

Appendix D: Fish and Fish Habitat Report



407 TRANSITWAY - KENNEDY ROAD TO BROCK ROAD

MINISTRY OF TRANSPORTATION - CENTRAL REGION

FISH AND FISH HABITAT – IMPACT ASSESSMENT REPORT

PLANNING AND PRELIMINARY DESIGN STUDY

407 TRANSITWAY

**FROM EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD
CITY OF MARKHAM (YORK REGION) AND
CITY OF PICKERING (DURHAM REGION)**

G.W.P. 13-20003

prepared for:

**MINISTRY OF TRANSPORTATION
CENTRAL REGION**

prepared by:



APRIL 2016

FISH AND FISH HABITAT – IMPACT ASSESSMENT REPORT

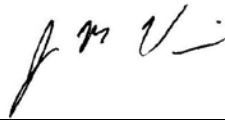
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G.W.P. 13-20003

prepared by:



Judson Venier, M.Sc.
Biologist



Stephanie Lillie, B.Sc.
Fisheries Biologist

reviewed by:



Grant Kauffman, M.E.S.
Vice-President, Ontario Region

LGL Limited
environmental research associates
22 Fisher Street, P.O. Box 280
King City, Ontario L7B 1A6
Telephone: 905-833-1244
Facsimile: 905-833-1255
URL: www.lgl.com

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1.0 INTRODUCTION

This project involves the planning and preliminary design for the 407 Transitway from east of Kennedy Road to east of Brock Road. The Transitway will be a high-speed fully grade separated facility on a separate right-of-way running parallel, and crossing over or under 407 ETR. This 18 km section has EA approval for the 60 metre Transitway from Markham Road to beyond Brock Road (to Highway 35/115). This study will document the requirements for EA approval under TPAP for the section from Kennedy to Markham Road as well as for the stations that will be required from Kennedy Road to Brock Road. The station designs will include bus access to and egress from the stations, bus platforms, layout of access to and from the arterial road, integration with local transit (bus platforms), parking spaces, Passenger Pick Up and Drop Off (PPUDO), shelters, buildings and other amenities. The Transitway and the stations will initially be designed to support the busway service with provisions for future conversion to light rail transit technology.

This is a total project management (TPM) assignment, where the consultant delivers all aspects of the study on behalf of MTO. The TPM prime consultant is Parsons. Parsons has assembled a team of engineering and environmental specialists to provide the services required for this study. LGL Limited was retained by Parsons to conduct a natural heritage investigation in support of the environmental assessment for the 407 Transitway.

This report documents the results of the fisheries assessment and has been prepared as per the requirements of the Environmental Reference for Highway Design (MTO 2013), and the *MTO/DFO/MNR Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings* (2013) and the *MTO Environmental Guide for Fish and Fish Habitat* (2009) (Fish Guide). This report updates work completed by LGL Limited in 2005 for the Regional Municipality of York as part of the Highway 7 Transit Improvements Individual Environmental Assessment and in 2010 for the Ministry of Transportation as part of the 407 Transitway from East of Highway 400 to East of Kennedy Road.

The general location of the study area within the Ministry of Transportation's Central Region is presented below in **Figure 1**.

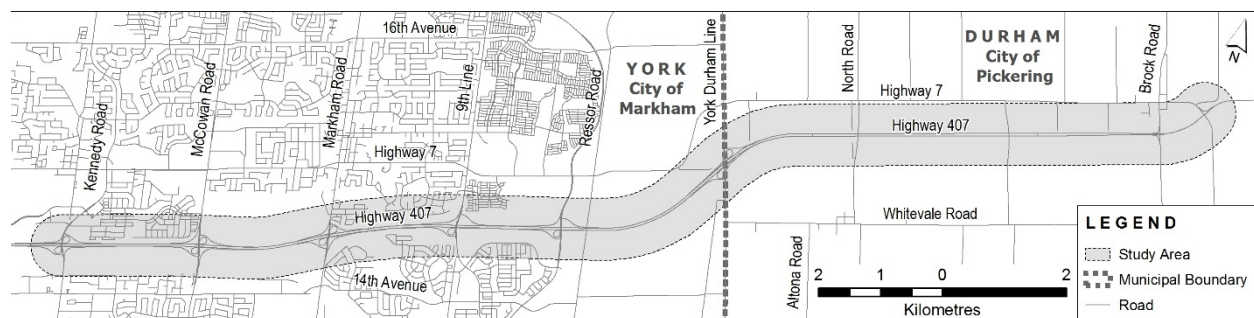


FIGURE 1. 407 TRANSITWAY KEY PLAN

2.0 CONSTRAINTS AND OPPORTUNITIES MAP

The purpose of the constraints and opportunities map is to show biological and physical constraints (i.e., fish and fish habitat and other designated natural areas) to highway development, and opportunities for enhancement, where present. The sensitivity and thermal designations on the map are based on the information provided by the Ontario Ministry of Natural Resources and Forestry (MNRF) in accordance with the criteria outlined in MTO Fish Guide. **Figure 2** presents the opportunities and constraints for each watercourse crossing. **Section 7.0** discusses potential enhancement/compensation opportunities in more detail.

3.0 BACKGROUND DATA COLLECTION

3.1 Background Information and Methodology

Secondary Source Data

Data was obtained from published data sources and unpublished information made available by relevant stakeholders. This data was then reviewed to identify data gaps and deficiencies, and to scope the type, location and level of detail for field investigations (see **Section 3.1.1** below). The study area spans three watersheds including: the Rouge River; Petticoat Creek; and, Duffins Creek. All three watersheds are managed under the jurisdiction of the Ministry of Natural Resources and Forestry (MNRF) Aurora District, and Toronto and Region Conservation Authority (TRCA).

