Photo No.: Photos-20180514-161740.jpg
Description: Upstream east

Photo No.: Photos-20180514-161803.jpg
Description: Upstream west

Photo No.: Photos-20180514-161826.jpg
Description: Downstream

Photo No.: Photos-20180514-161858.jpg
Description: Deck

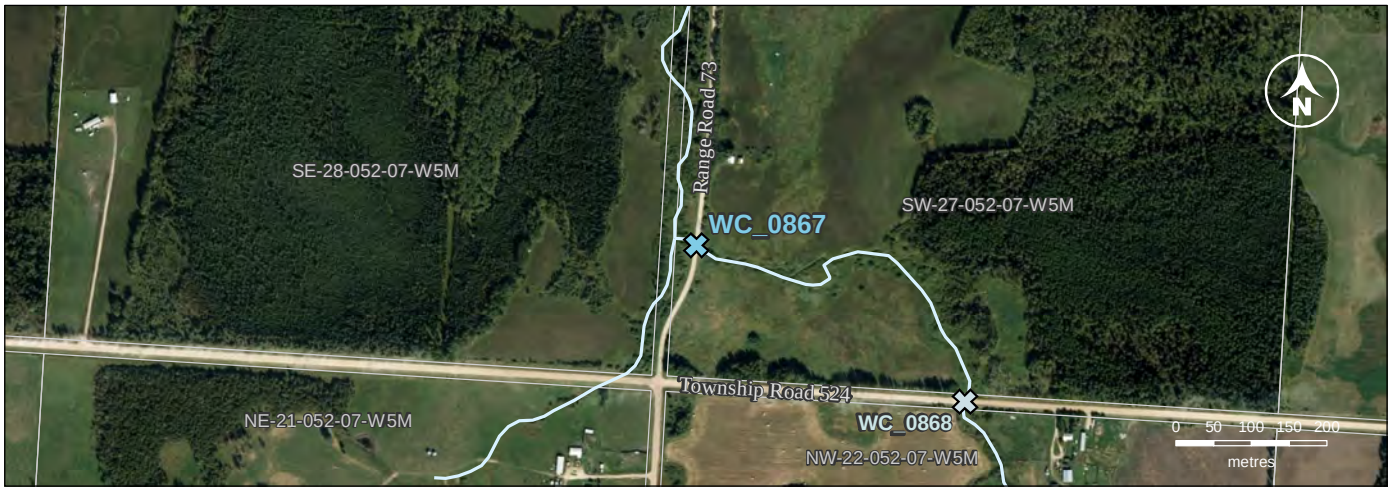
Photo No.: Photos-20180514-162137.jpg
Description: Outlet

Photo No.: Photos-20180514-162307.jpg
Description: Inlet

Crossing ID: WC_0611

Photo No.: Photos-20180514-162446.jpg
Description: sedimentation from road

Crossing ID: WC_0611



Inspection Date: May 09, 2018
Watercourse Name: Sturgeon River
GPS Co-ordinates:
UTM: 11 | **Easting:** 635,312 | **Northing:** 5,931,396

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 2.5m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: No

Most Common Bridge Substructure Material: Timber
Total Deck Length: 5 m
Deck Width (Number of Lanes): 1
Decking Material: Concrete
Decking Pattern: Open
Curb Type: Concrete
Road Surface Material: Gravel
Abutment Type: Log Pilings
Abutment Functioning?: Yes - in good condition and no materials eroding from underneath
Wingwall Functioning?: Yes - in good condition but materials eroding from the side

Armour: Riprap
Opening Blockage: 0%
Cause of blockage: Other - none
Structural Problems: S-Slumping
Bridge Signs: No, sign is not present
Grader markers or bridge reflectors?: Yes, sign is present

Fish Passage Assessment: No Concerns
Emergency Repair Required?: No
Overall Risk: Medium
Comments: Area of secondary inflow has brought material to in front of wingwall.

Crossing ID: WC_0867

Photo No.: Photos-20180509-171805.jpg
Description: Upstream

Photo No.: Photos-20180509-171822.jpg
Description: Downstream

Photo No.: Photos-20180509-171900.jpg
Description: Outlet

Photo No.: Photos-20180509-171952.jpg
Description: Deck

Photo No.: Photos-20180509-172038.jpg
Description: Inlet

Photo No.: Photos-20180509-172106.jpg
Description: Secondary inflow

Crossing ID: WC_0867

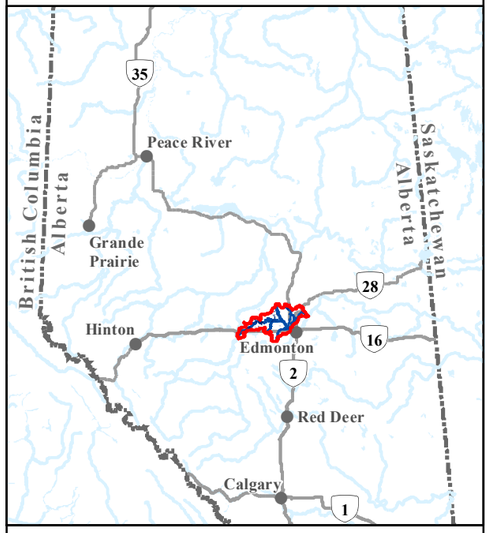
Appendix 5: High Risk Watercourse Crossing Overview Map and Field Sheets

NWSA
Sturgeon River Study

Water Course Crossing

Risk Assessment

- High



Source: Contains information licensed under the Open Government Licenses - Canada and Alberta, Parkland County, City of Edmonton, StonyPlain, Strathcona County and Leduc
Imagery acquisition date: 2001 - 2016
Coordinates system: NAD 1983 UTM Zone 11N

N
W E
S

1:400,000

0 5 10 15 20 km

Date: January 15, 2019

Prepared by: G. Couture

CPP ENVIRONMENTAL

Inspection Date: May 07, 2018
Watercourse Name: Little Egg Creek
GPS Co-ordinates:
UTM: 12 | **Easting:** 321,444 | **Northing:** 5,978,442

Stream Classification: Non-Fluvial
Bankfull Width: 3m (Estimated to Nearest Metre)
Crossing Type: None
Culvert(s) Diameter: none
Erosion at Site: No
Structural Problems: Yes, Other- there is no culvert here.

