Plan has been included showing the project alignments (See Appendix 1).

2.0 CONSTRUCTION ACTIVITIES

2.1 Activities for this Period

The following works took place within Section 1 in November 2020:

Area D

- Repaired sand slope that had washed out in Area D, east of W01 Detour.
- Placement of roadside barriers, signage and line planting to complete Detour W01
- Detour W01 opened on 2 -Nov-2020, both east and westbound lanes have been activated.
- ITS detour conduit crossing installed.

Area C

- Testing and final tie-in of new watermain was complete and put into service on 9-Nov-2020 (Photo 2).
- L275 embankment and preload fill placement recommenced and ongoing.
- L100 demolition of existing Hwy 17 completed including milling and pavement removal.
- Excavation of existing Highway 17 ongoing. Contaminated material encountered temporary stockpiled for confirmation testing. Temporary stockpiling procedure outlined in the CEMP were followed (Photo 1).
- L375 West Roundabout embankment and preload fill placement ongoing.
- L325 temporary truck turnaround complete.
- L350 construction of temporary lock block wall along River Road interface to complete embankment and preload fill placement.
- Electrical works conducted by Transwestern including relocation of electrical conduit, installation of temporary light pole, and removal of existing light pole.
- Sediment fence was repaired and modified for a wildlife sweep in the south portion of the River Road West roundabout and for the S1 stockpile area. Sweep was completed on 6-Nov-2020.
- During excavation for stone columns groundwater was encountered at a higher elevation than expected. As the Stage 2 PSI/DSI report identified groundwater contamination in this area, work was paused, and water samples were sent to the lab for analysis.

The following works took place in Section 2 in November 2020:

- No works were completed in Areas A or B.

Area E

- L575 completed hauling and placing preload sand, construction of basket wall 210 ongoing (Photo 3 and 4).
- L550 completed surface reclamation and construction of temporary basket wall 202 ongoing.
- L500 completed setting up visual barriers/screen and partial reclamation of Hwy 91 connector, clearing and grubbing, temporary wall construction complete, embankment fill placement ongoing.
- Fortis crossing 2200 CSP storm culvert installed, backfilled and compaction complete.

The following works took place in Section 3 in November 2020:

Area F

- Placement and compaction of river sand is ongoing. Sand hauled from Highway 99 stockpiles.
- Sub-excavation and construction of stone column test pad. Stone column test section completed. Survey layout for stone columns (Photo 8).
- Removed wire fence, sorted metal and woody debris, packed metal bin for disposal.

Area H

- Detailed excavation and hydrovac over Fortis gas line in preparation for placement of light weight fill (cellular concrete) (Photo 6).
- Cematrix mobilized to site and placement of light weight fill commenced (Photo 7).

The following works took place in Section 4 in November 2020:

Area I

- L2200 completed vegetation stripping and access construction. Completed surface reclamation of existing ramp. Hauling, placement, and compaction of sand including ditch infilling ongoing.
- Repaired sediment fencing and marked property boundaries.

Area G

- Sand platform along the entire length of the alignment completed.
- Auger holes and CPT tests ongoing.

Boardwalk

- Foundation pile installation complete.
- Decking and platform installation ongoing (Photo 9 and 10).

HWY 99 (Richmond)

- Relocated pre-load sand to Area F.
- Remainder of ESC fences were installed adjacent to the ditch high water mark.

2.2 Upcoming Activities

Section 1:

At River Rd, excavation will continue in preparation for the stone columns including the installation of a temporary water treatment facility to treat contaminated groundwater. ITS fiber relocation is scheduled for December. Stone column installation will commence in January followed by abutment foundation construction and L375E embankment/preload placement. In Area D preload settlement has commenced with embankment fill placement on hold in the most eastern portion of the roundabout.

Section 2:

In Area E, wall 210 and Wall 202 construction will continue. In Area B, the L550 1400 CSP culvert installation will commence in early January.

Section 3:

In Area H, Light weight fill over Fortis gas line will continue. The fish salvage of the Area H ditches is on hold until next year. In Area F, preload and embankment fill placement will continue. Wick drain installation will commence in December. Stone Column installation will continue.

Section 4:

In Area G, PGC is waiting on geotechnical test hole data for further recommendations to be made on next steps for this area. In Area I, L2200 embankment and preload fill placement will continue with anticipated completion date in early December. After the L2200 sand placement is complete, Detour E04 construction will commence along with L2100/L600 embankment and preload fill placement. Stone columns for Section 4 are scheduled to commence in late January.

3.0 ENVIRONMENTAL ISSUES

3.1 Environmental Incidents

At approximately 11:30am on November 03, 2020 a sheen was observed in a puddle around the Godwin pump and generator located adjacent to perimeter ditch in Section 2 and the Fortis crossing culvert install location. It is likely that there was some residue left on the pump during maintenance activities. Due to the heavy rain, this residue was mobilized to the pooling water under/beside the pump. No work was occurring in this area. White absorbent pads were placed in the pooling water. A berm was constructed, using sandbags and absorbent socks, around the pump and generator to eliminate the risk of contaminated water flowing down the bank of the ditch. All contaminated spill material was placed into hazardous waste bags for proper disposal by the PGC service provider (Photo 5).

On 06 November 2020, hydraulic fluid leaked from under a hydraulic dump trailer. <1L of the hydraulic fluid contacted the pavement. Spill Pads were placed on the pavement to absorb the hydraulic fluid and disposed of in the contaminated waste containment area.

On 16 November 2020, an oily sheen was observed in the truck stop parking lot near parked equipment. Hydrocarbon residue appeared to be left on the pavement during refueling of light standard. Hydrocarbon residue was cleaned with spill pads and reported to PGC Environmental Representative (Photograph 11).

On 27 November 2020, the excavator loading trucks at the Hwy 99 sand pile had its hydraulic line rupture around 12:30 am. The leak was on top of the boom and the operator noticed it immediately and shut down the machine. The leak ran down the arm and into the bucket (<1L) and there was no noticeable spillage on the ground (Photograph 12). Pads and trays were placed as a precaution and a scheduled repair was completed on the machine the following day.

At 11:30 PM on 29 November 2020, a hydraulic line burst on the dump truck tailgate as it was closing. The operator had completed dumping the load of sand and had pulled away before the spill event occurred. The spill volume was estimated to be approximately 1L. Operations were halted and the area was isolated, with absorbent pads immediately placed around the truck. The oil had sprayed onto the tailgate and onto the rear driver's side of the truck. Both areas were wiped clean. The crew ensured that no additional oil had spilled onto the preload sand and the truck was carefully removed from the site. An excavator scraped the surface of the sand to remove any potentially contaminated material, which was shoveled into spill bags for proper disposal.

3.2 Non-Compliance

No Environmental Non-Compliance Reports were issued or received during the reporting period.

Table 1: Non-Compliance Tracking

NCR #	Date Issued	Location	Description	Status

3.3 Non-Conformance

Nothing to report this period.

3.4 Opportunities for Improvement

Nothing to report this period.

3.5 Outstanding Environmental Issues

The following ongoing monitoring is being conducted (Table 2):

Table 2: Environmental Issues Tracking Table

Item No	Date	Environmental Issue or Required Action	Corrective Action	Projected Closure Date	Open/ Closed	Comments
1	25 June	Sediment fence with accumulated material at River Road West	Remove material and repair fence	29 June	Closed 30 June	Discussed with Supervisor. Accumulated material has been removed.
2	25 June	Minor dust at E01 Detour	Area watered to suppress dust	25 June	Closed	Dust suppression ongoing.
3	25 June	Potential track out at River Road East and West	Install gravel access pad	14 August	Closed	Ongoing monitoring performed. Pads will be installed if required.
4	10 July	Japanese knotweed growth in topsoil stockpile at River Road West	Treat with foliar application	10 August	Closed	Ongoing treatment efforts.
5	10 July	Construction personnel smoking throughout site as opposed to designated areas	Reiterate policies regarding smoking	13 July	Closed	Policies have been reiterated. An environmental advisory will be issued.
6	10 July	Trash can at River Road West was left full on site	Trash was removed. Crews reminded that trash is to be removed daily	10 July	Closed	
7	13 July	Approximately 3 L of diesel spilt from light station onto pavement	Spill volumes collected with absorbent materials	13 July	Closed	Refueling procedures to be reviewed with construction crews to prevent over filling.
8	16 July	Damaged sediment fence at River Road West and E01	Fence needs to be repaired	20 July	Closed	Fence repaired, and areas swept for wildlife.
9	23 July	Concern noted with noise levels at E01	Noise monitoring will be carried out	19 August	Closed	Monitoring will commence once works are happening in that area
10	28 July	Less than 1 L of oil leaked from the track of a CAT D6K Dozer	Contained with drip trays and absorbent pads	28 July	Closed	Normal wear and tear of equipment.
11	29 July	Sediment fence needs attention at L575	Repair fence	14 August	Closed	Spoke with Superintendent, Foremen fixed
12	10 August	Monitor for new instances of Japanese knotweed growth-project wide	Treat with foliar application	30 August	Closed	Ongoing treatment efforts and monitoring.
13	02 September	Excavated soils with potential contamination not fully covered with plastic	PGC Environmental Representative spoke to the Site Superintendent who indicated that	03 September	Closed	Low risk of contamination. Soils placed on an impermeable paved surface and has suspected high NaCl

			stockpiles will be covered the following day			concentrations; however, piles have since been covered
14	10 September	Overflowing general waste bin at the office laydown yard	Responsible party for scheduling was on days off, reminded to have a back up plan	11 September	Closed	Werner Beukes was already actioning a refuse pickup
15	17 September	Approximately 100 mL of engine oil spilled into the Burns Bog perimeter ditch due to a faulty fitting and the accumulation of water within a secondary containment structure	Spill response protocols were initiated immediately and the was reported to the appropriate agencies	17 September	Closed	Spill clean up initiated and reported to appropriate agencies
16	22 September	Gravel truck tracking out a hydrocarbon spill onto Hwy 91.	Truck was immediately taken out of service and spill volumes collected with kitty litter & absorbent materials	22 September	Closed	Spill clean up which included the use of a sweeper.
17	23 September	Swamped and compromised sediment fence as a result of the heavy precipitation	Inspection of all silt fence onsite and repair as required.	28 September	Closed	
18	29 September	Hydrocarbon spill while splicing plastic pipe	Spill was contained to a small area and immediately cleaned up	29 September	Closed	Spill absorbent materials were bagged and stored properly at the office laydown.
19	07 October	Small hydraulic fluid leak	Equipment immediately shutoff, cleaned, and repaired	7 October	Closed	Machine has been repaired, spill materials disposed of appropriately
20	16 October	Approximately 100 mL of applied tact coat at C01 that was impacted by rain events, migrated under the roadside barriers and entered into a ditch	Spill response protocols were initiated immediately, and the spill was reported to the appropriate agencies	16 October	Closed	Spill clean up initiated and reported to appropriate agencies: EMBC, DFO and MoTI
21	20 October	A sheen was observed on standing water within a trench tie in (total volume is estimated to be 50 mL). Source of spill is unknown.	Sheen was immediately collected with spill pads upon detection.	20 October	Closed	Reported to the Provincial Representative. Will continue to monitor the area.
22	23 October	Sand-slide failure on a small portion of the slope	The night shift Superintendent has been informed and	28 October	Closed	Preparations are currently being made to procure a wheel excavator to

		adjacent to the new paved detour at the Silda ditch. This was a result of a dewatering pipe that scoured the sand bank.	immediate action has been taken to stabilize the bank for further slides.			mitigate the scoured area and to stabilize the entire area.
23	26 October	Small spill (none to ground) due to a damaged hydraulic line fitting on a skid steer.	Spill was immediately cleaned with absorbent pads and the machine was taken out of service.	26 October	Closed	Equipment was repaired and returned to service.
24	3 November	Stockpiled waste asphalt at the S4 stockpile area appeared to be leaching a hydrocarbon sheen during rain event.	Construct berm around stockpile. Cover pile. Haul waste asphalt offsite.	3 November	Closed.	A berm was immediately built around the stockpile as temp control. The asphalt will be removed from site.
25	6 November	Hydraulic fluid leaked from under a hydraulic dump trailer. <1L of the hydraulic fluid contacted the pavement	Spill Pads were placed on the pavement to absorb the hydraulic fluid and disposed of in the contaminated waste containment area.	6 November	Closed	Proper protocols were followed by completing thorough equipment inspections on all equipment when it arrives on site prior to mobilizing into the field. This prevented a spill from occurring in a potentially more sensitive area.
26	12 November	Some equipment was observed to not have secondary containment	Spill trays needs to be placed under equipment when not in use	12 November	Closed	Spill trays placed under equipment + light plants. Crew reminded that spill trays need to be placed under equipment.
27	16 November	An oily sheen was observed in the truck stop parking lot near parked equipment. Hydrocarbon residue appeared to be left on pavement during refueling of light standard.	Hydrocarbon residue was cleaned with spill pads and reported by Werner Beukes (PGC).	16 November	Closed	Hydrocarbon residue cleaned.
28	25 November	Potential drainage issues identified at the S4 stockpile area. Weather events have caused damage to the sediment fence.	Sediment fence needs to be repaired and ongoing monitoring will occur.	1 December	Closed	Sediment fence repaired and area monitored.
29	25 November	Wet weather has caused roads in the S4 stockpile area to degrade	Cleaning of roadways. Access road maintenance. Other mitigation measures may include gravel	Ongoing	Open	

			placement on roadway.			
30	25 November	Accumulation of water in low lying areas. Site F.	Monitor areas. Drainage and pumping will be installed if required.	Ongoing	Open	
31	25 November	A trash can was observed to be full of water and unsorted waste indicating that it had been left uncovered.	On site trash needs to removed from site daily and brought to PGC laydown and sorted. Trash cans must be covered and secured at all times.	30 November	Closed	Trash removed from sight and crews reminded of proper waste management.
32	27 November	The excavator which was loading trucks at the Hwy 99 sand pile had its hydraulic line rupture around 12:30 am. The leak was on top of the boom and the operator noticed it immediately and shut down the machine. The leak ran down the arm and into the bucket (<1L) but there was no noticeable spillage on the ground	Pads and trays were placed as a precaution.	28 - November	Closed	Scheduled repair was completed on the machine.
33	29 November	Hydraulic line burst on tailgate of dump truck	Cleaned with absorbent spill pads and removed from site.	29 November	Closed	Truck departed from site to be repaired.

4.0 ENVIRONMENTAL MONITORING AND INSPECTION RESULTS

Daily site inspections were conducted during the reporting period by PGC (a representative was available during the day and night shift, as applicable). All operators were visited numerous times and all equipment was inspected to ensure that all best management practices were adhered to. PGC recorded regular equipment inspections. PGC indicated that environmental requirements were discussed with the construction crews prior to the commencement of works in new areas.

MESL conducted weekly visits on 03, 12, 19, 25 November 2020, following periods of heavy rain and during the day shift to measure compliance with the CEMP. MESL met with the environmental representative from PGC after the audits to discuss observations which had been recorded and upcoming works.

4.1 Air Quality and Dust Control

A water trailer is available at all times for dust control. Idling is limited to 1 minute for light duty vehicles and 5 minutes for heavy duty vehicles. PGC Environmental Coordinator checks stockpiles daily to monitor for any issues or potential issues with dust migration. Weather conditions generally wet throughout the month of November and no air quality or dust issues observed.

4.2 Noise and Vibration Management

Background noise data was collected at select stations on 13 November 2020. Noise monitoring day results captured were comparable to the baseline day results at the three monitoring stations, therefore, no major issues are reported.

Table 3 Noise Data

Start Time	Location	Description	Ambient Noise	GPS	Baseline (Day)			Results (Day)		
					Avg. (dB)	Min. (dB)	Max. (dB)	Avg. (dB)	Min. (dB)	Max (dB)
13:32	1	River Road West (Section1)	Active construction preload placement & compaction at Area C. Trucks hauling sand.	49.152693 LAT, -122.955650 LONG	59.0	54.2	75	65.4	61.3	69.8
12:42	3	Nordel Way Bog Area (Section 3)	Active construction preload placement & compaction at Area F. Construction of berms at L1300 interchange.	49.147230 LAT, -122.945896 LONG	71.9	53.4	92.3	66.6	58.6	79.3
14:45	5	Nordel Road Interchange (Section 3)	Removal of Peat at Area G- Placement and compaction of preload sand.	49.144235 LAT, -122.939154 LONG	70.8	58.9	84.8	72.3	63.6	90

4.3 Erosion and Sediment Control

Daily monitoring is completed by PGC Environmental Representatives, Site Supervisors, and Foreman to ensure the installed sediment fences are fully functional throughout the Project areas. Sediment control fences have been installed in active areas to prevent sediment run-off from clearing and grubbing activities, contain preload, and prevent wildlife from entering work areas. MESL inspects the silt fencing weekly and it during inspections the fence appeared to be in overall good condition. PGC repaired fence that was damaged from heavy rains (Area D east of the W01 detour Photograph 13 & 14).

In Area G, gravel has been replaced on haul roads which appeared to be in good condition (Photograph 15). Some sediment accumulation was observed at River Road West (Photograph 16), which was mitigated following the observation. Roads are swept at the end of each day shift and during night shifts, including the Highway 99 stockpile area in Richmond.

Throughout of the project site, catch basin protection has been installed; however, some (observed on River Road) were damaged and required replacement (Photograph 17). In the Section 4 stockpile area, a swale may need to be constructed near the entrance at the L2500 as flows have mobilized sediments and have overwhelmed a portion of sediment fencing (Photograph 18). This will continue to be monitored by PGC Environmental Representatives.

Most areas covered in sand preload appeared stable. Wet weather has caused road conditions in high traffic areas to degrade (Photograph 19). PGC will continue to monitor areas and repair as required. Water had accumulated in low-lying areas throughout the project; however, the stormwater has generally been contained to the work areas (Photograph 20). PGC will continue to evaluate the Project site to identify areas with high potential for water accumulation and mitigate accordingly.

4.4 Water Quality Management

Most of the wetland to the east of the existing highway closure in E02 is flooded. In Area G, the excavation strategy is to create sections, by building a berm of native material, and excavating each isolated section individually. The isolated section has water removed by an excavator, then material can be loaded into trucks with better visibility and minimal disturbance (reduced turbidity) to larger pond formed in Area G. Dewatering continued at Area G to maintain a manageable work environment (Photograph 21). Pumps discharged into a vegetated area to the north and percolated into the ground (likely cycling back into the work site). This system does not appear to be increasing turbidity due to the placement of the pumps and the natural filtration.

PGC has continued to monitor water quality in 96 Street Ditch and Silda Ditch, in addition to the East West Burns Bog Perimeter ditch at the Fortis crossing culvert site. During initial dewatering of the isolated area, water was pumped downstream of the work area. Once instream works commenced, the dewatering location was moved to a vegetated area to allow for sediments to settle out. Water quality results are presented in Appendix 7 (Figure 2).

Elevated turbidity was observed in Silda ditch in the month of November during and after heavy rain events. Minimal works were occurring at River Road West and the elevated turbidity was determined to be a result of weather events not construction activities.

Figure 2: Baseline water sampling locations, WQ-7 is grouped with WQ-5 and WQ-8.

4.5 Wildlife and Habitat Management

There were no wildlife salvages completed by Brybil for November 2020.

A wildlife sweep was conducted by PGC in Area G for access road construction. A fish screen and sediment fence were installed to isolate the area prior to the sweep. A wildlife sweep was conducted in Area C, south portion of the west roundabout, and for the S1 stockpile area on 06 November 2020. Maintenance of the isolation fencing will prevent any further wildlife sweep efforts from being required. Fish salvages in Areas H and I3 (L21000/West ditch) will be scheduled in 2021.

The beaver lodge on the L2300 (previously investigated by EBB Consulting) was given a 5 m buffer for unsupervised infilling works. EBB Consulting was present on 06 November 2020 and determined that the beaver lodge near the DNR could be retained as it was just outside the fill boundary and that the lodge was inactive. EBB Consulting also inspected the bank dens in the S2 Fortis trench which were discovered upon dewatering. EBB Consulting concluded that the dens were likely inactive and that works could proceed in the trench (Photographs 22 and 23).

Shrews (not Pacific water shrew) were encountered while advancing cuts into the soil bank at Area E. Brybil was contacted to provide guidance on how to proceed, measures were implemented to prevent injuries and fatalities to wildlife. Shrews dispersed from the area and were not handled.

4.6 Vegetation Management

Japanese knotweed was detected near the south end of Area C (north of the railway). If this area should be cleared or infilled, management of the knotweed will be required. This area is currently flooded, potentially due to recent beaver activity

4.7 Fisheries Habitat Management

There were no fish salvage completed for November 2020. PGC has indicated that the fish salvage at Area I3 has been scheduled for January 2021 and a revised memo for working outside of the reduced risk window for fish was supplied to the Province. Area H is scheduled for later in 2021 to better coincide with the scheduled construction activities at this location.

4.8 Construction and Hazardous Waste Management

Stockpiled waste asphalt in the Section 4 laydown area appeared to be leaching a hydrocarbon sheen during rain events (Photograph 24). MESL informed the foreman and an environmental representative from PGC who immediately worked to mitigate the issue.

Yellow wheelie bins with spill kits were readily available and fully stocked at each active work location while mobile equipment was also equipped with spill kits.

Hydrocarbon wastes were neatly stored in labelled drums near the site office which were covered and protected from rain. Zip tied hazardous waste bags containing used spill pads and contaminated soils are stored under the tent by the office muster point to stop rain reaching and spreading beyond spill trays. DEF containers that have been accumulating in hazardous waste storage area have been moved to recycling bin for disposal. Tervita and Super Save have been engaged to remove wastes from the designated areas on an as needed basis (Photograph 25).

Sub-contractors were informed by PGC that all equipment working near Burns Bog must be equipped with bio-degradable hydraulic oil. Labels were inspected and drums contained “Cat Bio Hydo Advanced Biodegradable Hydraulic Oil” while other heavy equipment was affixed with “Petro-Canada Environ MV46” labels (Photograph 26 & 27).

Some equipment such as lamp stands and one piece of heavy equipment did not appear to have secondary containment (Photograph 28 & 29); however, this appeared to be an oversight as a drip tray had been placed under most idle equipment. MESL spoke with Werner Beukes who indicated that new containment options are being investigated which are would allow the containers to retain hydrocarbons but drain clean rainwater.

A trash can was observed near the L2500 which was filled with miscellaneous trash (not sorted) which included food waste and was a quarter full of water, indicating that it had not been covered (Photograph 30). Trash is to be sorted and covered to deter wildlife. Food wastes are to be removed at the end of each shift.

Table 4: Hazardous Waste Storage and Disposal Tracking

Date (2020)	Location	Haz-Material Stored	Volume m^3	Comments	Date of Disposal
13 July	PGC Site Office Yard	Spent absorbents	N/A	Approximately 2-3 L of diesel was spilled on the pavement. Spent absorbents to be collected by Tervita.	TBD
28 July	L575 Preload Area	Spent absorbents	N/A	Less than 1L of oil to spill tray, absorbent pads used to mitigate spill to ground. Spent absorbent pads to be collected by Tervita.	TBD
17 Sept	Burns Bog perimeter ditch	Spent Absorbents	N/A	~100 mL of engine oil to water. Spent absorbent pads to be collected by Tervita.	TBD
21 Sept	Site office waste area	Spent Absorbents	N/A	Excess pads that were placed in spill trays. Spent absorbent pads to be collected by Tervita.	24 September 2020-3 barrels
24 Sept	Site office waste area	Spent Absorbents	N/A	Excess pads that were placed in spill trays. Spent absorbent pads to be collected by Tervita.	24 September 2020-3 barrels
24 Sept	Site office waste area	Used aerosols	N/A	Spray paint cans that had collected to date.	24 September 2020-3/4 of a bin
25 Oct	PGC Site Office Yard	Used aerosol paint cans, contaminated soil and plastic oil containers.	55 m^3	Spray paint cans that had collected to date, damaged drum with the soil and empty containers.	25 October 2020
3 Nov	Site office waste area	Wood waste bin	N/A	Pallets and other wood by products	3 November 2020

4.9 Spill Management and Emergency Response

No emergency responses were recorded during this reporting period

4.10 Contaminated Sites Management

The Approval in Principle (AiP) application package for Sections 1 and 2 was submitted to BC Ministry of Environment and Climate Change Strategy (ENV) on 04 September 2020. PGC and the design team has inquired with ENV regarding the status of ENV's decision, and it is understood that ENV is still reviewing the application. Anticipated approval date is 31 January 2021.

Contaminated sites work for Section 1 stone columns commenced on 27 November 2020, with a Notice of Independent Remediation (NIR) submitted for the excavation and temporary stockpile of contaminated material until the AiP received.

A Remediation Plan has been prepared by McElhanney for Section 3 and 4 to manage contamination that is anticipated to be encountered during construction activities and managed under a Notice of Independent Remediation with the Ministry of Environment. In addition, the Project Wide - Contaminated Sites Management Plan (CSMP) will be followed in Sections 3 and 4.

5.0 ENVIRONMENTAL PERMITS

5.1 Status Update

A Permit Tracker is provided in Appendix 4.

A Permit Conditions Tracker is included as Appendix 5 outlining all DFO and WSA permit terms and conditions.

5.2 Status of the Table of Commitments and Assurances

The status of completed and ongoing commitments in the Table of Commitments and Assurances is provided in Appendix 6.

6.0 SITE PHOTOS

Photo 1. Sand excavation of Hwy 17 off-ramp at Area C. Material to be placed at preload below for L225.

Photo 2. Paving and compacting asphalt on River Road over completed watermain work.

Photo 3. Sierra slope installation at the L575/L500 alignment

Photo 4. Sierra slope wall construction at Area E.

Photo 5. Hydrocarbon sheen at the pump at the S2 Fortis trench.

Photo 6. Removal of sand and gravel above the Fortis BC gas line at Area H.

Photo 7. Cemetrix mobilizing batch plant for lightweight concrete pour next week (at Area H).

Photo 8. Menard continuing stone column excavation at Area F.

Photo 9. Installing beams and stringers on top of pile caps near the north end of the existing boardwalk.

Photo 10. Planks installed on stringers at north tie-in on the DNR Boardwalk.