A search of the Natural Heritage Information Centre (NHIC) database and the Fisheries and Oceans Canada (DFO) aquatic species at risk mapping (2014) was completed and revealed two aquatic species at risk within the study limits. Redside Dace (*Clinostomus elongatus*) recovery or contributing habitat was identified by this mapping as occurring in the study area within the Rouge River, Ganatsekiagon Creek, Urfe Creek, and Brougham Creek. This species is regulated as ‘Endangered’ under the Ontario *Endangered Species Act, 2007* (ESA).

Eastern Pondmussel (*Ligumia nasuta*) was also identified in the Rouge River watershed on the DFO aquatic species at risk mapping (2014). This species is regulated as ‘Endangered’ under the Ontario *Endangered Species Act, 2007* and the Federal *Species at Risk Act*. Gary Cooper, Fisheries Protection Biologist at Fisheries and Oceans Canada was contacted by LGL on April 13, 2016 to confirm the likelihood of this species occurring within the study area. Mr. Cooper confirmed that Eastern Pondmussel is not a concern for this project, as the record for this species was north of the 407 ETR (DFO 2016).

In accordance with the MTO Fish Guide, a project notification and MNRF information request letter was sent to the MNRF Aurora District Office on August 5, 2014, requesting information regarding the thermal regime, habitat information, available data, fisheries management considerations, sensitivity and in-water timing windows for construction. LGL followed up on the status of this request on August 25, 2014 and again on May 5, 2015. LGL received a response from Adam Challice of the Aurora District Office on May 11, 2015. In addition to the data request, LGL requested a change to some of the provided MNR Sensitivities based on results of the field investigations as per the MTO Fish Guide. This request was sent on September 17, 2015. A response was received from Adam Challice on October 7, 2015 with the MNR response to LGLs requested changes in sensitivity. Detailed information regarding Redside Dace habitat was requested from MNRF on August 25, 2015 and February 9, 2016. A response was received from Adam Challice on on March 11, 2016 outlining the detailed Redside Dace habitat

(recovery or contributing) by watercourse. Information from this data request has been incorporated into this report, and copies of this correspondence can be found in **Appendix A**.

3.1.1 Data Sources

The following data sources relevant to fish and fish habitat within the study area were reviewed:

- DFO, 2014. *Distribution of Species at Risk Mapping; Toronto and Region Conservation Authority (Map 1)*. April 2011;
- DFO, 2016. Personal Correspondence with Gary Cooper. Fisheries Protection Biologist at Fisheries and Oceans Canada.
- LGL Limited. 2010. *Natural Heritage Report, 407 Transitway from East of Highway 400 to Kennedy Road (W.P. 252-96-00) – Planning and Preliminary Design Study*. Prepared for the Ontario Ministry of Transportation, Central Region. King City, Ontario.
- LGL Limited. 2005. Highway 7 Corridor and Vaughan North-South Link Public Transit Improvements Individual Environmental Assessment. Prepared for the Regional Municipality of York. King, City, Ontario.
- LGL Limited. 2010. *Natural Heritage Report, 407 Transitway from East of Highway 400 to Kennedy Road (W.P. 252-96-00) – Planning and Preliminary Design Study*. Prepared for the Ontario Ministry of Transportation, Central Region. King City, Ontario.
- MNRF. 2014. *Natural Heritage Information Centre Biodiversity Explorer*. Website available online: <http://nhic.MNRF.gov.on.ca/>. Ministry of Natural Resources. Peterborough, Ontario;
- MNRF. 2015, 2016. Personal correspondence with Adam Challice. Management Biologist at Aurora District Ministry of Natural Resources and Forestry;
- MNR and TRCA. 2010. *Draft Rouge River Fisheries Management Plan*. Published by the Ontario Ministry of Natural Resources and the Toronto and Region Conservation Authority. Queens Printer for Ontario;
- Ontario Ministry of Transportation. 2009. *407 East Individual Environmental Assessment (IEA) and Preliminary Design Study – Environmental Assessment Report and Appendices*;
- TRCA. 2002. *A Watershed Plan for Duffins Creek and Carruthers Creek*. Published by the Toronto and Region Conservation Authority; and,
- TRCA and Rouge Park. 2012. *Petticoat Creek Watershed Action Plan*. Published by TRCA and Rouge Park.
- MTO. 1997. Highway 407 / Transitway Markham Road Easterly to Highway 7 East of Brock Road. Environmental Assessment Report.

4.0 FIELD INVESTIGATIONS

The study area considered for the fisheries investigation includes a one-kilometre-wide corridor centred along 407 ETR from east of Kennedy Road in the City of Markham to east of Brock Road in the City of Pickering. Primary field investigations focussed on the facility footprint, including the Transitway corridor, station locations and adjacent lands up to 120 m from the future infrastructure footprint. The results of the natural sciences investigation are documented in further detail in the Environmental Project Report.

LGL Fisheries Specialists conducted fisheries surveys on April 28, and 29, May 1, August 25 and 26, and September 1 and 2, 2015 to identify and document fish habitat along and adjacent to the technically preferred route and station locations.

Physical features within 50 m of the Transitway corridor and station locations (facility footprint) were surveyed in sufficient detail to enable mapping and identification of key habitat types. The fisheries investigation by LGL Limited staff was carried out in accordance with the MTO Fisheries Protocol(2013). The physical habitat attributes assessed included: (a) instream cover; (b) bank stability; (c) substrate characteristics; (d) stream dimensions and depths; (e) barriers; (f) stream morphology; (g) terrain characteristics; (h) stream canopy cover; (i) stream gradient; (j) aquatic vegetation; (k) ground water seepage; and (l) general comments. Where accessible, dip net and visual fish sampling were conducted to confirm and augment existing fish community data obtained from secondary source review.