Greater than 10% of the culvert diameter blocked by debris?: no
Substrate in Culvert?: unknown
Substrate Type: unknown
For what length of culvert?: n/a
What proportion has backwater?: n/a
Culvert Slope: n/a

Outlet Gap: n/a
Pool Depth: n/a
Embedded?: n/a
Scour pool apparent?: n/a

Fish Passage Assessment: Some Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: No culvert found for crossing road. There is no water apparent on other side of road. Creek flows along ditch. Has the flow been altered from a historical route when the road was created?

Crossing ID: WC_0013

Photo No.: Photos-20180507-160350.jpg
Description: Upstream

Photo No.: Photos-20180507-160359.jpg
Description: Downstream

Photo No.: Photos-20180507-160413.jpg
Description: Towards Road

Crossing ID: WC_0013

Inspection Date: May 08, 2018
Watercourse Name: Riviere Qui Barre
GPS Co-ordinates:
UTM: 12 | **Easting:** 305,154 | **Northing:** 5,978,797

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 5m (Estimated to Nearest Metre)
Crossing Type: Culvert - Single
Culvert(s) Diameter: 1) 2.4 m
Erosion at Site: No

Greater than 10% of the culvert diameter blocked by debris?: Yes
Substrate in Culvert?: Unknown **Substrate Type:** unknown
For what length of culvert?: unknown
What proportion has backwater?: 100%
Culvert Slope: level and uniform
Outlet Gap: none **Embedded?:** no
Pool Depth: none **Scour pool apparent?:** No
Structural Problems: No

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: logs and sticks causing blockage are beaver removed and possibly flowed downstream collecting in culvert inlet . second culvert on north side of TS 572 fully exposed with outlet gap of 0.4m is aiding in collection of sticks. third culvert on south side of TS 572 is situation in the same fashion but not causing concerns. serious fish passage concerns due to pooling upstream from 90% blockage. blockage is at the tip of culvert. Possible breakage of blockage and flash flooding downstream

Crossing ID: WC_0016

Photo No.: Photos-20180508-164429.jpg
Description: Outlet

Photo No.: Photos-20180508-164455.jpg
Description: Downstream

Photo No.: Photos-20180508-164546.jpg
Description: Upstream

Photo No.: Photos-20180508-164607.jpg
Description: Inlet

Photo No.: Photos-20180508-164626.jpg
Description: Blockage

Crossing ID: WC_0016

Inspection Date: May 07, 2018
Watercourse Name: Little Egg
GPS Co-ordinates:
UTM: 12 | **Easting:** 326,119 | **Northing:** 5,972,933

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 5m (Estimated to Nearest Metre)
Crossing Type: underground channel
Culvert(s) Diameter: estimated 2m
Erosion at Site: Potential **Erosion Location (Inlet or Outlet):** Outlet
Erosion Source: Fill Slope,Ditch Gully
Erosion Extent: Low **Total Erosion Area:** 6 m^2

Structural Problems: Undersized culvert and other: not correct culvert type?

Greater than 10% of the culvert diameter blocked by debris?: unknown
Substrate in Culvert?: unknown **Substrate Type:** unknown
For what length of culvert?: unknown

What proportion has backwater?: 75%

Outlet Gap: None
Culvert Slope: level and uniform
Embedded?: unknown
Scour pool apparent?: unknown
Pool Depth: unknown

Fish Passage Assessment: Unknown concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: This is a horizontal cement culvert. No way to determine the depth or the true width of this culvert due to water height. Looks like this culvert is at full capacity. Inlet and outlet have ditch drainage flowing into creek.

Crossing ID: WC_0049

Photo No.: Photos-20180507-170238.jpg
Description: Downstream

Photo No.: Photos-20180507-170300.jpg
Description: Outlet

Photo No.: Photos-20180507-171150.jpg
Description: Inlet

Photo No.: Photos-20180507-171302.jpg
Description: Upstream

Crossing ID: WC_0049

Inspection Date: May 04, 2018
Watercourse Name: Sturgeon River
GPS Co-ordinates:
UTM: 12 | **Easting:** 349,773 | **Northing:** 5,967,349

Stream Classification: Fluvial (Permanent - Large)
Bankfull Width: 25m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** Both
Erosion Source: Fill Slope
Erosion Extent: Medium **Total Erosion Area:** 10 m^2

Most Common Bridge Substructure Material: Steel
Total Deck Length: 30 m
Deck Width (Number of Lanes): 2
Decking Material: Concrete
Decking Pattern: Closed
Curb Type: Concrete
Road Surface Material: Other - pavement
Abutment Type: Steel Pilings
Abutment Functioning?: Yes - in good condition and no materials eroding from underneath
Wingwall Functioning?: Yes - in good condition and no materials eroding from underneath
Armour: Other - concrete sand bags half bottom
Opening Blockage: 0%

Structural Problems: None
Bridge Signs: Yes, sign is present
Grader markers or bridge reflectors?: Yes, sign is present

Fish Passage Assessment: No Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Active fill slope erosion due to water and animal destruction