Photo 11. Diesel residue sheen cleanup in the truck parking area.

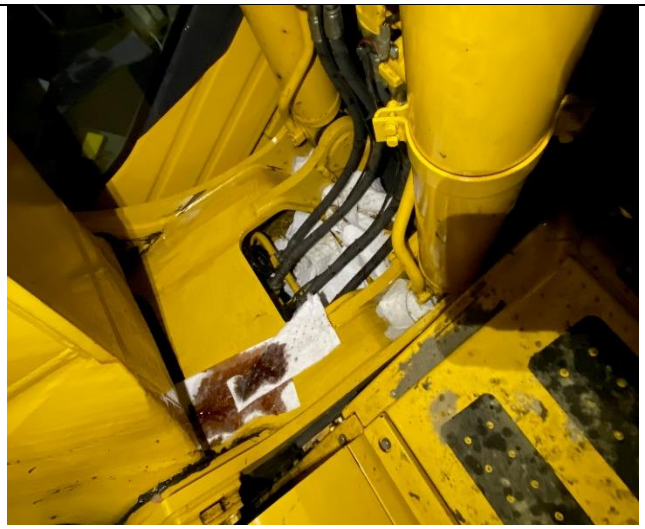


Photo 12. Hydraulic fluid being cleaned from machine (Hwy 99 Richmond sand stockpile).

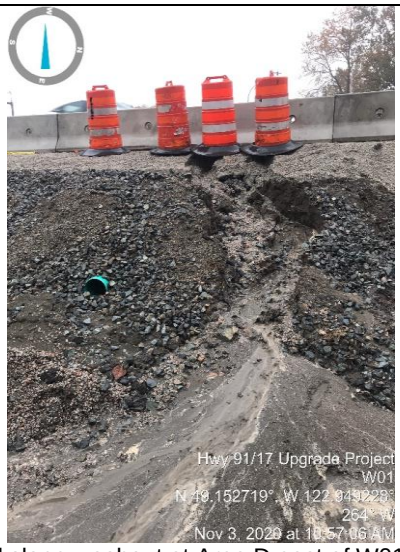


Photo 13. Sand slope washout at Area D east of W01.

Photo 14. Some sediment fencing had been damaged and needed repairs.

Photo 16. Track out was observed onto River Road West.

Photo 15. Fresh gravel had been applied to haul roads at Area G to reduce track out.

Photo 17. Damaged inlet protection on River Road West (Area C).

Photo 18. Drainage issued identified near the L2500. Flows overtopping sediment fencing.

Photo 19. Working surfaces and haul roads were beginning to deteriorate (near L2500).

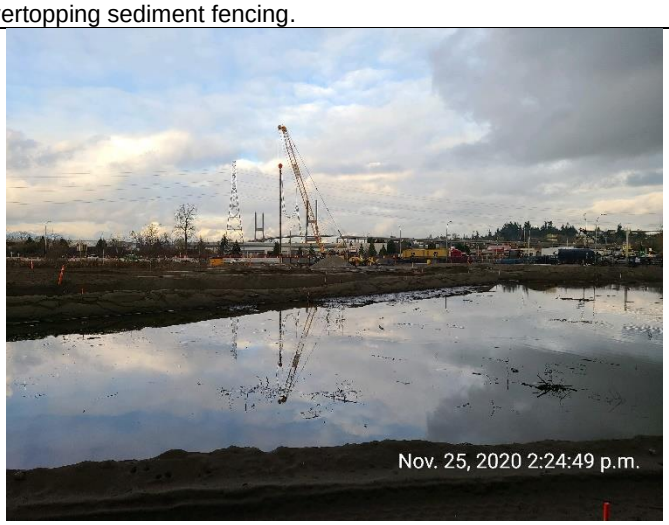


Photo 20. Low lying areas had infilled with water (view near Area F).

Photo 21. Area G was dewatered by active pumping which was discharged into a vegetated area.

Photo 22. The inactive beaver lodge was observed along the edge of the fill at the Delta Nature Reserve.

Photo 23. Beaver bank dens were observed within the dewatered S2 Fortis trench. EBB Consulting confirmed they were inactive.

Photo 24. A hydrocarbon sheen was leaching from the asphalt stockpile at Area G.

Photo 25. Super Save was actively collecting wastes which were stored in labelled bins near the site office.

Photo 26. Drum containing “Cat Bio HYDO Advanced Biodegradable Hydraulic Oil”.

Photo 27. Equipment affixed with a "Petro-Canada Environ MV46 Hydraulic Oil" label.

Photo 28. Some equipment such as light stands were lacking secondary containment.

Photo 29. Drip trays had not been placed under all idle equipment, despite being readily available.

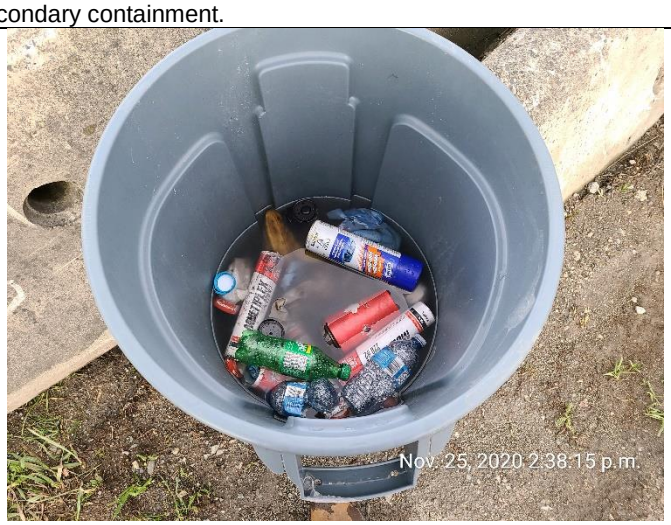
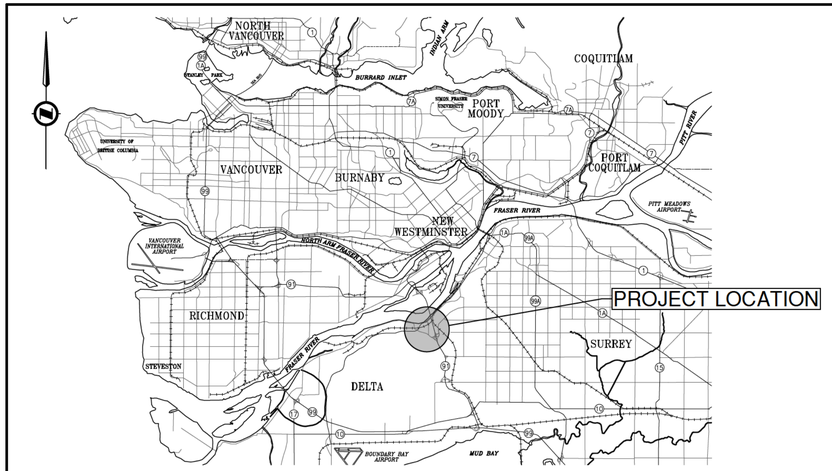


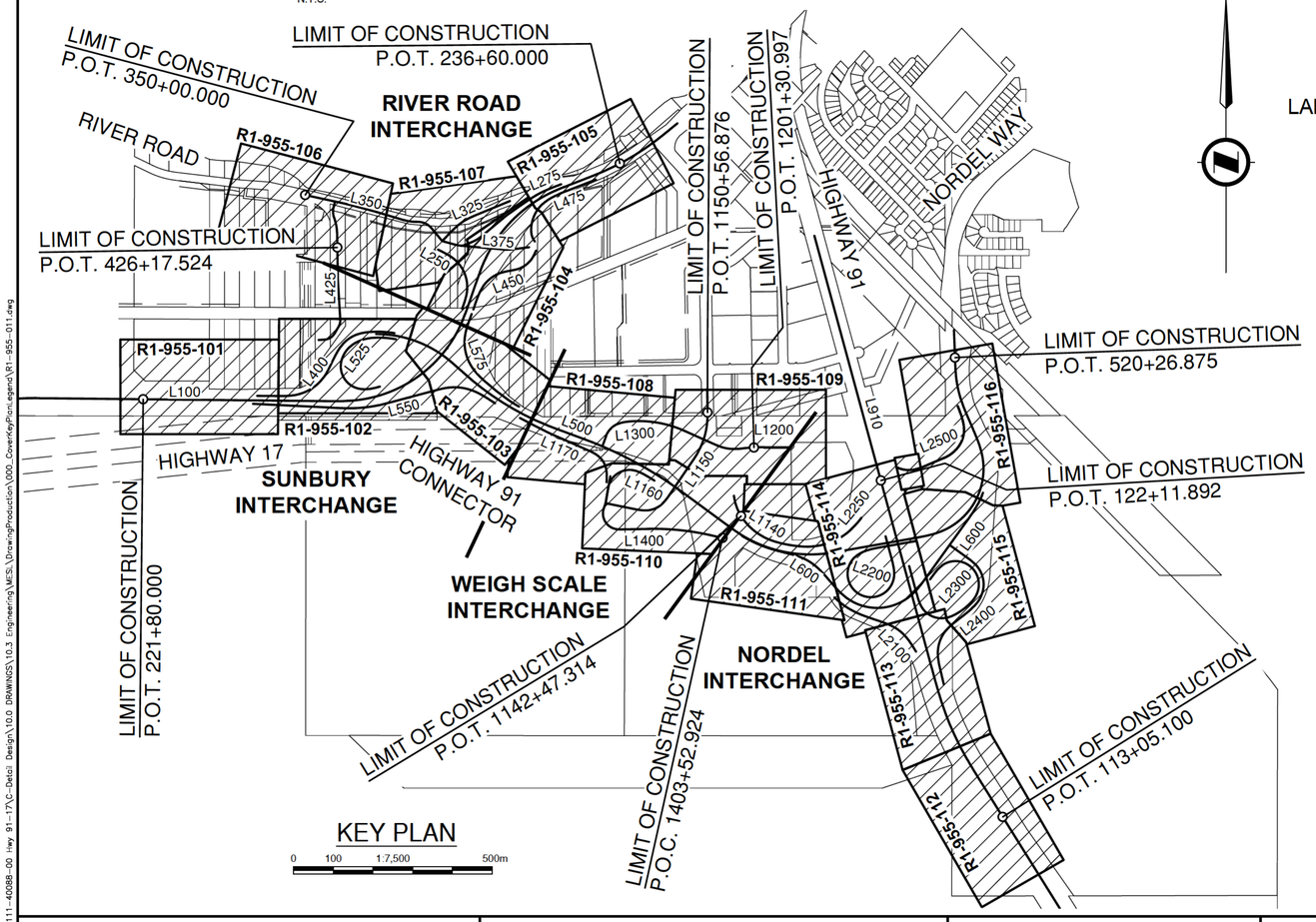
Photo 30. Trash can filled with water and unsorted trash.

APPENDIX 1: KEY PLAN DRAWING



LOCATION MAP

N.T.S.



KEY PLAN

0 100 1:7,500 500m

BRITISH COLUMBIA

Ministry of Transportation and Infrastructure

PROJECT NO. 08900

HIGHWAY 91/17 UPGRADE PROJECT DESIGN BUILD

HIGHWAY 17 - STA. P.O.T 221+80.000 - STA. P.O.C. 236+60.000

1.480 km

HIGHWAY 91 - STA. P.O.T 113+05.000 - STA. P.O.T. 122+11.892

0.907 km

LANDMARK KILOMETRE INVENTORY - SOUTH FRASER PERIMETER ROAD: HWY 99 - 136 ST
SEGMENT 3134 (EAST)
km 8.92 to km 10.23
SEGMENT 3135 (WEST)
km 9.67 to km 12.17

LANDMARK KILOMETRE INVENTORY - HWY 91 ANNACIS: RTE99 - NORDEL I/C
SEGMENT 3002 (NORTH)
km 7.10 to km 7.85
SEGMENT 3003 (SOUTH)
km 0.00 to km 0.75

LANDMARK KILOMETRE INVENTORY - HWY 91 ANNACIS: NORDEL I/C - JCT 91A
SEGMENT 3030 (NORTH)
km 0.00 to km 0.27
SEGMENT 3050 (SOUTH)
km 3.61 to km 3.88

ROADWAY DESIGN

SCALE AS SHOWN

CAD FILENAME R1-955-011

PLOT DATE 2020-02-14

REV	DATE	REVISIONS	NAME
A	2020-02-14	30% INTERIM DESIGN SUBMISSION	D. DULAY

Pacific Gateway Constructors

McElhanney

SEAL

DATE

BRITISH COLUMBIA

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
SOUTH COAST REGION
HIGHWAY ENGINEERING AND GEOMATICS

D. DULAY Eng.L., P.L. (Eng)
ENGINEER OF RECORD
DATE 2020-02-14

DESIGNED V. MAK DATE 2020-02-14
QUALITY CONTROL T. SMILJANIC DATE 2020-02-14
QUALITY ASSURANCE D. DULAY DATE 2020-02-14
DRAWN E. YANG DATE 2020-02-14

HIGHWAY 91/17 UPGRADE PROJECT

KEY PLAN

CONTRACTOR FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
2111-40088-00	08900	1	R1-955-011	A

PLOT DATE: 2020/02/14 N:\Proj\2111-40088-00 Hwy 91-17\C-Detail Design\10.0 DRAWINGS\10.3 Engineering\MES_\DrawingProduction\000_CoverKeyPlan_legend\R1-955-011.dwg

APPENDIX 2: SPILL AND INCIDENT TRACKER

HWY 91/17 SI E
Environmental Spill and Incident racking

Incident #	Date Of Event	Date Reported	Date Initial Notification Issued	Shift	Approx ime	Contractor	Sub Contractor	Silo	Classification	Description of Event	Location	Fluid Amount (L)	Fluid ype	ype of Equipment	Causal Factors	Action aken	Corrective Actions Date Complete
1	13-Jul-20	13-Jul-20	1 -Jul-20	Night	18:01 - 18:30	PGC	National Rentals		Sp ll (1.1L-5L)	Diesel sp ll to ground- paved su	PGC Site Office Yard	2	Diesel	Light plant	Inadequate Procedures	After the sp ll was reported at approximately 23:00 absorbent pads were placed on the surface in an attempt to absorb most of the surface diesel. Th s was repeated two times. The contaminated pads were removed, and a granular absorbent sand was placed on the spill to absorb any other res dual d esel from the spi l site. The con aminated gravel was then removed by using a broom and a shovel. Contaminated absorbent pads and contaminated so ls were placed in separate designated drums for proper disposal by a service provider.	
3	17-Sep-20	17-Sep-20	17-Sep-20	Day	12:01-12:30	PGC	NA		Minor spi l (<1L)	O l sp ll to water	CO1 Detour	<100ml	Oil	Godwin pump	The spill tray had fil ed with water because when the pump s in operation, the pump d scharges air as water is pumped (Dri-Prime pump). Sea s can wear over time, and water can be drawn into this hose in add tion to air. Water was drawn through this 1 hose and had discharged into the spill tray.	Clean up e forts commenced immediately. Booms were p aced in the water. Spi l pads were placed around the source, in the spi l tray and in the water course. The sand/soil material along the bank was shoveled. All used sp ll ma erial and contamina ed so l was p aced in hazardous waste disposal bags. These bags were brought to the hazardous waste s orage area in the laydown. The pump has been taken out of serv ce and w ll be inspected by a mechanic. The watercourse will be mon tored for any residual oil.	
	23-Sep-20	23-Sep-20	Norm (Binni) in ormed verbally	Night	2 :31-1:00	PGC	Nordel Trucking		Minor spi l (<1L)	O l leak on paved road surface	CO1 Detour	<500ml	Oil	Dump truck	O l leaked occurred onto the road surface when a truck was busy off oading gravel onto the CO1 road shoulder.	A spill was caused by one of the Nordel trucks wh le de ivering gravel to the CO1 s te. O l was tracked out over a large area on H ghway 91. Immediate act on was taken and the truck was taken out of service. Kitty litter sand and spill pads were used to absorb excess l quid from the road surface. The road sweeper was called o remove and sweep the road- all the contaminated kitty litter sand was successfully removed. Some residual staining remains on the road surface.	
5	29-Sep-20	30-Sep-20	Jordan Jef ares (Binn e) verbally	Day	12:01-12:30	PGC	Quattro Constructors		Sp ll (1.1L-5L)	O l sp ll to ground - pre- oad	River Road West (Area C) to the east of water main insta lation	2	Hydraulic oil	Pipe fusing machine	Normal wear and tear on moving machine parts- unforseen circumstances.	Machine turned off, driptrays and absorbent pads p aced under areas of concern. Machine covered with poly overnight until t can be removed from site.	
6	7-Oct-20	7-Oct-20	Jordan Jef ares (Binn e) verbally	Day	13:01-13:30	PGC	NA		Minor spi l (<1L)	O l leak on machine	E01 aydown area	<500ml	Hydraulic oil	Excavator	Normal wear and tear on moving machine parts- (hydraulic boom f tting) unforseen circumstances.	The operators stopped the machine immediately and not fied the supervisor. Sp ll trays were placed under the excavator. A mechan c was cal ed to site to safely move the excavator to prevent any additional leaks. Add tional spi l containment materials were placed on the ground around the excavator to protect the ground during removal and cleaning of the excavator. No oil was found on the ground, and no watercourses were nearby. The machine was repaired. A l used spi l mater als were placed in the hazardous waste segregation area at the PGC site o fice.	
7	9-Oct-20	9-Oct-20	Norn Richard	Night	2:01-2:30	PGC	NA		Minor spi l (<1L)	O l leak on owner operated excavator	EO2 detour	<200	Hydraulic oil	Excavator	Normal wear and tear on moving machine parts- (hydraulic sea) unforseen circumstances.	The operators stopped the machine immediately and not fied the supervisor. The MoTI represen ative, Norm R chard, was notif ed. The machine was turned off and spi l trays were placed under the excavator. This s an owner operated machine and an inspection revea ed the root cause of the problem. A mechanic w ll be ca led to site to safely replace the damaged seal of the excavator to prevent any additional leaks. With except on of the drip-tray no addit onal spill containment materia s were placed on the ground around the excavator as no flu d was sp lled on the ground surface. The drip tray remains under the faulty area as a measure to prevent any fluid from dripping on the sand until the repairs have been completed. A l con aminated sand from the insides of the track were placed in the hazardous waste segregation area at the PGC s te of ices.	
8	16-Oct-20	16-Oct-20	Norm Richard- Directly after incident	Night	3:31- :00	PGC	A l Roads		Minor spi l (<1L)	After a recent rain event eu sif ed bitumin (Tack Cout SS1) liqu d dilu ed with rainwater and m grated off-site in o a nearby waterfi led d tch that is connected to the Burns Bog.	CO1 detour	<100	Emulsified b tumen bond l quid	Handheld spray bott e	Excess Tack Cout SS1- (emu sif ed bitumen bond liquid) was eft on the newly paved asphalt surface. After a recent rain event the iquid d luted with rainwater and migrated off-si e into a nearby waterfi led d tch that is connected o the Burns Bog.	Wh te absorbent pads were placed on the surface to absorb excess surface l quid. An absorbent boom-sock was used to contain and absorb additional l quid that migrated underneath the concrete barr ers. A sweeper vac truck was deployed immediately after the incident to safely remove all remaining sur ace liqu d from the aspha t. The Environmental Representative used absorbent pads and a boom-sock to remove a brown oily residue from the surface of the water fi led d tch. All contaminated pads were p aced into a p ast c bag for proper disposal by the PGC service provider.	
9	20-Oct-20	20-Oct-20	Jordan Jef ares	Day	9:31-10:00	PGC			Minor spi l (<1L)	Sheen observed on surface of water in trench t e in ocat on	River Road West	<50ml	unknown hydrocarbon	unknown	unknown	Wh te sp ll pads were placed on the surface of the water to remove the sheen. Spill pads were bagged and placed in a hazardous waste bag for proper d sposal. The Province's Representative was notif ed. The surrounding area was inspected for any s gns of hydrocarbons.	
10	22-Oct-20	22-Oct-20	Jordan Jef ares	Day	11:01-11:30	PGC			Minor spi l (<1L)		8100 Nordel Way		sewage				

HWY 91/17 SI E
Environmental Spill and Incident racking

Incident #	Date Of Event	Date Reported	Date Initial Notification Issued	Shift	Approx ime	Contractor	Sub Contractor	Silo	Classification	Description of Event	Location	Fluid Amount (L)	Fluid ype	ype of Equipment	Causal Factors	Action aken	Corrective Actions Date Complete
11	26-Oct-20	26-Oct-20	Jordan Jef ares	Day	15:31-16:00	PGC			Minor spi l (<1L)		E01 aydown road under Nordel Way overpass	<500ml	Hydraulic luid	Sk d steer	Operator backed over skid steer hydrau ic ine which caused crimped f tting to detached from hose and leak.	The operator stopped the machine immed ately and not fied the supervisor. The MoTI represen ative was not fied. The leak from the sweeper attachment hydrau ic ine was fully iso ated with spill pads and the f tting will be replaced before using this machine. Fluid eaked only on to the top of the sk d steer sweeper attachment and no fluid was sp lled on the ground sur ace. The equipment was ocated on pavement away from any watercourses. All contaminated spill pads and sand from sweeper was placed in the hazardous was e segregation area at the PGC site offices.	
12	3-Nov-20	3-Nov-20	3-Nov-20	Day	11:31-12:00	PGC			Minor spi l (<1L)	Sheen on puddle bes de pump	Section 2 at Fortis crossing culvert	<10ml	unknown hydrocarbon	pump/generator	res due left on equipment during maintenace, rain mob lized contaminate to adjacent puddle	spill pads used to clean puddle, berm bui t to prevent run off to ditch. Secondary containment ordered.	
13	6-Nov-20	6-Nov-20	6-Nov-20	Day	1 :01-1 :30	PGC			Minor spi l (<1L)	Leak during equipment inspect on	Nordel Way Laydown	<1L	hydraul c flu d	hydrau ic dump trailer	equipment fa lure during pre-mob inspection	inspection paused and flu d cleaned up	
1	16-Nov-20	16-Nov-20	16-Nov-20	Day	13:01-13:30	PGC	Green be t		Minor spi l (<1L)	Sheen ound at ight p ant	Truck s op L1 00 entrance	<500ml	Diesel		Residue left under lightplant during refueling rain mobil zed and a sheen developed	Some of the runoff entered the catch basin, however the major ty was contained and cleaned after the incident was repor ed. Absorbent socks placed at the source of the contamination and near the catch basin to prevent further m gration of diesel into the stormwater system. Sp ll Pads were also placed on the pavement to absorb the diesel res due and disposed of in the contaminated waste containment area.	
15	27-Nov-20	27-Nov-20	27-Nov-20	Night	00:31-1:00	PGC			Minor spi l (<1L)	Hydrau ic ine burst	hwy 99 richmond	<1L	Hydruaic luid	Excavator	Excavator oading trucks had hydraul c line rupture	equipment immedintat on shut down, and c ean up commennced. Excavtor taken out of serv ce for repaire.	
16	29-Nov-20	30-Nov-20	1-Dec-20	Night	23:31-2 :00	PGC	De ta Agregate		Minor spi l (<1L)	Tipper truck bucket hydrau ic fa lure	Area F- preload	<1L	Hydraulic luid	Tipper truck	Hydrau ic failure	Contaminated so l removed- all contaminated areas cleaned. Surfaces wiped down with absorbent pads.	

