		Highway 91/17 Upgrade Project	
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Title	Environmental Monthly Report	**Revision:**	0
Date Submitted to MoTI		14 July 2020	
Prepared by:	Stephanie Murphy, M.Sc., R.P.Bio. (Brybil)		

REVISION LOG

Version #	Date	Revised By	Approved By	Revised Section
0	14 July 2020	Stephanie Murphy, M.Sc., R.P.Bio.	Allegra Hollingbury, M.Sc., P.Eng.	

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CONTENTS

Appendices

1.0 INTRODUCTION

This report covers all activities between June 1 and June 30, 2020. During this period works have been taking place at River Road West, River Road East, and the E01 Detour. For the purposes of this report, the following areas shall be defined as:

River Road West = Portion of River Road West of Highway 17 (Include L250, L275, L325, L350, part of L375)
River Road East = Portion of River Road West of Highway 17 (Includes L450, L475, part of L375).
E01 Detour = Portion of L910

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

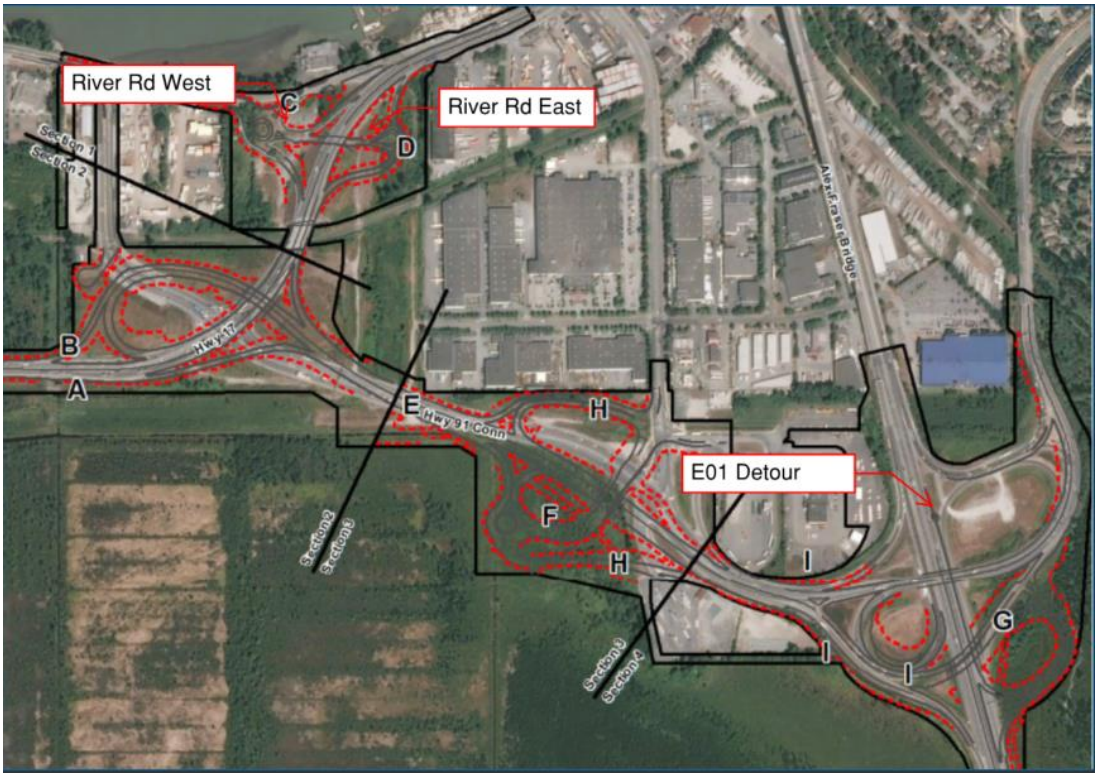


Figure 1: Approximate Work Area Locations

2.0 CONSTRUCTION ACTIVITIES

2.1 Activities this Period

The following works took place within Section 1 in June:

River Road West:

- clearing, grubbing, stripping, asphalt removal and placement of embankment fill (preload) (Photograph 1);
- dewatering and infilling River Road ditch;
- compaction testing;

- culvert removal and replacement, including backfilling and compaction (completed in isolation with residual ditches dewatered with pumps).

River Road East:

- clearing, grubbing, placement of sand and gravel preload outside of the wetland area, during nightshifts;
- survey works and hydrovac locates completed during the day;
- Mid-June sand placement temporarily put on hold;

The following works took place in Section 4 in June:

E01 Detour:

- Pre-construction wildlife survey completed;
- Removal of three trees and Alex Fraser Bridge signage, including concrete base;
- Construction for detour lane, shoulder widening, and electrical relocations ongoing.

2.2 Upcoming Activities

Along the majority of River Road that falls within the project limits, a watermain will be installed and is tentatively scheduled for mid-July. Dike Maintenance Act Approval was received 23 June for this work. Upon completion of the watermain, at River Rd West, works will include placement of the balance of embankment fill, placement of preload and construction of a truck turn around lane. [redacted] At River Rd East, embankment fill will continue outside of Site D wetland area. The balance of the embankment and preload fills will commence after the Section 11 WSA permit for Site D is received (estimated approval date 15 July 2020). At the E01 detour, construction will continue including excavation and compaction. At the L575, clearing grubbing and stripping is scheduled to commence in the salvaged areas in mid-July.

3.0 ENVIRONMENTAL ISSUES

3.1 Environmental Incidents

No Pacific Gateway Contractors (PGC) Environmental Incidents occurred during the reporting period; however, a near miss was documented during the night shift on 16 June 2020. PGC indicated that a hydraulic hose on the drum roller VC005 ruptured. A drip tray was placed beneath the equipment immediately preventing hydraulic fuel from making contact with the sand preload. All spill volumes were captured in the drip tray and collected with absorbent pads which were bagged and removed from site (to be collected by the PC service provider). The drum roller has since been repaired. PGC keeps a record of daily equipment inspection reports and attributes the spill to unforeseen circumstances (and not maintenance issues).

Table 1: Environmental Incident Report Tracking

EIR #	Date	Location	Reported By	Notification Submitted	Description	Open/ Closed

External Incidents

There were no external incidents during the reporting period.

3.2 Non-Compliance

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

Table 2: 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

Ongoing monitoring is being conducted at a potential track out a River Road East and West. Rock access pads will be installed if required (Table 3).

Table 3: Environmental Issues Tracking

Date	Environmental Issue or Required Action	Corrective Action	Projected Closure Date	Open/ Closed	Comments
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.
25 June	Minor dust at E01 Detour	Area watered to suppress dust	25 June	Closed	Dust suppression ongoing.
25 June	Potential track out at River Road East and West	Install rock access pad	Monitored	Open	Ongoing monitoring performed. Pads will be installed if required.

4.0 ENVIRONMENTAL MONITORING AND INSPECTION RESULTS

The PGC Environmental Manager was present between 1 and 31 June 2020 to monitor and inspect Project activities during construction. Construction activities are guided by the environmental requirements outlined in the Construction Environmental Management Plan (CEMP) and Environmental Work Plans (EWPs) developed in accordance with the Environmental Assessment Certificate (EAC) and applicable permits, approvals and/or authorizations. In additional to daily monitoring performed by PGC, weekly monitoring is conducted by McElhanney's Environmental Monitor (EM).

McElhanney's EM visited the site on 11, 19 and 25 June 2020 to measure compliance with the CEMP. The McElhanney EM has scheduled a weekly visit on 3 July; however, two separate weekly reports will be completed to delineate June and July to fulfill monthly reporting requirements. As such, McElhanney did not visit the site on 29/30 June 2020, which is solely based on observations provided by PGC.

The Contractor met with McElhanney and the environmental representatives from PGC on 11 and 19 June 2020 to complete a tailgate (outlining safety hazards) and to discuss works which had been completed during the week.

McElhanney met with environmental representatives from PGC on 25 June 2020 to discuss observations which had been recorded during the field visit.

4.1 Air Quality and Dust Control

High rainfall in June served to minimize dust generation. Also, working surfaces (generally covered in sand) were being routinely wetted for compaction purposes which dually served as dust control. Throughout the month equipment was observed to maintain reduced speeds and idle equipment was turned off and parked when not in use.