Crossing ID: WC_0088

Photo No.: Photos-20180504-160009.jpg
Description: Deck

Photo No.: Photos-20180504-160422.jpg
Description: Downstream

Photo No.: Photos-20180504-160445.jpg
Description: Outlet

Photo No.: Photos-20180504-160602.jpg
Description: Erosion

Photo No.: Photos-20180504-161454.jpg
Description: Upstream

Photo No.: Photos-20180504-161552.jpg
Description: Inlet

Crossing ID: WC_0088

Inspection Date: May 08, 2018
Watercourse Name: Riviere Qui Barre
GPS Co-ordinates:
UTM: 12 | **Easting:** 307,517 | **Northing:** 5,965,608

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 5m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** Both
Erosion Source: Bank Slump,Fill Slope
Erosion Extent: High **Total Erosion Area:** 60 m^2

Most Common Bridge Substructure Material: Timber
Total Deck Length: 17 m
Deck Width (Number of Lanes): 2
Decking Material: Concrete
Decking Pattern: Closed
Curb Type: Concrete
Road Surface Material: Other - pavement
Abutment Type: Log Pilings
Abutment Functioning?: Yes - in good condition and no materials eroding from underneath
Wingwall Functioning?: No - falling apart and/or materials eroding from underneath
Armour: Riprap
Opening Blockage: 75%
Cause of blockage: Debris and garbage
Structural Problems: Yes, Other - WIngwall has some damage
Bridge Signs: Yes, sign is present
Grader markers or bridge reflectors?: No, sign is not present

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: There is a accumulation of large organic debris and household garbage in stream and surrounding banks. This is creating a serious concern for fish passage. At the time of assessment, a larger bodied fish was seen trying to up over garbage and logs in stream, flopped around and made its way back into the stream where it came from. Damage to the wingwall on the southwest side. Rip rap is only present on one side. Area looks to receive a lot of water at different times. Assessment was done from a 2.5 meter high flood plain above water surface. This flood plain also contained small pools of water.

Crossing ID: WC_0142

Photo No.: Photos-20180508-193742.jpg
Description: Upstream

Photo No.: Photos-20180508-193818.jpg
Description: Inlet

Photo No.: Photos-20180508-193835.jpg
Description: Blockage Inlet

Photo No.: Photos-20180508-193856.jpg
Description: Erosion

Photo No.: Photos-20180508-193923.jpg
Description: Blockage

Photo No.: Photos-20180508-194119.jpg
Description: Outlet

Crossing ID: WC_0142

Photo No.: Photos-20180508-194145.jpg
Description: Downstream

Photo No.: Photos-20180508-194319.jpg
Description: Steel Beams in Water

Inspection Date: May 08, 2018
Watercourse Name: Riviere Qui Barre
GPS Co-ordinates:

UTM: 12 | **Easting:** 309,271 | **Northing:** 5,959,967
Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 10m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: No

Most Common Bridge Substructure Material: Timber

Total Deck Length: 6 m
Deck Width (Number of Lanes): 1
Decking Material: Concrete
Decking Pattern: Open
Curb Type: Concrete
Road Surface Material: Gravel
Abutment Type: Timber walls
Abutment Functioning?: Yes, but unknown
Wingwall Functioning?: No, missing wingwall
Armour: None
Opening Blockage: 0%
Cause of blockage: Other - none
Structural Problems: Yes, missing wingwall

Others: Difficult to determine functioning of abutments and wing-walls as the area is almost to full capacity.
Bridge Signs: No, sign is not present
Grader markers or bridge reflectors?: Yes, sign is present

Fish Passage Assessment: No Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Wingwall missing from southeast corner. Recommended inspection from engineer

Photo No.: Photos-20180508-203444.jpg
Description: Inlet

Photo No.: Photos-20180508-203459.jpg
Description: Upstream

Photo No.: Photos-20180508-203530.jpg
Description: Deck

Photo No.: Photos-20180508-203547.jpg
Description: Downstream

Photo No.: Photos-20180508-203621.jpg
Description: Outlet

Crossing ID: WC_0234

Inspection Date: May 14, 2018
Watercourse Name: Toad Creek
GPS Co-ordinates:
UTM: 11 | **Easting:** 686,216 | **Northing:** 5,959,880

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 3m (Estimated to Nearest Metre)
Crossing Type: Culvert - Single
Culvert(s) Diameter: 3.4 m
Erosion at Site: No
Structural Problems: None

Greater than 10% of the culvert diameter blocked by debris?: Yes
Substrate in Culvert?: Yes **Substrate Type:** gravel, cobble, sand
For what length of culvert?: 100
What proportion has backwater?: 25%
Culvert Slope: Level and Uniform
Outlet Gap: No **Embedded?:** Yes
Pool Depth: none **Scour pool apparent?:** No

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Upstream wetted width is significantly less than Bankfull width and culvert inlet blockage is caused by rip-rap and tires.
Beaver activity noted.