SUMMARY		
otals	Unit/Value	**otal**
Total Volume	L	**4**
Total Spi ls	#	**15**
Classification		**otal**
Minor Spi l (<1L)	#	**13**
Sp ll (1.1L-5L)	#	**2**
Large Spill (5.1L-99.9L)	#	**0**
Significant Spill (To water or >100L)	#	**0**
Total	#	**15**
Fluid ype		**otal**
Hydraulic	#	**6**
Ant freeze	#	**0**
Diesel	#	**2**
Oil	#	**5**
Gasoline	#	**0**
Black Water	#	**0**
Glycol	#	**0**
Unknown	#	**2**
Total	#	**15**

APPENDIX 3: WILDLIFE SALVAGE RESULTS

GLOSSARY OF TERMS

PEMA = North American Deer Mouse

Sorex sp = shrew family

MITO = Townsend vole

MIOR = Creeping vole

SOBE: Sorex bendirii (Pacific Water Shrew)

RACL: Rana clamitans (Green Frog)

AMGR: Ambystoma gracile (Northwestern Salamander)

RAAU: Rana aurora (Red-legged frog)

RARA: Rattus norvegicus (Black rat)

Area C1

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Notes	Initials
30-Apr-20	6:35	P1	Common Shrew	60	100		relocated	PM, NS
30-Apr-20	7:13	P14	Common Shrew	45	80		relocated	PM, NS
30-Apr-20	7:31	P22	Common Shrew	50	100		Distinct next fringe and dark fringes along the thighs and back	PM, NS
3-May-20	6:30	S7	PEMA				relocated	JC
3-May-20	22:00	P13	Common Shrew	50	100		relocated	SB, JW
3-May-20	22:00	P13	Common Shrew	50	95		relocated	SB, JW
4-May-20	6:20	S3	PEMA				escaped	NS
4-May-20	6:35	S4	PEMA				escaped	NS
4-May-20	6:50	S7	PEMA				relocated	NS
4-May-20	7:20	M3	green frog (juv)				euthanized	NS
5-May-20	6:29	S3	PEMA				relocated	NS
5-May-20	6:45	S9	PEMA				relocated	NS
5-May-20	22:15	P8	PEMA				escaped	JC, JW
5-May-20	22:30	S9	PEMA				relocated	JC, JW
5-May-20	22:40	M2	green frog				escaped	JC, JW
5-May-20	22:45	S11	PEMA				relocated	JC, JW
6-May-20	6:36	S3	PEMA				relocated	NS, PM
6-May-20	14:50	P13	Common Shrew	40	70		white belly; relocated	JC
7-May-20	6:50	M3	green frog				euthanized	JC, PM
7-May-20	14:45	M6	green frog				escaped; traps closed	NS, JC

Area D1

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
20-May-20	14:30	DS5	Creeping vole?					no red on back; relocated	NS
21-May-20	6:15	DS1	PEMA					relocated	NS
21-May-20	14:15	DS1	common shrew	45	90			white belly; relocated	JC
21-May-20	14:30	DP4	common shrew	50	90			white belly; relocated	JC
22-May-20	14:20	DS1	Townsend's vole	80	120			no red on back; relocated	NS
23-May-20	14:00	CLOSED							

Area E1

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
19-May-20	22:00	ES40	PEMA						SB, PJM
21-May-20	7:17	ES4	PEMA					relocated	NS
21-May-20	7:48	ES13	PEMA					relocated	NS
21-May-20	8:03	ES22	PEMA					relocated	NS
21-May-20	8:08	ES28	PEMA					relocated	NS
21-May-20	8:34	ES40	PEMA					relocated	NS
21-May-20	23:15	ES30	PEMA					relocated	JC/PM
22-May-20	6:52	EP1	common shrew	40	80			relocated	NS
22-May-20	7:00	ES3	townsend's vole	100	140			no red on back; relocated	NS
22-May-20	7:04	ES4	PEMA					relocated	NS
22-May-20	7:37	ES33	PEMA					relocated	NS
23-May-20	6:45	EP1	common shrew	50	100			white belly	JC
23-May-20	7:00	ES9	house mouse?					grey, small ears	JC
23-May-20	7:15	EP5	common shrew	60	110			white belly	JC
23-May-20	7:15	EP5	common shrew	40	80			white belly	JC
23-May-20	7:45	ES33	house mouse?					escaped	JC
24-May-20	6:18	ES3	PEMA					relocated	NS
25-May-20	6:00	EP1	common shrew	40	80			relocated	NS/JC
25-May-20	6:00	EP1	common shrew	50	90			relocated	NS/JC
25-May-20	6:00	ES3	PEMA					relocated	NS/JC
25-May-20	6:15	EP5	common shrew	40	75			relocated	NS/JC
25-May-20	6:15	EP5	common shrew	50	85			relocated	NS/JC
25-May-20	6:15	EP5	common shrew	50	50			relocated	NS/JC
26-May-20	6:20	ES22	PEMA					relocated	NS

Area D2

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials	
11-Aug-20	15:15	P14	Sorex sp.	50	40			relocated	NS	
11-Aug-20	15:15	P14	Sorex sp.	50	40			slightly darker w/ lighter belly	NS	
11-Aug-20	22:33	P14	Sorex sp.	35	40				PM/SB	**PEMA was
12-Aug-20	6:25	S4B	PEMA					relocated	NS	frequently
12-Aug-20	7:10	S30	PEMA					relocated	NS	misidentified as
12-Aug-20	14:30	P8	Sorex sp.	50	30				PM	MUMU on data
12-Aug-20	22:54	S31	Sorex sp.	45	45				SB/KD	sheets;
12-Aug-20	23:07	S36	PEMA						SB/KD	corrected here
13-Aug-20	6:50	S21	PEMA					mortality	NS	
13-Aug-20	7:15	P28	Sorex sp.	45	30			relocated	NS	
13-Aug-20	7:28	S34	PEMA					relocated	NS	
13-Aug-20	7:31	S36	Rat						NS	
13-Aug-20	14:33	P17	Sorex sp.	45	30				PM	
13-Aug-20	15:03	S22	Sorex sp.	50	45				PM	
13-Aug-20	22:14	P11	Sorex sp.	45	50			mortality	SB	
13-Aug-20	22:29	P17	Sorex sp.	50	50				SB	
13-Aug-20	22:29	P17	Sorex sp.	45	50				SB	
13-Aug-20	22:41	S21	PEMA?						SB	
14-Aug-20	6:20	P2	Sorex sp.						PJM	
14-Aug-20	7:20	S23	Sorex sp.					mortality	PJM	
14-Aug-20	7:30	S30	PEMA						PJM	
14-Aug-20	7:40	P24	Sorex sp.						PJM	
14-Aug-20	7:55	S34	PEMA						PJM	
14-Aug-20	8:00	S36	PEMA						PJM	
14-Aug-20	14:31	P8	garter snake					escaped when lifted lid	PM	
14-Aug-20	14:45	P14	Sorex sp.	45	35				PM	
14-Aug-20	14:45	P14	Sorex sp.	45	30				PM	
14-Aug-20	14:45	P14	PEMA					mortality; appears to have been predated by the shrews	PM	
14-Aug-20	22:33	S36	PEMA						SB/KD	
15-Aug-20	6:55	S21	PEMA					mortality	NS	
15-Aug-20	7:35	P28	Sorex sp.	50	40			mortality	NS	
15-Aug-20	7:50	S30	PEMA					mortality	NS	
15-Aug-20	14:00	P11	Sorex sp.	45	45				SB	
15-Aug-20	22:00	P14	Sorex sp.	45	45				SB/JW	
15-Aug-20	22:00	P14	Sorex sp.	45	45				SB/JW	
15-Aug-20	22:00	S23	bird sp.					little brown bird; flew away	SB/JW	
16-Aug-20	8:00	S36	PEMA					relocated	NS	
16-Aug-20	14:26	S9	Sorex sp.	50	45				PM	
16-Aug-20	22:00	S4B	PEMA						SB/JW	
16-Aug-20	22:00	P5	PEMA					baby?	SB/JW	

16-Aug-20	22:00	P10	Pacific treefrog				SB/JW
16-Aug-20	22:00	S24	PEMA				SB/JW
16-Aug-20	22:00	S34	PEMA				SB/JW
16-Aug-20	22:00	S36	PEMA				SB/JW
17-Aug-20	7:25	S18	PEMA				NS
17-Aug-20	7:35	P21	Sorex sp.	60	50	relocated	NS
17-Aug-20	7:50	P24	Sorex sp.	50	50	darker; light underside; relocated	NS
17-Aug-20	7:50	P24	Sorex sp.	60	50	lighter brown; relocated	NS
17-Aug-20	8:25	S34	PEMA			relocated	NS
17-Aug-20	8:30	S36	PEMA			weird growth on right side of belly, near hing legs	NS
17-Aug-20	22:15	S4B	PEMA				PM/JC
17-Aug-20	22:25	S8	PEMA			escaped	PM/JC
17-Aug-20	22:30	S14	PEMA				PM/JC
17-Aug-20	22:45	S19	PEMA				PM/JC
17-Aug-20	22:45	S20	PEMA				PM/JC
17-Aug-20	22:55	S24	PEMA				PM/JC
17-Aug-20	23:10	P24	Sorex sp.	40	35		PM/JC
17-Aug-20	23:20	S37	PEMA				PM/JC
17-Aug-20	23:25	S34	PEMA				PM/JC
17-Aug-20	23:30	S29	Sorex sp.	35	35		PM/JC
17-Aug-20	23:30	S31	Sorex sp.	50	40	almost dead, attempted to revive but died	PM/JC
18-Aug-20	6:10	S1	PEMA				NS
18-Aug-20	6:25	S4B	PEMA				NS
18-Aug-20	6:40	P11	Creeping vole	70	40	relocated	NS
18-Aug-20	7:00	S13	PEMA			small; relocated	NS
18-Aug-20	7:10	S14	PEMA			relocated	NS
18-Aug-20	7:30	S23	PEMA			small; relocated	NS
18-Aug-20	7:45	S22	PEMA			relocated	NS
18-Aug-20	7:50	P24	Sorex sp.	60	40	relocated	NS
18-Aug-20	7:50	P24	Sorex sp.	60	50	relocated	NS
18-Aug-20	7:50	P24	Sorex sp.	60	50	relocated	NS
18-Aug-20	8:15	S32	PEMA			relocated	NS
18-Aug-20	14:20	S4	Sorex sp.	50	40	fed mealworm	JC
18-Aug-20	14:30	P6	Peromyscus sp.			grey; large hind legs; long tail; ears flat to head	JC
18-Aug-20	15:30	S22	Sorex sp.	45	40	mortality	JC
18-Aug-20	15:45	S24	Sorex sp.	50	35	mortality	JC
18-Aug-20	16:10	S33	Sorex sp.	45	35		JC
18-Aug-20	16:15	S36	Sorex sp.	40	40	fed mealworm	JC
18-Aug-20	22:09	S1	PEMA				JC/JG
18-Aug-20	22:19	S7	PEMA				JC/JG
18-Aug-20	22:28	S9	PEMA				JC/JG
18-Aug-20	23:02	S20	PEMA				JC/JG
18-Aug-20	23:04	P21	Sorex sp.	40	40		JC/JG
18-Aug-20	23:12	S22	Sorex sp.	50	40		JC/JG

18-Aug-20	23:23	S22B	Sorex sp.	45	40	mortality	JC/JG
18-Aug-20	23:29	S24	PEMA				JC/JG
18-Aug-20	23:30	P26	Sorex sp.	40	40		JC/JG
18-Aug-20	23:38	S25	PEMA				JC/JG
18-Aug-20	23:52	S32	Sorex sp.	40	40		JC/JG
18-Aug-20	23:54	S34	PEMA				JC/JG
19-Aug-20	0:04	S36	PEMA				JC/JG
19-Aug-20	0:07	S37	PEMA			growth on right side	JC/JG
19-Aug-20	0:15	S14	PEMA				JC/JG
19-Aug-20	6:15	S1	PEMA			relocated	NS
19-Aug-20	6:25	S3	PEMA			relocated	NS
19-Aug-20	7:30	S21	PEMA			relocated	NS
19-Aug-20	7:35	S22	PEMA			mortality	NS
19-Aug-20	7:45	S24	PEMA			relocated	NS
19-Aug-20	7:50	S25	PEMA			relocated	NS
19-Aug-20	7:55	S26	Sorex sp.	50	40	mortality	NS
19-Aug-20	8:05	P28	Sorex sp.	50	50	relocated	NS
19-Aug-20	8:30	S32	Sorex sp.	50	40	mortality	NS
19-Aug-20	8:38	P30	Sorex sp.	60	50	relocated	NS
19-Aug-20	8:45	S36	PEMA			relocated	NS
19-Aug-20	14:20	S3	Sorex sp.			mortality	PJM
19-Aug-20	14:30	P2	garter snake			relocated	PJM
19-Aug-20	15:50	P23	Sorex sp.			fed mealworm; relocated	PJM
19-Aug-20	16:20	S24	bird sp.			flew away	PJM
19-Aug-20	16:50	S37	Sorex sp.			mortality	PJM
19-Aug-20	22:09	S2	Sorex sp.	40	35		PM/JG
19-Aug-20	22:19	S7	PEMA				PM/JG
19-Aug-20	22:33	S13	Sorex sp.	40	40		PM/JG
19-Aug-20	22:56	P23	Sorex sp.	35	40		PM/JG
19-Aug-20	22:56	S22	Sorex sp.	40	40		PM/JG
19-Aug-20	23:08	S4	PEMA				PM/JG
19-Aug-20	23:23	S23	PEMA				PM/JG
19-Aug-20	23:18	S26	PEMA				PM/JG
19-Aug-20	23:35	P30	Sorex sp.	40	40		PM/JG
19-Aug-20	23:39	S34	PEMA				PM/JG
20-Aug-20	6:25	P1	Sorex sp.			escaped	NS
20-Aug-20	6:25	P1	Sorex sp.	60	50	relocated	NS
20-Aug-20	6:55	S7	PEMA			relocated	NS
20-Aug-20	7:10	S9	Sorex sp.	60	50	relocated	NS
20-Aug-20	7:20	P14	Sorex sp.	50	40	relocated	NS
20-Aug-20	7:35	P16	Sorex sp.	50	40	relocated	NS
20-Aug-20	8:05	P23	Sorex sp.	50	40	relocated	NS
20-Aug-20	8:05	P23	Sorex sp.	55	45	relocated	NS
20-Aug-20	8:05	P23	Sorex sp.	45	40	mortality; other 2 eating it	NS

20-Aug-20	8:25	P24	Sorex sp.	50	40	relocated	NS
20-Aug-20	8:40	P26	Sorex sp.	50	50	relocated	NS
20-Aug-20	8:40	P26	Sorex sp.	45	40	mortality; slug feeding on it	NS
20-Aug-20	8:50	S25	PEMA			relocated	NS
20-Aug-20	8:55	S26	Sorex sp.	60	50	relocated	NS
20-Aug-20	9:10	S28	Sorex sp.	50	50	relocated	NS
20-Aug-20	9:25	S32	Sorex sp.	60	50	relocated	NS
20-Aug-20	9:35	S34	PEMA			relocated	NS
20-Aug-20	14:30	S6	Sorex sp.			fed mealworm; relocated	PJM
20-Aug-20	15:00	S9	Sorex sp.			relocated	PJM
20-Aug-20	15:20	P16	Sorex sp.			relocated	PJM
20-Aug-20	15:50	S23	Sorex sp.			fed mealworm; relocated	PJM
20-Aug-20	22:10	S2	Sorex sp.	60	50		PM/JG
20-Aug-20	22:26	S9	Sorex sp.	40	40		PM/JG
20-Aug-20	22:29	S10	PEMA				PM/JG
20-Aug-20	22:33	S12	Sorex sp.	50	45		PM/JG
20-Aug-20	22:43	P16	Sorex sp.	60	40		PM/JG
20-Aug-20	22:50	S16	PEMA				PM/JG
20-Aug-20	22:57	P20	Sorex sp.	60	50		PM/JG
20-Aug-20	23:08	S23	PEMA				PM/JG
20-Aug-20	23:14	S22B	Sorex sp.	60	45	mortality	PM/JG
20-Aug-20	23:20	S26	PEMA				PM/JG
20-Aug-20	23:26	S34	Sorex sp.	60	45		PM/JG
20-Aug-20	23:40	P29	Sorex sp.	60	40		PM/JG
21-Aug-20	6:15	P1	Sorex sp.	45	40		JC
21-Aug-20	7:00	P11	Sorex sp.	50	40		JC
21-Aug-20	7:20	S15	Sorex sp.	45	35	mortality	JC
21-Aug-20	7:40	P20	Sorex sp.	40	40		JC
21-Aug-20	8:00	P23	Sorex sp.	50	40		JC
21-Aug-20	8:15	P22	Sorex sp.	50	45		JC
21-Aug-20	8:15	S21	PEMA				JC
21-Aug-20	8:45	S35	PEMA				JC
21-Aug-20	14:45	S3	Sorex sp.	45	45	relocated	NS
21-Aug-20	15:00	S5	Sorex sp.	50	45	mortality	NS
21-Aug-20	15:15	S8	Sorex sp.	50	50	relocated	NS
21-Aug-20	16:15	S27	Sorex sp.	45	45	mortality	NS
21-Aug-20	16:45	S31	Sorex sp.	45	45	mortality	NS
21-Aug-20	22:00	S2	Sorex sp.	40	40	relocated to east side of Silda	PJM/JG
21-Aug-20	22:10	S4	Sorex sp.	40	40	relocated to east side of Silda	PJM/JG
21-Aug-20	22:15	S7	PEMA			relocated	PJM/JG
21-Aug-20	22:20	S9	PEMA			relocated	PJM/JG
21-Aug-20	22:30	S13	PEMA			relocated south of site	PJM/JG
21-Aug-20	22:30	P14	Sorex sp.	40	35	relocated south of site	PJM/JG
21-Aug-20	22:45	S20	Sorex sp.	40	30	relocated	PJM/JG

21-Aug-20	23:00	S26	Sorex sp.	50	40	relocated	PJM/JG
21-Aug-20	23:10	P27	Sorex sp.			relocated	PJM/JG
22-Aug-20	6:20	S4	PEMA			relocated	NS
22-Aug-20	6:25	S4B	PEMA			relocated	NS
22-Aug-20	6:30	S5	PEMA			relocated	NS
22-Aug-20	6:35	S6	PEMA			relocated	NS
22-Aug-20	7:05	S13	Sorex sp.	45	40	mortality; trap had been thrown/moved	NS
22-Aug-20	7:10	S14	PEMA			relocated	NS
22-Aug-20	7:40	S18	PEMA			relocated	NS
22-Aug-20	7:50	S21	PEMA			relocated	NS
22-Aug-20	7:52	S23	PEMA			relocated	NS
22-Aug-20	7:55	S22B	Sorex sp.	45	40	mortality	NS
22-Aug-20	8:10	P24	Sorex sp.	45	40	relocated	NS
22-Aug-20	8:10	P24	Sorex sp.	50	50	relocated	NS
22-Aug-20	8:20	P26	Sorex sp.	50	50	relocated	NS
22-Aug-20	8:35	P28	Sorex sp.	50	50	relocated	NS
22-Aug-20	8:50	S32	PEMA			relocated	NS
22-Aug-20	14:30	P1	Sorex sp.	40	40		JC
22-Aug-20	14:35	S4	Sorex sp.	50	40		JC
22-Aug-20	14:40	P2	Sorex sp.	45	45		JC
22-Aug-20	22:00	S4	PEMA				KD/JC
22-Aug-20	22:03	S4B	PEMA				KD/JC
22-Aug-20	22:16	S12B	Sorex sp.	50	40		KD/JC
22-Aug-20	22:18	S13	PEMA				KD/JC
22-Aug-20	22:30	P23	Sorex sp.	45	45		KD/JC
22-Aug-20	23:08	S35	PEMA				KD/JC
22-Aug-20	23:10	S36	PEMA				KD/JC
22-Aug-20	23:15	S37	Sorex sp.	40	45		KD/JC
23-Aug-20	6:30	S13	PEMA			relocated to south side of railroad tracks	PJM
23-Aug-20	6:45	S14	PEMA			relocated to south side of railroad tracks	PJM
23-Aug-20	6:50	S12B	PEMA			relocated to south side of railroad tracks	PJM
23-Aug-20	7:20	S21	PEMA			mortality	PJM
23-Aug-20	7:40	P30	Sorex sp.	45	40	relocated to east side of Silda	PJM
23-Aug-20	7:45	P32	PEMA			escaped	PJM
23-Aug-20	8:00	P37	PEMA			escaped	PJM
23-Aug-20	14:50	S12B	Sorex sp.			mortality	PM
23-Aug-20	14:54	P14	Sorex sp.	50	50		PM
23-Aug-20	15:03	S15	PEMA				PM
23-Aug-20	15:08	S16	Sorex sp.	40	40		PM
23-Aug-20	22:00	S2	Sorex sp.	45	40		KD/PM
23-Aug-20	22:10	S10	Sorex sp.	45	40	signs of stress	KD/PM
23-Aug-20	22:15	S13	Sorex sp.	45	40		KD/PM
23-Aug-20	22:20	S14	Sorex sp.	45	40	mortality	KD/PM
23-Aug-20	22:22	S15	Sorex sp.	40	40		KD/PM

23-Aug-20	23:00	S21	PEMA				KD/PM
23-Aug-20	23:20	S35	PEMA				KD/PM
23-Aug-20	23:30	S37	PEMA				KD/PM
24-Aug-20	6:25	S2	Sorex sp.	50	50	relocated	NS/PJM
24-Aug-20	6:45	S12B	Sorex sp.	45	45	relocated	NS/PJM
24-Aug-20	7:10	S21	PEMA			relocated	NS/PJM
24-Aug-20	7:15	P23	Sorex sp.	50	50	relocated	NS/PJM

Area B1

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
13-Aug-20	16:25	B1P3	MITO	70	30				PM
16-Aug-20	22:00	B1S3	PEMA						SB, JW
18-Aug-20	17:00	B1P3	garter snake						JC
18-Aug-20	0:45	B1S4	PEMA						JC, JG
18-Aug-20	0:50	B1S3	Sorex sp	50	45			mortality	JC, JG
18-Aug-20	0:55	B1S2	PEMA						JC, JG
19-Aug-20	9:25	B1S1	PEMA						NS
19-Aug-20	9:30	B1S2	PEMA						NS
19-Aug-20	9:40	B1S3	PEMA						NS
19-Aug-20	17:20	B1P1	garter snake						PJM
19-Aug-20	0:05	B1S4	PEMA						PM, JG
19-Aug-20	0:10	B1S3	PEMA						PM, JG
19-Aug-20	0:15	B1S1	PEMA						PM, JG
20-Aug-20	10:10	B1S1	PEMA						NS
20-Aug-20	0:05	B1S3	PEMA						PM, JG
20-Aug-20	0:10	B1S1	PEMA						PM, JG
21-Aug-20	9:00	B1S1	PEMA						JC
21-Aug-20	9:05	B1P1	Sorex sp	40	35				JC
21-Aug-20	23:45	B1S1	PEMA						PJM, JG
21-Aug-20	23:45	B1S3	PEMA						PJM, JG
22-Aug-20	9:30	B1S1	PEMA						NS
22-Aug-20	9:35	B1S3	PEMA						NS

Areas B2a

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
2-Sep-20	0:38	S1	PEMA						PM, JG
2-Sep-20	7:30	S1	PEMA					relocated	PJM, NS
2-Sep-20	7:40	P5	Sorex sp.					mortality; voucher specimen	PJM, NS
2-Sep-20	7:00	M2	green frog					escaped	PJM, NS
3-Sep-20	7:50	M2	NW salamander					relocated	NS, PJ
5-Sep-20	1:40	S5	PEMA						JC, PM
5-Sep-20	6:00	S6	PEMA					young; grey pelage	NS, TP
6-Sep-20	6:45	S6	PEMA					immature; relocated	TP, PM
6-Sep-20	19:25	M3	garter snake						PM, MT
7-Sep-20	1:31	S4	PEMA						PM, MT
7-Sep-20	7:20	S5	PEMA					relocated	PJM, JZ
7-Sep-20	19:00	P4	garter snake						TP
8-Sep-20	13:00	P9	PEMA					mortality; buried offsite	PJM, ML

Area G1

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
2-Sep-20	1:50	P12	MIOR					(creeping vole)	PM, JG
3-Sep-20	6:50	P23	Sorex sp.	55	45			relocated	NS, PJ
3-Sep-20	7:10	M1	green frog					tadpole	NS, PJ
3-Sep-20	7:20	M4	NW Salamander					relocated	NS, PJ
3-Sep-20	12:35	M3	NW Salamander						NS, RW
4-Sep-20	6:25	M2	green frog						NS, PJ
4-Sep-20	6:40	P18	Sorex sp.	45	40				NS, PJ
4-Sep-20	6:55	M1	green frog					tadpole	NS, PJ
4-Sep-20	7:00	M4	green frog					tadpole	NS, PJ
5-Sep-20	0:30	M1	Long-toed Salamander					tadpole	JC, PM
5-Sep-20	0:50	M2	NW Salamander					tadpole	JC, PM
5-Sep-20	0:50	M2	NW Salamander					tadpole	JC, PM
5-Sep-20	12:35	M1	green frog					adult; euthanized	JC, PM
6-Sep-20	0:18	P23	Sorex sp.	50	40				JC, MT
6-Sep-20	12:10	M1	NW Salamander					juvenile	TP
6-Sep-20	18:50	M3	green frog						PM, MT
7-Sep-20	0:34	P20	Sorex sp.	50	45				PM, MT
7-Sep-20	0:57	S5	PEMA						PM, MT
7-Sep-20	1:06	M3	NW Salamander						PM, MT
7-Sep-20	6:50	S7	PEMA						PJM, JZ
7-Sep-20	12:39	M3	NW Salamander						JC, AD
8-Sep-20	6:20	P9	Sorex sp.	60	55				NS, PJ
8-Sep-20	18:30	M3	NW Salamander						RD
9-Sep-20	6:20	M4	Long-toed Salamander					tadpole	PJM, NS
9-Sep-20	6:40	P22	Sorex sp.	40	40				PJM, NS

Area F1

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
3-Sep-20	13:40	M2	green frog					escaped	NS, RW
3-Sep-20	14:00	M3	green frog					escaped	NS, RW
4-Sep-20	8:00	S6	Sorex sp.	55	45			relocated	NS, PJ
4-Sep-20	13:40	M3	green frog					euthanized	PJM, RW
5-Sep-20	2:20	S1	PEMA						JC, PM
5-Sep-20	2:30	M4	NW Salamander						JC, PM
5-Sep-20	3:00	P10	Sorex sp.	40	40				JC, PM
5-Sep-20	19:15	M3	green frog					escaped	RW
6-Sep-20	1:51	P10	Sorex sp.	50	45				JC, MT
6-Sep-20	1:51	P10	Sorex sp.	45	40				JC, MT
6-Sep-20	19:50	M3	green frog						PM, MT
7-Sep-20	2:17	M4	NW Salamander						PM, MT
7-Sep-20	13:23	M3	Salamander sp						JC, AP
7-Sep-20	13:23	M3	Vole sp.						JC, AP
8-Sep-20	7:10	M3	green frog					tadpole	NS, PJ
9-Sep-20	1:30	P11	Sorex sp.	45	40			mortality	PM, JG
9-Sep-20	1:38	P12	Sorex sp.	45	40				PM, JG
10-Sep-20	6:30	P10	Sorex sp.	50	40			relocated	NS
10-Sep-20	7:00	M4	NW Salamander					relocated	NS
11-Sep-20	6:30	M3	green frog					escaped minnow	NS, JC
11-Sep-20	6:30	M3	NW Salamander					relocated	NS, JC

Area I3

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
17-Sep-20	0:38	P12	M-SOVA	50	100			Sorex vagrans; dark brown, beige belly	TP, MT, LS
17-Sep-20	19:20	S3	Sorex sp.	50	95				ADP, PM, SP
18-Sep-20	0:36	P8	M-SOBE					mortality; voucher specimen	TP, MT, SS
19-Sep-20	9:21	P3	M-SOBE	65-70	125				SS, LS
20-Sep-20	19:37	S3	Sorex sp.	40	80			dorsal - light brown/ grey underbelly	KD, SS
21-Sep-20	1:50	S3	PEMA						PM, MT, JC
21-Sep-20	13:45	S4	Sorex sp.	45	90				NS, JZ
22-Sep-20	19:50	S4	Sorex sp.	45	90				PM, ADP
23-Sep-20	0:29	S4	Sorex sp.	50	95				MT, TP
23-Sep-20	0:53	P3	Sorex sp.	45	85				MT, TP
23-Sep-20	8:40	S4	Sorex sp.	40	80			relocated	NS, RT
23-Sep-20	9:05	P7	Sorex sp.	50	95			relocated	NS, RT
23-Sep-20	9:05	P7	Sorex sp.	45	85			relocated	NS, RT
23-Sep-20	9:05	P7	Sorex sp.	50	95			relocated	NS, RT
30-Sep-20	7:20	P8	Sorex sp.	55	100				NS, LS
30-Sep-20	19:10	P12	Sorex sp.	45	85				JC, SP
1-Oct-20	0:15	S5	M-RARA					black rat; jumped out	TP, PM
1-Oct-20	0:21	P12	Sorex sp.						TP, PM