5.0 EXISTING FISH AND FISH HABITAT CONDITIONS

Aquatic habitat for each of the watercourse crossings within the study area is described in detail below based on the review of secondary source information and a two-season field investigation. A summary of this information, which includes habitat information, fish community, MNRF/LGL interpretation of sensitivity, can be found below in **Table 1**. Photos of the watercourse crossings, Watercourse Field Record Forms and Habitat Mapping are included in **Appendices B and C**, respectively.

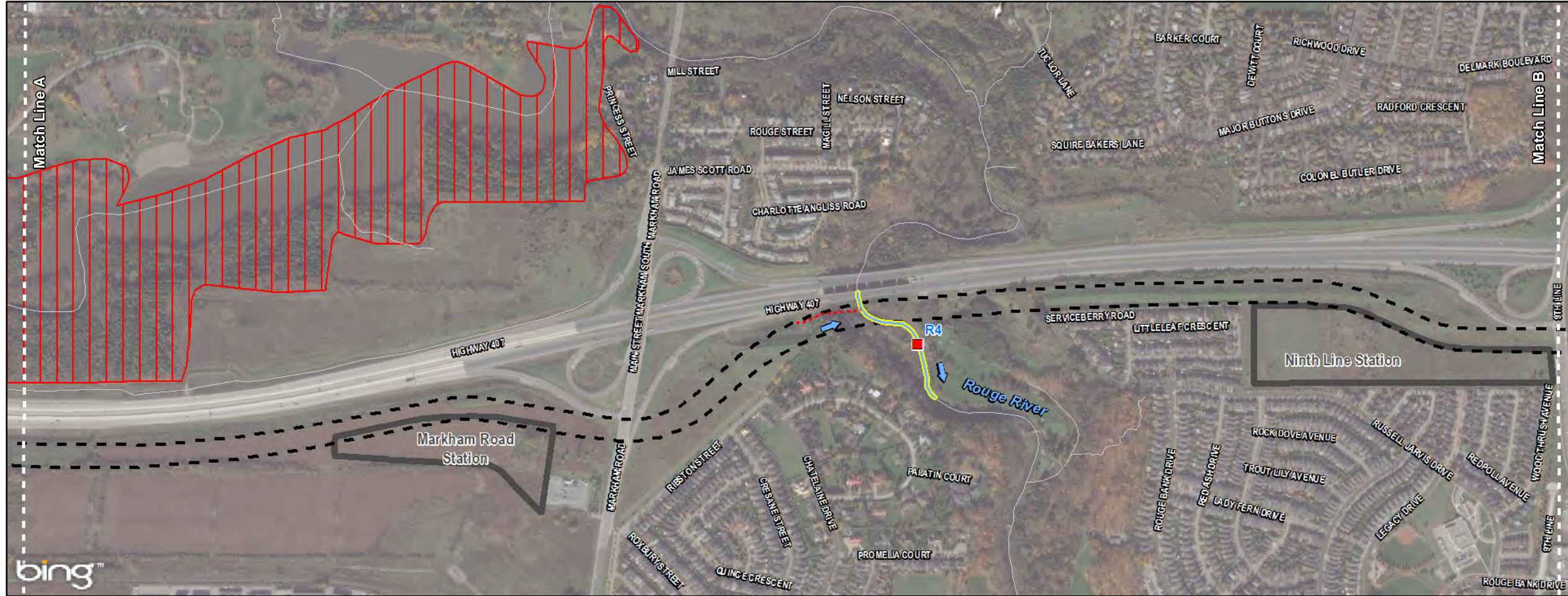
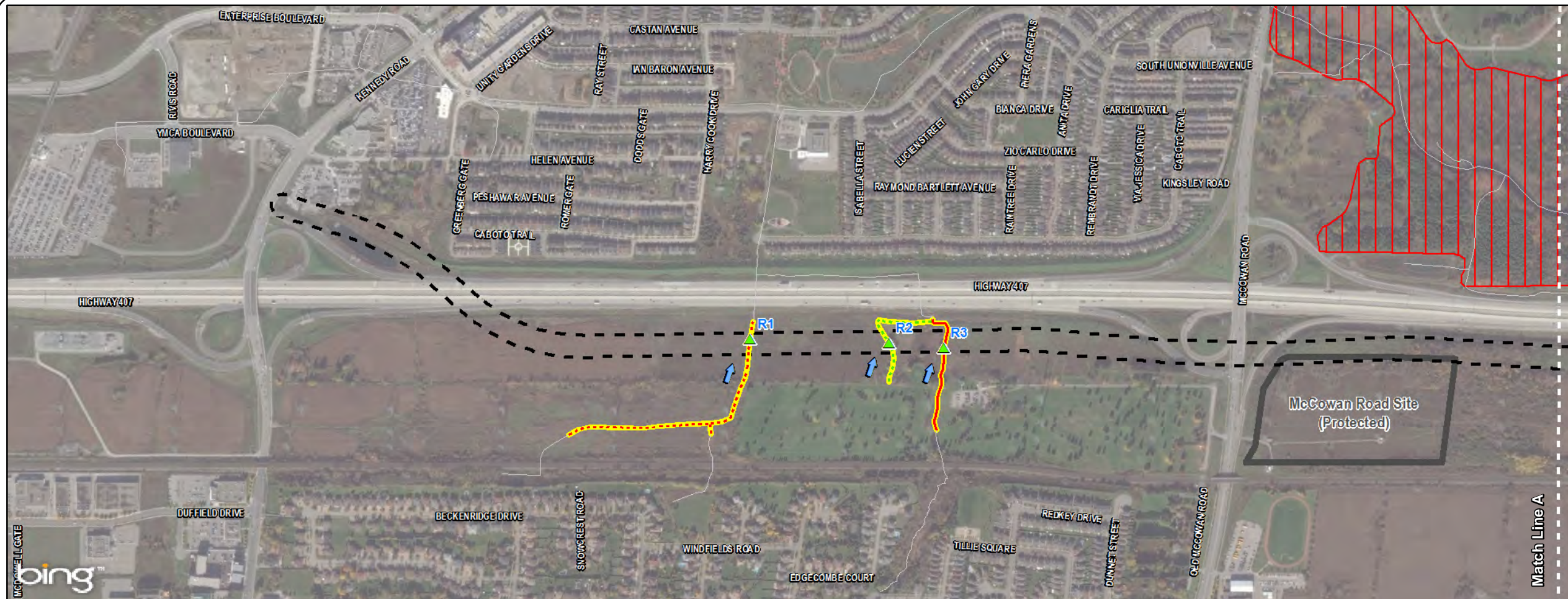
5.1 General Description of Watercourses within the Study Area

