



Highway 91/17 Upgrade Project

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REVISION LOG

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1.0 INTRODUCTION

This report covers all activities between 01 to 31 October 2020. During this period works occurred at River Road East, River Road West, Area I, Area C, Area D, E02 Detour, Area F, Area G, C01 (F1), 96th Street Ditch, Area E. For the purposes of this report, the following areas shall be defined as:

- River Road East = Portion of River Road East of Highway 17 (Includes L450, L475, part of L375).
- River Road West/ Area C = Portion of River Road West of Highway 17 (Includes L250, L275, L325, L350, part of L375)
- Area I = West side of Hwy 91.
- Area D = Silda Ditch, L375 and W01
- E02 Detour = Highway 91
- Area G = Delta Nature Reserve, L2400
- C01 Detour = North edge of Area F along Hwy 91C
- 96th Street Ditch
- Area E = L500, L575, L550
- Area F = L1150S/1160/1170/1400

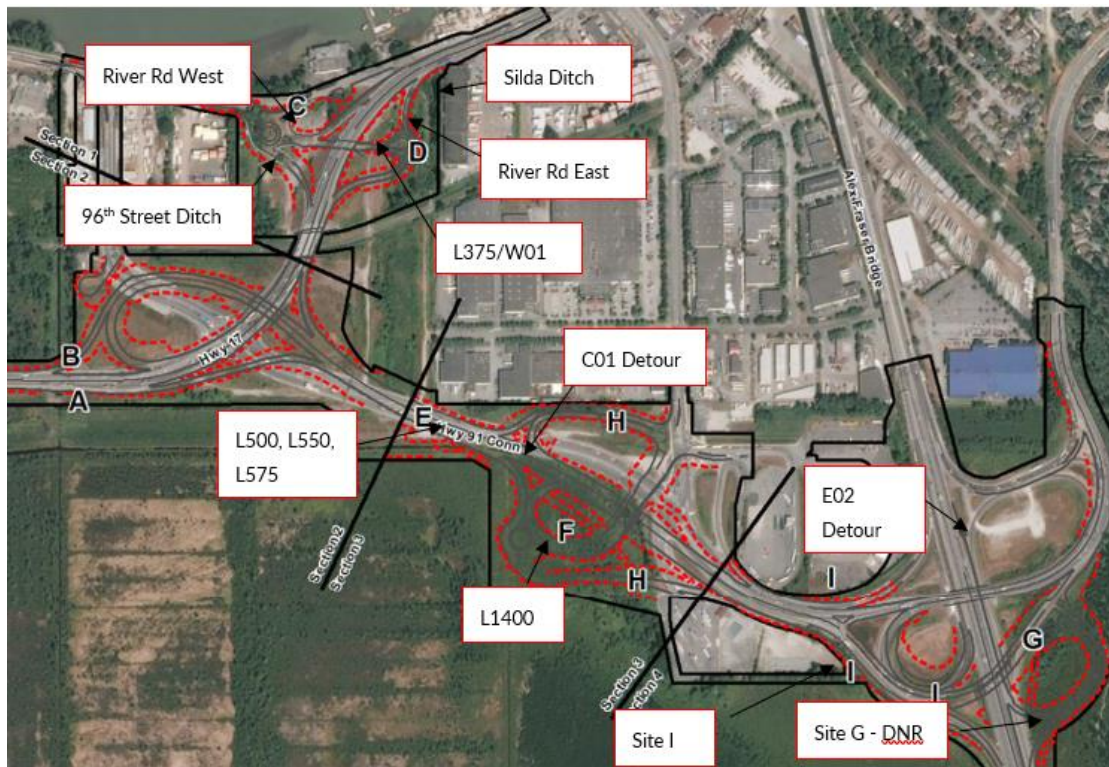


Figure 1: Approximate Work Area Locations

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 October 2020:

River Road East

- Most of the River Rd East embankment fill and preload was completed.
- W01 detour works continued, which included the following: electrical install; grading; asphalt removal and paving; barrier relocations; sign installation; and line eradication and painting.
- W01 detour full activation is scheduled for early November.

Area D

- Additional ESC measures were installed near the culvert at Silda ditch to prevent sand from migrating during rain events.
- A temporary lock-block wall was built.
- Retaining wall foundation phase 1 construction pads were completed. Topsoil was placed on the vertical sides facing the Silda ditch culvert.

River Road West

- Watermain installation continued with works including the following: rebar installation and concrete pour for anchor blocks; pipe fusing; pipe installation; and trench excavations and backfill. Testing of the watermain began with anticipated tie-ins in early November.

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

96th Street Ditch

- On the South side of Hwy 17 at the 96 Street Ditch (Area A) instream works were underway and backfill was being compacted around the installed culvert pipe.
- Placement of riprap was completed to armor the banks.
- Installation of subsurface drainage pipes on the east side of the 96th Street culvert.
- Dewatering pumps and isolation plates were removed at the completion of the works.

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

C01 Detour

- Detour works continued and included the following: asphalt removal and paving; removal and installation of catch basins; median and barrier removal and placement; line eradication and painting; and installation of signage.
- Detour C01 was put into service. Both East and Westbound lanes have been activated and all traffic is traveling in the new lanes.

Area E

- Placement and compaction of sand at the L575/Hwy 17 alignment. Placement of lock blocks for temporary walls during sand placement for the L500 alignment. Infilling of the L500/L575 connector area.
- East West Perimeter ditch was fish salvaged. the Fortis culvert sump hole was fitted with pipe to house the sump pump to manage water levels in the Perimeter Ditch. Water continued to be pumped into a flat vegetated area. North side of isolated Perimeter Ditch was dug out to accommodate future culvert installation.

Area F

- Close cut clearing was completed. Placement and compaction of river sand embankment is ongoing. River sand is being hauled from Hwy 99 stockpiles for placement at Area F.

The following works took place in Section 4 in October 2020:Area G and Boardwalk

- Excavation of peat test section completed and further excavated halted.
- Boardwalk realignment contractors evaluated site conditions and began to mobilize. Geotechnical investigations were performed along the new alignment. Clearing and tree felling was completed. Helical pile installation commenced for boardwalk realignment with an estimated completion date of early-November.
- Sand placement and vegetation stripping began at the south end of the S4 alignment (new Hwy 91 northbound offramp L2400).

Truck Stop Watermain.

- Water line work initiated in water meter box. Hydrovac excavated near the fire hydrant to prepare for the tie-in. The truck stop watermain was tied into the City of Delta system. Truck stop sump ejector installed in box by Coast Water while holes were plugged by PGC. The water tie-in was completed, backfilled, and compacted. All Roads completed asphalt paving and density testing was passed (conducted by Woods). The excavation near the fire hydrant and manhole tie-in were backfilled and compacted.

E02 Detour

- Detour E02 was put into service. The widened lane for Hwy 91 southbound offramp has been activated and all traffic is traveling in the new lanes.

2.2 Upcoming Activities

Section 1: At River Road West, once the watermain installation is complete, the following work will take place: protect/relocate gas line; place balance of embankment and pre-load fills over watermain; and construction of truck turnaround lane. Stripping will commence at the L250 and partial of the roundabout in early November and L275 construction will commence. At River Rd East, the following works will take place: utility relocations including ITS and existing storm line; and demo of the existing Highway 17 in preparation for ground improvement activities (stone column and bridge foundation).

Section 2: At L575/L500, embankment and pre-load fill placement will continue. Wall construction along the South end of L575 will commence and preload fills will commence in conjunction with temporary lock block walls to retain the fill.

Section 3: Light weight fill (cellular concrete) will be placed to protect existing gas lines. In Area F sand placement will continue and wick drain installation will commence. Fortis crossing culvert work will continue.

Section 4: At the L2300/L2400 sand placement will continue. Piling will continue on the Boardwalk and the new path platform will be placed. At Hwy 91 Southbound and the L220 Loop Ramp, as the E02 detour has been implemented, site prep and access will be completed. L2200 embankment and preload fill placement will commence.

3.0 ENVIRONMENTAL ISSUES

3.1 Environmental Incidents

On 7 October 2020, a small hydraulic fluid leak was noticed at the E01 laydown. The upper hydraulic arm of the excavator which was working on the stockpile appeared to be “misting” oil (it should be noted that the machine was operating with biodegradable oil). The machine was immediately shut off and a pinhole leak was located on the hydraulic arm fitting. Oil was only observed on the machine and not on the ground (there were no watercourses in this area). The excavator arm was cleaned with absorbent oil pads, drip trays were placed beneath the machine and

the hydraulic fitting was repaired in place. The estimated spill volume of oil was <0.5L. The Province was notified, and an Environmental Incident Report was submitted to the Province.

On 16 October 2020, a release of Tack Coat SS1 (emulsifying bitumen bond asphalt oil), from the newly paved road surface at the C01 detour, was observed in the nearby ditch at the east-west Burns Bog perimeter ditch. This portion of the ditch was already isolated, and no downstream migration of oil occurred. The liquid had been sprayed during the paving process to aid with the asphalt bonding process, which encountered precipitation. The mixed runoff and tack coat migrated to a low-lying area on the road surface and flowed underneath the road-side barriers and into the ditch. The estimated total volume of the liquid was < 100 ml. The Province was notified along with EMBC and DFO and an Environmental Incident Report was submitted.