A large water receptacle had been delivered to the E01 Detour in Section 4 for dust suppression. During the field visit on 25 June 2020 the laydown area near the E01 Detour was dry and generating minor dust when subjected to vehicular traffic (Photograph 2). This was also noted by an environmental representative from PGC on 26 June 2020 who spoke with the foreman about increasing dust suppression efforts.

PGC indicated that dust suppression activities have increased (particularly at the E01 Detour) especially during periods of drier weather.

4.2 Noise and Vibration Management

PGC conducted additional noise data collection on 25 June 2020 as traffic volumes have increased as Covid-19 restrictions have been eased or otherwise lifted. Results were similar to the baseline noise data collected on 25 May 2020 at these two locations (Table 4).

Table 4: 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)
11:33:47	1	River Road West (Section 1)	Pedestrians, vehicles, active site operations at River Rd. W	49.152693 LAT - 122.955650 LONG	59.0	54.2	75.0	56.4	52.0	69.9
12:15:43	6	Nordel Way North (Section 4)	Vehicles, pedestrians, electric bike, active site operations at E01 Detour	49.148096 LAT - 122.936407 LONG	60.9	56.4	70.5	59.1	53.0	71.6

4.3 Erosion and Sediment Control

Sediment control fences had been installed at River Road West (Photograph 3), River Road East, and the E01 Detour (Photograph 4) to prevent sediment run-off from clearing and grubbing activities in addition to containment of preload. Additional silt fencing was also erected around stockpiles which had been placed in the middle of the roundabout at the E01 Detour. Approved inlet protection had been installed in catch basins on River Road West adjacent to the active work areas. Straw wattle check dams had been placed across a smaller perpendicular ditch which drained into the main ditch along River Road West.

River Road West, Highway 17 (near access point to River Road East), and the Highway 91 off ramp (near the E01 Detour) were all observed in clean condition during weekly field visits performed by the McElhanney EM.

Silt fencing is inspected daily and any damage is generally mended immediately by the Contractor. On 25 June 2020 McElhanney noticed a small portion of silt fencing along River Road West along the preload had backfilled with sand and was overtopping (Photograph 3). The Contractor was aware of this deficiency and the PGC confirmed this item had been rectified as of 30 June 2020.

At one-point pumps were displacing residual water from the roadside ditch along River Road West and dewatering into the sand preload. Although erosion was not considered to be an issue, the outlet was discharging onto polyethylene to prevent scour.

Proper construction access pads were not observed and may be warranted to prevent track out onto paved surfaces, particularly at River Road East where trucking accesses from Highway 17 (Photograph 5). Representatives from PGC indicated that this area would be routinely monitored to assess whether a rock access pad is required (there have been no issues to date).

Regular and reasonable cleaning of roads is conducted. Construction personal actively sweep paved surfaces throughout the day to prevent soil migration and mitigate potential liabilities to passing vehicular traffic.

4.4 Water Quality Management

The ditch segments along River Road West were salvaged and are contained with inflatable test balls to prevent the re-entry of fish. Infilling and installation of the temporary culverts at River Road West Section 1 has commenced. The results of background water quality collected by PGC from Silda Ditch to the Fraser River over the course of several days is provided in Table 5.

Table 5: Background Water Quality

Site	Date	Time	Water Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
Silda Ditch US	18/6/20	13:59	23.1	6.34	0.84	7.36	0.41	10.9	Low tide
Silda Ditch DS	18/6/20	14:09	23.5	6.95	0.82	7.38	0.41	11.3	Low tide
Fraser River Inlet	18/6/20	14:27	15.4	9.47	0.16	7.72	0.09	65.6	Low tide
Silda Ditch US	24/6/20	9:21	17.3	4.69	0.66	7.32	0.34	20.2	High tide
Silda Ditch MS	24/6/20	9:32	17.2	4.52	0.71	7.29	0.36	17.9	High tide
Silda Ditch DS	24/6/20	9:45	16.8	5.52	0.61	7.35	0.29	23.9	High tide
Silda Ditch US	29/6/20	13:19	18.8	5.53	0.99	7.34	0.40	6.67	High tide
Silda Ditch MS	29/6/20	13:35	22.2	5.83	1.00	7.39	0.32	11.0	High tide
Silda Ditch DS	29/6/20	13:03	19.4	5.77	1.09	7.54	0.30	15.9	High tide
Fraser River Inlet	29/6/20	13:51	16.0	9.14	0.11	8.19	0.15	103.0	High tide

4.5 Wildlife and Habitat Management

Salvages

Wildlife salvages are conducted for amphibians, small mammals, and identified species at risk where suitable habitat overlaps with the project footprint (Areas C, D and E)[1]. Salvage results are provided in Appendix 2.

Nest Surveys

The American robin (*Turdus migratorius*) observed in the nest which had been identified near River Road West in the May monthly report has since fledged and vacated the nest. The nest was empty aside from some eggshells. The buffer has since been removed.

During the preconstruction survey for the E01 Detour an inactive nest was identified by Brybil in a tree which had been designated for removal. An environmental representative from PGC was present during the removal and was able to confirm these findings. No other nests were observed near the E01 Detour during weekly field inspections by McElhanney.

Debris stockpiles have been routinely covered (particularly over the weekend when the sites are inactive) to deter nesting activity (Photograph 6).

Wildlife Observations

Daily observations are carried out by PGC staff to ensure that no wildlife are trapped, harmed, or harassed in work site areas. Any wildlife observed on site is recorded (Table 6). Environmental representatives from PGC have provided all Foremen with wildlife sighting cards to make reporting easier.

A coyote (*Canis latrans*) has been observed at River Road East and River Road West. Coyote tracks were also observed throughout Site C. American beaver (*Castor canadensis*) sign (tracks and severed shrubs) were observed in low lying areas adjacent to remaining ditches. Unidentified wildlife tracks were observed in the sand preload at Site C in Section 1.

Table 6: Wildlife Observations

Species	Date	Male / Female	Location
Coyote (*Canis latrans*)	5-Jun-20	Unknown	Site D
Beaver (*Castor canadensis*)	8-Jun-20	Unknown	Site D
Garter snake (*Thamnophis sirtalis*)	9-Jun-20	Unknown	Site D
Garter snake (*T. sirtalis*) x 2	10-Jun-20	Unknown	Site D
Garter snake (*T. sirtalis*) x 3	19-Jun-20	Unknown	Site D
Garter snake (*T. sirtalis*) x 15	22-Jun-20	Unknown	Site D

[1] Location of wildlife salvages provided in the May Monthly Environmental Report

4.6 Vegetation Management

Occurrences of Japanese knotweed (*Fallopia japonica*) were discoloured following foliar treatment (Photograph 7). No additional growth or occurrences were identified. Diamond Head, the vegetation management contractor, inspected the treated plants on 8 June 2020 and recommended the removal of the roots and potentially contaminated seed bank. PGC is developing a plan based on the CEMP for removal methods and disposal options within the project footprint. An AQP will be onsite during the removal of the plants to inspect that all knotweed and root structure is removed and to document work procedures implemented to prevent dispersal.

4.7 Fisheries Habitat Management

No fish salvages were conducted in June. Results for fish salvages conducted in May are provided in Appendix 3.

4.8 [redacted]

[redacted]

4.9 Construction and Hazardous Waste Management

Yellow wheelie bins are available at River Road East and River Road West and mobile equipment are equipped with spill kits. Empty 45-gallon drums have also been delivered to hold any hazardous wastes which may be a generated because of construction activities.

A portable toilet was delivered to river Road East (which was inactive, but available for night work only) and had initially been placed near Silda Ditch. A more suitable location was identified and it was moved to the new location later that month.

Trash and recycling bins at River Road West were being emptied at the end of each workday to avoid attracting wildlife. A trash bin at River Rd East (night works) was full but not removed from site. A heavy rock had been placed on the lid. Following this, site supervisors were reminded that all trash is to be removed from site at the end of the shift. Wastes are now being removed at all locations at the end of each workday to avoid attracting wildlife.

A cigarette butt receptacle was delivered to the E01 Detour (Photograph 8). Workers were instructed to use these receptacles which will also mitigate the risk of accidental grass fires as temperatures increase.