Watercourses within the study area flow in a generally north to south direction, and ultimately drain into Lake Ontario, with the exception of some tributaries of the Rouge River which flow south to north through the facility footprint. There are a total of 31 watercourse crossings occurring within the project limits: 12 within the Rouge River watershed; one within the Petticoat Creek watershed; and, 18 within the Duffins Creek watershed. The locations of these watercourses, including the proposed Transitway corridor and station locations, can be found below in **Figure 2a, 2b and 2c**. The watercourse labels are numbered from west to east, and preceded by the first letter of the watershed name (i.e., the westerly crossing of the Rouge River is labelled R1).




















5.1.1 Rouge River Watershed

There are 12 crossings of Rouge River watershed watercourses occurring within the study area: 3 watercourses in Central Main Rouge River subwatershed; 2 within the Lower Main Rouge River subwatershed; and 7 within the Lower Little Rouge River subwatershed. According to the review of the Draft Rouge River Fisheries Management Plan (MNR and TRCA 2010) and personal correspondence with the MNRF (2015, 2016), tributaries of the Rouge River that occur within the study area support warmwater, coolwater and coldwater fish communities. However, according to field work completed by LGL Limited in 2003 for the Highway 7 Transitway, many of the Rouge River tributaries, including the main branch, have been classified as coldwater or coolwater (LGL Limited 2005). The main branch of the Rouge River is known to support migratory salmonid runs, however the extent of natural reproduction is currently not known (MNR and TRCA 2010).

The Draft Rouge River Fisheries Management Plan (MNR and TRCA 2010), Aquatic Species at Risk Mapping (DFO 2014), and, personal correspondence with the MNRF indicate that Redside Dace habitat (recovery or contributing) occurs within several tributaries, including the main branch of the Rouge River within the study area. Below, are descriptions of each of the watercourses that are being affected by the 407 Transitway corridor and proposed station locations.




LEGEND

-  407 Transitway
 -  407 Transitway Station
 -  Environmentally Significant Area (Milne Woods)
 -  Watercourse - Coldwater Permanent
 -  Watercourse - Coolwater Permanent
 -  Watercourse - Warmwater Permanent
 -  Watercourse - Warmwater Intermittent
 -  Watercourse - Coolwater Intermittent
 -  Watercourse - Coldwater Intermittent
 -  Watercourse - Warmwater Ephemeral
 -  Watercourse - Coldwater Ephemeral
 -  Watercourse - Not Surveyed
 -  Watercourse - Redside Dace Contributing Habitat
 -  Watercourse - Redside Dace Recovery Habitat
 -  Watercourse Flow Direction
- Sensitivity
-  High Sensitivity with Opportunity for Enhancement
 -  Moderate Sensitivity with Opportunity for Enhancement
 -  Low Sensitivity with Opportunity for Enhancement
 -  No Data

Data Sources: LGL Limited field surveys, Ministry of Natural Resources and Forestry (LIO).

200 100 0 200 Metres



FISHERIES



Project: TA8429	Figure: 2a
Date: April, 2016	Prepared By: MWF
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LEGEND