On 20 October 2020, a sheen was observed on the surface of standing water in a trench tie-in location at Area C (no active work at this location for over a week). The possible spill was believed to be ~ 50 mL; however, the source is unknown. White absorbent spill pads were placed on the surface of the water to remove the sheen and were bagged as hazardous waste for proper disposal. The Provincial Representative (Jordan Jeffares) was notified of this incident. The surrounding area was inspected for any signs of hydrocarbon contamination; however, none were detected.

On 26 October 2020, a hydraulic line fitting was damaged on a skid steer at the E01 laydown road (under the Nordel Way overpass). The incident resulted when the operator drove over the hydraulic line of the sweeper arm attachment causing the fitting to decouple from the hose. The machinery was immediately shut off and the leak was isolated, contained, and cleaned up. The total spill volume was estimated to be < 500 mL of hydraulic oil. The hydraulic oil only contacted the sweeper arm which was cleaned with absorbent pads while the sand on the sweeper arm was collected and treated as hazardous waste (as a precautionary measure). The sand is being stored in the hazardous waste tent in the office parking lot. The damaged sweeper arm was taken out of operation and fixed.

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 stockpiles will be covered the following day	03 September	Closed	Low risk of contamination. Soils placed on an impermeable paved surface and has suspected high NaCl 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 adjacent to the new paved detour at the Silda ditch. This was a result of a dewatering pipe that scoured the sand bank.	The night shift Superintendent has been informed and immediate action has been taken to stabilize the bank for further slides.	28 October	Closed	Preparations are currently being made to procure a wheel excavator to 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.
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4.0 ENVIRONMENTAL MONITORING AND INSPECTION RESULTS

Daily site inspections were held 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.

MESL conducted weekly visits on 07, 16, 22, 27 October 2020, 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.

PGC indicated that environmental requirements were reiterated with construction crews prior to the commencement of works in new areas. MESL spoke with a foreman at Area G who produced a copy of environmental documents and discussed the mitigative measures which had been installed at the site.

PGC indicated that all equipment is inspected prior to arriving on site to ensure that it is checked for excess grease, leaks, and foreign material. In addition, all equipment is inspected for the presence of a spill kit, spill tray, and fire extinguisher. During this reporting period, the VanMars drill rig was inspected and verified prior to entering the work site and inspection sheets (pre-trip) were collected from Delta Aggregate (for each piece of equipment) and are available upon request.

4.1 Air Quality and Dust Control

Nothing to report this period.

4.2 Noise and Vibration Management

Noise data was recorded on 14 October 2020 as provided in Table 3. Location 4 was slightly higher than the baseline data, likely due to active preload placement and compaction. It was noted that many large trucks passed the noise meter during the sampling period. Trucks engaged the air brakes when entering the lane closure area which was one of the main contributors of the elevated readings.

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)
22:14	4	Nordel Underpass South (Section 4)	Offloading and compaction of sand-dewatering of ditch. Trucks using airbrakes when entering lane closure.	49.144217 LAT, -122.939296 LONG	49.4	42.0	68.6	61.2	53.9	79.9
23:14	5	Nordel Road Interchange (Section 3)	Cars & trucks, construction activities at C01 (paving) and C02 (preload placement).	49.144235 LAT, -122.939154 LONG	57.0	48.2	75.9	55.7	47.3	74.8

0:30	2	Sunbury Mounds (Section 2)	Minor construction activities at the River Rd E detour.	49.150210 LAT, -122.933121 LONG	55.3	46.5	65.4	59.2	46.9	72.4
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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 where needed. Sediment control fences had been installed in active areas to prevent sediment run-off from clearing and grubbing activities in addition to containment of preload and isolation of wildlife. MESL inspected the silt fencing which appeared to be in good condition. PGC indicated that all ESC fencing is inspected and repaired, as needed.

Damaged sediment fences had been reported near Area F (Truck Stop) by Brybil who indicated that the fencing was not keyed in as specified. PGC has indicated that this location has been mended several times and the routine damage is believed to be the result of wildlife (tracks and trail leading to this location). All fencing was repaired prior to the Thanksgiving long weekend.

Overall, PGC has been diligent in inspecting and repairing sediment fencing. PGC environmental personnel have been proactive in directing Erosion & Sediment Control (ESC) measures in advance of anticipated rain events.

Minor track out was observed onto paved surfaces; however, crews had been diligent about sweeping the roads at the end of each workday, like at River Road West (S1 watermain area) and the Hwy 99 stockpile area in Richmond. Track out was not observed onto high traffic areas such as Hwy 17 near Area D (eastbound lane). Isolated paved surfaces near the E01 Detour were accumulating sediment from track out which was contributing to sediment laden runoff. Although this runoff appeared to be contained in vegetated areas; efforts were taken to keep all paved surfaces clean.

Protective inserts had been installed in most catch basins; however, an unprotected catch basin was observed at the Truck Stop (Area F) and close to Area G but the foreman at this site indicated that this catch basin had been disconnected and was abandoned and as such did not warrant protection.

Most areas were relatively stable having been covered with preload sand. Low-lying areas near the Delta Nature Reserve, during this reporting period had flooded due to rainfall events. Also, high traffic areas (particularly near the E01 Detour) had begun to degrade due to traffic and weather conditions. Although these areas were relatively contained to the site; equipment use had increased potential to track sediment onto public roadways. Low-lying areas throughout the project extent had accumulated water due to ongoing rainfall.

A small dewatering operation was installed in Area G. Pumps were dewatering from the northwest corner of the excavation and discharged into a non-fish bearing ditch across the closed exit road (which eventually drains back into the excavation site). The intake hose was screened and strategically placed to draw deeper (lower turbidity) water. The discharge hose was placed in a heavily vegetated area with low erosion risk. This system was approved by the environmental manager and was inspected during the field visit and appeared to be functioning as intended. PGC had indicated that all dewatering activities for the S4 peat sub excavation, S2 Fortis culvert, and S1 W01 (Area D) were monitored to ensure sediment control measures were adequate. The E01 laydown had deteriorated and was contributing to track out onto Nordel Way; however, additional clear crush had been imported, which improved working surfaces and haul roads.

Water Quality Management

The ditch segments along River Road West have been salvaged and infilled. Residual water was still contained in remaining segments which fluctuates with the prevailing tide.

Most of the wetland to the east of the existing highway closure in E02 was flooded. The excavation strategy used in this area was to create smaller squared areas to be excavated separately. A berm of native sand was created to isolate each section. Water was removed from each isolated section prior to material loading to minimize disturbance (reduce turbidity) in the larger pond formed in Area G.

PGC has continued to collect water quality from 96 Street and Silda Ditches to the Fraser River, in addition to the Fortis culvert excavation which commenced during this reporting period. The results of this data collection are presented in Appendix 7.

Turbidity readings taken downstream of 96th Street Ditch show elevated turbidity levels for this reporting period. These results are likely a result of the elevated turbidity in the Fraser River (see Fraser River turbidity readings) and the input of water into the ditch due to tidal influence. The downstream water quality monitoring station in 96th Street was relocated closer to the work area to accurately reflect the water quality levels. Please note that Dissolved Oxygen (DO) was not recorded during part of this reporting period as the equipment's battery was dead (not readily available) and a replacement was ordered.

Water quality monitoring was conducted in the East West Perimeter Ditch for works at the Fortis culvert crossing. 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.