4.10 Spill Management and Emergency Response

All refueling of equipment is done on flat surfaces away from water bodies, with a drip tray in place and special care is taken to prevent spillages to the environment. All equipment and vehicles on site are inspected daily to ensure that there are no leaks or defects. No fuel is stored on site.

At River Road West, Section 1 all fuel sources had been placed within secondary containment with drip trays beneath idle or parked equipment. Additional drip trays were ordered and received for placement under inactive vehicles in Site D. Although minor, a small quantity of grease was observed on the ground beneath parked equipment at Site D. Upon further investigation some joints and components had been over greased and were recommended to be cleaned.

PGC has retained Tervita for hazardous waste management and emergency spills. No Emergency Responses were recorded during this reporting period (with the exception of the near miss described in Section 3.1).

4.11 Contaminated Sites Management

The Remediation Plan that included Screening Level Risk Assessments were prepared for Sections 1 and 2 (excluding Sunbury Mounds former abandonment permit area) in June. Risk control recommendations in the form of Performance Verification Plans were included and packaged together with supplemental forms for the Approval in Principle (AiP) application documents; which will be the primary legal instrument used for the management of contaminated soils in the project area. The AiP Application with all supplemental documentation has been submitted for review to PGC. Core6, the Province's consultant, has assumed responsibility for integrating the Sunbury Mounds Area with the AiP application.

The Sunbury Mounds Area Surface Water and Groundwater Monitoring Program was finalized by addressing final comments by The Province and their environmental consultant, Core6.

5.0 ENVIRONMENTAL PERMITS

5.1 Status Update

The DFO Approval for Sites A (20-HPAC-00095), B, D & E (20-HPAC-00694) (Sections 1 and 2) was received on 17 June 2020.

Additional information was provided to FLNRORD on 8 and 15 June 2020 for the Section 11 *Water Sustainability Act* Approval Applications. An updated Permit Tracker is provided in Appendix 4.

5.2 Permit Conditions Tracking

Specific permit conditions will be added to this report to track compliance with all permit conditions.

5.3 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 5.

6.0 SITE PHOTOS

Photo 1. Location: Looking southeast towards Site C from River Road West. Description: Importation of sand preload had continued at Site C Section 1.

Photo 2. Location: Looking at the laydown area at the E01 Detour. Description: Vehicular traffic was generating minor quantities of dust.

Photo 3. Location: Looking at sediment fencing along the preload at River Road West. Description: Sand has built up behind a few segments of sediment fencing.

Photo 4. Location: west along the Hwy 91 off ramp (towards Hwy 91) Description: Sediment fencing had been installed near the E01 Detour.

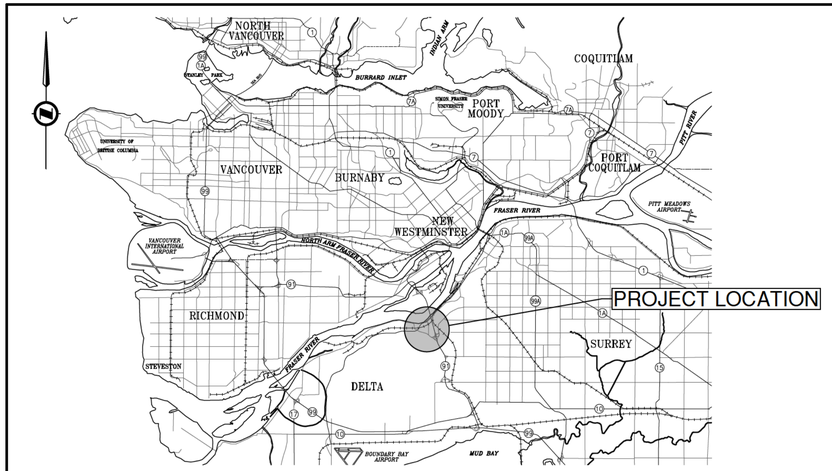
Photo 5. Location: Looking northeast towards Highway 17 from River Road East. Description: No construction access pads were observed during the field visit.

Photo 6. Location: Looking at a covered debris pile at River Road West. Description: Debris piles had been covered to deter nesting activity.

Photo 7. Location: Looking south towards Site C Section 1 from River Road West. Description: Japanese knotweed appeared stressed following chemical treatment.

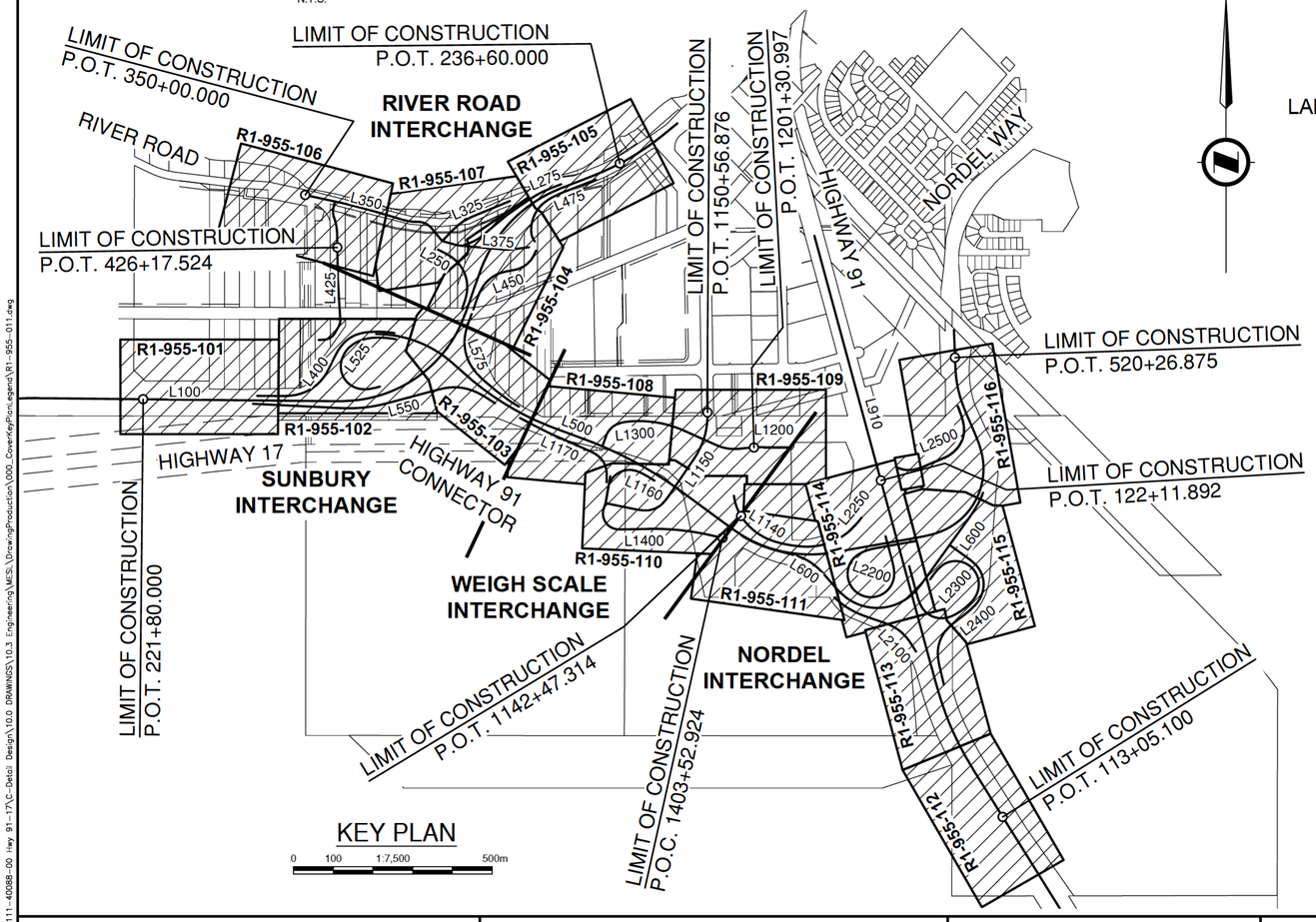
Photo 8. Location: Looking west towards Highway 91. Description: A cigarette receptacle had been delivered near the E01 Detour and a designated smoking area had been established.