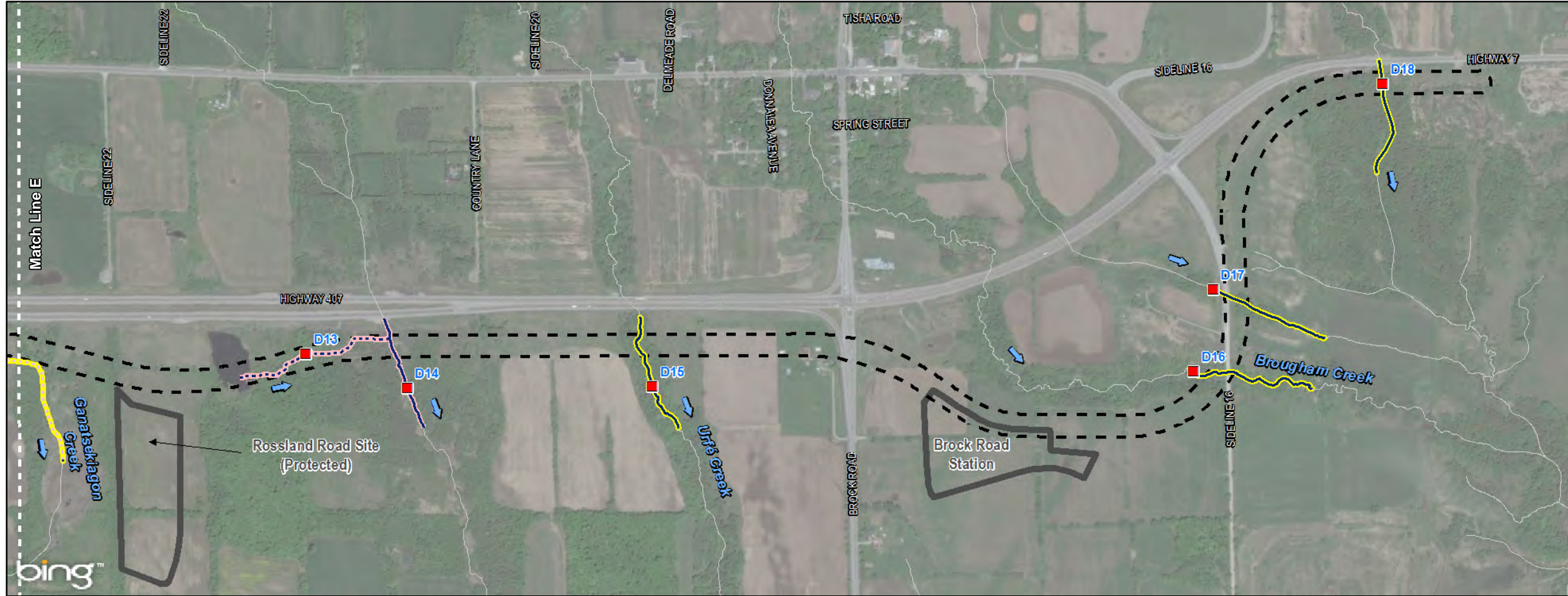
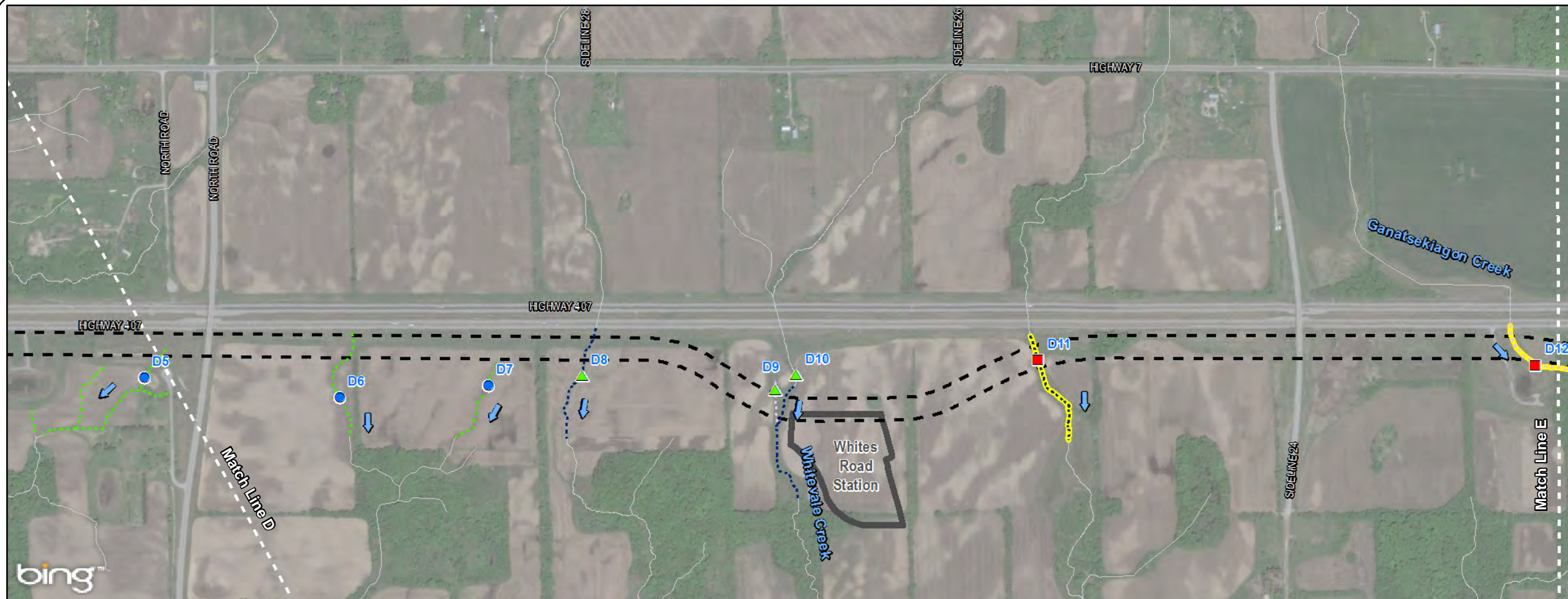
- 407 Transitway
 - 407 Transitway Station
 - Environmentally Significant Area (West Duffins Creek)
 - Watercourse - Coldwater Permanent
 - Watercourse - Coolwater Permanent
 - Watercourse - Warmwater Permanent
 - Watercourse - Warmwater Intermittent
 - Watercourse - Coolwater Intermittent
 - Watercourse - Coldwater Intermittent
 - Watercourse - Warmwater Ephemeral
 - Watercourse - Coolwater Ephemeral
 - Watercourse - Coldwater Ephemeral
 - Watercourse - Not Surveyed
 - Watercourse - Redside Dace Contributing Habitat
 - Watercourse - Redside Dace Recovery Habitat
 - Watercourse Flow Direction
- Sensitivity
- High Sensitivity with Opportunity for Enhancement
 - Moderate Sensitivity with Opportunity for Enhancement
 - Low Sensitivity with Opportunity for Enhancement
 - No Data

Data Sources: LGL Limited field surveys, Ministry of Natural Resources and Forestry (LIO).