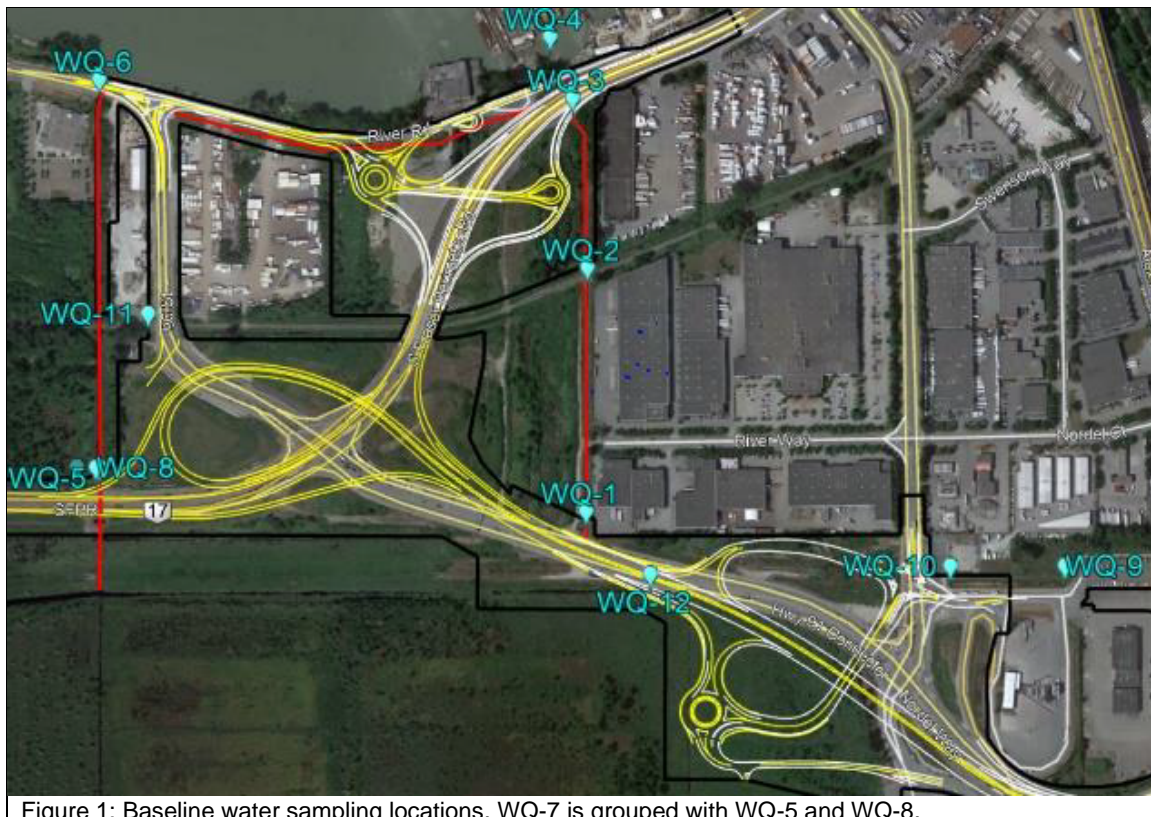


Figure 1: Baseline water sampling locations, WQ-7 is grouped with WQ-5 and WQ-8.

4.4 Wildlife and Habitat Management

Brybil completed wildlife salvages in in Area G.

Areas B2(b) and H were salvaged with trap checks four times a day. Traps were closed during the midnight trap checks when temperatures were below freezing (to prevent mortality). Traps were re-opened during the morning trap check (06:00). Areas B2 (b) and H were completed on 30 October 2020.

EBB Environmental placed wildlife cameras on 8 October 2020 to monitor beaver activity at DNR/G2 (S4) and had not observed any beaver activity and as such, trapping efforts were not recommended. EBB Environmental is scheduled to be present during the deconstruction of the beaver lodge.

4.5 Vegetation Management

Japanese knotweed was detected near the south end of Area C (north of the railway). Although this is not in an active work area, PGC indicated that it may be utilized to store stockpiled material, and as such, was brought to their attention. This area was also flooded, potentially due to beaver activity which was observed. If this area is cleared or infilled, it is recommended that a wildlife sweep be conducted in advance of any works.

4.6 Fisheries Habitat Management

A fish salvage was completed in a portion of East West Burns Bog Perimeter Ditch for the installation of the Fortis crossing culvert (Area E). Instream works commenced on 21 October 2020, with an Environmental Monitor (EM) present at all times during instream works. No fish captures were recorded.

4.7 Construction and Hazardous Waste Management

Yellow wheelie bins 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 from reaching and spreading beyond spill trays.

These bins are collected by Tervita for disposal when they are 75% full. All waste receptacles were labelled with appropriate signage and personnel had been reminded to sort wastes accordingly by PGC. PGC scheduled contaminated soil disposal with Tervita who had collected the accumulated waste as of 8 October 2020.

All heavy equipment at the site utilizes environmentally sensitive, bio-degradable hydraulic oils to meet the requirements of the regulatory approvals, including all equipment working near Burns Bog/DNR.

Secondary containments are inspected on a routine basis; for proper use under parked equipment for general waste and particularly after rainfall to ensure that they are not full of water to prevent additional incidents. During a weekly site audit, rain water was accumulating within secondary containments, which was relayed to the PGC who acted on the advice.

The E01 laydown was arranged to accommodate potentially contaminated material being excavated at the south end of Area G. Stockpile bottoms were lined with poly sheets. Edges were contained with ~1-m high sand berm since material is characteristically wet and prone to dripping. No poly sheet had been placed on top since no dry material

was present therefor there was no risk of particles spreading in wind (large sheets could blow off and pose safety risk on highway or pose safety risk to personnel to install). Contaminated stockpiles will be covered when completed.

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

4.8 Spill Management and Emergency Response

No emergency responses were recorded during this reporting period

4.9 Contaminated Sites Management

Contaminated Sites works in Sections 1 and 2 have not proceeded as PGC and design team await the Approval in Principle permitting decision. The 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 design team has inquired with ENV regarding the status of ENV's decision, and we understand that ENV is still reviewing the application. Anticipated approval date is January 31, 2021. Brybil is not aware or has not been informed of any contaminated sites works being carried out in Sections 1 and 2 under Notification of Independent Remediation management processes with ENV.

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 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. Hwy 17 north & 96 Street Ditch, view to the north (Area B).

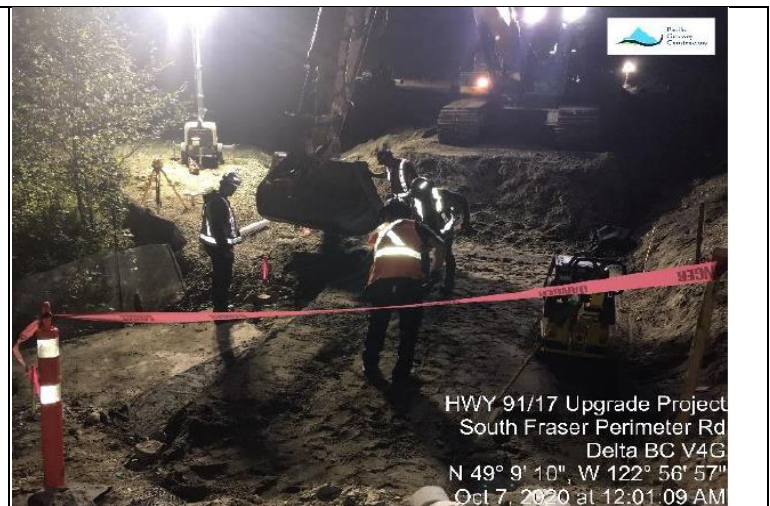


Photo 2. Placement & compaction of sand at the W01 retaining wall.



Photo 3. Some sediment accumulation observed on paved surfaces near Area C. Pavement is swept at the end of each day.



Photo 4. Unprotected CB at the Truck Stop (Area F) near an active access point.



Oct. 7, 2020 2:51:23 p.m.

Photo 5. In general, most areas were stable due to placement of preload sand.



Oct. 7, 2020 3:29:04 p.m.

Photo 6. Low lying areas near the Delta Nature Reserve had flooded, impeding salvage efforts.



Oct. 16, 2020 12:12:00 p.m.

Photo 7. Portion of damaged silt fencing at the south end of Area D, adjacent to Highway 17.



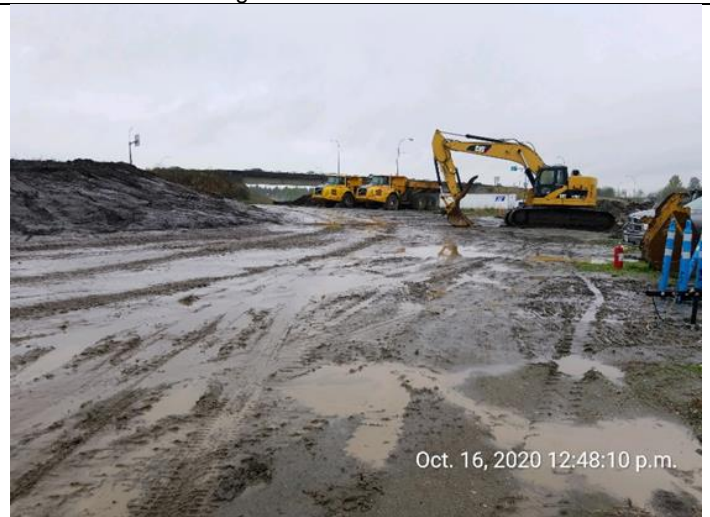
Oct. 16, 2020 12:17:05 p.m.

Photo 8. Paved surfaces (accessible to the public) were observed in clean condition. Looking east on River Road near Area C.



Oct. 16, 2020 12:49:45 p.m.

Photo 9. Sediment accumulation on pavement near Area G was contributing to sediment laden water.



Oct. 16, 2020 12:48:10 p.m.

Photo 10. Working surfaces near the E01 Detour were deteriorating due to traffic and weather conditions.



Photo 11. Active trapping was underway at Area G.



Photo 12. Secondary containments and drip trays should be inspected to remove quantities of accumulated rainwater.



Photo 13. Dewatering into vegetated areas to prevent scour and allow for bio infiltration.



Photo 14. Track out was observed onto public roadways (Highway 91 offramp to Nordel Way).



Photo 15. Sediment accumulation on pavement near Area G was contributing to sediment laden water. During periods of rain.



Photo 16. CB inserts had been installed at the truck stop.