Areas E2 and E3

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
6-Oct-20	18:43	M2	A-RACL						JB, ADP
7-Oct-20	0:10	M1	A-AMGR						TP, JC
7-Oct-20	0:25	P8	PEMA						TP, JC
7-Oct-20	0:37	S30	PEMA					subadult	TP, JC
7-Oct-20	0:52	S21	PEMA					subadult	TP, JC
7-Oct-20	6:22	S8	PEMA						NS, LS
7-Oct-20	6:28	S10	PEMA						NS, LS
7-Oct-20	12:20	S8	PEMA						PJM, AW
7-Oct-20	18:35	M4	RACL						PM, JG
8-Oct-20	0:25	S10	PEMA						TP, JC
8-Oct-20	0:30	M3	AMGR						TP, JC
8-Oct-20	6:23	P10	Sorex sp.	45	85			brown dorsal; tan ventral	SS, LS
8-Oct-20	7:06	S31	PEMA						SS, LS
8-Oct-20	12:30	M4	A-AMGR					tadpole	NS, PJ
8-Oct-20	17:55	M3	A-RACL						JB, SPE
9-Oct-20	0:35	S26	PEMA						JC, PM
9-Oct-20	6:35	S20	PEMA						SS, NS
9-Oct-20	12:15	P3	Sorex sp.	55	100			closed traps due to rain	NS, RW
11-Oct-20	0:15	P1	Sorex sp.						TP, SP
11-Oct-20	0:30	S8	PEMA						TP, SP
11-Oct-20	0:35	S10	PEMA						TP, SP
11-Oct-20	0:40	S11	PEMA						TP, SP
11-Oct-20	0:45	S25	PEMA						TP, SP
11-Oct-20	7:12	S26	PEMA						NS
11-Oct-20	12:00							traps closed due to forecast rain	SS, SPE
14-Oct-20	0:05	M3	A-AMGR						JC, SB
14-Oct-20	0:30	S19	PEMA						JC, SB
14-Oct-20	0:45	P32	Sorex sp.	50	100				JC, SB
14-Oct-20	6:28	S15	PEMA						NS, LS
14-Oct-20	6:45	S19	PEMA						NS, LS

15-Oct-20	0:15	S18	PEMA			young	TP, JC
15-Oct-20	0:20	S19	PEMA			young	TP, JC
15-Oct-20	0:30	S26	PEMA			subadult	TP, JC
15-Oct-20	6:49	S26	PEMA				SS, PJ
16-Oct-20	0:17	P30	Sorex sp.	50	100		PM, JG
16-Oct-20	0:17	P30	Sorex sp.	45	90		PM, JG
16-Oct-20	0:42	S20	PEMA				PM, JG
16-Oct-20	6:28	S19	PEMA			mortality	NS, LS
16-Oct-20	12:50	S29	PEMA				JC, RW
17-Oct-20	0:19	P27	Sorex sp.				TP, SP
17-Oct-20	0:50	S26	PEMA			mortality	TP, SP

Area F2

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
16-Sep-20	18:58	P27	Sorex sp.						TP, SP, RD
17-Sep-20	0:29	P12	Sorex sp.						TP, SS, MT
17-Sep-20	0:39	P16	Sorex sp.						TP, SS, MT
17-Sep-20	0:39	P16	Sorex sp.						TP, SS, MT
17-Sep-20	0:49	P27	Sorex sp.						TP, SS, MT
17-Sep-20	0:55	S17	PEMA						TP, SS, MT
17-Sep-20	6:30	P12	Sorex sp.	50	90	7		mortality; brown top, silver bottom	SS, JB, PJ
17-Sep-20	7:00	S13A	Sorex sp.	55	100	8		brown dorsal, silver ventral, relocated	SS, JB, PJ
18-Sep-20	0:35	P13	Sorex sp.	52	89	3		brown dorsal, cream ventral	SS, MT, TP
18-Sep-20	0:46	P16	Sorex sp.	50	100	7		brown dorsal, silver ventral	SS, MT, TP
18-Sep-20	1:15	S17	Sorex sp.	50	90			brown dorsal, silver ventral	SS, MT, TP
18-Sep-20	1:25	P39	Sorex sp.	-	-			escaped; brown dorsal, cream ventral	SS, MT, TP
18-Sep-20	6:26	P16	Sorex sp.	55	100				JZ, NS, JB
18-Sep-20	6:33	P18	Sorex sp.	60	110				JZ, NS, JB
18-Sep-20	12:30	S16	Sorex sp.	60	100				RW, NS, LS
18-Sep-20	18:21	S10	Sorex sp.	50	85				ADP, PM, PJM
18-Sep-20	18:32	P12	Sorex sp.	40	75				ADP, PM, PJM
18-Sep-20	18:59	P39	Sorex sp.	50	85				ADP, PM, PJM
19-Sep-20	0:56	P3	Sorex sp.					s.vagrans/monticolus type	TP, SP
19-Sep-20	1:14	S13B	Sorex sp.					s.vagrans/monticolus type	TP, SP
19-Sep-20	1:20	P16	Sorex sp.					s.vagrans/monticolus type	TP, SP
19-Sep-20	1:56	P57	Sorex sp.					s.vagrans/monticolus type	TP, SP
19-Sep-20	1:56	P57	Sorex sp.					s.vagrans/monticolus type	TP, SP
19-Sep-20	2:15	P66	Sorex sp.						TP, SP
19-Sep-20	6:15	P1	Sorex sp.	55	95			brown dorsal, silver ventral	SS, LS
19-Sep-20	7:30	P35	Sorex sp.	50	90			brown dorsal, beige ventral	SS, LS
19-Sep-20	7:38	P49A	Sorex sp.	45	80			brown dorsal, silver ventral	SS, LS
19-Sep-20	8:13	P57	Sorex sp.	45	85			brown dorsal, silver ventral	SS, LS

19-Sep-20	18:00	P16	Sorex sp.	-	-			TP, SP
20-Sep-20	0:10	P1	Sorex sp.		50	90		PM, SP
20-Sep-20	0:20	P13	Sorex sp.		55	105		PM, SP
20-Sep-20	0:32	P18	Sorex sp.		50	95		PM, SP
20-Sep-20	0:40	P23	Sorex sp.		50	95		PM, SP
20-Sep-20	0:44	P28	Sorex sp.		45	90		PM, SP
20-Sep-20	6:20	P1	Sorex sp.		55	100		LS, NS
20-Sep-20	6:25	S1	Sorex sp.		55	100		LS, NS
20-Sep-20	6:40	P5	SOBE	75-80		150		LS, NS
20-Sep-20	7:00	P17	Sorex sp.		55	105	dorsal - grey and brown, ventral - lighter beige/grey	LS, NS
20-Sep-20	7:31	P30	Sorex sp.		45	85		LS, NS
20-Sep-20	7:38	P32	Sorex sp.		50	95	dorsal - grey and brown, ventral - light grey	LS, NS
20-Sep-20	7:38	P32	Sorex sp.		40	80		LS, NS
20-Sep-20	7:46	P37	Sorex sp.		45	85		LS, NS
20-Sep-20	12:40	P27	Sorex sp.		50	90	d - brown	SS, PJM
20-Sep-20	12:55	P30	Sorex sp.		35	70	d - brown	SS, PJM
20-Sep-20	18:20	S3	Sorex sp.		40	70	d - brown, v-creamy/grey	SS, KD
21-Sep-20	0:00	P2	Sorex sp.		45	90		PM, MT, JC
21-Sep-20	0:10	S13B	Sorex sp.		50	95		PM, MT, JC
21-Sep-20	0:15	P17	Sorex sp.		45	85		PM, MT, JC
21-Sep-20	0:30	P22	Sorex sp.		45	90		PM, MT, JC
21-Sep-20	0:45	P29B	Sorex sp.		40	80		PM, MT, JC
21-Sep-20	6:20	S14	Sorex sp.		55	100		PJ, JB
21-Sep-20	6:50	P29B	Sorex sp.		58	104		PJ, JB
21-Sep-20	6:55	P23	Sorex sp.		54	96		PJ, JB
21-Sep-20	7:25	P40B	Sorex sp.		55	100		PJ, JB
21-Sep-20	12:40	P27	Sorex sp.		50	90		NS, JZ
21-Sep-20	12:52	P38	Sorex sp.		50	95		NS, JZ
22-Sep-20	18:10	P1	Sorex sp.		45	80	relocated; light belly	RD, PJM
22-Sep-20	18:20	S1	Sorex sp.		40	75	relocated; light belly	RD, PJM
22-Sep-20	0:10	P4	Sorex sp.		45	85		JC, PM, TP
22-Sep-20	0:30	P10	Sorex sp.		50	95		JC, PM, TP

22-Sep-20	0:50	P17	Sorex sp.	45	90		JC, PM, TP
22-Sep-20	1:15	P29B	Sorex sp.	50	90		JC, PM, TP
22-Sep-20	6:18	P2	Sorex sp.	50	90	D=brown/v=cream; escaped	SS, LS
22-Sep-20	6:53	P13	Sorex sp.	50	90	D=brown/v=cream	SS, LS
22-Sep-20	6:31	S17	Sorex sp.	50	95	D=brown/v=beige	SS, LS
22-Sep-20	6:45	S18	PEMA	60	120	D=brown/v=lighter brown; lrg eyes & ears	SS, LS
22-Sep-20	8:17	P69	Sorex sp.	45	85	D=brown/v=grey/silver	SS, LS
22-Sep-20	12:30	P19	Sorex sp.	40	75	light belly; relocated	AW, PJM
22-Sep-20	12:50	S19	Sorex sp.	45	85	light belly; relocated	AW, PJM
22-Sep-20	18:26	P17	Sorex sp.	50	95		ADP, PM
22-Sep-20	18:43	P40B	Sorex sp.	50	90		ADP, PM
22-Sep-20	18:43	P40B	Sorex sp.	55	100		ADP, PM
22-Sep-20	18:56	P48	Sorex sp.	40	80		ADP, PM
23-Sep-20	0:25	P7	Sorex sp.				TP, MT
23-Sep-20	0:32	P10	Sorex sp.				TP, MT
23-Sep-20	0:32	P10	Sorex sp.				TP, MT
23-Sep-20	0:45	P17	Sorex sp.				TP, MT
23-Sep-20	1:15	S25	PEMA				TP, MT
23-Sep-20	1:37	P58	Sorex sp.				TP, MT
23-Sep-20	6:20	P2	Sorex sp.	50	100	relocated	NS, RT
23-Sep-20	6:20	P2	Sorex sp.	50	95	relocated	NS, RT
23-Sep-20	6:30	P3	Sorex sp.	45	85	relocated	NS, RT
23-Sep-20	6:40	P5	Sorex sp.	50	90	relocated	NS, RT
23-Sep-20	6:48	P6	Sorex sp.	45	85	relocated	NS, RT
23-Sep-20	6:59	P11	Sorex sp.	45	85	relocated	NS, RT
23-Sep-20	7:05	P12	Sorex sp.	55	105	relocated	NS, RT
23-Sep-20	7:10	P16	Sorex sp.	60	110	relocated	NS, RT
23-Sep-20	7:15	P17	Sorex sp.	45	85	relocated	NS, RT
23-Sep-20	7:15	P17	Sorex sp.	50	95	relocated	NS, RT
23-Sep-20	7:35	S22	Sorex sp.	45	80	relocated	NS, RT
23-Sep-20	7:40	P43	Sorex sp.	45	85	relocated	NS, RT
23-Sep-20	7:50	P49A	Sorex sp.	55	105	relocated	NS, RT
23-Sep-20	8:00	P54	Sorex sp.	55	100	relocated	NS, RT

23-Sep-20	8:03	P56	Sorex sp.	50	90	relocated	NS, RT
28-Sep-20	18:24	P16	Sorex sp.	50	100		PM, ADP
28-Sep-20	19:09	S24	Sorex sp.	50	95		PM, ADP
29-Sep-20	1:41	P41	Sorex sp.	40	80		MT, JG
29-Sep-20	6:37	P20	SOBE	100	170	mortality; voucher specimen	JZ, JC
29-Sep-20	6:58	P29B	Sorex sp.	40	80		JZ, JC
30-Sep-20	23:30	P1	Sorex sp.				TP, JG, MT
30-Sep-20	0:45	P7	Sorex sp.				TP, JG, MT
1-Oct-20	0:34	P10	Sorex sp.	50	95		PM, TP
1-Oct-20	0:56	P29B	Sorex sp.	50	95		PM, TP

Area G2 and Boardwalk

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
6-Oct-20	20:14	P19	Sorex sp.	40	80				JB, ADP
6-Oct-20	20:14	P19	Sorex sp.	40	80				JB, ADP
7-Oct-20	2:05	S15	PEMA					subadult	TP, JC
7-Oct-20	2:10	M2	A-RAAU					red-legged frog; relocated	TP, JC
7-Oct-20	2:15	S6	PEMA					adult	TP, JC
7-Oct-20	7:40	P12	A-AMGR						NS, LS
7-Oct-20	7:55	M2	A-AMGR						NS, LS
8-Oct-20	7:55	M1	A-AMGR	100	100			relocated	SS, LS
8-Oct-20	7:55	M1	A-AMGR	25	25			relocated	SS, LS
8-Oct-20	8:33	S4	PEMA					relocated	SS, LS
9-Oct-20	1:10	P12	Sorex sp.	50	95				PM, JC
9-Oct-20	1:25	F3	A-RACL					euthanized	PM, JC
9-Oct-20	1:35	M2	A-RAAU					relocated	PM, JC
9-Oct-20	7:30	F2	A-RACL						NS, SS
9-Oct-20	7:35	M2	A-RACL						NS, SS
9-Oct-20	8:20	S6B	PEMA					mortality	NS, SS
9-Oct-20	13:20	M1	garter snake					escaped	NS, RW
9-Oct-20	13:25	M3	fish sp.					relocated; traps close due to forecast rai	NS, RW
11-Oct-20	1:39	S15	PEMA						TP, SP
11-Oct-20	2:00	P19	Microtus sp.					Creeping vole?	TP, SP
11-Oct-20	2:05	M1	A-AMGR						TP, SP
11-Oct-20	2:40	M2	A-AMGR						TP, SP
11-Oct-20	2:40	P21	A-AMGR						TP, SP
11-Oct-20	8:20	P9	Sorex sp.	45	85				NS
11-Oct-20	8:40	F1	A-AMGR						NS
11-Oct-20	9:20	S7	PEMA						NS
11-Oct-20	12:00							traps closed due to forecast rain	SS, SPE
13-Oct-20	19:30	P17	Salamander sp.						JB, SP
14-Oct-20	1:00	F1	A-AMGR						JC, SB
14-Oct-20	1:00	F1	A-AMGR						JC, SB

14-Oct-20	1:30	M3	A-AMGR				JC, SB
14-Oct-20	1:30	M3	A-AMGR				JC, SB
14-Oct-20	1:30	M3	A-AMGR				JC, SB
15-Oct-20	7:40	F3	A-AMGR				NS, LS
15-Oct-20	1:30	M2	A-AMGR				TP, JC
15-Oct-20	1:30	M2	A-AMGR				TP, JC
15-Oct-20	7:53	M4	A-AMGR			SNV: 75 mm	SS, PJ
15-Oct-20	8:05	M1	A-AMGR			SNV: 110 mm	SS, PJ
15-Oct-20	8:38	P34	Sorex sp.	50	93	dark brown dorsal; light cream ventral	SS, PJ
16-Oct-20	1:30	P19	Sorex sp.	45	85		PM, JG
16-Oct-20	7:29	M1	A-AMGR				NS, LS
16-Oct-20	7:37	M4	A-AMGR				NS, LS
16-Oct-20	8:00	F5	A-AMGR				NS, LS
17-Oct-20	1:08	F1	A-AMGR				TP, SP
17-Oct-20	1:08	F1	A-AMGR				TP, SP
17-Oct-20	7:46	F1	A-AMGR				SS
17-Oct-20	8:02	P17	A-RAAU				SS
17-Oct-20	12:00					Traps closed/pulled; only minnows and f	JC, SPE
18-Oct-20	12:02	M1	F-TSB				SS
18-Oct-20	12:03	F5	A-RAAU			relocated	SS
18-Oct-20	12:18	F3	A-RAAU			relocated	SS
18-Oct-20	12:35	M2	A-RAAU			relocated	SS
18-Oct-20	12:35	M2	A-AMGR				SS
19-Oct-20	8:00					No captures; minnows & funnel traps pu	NS

Area H

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
22-Oct-20	6:22	S2	PEMA						SS, LS
22-Oct-20	7:20	M2	A-AMGR						SS, LS
24-Oct-20	0:25	S8	PEMA						TP, SP
26-Oct-20	18:45	M3	A-AMGR					larval stage	JB, PJ
27-Oct-20	6:25	S3	PEMA						SS, ADP
28-Oct-20	18:30	S20	sparrow					released	JB, SPE
29-Oct-20	12:30	M3	A-AMGR					small	JC, LS
30-Oct-20	6:15	S23	PEMA						NS, LS

Area B2b

Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Photo #	Notes	Initials
23-Oct-20	1:16	P1	Sorex sp.	45	90				PM, MT
27-Oct-20	1:08	S3	PEMA						SB, MT
27-Oct-20	1:15	S4	PEMA						SB, MT
27-Oct-20	7:26	S6	PEMA						SS, ADP
27-Oct-20	18:34	S3	Wren sp.					flew away	JB, KD
28-Oct-20	0:39	P4	A-RACL						TP, JG
28-Oct-20	6:50	P16	Sorex sp.	50	90				NS, LS
29-Oct-20	7:15	P10	Sorex sp.	60	105			Brown dorsal / silver ventral; Grovesnail observed adj to pitfall	SS, PJ
29-Oct-20	7:15	P10	Sorex sp.	60	100			Brown dorsal / silver ventral	SS, PJ
30-Oct-20	7:34	P3	A-AMGR					relocated to 96th St ditch, north of isolation	NS, JG, LS, ADP
30-Oct-20	7:35	P5A	A-AMGR					relocated to 96th St ditch, north of isolation	NS, JG, LS, ADP
30-Oct-20	7:38	S4	PEMA						NS, JG, LS, ADP
30-Oct-20	7:41	S5	PEMA						NS, JG, LS, ADP