FISHERIES



Project: TA8429	Figure: 2b
Date: May, 2016	Prepared By: MWF
Scale: 1 : 10,500	Checked By: SLL



LEGEND

- 407 Transitway
- 407 Transitway Station
- Watercourse - Coldwater Permanent
- Watercourse - Coolwater Permanent
- Watercourse - Warmwater Permanent
- Watercourse - Warmwater Intermittent
- Watercourse - Coolwater Intermittent
- Watercourse - Coldwater Intermittent
- Watercourse - Warmwater Ephemeral
- Watercourse - Coldwater Ephemeral
- Watercourse - Not Surveyed
- Watercourse - Redside Dace Contributing Habitat
- Watercourse - Redside Dace Recovery Habitat
- Watercourse Flow Direction
- High Sensitivity with Opportunity for Enhancement
- Moderate Sensitivity with Opportunity for Enhancement
- Low Sensitivity with Opportunity for Enhancement
- No Data

Data Sources: LGL Limited field surveys, Ministry of Natural Resources and Forestry (LIO).

200 100 0 200 Metres

FISHERIES



Project: TA8429	Figure: 2c
Date: April, 2016	Prepared By: MWF
Scale: 1 : 10,500	Checked By: SLL

5.1.1.1 R1: Tributary of the Rouge River

This tributary of the Rouge River appears to originate as surface drainage from a golf course to the south of the study area. The watercourse was flowing minimally during the spring site visit and no flow was observed during the summer site visit. During the spring visit, the channel measured an average of 0.5 m in width and flowed through sections of cattails and overhanging grasses. Standing pools interspersed by dry reaches were observed in August 2015. This pooling is influenced by the presence of debris jams instream, located in the upstream end of the Transitway corridor. No evidence of groundwater contribution was observed during either site visit. This watercourse functions as warmwater, intermittent drainage and constitutes indirect fish habitat. MNRF classified this watercourse as warmwater, having **moderate** sensitivity and comprises contributing Redside Dace habitat. Based on field investigations, LGL requested the sensitivity change from **moderate** to **low**. However, MNRF did not agree to this change based on the contributing Redside Dace classification. This watercourse eventually discharges into a coolwater fish community (main branch of the Rouge River, R4) downstream of the study area (MNRF 2015,2016).

5.1.1.2 R2: Tributary of the Rouge River

This tributary of the Rouge River originates as a combination of surface drainage from the golf course and a small wetland area. Flow within this watercourse within the study area was diffuse through a dense stand of *Phragmites* (common reed) approximately 11 m in width during the spring site visit. During the summer site visit, this feature was dry. As such, constitutes indirect fish habitat and flows ephemerally during precipitation or snowmelt events. MNRF originally classified this watercourse as warmwater, having **moderate** sensitivity and comprises contributing Redside Dace habitat. Based on field investigations, LGL requested the sensitivity change from **moderate** to **low**. However, MNRF did not agree to this change based on the contributing Redside Dace classification. This watercourse eventually discharges into a coolwater fish community (main branch of the Rouge River, R4) downstream of the study area (MNRF 2015, 2016).

5.1.1.3 R3: Tributary of the Rouge River

This tributary of the Rouge River supports direct fish habitat within the proposed Transitway corridor. Flow within this watercourse has been confirmed as permanent as there was water flow during both the spring and summer site visits. Conditions within this watercourse are degraded and have been altered by impacts from the golf course and 407 ETR. The watercourse flows through the golf course upstream, but is fairly diffuse within the Transitway corridor and braids into two channels before reconnecting and flowing underneath 407 ETR. Riparian and instream vegetation consisted of cattails, *Phragmites* and overhanging grasses. A barrier to passage for small fish was identified within the proposed Transitway corridor as a drop in channel elevation of approximately 0.5 m was noted. Downstream of this drop within the Transitway corridor, cyprinids were observed within the watercourse and within portions of the ditchline during both site investigations. During the summer visit, channel dimensions measured approximately 1.2 m wide and 15 cm deep, upstream of the 407ETR culvert with only 1 cm depth of flow (sheet flow) through the culvert section. This watercourse has been classified by the MNRF as warmwater, having **moderate** sensitivity and comprises contributing Redside Dace habitat. As a result of the barrier to fish passage caused by the elevation change (and sheet flow within the 407 ETR culvert), this watercourse does not support Redside Dace directly, however is contributing habitat for the species. This watercourse eventually discharges into a coolwater fish community (main branch of the Rouge River, R4) downstream of the study area (MNRF 2015, 2016).

5.1.1.4 R4: Rouge River

The main branch of the Rouge River supports permanent, direct fish habitat within the proposed Transitway corridor. This watercourse averages 11 m in width and 0.5 m in depth and, within the area of investigation, is comprised of mostly flat morphology, with some riffles and runs. Pool habitat appeared to be lacking within the reach investigated. Substrates are cobble-dominated and included silt, gravel, sand and boulders. This watercourse flows south through a natural valley to the north of the Transitway corridor, continuing south through a golf course with a small natural riparian buffer. Significant groundwater contribution was observed along the east bank, immediately north of the golf course during LGL's spring and summer investigations. A small weir, which forms a barrier to small fish passage, was identified approximately 200 m downstream of the Transitway corridor. The Rouge River in the study area has been classified by the MNRF as having **high** sensitivity, and is a coolwater watercourse which supports a diverse warmwater/coolwater fish community that includes contributing Redside Dace habitat, in addition to supporting seasonal salmonid migratory runs (MNRF 2015, 2016; MNR and TRCA 2010).