Photo 17. Japanese knotweed was observed near Area C which had been disturbed to facilitate the installation of sediment fencing.



Photo 18. Lock block retaining wall at W01 detour.



Photo 19. Progress construction on of the W01 detour in Area D, north view.



Photo 20. Installation of helical piles for the new boardwalk section in the Delta Nature Reserve.



Photo 21. Most areas were covered with pre-load sand and were not considered to be erodible.



Photo 22. Low-lying areas throughout the project were filling with water due to a high-water table and increasing seasonal rains.

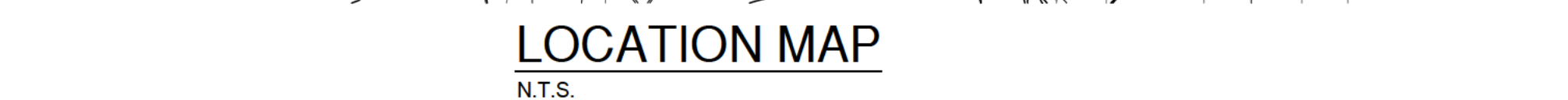


Photo 23. Installation of 2200 mm culvert over the Fortis line post fish salvage.



Photo 24. Although readily available, drip trays were often not placed under idle equipment.

APPENDIX 1: KEY PLAN DRAWING



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

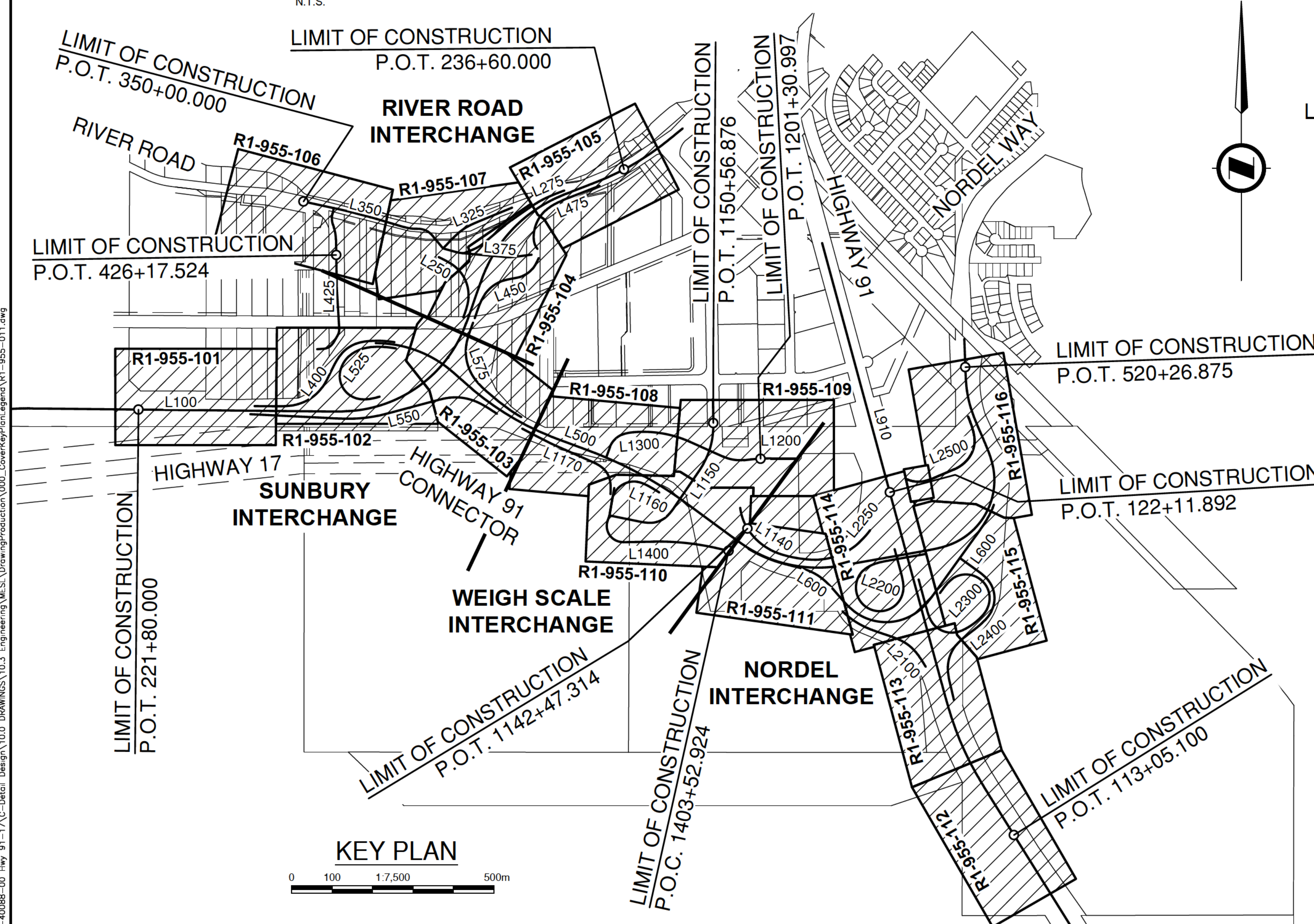
SEGMENT 3030 (NORTH)

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

SEA



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	<u>V. MAK</u>	DATE	<u>2020-02-14</u>
QUALITY CONTROL	<u>T. SMILJANIC</u>	DATE	<u>2020-02-14</u>
QUALITY ASSURANCE	<u>D. DULAY</u>	DATE	<u>2020-02-14</u>
DRAWN	<u>E. YANG</u>	DATE	<u>2020-02-14</u>

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

APPENDIX 2: SPILL AND INCIDENT TRACKER

HWY 91/17 SITE Environmental Spill and Incident Tracking																	
Incident #	Date Of Event	Date Reported	Date Initial Notification Issued	Shift	Approx. Time	Contractor	Sub-Contractor	Silo	Classification	Description of Event	Location	Fluid Amount (L)	Fluid Type	Type of Equipment	Causal Factors	Action Taken	Corrective Actions Date Complete
1	13-Jul-20	13-Jul-20	14-Jul-20	Night	18:01 - 18:30	PGC	National Rentals		Spill (1.1L-5L)	Diesel spill to ground- paved su	PGC Site Office Yard	2	Diesel	Light plant	Inadequate Procedures	After the spill was reported at approximately 23 00 absorbent pads were placed on the surface in an attempt to absorb most of the surface diesel. This was repeated two times. The contaminated pads were removed, and a granular absorbent sand was placed on the spill to absorb any other residual diesel from the spill site. The contaminated gravel was then removed by using a broom and a shovel. Contaminated absorbent pads and contaminated soils 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 spill (<1L)	Oil spill to water	CO1 Detour	<100ml	Oil	Godwin pump	The spill tray had filled with water because when the pump is in operation, the pump discharges air as water is pumped (Dri-Prime pump). Seals can wear over time, and water can be drawn into this hose in addition to air. Water was drawn through this 1" hose and had discharged into the spill tray.	Clean up efforts commenced immediately. Booms were placed in the water. Spill pads were placed around the source, in the spill tray and in the water course. The sand/soil material along the bank was shoveled. All used spill material and contaminated soil was placed in hazardous waste disposal bags. These bags were brought to the hazardous waste storage area in the laydown. The pump has been taken out of service and will be inspected by a mechanic. The watercourse will be monitored for any residual oil.	
4	23-Sep-20	23-Sep-20	Norm (Binni) informed verbally	Night	24 31-1:00	PGC	Nordel Trucking		Minor spill (<1L)	Oil leak on paved road surface	CO1 Detour	<500ml	Oil	Dump truck	Oil leaked occurred onto the road surface when a truck was busy offloading gravel onto the CO1 road shoulder.	A spill was caused by one of the Nordel trucks while delivering gravel to the CO1 site. Oil was tracked out over a large area on Highway 91. Immediate action was taken and the truck was taken out of service. Kitty litter sand and spill pads were used to absorb excess liquid from the road surface. The road sweeper was called to 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 Jeffares (Binnie) verbally	Day	12 01-12 30	PGC	Quattro Constructors		Spill (1.1L-5L)	Oil spill to ground - pre-load	River Road West (Area C) to the east of water main installation	2	Hydraulic oil	Pipe fusing machine	Normal wear and tear on moving machine parts- unforeseen circumstances.	Machine turned off, driptrays and absorbent pads placed under areas of concern. Machine covered with poly overnight until it can be removed from site.	
6	7-Oct-20	7-Oct-20	Jordan Jeffares (Binnie) verbally	Day	13 01-13 30	PGC	NA		Minor spill (<1L)	Oil leak on machine	E01 laydown area	<500ml	Hydraulic oil	Excavator	Normal wear and tear on moving machine parts- (hydraulic boom fitting) unforeseen circumstances.	The operators stopped the machine immediately and notified the supervisor. Spill trays were placed under the excavator. A mechanic was called to site to safely move the excavator to prevent any additional leaks. Additional spill 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. All used spill materials were placed in the hazardous waste segregation area at the PGC site office.	
7	9-Oct-20	9-Oct-20	Norn Richard	Night	2 01-2 30	PGC	NA		Minor spill (<1L)	Oil leak on owner operated excavator	EO2 detour	<200	Hydraulic oil	Excavator	Normal wear and tear on moving machine parts- (hydraulic seal) unforeseen circumstances.	The operators stopped the machine immediately and notified the supervisor. The MoTI representative, Norm Richard, was notified. The machine was turned off and spill trays were placed under the excavator. This is an owner operated machine and an inspection revealed the root cause of the problem. A mechanic will be called to site to safely replace the damaged seal of the excavator to prevent any additional leaks. With exception of the drip-tray no additional spill containment materials were placed on the ground around the excavator as no fluid was spilled 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. All contaminated sand from the insides of the track were placed in the hazardous waste segregation area at the PGC site offices.	