Crossing ID: WC_0243

Photo No.: Photos-20180514-183036.jpg
Description: Upstream

Photo No.: Photos-20180514-183100.jpg
Description: Inlet

Photo No.: Photos-20180514-183219.jpg
Description: Downstream

Photo No.: Photos-20180514-183247.jpg
Description: Inlet

Photo No.: Photos-20180514-183320.jpg
Description: Beaver activity

Crossing ID: WC_0243

Inspection Date: May 11, 2018
Watercourse Name: Sturgeon River
GPS Co-ordinates:
UTM: 11 | **Easting:** 683,036 | **Northing:** 5,957,752

Stream Classification: Fluvial (Permanent - Large)
Bankfull Width: 6m (Estimated to Nearest Metre)
Crossing Type: Culvert - Multiple
Erosion at Site: Potential **Erosion Location (Inlet or Outlet):** Outlet
Erosion Source: Bank Slump,Other (scour pool on bank stability)
Erosion Extent: Low **Total Erosion Area:** 9 m^2

Culvert(s) Diameter: 1) 2.8 m
2) 2.8 m

Greater than 10% of the culvert diameter blocked by debris?: No
Substrate in Culvert?: None **Substrate Type:** none
For what length of culvert?: unknown
What proportion has backwater?: 75%
Culvert Slope: > Slope
Outlet Gap: 0.3 m **Embedded?:** No
Pool Depth: 0.7 m **Scour pool apparent?:** Yes

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: Yes
Overall Risk: High
Comments:

Old beaver dam causing northern culvert to take less water and the southern culvert to take more water. The culverts are angled down and creating a higher velocity of water to flow. This poses concerns for fish passage of weaker fish. Scour pool forming, eroding bank at outlet.

spoke to nearby landowner, beaver dam on site, this on is 3 years old. the bank on the outlet side had looked like that for 60 years. this channel up steam is actually dug out by landowners father, government told him to do that for the installation of culverts. original channel is 200m south.

Photo No.: Photos-20180511-195433.jpg
Description: Upstream

Photo No.: Photos-20180511-195622.jpg
Description: Inlet

Photo No.: Photos-20180511-195737.jpg
Description: Downstream

Photo No.: Photos-20180511-195827.jpg
Description: Outlet

Photo No.: Photos-20180511-200159.jpg
Description: Scour pool

Crossing ID: WC_0284

Inspection Date: May 14, 2018
Watercourse Name: Kilini Creek
GPS Co-ordinates:
UTM: 11 | **Easting:** 690,432 | **Northing:** 5,952,520

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 8m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** Outlet
Erosion Source: Bank Slump
Erosion Extent: Low **Total Erosion Area:** 4 m^2

Most Common Bridge Substructure Material: Timber
Total Deck Length: 7 m
Deck Width (Number of Lanes): 1
Decking Material: Concrete
Decking Pattern: Open
Curb Type: Concrete
Road Surface Material: Other - pavement
Abutment Type: Log Pilings
Abutment Functioning?: Yes - in good condition and no materials eroding from underneath
Wingwall Functioning?: Yes - in good condition and no materials eroding from underneath
Armour: None
Opening Blockage: 75%
Cause of blockage: Debris
Structural Problems: Yes- D,DG
Bridge Signs: No, sign is not present
Grader markers or bridge reflectors?: Damaged, sign is either down or needs to be replaced

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: Yes
Overall Risk: High
Comments: The guardrail is not intact and hanging off the south end of bridge. There is a "bridge out" sign present and the bridge surface is reduced to one lane. With the hanging guard rail, the accumulation of logs is causing fish passage concerns.

Crossing ID: WC_0374

Photo No.: Photos-20180514-172432.jpg
Description: Deck

Photo No.: Photos-20180514-172518.jpg
Description: Upstream

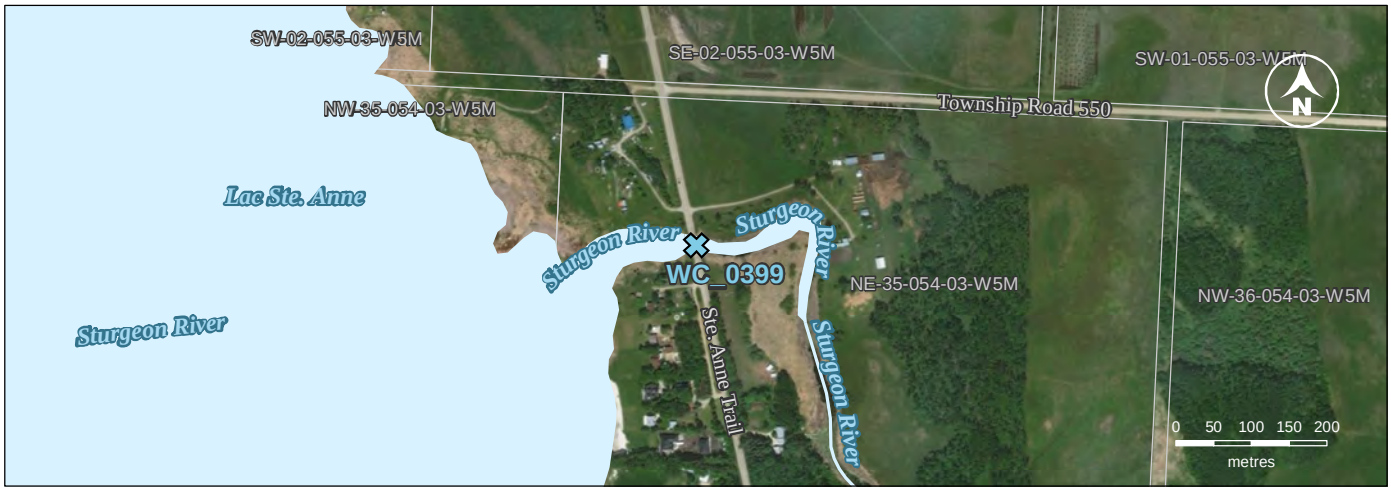
Photo No.: Photos-20180514-172540.jpg
Description: Inlet

Photo No.: Photos-20180514-172900.jpg
Description: Outlet

Photo No.: Photos-20180514-172915.jpg
Description: Erosion

Photo No.: Photos-20180514-172930.jpg
Description: Downstream

Crossing ID: WC_0374



Inspection Date: May 11, 2018
Watercourse Name: Sturgeon River
GPS Co-ordinates:
UTM: 11 | **Easting:** 676,156 | **Northing:** 5,954,985