APPENDIX 1 KEY PLAN



LOCATION MAP

N.T.S.



KEY PLAN

0 100 1:7,500 500m

BRITISH COLUMBIA

Ministry of Transportation and Infrastructure

PROJECT NO. 08900

HIGHWAY 91/17 UPGRADE PROJECT DESIGN BUILD

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

1.480 km

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

0.907 km

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

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

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

ROADWAY DESIGN

SCALE AS SHOWN

CAD FILENAME R1-955-011

PLOT DATE 2020-02-14

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

Pacific Gateway Constructors

McElhanney

SEAL

DATE

BRITISH COLUMBIA

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

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

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

HIGHWAY 91/17 UPGRADE PROJECT

KEY PLAN

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

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

APPENDIX 2 WILDLIFE SALVAGE RESULTS

Table 1 Wildlife Salvage Results – Area C1

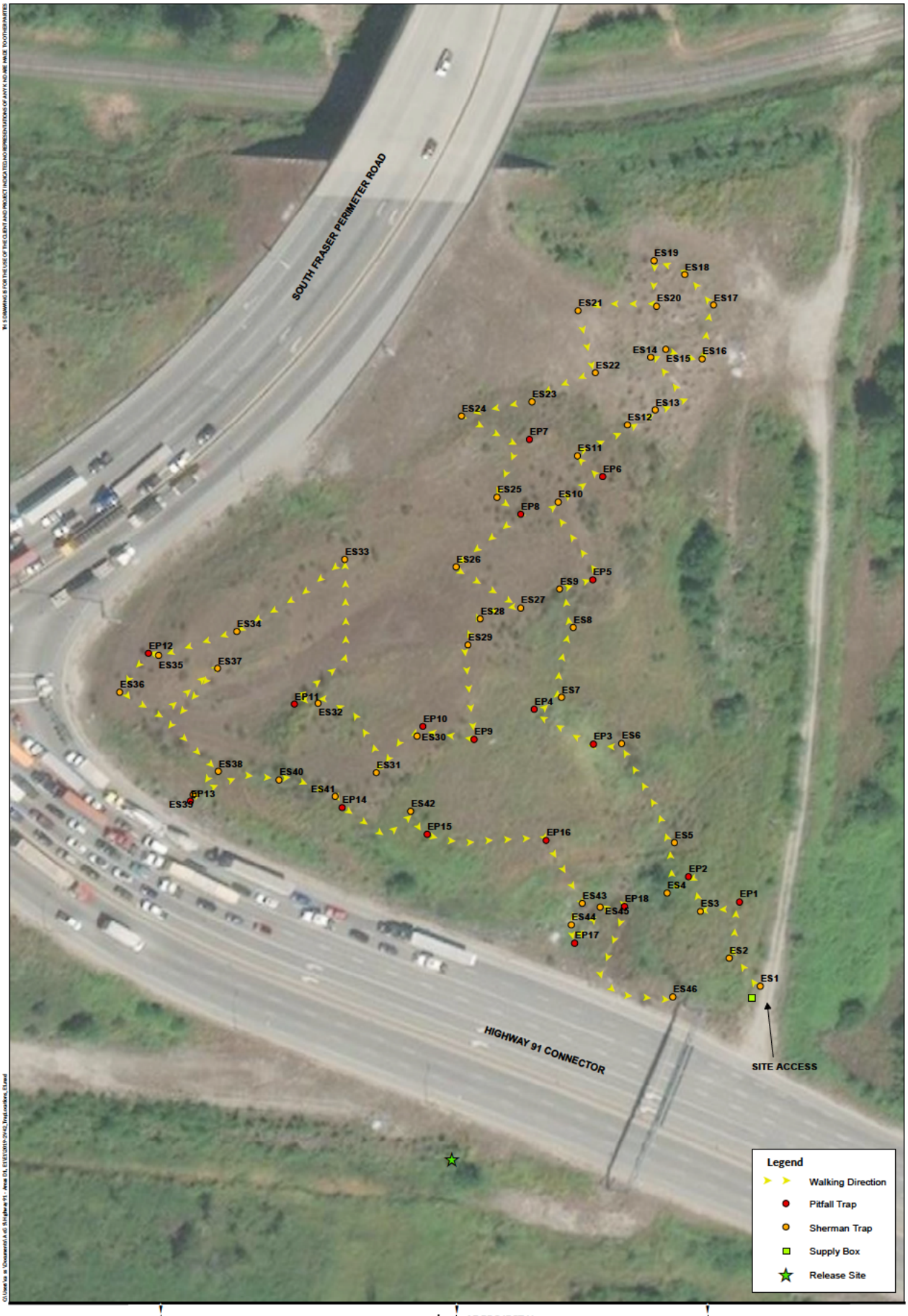
Day	Time (hr)	Trap	Species	Body length (mm)	Total length (mm)	Weight (g)	Notes	Initials
30-Apr-20	6:35	P1	Common shrew	60	100		Relocated	PM, NS
30-Apr-20	7:13	P14	Common shrew	45	80		Relocated	PM, NS
30-Apr-20	7:31	P22	Common shrew	50	100		Distinct next fringe and dark fringes along the thighs and back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

Table 2 Wildlife Salvage Results – Area D1

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

Table 3 Wildlife Salvage Results – Area E1

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



Associated Environmental

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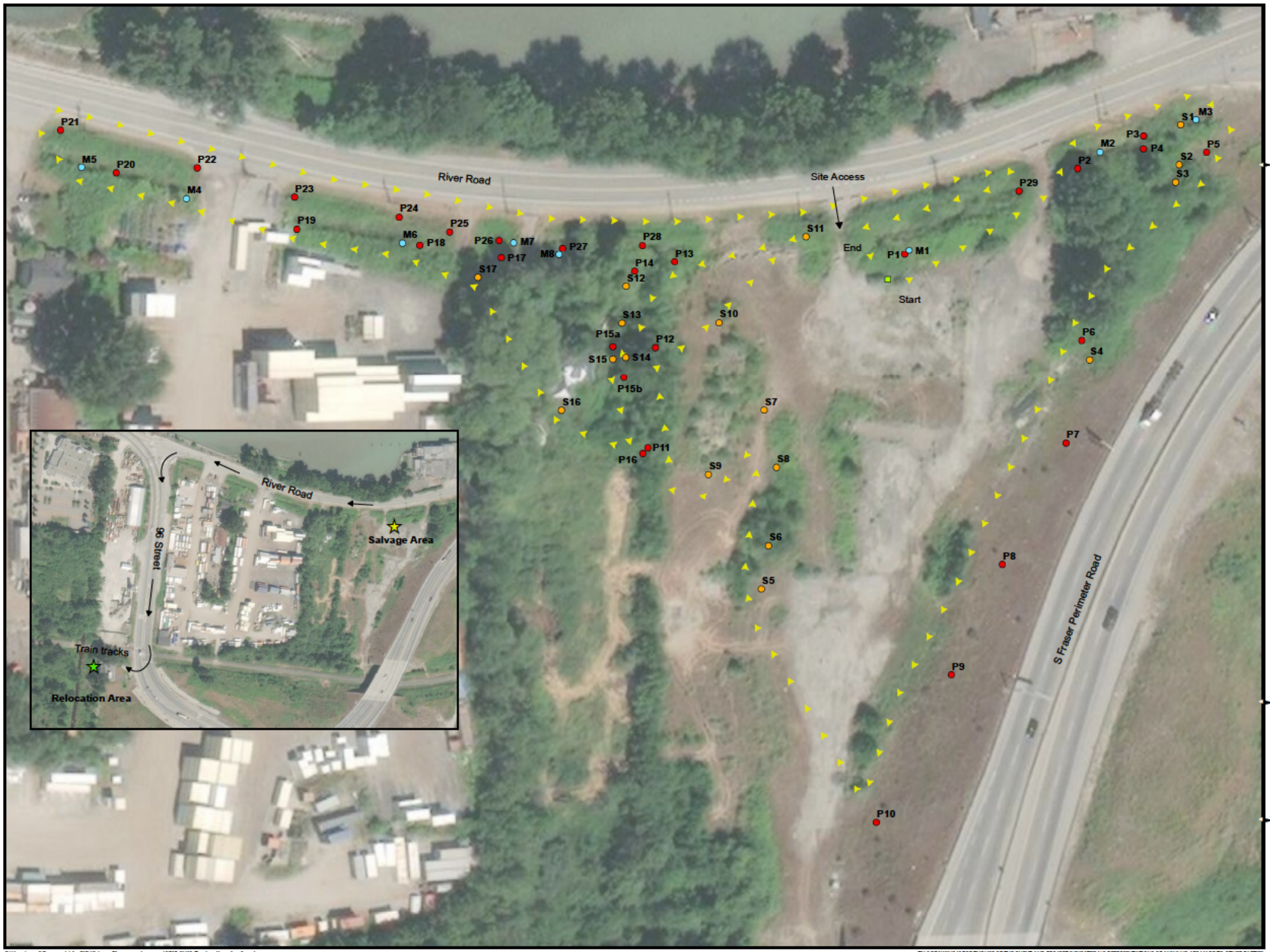
ESRI World Imagery: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, GP, swisstopo, and the GIS User Community.