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)

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
						dorsal - grey and brown, ventral - lighter
20-Sep-20	7:00 P17	Sorex sp.		55	105	beige/grey LS, NS
20-Sep-20	7:31 P30	Sorex sp.		45	85	LS, NS
						dorsal - grey and brown, ventral - light
20-Sep-20	7:38 P32	Sorex sp.		50	95	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
					D=brown/v=lighter brown; lrg eyes & ears	SS, LS
22-Sep-20	6:45 S18	PEMA	60	120		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	mortality; voucher specimen	MT, JG
29-Sep-20	6:37 P20	SOBE	100	170		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 rain	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

1. Agency agreement: The agency agreement is a legal contract between the agency and the client. It outlines the scope of the agency's work, the fees, and the terms of the relationship. The agency agreement is a key document in the agency-client relationship.

APPENDIX 5: PERMIT CONDITIONS TRACKER

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 <i>Sorex rowheri</i> 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 <i>Notice of Railway Works Regulations</i> . Notify the public and affected stakeholders in accordance with the <i>Railway Safety Act</i> .	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 5: PERMIT CONDITIONS TRACKER

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 <i>Sorex rowheri</i> 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 <i>Notice of Railway Works Regulations</i> . Notify the public and affected stakeholders in accordance with the <i>Railway Safety Act</i> .	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-1	Silda Ditch US	04/09/2020	14:15	15.8	3.89	1.12	7.57	0.39	25	-
WQ-2	Silda Ditch MS	04/09/2020	14:30	14.9	7.64	0.79	7.8	0.48	22.2	-
WQ-3	Silda Ditch DS	04/09/2020	14:45	14.8	5.99	0.68	7.34	0.33	17.3	-
WQ-4	Fraser Rr Inlet	04/09/2020	15:15	17.9	6.24	0.89	7.91	0.39	63.2	-
WQ-5	96 Street Ditch US	08/09/2020	19:30	12.9	5.90	1.05	6.15	0.05	7.15	Prior to topsoil stripping and sand placement; High tide coming in.
WQ-5	96 Street Ditch US	09/09/2020	22:45	18.6	5.45	0.09	5.85	0.06	7.25	High tide moving out
WQ-6	96 Street Ditch DS	09/09/2020	23:30	18.4	6.27	0.15	7.21	0.07	27.1	High tide moving out
WQ-1	Silda Ditch US	10/09/2020	11:15	17.9	4.95	1.15	6.25	0.33	9.5	High tide moving in
WQ-2	Silda Ditch MS	10/09/2020	11:30	17.7	5.10	0.95	6.65	0.45	9.6	High tide moving in
WQ-3	Silda Ditch DS	10/09/2020	11:45	17.2	4.75	0.79	7.23	0.70	12.1	High tide moving in
WQ-4	Fraser Rr Inlet	10/09/2020	12:00	18.1	11.15	0.25	7.90	0.85	55.2	High tide moving in
WQ-5	96 Street Ditch US	10/09/2020	13:30	17.6	4.99	0.11	6.45	0.08	10.2	High tide moving in
WQ-6	96 Street Ditch DS	10/09/2020	14:00	17.4	6.31	0.18	7.12	0.15	17.8	High tide moving in
WQ-5	96 Street Ditch US	13/09/2020	0:11	17.6	4.56	0.77	5.45	0.38	5.2	High tide moving in
WQ-6	96 Street Ditch DS	13/09/2020	0:35	17.9	5.76	0.75	7.00	0.32	11.8	High tide moving in
WQ-5	96 Street Ditch US	14/09/2020	23:45	15.6	4.23	1.15	5.89	0.25	9.35	High tide moving in
WQ-6	96 Street Ditch DS	14/09/2020	0:15	15.7	4.59	0.86	7.23	0.28	12.57	High tide moving in
WQ-1	Silda Ditch US	15/09/2020	15:40	22.1	13.52	0.83	6.59	0.42	232	Mid tide moving in
WQ-2	Silda Ditch MS	15/09/2020	15:30	23.3	5.52	0.79	7.12	0.39	51.1	Mid tide moving in
WQ-3	Silda Ditch DS	15/09/2020	15:15	22.9	5.96	0.23	7.55	0.12	11.7	Mid tide moving in
WQ-4	Fraser Rr Inlet	15/09/2020	14:30	20.1	5.65	0.73	7.07	0.36	20.5	Mid tide moving in
WQ-5	96 Street Ditch US	15/09/2020	15:00	22.8	4.12	0.29	6.34	0.14	8.16	Mid tide moving in
WQ-6	96 Street Ditch DS	15/09/2020	14:45	21.1	4.11	0.27	6.94	0.13	12.6	Mid tide moving in
WQ-1	Silda Ditch US	16/09/2020	15:40	20.7	2.79	0.76	6.79	0.39	141	Low tide moving in
WQ-2	Silda Ditch MS	16/09/2020	15:30	21.5	2.18	0.74	7.04	0.37	48.6	Low tide moving in
WQ-3	Silda Ditch DS	16/09/2020	15:15	20.7	5.84	0.33	7.58	0.17	11.3	Low tide moving in
WQ-4	Fraser Rr Inlet	16/09/2020	14:30	21.2	3.31	0.87	8.17	0.46	23.2	Low tide moving in
WQ-5	96 Street Ditch US	16/09/2020	15:00	19.2	3.41	0.25	6.51	0.12	5.22	Low tide moving in
WQ-6	96 Street Ditch DS	16/09/2020	14:45	20.0	4.48	0.43	7.29	0.21	18.1	Low tide moving in
WQ-1	Silda Ditch US	17/09/2020	15:40	20.8	1.90	0.91	6.75	0.46	207	Mid tide moving in
WQ-2	Silda Ditch MS	17/09/2020	15:30	19.8	2.51	1.07	7.24	0.59	9.3	Mid tide moving in
WQ-3	Silda Ditch DS	17/09/2020	15:15	20.3	4.21	0.34	7.68	0.16	15.2	Mid tide moving in
WQ-4	Fraser Rr Inlet	17/09/2020	14:30	19.3	4.21	0.69	8.49	0.35	8.6	Mid tide moving in
WQ-5	96 Street Ditch US	17/09/2020	15:00	18.4	3.86	0.31	6.58	0.15	6.1	Mid tide moving in
WQ-6	96 Street Ditch DS	17/09/2020	14:45	19.5	4.76	0.37	7.51	0.20	13.5	Mid tide moving in
WQ-1	Silda Ditch US	21/09/2020	02:30	13.2	3.23	0.75	5.95	0.31	14.6	Shallow standing water.