APPENDIX 4: PERMIT TRACKER

McElhanney

Environmental Permits and Approvals Tracking Sheet: For Information Only

Rev A

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
										[illegible]						
1	A	2	98th Street Ditch	[illegible] Hwy 17	Obtained	14-Feb-20	20-Feb-2020	21-Feb-2020	45	100010698	6-Apr-2020	2-May-2020	100010488	8-Apr-20	May 02 2020-May 02 2021	Please note that the [illegible] date is May 2 2020
2	C	1	River Road Ditch	Culvert Installations (350-325)	Issued	14-Feb-20	20-Feb-2020	21-Feb-2020	45	100010698	6-Apr-2020	2-May-2020	100010488	8-Apr-20	May 02 2020-May 02 2021	Please note that the [illegible] date is May 2 2020
										[illegible]						
3	B	2	98th Street Ditch	Hwy 17 Culvert Extension (300-400)	[illegible] Regulatory Review - assigned to a Water Officer	14-Feb-20	20-Feb-2020	21-Feb-2020	140	100011218	19-[illegible]-2020	20-[illegible]-2020	2007796	29-[illegible]-20	31-Dec-33	[illegible] NRO May 20 2020 [illegible] May 26 2020 and [illegible] June 8 2020 [illegible] June 15 2020 [illegible] July 15 2020 NRO [illegible] 114324
4	E	2	Side Ditch and wetland	Culvert Extension Downstream of Hwy 91C and [illegible]	[illegible] Regulatory Review - assigned to a Water Officer	14-Feb-20	20-Feb-2020	21-Feb-2020	140	100011218	19-[illegible]-2020	20-[illegible]-2020	2007796	29-[illegible]-20	31-Dec-33	[illegible] NRO May 20 2020 [illegible] May 26 2020 and [illegible] June 8 2020 [illegible] June 15 2020 [illegible] July 15 2020 NRO [illegible] 114324
5	D	1	Side Ditch wetland	Roundabout and Ramp [illegible] (375-475-450)	[illegible] Regulatory Review - assigned to a Water Officer	21-Feb-20	20-Feb-2020	21-Feb-2020	140	100011218	19-[illegible]-2020	20-[illegible]-2020	2007796	29-[illegible]-20	31-Dec-33	[illegible] NRO May 20 2020 [illegible] May 26 2020 and [illegible] June 8 2020 [illegible] June 15 2020 [illegible] July 15 2020 NRO [illegible] 114324
6		3	SW Burns Bog Perimeter Ditch	[illegible] the Ditch [illegible] (1400-1150-1160-1170)	[illegible] Regulatory Review - assigned to a Water Officer	21-Feb-20	26-Feb-2020	28-Feb-2020	140	100011588	17-[illegible]-2020	8-Aug-2020	2007783			[illegible] NRO May 20 2020 [illegible] May 26 2020 and [illegible] June 8 2020 [illegible] June 15 2020
7	H	3	West Ditch - C289 and Weigh Scale Road	C289 [illegible] (1300)	[illegible] Regulatory Review - assigned to a Water Officer	11-Mar-20	16-Mar-2020	17-Mar-2020	140	100012728	4-Jun-2020	8-Aug-2020	2007798			[illegible] NRO May 20 2020 [illegible] May 26 2020 and [illegible] June 8 2020 [illegible] June 15 2020
8	I	4	North Ditch West Ditch and unnamed ditches by C289	Road and ditch [illegible] (2100-2300-2250)	[illegible] Regulatory Review - assigned to a Water Officer	5-Mar-20	9-Mar-2020	11-Mar-2020	140	100012676	29-[illegible]-2020	8-Aug-2020	2007770			[illegible] NRO May 20 2020 [illegible] May 26 2020 and [illegible] June 8 2020 [illegible] June 15 2020
9	G	4	Delta Nature Reserve	Road and ditch [illegible] (2300-2400)	[illegible] Regulatory Review - assigned to a Water Officer	21-Feb-20	26-Feb-2020	28-Feb-2020	140	100011591	17-[illegible]-2020	8-Aug-2020	2007749			[illegible] NRO May 20 2020 [illegible] May 26 2020 and [illegible] June 8 2020 [illegible] June 15 2020
10			[illegible]	[illegible]	[illegible]				—							[illegible] Change [illegible] Pending
										[illegible]						
11	A	2	98th Street Ditch	[illegible] Hwy 17	[illegible] to Avoid and Mitigate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HPAC-00288	21-Apr-2020	18-[illegible]-2020	20-HPAC-00694	17-Jun-20	Dec-25	[illegible] Meeting with DFO on May 7 2020 [illegible] May 22 [illegible] Avoid and Mitigate
12	B	2	98th Street Ditch	Hwy 17 Culvert Extension (300-400)	[illegible] to Avoid and Mitigate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HPAC-00494	21-Apr-2020	18-[illegible]-2020	20-HPAC-00694	17-Jun-20	Dec-25	[illegible] Meeting with DFO on May 7 2020 [illegible] May 22 [illegible] Avoid and Mitigate
13	C	1	River Road Ditch	Culvert Installations	[illegible] to Avoid and Mitigate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HPAC-00494	21-Apr-2020	29-May-2020	20-HPAC-00096	19-May-20	31-Jan-21	[illegible] based on DFO meeting May 7 2020 [illegible] Avoid and Mitigate
14	D	1	Side Ditch	Roundabout [illegible]	[illegible] to Avoid and Mitigate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HPAC-00494	21-Apr-2020	18-[illegible]-2020	20-HPAC-00694	17-Jun-20	Dec-25	[illegible] Meeting with DFO on May 7 2020 [illegible] May 22 [illegible] Avoid and Mitigate
15	E	2	Side Ditch	Culvert Extension Downstream of Hwy 91C	[illegible] to Avoid and Mitigate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HPAC-00494	21-Apr-2020	18-[illegible]-2020	20-HPAC-00694	17-Jun-20	Dec-25	[illegible] Meeting with DFO on May 7 2020 [illegible] May 22 [illegible] Avoid and Mitigate
16		3	SW Burns Bog Perimeter Ditch	[illegible] the Ditch [illegible] (1400-1150-1160-1170)	[illegible] to Avoid and Mitigate	21-Feb-20	26-Feb-2020	28-Feb-2020	60	20-HPAC-00303	28-Apr-2020	NA	20-HPAC-00303	2-Jul-20	Dec-25	[illegible] Meeting with DFO on May 7 2020 [illegible] May 22 [illegible] Avoid and Mitigate
17	H	3	West Ditch - C289 and Weigh Scale Road	C289 [illegible] (1300)	[illegible] Regulatory Review	11-Mar-20	16-Mar-2020	17-Mar-2020	60	20-HPAC-00392	14-May-2020	NA	20-HPAC-00392			[illegible] Meeting with DFO on May 7 2020 [illegible] May 22
18	I	4	North Ditch West Ditch and unnamed ditches by C289	Road and ditch [illegible] (2100-2300-2250)	[illegible] Regulatory Review	28-Feb-20	9-Mar-2020	11-Mar-2020	60	20-HPAC-00349	10-May-2020	NA	20-HPAC-00349			[illegible] Meeting with DFO on May 7 2020 [illegible] May 22
19	G	4	Delta Nature Reserve	Road and ditch [illegible] (2300-2400)	[illegible] to Avoid and Mitigate	21-Feb-20	26-Feb-2020	26-Feb-2020	60	20-HPAC-00304	26-Apr-2020	NA	20-HPAC-00304	8-Jul-20	Dec-25	[illegible] Meeting with DFO on May 7 2020 [illegible] May 22 [illegible] Avoid and Mitigate
										[illegible]						
20	A	2	98th Street Ditch	[illegible] Hwy 17	[illegible] DFO Request for Review No Authorization required				90	NA	NA	NA	NA	NA	NA	Received [illegible] Avoid and Mitigate on June 17 2020 not need [illegible] Authorization
21	B	2	98th Street Ditch	Hwy 17 Culvert Extension (300-400)	[illegible] DFO Request for Review No Authorization required				90	NA	NA	NA	NA	NA	NA	Received [illegible] Avoid and Mitigate on June 17 2020 not need [illegible] Authorization
22	C	2	River Road Ditch	Culvert Installations	[illegible] DFO Request for Review No Authorization required				90	NA	NA	NA	NA	NA	NA	Received [illegible] Avoid and Mitigate on May 25 2020 not need [illegible] Authorization
23	D	1	Side Ditch	Roundabout [illegible]	[illegible] DFO Request for Review No Authorization required				90	NA	NA	NA	NA	NA	NA	Received [illegible] Avoid and Mitigate on June 17 2020 not need [illegible] Authorization
24	E	2	Side Ditch	Culvert Extension Downstream of Hwy 91C	[illegible] DFO Request for Review No Authorization required				90	NA	NA	NA	NA	NA	NA	Received [illegible] Avoid and Mitigate on June 17 2020 not need [illegible] Authorization
25		3	SW Burns Bog Perimeter Ditch	[illegible] the Ditch [illegible] (1400-1150-1160-1170)	[illegible] DFO Request for Review No Authorization required				90	NA	NA	NA	NA	NA	NA	Received [illegible] Avoid and Mitigate on July 2 2020 not need [illegible] Authorization
26	H	3	West Ditch - C289 and Weigh Scale Road	C289 [illegible] (1300)	[illegible] DFO Request for Review				90							
27	I	4	North Ditch West Ditch and unnamed ditches by C289	Road and ditch [illegible] (2100-2300-2250)	[illegible] DFO Request for Review				90							
28	G	4	Delta Nature Reserve	Road and ditch [illegible] (2300-2400)	[illegible] DFO Request for Review No Authorization required				90	NA	NA	NA	NA	NA	NA	Received [illegible] Avoid and Mitigate on July 8 2020 not need [illegible] Authorization
										[illegible]						
29	A	2	98th Street Ditch	[illegible] Hwy 17	Issued	27-Jan		30-Jan-2020	14	100008107 NRO	13-Feb-2020	NA	SU20-401411 [illegible] 31 2020	24-Feb-20	NRO DFO Sept 30 2022	Submit [illegible] NRO on Counter [illegible] account and [illegible] DFO [illegible]
30	B	2	98th Street Ditch	Hwy 17 Culvert Extension (300-400)	Issued	27-Jan		30-Jan-2020	14	100008107 NRO	13-Feb-2020	NA	SU20-401411 [illegible] 31 2020	24-Feb-20	NRO DFO Sept 30 2022	Submit [illegible] NRO on Counter [illegible] account and [illegible] DFO [illegible]
31	C	2	River Road Ditch	Culvert Installations	Issued	27-Jan		30-Jan-2020	14	100008107 NRO	13-Feb-2020	NA	SU20-401411 [illegible] 31 2020	24-Feb-20	NRO DFO Sept 30 2022	Submit [illegible] NRO on Counter [illegible] account and [illegible] DFO [illegible]
32		1	[illegible]	[illegible]	[illegible]	—		—	—	[illegible]	[illegible]					[illegible]
33	E	2	Side Ditch	Culvert Extension [illegible] Hwy 91C	Issued	27-Jan		30-Jan-2020	14	100008107 NRO	13-Feb-2020	NA	SU20-401411 [illegible] 31 2020	24-Feb-20	NRO DFO Sept 30 2022	Submit [illegible] NRO on Counter [illegible] account and [illegible] DFO [illegible]
34		3	SW Burns Bog Perimeter Ditch	[illegible] the Ditch [illegible] (1400-1150-1160-1170)	Issued	27-Jan		30-Jan-2020	14	100008107 NRO	13-Feb-2020	NA	SU20-401411 [illegible] 31 2020	24-Feb-20	NRO DFO Sept 30 2022	Submit [illegible] NRO on Counter [illegible] account and [illegible] DFO [illegible]
35	H	3	West Ditch - C289 and Weigh Scale Road	C289 [illegible] (1300)	Issued	27-Jan		30-Jan-2020	14	100008107 NRO	13-Feb-2020	NA	SU20-401411 [illegible] 31 2020	24-Feb-20	NRO DFO Sept 30 2022	Submit [illegible] NRO on Counter [illegible] account and [illegible] DFO [illegible]
36	I	4	North Ditch West Ditch and unnamed ditches by C289	Road and ditch [illegible] (2100-2300-2250)	Issued	27-Jan		30-Jan-2020	14	100008107 NRO	13-Feb-2020	NA	SU20-401411 [illegible] 31 2020	24-Feb-20	NRO DFO Sept 30 2022	Submit [illegible] NRO on Counter [illegible] account and [illegible] DFO [illegible]
37	G	4	Delta Nature Reserve	Road and ditch [illegible] (2300-2400)	Issued	27-Jan		30-Jan-2020	14	100008107 NRO	13-Feb-2020	NA	SU20-401411 [illegible] 31 2020	24-Feb-20	NRO DFO Sept 30 2022	Submit [illegible] NRO on Counter [illegible] account and [illegible] DFO [illegible]
										[illegible]						
38	A	2	98th Street Ditch	[illegible] Hwy 17	Issued	27-Jan		30-Jan-2020	90	100008409	29-Apr-2020	NA	SU20-601719	8-Apr-20	6-Apr-21	Submit [illegible] NRO on Counter [illegible] account
39	B	2	98th Street Ditch	Hwy 17 Culvert Extension	Issued	27-Jan		30-Jan-2020	90	100008409	29-Apr-2020	NA	SU20-601719	8-Apr-20	6-Apr-21	Submit [illegible] NRO on Counter [illegible] account
40	C	2	River Road Ditch	Culvert Installations	Issued	27-Jan		30-Jan-2020	90	100008409	29-Apr-2020	NA	SU20-601719	8-Apr-20	6-Apr-21	Submit [illegible] NRO on Counter [illegible] account
41		1	[illegible]	[illegible]	[illegible]	—		—	—	[illegible]	[illegible]					[illegible]
42	E	2	Side Ditch	Culvert Extension [illegible] Hwy 91C	Issued	27-Jan		30-Jan-2020	90	100008409	29-Apr-2020	NA	SU20-601719	8-Apr-20	6-Apr-21	Submit [illegible] NRO on Counter [illegible] account
43		3	SW Burns Bog Perimeter Ditch	[illegible] the Ditch [illegible] (1400-1150-1160-1170)	Issued	27-Jan		30-Jan-2020	90	100008409	29-Apr-2020	NA	SU20-601719	8-Apr-20	6-Apr-21	Submit [illegible] NRO on Counter [illegible] account
44	H	3	West Ditch - C289 and Weigh Scale Road	C289 [illegible] (1300)	Issued	27-Jan		30-Jan-2020	90	100008409	29-Apr-2020	NA	SU20-601719	8-Apr-20	6-Apr-21	Submit [illegible] NRO on Counter [illegible] account
45	I	4	North Ditch West Ditch and unnamed ditches by C289	Road and ditch [illegible] (2100-2300-2250)	Issued	27-Jan		30-Jan-2020	90	100008409	29-Apr-2020	NA	SU20-601719	8-Apr-20	6-Apr-21	Submit [illegible] NRO on Counter [illegible] account
46	G	4	Delta Nature Reserve	Road and ditch [illegible] (2300-2400)	Issued	27-Jan		30-Jan-2020	90	100008409	29-Apr-2020	NA	SU20-601719	8-Apr-20	6-Apr-21	Submit [illegible] NRO on Counter [illegible] account
										[illegible]						
47		1	Contaminated Soil and Groundwater	Segment 1 North and South					30							
										[illegible]						
48		1	[illegible]	[illegible]					—							
49		1	[illegible]	[illegible]					—							
50		1	[illegible]	[illegible]					—							
										[illegible]						
51		1	Contaminated Soil and Groundwater	Utility trenches in contaminated soils					7							
52		1	Contaminated Soil and Groundwater	Contaminated water management					7							
53		1	Contaminated Soil and Groundwater	Section 6 Stone columns [illegible]					7							
54		1	Contaminated Soil and Groundwater	Channel [illegible]					7							
55		1	Contaminated Soil and Groundwater	Channel [illegible]					7							
56		1	Contaminated Soil and Groundwater	Channel [illegible]					7							
										A						
57		1	Contaminated Soil and Groundwater	Segment 1 and 2		17-Jun		6-[illegible]-2020	60		4-Sep-2020					AiP [illegible] by ENV [illegible] as quickly as possible
58		1	Contaminated Soil and Groundwater	Segment 3 and 4		27-Jul		28-Aug-2020	60		27-Oct-2020					AiP [illegible] by ENV [illegible] as quickly as possible
										[illegible]						
59		1 to 4	CEMP		Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
60		1 to 4	Work Procedures	Agriculture Mitigation Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
61		1 to 4	Work Procedures	Air Quality and Dust Control Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
62		1 to 4	Work Procedures	Change [illegible] Management Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
63		1 to 4	Work Procedures	Construction & Hazardous Waste Management Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
64		1 to 4	Work Procedures	Contaminated Sites Management Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020 updated [illegible] Apr 17 2020 MoTI comments
65		1 to 4	Work Procedures	Contractor [illegible] areas and [illegible] plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
66		1 to 4	Work Procedures	Environmental Monitoring Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
67		1 to 4	Work Procedures	Fish Habitat Mitigation and Compensation Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
68		1 to 4	Work Procedures	Health and Safety Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
69		1 to 4	Work Procedures	Invasive Species Management Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
70		1 to 4	Work Procedures	Noise and Vibration Management Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
71		1 to 4	Work Procedures	Spill Management and Emergency Response Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
72		1 to 4	Work Procedures	Surface Water Quality and Sediment Control Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
73		1 to 4	Work Procedures	Wildlife and Habitat Management Plan	Updated [illegible] comments	11-Mar-20	13-Mar-20	20-Mar-20	30	OR-TMS-0001				27-Apr-20		Updated document [illegible] Submitted by [illegible] to the PIC on March 16 2020
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]			[redacted]	[redacted]	[redacted]	
										[illegible]						
79			River Road [illegible]	Proposed Watermain at River Road	[illegible] submitted the permit	NA	NA	27-May-20		3N250-20 DCO [illegible]				23-Jun-20	24-Jun-21	[illegible]
										[illegible]						
80			River Road	Proposed Watermain at River Road	[illegible] design [illegible] approved by City of Delta	NA	NA	19-Jun-20	NA		26-[illegible]-2020					

Notes: * Agency approval timelines [illegible] once a submission has been completed [illegible] the approvals is based on [illegible] the Designer['s] control
This tracking Table will be updated [illegible] when new information is available [illegible] regulators
** This column is to be used [illegible] applications that require additional information by the regulator and [illegible] is an impact to the Anticipated Approval Date

APPENDIX 5: PERMIT CONDITIONS TRACKER

DFO 20-HPAC-00095

Subject: River Road Interchange (Section 1), Site C -Watercourse Infilling and Highway Upgrades, Fraser River, Delta - Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

	Conditions	Responsibility
1	The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2	Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3	If works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented:	PGC
a	An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.	Brybil
b	Dewater the isolated area gradually to reduce the potential for stranding fish.	PGC
c	Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecraneng.html).	PGC/Brybil
d	When diverting watercourse flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat downstream of the isolated work area.	PGC
4	Complete the works as quickly as possible once they are started.	PGC
5	Undertake works during dry weather and low water conditions.	PGC
6	Equipment is to be situated in the dry watercourse channel within the footprint of the works or operated from the top of the bank.	PGC
7	Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8	Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9	Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	PGC
10	Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11	Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC
12	Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13	While the Program recommends works be conducted during the least risk to fish instream work window of August 1 – September 15 where possible. It is recognized instream works will be required to commence upland works. Therefore, if works are proposed for outside the least risk window, work should especially be conducted under the direction of an appropriately qualified professional as per item 12 above.	PGC
14	Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC, weekly audit MESL
15	If fish are observed at the site, or upstream or downstream of the site, work should be halted. Works may only resume following implementation of appropriate mitigation measures and under the direction of an appropriately qualified professional.	PGC
16	Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC

DFO 20-HPAC-00303

Subject: Highway 91/17 – Site F – Wetland Infilling, Burns Bog Ditches, Delta - Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

	Conditions	Responsibility
1	The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2	Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3	If instream works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented:	PGC
a	An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.	Brybil
b	Dewater the isolated area gradually to reduce the potential for stranding fish.	PGC
c	Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecraneng.html).	PGC/Brybil
d	When diverting watercourse flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat downstream of the isolated work area.	PGC
4	Complete the works as quickly as possible once they are started.	PGC
5	Undertake works during dry weather and low water conditions.	PGC
6	Equipment is to be situated in the dry watercourse channel within the footprint of the works or operated from the top of the bank.	PGC
7	Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8	Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9	Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	PGC
10	Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11	Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC
12	Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13	The Program recommends works within fish-bearing or potentially fish-bearing watercourses be completed during the least risk to fish instream work window of August 1 – September 15 where possible. However, it is recognized that there are proposed instream works outside this window. Therefore, if works are proposed for outside this time window, additional measures should be implemented under the direction of an appropriately qualified professional, as per item 12 above.	PGC
14	Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC, weekly audit MESL
15	If fish are observed at the site, or upstream or downstream of the site, work should be halted. Works may only resume following implementation of appropriate mitigation measures and under the direction of an appropriately qualified professional.	PGC
16	Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC
17	Use non-acid rock drainage and metal leaching (non-ARD/ML) riprap.	

DFO 20-HPAC-00304

Subject: Highway 91/17 – Site G – Wetland Infilling, Burns Bog, Delta - Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

	Conditions	Responsibility
1	The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2	Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3	If works in the roadside ditches are not conducted in the dry, works are to be conducted in isolation of flow. When diverting watercourse flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat downstream of the isolated work area.	PGC
4	Complete the works as quickly as possible once they are started.	PGC
5	Undertake works during dry weather and low water conditions.	PGC
6	Equipment is to be situated in the dry watercourse channel within the footprint of the works or operated from the top of the bank.	PGC
7	Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8	Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9	Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	Brybil -develop PGC - lead and implement
10	Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11	Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC, weekly audit MESL
12	Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13	If fish are observed at the site, or upstream or downstream of the site, work should be halted. Works may only resume under the direction of an appropriately qualified professional, as per Item 12 above, with the following measures in place:	PGC
a	Works are to be conducted in isolation of flow.	PGC
b	An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. Use appropriate fish handling techniques and relocate salvaged fish to a nearby undisturbed location. In the event that isolation is breached, stop work and repeat fish salvage efforts.	Brybil
c	Dewater the isolated area gradually to reduce the potential for stranding fish.	PGC
d	Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html).	PGC, Brybil
e	Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC
f	Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC
g	Ensure that flows are maintained to downstream fish habitat in East Ditch, West Ditch, Silda Ditch, and 96 Street Ditch.	PGC
14	Use non-acid rock drainage and metal leaching (non-ARD/ML) riprap.	PGC

DFO 20-HPAC-00694

Subject: Highway 91/17 - Sites A, B, D & E (Sections 1 and 2) -Watercourse Infilling and Highway Upgrades, Fraser River, Delta - Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

	Conditions	Responsibility
1	The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	
2	Whenever possible, works are to be conducted when the watercourse is dry.	
3	If works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented:	
a	An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.	
b	Dewater the isolated area gradually to reduce the potential for stranding fish.	
c	Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecraneng.html).	
d	When diverting watercourse flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat downstream of the isolated work area.	
4	Complete the works as quickly as possible once they are started.	
5	Undertake works during dry weather and low water conditions.	
6	Equipment is to be situated in the dry watercourse channel within the footprint of the works or operated from the top of the bank.	
7	For works in fish-bearing waters, fish passage is to be maintained through any culverts in fish-bearing waters upon completion of works.	
8	Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	
9	Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	
10	Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	
11	Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	
12	Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	
13	Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	
14	While the Program recommends works be conducted during the least risk to fish instream work window of August 1 – September 15 where possible. It is recognized that there are proposed instream works outside this window. Therefore, if works are proposed for outside the least risk window, work should especially be conducted under the direction of an appropriately qualified professional and additional measure should be implemented, as per item 13 above.	
15	Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area	
16	If fish are observed at the site, or upstream or downstream of the site, work should be halted. Works may only resume following implementation of appropriate mitigation measures and under the direction of an appropriately qualified professional.	
17	Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	
18	Use non-acid rock drainage and metal leaching (non-ARD/ML) riprap.	

DFO 20-HPAC-00349

Highway 91/17 Upgrades – Site I, Nordel Ditches & West Ditch – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

	Conditions	Responsibility
1	The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2	Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3	If works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented	PGC/Brybil
a	An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.	Brybil
b	Dewater the isolated area gradually to reduce the potential for stranding fish.	PGC
c	Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfompo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html).	PGC
d	When diverting flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat, both upstream and downstream of the isolated work area.	PGC
4	Complete the works as quickly as possible once they are started.	PGC
5	Undertake works during dry weather and low water conditions.	PGC
6	Equipment is to be situated in the dry stream channel within the footprint of the works or operated from the top of the bank.	PGC
7	Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8	Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9	Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	PGC
10	Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11	Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC
12	Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13	Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC
14	Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC
15	Use non-acid rock drainage and metal leaching (non-ARD/ML) rip rap.	PGC

DFO 20-HPAC-00350

Highway 91/17 Upgrades – Site H, Unnamed Tributary Ditches to Silda Ditch – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

	Conditions	Responsibility
1	The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2	Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3	If works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented:	PGC/Brybil
a	An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.	Brybil
b	Dewater the isolated area gradually to reduce the potential for stranding fish.	PGC
c	Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www dfompo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html).	PGC
d	When diverting flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat, both upstream and downstream of the isolated work area.	PGC
4	Complete the works as quickly as possible once they are started.	PGC
5	Undertake works during dry weather and low water conditions.	PGC
6	Equipment is to be situated in the dry stream channel within the footprint of the works or operated from the top of the bank.	PGC
7	Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8	Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9	Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	PGC
10	Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11	Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC
12	Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13	Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC
14	Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC
15	Use non-acid rock drainage and metal leaching (non-ARD/ML) rip rap.	PGC

WSA Notification 100310655
Notice to Habitat Officer / Changes in and about a Stream under Part 3 Water Sustainability Regulation

	Conditions	Responsibility
1	Any work associated with the proposed changes in and about a stream must not cause stream channel instability or increase the risk of sedimentation into the stream.	PGC
2	During work onsite, erosion and sediment control materials must be available on site at all times and must be installed if sedimentation is likely to occur into the stream. A contingency plan must be developed outlining the measures to be taken by workers when carrying out any work to control erosion and sediment.	PGC
3	Soil disturbance must not occur in heavy rain conditions and any soil removed must be placed in a location that ensures that sedimentor debris does not enter the stream.	PGC
4	Within a work area, water that contains sediment must be pumped to a vegetated area away from the stream where it can seep into the ground, or to a settling pond that is sufficiently far from the stream to allow sediment to settle out before the water returns to the stream.	PGC
5	The disturbance of stream bank vegetation must not occur or be minimized as much as possible.	PGC
6	Any areas that are disturbed during the work (such as exposed soil) must be promptly restored at a minimum to the pre-disturbance condition. Note: Guidance is provided in the Enhancement Section of the Best Management Practices Instream Works	PGC
7	If possible, work must be conducted on, and equipment located and operated from, dry land (no water present) and the worksite must be isolated from flowing water.	PGC
8	Any equipment used in conducting work must be in good mechanical condition and, when operating in close proximity to the wetted perimeter of a stream, the operator must prevent entry of any substance, sediment, debris or material (e.g., hydrocarbons, silt) into the stream so as to prevent harm to fish, wildlife or the aquatic ecosystem of a stream. Note that Section 46 of the Water Sustainability Act prohibits the introduction of foreign matter into a stream. Failure to comply may result in a remediation order and it is also an offence to do so.	PGC
9	The original rate of water flow in the stream (existing prior to commencing work) must be maintained upstream and downstream of the worksite during all phases of instream activity associated with the work.	PGC
10	When work requires de-watering or isolation of the worksite in the stream, a permit for the salvage of fish and wildlife must be obtained prior to commencing work. All required salvage permits must be obtained from Front Counter BC :http://www.frontcounterbc gov.bc.ca/. Any salvage must be carried out by a qualified environmental professional (such as an R.P.Bio.).	Brybil
11	Following de-watering or isolation of the worksite, stream flow must be returned gradually to the de-watered or isolated area within the stream and not in a single sudden rush so as to avoid erosion of the stream channel and sediment delivery to the stream.	PGC
12	The stream channel width must not change as a result of the work.	PGC
13	Any materials, such as riprap or gabion rock, placed within the stream must be clean and not contain substances that could be harmful to fish, wildlife or the aquatic ecosystem of the stream.	PGC
14	Any areas disturbed as part of the work must be restored as close as possible to their pre-disturbance condition. Any soil exposed at the worksite must be promptly re-vegetated.	PGC
15	Subject to section 16 and 17 below, the work must be completed during the timing window for the stream in respect of which the changes are proposed. The applicable timing window (by region and/or by stream) are specified in the following links (see below) and are designed to protect fish, wildlife or the aquatic ecosystem of a stream. To determine the timing window, please select the relevant region from the map: http://www.frontcounterbc ca/pdf/RegionMap.pdfand then determine the applicable timing window:*Regional Timing Windows:http://www2 gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water/regional-terms-conditions-timing-windows< <for that region and for the stream where the proposed changes will be made. For projects proposed to take place outside these timing windows, please see section 16 and 17 below	PGC
16	In addition to the timing windows specified in section 15 above, work may be carried out during the following times provided these requirements are met when the changes are carried out:	PGC
i.	If the stream channel is naturally dry (no flow) or frozen to the bottom at the worksite and the instream work / activity associated with the proposed change will not adversely impact fish, wildlife or the aquatic ecosystem of the stream (e.g. not result in any substance, sediment, debris or other material entering or leaching into the stream that would adversely affect fish, wildlife or the aquatic ecosystem),	PGC
ii.	In the construction of a winter crossing, the stream channel is frozen to the bottom at the worksite and related work does not adversely impact the stream channel (including stream bed and banks), or fish, wildlife or the aquatic ecosystem of the stream, or impede their passage (in both directions) in the stream.	PGC
17	If your work is proposed outside of the timing window (as described in section 15 above), you must retain a qualified environmental professional (such as an R.P. Bio.). The professional will be responsible for providing a written technical rational that assesses and addresses the risks of the proposed changes in and about a stream, including proposing site specific mitigation (e.g. an Erosion Control Plan that identifies contingency measures and emergency procedures related to the proposal) and onsite monitoring of their implementation. This document must be submitted to the Habitat Officer via Front Counter B.C. with reference to your file number (shown on top of this document).	PGC

WSA Approval 2007795
Change Approval -Changes In and About 96th Street Ditch and Silda Ditch (Sites B, D, and E)

Legend	
	Difference between Approval 2007783 & 2007795
	Difference between Approval 2007749 & 2007795
	Difference between Approval 2007770 & 2007795
	Difference between Approval 2007755 & 2007795

	Conditions	Responsibility
	If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	PGC, Brybil
d	The work(s) authorized in this Approval shall be completed on or before Dec. 31, 2023.	PGC
e	All works associated with the Environmental Enhancement Management Plan, as outlined in clause (m) and required in clause (oo) below, shall be completed on or before December 31, 2033 (based on 10 years).	PGC, Brybil - development of plan
f	Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	PGC - implementation Brybil/MESL - provide input
1	Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 15; or	
2	Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i	An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors); and	
ii	The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii	Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv	The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g	All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.	PGC
h	Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train on site staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	PGC
i	The works shall not result in depressions that have the ability to trap fish and other aquatic life.	PGC
j	The holder of this approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of the rights granted with this approval.	PGC
k	Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	PGC
l	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize, and it shall be managed to avoid entry into any stream or watercourse.	PGC
m	All works shall be completed in accordance with	PGC
1	ENG DWG Site E Culvert Plan and Profile, 2020-01-27	PGC
2	ENG DWG Site B Culvert Plan and Profile, 2020-01-27	PGC
3	ENG DWG Site D River Road Interchange Silda Wetland Encroachment, 2020-02-19	PGC
4	Report Section 11 Approval Application Highway 91/17 Upgrades, Section 1 And 2, By Brybil Projects Ltd., February 21, 2020	PGC
5	Stormwater Management Plan, McElhanney May 6, 2020	PGC
6	CEMP, 3rd Revision, May, 2020	PGC
7	Surface Water Quality & Sediment Control Plan (of CEMP)	PGC
8	Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	PGC
9	Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	PGC
10	Memo Additional FLNRO Information, Dave Hayward, Brybil, June 8, 2020	PGC
n	The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/In-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	PGC
o	All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http //www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf.	PGC
p	The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another July 23, 2020 Job Number 114324 File Number 20077955 of 10 Ministry of Forests, Lands, Natural Resource Operations, and Rural Development Water Management Mailing Address 200-10428 153 Street, Surrey BC V3R 1E1 Location 200-10428 153 Street, Surrey BC V3R 1E1 Phone (604) 586-4400 Fax (604) 586-4444 Web https //www2.gov.bc.ca/gov/content/environment/air-land-water/waterqualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	PGC
1	Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	PGC
2	Where applicable, assist in the isolation of the stream prior to the commencement of works.	PGC
3	Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	PGC
4	Supervise all instream works authorized under this Approval.	PGC
5	When the works involve temporary diversions to isolate the work site,	PGC
i	Monitor all diversion works daily to ensure pumps & flow by passes are inproper working condition;	PGC
ii	Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater"(Fisheries and Oceans Canada, 2020);and	PGC
iii	Ensure fish are prevented from entering the works.	PGC
6	When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	PGC
i	Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	PGC, Brybil
ii	Obtain any permits needed prior to undertaking the salvage(s); and	Brybil
iii	Inspect the extraction area for fish stranding at least once after water levels have declined.	PGC,Brybil
7	In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	PGC
8	Be granted authority to stop the work authorized under this Approval if deemed necessary toaddress risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	PGC, MESL
q	Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	PGC
r	All equipment and machinery used in or near the stream channel	PGC
1	Must be in good operating condition and free of leaks, excess oil and grease;	PGC