Stream Classification: Fluvial (Permanent - Large)
Bankfull Width: 25m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: No

Most Common Bridge Substructure Material: Timber
Total Deck Length: 20 m
Deck Width (Number of Lanes): 1
Decking Material: Concrete
Decking Pattern: Open
Curb Type: Concrete
Road Surface Material: Other - pavement
Abutment Type: Log Pilings
Abutment Functioning?: Yes - in good condition and no materials eroding from underneath
Wingwall Functioning?: Yes - in good condition and no materials eroding from underneath
Armour: None
Opening Blockage: 25%
Cause of blockage: Debris
Structural Problems: None
Bridge Signs: No, sign is not present
Grader markers or bridge reflectors?: Yes, sign is present

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: There is a old structure (possibly an old foot bridge) that has fallen apart but the foundational structure is still protruding causing blockage to fish moving upstream into the lake. There is a difference in water level on either side of the structure (approx 0.5-2 foot). Back pool of floating aquatic vegetation and cattails. The bridge is only 4 feet 5 inches from the surface of the water.

Crossing ID: WC_0399

Photo No.: Photos-20180511-174648.jpg
Description: Upstream

Photo No.: Photos-20180511-174725.jpg
Description: Inlet

Photo No.: Photos-20180511-174755.jpg
Description: Blockage upstream

Photo No.: Photos-20180511-175009.jpg
Description: Deck

Photo No.: Photos-20180511-175107.jpg
Description: Blockage

Photo No.: Photos-20180511-175125.jpg
Description: Blockage

Crossing ID: WC_0399

Photo No.: Photos-20180511-175151.jpg
Description: Downstream

Photo No.: Photos-20180511-175233.jpg
Description: Outlet

Photo No.: Photos-20180511-175949.jpg
Description: Distance between blockage and bridge at inlet

Inspection Date: May 18, 2018
Watercourse Name: Carrot Creek
GPS Co-ordinates:
UTM: 12 | **Easting:** 323,826 | **Northing:** 5,952,013

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 10m (Estimated to Nearest Metre)
Crossing Type: Culvert - Multiple
Erosion at Site: No
Structural Problems: Yes, undersized culverts

Culvert(s) Diameter: 1) 1.5 m
2) 1 m

Greater than 10% of the culvert diameter blocked by debris?: No
Substrate in Culvert?: Unknown **Substrate Type:** unknown
For what length of culvert?:unknown
What proportion has backwater?: 100%
Culvert Slope: Level and Uniform
Outlet Gap: none **Embedded?:** no
Pool Depth: none **Scour pool apparent?:** No

Fish Passage Assessment: No Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Inlet for smaller culvert was not found. Believed to be underwater since the outlet is visible but at 80% capacity. Flooding is common here, sign found to support. Range Road 225 had water pooling around its sides. Water is half a foot from being flush with the road.

Crossing ID: WC_0449

Photo No.: Photos-20180518-170949.jpg
Description: Downstream

Photo No.: Photos-20180518-171007.jpg
Description: Outlet

Photo No.: Photos-20180518-171059.jpg
Description: Inlet

Photo No.: Photos-20180518-171131.jpg
Description: Upstream

Photo No.: Photos-20180518-171223.jpg
Description: Upstream

Photo No.: Photos-20180518-171253.jpg
Description: Sign in area

Crossing ID: WC_0449

Inspection Date: May 14, 2018
Watercourse Name: Kilini Creek
GPS Co-ordinates:
UTM: 11 | **Easting:** 688,610 | **Northing:** 5,943,621

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 6m (Estimated to Nearest Metre)
Crossing Type: Culvert - Single
Culvert(s) Diameter: 1) 4.2 m
Erosion at Site: No

Greater than 10% of the culvert diameter blocked by debris?: No
Substrate in Culvert?: unknown **Substrate Type:** unknown
For what length of culvert?: unknown
What proportion has backwater?: 75%
Culvert Slope: uniform and level
Outlet Gap: none **Embedded?:** No
Pool Depth: none **Scour pool apparent?:** No

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: beaver dam upstream (approx 20m from culvert) completely blocking flow.

Crossing ID: WC_0657

Photo No.: Photos-20180514-155441.jpg
Description: Downstream

Photo No.: Photos-20180514-155527.jpg
Description: Outlet

Photo No.: Photos-20180514-155708.jpg
Description: Upstream

Photo No.: Photos-20180514-155956.jpg
Description: beaver dam

Crossing ID: WC_0657

Inspection Date: May 16, 2018
Watercourse Name: Atim Creek
GPS Co-ordinates:
UTM: 12 | **Easting:** 310,660 | **Northing:** 5,941,811

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 7m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent **Culvert(s) Diameter:** n/a
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** Both
Erosion Source: Bank Slump
Erosion Extent: Low **Total Erosion Area:** 4 m^2

Most Common Bridge Substructure Material: Timber
Total Deck Length: 7 m
Deck Width (Number of Lanes): 1
Decking Material: Concrete
Decking Pattern: Open
Curb Type: Concrete
Road Surface Material: Gravel
Abutment Type: Log Pilings
Abutment Functioning?: Yes - in good condition and no materials eroding from underneath
Wingwall Functioning?: No - falling apart and/or materials eroding from underneath
Armour: None
Opening Blockage: 0%
Cause of blockage: Other - none
Structural Problems: Yes, collapsing wingwalls
Bridge Signs: No, sign is not present
Grader markers or bridge reflectors?: Yes, sign is present, but damaged

Fish Passage Assessment: No Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Two wingwalls have started to let go from the main structure. Creeks looks to have been anthropologically directed in which way to go. Marshlands on either side of creek and both up and downstream of bridge. Bullet holes in grader markers.