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	21/09/2020	01:45	13.4	4.05	0.48	7.15	0.49	15.4	Low tide, going out
WQ-3	Silda Ditch DS	21/09/2020	01:33	13.9	3.34	1.15	7.28	0.25	22.4	Low tide, going out
WQ-4	Fraser Rr Inlet	21/09/2020	01:08	14.5	4.25	0.35	8.05	0.49	56.12	Low tide, going out
WQ-5	96 Street Ditch US	20/09/2020	23:45	13.3	4.13	0.36	6.78	0.29	5.55	Low water due to dewatering for culvert extension.
WQ-6	96 Street Ditch DS	20/09/2020	23:15	13.8	6.00	0.34	7.09	0.20	8.73	Mid tide, going out
WQ-1	Silda Ditch US	21/09/2020	12:00	17.6	4.55	0.77	6.94	0.37	198.0	High tide, going out
WQ-2	Silda Ditch MS	21/09/2020	11:40	18.0	5.62	1.18	8.90	0.62	10.2	High tide, going out
WQ-3	Silda Ditch DS	21/09/2020	11:50	17.3	7.21	0.23	8.51	0.13	16.0	High tide, going out
WQ-4	Fraser Rr Inlet	21/09/2020	12:10	17.7	7.36	0.21	8.25	0.12	14.8	High tide, going out
WQ-5	96 Street Ditch US	21/09/2020	12:30	18.4	3.95	0.42	6.71	0.18	11.4	High tide, going out
WQ-6	96 Street Ditch DS	21/09/2020	12:15	17.3	6.98	0.27	8.16	0.13	14.5	High tide, going out
WQ-1	Silda Ditch US	22/09/2020	10:40	17.4	4.50	0.82	6.84	0.41	191.0	Shallow standing water
WQ-2	Silda Ditch MS	22/09/2020	10:30	18.0	5.90	0.50	7.42	0.24	8.6	High tide
WQ-3	Silda Ditch DS	22/09/2020	10:00	17.4	5.95	0.32	7.90	0.15	28.8	High tide
WQ-4	Fraser Rr Inlet	22/09/2020	9:00	17.8	3.58	1.16	9.10	0.57	26.6	High tide
WQ-5	96 Street Ditch US	22/09/2020	9:40	16.4	3.41	0.34	6.69	0.17	8.4	Low water due to dewatering for culvert extension.
WQ-6	96 Street Ditch DS	22/09/2020	9:30	17.3	5.56	0.30	8.63	0.15	19.3	High tide
WQ-1	Silda Ditch US	23/09/2020	13:50	16.6	4.25	1.09	7.33	0.44	102.0	High tide, heavy rain during sampling
WQ-2	Silda Ditch MS	23/09/2020	13:45	16.9	5.38	1.67	8.06	0.69	22.8	High tide, heavy rain during sampling
WQ-3	Silda Ditch DS	23/09/2020	13:40	16.6	4.79	1.69	9.45	0.87	34.0	High tide, heavy rain during sampling
WQ-4	Fraser Rr Inlet	23/09/2020	13:10	17.1	4.21	1.72	9.38	0.91	37.1	High tide, heavy rain during sampling
WQ-5	96 Street Ditch US	23/09/2020	13:30	17.0	3.88	0.81	7.01	0.45	10.4	High tide, heavy rain during sampling
WQ-6	96 Street Ditch DS	23/09/2020	13:20	16.8	4.00	0.73	8.75	0.33	32.6	High tide, heavy rain during sampling
WQ-1	Silda Ditch US	24/09/2020	11:45	16.7	3.85	0.19	6.78	0.08	6.8	High tide, coming in. Rain during sampling. High water from earlier rain.
WQ-2	Silda Ditch MS	24/09/2020	11:20	17.9	4.59	0.31	7.34	0.19	34.0	High tide, coming in. Rain during sampling. High water from earlier rain.
WQ-3	Silda Ditch DS	24/09/2020	11:25	16.3	4.59	0.10	6.90	0.05	10.6	High tide, coming in. Rain during sampling. High water from earlier rain.
WQ-4	Fraser Rr Inlet	24/09/2020	12:00	17.0	6.32	0.14	7.74	0.07	30.3	High tide, coming in. Rain during sampling
WQ-5	96 Street Ditch US	24/09/2020	12:20	16.3	5.03	0.67	7.18	0.32	8.0	High tide, coming in. Rain during sampling. High water from earlier rain.
WQ-6	96 Street Ditch DS	24/09/2020	12:10	16.8	6.29	0.20	7.96	0.09	30.1	High tide, coming in. Rain during sampling. High water from earlier rain.
WQ-1	Silda Ditch US	28/09/2020	13:20	19.7	4.19	0.28	6.68	0.14	5.0	Mid-tide, coming in
WQ-2	Silda Ditch MS	28/09/2020	13:10	18.9	4.29	0.27	6.81	0.13	4.9	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-3	Silda Ditch DS	28/09/2020	13:00	17.8	4.03	0.25	6.85	0.13	5.6	Mid-tide, coming in
WQ-4	Fraser Rr Inlet	28/09/2020	12:20	17.8	4.11	0.79	7.58	0.39	5.8	Mid-tide, coming in
WQ-5	96 Street Ditch US	28/09/2020	12:45	18.0	5.46	0.23	6.44	0.12	2.5	Mid-tide, coming in
WQ-6	96 Street Ditch DS	28/09/2020	12:25	16.5	5.83	0.22	6.88	0.11	8.2	Mid-tide, coming in
WQ-1	Silda Ditch US	29/09/2020	12:15	19.1	4.17	0.33	6.56	0.16	5.3	Low tide
WQ-2	Silda Ditch MS	29/09/2020	12:00	17.4	3.48	0.31	6.68	0.16	5.5	Low tide
WQ-3	Silda Ditch DS	29/09/2020	11:45	16.4	4.77	0.33	6.72	0.16	6.1	Low tide
WQ-4	Fraser Rr Inlet	29/09/2020	10:00	16.4	5.64	0.27	6.98	0.14	7.6	Low tide
WQ-5	96 Street Ditch US	29/09/2020	10:30	16.8	4.55	0.15	6.18	0.08	1.7	Low tide
WQ-6	96 Street Ditch DS	29/09/2020	10:15	15.6	4.29	0.21	6.70	0.10	16.6	Low tide
WQ-1	Silda Ditch US	30/09/2020	10:10	15.2	4.39	0.45	6.87	0.26	7.8	Low tide
WQ-2	Silda Ditch MS	30/09/2020	9:55	14.9	3.13	0.48	6.98	0.24	6.8	Low tide
WQ-3	Silda Ditch DS	30/09/2020	10:00	14.5	5.72	0.35	7.03	0.18	7.0	Low tide
WQ-4	Fraser Rr Inlet	30/09/2020	14:50	19.0	5.12	0.41	7.13	0.20	10.4	Mid-tide, coming in
WQ-5	96 Street Ditch US	30/09/2020	15:10	19.4	4.05	0.53	6.82	0.26	6.2	Mid-tide, coming in
WQ-6	96 Street Ditch DS	30/09/2020	15:00	18.1	4.94	0.14	6.54	0.07	4.2	Mid-tide, coming in
WQ-9	Area G Peat Sub Excavation	30/09/2020	9:45	15.4	1.97	0.76	6.92	0.38	25.7	Pond on mud being excavated
WQ-1	Silda Ditch US	05/10/2020	11:00	15.8	3.25	0.50	6.68	0.25	12.4	-
WQ-2	Silda Ditch MS	05/10/2020	11:20	16.8	4.26	0.49	6.99	0.24	10.7	-
WQ-3	Silda Ditch DS	05/10/2020	11:30	15.7	6.51	0.15	7.74	0.07	15.1	Similar water qualities to Fraser River
WQ-4	Fraser Rr Inlet	05/10/2020	10:00	15.3	7.03	0.13	7.40	0.06	23.0	High tide, going out
WQ-5	96 Street Ditch US	05/10/2020	10:30	14.9	5.75	0.09	6.03	0.04	2.2	-
WQ-6	96 Street Ditch DS	05/10/2020	10:15	15.1	7.40	0.12	7.73	0.06	16.4	Similar water qualities to Fraser River
WQ-1	Silda Ditch US	06/10/2020	13:00	15.7	3.72	0.51	6.59	0.26	19.8	Low water with easily disturbed sediment
WQ-2	Silda Ditch MS	06/10/2020	13:10	17.3	4.37	0.48	6.96	0.24	12.3	-
WQ-3	Silda Ditch DS	06/10/2020	13:15	16.3	6.28	0.13	7.43	0.07	13.0	Similar water qualities to Fraser River
WQ-4	Fraser Rr Inlet	06/10/2020	12:00	15.8	7.45	0.11	7.47	0.06	16.7	High tide, going out
WQ-5	96 Street Ditch US	06/10/2020	12:45	16.4	3.60	0.09	5.81	0.04	2.7	Isolation plates removed
WQ-6	96 Street Ditch DS	06/10/2020	12:30	16.0	7.96	0.12	7.64	0.06	15.9	Similar water qualities to Fraser River
WQ-1	Silda Ditch US	07/10/2020	10:45	15.5	6.76	0.57	6.66	0.28	26.1	Low water with easily disturbed sediment
WQ-2	Silda Ditch MS	07/10/2020	11:05	16.0	4.23	0.53	7.01	0.26	13.6	-
WQ-3	Silda Ditch DS	07/10/2020	11:00	15.6	8.32	0.13	7.62	0.07	19.8	Similar water qualities to Fraser River
WQ-4	Fraser Rr Inlet	07/10/2020	09:40	15.1	8.85	0.12	7.81	0.06	21.4	High tide
WQ-5	96 Street Ditch US	07/10/2020	10:05	14.7	5.06	0.09	5.91	0.04	2.9	-