2	Must have a spill containment kit readily accessible on-site;	PGC
3	May not be refuelled within 30 meters of any watercourse; and	PGC
4	Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	PGC
s	Any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities must be reported to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	PGC
t	Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).	PGC
u	Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.	PGC
v	Care shall be exercised during sediment screening so that fine size fractions are not introduced into wetted areas or left in dry areas of the stream channel following the completion of work.	PGC
w	Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https //www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https //www2.gov.bc.ca/assets/gov/environment/air-land water/water/waterquality/wqgs-wqos/approved-wqgs/turbitity-or.pdf) and/or the applicable Local Government Bylaw(s).	PGC
	Water quality monitoring must be conducted by an appropriately qualified professional or their designated Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined asbeing equal to or greater than 25 millimetres of rainfall within a24-hourperiod.	PGC
x	All excavated material and debris shall be removed from the site or placed in a stable area above the high-watermark of the stream. Mitigative measures must be applied July 23, 2020 Job Number 114324 File Number 20077957of Ministry of Forests, Lands, Natural Resource Operations, and Rural Development Water Management Mailing Address 200-10428 153 Street, Surrey BC V3R 1E1 Location 200-10428 153 Street, Surrey BC V3R 1E1 Phone (604) 586-4400 Fax (604) 586-4444 Web https //www2.gov.bc.ca/gov/content/environment/air-land-water/waterto protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.	PGC
y	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	PGC
z	Measures must be taken to ensure that no harmful material (e.g. fuel and other hydrocarbons, soil, road fill, or sediment) which could adversely impact water quality, fish and other aquatic life, and/or fish habitat, be allowed to enter the wetted perimeter as a result of the project activities. All staff must be trained in handling and applying a spill kit appropriately to any spills/incidents.	PGC
aa	Site preparation is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.	PGC
bb	The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.	PGC
cc	All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.	PGC
dd	Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.	PGC
ee	All disturbed areas of the banks of the stream shall be restored to their original condition.	PGC
ff	The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.	MESL Design, PGC implementation
gg	The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).	MESL Design, PGC implementation
hh	Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.	PGC
ii	All rock used in the works shall be clean and free of sediment producing material, durable, non-acid generating and suitably graded.	PGC
jj	Treated wood products shall not be used in any construction below the high-water mark of the stream channel.	PGC
kk	Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.	PGC
ll	Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented	PGC
1	Where possible and feasible, piles should be installed using a vibratory hammer.	PGC
2	Piles installed using an impact hammer must implement mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa).	PGC
3	Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish.	PGC
4	Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area.	PGC
5	Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring.	PGC
6	In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed.	PGC
mm	The holder of this Approval shall be responsible for the repair, operation and maintenance of works to the satisfaction of the Water Manager.	PGC
nn	The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAReporting@gov.bc.ca.	PGC
	That report shall include a signed statement from an appropriately Qualified Professional summarizing	PGC
1	The in-stream works undertaken,	PGC
2	The timing of those works,	PGC
3	The total in-stream area directly affected,	PGC
4	The volume of gravel or sediment removed (if applicable),	PGC
5	The frequency of monitoring including who the QP or EM was;	PGC
6	The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable),	PGC
7	Representative site photographs;	PGC
8	Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and	PGC
9	A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported.	PGC
oo	The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval.	Brybil Development, PGC Implementation
	The effectiveness monitoring term required for this approval is 10 years, ending on Dec. 31, 2033, or 10 years following the completion of construction, whichever is later. Monitoring for riparian, instream, and wetland habitats should occur on years 1, 2, 3, 6, 7, and 10.	Province
	Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAReporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email. The reports shall include	Province
1	Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively.	Province
2	Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.	Province

3	Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel.	Province
4	Amphibian species presence by egg mass surveys,	Province
5	Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.,	Province
6	Monitoring, maintenance and implementation of the above recommendations if required.	Province
7	Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity.	Province
pp	To address the permanent in stream and riparian impacts associated with the project, the holder of this Approval must	
1	Retain one or more appropriately qualified professionals to develop an offsetting plan that includes	
i	The creation of a minimum of 206 m2 of instream, 2,705 m2 of wetland, and 1,082 m2 riparian habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines.	Brybil/PGC
ii	A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures.	Province
iii	A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program.	Province
2	Develop the offsetting plan in collaboration with interested First Nations and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development.	Brybil/PGC
3	Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.	Brybil/PGC

WSA Approval 2007783
Change Approval - Changes In and About East West Perimeter Ditch and Burns Bog (Site F)

Legend	
	Difference between Approval 2007795 & 2007783
	Difference between Approval 2007749 & 2007783
	Difference between Approval 2007770 & 2007783
	Difference between Approval 2007755 & 2007783

	Conditions	Responsibility
	If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	
d	The work(s) authorized in this Approval shall be completed on or before Dec. 31, 2023.	
e	All works associated with the Environmental Enhancement Management Plan, as outlined in clause (m) and requirements in clause (jj) below, shall be completed on or before December 31, 2033 (based on 10 years).	
f	Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	
1	Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 15; or	
2	Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i	An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors); and	
ii	The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii	Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv	The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g	All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.	
h	Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	
i	The works shall not result in depressions that have the ability to trap fish and other aquatic life.	
j	The holder of this approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of the rights granted with this approval.	
k	Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	
l	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
m	All works shall be completed in accordance with	
1	Reference ENG DWGs Site F Key Plan/Drawing Index 2020-02-14; Plan 2020-02-14; Profiles 2020-02-14; Typical sections 2020-02-14; Culvert Plan and Profiles, 2020-02-14	
2	Report Section 11 Approval Application Highway 91/17 Upgrades, Section 3, Site F, By Brybil Projects Ltd., February 28, 2020	
3	Stormwater Management Plan, McElhanney May 6, 2020	
4	CEMP, 3rd Revision, May 2020	
5	Surface Water Quality & Sediment Control Plan (of CEMP)	
6	Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	
7	Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	
8	Memo Additional FLNRO Information, Dave Hayward, Brybil, June 8, 2020	
n	The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/In-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	
o	All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http //www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf.	
p	The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another qualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
1	Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	
2	Where applicable, assist in the isolation of the stream prior to the commencement of works.	
3	Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	
4	Supervise all instream works authorized under this Approval.	
5	When the works involve temporary diversions to isolate the work site,	
i	Monitor all diversion works daily to ensure pumps & flow bypasses are in proper working condition;	
ii	Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	
iii	Ensure fish are prevented from entering the works.	
6	When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
i	Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	
ii	Obtain any permits needed prior to undertaking the salvage(s); and	
iii	Inspect the extraction area for fish stranding at least once after water levels have declined.	
7	In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	
8	Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	
q	Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	
r	All equipment and machinery used in or near the stream channel	
1	Must be in good operating condition and free of leaks, excess oil and grease;	
2	Must have a spill containment kit readily accessible on-site;	
3	May not be refuelled within 30 meters of any watercourse; and	
4	Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	

s	Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).	
t	Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.	
u	Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https //www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https //www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/turbitity-or.pdf) and/or the applicable Local Government Bylaw(s). Water quality monitoring must be conducted by an appropriately qualified professional or their designated Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24 hour period.	
v	All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.	
w	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
x	Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.	
y	The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.	
z	All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.	
aa	Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.	
bb	The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.	
cc	The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).	
dd	Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.	
ee	Treated wood products shall not be used in any construction below the high-water mark of the stream channel.	
ff	Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.	
gg	Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented	
1	Where possible and feasible, piles should be installed using a vibratory hammer.	
2	Piles installed using an impact hammer must implement mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa).	
3	Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish.	
4	Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area.	
5	Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring.	
6	In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed.	
hh	The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAReporting@gov.bc.ca. That report shall include a signed statement from an appropriately Qualified Professional summarizing	
1	The in-stream works undertaken,	
2	The timing of those works,	
3	The total in-stream area directly affected,	
4	The volume of gravel or sediment removed (if applicable),	
5	The frequency of monitoring including who the QP or EM was;	
6	The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable),	
7	Representative site photographs;	
8	Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and	
9	A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported.	
ii	The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. The effectiveness monitoring term required for this approval is 10 years, ending on Dec. 31, 2033, or 10 years following the completion of construction, whichever is later. Monitoring for riparian, instream, and wetland habitats should occur on years 1, 2, 3, 6, 7, and 10. Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAReporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email. The reports shall include	
1	Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively.	
2	Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.	
3	Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel.	
4	Amphibian species presence by egg mass surveys,	
5	Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.,	
6	Monitoring, maintenance and implementation of the above recommendations if required.	
7	Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity.	
jj	To address the permanent instream and riparian impacts associated with the project, the holder of this Approval must	
1	Retain one or more appropriately qualified professionals to develop an offsetting plan that includes	
i	The creation of a minimum of 382 m2 of instream, 21,648 m2 of wetland, and 52 m2 riparian habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines.	
ii	A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures. Monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Results of initial monitoring will determine how much further monitoring may be required until enhancement habitats are self-sustaining.	

iii	A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program.	
2	Develop the offsetting plan in collaboration with interested First Nations, local governments, and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development.	
3	Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.	
kk	Effectiveness monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Targets include	
1	Plant survival is ≥ 80%; Tree survival rate of 100 %.	
2	Native plant cover is two thirds greater than invasive species cover within 5 years;	
3	Visual survey of LWD and boulders to confirm they are in place and intact, and that boulders are effectively creating riffles and pools, creating cover for fish and habitat for amphibians; and	
4	Fish are present in instream areas and there are no new barriers to movement.	

WSA Approval 2007749
Change Approval - Changes In and About a Stream (Site G)

Legend	
	Difference between Approval 2007795 & 2007749
	Difference between Approval 2007783 & 2007749
	Difference between Approval 2007770 & 2007749
	Difference between Approval 2007755 & 2007749

		Conditions	Responsibility
		If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	
	d	The work(s) authorized in this Approval shall be completed on or before Dec. 31, 2023.	
	e	All works associated with the Environmental Enhancement Management Plan, as outlined in clause (m) and requirements in clause (jj) below, shall be completed on or before December 31, 2033 (based on 10 years).	
	f	Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	
	1	Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 15; or	
	2	Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
	i	An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors); and	
	ii	The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
	iii	Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
	iv	The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
	g	All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.	
	h	Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	
	i	The works shall not result in depressions that have the ability to trap fish and other aquatic life.	
	j	The holder of this approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of the rights granted with this approval.	
	k	Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	
	l	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
	m	All works shall be completed in accordance with	
	1	Reference ENG DWGs Site G Key Plan/Drawing Index 2020-02-14; Plan 2020-02-14; Profiles 2020-02-14; Typical sections 2020-02-14; Culvert Plan and Profiles, 2020-02-14	
	2	Report Section 11 Approval Application Highway 91/17 Upgrades, Section 4, Site G, By Brybil Projects Ltd., February 28, 2020	
	3	Stormwater Management Plan, McElhanney May 6, 2020	
	4	CEMP, 3rd Revision, May 2020	
	5	Surface Water Quality & Sediment Control Plan (of CEMP)	
	6	Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	
	7	Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	
	8	Memo Additional FLNRO Information, Dave Hayward, Brybil, June 8, 2020	
	n	The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/In-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	
	o	All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http //www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf.	
	p	The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another qualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
	1	Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	
	2	Where applicable, assist in the isolation of the stream prior to the commencement of works.	
	3	Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	
	4	Supervise all instream works authorized under this Approval.	
	5	When the works involve temporary diversions to isolate the work site,	
	i	Monitor all diversion works daily to ensure pumps & flow bypasses are in proper working condition;	
	ii	Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	
	iii	Ensure fish are prevented from entering the works.	
	6	When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
	i	Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	
	ii	Obtain any permits needed prior to undertaking the salvage(s); and	
	iii	Inspect the extraction area for fish stranding at least once after water levels have declined.	
	7	In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	
	8	Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	
	q	Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	
	r	All equipment and machinery used in or near the stream channel	
	1	Must be in good operating condition and free of leaks, excess oil and grease;	
	2	Must have a spill containment kit readily accessible on-site;	
	3	May not be refuelled within 30 meters of any watercourse; and	
	4	Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	

s	Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincia "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).	
t	Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.	
u	Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https //www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https //www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/turbitity-or.pdf) and/or the applicable Local Government Bylaw(s).	
	Water quality monitoring must be conducted by an appropriately qualified professional or their designated Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24 hour period.	
v	All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.	
w	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
x	Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.	
y	The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.	
z	All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.	
aa	Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.	
bb	The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.	
cc	The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).	
dd	Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.	
ee	Treated wood products shall not be used in any construction below the high-water mark of the stream channel.	
ff	Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.	
gg	Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented	
1	Where possible and feasible, piles should be installed using a vibratory hammer or helical (screw) method.	
2	Piles installed using an impact hammer must implement the following mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa)	
i	Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish.	
ii	Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area.	
iii	Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring.	
3	In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed.	
hh	The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAReporting@gov.bc.ca.	
	That report shall include a signed statement from an appropriately Qualified Professional summarizing	
1	The in-stream works undertaken,	
2	The timing of those works,	
3	The total in-stream area directly affected,	
4	The volume of gravel or sediment removed (if applicable),	
5	The frequency of monitoring including who the QP or EM was;	
6	The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable),	
7	Representative site photographs;	
8	Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and	
9	A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported.	
ii	The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval.	
	The effectiveness monitoring term required for this approval is 10 years, ending on Dec. 31, 2033, or 10 years following the completion of construction, whichever is later. Monitoring for riparian, instream, and wetland habitats should occur on years 1, 2, 3, 6, 7, and 10.	
	Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAReporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email.	
	The reports shall include	
1	Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively.	
2	Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.	
3	Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel.	
4	Amphibian species presence by egg mass surveys,	
5	Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.,	
6	Monitoring, maintenance and implementation of the above recommendations if required.	
7	Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity.	
jj	To address the permanent instream and riparian impacts associated with the project, the holder of this Approval must	
1	Retain one or more appropriately Qualified Professionals to develop an offsetting plan that includes	
i	The creation of a minimum of, 7,617 m2 of wetland habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and/or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines.	
ii	A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures.	
iii	A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program.	
2	Develop the offsetting plan in collaboration with interested First Nations, local governments, and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development.	

3	Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.	
kk	Effectiveness monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Targets include	
1	Plant survival is ≥ 80%; Tree survival rate of 100 %.	
2	Native plant cover is two thirds greater than invasive species cover within 5 years;	
3	Visual survey of LWD and boulders to confirm they are in place and intact, and that boulders are effectively	
4	creating riffles and pools and creating cover for fish and habitat for amphibians; and	
5	Fish are present in instream areas and there are no new barriers to movement	

WSA Approval 2007770
Change Approval - Changes In and About a Stream (Site I)

Legend	
	Difference between Approval 2007795 & 2007770
	Difference between Approval 2007783 & 2007770
	Difference between Approval 2007749 & 2007770
	Difference between Approval 2007755 & 2007749

	Conditions	Responsibility
	If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	
	If it is possible amphibians may be present in the streams, such as Nordel Ditches, an amphibian salvage must be undertaken prior to works taking place.	
d	The works authorized shall be completed on or before December 31, 2023.	
e	All works associated with an authorized Environmental Enhancement Management Plan, as outlined in clause (n) and required in clause (ff) below shall be completed on or before December 31, 2033 (based on 10 years).	
f	Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	
1	Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 30; or	
2	Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i	An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors); and	
ii	The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii	Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv	The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g	All works shall be completed in accordance with	
1	Reference ENG DWGs Site I Plan 2020-02-27, Profiles 2020-02-27, Typical Sections 2020-02-27, Culvert/ Storm Plans and Profiles 2020-02-27	
2	Report Section 11 Approval Application Highway 91/17 Upgrades, Section 4, Site I, By Brybil Projects Ltd., March 10, 2020	
3	Stormwater Management Plan, McElhanney May 6, 2020	
4	CEMP, 3rd Revision, May, 2020	
5	Surface Water Quality & Sediment Control Plan (of CEMP)	
6	Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	
7	Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	
8	Memo Additional FLNRO Information, Dave Hayward, Brybil, June 8, 2020	
h	The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/In-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	
i	All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http //www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf.	
j	The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another qualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
1	Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	
2	Where applicable, assist in the isolation of the stream prior to the commencement of works.	
3	Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	
4	Supervise all instream works authorized under this Approval.	
5	When the works involve temporary diversions to isolate the work site,	
i	Monitor all diversion works daily to ensure pumps & flow bypasses are in proper working condition;	
ii	Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	
iii	Ensure fish are prevented from entering the works.	
6	When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
i	Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	
ii	Obtain any permits needed prior to undertaking the salvage(s); and	
iii	Inspect the extraction area for fish stranding at least once after water levels have declined.	
7	In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	
8	Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	
k	All equipment and machinery used in or near the stream channel	
1	Must be in good operating condition and free of leaks, excess oil and grease;	
2	Must have a spill containment kit readily accessible on-site;	
3	May not be refuelled within 30 meters of any watercourse; and	
4	Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	
l	Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	
m	Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	
n	Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).	
o	Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.	
p	All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.	
q	Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https //www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https //www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/turbitity-or.pdf) and/or the applicable Local Government Bylaw(s).	

	Water quality monitoring must be conducted by an appropriately qualified professional or their designated Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24 hour period.		
r	The holder of this approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of the rights granted with this approval.		
s	Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.		
t	The works shall not result in depressions that have the ability to trap fish and other aquatic life.		
u	The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.		
v	All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.		
w	Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.		
x	The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.		
y	The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).		
z	Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.		
aa	All rock used in the works shall be clean and free of sediment producing material, durable, non-acid generating and suitably graded.		
bb	Treated wood products shall not be used in any construction below the high-water mark of the stream channel.		
cc	Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.		
dd	Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented		
1	Where possible and feasible, piles should be installed using a vibratory hammer.		
2	Piles installed using an impact hammer must implement mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa).		
3	Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish.		
4	Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area.		
5	Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring.		
6	In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed.		
ee	The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAReporting@gov.bc.ca.		
	That report shall include a signed statement from an appropriately Qualified Professional summarizing		
1	The in-stream works undertaken,		
2	The timing of those works,		
3	The total in-stream area directly affected,		
4	The volume of gravel or sediment removed (if applicable),		
5	The frequency of monitoring including who the QP or EM was;		
6	The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable),		
7	Representative site photographs;		
8	Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and		
9	A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported.		
ff	The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval.		
	The effectiveness monitoring term required for this approval is 10 years following the completion of construction of the offsetting habitat. Monitoring for riparian, instream, and wetland habitat should occur for 5 years, over a 10-year period following the completion of construction of the habitat offsetting unless a Qualified Professional deems the site functional prior to the end of the 5 years of monitoring. Monitoring must occur until the habitat is deemed functional at like for like or like for greater than the original habitat by a Qualified Professional.		
	Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAReporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email.		
	The reports shall include		
1	Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively.		
2	Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.		
3	Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel.		
4	Amphibian species presence by egg mass surveys,		
5	Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.,		
6	Monitoring, maintenance and implementation of the above recommendations if required.		
7	Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity.		
gg	To address the permanent instream and riparian impacts associated with the project, the holder of this Approval must		
1	Retain one or more appropriately qualified professionals to develop an offsetting plan that includes		
i	The creation of a minimum of 1,310 m2 of instream, 2,274 m2 of wetland, and 743 m2 riparian habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines.		
ii	A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures.		
iii	A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program.		
2	Develop the offsetting plan in collaboration with interested First Nations, local governments, and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development.		
3	Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.		
hh	Effectiveness monitoring must take place during the same time of year each year to provide comparable data.		
	Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Results of initial monitoring will determine how much further monitoring may be required until enhancement habitats are self-sustaining. Targets include		
1	Plant survival is ≥ 80%; Tree survival rate of 100 %.		
2	Native plant cover is two thirds greater than invasive species cover within 5 years;		
3	Visual survey of LWD and boulders to confirm they are in place and intact, and that boulders are effectively creating riffles and pools and creating cover for fish and habitat for amphibians; and		
4	Fish are present in instream areas and there are no new barriers to movement		

WSA Approval 2007755
Change Approval - Changes In and About SFPR Offset site FC239, and drainage between SFPR Offset site FC239 and Silda Ditch (Site H)

Legend	
	Difference between Approval 2007795 & 2007755
	Difference between Approval 2007783 & 2007755
	Difference between Approval 2007749 & 2007755
	Difference between Approval 2007770 & 2007755

	Conditions	Responsibility
	If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	
d	The work(s) authorized in this Approval shall be completed on or before Dec. 31, 2023.	
e	All works associated with an Environmental Enhancement Management Plan, as outlined in clause (m) and requirements in clause (jj) below shall be completed on or before December 31, 2033 (based on 10 years).	
f	Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	
1	Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 30; or	
2	Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i	An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors); and	
ii	The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii	Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv	The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g	All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.	
h	Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	
i	The works shall not result in depressions that have the ability to trap fish and other aquatic life.	
j	The holder of this approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of the rights granted with this approval.	
k	Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	
l	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
m	All works shall be completed in accordance with	
1	ENG DWG Site H Key Plan/Drawing Index, by McElhanney, 2020-02-20	
2	ENG DWG Site H Plan, by McElhanney, 2020-02-20	
3	ENG DWG Site H Profile, by McElhanney, 2020-02-20	
4	ENG DWG Site H Typical Sections, by McElhanney, 2020-02-20	
5	ENG DWG Site H Culvert Plan and Profiles, by McElhanney, 2020-02-20	
6	Report Section 11 Approval Application Highway 91/17 Upgrades, Section 1 And 2, By Brybil Projects Ltd., February 21, 2020	
7	Stormwater Management Plan, McElhanney May 6, 2020	
8	CEMP, 3rd Revision, May 2020	
9	Surface Water Quality & Sediment Control Plan (of CEMP)	
10	Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	
11	Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	
12	Memo Additional FLNRO Information, Dave Hayward, Brybil, June 8, 2020; and	
13	Any other documents related to the File No. 2007755.	
n	The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/In-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	
o	All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http //www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf.	
p	The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another qualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
1	Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	
2	Where applicable, assist in the isolation of the stream prior to the commencement of works.	
3	Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	
4	Supervise all instream works authorized under this Approval.	
5	When the works involve temporary diversions to isolate the work site,	
i	Monitor all diversion works daily to ensure pumps & flow bypasses are in proper working condition;	
ii	Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	
iii	Ensure fish are prevented from entering the works.	
6	When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
i	Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	
ii	Obtain any permits needed prior to undertaking the salvage(s); and	
iii	Inspect the extraction area for fish stranding at least once after water levels have declined.	
7	In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	
8	Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	
q	Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	
r	All equipment and machinery used in or near the stream channel	
1	Must be in good operating condition and free of leaks, excess oil and grease;	
2	Must have a spill containment kit readily accessible on-site;	

	3	May not be refuelled within 30 meters of any watercourse; and	
	4	Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	
	s	Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).	
	t	Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.	
	u	Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https //www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https //www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/turbitity-or.pdf) and/or the applicable Local Government Bylaw(s).	
		be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24 hour period.	
	v	All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.	
	w	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
	x	Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.	
	y	The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.	
	z	All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.	
	aa	Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.	
	bb	The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.	
	cc	The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).	
	dd	Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.	
	ee	All rock used in the works shall be clean and free of sediment producing material, durable, non-acid generating and suitably graded.	
	ff	Treated wood products shall not be used in any construction below the high-water mark of the stream channel.	
	gg	Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.	
	hh	Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented	
	1	Where possible and feasible, piles should be installed using a vibratory hammer.	
	2	Piles installed using an impact hammer must implement mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa).	
	3	Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish.	
	4	Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area.	
	5	Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring.	
	6	In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed.	
	ii	The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAReporting@gov.bc.ca.	
		That report shall include a signed statement from an appropriately Qualified Professional summarizing	
	1	The in-stream works undertaken,	
	2	The timing of those works,	
	3	The total in-stream area directly affected,	
	4	The volume of gravel or sediment removed (if applicable),	
	5	The frequency of monitoring including who the QP or EM was;	
	6	The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable),	
	7	Representative site photographs;	
	8	Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and	
	9	A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported.	
	jj	The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval.	
		The effectiveness monitoring term required for this approval is 10 years following the completion of construction of the offsetting habitat. Monitoring for riparian, instream, and wetland habitat should occur for 5 years, over a 10-year period following the completion of construction of the habitat offsetting unless a Qualified Professional deems the site functional prior to the end of the 5 years of monitoring. Monitoring must occur until the habitat is deemed functional at like for like or like for greater than the original habitat by a Qualified Professional.	
		Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAReporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email.	
		The reports shall include	
	1	Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively.	
	2	Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.	
	3	Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel.	
	4	Amphibian species presence by egg mass surveys,	
	5	Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.,	
	6	Monitoring, maintenance and implementation of the above recommendations if required.	
	7	Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity.	
	kk	To address the permanent instream and riparian impacts associated with the project, the holder of this Approval must	
	1	Retain one or more appropriately qualified professionals to develop an offsetting plan that includes	
	i	The creation of a minimum of 406 m2 of instream, 702 m2 of wetland, and 5,495 m2 riparian habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines.	

ii	A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures. Monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Results of initial monitoring will determine how much further monitoring may be required until enhancement habitats are self-sustaining.		
iii	A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program.		
2	Develop the offsetting plan in collaboration with interested First Nations, local governments, and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development.		
3	Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.		
II	Effectiveness monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Targets include		
1	Plant survival is ≥ 80%; Tree survival rate of 100 %.		
2	Native plant cover is two thirds greater than invasive species cover within 5 years;		
3	Visual survey of LWD and boulders to confirm they are in place and intact, and that boulders are effectively creating riffles and pools, creating cover for fish and habitat for amphibians; and		
4	Fish are present in instream areas and there are no new barriers to movement		

APPENDIX 6: STATUS OF TOCA COMMITMENTS TABLE

Ref	Objective Commitments & Assurances	Timing	Delivered By	Status Update	
				Ongoing	Complete
1.0 Responsible Environmental Management					
1.1	Develop, implement, and maintain an Environmental Management Plan (EMP) for the Project to demonstrate how the design, construction and operation, including maintenance, of the Project: - Will be carried out to avoid or mitigate negative impacts; - Will be carried out in an environmentally responsible manner, in accordance with DBSS 165 [Protection of the Environment]; - Will employ Best Management Practices (BMPs3); and - Will comply with federal and provincial legislation, permits, approvals and authorizations, including the Environmental Assessment Certificate (EAC).	All phases	Contractor	X	
1.2	Prepare and implement a Construction Environmental Management Plan (CEMP), (which is a component of the EMP), including relevant sub-plans, for the Project prior to the start of relevant construction activities.	Pre-construction	Contractor	X	
1.3	Obtain required statutory permits, approvals, and authorizations before proceeding with construction that requires such permits.	All phases	Contractor	X	
1.4	Adhere to the terms and conditions of the: EAC; federal screening report; the EMP; DBSS 165 [Protection of the Environment]; and any other applicable permits, licenses and approvals.	Pre-construction, construction	Contractor	X	
1.5	Establish an Inter-Agency Environmental Review Committee (IAERC), in accordance with the Terms of Reference developed during Application review, to provide for agency review and comment on plans and designs prior to construction, including but not limited to: - Detailed design of stormwater management infrastructure;	Pre-construction, construction	MOTI / Contractor	N/A	