Crossing ID: WC_0687

Photo No.: Photos-20180516-173505.jpg
Description: Upstream

Photo No.: Photos-20180516-173525.jpg
Description: Downstream

Photo No.: Photos-20180516-173618.jpg
Description: Outlet

Photo No.: Photos-20180516-173632.jpg
Description: Slumping

Photo No.: Photos-20180516-173650.jpg
Description: Wing wall failing

Photo No.: Photos-20180516-173734.jpg
Description: Inlet

Crossing ID: WC_0687

Photo No.: Photos-20180516-173759.jpg
Description: Second wing wall failing

Photo No.: Photos-20180516-173835.jpg
Description: Deck

Photo No.: Photos-20180516-173856.jpg
Description: Shotgun bullet holes in graders

Photo No.: Photos-20180516-173941.jpg
Description: Send channel upstream

Photo No.: Photos-20180516-174219.jpg
Description: Downstream marshlands

Photo No.: Photos-20180516-174239.jpg
Description: Upstream marshlands

Crossing ID: WC_0687

Inspection Date: May 15, 2018
Watercourse Name: Atim Creek
GPS Co-ordinates:
UTM: 12 | **Easting:** 304,337 | **Northing:** 5,939,630

Stream Classification: Non-Fluvial
Bankfull Width: 1m (Estimated to Nearest Metre) **Crossing Type:** Culvert - Single
Culvert(s) Diameter: 1) 1.5 m
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** Outlet
Erosion Source: Fill Slope
Erosion Extent: Medium **Total Erosion Area:** 6 m^2

Greater than 10% of the culvert diameter blocked by debris?: No
Substrate in Culvert?: Unknown **Substrate Type:** unknown
For what length of culvert?: unknown
What proportion has backwater?: 50%
Culvert Slope: Slope > or Vertical Bent
Outlet Gap: 0.6 m **Embedded?:** No
Pool Depth: none **Scour pool apparent?:** No
Structural Problems: Yes, undersized culvert

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Outlet of WC_0780. Hard to determine downstream channel.

Crossing ID: WC_0772

Photo No.: Photos-20180515-210448.jpg
Description: Downstream

Photo No.: Photos-20180515-210502.jpg
Description: Outlet

Photo No.: Photos-20180515-210521.jpg
Description: Erosion

Crossing ID: WC_0772

Inspection Date: May 15, 2018
Watercourse Name: Atim Creek
GPS Co-ordinates:
UTM: 12 | **Easting:** 304,346 | **Northing:** 5,939,597

Stream Classification: Non-Fluvial
Bankfull Width: 25m (Estimated to Nearest Metre) **Crossing Type:** Culvert - Single
Culvert(s) Diameter: 1) 1.5 m
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** Inlet
Erosion Source: Bank Slump
Erosion Extent: High **Total Erosion Area:** 15 m^2

Greater than 10% of the culvert diameter blocked by debris?: No
Substrate in Culvert?: Unknown **Substrate Type:** unknown
For what length of culvert?: unknown
What proportion has backwater?: <25%
Culvert Slope: Slope > or Vertical Bent
Outlet Gap: n/a **Embedded?:** No
Pool Depth: n/a **Scour pool apparent?:** n/a

Structural Problems: Yes, undersized culvert and damaged

Fish Passage Assessment: Serious concerns

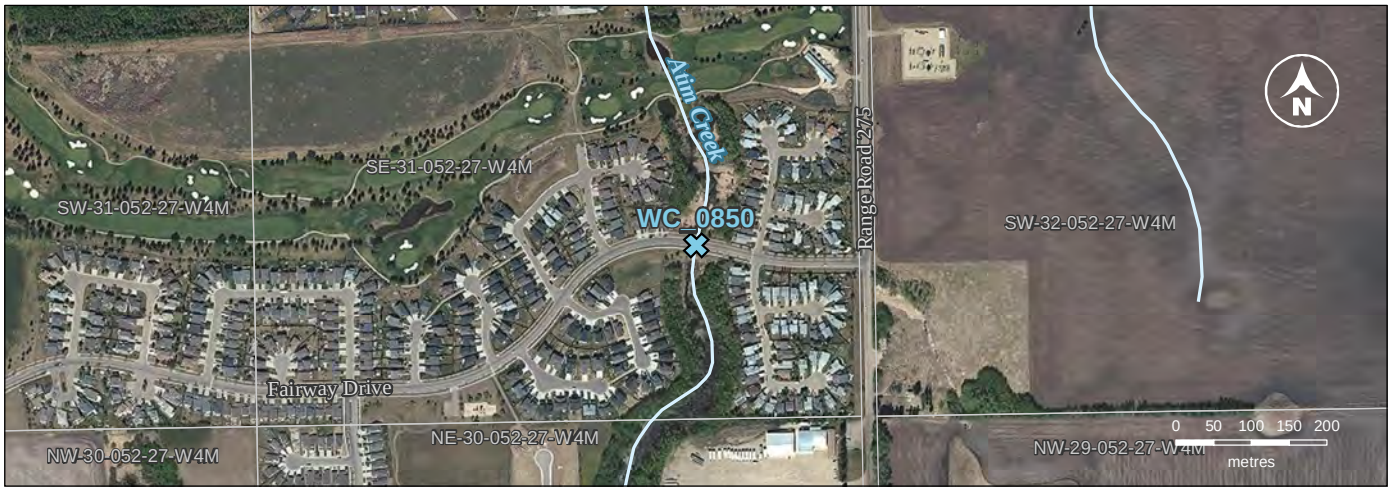
Emergency Repair Required?: No
Overall Risk: High
Comments: inlet of WC_0772. Lots of backwater flooding due to culvert being bent upwards and water unable to enter the culvert properly. Trees are becoming waterlogged and dying.