AE PROJECT No.	2020-2V42
DATE	2020 MAY
SCALE*	1:850
COORD. SYSTEM	NAD 1983 UTM Zone 11N
REV	01
DESCRIPTION	ISSUED FOR INFORMATION
DRAWN BY	JC
CHECKED BY	NS

FIGURE 3
TRAP LOCATIONS - AREA E1

Ministry of Transportation and Infrastructure
Highway 91/17 Upgrades

Small Mammal Salvage



Associated Environmental

FIGURE 1
TRAP LOCATIONS

Ministry of Transportation and Infrastructure
Highway 91/17 Upgrades

Small Mammal Salvage - Site 1

AE PROJECT No.	2019-2V42
DATE	2020 APRIL
SCALE*	1:1,008
COORD. SYSTEM	NAD 1983 UTM Zone 10N
REV	01
DESCRIPTION	ISSUED FOR INFORMATION
DRAWN BY	JC
CHECKED BY	NS

Associated Environmental

0 5 10 15 20 25 m

ESRI World Imagery: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, GP, swisstopo, and the GIS User Community.

AE PROJECT No.	2020-2V42
DATE	2020 MAY
SCALE*	1:500
COORD. SYSTEM	NAD 1983 UTM Zone 11N
REV	01
DESCRIPTION	ISSUED FOR INFORMATION
DRAWN BY	JC
CHECKED BY	NS

FIGURE 2
TRAP LOCATIONS - AREA D1

Ministry of Transportation and Infrastructure
Highway 91/17 Upgrades

Small Mammal Salvage

APPENDIX 3 FISH SALVAGE RESULTS FOR MAY 2020

Location: Ditch along River Road in Area C

Method	Date start	Time start	Date end	Time end	Species	Number Caught
Minnow trap*	5/19/2020	16:00	5/20/2020	11:00	Coho salmon	1
Minnow trap*	5/19/2020	16:00	5/20/2020	11:00	Sculpin	1
Minnow trap*	5/19/2020	16:00	5/20/2020	11:00	Three-spined stickleback	603
Electrofisher Pass 1	5/20/2020	12:45	5/20/2020	14:15	Coho salmon	6
Electrofisher Pass 1	5/20/2020	12:45	5/20/2020	14:15	Carp	1
Electrofisher Pass 1	5/20/2020	12:45	5/20/2020	14:15	Three-spined stickleback	161
Electrofisher Pass 2	5/20/2020	14:30	5/20/2020	15:45	Three-spined stickleback	136
Electrofisher Pass 3	5/20/2020	16:00	5/20/2020	17:15	Sculpin	1
Electrofisher Pass 3	5/20/2020	16:00	5/20/2020	17:15	Three-spined stickleback	75