	- Detailed vegetation and wildlife mitigation plans and mitigation monitoring plans; and - Environmental management plans.				
1.6	Provide all project related EMPs, including component EMPs, to applicable regulatory agencies in the IAERC for review and comment, at least 30 calendar days prior to the start of construction that requires such plans.	Pre-construction	Contractor	N/A	
1.7	Relevant sub-plans to be included in the CEMP will include those to address environmental issues identified in the Application and supporting documentation submitted to the EAO during the Application review, and described in the Application (Section 11, pg. 523), including but not limited to: - Agriculture Mitigation Plan; - Air Quality and Dust Control Plan; - Archaeological Mitigation / Monitoring Plan; - Construction and Hazardous Waste Management Plan; - Contaminated Sites Management Plan; - Contractor Awareness and Education Plan; - Environmental Monitoring Plan; - Fisheries Habitat Mitigation and Compensation Plan; - Health and Safety Plan; - Invasive Species Management Plan; - Noise and Vibration Management Plan; - Spill Management and Emergency Response Plan; - Surface Water Quality and Sediment Control Plan; - Wildlife and Habitat Management Plan.	Pre-construction	Contractor	X	
1.8	Manage contamination encountered during project development, regardless of the current assessment of potential contamination, in accordance with applicable regulatory requirements.	All phases	Contractor	X	
1.9	Prepare and implement an Operational Environmental Management Plan, prior to operation and maintenance activities. Provide the operational EMP to relevant reviewing and regulatory agencies, for review and comment, at least 30 calendar days prior to the onset of operation and maintenance activities.	Pre-construction	Contractor	TBD	
1.10	At a minimum, review the Wildlife and Habitat Management Plan and modify if required, three years post- construction and make a decision regarding the next review date and/or determine the closure date for the plan(s). The method for review, modification, and decision on closure of the plan(s) will be defined by the applicable regulatory agencies within the IAERC	Operations	Contractor	N/A	
2.0 Monitoring					
2.1	Ensure that environmental monitoring and reporting for the Project will be conducted, with respect to the terms and conditions of the EAC and other regulatory permits, approvals and authorizations as applicable.	Construction	Contractor	X	
2.2	Incorporate a monitoring component into all applicable sub-plans of the construction EMP developed for the construction phase of the Project.	Pre-construction	Contractor	X	
2.3	Outline in each of the sub-plans of the construction EMP: - Rationale for monitoring; - Parameters to be monitored;	Pre-construction	Contractor	X	

	- Monitoring program details; and - Required follow-up actions.				
2.4	The Owner will engage an Environmental Monitor for the construction phases of the Project to undertake environmental monitoring activities and oversee implementation of each of component plans of the EMP developed for the Project. The Environmental Monitor will monitor, evaluate, and report to the owner on construction activities and the effectiveness of the environmental management strategies and mitigation measures, with respect to the terms and conditions of the Application and other regulatory Permits, Approvals and Authorizations that may apply. The Monitor will be responsible for making onsite decisions and taking on-site action to avoid/respond to potential environmental effects which could include temporary stop work orders if necessary.	Construction	Contractor	X	
2.5	Implement environmental quality management program through monitoring, auditing and reporting activities for the Project with respect to the terms and conditions of the EAC and other regulatory permits, approvals and authorizations.	All phases	Contractor	X	
3.0 Incident Management					
3.1	Respond to environmental incidents, including spill incidents in accordance with the Emergency Response Plan to minimize effects and risks to the general public, on-site workers and the environment.	All phases	Contractor	X	
3.2	Include protocols, consistent with the BC Spill Reporting Regulation, for reporting spills to appropriate emergency response authorities, including; - The Provincial Emergency Program, in the case of any spills of reportable deleterious substances into waters frequented by fish, regardless of the amount of the spill; and - To adjacent property owners and occupiers, including local government, where utilities cross the highway and there is a potential for an incident to extend beyond the Project boundaries.	Pre-construction	Contractor	X	
3.3	Train all field Project personnel regarding implementation of the Construction and Hazardous Waste Management and Spill Management and Emergency Response Plans.	All phases	Contractor	X	
3.4	Incorporate relevant municipal contacts into the emergency contacts for the Construction and Hazardous Waste Management and Spill Management and Emergency Response Plans prepared for construction of the Project.	Pre-construction	Contractor	X	
3.5	Follow applicable DBSS 165 and Canadian Council of Ministers of Environment codes and procedures if temporary fuel storage/fueling facilities are required during construction. Where there is a difference in standards, the most stringent measure for environmental protection will take precedence.	Construction	Contractor	X	
4.0 Community Consultation					
4.1	Consult with local governments, stakeholders and the public during all stages of Project development.	Pre-construction; construction	MoT, Contractor	X	
4.2	Conduct community open houses and information sessions during the design review stage to obtain input on design refinements, during the preliminary and final design review stages.	Pre-construction	MoT, Contractor	N/A	
4.3	Provide regular public information updates on the progress of construction, the schedule, and upcoming milestones.	Construction	MoT, Contractor	X	

4.4	Consult with the Corporation of Delta (CoD) and the City of Surrey (CoS) during all stages of project development and construction.	Pre-construction; construction	Contractor	X	
4.5	Provide updated media information materials, as part of the Project commitment to making project information available to the public.	All phases	Contractor	X	
4.6	Track project enquiries and responses.	All phases	Contractor	X	
4.7	Discuss potential economic opportunities generated by the Project with participating First Nations throughout the Post-EA Certification, Design and Construction Phases of the Project.	Pre-construction; construction	MoT, Contractor	X	
4.8	Obtain input from participating First Nations to identify appropriate measures to mitigate potential project related impacts on their previously identified interests in relation to fisheries and habitat matters.	Pre-construction	Contractor	X	
5.0 Stormwater Management					
5.1	Ensure that the design, construction and maintenance of stormwater management infrastructure for the Project takes an integrated approach to stormwater management and contributes to maintaining, or improving, drainage and water quality conditions directly adjacent to the corridor.	All phases	Contractor	TBD	
5.2	Design, construct and maintain stormwater management infrastructure, such that it to meets the performance objectives outlined in the Stormwater Management Plan Outline (July, 2007) and the Application. Monitoring of the infrastructure will be undertaken to confirm performance objectives are met or, if necessary, additional steps are taken to ensure performance objectives are achieved.	All phases	Contractor	X	
5.3	Consult with municipalities adjacent to the new construction area such that the approach to the management of stormwater and drainage design is complementary to, and can be integrated with, adjacent municipal stormwater infrastructure.	Pre-construction	Contractor	TBD	
5.4	Provide final designs for stormwater management infrastructure to relevant First Nations and reviewing and regulatory agencies for review and comment at least 30 calendar days prior to relevant construction activities in order to verify that the proposed infrastructure achieves agreed upon performance measures identified in the Stormwater Management Plan Outline (July 2007).	Pre-construction	Contractor	TBD	
5.5	Drain stormwater and road runoff away from red and blue listed plant communities and do not construct integrated stormwater management infrastructure in such habitat areas.	Construction; operation	Contractor	TBD	
5.6	Obtain input from participating First Nations regarding mitigation measures outlined in the stormwater and drainage plan and effective integration of those measures into the design and operation of the Project.	Pre-construction	Contractor	TBD	
6.0 Agriculture					
6.1	Consult with the Agricultural Land Commission (ALC), Ministry of Agriculture and Lands (MAL), Delta Farmers' Institute (DFI), individual farm owners and the CoD, through all future stages of Project development, construction and operation, to ensure impacts to agricultural lands and operations are minimized where possible and appropriately addressed where impacts are unavoidable.	All phases	MoT, Contractor	X	
6.2	Obtain ALC approvals regarding areas within the Agricultural Land Reserve (ALR) required for the project, prior to construction.	Pre-construction	MoT, Contractor		X

6.3	Develop and implement an Agricultural Mitigation Plan as outlined in the Application that identifies potential impacts to agriculture as a result of project construction activities and measures for avoiding and addressing such impacts where possible. The scope will include those measures outlined in the Application and the Agricultural Enhancement Strategy (April 2008), including but not limited to mitigation measures focused on: - Road access; - Drainage and irrigation; - Utilities; and - Maintaining the agricultural land base.	Pre-construction	Contractor	X	
6.4	Finalize and implement specific agricultural enhancement initiatives, including but not limited to, compensation mechanisms focused on improving road access and drainage and irrigation, as part of the application process to the ALC and summarily as part of the Agricultural Enhancement Strategy (April 2008).	Pre-construction; construction	MoT	X	
6.5	Retain the services of a Professional Agrologist to: - Liaise with the owner, Design-Builder and farmer(s); - Oversee a consultation and dispute resolution process for individual farmers affected by the Project; and - Oversee monitoring and effectiveness of measures proposed to address impacts to agriculture during design, construction and operation.	All phases	MoT	X	
6.6	Avoid, to the extent possible, using agricultural lands outside of the Right-Of-Way (ROW), for staging areas. For all agricultural lands that are required for use as staging areas, implement construction BMPs (as noted in the Agriculture Mitigation Plan in the EMP) to manage potential construction related effects and restore lands to pre-construction condition, or better agricultural capability, upon completion of project works.	Pre-construction; construction	Contractor	X	
6.7	Consult with individual farm owners, as well as MAL, ALC, CoD, DFI and other stakeholders, to identify potential impacts to agricultural operations and infrastructure and ensure that such impacts are avoided, mitigated for, or appropriately addressed during future stages of design and construction of the Project. The scope of potential impacts to farm operations includes, but is not limited to: - Agricultural drainage; - Utilities; - Road Access; and - Pollinators.	Pre-construction; construction	MoT; contractor	X	
6.8	Undertake reasonable measures to facilitate the consolidation of parcels of isolated agricultural lands, to promote continued agricultural use of such lands.	All phases	MoT	X	
6.9	Undertake reasonable measure to minimize potential loss of ALR lands, including existing farm(s) by: - Refining the Project footprint where feasible; and - Optimizing use of existing ROW.	Pre-construction; construction	Contractor	X	
7.0 Air Quality					
7.1	Ensure that the construction works and operations for the Project are conducted in compliance with environmental permits and approvals and that all reasonable measures are taken to address project-related effects on air quality.	Construction, operation	Contractor	X	

7.2	Develop and implement an Air Quality and Dust Control Plan for the construction phase of the project. The plan will: - Include an air quality monitoring program with thresholds, which if exceeded, will trigger the implementation of additional mitigation and corrective measures; - Commit to the best available, known and effective, measures for mitigating construction related air emissions, including diesel particulate matter (PM), as identified by relevant regulatory agencies. This would include, where practical, the use of diesel oxidation catalysts (DOCs) or diesel particulate filters (DPFs) on all on-road and off-road project equipment in combination with use of a B20 biodiesel blend; - Include an anti-idling policy for construction equipment and other vehicles associated with construction related activities; - Commit to fugitive dust minimization strategies (e.g. wheel wash and sweeping), and dust suppression techniques (e.g. watering) on roads; and - Identify site specific considerations, where applicable, such as proximity to sensitive environmental or human receptors.	Pre-construction; construction	Contractor	X	
7.3	Provide the Air Quality and Dust Control Plan to Metro Vancouver, Environment Canada (EC), Ministry of Environment (MoE), Transport Canada, Health Canada (HC) and other relevant agencies for review and comment at least 30 calendar days prior to relevant construction activities.	Pre-construction	MoT, Contractor	X	
7.4	Avoid burning as a means for disposing of land clearing debris.	Construction	Contractor	X	
8.0 Traffic Management					
8.1	Ensure that the design of the Project is integrated with local road networks, and that construction of the proposed project includes measures for avoiding or minimizing impacts to local road networks.	Pre-construction; construction	MoT, Contractor	X	
8.2	Prepare and implement a Traffic Management Plan in coordination with CoS and CoD to address construction related traffic conditions.	Pre-construction; construction	Contractor	X	
8.3	Consult with the CoD, CoS, MoT district office, and other stakeholders to design and construct project infrastructure so that it is effectively integrated with existing and planned local road networks.	Pre-construction; construction	Contractor	X	
9.0 Noise and Vibration					
9.1	Ensure that potential noise impacts associated with the project are considered and mitigation provided for during design, construction and operation of the project.	All phases	Contractor	X	
9.2	Prepare and implement a Noise and Vibration Management Plan for the construction phase of the Project that will include specific mitigation measures, and locations where they will be applied to address construction related noise.	Pre-construction; construction	Contractor	X	
9.3	Prepare a noise complaint protocol as part of the CEMP Noise and Vibration Management Plan to respond in a timely manner to concerns and complaints raised by residents and take reasonable actions to reduce the Project-related construction noise in question.	Pre-construction	Contractor	X	
9.4	Provide the construction Noise and Vibration Management Plan to the CoS, CoD and other stakeholders for review and comment 30 calendar days prior to the onset of relevant construction activities.	Pre-construction	Contractor	X	

9.5	Design and construct mitigation measures to address potential operational noise impacts on residential areas as part of the project according to the MoT Noise Policy (1993) [referenced as the Noise Policy in this Agreement].	Pre-construction; construction	Contractor	TBD	
9.6	Conduct noise monitoring at the baseline sites during the first year after construction is complete to assess the effectiveness of mitigation measures, with a commitment to further mitigation if necessary, technically feasible and practical.	Operation	Contractor	TBD	
9.7	Consult with the CoD and CoS to look for opportunities to use tree planting and landscaping to mitigate potential visual, noise and air quality impacts.	Pre-construction; construction	Contractor		
9.8	Participate in meetings with affected communities and residents to address site-specific noise issues in the event that late evening or night time construction works prove necessary in the vicinity of residential areas.	Pre-construction; construction	Contractor	TBD	
9.10	Perform pre-condition surveys to document existing state of buildings and facilities in the vicinity of SFPR construction activities as per standard geotechnical BMPs. This will form the baseline conditions, against which post-construction condition surveys will be carried out to assess any vibration impacts to buildings and facilities as a result of Project construction.	Pre-construction	Contractor	X	
9.11	Monitor ground vibrations, as per standard geotechnical BMPs, adjacent to buildings to confirm that vibration levels are within ranges expected to avoid construction-related vibration.	Construction	Contractor	X	
10.0 Contaminated Sites and Property Acquisition					
10.1	Ensure that potential site contamination is investigated, and managed in compliance with the Contaminated Sites Regulation (Environmental Management Act), during all stages of project development including property acquisition, design and construction.	All phases	Contractor	X	
10.2	Assess all Tier 1 and Tier 2 properties required for the ROW for potential contamination prior to construction and take steps, as required, to investigate and address site contamination that may exist.	Pre-construction; construction	MoT; Contractor	X	
10.3	Manage any contaminated groundwater encountered in accordance with the requirements of the Environmental Management Act and associated regulations.	Pre-construction; construction	MoT; Contractor	X	
10.4	Undertake risk assessment and remediation activities, as required, and manage potential contamination in compliance with the provincial Environmental Management Act and Contaminated Sites Regulation.	Pre-construction; construction	MoT; Contractor	X	
10.5	Should contaminated groundwater be identified along the route, include measures to control/mitigate the potential for impacts to surface water in future stormwater design.	All phases	MoT; Contractor	X	
10.6	Notify MoE of potential migration of contaminants from known or identified Tier 1 off-corridor properties of concern discovered during supplementary investigations or Project-related activities and use information to manage and mitigate contaminated sites issues prior to construction.	Pre-construction	Contractor	X	
10.7	As part of the CEMP, the Contaminated Sites Management, Construction and Hazardous Waste Management and Spill Management and Emergency Response Plans, develop and implement a protocol for identifying and managing contaminated and potentially contaminated materials during the construction phase of the Project.	Pre-construction; construction	Contractor	X	
11.0 Fisheries					

11.1	Ensure that all works and activities associated with the construction, operation and maintenance of the project are conducted in compliance with the Fisheries Act. This includes implementing mitigation measures and best management practices to ensure that the project does not cause any unauthorized harmful alteration, disruption or destruction of fish habitat, that the project does not cause any harm or mortality to fish, and that the project does not cause or result in the deposit of a deleterious substance of any type, including sediment, into a watercourse that is frequented by fish.	All phases	Contractor	X	
11.2	Obtain an authorization under subsection 35(2) of the Fisheries Act for any unavoidable harmful alteration, disruption or destruction of fish habitat prior to relevant construction works or activities.	All phases	Contractor	X	
11.3	Develop and construct fish habitat compensation measures that offset all project impacts to fish habitat. These fish habitat compensation measures will be constructed by the proponent as directed by Fisheries and Oceans Canada and in accordance with any s. 35(2) Fisheries Act authorizations.	Pre-construction; construction	Contractor	X	
11.4	Implement appropriate measures to adequately mitigate the effects of the creation of impervious surfaces on volume of surface runoff, rate of runoff, and water quality. These will meet performance targets established in the Stormwater Management Plan Outline (July, 2007) for the project.	Pre-construction; construction; operation	Contractor	TBD	
11.5	Establish and maintain riparian setback areas from drainage channels and watercourses in accordance with regulatory requirements.	Pre-construction; construction; operation	Contractor	X	
11.6	Take all reasonable measures to prevent substances that may be harmful to fish from entering the aquatic environment at the construction sites in the proximity to fish and aquatic habitat, paying particular attention to discharges of suspended sediments, construction waste, handling of uncured concrete and other deleterious substances.	Construction	Contractor	X	
11.7	Construct bridges for watercourse crosses in the vicinity of Delta Ravines (i.e. Norum, McAdam, Collings, Nelson View and Gunderson Creeks), as shown in plans attached to the Application (Technical Volume 1) and over a minimum 450 m portion of the Fraser Heights Wetlands, using the design and the construction methods outlined in the draft Fraser Heights Wetlands Bridge Preliminary Design Report.	Pre-construction; construction	Contractor	N/A	
11.8	Obtain input from the Musqueam Indian Band and other participating First Nations to identify appropriate measures to mitigate potential project related impacts on the identified interests of the Musqueam Band in relation to fisheries and habitat matters. Identify potential opportunities for mutually agreeable opportunities to assist in advancing the fisheries interests of the Musqueam Indian Band or other participating First Nations.	All phases	MoT, contractor	X	
11.9	Review with the applicable regulatory agencies, including but not limited to DFO and MOE, proposals for compensation habitat, including opportunities for habitat to be constructed in advance of other Project construction (i.e. “habitat banking”), to determine the ratio of habitat types and to which drainage compensation will apply.	Pre-construction	Contractor	X	
11.10	Follow BMPs in the construction of all new ditches and stormwater watercourses.	Construction	Contractor	X	

11.11	Retain maintenance responsibility for compensation sites within the Project limits. For sites constructed in areas outside of the Project limits, establish site-specific agreements for access and maintenance with the relevant stakeholder/landowner.	Operations	Contractor		
12.0 Water Quality					
12.1	Ensure that the construction works and operations for the Project are conducted in compliance with environmental requirements and BMPs in order to avoid impacts to water quality.	All phases	Contractor	X	
12.2	Develop and implement a Surface Water Quality and Sediment Control Plan and provide the plan for review and comment by relevant environmental agencies at least 30 calendar days prior to the start of relevant construction activities.	Pre-construction	Contractor	X	
12.3	Sample water from potentially impacted drinking water wells to assess potential adverse effects to water quality associated with during construction and operation phases of the project. Provide sampling water quality data to the local health authority for review and comment.	Construction; operation	Contractor	TBD	
12.4	The Surface Water Quality and Sediment Control Plan will at a minimum: - Identify requirements for additional water quality monitoring prior to and during construction to ensure preventative and mitigation measures can be taken as appropriate, to avoid impacts to water quality; - Identify potential water quality contaminants of concern generated by construction activities and associated preventative and mitigative measures; - Include a BMP maintenance plan to ensure BMPs implemented are functioning as designed and corrective actions are taken when required; and - Be submitted to the applicable regulatory agencies at least 30 calendar days prior to start of construction activities for review.	Pre-construction; construction	Contractor	X	
13.0 Wildlife and Vegetation					
13.1	Ensure that the design, construction, and operation of the project, avoids where practical and technically feasible, impacts to vegetation and wildlife.	All phases	Contractor	X	
13.2	Prepare and implement a Wildlife and Habitat Management Plan to avoid and, where necessary, mitigate potential impacts to vegetation, wildlife and wildlife habitat. Provide the Plan to relevant regulatory and reviewing agencies for review and comment at least 30 calendar days prior to relevant construction activities beginning. The Wildlife and Habitat Management Plan will include best practices including but not limited to those identified in the Application (Table 7.717, draft Wildlife Mitigation Crossing Plan (April 2007) [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)], and Zones of Influence memo (July 2007) [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)] in order to avoid, and where necessary, mitigate potential effects on vegetation and wildlife. This plan will also identify protocols for the survey and salvage of vegetation and wildlife as appropriate and required.	Pre-construction; construction	Contractor	X	
13.3	Develop and implement mitigation measures to avoid and minimize impacts to wildlife during construction and operation of the project including, but not limited to those measures identified in the Application (September, 2006), draft Wildlife Mitigation Crossing Plan (April 2007) [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)] and Zones of Influence Assessment memo (July 2007) [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)].	Pre-construction; construction	Contractor	X	

13.4	During the design phase, MoT will finalize its determination of the type and location of sound barriers to be constructed along the perimeter of Burns Bog. For the south-western alignment (adjacent to Crescent Slough), this design will include the construction of a solid sound barrier or a barrier that will provide equivalent mitigation. MoT will ensure on-going consultation with TC, EC, MoE and other IAERC members as appropriate, during design regarding the proposed type and location of sound barriers to be installed around Burns Bog.	Pre-construction	MoT, Contractor	TBD	
13.5	Consult with the MoE and the Canadian Wildlife Service (CWS) of Environment Canada, to identify suitable compensation, including but not limited to that identified in the Wildlife and Habitat Management Plan and Habitat Compensation Plan (February, 2007) [replaced by Habitat Compensation Plan (May 2007)], to address residual effects on vegetation and wildlife as a result of the Project.	Pre-construction	Contractor	X	
13.6	Work with reviewing and regulatory agencies to develop and implement a comprehensive and long term Mitigation Monitoring Plan (MMP) [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan], based on the Vegetation and Wildlife Mitigation Monitoring Strategy (April 2007) [replaced by the SFPR Vegetation and Wildlife Mitigation Monitoring Plan], to monitor the effectiveness of proposed mitigation measures in addressing Project-related effects on vegetation and wildlife, including species at risk. Data collection and monitoring in support of the implementation of the MMP will begin prior to construction and continue for a period of time, to be determined with relevant regulatory agencies, during operation. Information collected in relation to the MMP will be used to guide detailed planning of mitigation, assess the effectiveness of such mitigation, and determine where additional measures may be required. The MMP will include scientifically defensible thresholds or performance measures to facilitate the evaluation of the effectiveness of mitigation.	All phases	Contractor	X	
13.7	Undertake site-specific vegetation surveys in accordance with the regionally supported Protocols for Rare Plants Surveys, to identify the presence and distribution of red- and blue-listed plants species prior to final design and construction. Provide information on the presence and distribution of such plants species to MoE for review and use the information to guide final design and construction to avoid or mitigate impacts to these species.	Pre-construction	Contractor	X	
13.8	Avoid direct impacts to sensitive red and blue listed plant communities where possible and adhere to construction exclusion windows determined by regulators.	Construction	Contractor	X	
13.9	Develop a plan for salvaging plants and seeds, for review by MoE, where impacts to red and blue listed plant species cannot be avoided, for replanting off-alignment.	Pre-construction	Contractor		
13.10	Make all reasonable efforts to avoid impacts to confirmed streambank lupine habitat and confirmed stream bank lupine seed banks in the project corridor, as identified in consultation with the Streambank lupine recovery team, during design construction and operation of the Project. Where impacts to such areas cannot be avoided, work with the Ministry of Environment and the Streambank Lupine Recovery team to identify and carry out appropriate mitigation measures including, but not limited to, the stockpiling of soil containing streambank lupine seeds.	Construction	Contractor	X	

13.11	Undertake pre-construction bird nest surveys and restrict clearing during the breeding season. Pre- construction bird nest surveys will include, but not necessarily be limited to the following: - Conduct pre-construction raptor, heron or any listed species nest and roost tree surveys, consistent with applicable BMPs, to determine presence of active/inactive raptor and heron nests in the corridor and work scheduling with respect to the nest locations and applicable timing restrictions; - Prepare pre-construction bird nest survey protocols should works include clearing of vegetation during the general bird breeding time period as determined by MOE; - Conduct pre-construction bird nest surveys to the satisfaction of the MOE should the Design-Builder intend to seek approval from the MOE for vegetation clearing within the bird breeding time period (defined by MOE) in any year during the Term.	Pre-construction	Contractor	X	
13.12	Consult with MoE on the development and implementation of an Invasive Species Management Plan to address potential effects of the project related to the spread of invasive plant and aquatic wildlife species within the project corridor.	Pre-construction; construction	Contractor	X	
13.13	Include large mammal crossings adjacent to the perimeter of Burns Bog. The final number and location of wildlife crossings will be identified in the Wildlife Mitigation Crossing Plan [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)] which will be finalized in consultation with MoE and EC.	Pre-construction	Contractor	X	
13.14	Follow the design criteria outlined in the MOT Manual of Aesthetic Design Practice and the MOT Landscape Policy and Design Standards that form the landscape and site restoration design criteria for the Project.	Pre-construction; construction	Contractor	X	
13.15	Use data collected through the MOT administered Wildlife Accident Reporting System to identify areas of increased wildlife collisions and to monitor direct effects on wildlife.	Operations	Contractor	TBD	
13.16	Identify the location of sensitive wildlife habitats, including but not limited to habitat for species at risk, red and blue listed plant communities and high biodiversity habitats, on detailed design drawings in order to avoid or minimize potential effects to these areas.	Pre-construction	Contractor	X	
14.0 Species at Risk					
14.1	Ensure that all reasonable measures are taken to avoid or lessen effects of the Project on listed wildlife species and their critical habitat and that potential effects that could occur are monitored. All mitigation and monitoring measures will be undertaken in a manner that is consistent with applicable recovery strategy and actions plans.	Pre-construction; construction	MoT, contractor	X	
14.2	Undertake a salvage program for Pacific water shrew from, at a minimum, high and moderate-rated habitat adjacent to the SFPR. Other areas potentially requiring salvage will include lower-rated habitat, connected to higher-rated habitat, and will be determined in consultation with MoE and the PWS Recovery Team.	Pre-construction; construction	Contractor	X	
14.3	Consult with MoE regarding the mitigation of potential effects on Pacific water shrew, and take all practical steps to apply the most recent Pacific water shrew best management practices to address potential effects, including identifying additional opportunities to avoid direct effects to areas, designated as critical habitat by the PWS Recovery Team, during design, construction and operation.	Pre-construction; construction	Contractor	TBD	