Crossing ID: WC_0780

Photo No.: Photos-20180515-204955.jpg
Description: Upstream

Photo No.: Photos-20180515-205012.jpg
Description: Inlet

Photo No.: Photos-20180515-205343.jpg
Description: Area view of water back up



Inspection Date: May 15, 2018
Watercourse Name: Atim Creek
GPS Co-ordinates:
UTM: 12 | **Easting:** 303,641 | **Northing:** 5,935,167

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 8m (Estimated to Nearest Metre)
Crossing Type: Culvert - Multiple
Erosion at Site: No
Structural Problems: Yes, undersized culverts.

Culvert(s) Diameter: 1) 1.7 m
2) 1.7 m

Greater than 10% of the culvert diameter blocked by debris?: Yes
Substrate in Culvert?: Unknown **Substrate Type:** unknown
For what length of culvert?: unknown
What proportion has backwater?: 50%
Culvert Slope: Level and Uniform
Outlet Gap: none **Embedded?:** No
Pool Depth: none **Scour pool apparent?:** No

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Might have been a removal of a beaver dam recently, the debris blocking the inlet of the culverts is evident of beaver.

Crossing ID: WC_0850

Photo No.: Photos-20180515-180913.jpg
Description: Downstream

Photo No.: Photos-20180515-181001.jpg
Description: Outlet

Photo No.: Photos-20180515-181247.jpg
Description: Upstream

Photo No.: Photos-20180515-181312.jpg
Description: Upstream

Photo No.: Photos-20180515-181348.jpg
Description: Inlet

Photo No.: Photos-20180515-181452.jpg
Description: Blockage

Crossing ID: WC_0850

Inspection Date: May 15, 2018
Watercourse Name: Atim Creek
GPS Co-ordinates:
UTM: 12 | **Easting:** 303,198 | **Northing:** 5,931,574

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 5m (Estimated to Nearest Metre)
Crossing Type: Culvert - Single **Culvert(s) Diameter:** 1) 1.5 m
Erosion at Site: Potential **Erosion Location (Inlet or Outlet):** Inlet
Erosion Source: Bank Slump
Erosion Extent: Low **Total Erosion Area:** 5 m^2

Greater than 10% of the culvert diameter blocked by debris?: Yes
Substrate in Culvert?: Unknown **Substrate Type:** unknown
For what length of culvert?: unknown
What proportion has backwater?: 75%
Culvert Slope: Level and Uniform
Outlet Gap: none **Embedded?:** No
Pool Depth: 0.2 m **Scour pool apparent?:** No
Structural Problems: Yes, undersized culvert.

Fish Passage Assessment: Some Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Accumulation of debris at inlet and outlet. Bank slump erosion apparent and inappropriate vegetation stabilizing the banks. This channel looks like it was dug by an excavator.

Crossing ID: WC_0861

Photo No.: Photos-20180515-172757.jpg
Description: Downstream

Photo No.: Photos-20180515-172820.jpg
Description: Outlet

Photo No.: Photos-20180515-172936.jpg
Description: Upstream

Photo No.: Photos-20180515-173000.jpg
Description: Inlet

Photo No.: Photos-20180515-173259.jpg
Description: Erosion

Photo No.: Photos-20180515-173347.jpg
Description: Erosion

Crossing ID: WC_0861

Inpection Date: May 15, 2018
Watercourse Name: Atim Creek
GPS Co-ordinates:
UTM: 11 | **Easting:** 698,985 | **Northing:** 5,928,263

Stream Classification: Fluvial (Permanent - Small)
Banful Width: 5m (Estimated to Nearest Metre)
Crossing Type: Culvert - Multiple **Culvert(s) Diameter:** 1) 1.15 m 2) 1.15 m
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** inlet
Erosion Source: under culvert
Erosion Extent: medium **Total Erosion Area:** 2m^2
Structural Problems: Yes, damaged by rust

Greater than 10% of the culvert diameter blocked by debris?: Yes
Substrate in Culvert?: Unknown **Substrate Type:** unknown
For what length of culvert?: unknown
What proportion has backwater?: <25%
Culvert Slope: > sloped
Outlet Gap: none **Embeded?:** No
Pool Depth: none **Scour pool apparent?:** No

Fish Passage Assessment: Serious Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: part of a water management project with AEP. steel wall at inlet to slow water or back the water up in channel for other uses upstream. culverts are not submerged and very little water can make it through, inlet gap (0.3m). one culvert is rusting away. heavily vegetated on outlet. serious fish concerns because of steel wall and fish trying to move upstream will not be able to jump.