5.1.1.5 R5: Tributary of the Rouge River

This tributary of the Rouge River has been altered by development activities. It appears to originate just north of 407 ETR, outletting from storm water management (SWM) ponds via two channels. Within the Transitway corridor, this watercourse flows through wetland habitat, with a large wetted corridor approximately 100 m in width. South (downstream) of the corridor, a defined channel exits the wetland and flows to the southwest along an armourstone wall which borders the Box Grove commercial complex. The channel averaged 1.5 m in width and 20 cm in depth in spring, with similar dimensions recorded in the summer survey, supporting very slow flow at this time. Morphologically, this channel consists of a single flat section. This tributary flows through a narrow cattail lined-corridor, along the west side of the commercial development, and through a grated concrete structure (125 m length) under the Copper Creek Drive/9th Line intersection, outletting to wetland habitat downstream. Groundwater contributions are notable within the downstream wetland, given the prevalence of iron flocculent instream. Some groundwater evidence (oily sheen) was also observed within the vicinity of the Transitway corridor. MNRF originally indicated that this tributary is classified as coolwater with **high** sensitivity and supporting migratory salmonids in addition to contributing Redside Dace habitat. However, based on LGL's field investigations, it appears unlikely fish can migrate freely up to this section given dense vegetative conditions or would use the wetland area based on unsuitable habitat conditions both within the downstream channel and within the Transitway corridor. Therefore, this tributary of the Rouge River provides indirect fish habitat, supports a downstream coolwater fish community and is contributing habitat for Redside Dace. LGL/MNRF agreed that this crossing should be classified as **moderate** sensitivity.

5.1.1.6 R6: Tributary of Little Rouge Creek

This tributary of Little Rouge Creek originates from a SWM pond to the north of 407 ETR. This watercourse within the Transitway corridor functions as direct fish habitat and is classified as permanent as water flow was noted during both the spring and summer site visits. The channel supports braided flow through a large corridor of *Phragmites*, cattails (*Typha* sp.) and Crack Willow (*Salix fragilis*). Slow to moderate flows were observed, measuring approximately 15-20 cm deep during the summer survey. Iron staining, indicating groundwater input was documented along the west bank within the Transitway corridor. Abundant numbers of baitfish were observed using the 407 ETR culvert outlet pool, which measured 70-80 cm deep (approximate), at the time of the summer survey. MNRF originally classified this tributary as warmwater with **high** sensitivity. However, based on the results of the field investigation, and the fish community information, MNRF and LGL agreed that this crossing should be classified as **moderate** sensitivity. The fish community data provided by the MNRF is more

characteristic of a coolwater fish community and, therefore, the thermal regime was modified by LGL from warmwater to coolwater.

5.1.1.7 R7 / R7-A: Tributary of Little Rouge Creek

This tributary of Little Rouge Creek is a diffusely flowing watercourse within a large corridor of cattail and *Phragmites* within the Transitway corridor. The channel is approximately 0.5 m deep at the 407 ETR culvert outlet, flows diffusely through the corridor and becomes channelized again as it approaches Copper Creek Drive. Another watercourse (Tributary R7-A) joins R7 from the east within the Transitway corridor. R7-A appears to drain storm water runoff from the 407 ETR and connects via a small pipe from a pond to the east of R7: it was dry during the summer visit and can be classified as ephemeral. This flow is directed to a Hickenbottom drain inlet. The R7 watercourse within the Transitway corridor provides direct fish habitat as cyprinids were observed. MNRF originally classified these tributaries as warmwater with **high** sensitivity. However, based on the results of the field investigation, and the fish community information, MNRF and LGL agreed that these crossing should be classified as **moderate** sensitivity. The fish community data provided by the MNRF is more characteristic of a coolwater fish community and, therefore, the thermal regime was modified by LGL from warmwater to coolwater for both of these features.

5.1.1.8 R8: Tributary of Little Rouge Creek

This tributary of Little Rouge Creek appears to originate from a large SWM pond to the north of 407 ETR. The watercourse within the Transitway corridor appears to have been historically altered (straightened) and measures approximately 0.4 m in width and 20-30 cm in depth. This channel appears to constitute fairly high quality fish habitat with an abundance of riparian vegetation growth and instream cover. However, no critical habitats or contributions of groundwater were observed. Downstream of the Transitway corridor the watercourse follows the ditch line of Reesor Road, eventually crossing the road and the CNR line before discharging into Little Rouge Creek. MNRF did not have any fisheries or sensitivity data for this watercourse other than a thermal classification of coolwater, and LGL investigations did not result in the observation or capture of any fish during the spring or summer site visits. Based on field investigations LGL and MNRF agreed on a **moderate** sensitivity classification for this watercourse. This tributary provides direct fish habitat, based on the presence of high quality habitat features and the absence of barriers to fish passage within and immediately downstream of the Transitway corridor.

5.1.1.9 R9: Tributary of Little Rouge Creek

The watercourse at this crossing has been degraded from urban and agricultural activities. It outlets from under 407 ETR and immediately crosses underneath the CNR tracks. Downstream of the railway an all-terrain vehicle (ATV) trail crosses the watercourse before the channel flows into cultural thicket habitat that borders an agricultural field. It then enters the field where it has been ploughed, but eventually transitions into a vegetated swale (within 90 m downstream of the Transitway corridor). At the time of the spring site visit, no defined channel existed and flow was diffuse through the agricultural field. During the summer site visit, no flow was evident and the feature was dry with the exception of minor pooling at the culverts. MNRF did not have any fisheries or sensitivity data for this watercourse other than the classification of coolwater. Based on field investigations LGL and MNRF agreed on a **low** sensitivity classification for this watercourse. This watercourse eventually discharges into the tributary of Little Rouge Creek from crossing R8, but, due to its degraded conditions, does not support direct fish habitat within the Transitway corridor.