Site Code	Site	Date	Time	Water Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-6	96 Street Ditch DS	07/10/2020	09:50	15.0	8.09	0.12	7.84	0.06	17.8	Similar water qualities to Fraser River
WQ-1	Silda Ditch US	08/10/2020	13:00	16.7	5.24	0.61	6.68	0.30	32.3	Low water with easily disturbed sediment
WQ-2	Silda Ditch MS	08/10/2020	13:25	17.5	5.99	0.55	7.04	0.28	14.3	Similar water qualities to Fraser River
WQ-3	Silda Ditch DS	08/10/2020	13:20	17.0	10.66	0.17	7.84	0.09	14.3	Similar water qualities to Fraser River
WQ-4	Fraser Rr Inlet	08/10/2020	10:00	15.5	7.11	0.15	7.51	0.08	16.5	High tide
WQ-5	96 Street Ditch US	08/10/2020	10:40	15.7	7.52	0.09	5.96	0.04	2.2	Similar water qualities to Fraser River
WQ-6	96 Street Ditch DS	08/10/2020	10:20	15.6	7.85	0.13	7.87	0.06	14.5	-
WQ-1	Silda Ditch US	09/10/2020	11:30	15.6	6.31	0.52	6.73	0.26	73.0	Low water with easily disturbed sediment
WQ-2	Silda Ditch MS	09/10/2020	11:40	15.8	6.22	0.56	7.10	0.28	15.1	Between Fraser and US values for turbidity suggests mixing
WQ-3	Silda Ditch DS	09/10/2020	11:45	15.6	7.99	0.17	7.70	0.08	13.8	Similar water qualities to Fraser River
WQ-4	Fraser Rr Inlet	09/10/2020	10:45	15.4	7.98	0.15	7.29	0.07	17.0	High tide, going out
WQ-5	96 Street Ditch US	09/10/2020	11:00	14.9	6.15	0.08	5.94	0.04	2.0	-
WQ-6	96 Street Ditch DS	09/10/2020	10:50	15.2	7.51	0.12	7.61	0.06	13.1	Similar water qualities to the Fraser River inlet, likely flooding into ditch
WQ-1	Silda Ditch US	13/10/2020	11:20	13.4	-	0.11	6.58	0.06	4.8	-
WQ-2	Silda Ditch MS	13/10/2020	11:45	14.3	-	0.11	6.73	0.06	5.6	-
WQ-3	Silda Ditch DS	13/10/2020	11:50	14.5	-	0.14	6.83	0.07	9.6	-
WQ-4	Fraser Rr Inlet	13/10/2020	10:45	12.0	-	0.05	6.67	0.03	16.2	Mid tide, coming in
WQ-5	96 Street Ditch US	13/10/2020	11:15	13.2	-	0.14	6.40	0.07	2.6	-
WQ-6	96 Street Ditch DS	13/10/2020	11:00	12.9	-	0.15	6.56	0.08	6.1	-
WQ-1	Silda Ditch US	14/10/2020	13:30	14.1	-	0.10	6.67	0.12	4.8	-
WQ-2	Silda Ditch MS	14/10/2020	13:40	14.3	-	0.11	7.01	0.12	5.6	-
WQ-3	Silda Ditch DS	14/10/2020	13:45	14.9	-	0.12	7.24	0.14	9.6	-
WQ-4	Fraser Rr Inlet	14/10/2020	13:00	14.0	-	0.09	7.13	0.06	16.2	Mid tide, coming in
WQ-5	96 Street Ditch US	14/10/2020	13:20	14.2	-	0.14	6.16	0.14	2.6	-
WQ-6	96 Street Ditch DS	14/10/2020	13:10	14.9	-	0.14	7.17	0.16	6.1	-
WQ-1	Silda Ditch US	15/10/2020	11:30	12.6	-	0.51	6.79	0.24	15.6	-
WQ-2	Silda Ditch MS	15/10/2020	11:40	12.8	-	0.52	7.03	0.22	5.7	-
WQ-3	Silda Ditch DS	15/10/2020	11:45	12.6	-	0.15	7.13	0.06	14.2	Similar water qualities to Fraser River.
WQ-4	Fraser Rr Inlet	15/10/2020	10:45	12.4	-	0.13	7.33	0.05	22.6	Mid tide, coming in
WQ-5	96 Street Ditch US	15/10/2020	11:00	11.9	-	0.07	6.08	0.04	3.0	-
WQ-6	96 Street Ditch DS	15/10/2020	10:50	12.2	-	0.11	7.29	0.07	17.4	Similar water qualities to Fraser River.

Site Code	Site	Date	Time	Water Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-1	Silda Ditch US	19/10/2020	16:30	13.8	-	0.17	6.68	0.08	4.2	-
WQ-2	Silda Ditch MS	19/10/2020	16:20	14.0	-	0.90	6.85	0.08	6.3	-
WQ-3	Silda Ditch DS	19/10/2020	16:15	13.9	-	0.19	6.87	0.10	11.1	Knocked gravel in while approaching to collect sample and potentially raised turbidity
WQ-4	Fraser Rr Inlet	19/10/2020	15:30	14.5	-	0.24	6.80	0.14	5.6	High tide
WQ-5	96 Street Ditch US	19/10/2020	16:00	13.2	-	0.07	5.80	0.04	1.3	-
WQ-6	96 Street Ditch DS	19/10/2020	15:45	12.9	-	0.08	6.09	0.04	5.9	-
WQ-7	Hwy 99 Stockpiles	19/10/2020	22:50	9.4	-	0.55	7.32	0.28	15.5	Stagnant water, slight odour
WQ-1	Silda Ditch US	20/10/2020	11:45	12.9	-	0.20	6.89	0.11	6.7	-
WQ-2	Silda Ditch MS	20/10/2020	12:00	12.8	-	0.29	6.94	0.12	5.0	-
WQ-3	Silda Ditch DS	20/10/2020	12:10	12.8	-	0.37	7.09	0.14	5.8	-
WQ-4	Fraser Rr Inlet	20/10/2020	10:45	12.5	-	0.10	9.27	0.35	47.6	High tide
WQ-11	Fortis Culvert US	20/10/2020	11:10	12.0	-	0.16	5.37	0.08	4.9	Plates installed, no dewatering. Sample location in middle of stream
WQ-12	Fortis Culvert DS	20/10/2020	11:15	12.1	-	0.11	5.67	0.05	11.6	Plates installed, no dewatering. Sample location at edge of stream
WQ-11	Fortis Culvert US	20/10/2020	04:55	13.4	-	0.09	5.30	0.04	5.5	Plates installed, no dewatering has taken place yet. Sample location in middle of stream
WQ-12	Fortis Culvert DS	20/10/2020	05:00	13.0	-	0.09	5.28	0.05	16.6	Plates installed, no dewatering has taken place yet. Sample location at edge of stream (muddier). Aiming to sample closer to middle
WQ-2	Silda Ditch MS	21/10/2020	08:20	10.5	-	0.23	6.63	0.12	6.1	-
WQ-3	Silda Ditch DS	21/10/2020	08:15	10.5	-	0.25	6.55	0.12	7.4	-
WQ-4	Fraser Rr Inlet	21/10/2020	08:45	9.8	-	0.14	7.42	0.07	54.3	-
WQ-11	Fortis Culvert US	21/10/2020	07:30	10.6	-	0.10	5.06	0.05	5.4	Pre-dewatering
WQ-12	Fortis Culvert DS	21/10/2020	07:30	11.0	-	0.09	5.18	0.05	9.4	Pre-dewatering
WQ-11	Fortis Culvert US	21/10/2020	08:30	10.8	-	0.09	5.12	0.04	6.2	-
WQ-12	Fortis Culvert DS	21/10/2020	08:30	10.7	-	0.10	5.79	0.05	12.5	-
WQ-11	Fortis Culvert US	21/10/2020	09:30	10.9	-	0.10	5.19	0.06	8.1	-
WQ-12	Fortis Culvert DS	21/10/2020	09:30	11.0	-	0.08	5.14	0.05	15.7	Dewatering into perimeter ditch.
WQ-11	Fortis Culvert US	21/10/2020	10:30	12.4	-	0.09	5.11	0.05	8.8	-
WQ-12	Fortis Culvert DS	21/10/2020	10:30	12.6	-	0.10	5.34	0.05	14.0	-
WQ-11	Fortis Culvert US	21/10/2020	11:30	13.2	-	0.10	5.08	0.05	10.7	-
WQ-12	Fortis Culvert DS	21/10/2020	11:30	13.4	-	0.12	5.20	0.06	10.1	-
WQ-11	Fortis Culvert US	21/10/2020	12:30	13.2	-	0.90	5.11	0.05	-	-
WQ-12	Fortis Culvert DS	21/10/2020	12:30	13.4	-	0.10	5.29	0.05	-	-
WQ-11	Fortis Culvert US	21/10/2020	13:30	13.3	-	0.10	4.99	0.05	8.4	-