*25 traps installed along the ditch

APPENDIX 4 PERMIT TRACKER

McElhanney

Env ronmen al Perm ts and Approvals ack ng Sheet: For nformation Only

Rev A

[illegible]	[illegible]	[illegible]	[illegible]	W k	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
										• W A •						
1	A	2	96 h St eet D tch	Ne ma ne out all ou h o Hwy 17	Ob a ned	14- eb-20	20- eb-2020	21- eb-2020	45	100513698	6-Ap -2020	2-May-2020	100513698	8-Ap -20	May 02 2020-May 02 2021	P ease note that the e s a late s May 2 2020
2	C	1	R ve Road D tch	Cu ve t ns allat ons (350 520)	Ob a ned	14- eb-20	20- eb-2020	21- eb-2020	45	100513698	6-Ap -2020	2-May-2020	100513698	8-Ap -20	May 02 2020-May 02 2021	P ease note that the e s a late s May 2 2020
										• W A A ••						
3	B	2	96 h St eet D tch	Hwy 17 Cu ve t Extens on (300 400)	Unde Regulato y Rev ew - ass gned to a Wate O ce	14- eb-20	20- eb-2020	21- eb-2020	140	100511218	16- ul 2020		2007796			P o ec s e ed o NRORD by he P o nce Ap l 24 2020 B Redding o p ov ded IS Consul at on eco ds Meet ng w th NRORD May 20 2020 Hold le e ssued May 26 2020 and esponded on June 8 2020 Con i mat on o ece pt on June 16 2020 Date extended to uly 16 2020
4	E	2	S de D tch and wetland	Cu ve t Extens on Dere ct ame o Hwy 91C and oad n E	Unde Regulato y Rev ew - ass gned to a Wate O ce	14- eb-20	20- eb-2020	21- eb-2020	140	100511218	16- ul 2020		2007796			P o ec s e ed o NRORD by he P o nce Ap l 24 2020 B Redding o p ov ded IS Consul at on eco ds Meet ng w th NRORD May 20 2020 Hold le e ssued May 26 2020 and esponded on June 8 2020 Con i mat on o ece pt on June 16 2020 Date extended to uly 16 2020
5	D	1	S de D tch ve land	Roundabout and Ramp Ex ens on (375 475 450)	Unde Regulato y Rev ew - ass gned to a Wate O ce	21- eb-20	20- eb-2020	21- eb-2020	140	100511218	16- ul 2020		2007796			P o ec s e ed o NRORD by he P o nce Ap l 24 2020 B Redding o p ov ded IS Consul at on eco ds Meet ng w th NRORD May 20 2020 Hold le e ssued May 26 2020 and esponded on June 8 2020 Con i mat on o ece pt on June 16 2020 Date extended to uly 16 2020
6		3	EW Bu ns Bog Pe mete D tch	Back ng o he D tch oundabout and new oad n Bog (1400 1350 1160 1170)	Unde Regulato y Rev ew - a s gned to a Wate O ce	21- eb-20	26- eb-2020	28- eb-2020	140	100511988	17- ul 2020		2007783			P o ec s e ed o NRORD by he P o nce Ap l 24 2020 B Redding o p ov ded IS Consul at on eco ds Meet ng w th NRORD May 20 2020 Hold le e ssued May 26 2020 and esponded on June 8 2020 Con i mat on o ece pt on June 16 2020
7	H	3	West D tch C239 and We gh Scale Road	C239 O set d tches and d ch and t e to S de D tch and oad (1300)	Unde Regulato y Rev ew - ass gned to a Wate O ce	11-Ma -20	16-Ma -2020	17-Ma -2020	140	100512729	4-Aug 2020		2007798			P o ec s e ed o NRORD by he P o nce Ap l 24 2020 B Redding o p ov ded IS Consul at on eco ds Meet ng w th NRORD May 20 2020 Hold le e ssued May 26 2020 and esponded on June 8 2020 Con i mat on o ece pt on June 16 2020
8	I	4	No del D tch West D tch and unnamed d tche by C239	Road and d tch e ocation (SW co ne o No de Inte change 2100 2200 2260)	Unde Regulato y Rev ew - a s gned to a Wate O ce	5-Ma -20	9-Ma -2020	11-Ma -2020	140	100512676	29- ul 2020		2007770			P o ec s e ed o NRORD by he P o nce Ap l 24 2020 B Redding o p ov ded IS Consul at on eco ds Meet ng w th NRORD May 20 2020 Hold le e ssued May 26 2020 and esponded on June 8 2020 Con i mat on o ece pt on June 16 2020
9	G	4	Delta Natu e Rese ve	Road and d tch e ocation (SE co ne o No del nte change 2300 2400)	Unde Regulato y Rev ew - a s gned to a Wate O ce	21- eb-20	26- eb-2020	28- eb-2020	140	100511991	27- ul 2020		2007749			P o ec s e ed o NRORD by he P o nce Ap l 24 2020 B Redding o p ov ded IS Consul at on eco ds Meet ng w th NRORD May 20 2020 Hold le e ssued May 26 2020 and esponded on June 8 2020 Con i mat on o ece pt on June 16 2020
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										- • •• •••						
11	A	2	96th Street D tch	Ne ma ne out all ou h o Hwy 17	e te to Avo d and M t gate	14- eb-20	20- eb-2020	21- eb-2020	60	20-HPAC-00098	21-Ap -2020	19- un-2020	20-HPAC-00098	17-Jun-20	Dec-23	D O has dete m ned that the p oject subm ss on equ es a mo e deta led ev ew W not be ev ew ng as a ely they cons de th s a low sk p o ect Meet ng w th D O on May 7 2020 add t onal n o p ov ded by May 22
12	B	2	96th Street D tch	Hwy 17 Cu ve t Extens on (300 400)	e te to Avo d and M t gate	14- eb-20	20- eb-2020	21- eb-2020	60	20-HPAC-00098	21-Ap -2020	19- un-2020	20-HPAC-00098	17-Jun-20	Dec-23	D O has dete m ned that the p oject subm ss on equ es a mo e deta led ev ew W not be ev ew ng as a ely they cons de th s a low sk p o ect Meet ng w th D O on May 7 2020 add t onal n o p ov ded by May 22
13	C	1	R ve Road D tch	Cu ve t ns allat ons	e te to Avo d and M t gate	14- eb-20	20- eb-2020	21- eb-2020	60	20-HPAC-00098	21-Ap -2020	29-Ma -2020	20-HPAC-00098	18-May-20	31-Jan-21	D O has dete m ned that the p oject subm ss on equ es a mo e deta led ev ew W not be ev ew ng as a ely they cons de th s a low sk p o ect Rev sed app oval date based on D O meet ng May 7 2020 Rece ved ette to Avo d and M t gate
14		1	S de D tch - emoved o D O Rev ew	—		—	—	—	—	—	—	—	—			
15	E	2	S de D tch	Cu ve t Extens on Dere ct ame o Hwy 91C	e te to Avo d and M t gate	14- eb-20	20- eb-2020	21- eb-2020	60	20-HPAC-00098	21-Ap -2020	19- un-2020	20-HPAC-00098	17 Jun 20	Dec-23	D O has dete m ned that the p oject subm ss on equ es a mo e deta led ev ew W not be ev ew ng as a ely they cons de th s a low sk p o ect Meet ng w th D O on May 7 2020 add t onal n o p ov ded by May 22 Rece ved ette o Avo d and M t gate
16		3	EW Bu ns Bog Pe mete D tch	Back ng o he D tch oundabout and new oad n Bog (1400 1350 1160 1170)	e te to Avo d and M t gate	21- eb-20	26- eb-2020	28- eb-2020	60	20-HPAC-00303	28-Ap -2020	NA	20-HPAC-00303	2-Ju -20	Dec-23	D O has dete m ned that the p oject subm ss on equ es a mo e deta led ev ew W not be ev ew ng as a ely they cons de th s a low sk p o ect Meet ng w th D O on May 7 2020 add t onal n o p ov ded by May 22 Rece ved ette o Avo d and M t gate
17	H	3	West D tch C239 and We gh Scale Road	C239 O set d tches and d ch and t e to S de D tch and oad (1300)	Unde Regulato y Rev ew	11-Ma -20	16-Ma -2020	17-Ma -2020	60	20-HPAC-00360	18-May-2020	NA	20-HPAC-00360			D O has dete m ned that the p oject subm ss on equ es a mo e deta led ev ew W not be ev ew ng as a ely they cons de th s a low sk p o ect Meet ng w th D O on May 7 2020 add t onal n o p ov ded by May 22
18	I	4	No del D tch West D tch and unnamed d tche by C239	Road and d tch e ocation (SW co ne o No de Inte change 2100 2200 2260)	Unde Regulato y Rev ew	28- eb-20	9-Ma -2020	11-Ma -2020	60	20-HPAC-00349	19-May-2020	NA	20-HPAC-00349			D O has dete m ned that the p oject subm ss on equ es a mo e deta led ev ew W not be ev ew ng as a ely they cons de th s a low sk p o ect Meet ng w th D O on May 7 2020 add t onal n o p ov ded by May 22
19	G	4	Delta Natu e Rese ve	Road and d tch e ocation (SE co ne o No del nte change 2300 2400)	Unde Regulato y Rev ew	21- eb-20	26- eb-2020	28- eb-2020	60	20-HPAC-00304	28-Ap -2020	NA	20-HPAC-00304			D O has dete m ned that the p oject subm ss on equ es a mo e deta led ev ew W not be ev ew ng as a ely they cons de th s a low sk p o ect Meet ng w th D O on May 7 2020 add t onal n o p ov ded by May 22
										-A ••						
20	A	2	96 h Street D tch	Ne ma ne out all ou h o Hwy 17	Pend ng outcome o D O Request o Rev ew No Autho zat on equ ed				60	NA	NA		NA	NA	NA	Rece ved ette o Avo d and M t gate on June 17 2020 not need o an Autho zat on
21	B	2	96 h Street D tch	Hwy 17 Cu ve t Extens on (300 400)	Pend ng outcome o D O Request o Rev ew No Autho zat on equ ed				60	NA	NA		NA	NA	NA	Rece ved ette o Avo d and M t gate on June 17 2020 not need o an Autho zat on
22	C	2	R ve Road D tch	Cu ve t ns allat ons	Pend ng outcome o D O Request o Rev ew No Autho zat on equ ed				60	NA	NA		NA	NA	NA	Rece ved ette o Avo d and M t gate on May 25 2020 not need o an Autho zat on
23		1	—	—	—				—	—	—		—	—	—	
24	E	2	S de D tch	Cu ve t Extens on Dere ct ame o Hwy 91C	Pend ng outcome o D O Request o Rev ew No Autho zat on equ ed				60	NA	NA		NA	NA	NA	Rece ved ette to Avo d and M t gate on June 17 2020 not need o an Autho zat on