14.4	Consult with MOE to develop a mitigation and compensation strategy for Pacific water shrew, where opportunities are available, based on habitat quality and connectivity to surrounding habitat. Undertake sampling program, where required, to determine the presence and distribution of Pacific water shrew to support detailed design of mitigation.	Pre-construction; construction	MoT, Contractor	TBD	
14.5	Detailed design of wildlife crossing mitigation for southern red-backed vole (RBV) will be conducted assuming the presence of RBV in high and moderate rated habitat identified in the EA. Monitoring of the use of wildlife crossing structures will include provisions for assessing the use of such structures by RBV.	Pre-construction	Contractor	TBD	
14.6	Undertake a review of local museum specimens to confirm the distribution of *Sorex rowheri* within the Lower Fraser Valley. Where possible, use findings to support detailed design of mitigation.	Pre-construction	Contractor	TBD	
14.7	Use information obtained through the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)] to support detailed planning of mitigation to address potential noise, visual and collision effects of the project on barn owl. Undertake long term monitoring of the effectiveness of such mitigation as part of the implementation of the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)].	All phases	Contractor	TBD	
14.8	Use information obtained through the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)] to support detailed planning of mitigation, including pre-construction salvage where appropriate, to address potential effects of the project, including those related to collision and changes in hydrology, on red-legged frog and western toad. Undertake long term monitoring of the effectiveness of such mitigation as part of the implementation of the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)].	All phases	Contractor	X	
14.9	Consult with MOE to plan and undertake at least one preconstruction, one construction and two operational inventories of at-risk aquatic insects in habitat known to or suspected of supporting such species and potentially affected by the project, including but not necessarily limited to the Fraser Heights Wetland, to confirm the findings of the environmental assessment and to monitor potential impacts of the project on aquatic insects.	All phases	Contractor	X	
14.10	Consult with the Canadian Wildlife Service to develop and implement a Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan] to monitor and assess the effectiveness of measures proposed to avoid or mitigate potential effects on Sandhill Crane. The Plan will identify: - species habitat requirements; - existing conditions in the project area; - potential project related effects and mitigation; - core indicators for assessing the effectiveness of mitigation; and - proposed study methodology and data interpretation and reporting protocols.	Pre-construction; construction	MoT	TBD	
15.0 Burns Bog					
15.1	Avoid potentially significant impacts to hydrological and ecological values associated with Burns Bog (i.e. alignment refinements to avoid ecological and hydrological values, development of hydrological mitigation that meet the hydrologic objectives identified).	All phases	MoT, Contractor	X	

15.2	Consult with the MV, CoD, MoE, EC, and the Burns Bog Management Planning Committee (BBMPC) and Scientific Advisory Panel (SAP) to ensure design, construction and operation of the Project complements long term management objectives established for the Burns Bog Ecological Conservation Area.	All phases	Contractor	TBD	
15.3	Consult with the reviewing agencies to finalize construction and post construction monitoring requirements related to Burns Bog including, but not limited to, those identified in the Vegetation and Wildlife Mitigation Monitoring Strategy (April 2007) [replaced by the SFPR Vegetation and Wildlife Mitigation Monitoring Plan]. Monitoring requirements with respect to Burns Bog will include but not be limited to those relating to: air quality, water quality, water levels, red-listed plant communities, and wildlife	Construction, operation	Contractor	X	
15.4	Share environmental data from Burns Bog collected as part of the development of the SFPR project, with agencies responsible for the management of the Burns Bog Ecological Conservancy Area in order to support the implementation of the long term management plan for the Bog.	All phases	Contractor	TBD	
15.5	Design, construct and operate hydrology mitigation infrastructure, to mitigate potential effects of the project on the hydrology of Burns Bog, in a way that meets the following performance objectives: - Site specific solutions – the design, construction and operation of hydrology mitigation will be based on, and take into account, site specific conditions. - Compatibility between highway water management and bog water management – Providing for active water level controls in the Bog that are independent of SFPR-related water management. - Prevention of mineral migration into the Bog. – Where indicated, providing a low permeability barrier between the SFPR highway ditch and the lagg ponds/ditches by: using material to construct the berm that supports appropriate vegetation on the berm and prevents the introduction of mineral material into the Bog; and maintaining hydraulic gradients so that Type 1 bog waters flow toward the highway at all times. - Resilience – Providing a design that is sufficiently robust to maintain and actively manage water levels under average and extreme conditions and if Bog conditions change. - Highway and mitigation construction does not preclude future restoration of Burns Bog – Providing flexibility of design that allows, for example, for future water control structures that allow for raising of water level as part of future bog restoration. - Holistic design – Hydrology mitigation concepts are designed in way that ensure they will be compatible with, and help achieve multiple, mitigation requirements. As the design of hydrology mitigation is advanced, it will be documented in a Hydrology Work Plan [currently known as Hydrology Workplan (Burns Bog)]. This document will be finalized prior to commencement of pre-load activities around Burns Bog.	All phases	MoT	TBD	
15.6	Pre-load activities around Burns Bog, including areas north of the Highway 99 interchange and west of Nordel Way, will not commence until TC (and other decision-making authorities as required) has reviewed and is satisfied with the final Hydrology Work Plan and the status of the hydrology mitigation design.	Pre-construction	MoT	TBD	

15.7	Provide opportunities for the active involvement of agencies responsible for the management of the Burns Bog Ecological Conservancy Area, and the Scientific Advisory Panel (SAP), in the design, construction and operation of project related works adjacent to Burns Bog including but not limited to those proposed as mitigation for potential project related effects.	All phases	MoT, contractor	TBD	
15.8	Consult with MV, CoD, EC and MoE on the development of a water balance model and a drainage model to support the design, construction and operation of hydrology mitigation infrastructure adjacent to Burns Bog and support implementation of the Burns Bog Ecological Conservancy Area Management Plan.	Pre-construction	Contractor	TBD	
15.9	Finalize an Air Quality Management Plan [currently known as SFPR Air Quality Management Plan (Burns Bog Segment)], in consultation with TC, EC and other IAERC members as appropriate, prior to commencing pre-loading activities around Burns Bog. This document will identify all technically and economically feasible mitigation measures to be implemented to prevent generation and transmission of dust during the pre-load and construction phases of the project.	Pre-construction	MoT, contractor		X
15.10	Collect a minimum of 4 months of baseline dust fall monitoring between June and September 2008. Following the collection of this information, the MoT will meet with TC and EC to discuss the baseline monitoring information collected and the approach for continued data collection, prior to the commencement of pre- loading activities around Burns Bog (i.e., north of the Highway 99 interchange and west of Nordel Way).	Pre-construction	MoT		X
15.11	Work co-operatively with the Tsawwassen First Nation to maintain appropriate access for TFN members to Burns Bog to facilitate TFN's harvesting rights pursuant to the Tsawwassen Final Agreement.	All phases	MoT, Contractor	TBD	
15.12	Ensure that the development and operation of Stormwater management infrastructure does not compromise the ability to achieve hydrology mitigation objectives adjacent to Burns Bog.	All phases	MoT, Contractor	TBD	
15.13	Implement the monitoring and follow-up activities identified in the Screening document, for a period of five years after the project has commenced operation, to ensure the effectiveness of mitigation measures related to aerial deposition, hydrology, and Sandhill crane in the vicinity of Burns Bog.	All phases	MoT, Contractor	TBD	
16.0 Archaeology					
16.1	Ensure that the design, construction and operation of the Project is advanced in a way that avoids, or minimizes potential impacts to known archaeological sites, including the Nottingham Farm, St. Mungo and the Glenrose Cannery sites, as well as other sites that may be encountered during project planning and development.	All phases	Contractor		X
16.2	Work with participating First Nations who have identified related interests within the context of the ongoing environmental review process and the BC Archaeology Branch regarding investigation of unsurveyed areas within the Project area assessed as having archaeological potential at an appropriate level for an archaeological impact assessment and develop mitigation measures consistent with the BC Archaeological Impact Assessment Guidelines.	Pre-construction	MoT, Contractor	X	

16.3	Obtain a valid Heritage Conservation Act Section 14 Heritage Inspection Permit with adequate provisions to address requirements for investigations and potential impacts to previously unrecorded archaeological sites should they arise. Immediately report previously undocumented archaeological sites that come to light during the construction phase of the Project to the BC Archaeology Branch and participating First Nations.	Pre-construction; construction	MoT, Contractor	X	
16.4	Include required edits and revisions to the Application in the final Heritage Conservation Act Permit report.	Pre-construction	MoT	X	
16.5	Work with the Musqueam Indian Band and other interested First Nations in developing a mutually acceptable Site Management Plan (SMP) for the Glenrose / St. Mungo area [currently known as Archaeological Impacts and Mitigation Strategy St. Mungo and Glenrose Cannery], to encourage the preservation of archaeological deposits through the protection and management of archaeological and heritage resources during planning, design, construction and operation phases of the SFPR project. The Plan will include, but not be limited to: - a summary of existing information (archaeology and oral history); - summary of existing site conditions; - site management objectives (short, medium and long term); and - site management strategies (preconstruction, construction, post-construction phases).	Pre-construction	MoT	N/A	
16.6	Develop and implement an archaeological mitigation program focused on intact archaeological deposits that includes systematic data recovery (excavation) and archaeological monitoring for the St. Mungo and Glenrose Cannery Sites. Develop methodology and sample size with input from the Archaeology Branch and First Nations. Obtain Heritage Conservation Act Section 14 Heritage Investigation Permits and Section 12 Alteration Permits prior to mitigation and/or alteration of known archaeological sites.	Pre-construction, construction	Contractor	N/A	
16.7	Work with the Musqueam Indian Band and other interested First Nations in establishing a final design for the SFPR segment in the Glenrose / St. Mungo area focused on minimizing potential project related impacts on identified archaeological resources.	Pre-construction,	MoT, Contractor	N/A	
16.8	Work with the Musqueam Indian Band and other interested First Nations to further explore options/opportunities to establish appropriate First Nation recognition and/or interpretation measures in relation to the Glenrose / St. Mungo sites.	All phases	MoT	N/A	
16.9	Undertake appropriate archaeological site impact mitigation measures, including construction monitoring and systematic data recovery (i.e., an archaeological excavation), at the St. Mungo and Glenrose Cannery archaeological sites and support these measures with field programs that involve the Musqueam Indian Band and other interested First Nations as appropriate. The proposed mitigation strategy will be based on an archaeological site management plan for the St. Mungo, Wet Site and Glenrose Cannery archaeological sites currently under development in conjunction with representatives of the Musqueam Indian Band.	All phases	MoT, Contractor	N/A	
16.10	Report the discovery of previously undocumented archaeological sites that may come to light during the construction phase of the SFPR project to the British Columbia Archaeology Branch and interested First Nations. Engage an archaeologist to investigate and assess such sites under the terms and conditions of a Heritage Conservation Act permit.	All phases	Contractor	X	

16.11	Provide opportunities for members of the Musqueam Indian Band and other interested First Nations to participate in field programs supporting the implementation of archaeological site mitigation measures.	All phases	MoT, contractor	X	
16.12	Notify and invite First Nations to participate in specified archaeological work that is to occur at identified archaeological sites within their respective asserted traditional territories.			X	
17.0 Heritage					
17.1	Ensure that the design, construction and operation of the proposed project is advanced in a way that avoids, or minimizes potential impacts to heritage buildings	All phases	MoT, contractor	X	
17.2	Consult with the Delta Heritage Advisory Commission and the Surrey Heritage Committee to define heritage interests and work with the Delta Museum and Archive to develop a photo record and inventory of potentially affected heritage houses.	Pre-construction, construction	Contractor	N/A	
17.3	Prior to construction, undertake pre-condition surveys with respect to heritage buildings, as further described in commitment 9.9.	Pre-construction	Contractor	N/A	
17.4	Avoid, where practical and technically feasible, direct impacts to heritage buildings.	All phases	Contractor	NA/	
18.0 Navigable Waters					
18.1	Obtain regulatory approval related to crossings of designated Navigable Waters pursuant to the Navigable Waters Protection Act (NWPA), including but not necessarily limited to, McAdam Creek, Collings Creek, Manson Canal, and Crescent Slough, prior to commencement of works.	Pre-construction, construction	MoT, Contractor	N/A	
19.0 Socio-economic					
19.1	Mitigate potential Project-related visual/lighting impacts through use of screening, fencing and landscaping in consultation with local government. Use dark-sky compliant lighting for the Project.	Pre-construction, construction	Contractor	TBD	
19.2	Manage potential impacts to emergency response services by: - Ensuring emergency response plans (including a Spill Response Management and Emergency Response Plan) are in place during the construction phase of the Project, and updated annually, at a minimum; - Consulting first responders in Traffic Management Plan development; and - Consulting with local fire departments to ensure adequate access.	Pre-construction, construction	Contractor	X	
20.0 Rail					
20.1	Avoid or minimize potential impacts from Project works and activities to rail corridors.	All phases	Contractor	X	
20.2	Notify Transport Canada of project works as required under the *Notice of Railway Works Regulations*. Notify the public and affected stakeholders in accordance with the *Railway Safety Act*.	All phases	Contractor	TBD	
20.3	Comply with Canadian transportation standards and regulations as well as the design specifications of the respective railway with regard to vertical and horizontal railroad clearance of new or upgraded infrastructure.	Pre-construction	Contractor	TBD	
20.4	Minimize railroad closures during construction.	Construction	Contractor	X	

APPENDIX 7: WATER QUALITY DATA

Site Code	Site	Date	Time	Water Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-12	Fortis Culvert DS	02/11/2020	01:00	9.6	4.38	0.35	4.75	0.17	3.0	Sampling done during night shift
WQ-12	Fortis Culvert DS	02/11/2020	03:00	8.4	4.25	0.45	4.80	0.25	5.2	Sampling done during night shift
WQ-2	Silda Ditch MS	02/11/2020	13:15	11.6	4.98	0.22	7.20	0.16	7.9	
WQ-3	Silda Ditch DS	02/11/2020	13:20	11.7	6.77	0.16	6.91	0.09	12.1	
WQ-4	Fraser Rr Inlet	02/11/2020	13:00	11.4	8.37	0.26	7.84	0.13	92.8	High tide, coming in
WQ-11	Fortis Culvert US	02/11/2020	13:30	12.4	4.06	0.10	5.08	0.06	3.0	No instream works today
WQ-12	Fortis Culvert DS	02/11/2020	13:35	12.1	5.98	0.11	4.71	0.05	3.5	No instream works today.
WQ-11	Fortis Culvert US	03/11/2020	01:30	11.4	4.53	0.80	4.95	0.07	3.8	Nightshift-dewatering and instream works
WQ-12	Fortis Culvert DS	03/11/2020	01:00	11.5	4.09	0.73	4.85	0.11	5.9	Nightshift-dewatering and instream works
WQ-2	Silda Ditch MS	03/11/2020	11:00	10.7	7.00	0.31	6.69	0.15	36.2	Heavy rain while sampling
WQ-12	Fortis Culvert DS	02/11/2020	01:00	9.6	4.38	0.35	4.75	0.17	3.0	Sampling done during night shift
WQ-3	Silda Ditch DS	03/11/2020	10:50	10.6	6.99	0.32	6.67	0.16	64.5	Heavy rain while sampling. Sand washouts noticed ~6 m US. Observed turbidity passing through straw waddle into stream from washout direction. Dispatched crew to re-build washout, remove sediment in runoff path, and install ESC measures.
WQ-4	Fraser Rr Inlet	03/11/2020	10:00	10.6	8.77	0.16	8.00	0.08	95.5	High tide, going out. Heavy rain while sampling.

Site Code	Site	Date	Time	Water Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-11	Fortis Culvert US	03/11/2020	10:30	9.6	5.60	0.10	5.32	0.05	8.5	Heavy rain while sampling. No instream works.
WQ-12	Fortis Culvert DS	03/11/2020	10:30	9.1	8.21	0.10	5.29	0.05	3.4	Heavy rain while sampling. No instream works.
WQ-2	Silda Ditch MS	04/11/2020	13:05	10.9	4.23	0.28	6.73	0.12	19.8	Heavy rain during sampling and Fraser River high tide moving out had an impact on the turbidity as water levels were higher than normal.
WQ-3	Silda Ditch DS	04/11/2020	13:00	11.1	6.17	0.22	6.82	0.16	25.6	Heavy rain during sampling and Fraser River high tide moving out had an impact on the turbidity as water levels were higher than normal.
WQ-4	Fraser Rr Inlet	04/11/2020	10:30	11.5	7.85	0.14	7.95	0.07	70.6	High tide, going out. Heavy rain while sampling.
WQ-11	Fortis Culvert US	04/11/2020	11:15	11.2	5.76	0.11	5.22	0.06	4.8	No instream works.
WQ-12	Fortis Culvert DS	04/11/2020	11:15	11.0	7.22	0.10	5.06	0.05	2.6	No instream works.
WQ-2	Silda Ditch MS	05/11/2020	11:25	9.6	4.97	0.13	6.79	0.08	5.9	
WQ-3	Silda Ditch DS	05/11/2020	11:30	9.5	5.21	0.13	6.92	0.08	7.1	Spillway installed at previous washouts on nightshift prior to sampling
WQ-4	Fraser Rr Inlet	05/11/2020	10:30	9.2	8.49	0.04	7.59	0.04	70.6	High tide
WQ-11	Fortis Culvert US	05/11/2020	10:50	9.2	5.09	0.10	5.46	0.05	2.9	No instream works.
WQ-12	Fortis Culvert DS	05/11/2020	10:45	9.4	4.07	0.10	4.83	0.05	3.2	No instream works.
WQ-2	Silda Ditch MS	06/11/2020	10:00	9.4	4.77	0.14	6.65	0.07	6.4	

Site Code	Site	Date	Time	Water Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-3	Silda Ditch DS	06/11/2020	10:05	9.2	5.96	0.16	6.68	0.08	6.8	
WQ-4	Fraser Rr Inlet	06/11/2020	10:20	9.2	8.49	0.04	7.59	0.04	1.8	High tide
WQ-11	Fortis Culvert US	06/11/2020	10:55	9.2	4.87	0.10	5.50	0.05	2.5	No instream works
WQ-12	Fortis Culvert DS	06/11/2020	11:00	9.5	3.59	0.09	4.65	0.04	1.4	No instream works
WQ-2	Silda Ditch MS	08/11/2020	13:00	7.1	5.87	0.13	6.59	0.06	5.9	-
WQ-3	Silda Ditch DS	08/11/2020	13:05	7.6	4.69	0.15	6.98	0.08	11.6	-
WQ-4	Fraser Rr Inlet	08/11/2020	12:00	8.9	9.12	0.06	7.94	0.05	92.4	High tide
WQ-11	Fortis Culvert US	08/11/2020	12:10	7.4	4.11	0.10	5.23	0.06	3.7	-
WQ-12	Fortis Culvert DS	08/11/2020	12:15	7.5	3.90	0.10	4.99	0.05	3.6	Sampling location in grass along bank
WQ-2	Silda Ditch MS	09/11/2020	12:00	7.4	6.06	0.33	6.58	0.16	8.9	-
WQ-3	Silda Ditch DS	09/11/2020	11:55	7.4	9.06	0.34	6.54	0.17	13.4	-
WQ-4	Fraser Rr Inlet	09/11/2020	10:45	8.7	9.54	0.14	7.23	0.07	80.2	Mid-tide, coming in
WQ-11	Fortis Culvert US	09/11/2020	11:15	7.4	5.59	0.10	5.20	0.05	4.1	-
WQ-12	Fortis Culvert DS	09/11/2020	11:10	6.7	5.22	0.09	4.71	0.05	1.8	Sampling location in grass along bank
WQ-2	Silda Ditch MS	12/11/2020	12:25	6.9	6.57	0.29	6.42	0.16	12.4	Raining while sampling
WQ-3	Silda Ditch DS	12/11/2020	12:30	7.0	8.73	0.32	6.71	0.16	20.1	Raining while sampling
WQ-4	Fraser Rr Inlet	12/11/2020	8:00	7.9	9.66	0.15	7.86	0.06	81.7	Low tide, coming in
WQ-2	Silda Ditch MS	13/11/2020	14:55	9.1	7.77	0.16	6.46	0.08	12.2	Ditch running high ~50mm of rain in 24 hrs
WQ-3	Silda Ditch DS	13/11/2020	15:00	10.3	6.73	0.15	6.41	0.07	14.3	Ditch running high ~50mm of rain in 24 hrs
WQ-4	Fraser Rr Inlet	13/11/2020	13:40	7.7	9.05	0.15	7.18	0.07	47.0	High tide, coming in
WQ-2	Silda Ditch MS	16/11/2020	14:25	8.1	7.83	0.07	5.52	0.04	4.3	Ditch running high, raining
WQ-3	Silda Ditch DS	16/11/2020	14:30	8.7	6.73	0.08	5.66	0.04	5.2	Ditch running high, raining

Site Code	Site	Date	Time	Water Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-4	Fraser Rr Inlet	16/11/2020	13:30	8.9	9.14	0.19	7.04	0.10	27.3*	High-tide, coming in, raining
WQ-2	Silda Ditch MS	17/11/2020	12:30	7.9	7.13	0.19	5.67	0.09	4.0	Ditch running high, raining
WQ-3	Silda Ditch DS	17/11/2020	12:25	8.2	5.84	0.18	5.92	0.09	5.8	Ditch running high, raining
WQ-4	Fraser Rr Inlet	17/11/2020	12:15	8.4	8.99	0.24	7.26	0.12	43.8*	High-tide, coming in, raining
WQ-2	Silda Ditch MS	18/11/2020	15:35	9.2	6.24	0.11	5.99	0.05	9.7	Ditch running high, raining
WQ-3	Silda Ditch DS	18/11/2020	15:30	9.5	6.39	0.12	6.23	0.06	14.2	Ditch running high, raining
WQ-4	Fraser Rr Inlet	18/11/2020	14:00	8.1	8.16	0.15	6.91	0.07	23.3*	High tide, coming in, raining
WQ-2	Silda Ditch MS	19/11/2020	14:40	9.0	6.03	0.11	5.95	0.06	9.2	-
WQ-3	Silda Ditch DS	19/11/2020	14:35	9.6	4.51	0.12	6.17	0.06	6.9	-
WQ-4	Fraser Rr Inlet	19/11/2020	14:00	8.9	8.49	0.12	6.76	0.06	17.5*	High tide going out
WQ-2	Silda Ditch MS	20/11/2020	11:45	8.6	6.27	0.11	6.01	0.06	9.7	-
WQ-3	Silda Ditch DS	20/11/2020	11:50	8.4	5.12	0.11	6.12	0.05	8.7	-
WQ-4	Fraser Rr Inlet	20/11/2020	11:00	8.8	9.01	0.13	7.06	0.06	30.1*	Mid-tide, coming in
WQ-2	Silda Ditch MS	23/11/2020	16:00	8.2	7.16	0.25	6.35	0.12	12.1	
WQ-3	Silda Ditch DS	23/11/2020	16:05	8.7	5.38	0.24	6.28	0.12	8.3	
WQ-4	Fraser Rr Inlet	23/11/2020	12:30	8.4	4.03	0.13	7.05	0.07	20.4	High tide
WQ-3	West Ditch (Area I3)	23/11/2020	15:50	10.2	4.53	0.12	6.14	0.06	6.7	
WQ-2	Silda Ditch MS	24/11/2020	13:20	8.9	3.95	0.24	6.33	0.12	11.0	
WQ-3	Silda Ditch DS	24/11/2020	13:15	9.4	4.25	0.22	6.58	0.11	10.0	
WQ-4	Fraser Rr Inlet	24/11/2020	11:50	8.7	6.33	0.14	7.17	0.07	13.8	High tide coming in
WQ-2	Silda Ditch MS	25/11/2020	9:00	8.7	4.12	0.24	6.29	0.13	7.6	
WQ-3	Silda Ditch DS	25/11/2020	9:05	9.1	5.06	0.23	6.48	0.12	8.2	
WQ-4	Fraser Rr Inlet	25/11/2020	8:30	8.6	8.97	0.14	7.03	0.07	14.9	Mid-tide, coming in

Site Code	Site	Date	Time	Water Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-2	Silda Ditch MS	26/11/2020	14:40	10.1	9.24	0.23	6.13	0.11	8.3	Raining while sampling
WQ-3	Silda Ditch DS	26/11/2020	14:35	11.1	4.69	0.23	6.29	0.11	7.3	Raining while sampling
WQ-4	Fraser Rr Inlet	26/11/2020	13:45	10.9	8.35	0.13	6.93	0.07	11.2	High tide coming in. Raining while sampling.
WQ-2	Silda Ditch MS	27/11/2020	7:45	8.8	4.59	0.24	6.24	0.12	7.6	
WQ-3	Silda Ditch DS	27/11/2020	7:50	9.0	5.19	0.23	6.51	0.12	8.4	
WQ-4	Fraser Rr Inlet	27/11/2020	8:00	8.6	9.06	0.14	7.09	0.07	19.7	Mid-tide going out