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	21/10/2020	13:30	13.2	-	0.09	5.01	0.05	30.5	Dewatering bottom of ditch, discharge was now visually turbid. Changed discharge location to pool that will not drain into W/C
WQ-11	Fortis Culvert US	21/10/2020	13:40	13.3	-	0.10	5.09	0.06	8.3	-
WQ-12	Fortis Culvert DS	21/10/2020	13:40	13.3	-	0.09	5.26	0.05	16.1	Sample 10 mins later was within 8 NTU of US measurements. Dewatering to veg. continued.
WQ-11	Fortis Culvert US	21/10/2020	14:30	13.6	-	0.90	5.11	0.06	7.9	Finished dewatering for day
WQ-12	Fortis Culvert DS	21/10/2020	14:30	13.8	-	0.10	5.64	0.07	8.1	Finished dewatering for day
WQ-2	96 Street Ditch US	22/10/2020	12:30	12.6	-	0.30	6.76	0.15	7.2	-
WQ-3	96 Street Ditch DS	22/10/2020	12:35	11.9	-	0.15	7.06	0.07	38.4	High tide. TDS and conductivity are similar to Fraser, indicating flooding into ditch from Fraser River
WQ-4	Fraser Rr Inlet	22/10/2020	12:00	12.3	-	0.12	7.56	0.06	32.3	High tide
WQ-11	Fortis Culvert US	22/10/2020	08:30	10.4	-	0.09	5.10	0.04	6.0	-
WQ-12	Fortis Culvert DS	22/10/2020	08:30	10.6	-	0.08	5.37	0.05	9.1	Dewatering into veg. (flat pool), not into Ditch
WQ-11	Fortis Culvert US	22/10/2020	09:30	10.9	-	0.08	5.06	0.06	6.2	-
WQ-12	Fortis Culvert DS	22/10/2020	09:30	11.0	-	0.10	5.23	0.05	12.5	Dewatering into veg. (flat pool), not into Ditch
WQ-11	Fortis Culvert US	22/10/2020	09:30	10.9	-	0.08	5.06	0.06	6.5	-
WQ-12	Fortis Culvert DS	22/10/2020	09:30	11.0	-	0.10	5.23	0.05	10.6	Dewatering into veg. (flat pool), not into Ditch
WQ-11	Fortis Culvert US	22/10/2020	10:45	11.9	-	0.09	4.94	0.05	5.1	-
WQ-12	Fortis Culvert DS	22/10/2020	10:45	11.7	-	0.10	5.41	0.06	11.6	Dewatering into veg. (flat pool), not into Ditch
WQ-11	Fortis Culvert US	22/10/2020	12:00	12.3	-	0.09	4.98	0.04	6.8	-
WQ-12	Fortis Culvert DS	22/10/2020	12:00	12.3	-	0.10	5.12	0.05	9.3	Dewatering into veg. (flat pool), not into Ditch
WQ-11	Fortis Culvert US	22/10/2020	13:30	12.4	-	0.11	5.01	0.05	5.9	-
WQ-12	Fortis Culvert DS	22/10/2020	13:30	12.6	-	0.10	5.27	0.05	8.0	Dewatering into veg. (flat pool), not into Ditch
WQ-2	96 Street Ditch US	23/10/2020	13:20	8.8	6.98	0.39	6.93	0.20	24.8	Sampling during rain
WQ-3*	96 Street Ditch DS	23/10/2020	13:15	8.9	8.93	0.12	7.31	0.06	68.9	Sampling during rain. Sand slope nearby (3 m from edge) had collapsed 30 mins earlier due to heavy rain
WQ-4	Fraser Rr Inlet	23/10/2020	09:45	10.6	7.98	0.13	7.20	0.06	64.2	Sampling during rain. Mid tide, coming in
WQ-11	Fortis Culvert US	23/10/2020	08:30	7.8	3.97	0.09	5.16	0.05	5.0	-
WQ-12	Fortis Culvert DS	23/10/2020	08:30	7.9	4.68	0.10	5.34	0.06	5.8	-
WQ-11	Fortis Culvert US	23/10/2020	10:30	8.0	4.16	0.07	5.07	0.06	3.0	-
WQ-12	Fortis Culvert DS	23/10/2020	10:30	7.6	3.97	0.12	5.03	0.09	7.5	Dewatering into veg. (flat pool), not into Ditch
WQ-11	Fortis Culvert US	23/10/2020	12:30	8.4	3.29	0.10	5.11	0.04	4.2	-
WQ-12	Fortis Culvert DS	23/10/2020	12:30	8.5	6.21	0.11	5.41	0.06	11.6	Dewatering into veg. (flat pool), not into Ditch
WQ-11	Fortis Culvert US	23/10/2020	14:30	8.9	3.52	0.12	5.02	0.06	3.3	-
WQ-12	Fortis Culvert DS	23/10/2020	14:30	8.7	5.48	0.12	5.05	0.06	5.7	Dewatering into veg. (flat pool), not into Ditch

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	26/10/2020	12:25	8.6	7.13	0.27	6.68	0.14	25.0	-
WQ-3	Silda Ditch DS	26/10/2020	12:30	8.5	8.35	0.36	6.56	0.18	32.5	-
WQ-4	Fraser Rr Inlet	26/10/2020	10:30	12.2	4.41	0.58	6.66	0.30	10.6	Low tide turning
WQ-11	Fortis Culvert US	26/10/2020	08:30	6.8	6.46	0.13	5.19	0.05	2.4	-
WQ-12	Fortis Culvert DS	26/10/2020	08:30	6.9	5.30	0.08	4.61	0.06	1.8	Dewatering into veg (flat pool), not into ditch
WQ-11	Fortis Culvert US	26/10/2020	10:45	7.2	8.76	0.13	5.43	0.06	2.4	-
WQ-12	Fortis Culvert DS	26/10/2020	10:45	7.4	4.90	0.10	4.55	0.05	1.8	Dewatering into veg (flat pool), not into ditch
WQ-11	Fortis Culvert US	26/10/2020	12:15	8.5	4.16	0.11	5.17	0.06	3.0	-
WQ-12	Fortis Culvert DS	26/10/2020	12:15	8.8	6.65	0.10	4.63	0.05	2.8	Dewatering into veg (flat pool), not into ditch
WQ-11	Fortis Culvert US	26/10/2020	14:00	9.2	5.19	0.08	5.21	0.05	3.0	-
WQ-12	Fortis Culvert DS	26/10/2020	14:00	9.1	6.70	0.12	4.60	0.05	2.2	Dewatering into veg (flat pool), not into ditch
WQ-2	Silda Ditch MS	27/10/2020	13:20	9.5	8.28	0.30	6.62	0.15	6.4	-
WQ-3	Silda Ditch DS	27/10/2020	13:25	10.1	6.71	0.30	6.55	0.15	8.0	-
WQ-4	Fraser Rr Inlet	27/10/2020	12:00	8.5	5.84	0.40	7.57	0.20	12.3	Mid-tide, coming in
WQ-11	Fortis Culvert US	27/10/2020	12:20	8.2	4.48	0.10	5.28	0.05	2.7	No instream works today
WQ-12	Fortis Culvert DS	27/10/2020	12:20	8.1	6.36	0.10	4.66	0.05	3.7	No instream works today. Sampling location below dewatering discharge
WQ-2	Silda Ditch MS	28/10/2020	15:00	11.8	5.54	0.35	6.67	0.18	6.7	-
WQ-3	Silda Ditch DS	28/10/2020	14:55	12.0	5.52	0.34	6.65	0.17	8.7	-
WQ-4	Fraser Rr Inlet	28/10/2020	14:15	10.5	8.05	0.13	7.43	0.07	21.6	Mid-tide, coming in
WQ-11	Fortis Culvert US	28/10/2020	14:30	11.1	6.09	0.11	5.26	0.05	2.7	No instream works today
WQ-12	Fortis Culvert DS	28/10/2020	14:35	10.9	5.25	0.10	4.43	0.05	5.0	No instream works today. Sampling below dewatering discharge
WQ-2	Silda Ditch MS	29/10/2020	9:20	8.9	5.95	0.26	6.61	0.21	7.5	-
WQ-3	Silda Ditch DS	29/10/2020	9:15	8.8	4.68	0.29	6.97	0.19	12.4	-
WQ-4	Fraser Rr Inlet	29/10/2020	8:15	11.9	9.20	0.38	7.54	0.12	32.8	High tide, going out
WQ-11	Fortis Culvert US	29/10/2020	8:45	9.5	4.36	0.10	5.14	0.06	2.8	No instream works today
WQ-12	Fortis Culvert DS	29/10/2020	8:50	9.1	5.12	0.09	4.98	0.05	2.8	No instream works today. Sampling location below dewatering discharge
WQ-2	Silda Ditch MS	30/10/2020	8:00	8.6	5.48	0.26	7.06	0.20	6.5	-
WQ-3	Silda Ditch DS	30/10/2020	8:00	8.6	6.75	0.18	6.95	0.14	9.9	-
WQ-4	Fraser Rr Inlet	30/10/2020	7:30	11.7	8.12	0.34	7.62	0.26	29.4	High tide, going out
WQ-11	Fortis Culvert US	30/10/2020	7:45	8.9	3.65	0.11	5.26	0.05	2.6	No instream works today
WQ-12	Fortis Culvert DS	30/10/2020	7:45	9.0	6.70	0.11	4.88	0.05	1.9	No instream works today. Sampling location below dewatering discharge

* On 23 October 2020, there was a sand-slide failure on a small portion of the sand slope adjacent to the new paved detour at the Silda ditch Downstream monitoring point. This was a result of a dewatering pipe that scoured the sand bank. The night shift Superintendent has been informed and immediate action has been taken to stabilize the bank for further slides. Since the detour has been paved recently, no large tracked equipment can be mobilized to repair the area. Preparations are currently being made to procure a wheel excavator to mitigate the scoured area and to stabilize the entire area. Upon investigation most of the sediment was captured by the check dams and straw wattles before it entered the Silda ditch. This has been given top priority as it not only poses a risk to the migration of sediment but also to the integrity of the nearby detour.