Crossing ID: WC_0881

Photo No.: Photos-20180515-161131.jpg
Description: Outlet looking from north

Photo No.: Photos-20180515-161240.jpg
Description: Outlet looking from south

Photo No.: Photos-20180515-161324.jpg
Description: Downstream

Photo No.: Photos-20180515-161634.jpg
Description: Upstream

Photo No.: Photos-20180515-161716.jpg
Description: Inlet

Photo No.: Photos-20180515-161734.jpg
Description: Inlet

Crossing ID: WC_0881

Inspection Date: May 14, 2018
Watercourse Name: Sturgeon River
GPS Co-ordinates:
UTM: 11 | **Easting:** 697,794 | **Northing:** 5,957,072

Stream Classification: Fluvial (Permanent - Large)
Bankfull Width: 12m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: Potential **Erosion Location (Inlet or Outlet):** Both
Erosion Source: Fill Slope, Bridge Deck
Erosion Extent: Low **Total Erosion Area:** 6 m^2

Most Common Bridge Substructure Material: Timber
Total Deck Length: 30 m
Deck Width (Number of Lanes): 1
Decking Material: Concrete
Decking Pattern: Open
Curb Type: Concrete
Road Surface Material: Gravel
Abutment Type: Log Pilings
Abutment Functioning?: No - falling apart and/or materials eroding from underneath
Wingwall Functioning?: Yes - in good condition and no materials eroding from underneath
Armour: Riprap
Opening Blockage: 10%
Cause of blockage: Debris
Structural Problems: Yes, broken/damaged abutments, Other - Bridge deck spacing from road on south side
Bridge Signs: No, sign is not present
Grader markers or bridge reflectors?: Yes, sign is present

Fish Passage Assessment: Some Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: There is heavy debris build up of large logs at inlet. Damage to the south abutment lumber wall, possibly from large rip rap falling into wall.

Photo No.: Photos-20180514-204704.jpg
Description: Downstream

Photo No.: Photos-20180514-204826.jpg
Description: Damaged abutments

Photo No.: Photos-20180514-204919.jpg
Description: Deck

Photo No.: Photos-20180514-205106.jpg
Description: Outlet

Photo No.: Photos-20180514-205156.jpg
Description: Upstream

Photo No.: Photos-20180514-205206.jpg
Description: Inlet

Crossing ID: WC_0323

Inspection Date: May 18, 2018
Watercourse Name: Sturgeon River
GPS Co-ordinates:
UTM: 12 | **Easting:** 320,389 | **Northing:** 5,944,401

Stream Classification: Fluvial (Permanent - Large)
Bankfull Width: 12m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** Both
Erosion Source: Bank Slump,Fill Slope
Erosion Extent: High **Total Erosion Area:** 60 m^2

Most Common Bridge Substructure Material: Concrete
Total Deck Length: 40 m
Deck Width (Number of Lanes): 2
Decking Material: Concrete
Decking Pattern: Closed
Curb Type: Concrete
Road Surface Material: Other - pavement
Abutment Type: Concrete Blocks
Abutment Functioning?: Yes - in good condition and no materials eroding from underneath
Wingwall Functioning?: Yes - in good condition and no materials eroding from underneath
Armour: None
Opening Blockage: 0%
Cause of blockage: Debris
Structural Problems: None
Bridge Signs: Yes, sign is present
Grader markers or bridge reflectors?: Damaged, sign is either down or needs to be replaced

Fish Passage Assessment: No Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Active beaver in area. 3/4 grader markers up. Approximately 50 meters upstream, the bank gave way crumbling part of the road. This bank is appox 20 meters high.

Crossing ID: WC_0582

NSWA Sturgeon River Watercourse Assessment

Photo No.: Photos-20180518-180842.jpg
Description: Outlet

Photo No.: Photos-20180518-180915.jpg
Description: Old Beaver Dam

Photo No.: Photos-20180518-180929.jpg
Description: Erosion

Photo No.: Photos-20180518-180953.jpg
Description: Erosion

Photo No.: Photos-20180518-181008.jpg
Description: Erosion

Photo No.: Photos-20180518-181028.jpg
Description: Downstream

Crossing ID: WC_0582

Photo No.: Photos-20180518-181049.jpg
Description: Downstream

Photo No.: Photos-20180518-181304.jpg
Description: Inlet

Photo No.: Photos-20180518-181506.jpg
Description: Upstream facing inlet

Photo No.: Photos-20180518-181524.jpg
Description: Bank give out

Crossing ID: WC_0582

Inspection Date: May 14, 2018
Watercourse Name: Kilini Creek
GPS Co-ordinates:
UTM: 11 | **Easting:** 689,167 | **Northing:** 5,947,603

Stream Classification: Fluvial (Permanent - Small)
Bankfull Width: 3m (Estimated to Nearest Metre)
Crossing Type: Bridge - Permanent
Erosion at Site: Yes **Erosion Location (Inlet or Outlet):** Both
Erosion Source: Road Surface,Bridge Deck,Ditch Gully
Erosion Extent: High **Total Erosion Area:** 10 m^2

Most Common Bridge Substructure Material: Timber
Total Deck Length: 6 m
Deck Width (Number of Lanes): 1
Decking Material: Concrete
Decking Pattern: Open
Curb Type: Concrete
Road Surface Material: Gravel
Abutment Type: Log Pilings
Abutment Functioning?: Yes - in good condition and no materials eroding from underneath
Wingwall Functioning?: No, some falling apart and materials coming around the side

Armour: None
Opening Blockage: 0%
Cause of blockage: Road Material
Structural Problems: Yes, damaged guardrail and curb falling apart
Bridge Signs: Yes, sign is present
Grader markers or bridge reflectors?: Damaged, sign is either down or needs to be replaced

Fish Passage Assessment: Some Concerns
Emergency Repair Required?: No
Overall Risk: High
Comments: Downstream from aggregate wash pit. There is a buildup of road material in piling in stream bed.

Crossing ID: WC_0589

Photo No.: Photos-20180514-164240.jpg
Description: Upstream (see culvert in background)

Photo No.: Photos-20180514-164343.jpg
Description: Inlet

Photo No.: Photos-20180514-164405.jpg
Description: Road material erosion

Photo No.: Photos-20180514-164530.jpg
Description: Downstream

Photo No.: Photos-20180514-164605.jpg
Description: Outlet

Photo No.: Photos-20180514-164639.jpg
Description: Deck

Crossing ID: WC_0589