25		3	EW Bu ns Bog Pe mete D tch	Back ng o he D tch oundabout and new oad n Bog (1400 1350 1160 1170)	Pend ng outcome o D O Request o Rev ew				60							
26	H	3	West D tch C239 and We gh Scale Road	C239 O set d tches and d ch and t e to S de D tch and oad (1300)	Pend ng outcome o D O Request o Rev ew				60							
27	I	4	No del D tch West D tch and unnamed d tche by C239	Road and d tch e ocation (SW co ne o No de Inte change 2100 2200 2260)	Pend ng outcome o D O Request o Rev ew				60							
28	G	4	Delta Natu e Rese ve	Road and d tch e ocation (SE co ne o No del nte change 2300 2400)	Pend ng outcome o D O Request o Rev ew				60							
										[illegible]						
29	A	2	96 h St eet D tch	Ne ma ne out all ou h o Hwy 17	Obta ned	27- an		30 Jan 2020	14	100508127 NRORD	13- eb-2020	NA	SU20 601411 SHAR 51 2020	24- eb-20	NRORD O O Sept 30 2022	Subm t e unds he NRORD ontCounts et ... al u ng A account and e ed to D O e end
30	B	2	96 h St eet D tch	Hwy 17 Cu ve t Extens on (300 400)	Obta ned	27- an		30 Jan 2020	14	100508127 NRORD	13- eb-2020	NA	SU20 601411 SHAR 51 2020	24- eb-20	NRORD O O Sept 30 2022	Subm t e unds he NRORD ontCounts et ... al u ng A account and e ed to D O e end
31	C	2	R ve Road D tch	Cu ve t ns allat ons	Obta ned	27- an		30 Jan 2020	14	100508127 NRORD	13- eb-2020	NA	SU20 601411 SHAR 51 2020	24- eb-20	NRORD O O Sept 30 2022	Subm t e unds he NRORD ontCounts et ... al u ng A account and e ed to D O e end
32		1	—	—	—	—		—	—	—	—					—
33	E	2	S de D tch	Cu ve t Extens on Dere ct ame o Hwy 91C	Obta ned	27- an		30 Jan 2020	14	100508127 NRORD	13- eb-2020	NA	SU20 601411 SHAR 51 2020	24- eb-20	NRORD O O Sept 30 2022	Subm t e unds he NRORD ontCounts et ... al u ng A account and e ed to D O e end
34		3	EW Bu ns Bog Pe mete D tch	Back ng o he D tch oundabout and new oad n Bog (1400 1350 1160 1170)	Obta ned	27- an		30 Jan 2020	14	100508127 NRORD	13- eb-2020	NA	SU20 601411 SHAR 51 2020	24- eb-20	NRORD O O Sept 30 2022	Subm t e unds he NRORD ontCounts et ... al u ng A account and e ed to D O e end
35	H	3	West D tch C239 and We gh Scale Road	C239 O set d tches and d ch and t e to S de D tch and oad (1300)	Obta ned	27- an		30 Jan 2020	14	100508127 NRORD	13- eb-2020	NA	SU20 601411 SHAR 51 2020	24- eb-20	NRORD O O Sept 30 2022	Subm t e unds he NRORD ontCounts et ... al u ng A account and e ed to D O e end
36	I	4	No del D tch West D tch and unnamed d tche by C239	Road and d tch e ocation (SW co ne o No de Inte change 2100 2200 2260)	Obta ned	27- an		30 Jan 2020	14	100508127 NRORD	13- eb-2020	NA	SU20 601411 SHAR 51 2020	24- eb-20	NRORD O O Sept 30 2022	Subm t e unds he NRORD ontCounts et ... al u ng A account and e ed to D O e end
37	G	4	Delta Natu e Rese ve	Road and d tch e ocation (SE co ne o No del nte change 2300 2400)	Obta ned	27- an		30 Jan 2020	14	100508127 NRORD	13- eb-2020	NA	SU20 601411 SHAR 51 2020	24- eb-20	NRORD O O Sept 30 2022	Subm t e unds he NRORD ontCounts et ... al u ng A account and e ed to D O e end
										W • ••• • •••						
38	A	2	96 h St eet D tch	Ne ma ne out all ou h o Hwy 17	Obta ned	27- an		30 Jan 2020	60	100508425	29-Ap -2020	NA	SU20 601719	8-Ap -20	6-Ap -21	Subm t e unds he NRORD ontCounts et ... al u ng A account
39	B	2	96 h St eet D tch	Hwy 17 Cu ve t Extens on	Obta ned	27- an		30 Jan 2020	60	100508425	29-Ap -2020	NA	SU20 601719	8-Ap -20	6-Ap -21	Subm t e unds he NRORD ontCounts et ... al u ng A account
40	C	2	R ve Road D tch	Cu ve t ns allat ons	Obta ned	27- an		30 Jan 2020	60	100508425	29-Ap -2020	NA	SU20 601719	8-Ap -20	6-Ap -21	Subm t e unds he NRORD ontCounts et ... al u ng A account
41		1	—	—	—	—		—	—	—	—					—
42	E	2	S de D tch	Cu ve t Extens on Dere ct ame o Hwy 91C	Obta ned	27- an		30 Jan 2020	60	100508425	29-Ap -2020	NA	SU20 601719	8-Ap -20	6-Ap -21	Subm t e unds he NRORD ontCounts et ... al u ng A account
43		3	EW Bu ns Bog Pe mete D tch	Back ng o he D tch oundabout and new oad n Bog (1400 1350 1160 1170)	Obta ned	27- an		30 Jan 2020	60	100508425	29-Ap -2020	NA	SU20 601719	8-Ap -20	6-Ap -21	Subm t e unds he NRORD ontCounts et ... al u ng A account
44	H	3	West D tch C239 and We gh Scale Road	C239 O set d tches and d ch and t e to S de D tch and oad (1300)	Obta ned	27- an		30 Jan 2020	60	100508425	29-Ap -2020	NA	SU20 601719	8-Ap -20	6-Ap -21	Subm t e unds he NRORD ontCounts et ... al u ng A account
45	I	4	No del D tch West D tch and unnamed d tche by C239	Road and d tch e ocation (SW co ne o No de Inte change 2100 2200 2260)	Obta ned	27- an		30 Jan 2020	60	100508425	29-Ap -2020	NA	SU20 601719	8-Ap -20	6-Ap -21	Subm t e unds he NRORD ontCounts et ... al u ng A account
46	G	4	Delta Natu e Rese ve	Road and d tch e ocation (SE co ne o No del nte change 2300 2400)	Obta ned	27- an		30 Jan 2020	60	100508425	29-Ap -2020	NA	SU20 601719	8-Ap -20	6-Ap -21	Subm t e unds he NRORD ontCounts et ... al u ng A account
										• •• T • • •• • • ••• • •						
47		1	Contam nated So l and G oundwate	Segment 1 No th and South					30							
										—						
48		1	—	—					—							
49		1	—	—					—							
50		1	—	—					—							
										• • • • ••• •						
51		1	Contam nated So l and G oundwate	Ut l ty t enches in contam na ed so ls					7							
52		1	Contam nated So l and G oundwate	Contam nated wate management					7							
53		1	Contam nated So l and G oundwate	Sect on 4 Stone column a ea					7							
54		1	Contam nated So l and G oundwate	Change led					7							
55		1	Contam nated So l and G oundwate	Change led					7							
56		1	Contam nated So l and G oundwate	Change led					7							
										A						
57		1	Contam nated So l and G oundwate	Segment 1 and 2		17- un		6-Ju -2020	60		6-Sep 2020					A P and le ed by ENV get in as qu ckly as poss ble
58		1	Contam nated So l and G oundwate	Segment 3 and 4		27-Jul		10-Aug 2020	60		9-Oct 2020					A P and le ed by ENV get in as qu ckly as poss ble
										• •• • ••• • •• • •						
59		1 to 6	CEMP		Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
60		1 to 6	Wo k P ans	Ae chaeolog cal M t gat on Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
61		1 to 6	Wo k P ans	A Qual ty and Dust Cont ol Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
62		1 to 6	Wo k P ans	Change led Management Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
63		1 to 6	Wo k P ans	Const uct on & Hazardous Waste Management Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
64		1 to 6	Wo k P ans	Contam nated S tes Management Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
65		1 to 6	Wo k P ans	Cont actor Wo k a eas and Mob l zat on plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020 upda ed o Ap 17 2020 MoTI comments
66		1 to 6	Wo k P ans	Env ronmental Mon to ing Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
67		1 to 6	Wo k P ans	W ldl fe M t gat on and Compensat on Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
68		1 to 6	Wo k P ans	Health and Sa ety Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
69		1 to 6	Wo k P ans	Invas ve Spec es Management Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
70		1 to 6	Wo k P ans	No se and V b at on Management Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
71		1 to 6	Wo k P ans	So l Management and ... Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
72		1 to 6	Wo k P ans	Su face Wate Qual ty and Sed ment Cont ol Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
73		1 to 6	Wo k P ans	W ldl fe and Hab tat Management Plan	Updated based on P ov nce comments	11-Ma -20	18-Ma -20	20-Ma -20	30	08-7165.0031				27-Ap -20		Updated document Re-Subm tted by Des gn team to he PEC on Ma ch 16 2020
										[redacted]						
74		[redacted]	The P oject NOW	[redacted]	[redacted]	NA	NA	NA	[redacted]						[redacted]	
75		[redacted]	The P oject NOW	[redacted]	[redacted]	NA	NA	[redacted]		[redacted]						
76		[redacted]	The P oject NOW	[redacted]	[redacted]	NA	NA	[redacted]								
77	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	NA	NA	[redacted]	[redacted]	[redacted]						
78		[redacted]	The P oject NOW	[redacted]	[redacted]	NA	NA	[redacted]	[redacted]							
										•• ••• •• • ••						
79			R ve Road D ke	P oposed Wate main at R ve Road	CIV subm tted the pe m t	NA	NA	29-May-20								F Y to o low up on status
										•• • ••						
80			R ve Road	P oposed Wate main at R ve Road	Pe m t to be subm t ed once des gn s app oved by C ty o Delta	NA	NA									

Notes: * Agency app oval t mel nes a e subject to and once a subm ss on has been comp eted h s p oject d t mel nes actua ly obta n ng the app o a s based on h d pa ty ev ews and s out o   he Des gne s cont ol
This ack ng Table w ll be upda ed equen ly when new n o mat on s ava lable om he egulato s
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APPENDIX 5: 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; - Detailed vegetation and wildlife mitigation plans and mitigation monitoring plans; and - Environmental management plans.	Pre-construction, construction	MOTI / Contractor	N/A	
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;	Pre-construction	Contractor	X	

	- 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.				
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; - Monitoring program details; and - Required follow-up actions.	Pre-construction	Contractor	X	
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	Pre-construction; construction	Contractor	X	

	- Identify site specific considerations, where applicable, such as proximity to sensitive environmental or human receptors.				
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	TBD	
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	Pre-construction	Contractor	X	

	out to assess any vibration impacts to buildings and facilities as a result of Project construction.				
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:	Pre-construction; construction	Contractor	X	

	- 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.				
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	All phases	Contractor	X	

	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.				
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	X	
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	Pre-construction	Contractor	X	

	[replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)] which will be finalized in consultation with MoE and EC.				
13.14	Follow the design criteria outlined in the MOT Manual of Aesthetic Design Practice and the MOT Landscape Policy and Design Standards that form the landscape and site restoration design criteria for the Project.	Pre-construction; construction	Contractor	X	
13.15	Use data collected through the MOT administered Wildlife Accident Reporting System to identify areas of increased wildlife collisions and to monitor direct effects on wildlife.	Operations	Contractor	TBD	
13.16	Identify the location of sensitive wildlife habitats, including but not limited to habitat for species at risk, red and blue listed plant communities and high biodiversity habitats, on detailed design drawings in order to avoid or minimize potential effects to these areas.	Pre-construction	Contractor	X	
14.0 Species at Risk					
14.1	Ensure that all reasonable measures are taken to avoid or lessen effects of the Project on listed wildlife species and their critical habitat and that potential effects that could occur are monitored. All mitigation and monitoring measures will be undertaken in a manner that is consistent with applicable recovery strategy and actions plans.	Pre-construction; construction	MoT, contractor	X	
14.2	Undertake a salvage program for Pacific water shrew from, at a minimum, high and moderate-rated habitat adjacent to the SFPR. Other areas potentially requiring salvage will include lower-rated habitat, connected to higher-rated habitat, and will be determined in consultation with MoE and the PWS Recovery Team.	Pre-construction; construction	Contractor	X	
14.3	Consult with MoE regarding the mitigation of potential effects on Pacific water shrew, and take all practical steps to apply the most recent Pacific water shrew best management practices to address potential effects, including identifying additional opportunities to avoid direct effects to areas, designated as critical habitat by the PWS Recovery Team, during design, construction and operation.	Pre-construction; construction	Contractor	TBD	
14.4	Consult with MOE to develop a mitigation and compensation strategy for Pacific water shrew, where opportunities are available, based on habitat quality and connectivity to surrounding habitat. Undertake sampling program, where required, to determine the presence and distribution of Pacific water shrew to support detailed design of mitigation.	Pre-construction; construction	MoT, contractor	TBD	
14.5	Detailed design of wildlife crossing mitigation for southern red-backed vole (RBV) will be conducted assuming the presence of RBV in high and moderate rated habitat identified in the EA. Monitoring of the use of wildlife crossing structures will include provisions for assessing the use of such structures by RBV.	Pre-construction	Contractor	TBD	
14.6	Undertake a review of local museum specimens to confirm the distribution of *Sorex rowheri* within the Lower Fraser Valley. Where possible, use findings to support detailed design of mitigation.	Pre-construction	Contractor	TBD	
14.7	Use information obtained through the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)] to support detailed planning of mitigation to address potential noise, visual and collision effects of the project on barn owl. Undertake long term monitoring of the effectiveness of such mitigation as part of the implementation of the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)].	All phases	Contractor	TBD	
14.8	Use information obtained through the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)] to support detailed planning of mitigation, including pre-construction salvage where appropriate, to	All phases	Contractor	X	

	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)].				
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.	All phases	MoT	TBD	

	- 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.				
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.	Pre-construction, construction	Contractor	N/A	

	Obtain Heritage Conservation Act Section 14 Heritage Investigation Permits and Section 12 Alteration Permits prior to mitigation and/or alteration of known archaeological sites.				
16.7	Work with the Musqueam Indian Band and other interested First Nations in establishing a final design for the SFPR segment in the Glenrose / St. Mungo area focused on minimizing potential project related impacts on identified archaeological resources.	Pre-construction,	MoT, Contractor	N/A	
16.8	Work with the Musqueam Indian Band and other interested First Nations to further explore options/opportunities to establish appropriate First Nation recognition and/or interpretation measures in relation to the Glenrose / St. Mungo sites.	All phases	MoT	N/A	
16.9	Undertake appropriate archaeological site impact mitigation measures, including construction monitoring and systematic data recovery (i.e., an archaeological excavation), at the St. Mungo and Glenrose Cannery archaeological sites and support these measures with field programs that involve the Musqueam Indian Band and other interested First Nations as appropriate. The proposed mitigation strategy will be based on an archaeological site management plan for the St. Mungo, Wet Site and Glenrose Cannery archaeological sites currently under development in conjunction with representatives of the Musqueam Indian Band.	All phases	MoT, Contractor	N/A	
16.10	Report the discovery of previously undocumented archaeological sites that may come to light during the construction phase of the SFPR project to the British Columbia Archaeology Branch and interested First Nations. Engage an archaeologist to investigate and assess such sites under the terms and conditions of a Heritage Conservation Act permit.	All phases	Contractor	X	
16.11	Provide opportunities for members of the Musqueam Indian Band and other interested First Nations to participate in field programs supporting the implementation of archaeological site mitigation measures.	All phases	MoT, contractor	X	
16.12	Notify and invite First Nations to participate in specified archaeological work that is to occur at identified archaeological sites within their respective asserted traditional territories.			X	
17.0 Heritage					
17.1	Ensure that the design, construction and operation of the proposed project is advanced in a way that avoids, or minimizes potential impacts to heritage buildings	All phases	MoT, contractor	X	
17.2	Consult with the Delta Heritage Advisory Commission and the Surrey Heritage Committee to define heritage interests and work with the Delta Museum and Archive to develop a photo record and inventory of potentially affected heritage houses.	Pre-construction, construction	Contractor	N/A	
17.3	Prior to construction, undertake pre-condition surveys with respect to heritage buildings, as further described in commitment 9.9.	Pre-construction	Contractor	N/A	
17.4	Avoid, where practical and technically feasible, direct impacts to heritage buildings.	All phases	Contractor	NA/	
18.0 Navigable Waters					
18.1	Obtain regulatory approval related to crossings of designated Navigable Waters pursuant to the Navigable Waters Protection Act (NWPA), including but not necessarily limited to, McAdam Creek, Collings Creek, Manson Canal, and Crescent Slough, prior to commencement of works.	Pre-construction, construction	MoT, Contractor	N/A	
19.0 Socio-economic					

19.1	Mitigate potential Project-related visual/lighting impacts through use of screening, fencing and landscaping in consultation with local government. Use dark-sky compliant lighting for the Project.	Pre-construction, construction	Contractor	TBD	
19.2	Manage potential impacts to emergency response services by: - Ensuring emergency response plans (including a Spill Response Management and Emergency Response Plan) are in place during the construction phase of the Project, and updated annually, at a minimum; - Consulting first responders in Traffic Management Plan development; and - Consulting with local fire departments to ensure adequate access.	Pre-construction, construction	Contractor	X	
20.0 Rail					
20.1	Avoid or minimize potential impacts from Project works and activities to rail corridors.	All phases	Contractor	X	
20.2	Notify Transport Canada of project works as required under the *Notice of Railway Works Regulations*. Notify the public and affected stakeholders in accordance with the *Railway Safety Act.*	All phases	Contractor		
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		
20.4	Minimize railroad closures during construction.	Construction	Contractor	X	