5.1.1.10 R10: Little Rouge Creek

Little Rouge Creek flows through a large natural valley with mixed forest riparian vegetation community. This watercourse averages 7 m in width, ranges 20-80 cm in depth (spring) and has a diverse morphology

of riffles, runs and pools. In comparison, riffles measured approximately 15 cm deep and pools approximately 50 cm deep during summer low flow conditions. In-stream cover is high with an abundance of large woody debris and some undercut banks. Substrates are cobble dominated and also include gravel, sand, silt and boulders. An overflow channel appears to exist along the riparian edge, within the running way corridor. ATVs are crossing this watercourse at a riffle approximately 30 m downstream of the Transitway corridor. Further downstream of the Transitway corridor, the west bank is deeply entrenched and accelerated erosion appears to be occurring. This watercourse has been classified by the MNRF as a permanent, coldwater watercourse which directly supports a coldwater/coolwater fish community and seasonal migratory salmonid runs. This watercourse has been classified by MNRF as having **high** sensitivity.

5.1.1.11 R11: Tributary of Little Rouge Creek

This feature was dry during the spring and summer field investigations. No formal channel or aquatic vegetation was noted at this location and no critical habitat features were observed. This watercourse functions as ephemeral drainage, and does not constitute fish habitat.

5.1.2 Petticoat Creek Watershed

Petticoat Creek crosses the Transitway corridor west of York-Durham Line, and according to the Petticoat Creek Watershed Action Plan (TRCA and Rouge Park 2012), this watercourse has “low sensitivity”. The watershed report states that much of the flow within the tributaries of this watershed is provided by surface flow, therefore these tributaries are likely intermittent/ephemeral and may support an indirect or seasonal warmwater fish community (TRCA and Rouge Park 2012). However, correspondence with the MNRF originally classified Petticoat Creek as having **high** sensitivity and supporting a coldwater fish community including Atlantic Salmon (*Salmo salar*) and Brook Trout (*Salvelinus fontinalis*).

5.1.2.1 P1: Petticoat Creek

Petticoat Creek within the study area was nearly dry during the spring site investigation and was completely dry during the summer site visit. This watercourse consists of a diffuse channel flowing through a wide corridor of cattails and *Phragmites*. It is likely that flows are ephemeral. Downstream of the Transitway corridor, the watercourse traverses a ploughed field where no discernible channel or swale is evident. MNRF originally classified this feature as warmwater and **high** sensitivity; however, according to LGL field investigations, this feature does not support fish habitat. Although no channel or swale was evident during field investigations, MNRF requested this feature be treated as a watercourse of **low** sensitivity due to the potential for cyprinid migration during high water conditions. Conditions of this watercourse within the Petticoat Creek watershed reflect the poor quality, ephemeral conditions noted in the Petticoat Creek Watershed Action Plan (TRCA and Rouge Park 2012).

5.1.3 Duffins Creek Watershed

There are 18 total watercourses in the Duffins Creek watershed that occur within the Transitway corridor; 5 watercourses within the West Duffins Creek subwatershed, 5 watercourses within the Whitevale Creek subwatershed, 2 watercourses within the Ganatsekiagon Creek subwatershed, 3 watercourses within the Urfe Creek subwatershed and 3 watercourses within the Brougham Creek subwatershed. According to the Duffins Creek Watershed Plan (TRCA 2002) and correspondence with the MNRF, these watercourses support predominately coolwater fish communities and are managed for Redside Dace, darter species and Rainbow Trout (*Oncorhynchus mykiss*). Coldwater watercourses also occur within the study area and are managed for Brook Trout and Atlantic Salmon (TRCA 2002).

The Aquatic Species at Risk Mapping and correspondence with the MNRF supports that Redside Dace habitat (Contributing or Recovery) occurs in several tributaries of Duffins Creek within the facility footprint. Redside Dace habitat within watercourses includes channel reaches downstream of the study area in Ganatsekiagon Creek, Urfe Creek and in the vicinity of the east end of the study area in the East Duffins Creek subwatershed (Brougham Creek) (DFO 2014). MNRF classified these watercourses as coldwater fish habitat and **high** sensitivity.

5.1.3.1 D1: West Duffins Creek

This watercourse supports permanent direct fish habitat within the area of investigation. It flows through a large natural valley corridor with a mixed forest community. West Duffins Creek at this location has a diverse morphology and good riparian vegetation growth. Instream cover is prominent with an abundance of woody debris, some undercut banks and cobble/boulders. Seeps of groundwater were observed in several locations along the west bank within and downstream of the Transitway corridor. The watercourse averages 6 m in width and 45 cm in depth with substrates dominated by cobble, gravel, sand, silt and boulders. The background review and site investigations indicated high quality fish habitat. MNRF classified this watercourse as coldwater fish habitat and **high** sensitivity.

5.1.3.2 D2: Tributary of West Duffins Creek

Based on field investigations this feature does not appear to be a defined watercourse. A small, offline wetted depression is present within the Transitway corridor and upstream under the 407 ETR bridge structures. This feature was followed to the south and did not appear to directly connect to West Duffins Creek as no defined channel was observed. Approximately 100 m downstream of the Transitway corridor, a backwater branch, which appears to be remnants of the mapped historical contributing channel of West Duffins Creek was observed. This feature within the Transitway corridor does not constitute fish habitat based on field investigations conducted by LGL. Although no apparent watercourse was identified within the facility footprint during field investigations, MNRF requested this feature be treated as a coldwater watercourse of **low** sensitivity.

5.1.3.3 D3: Tributary of West Duffins Creek

This watercourse supports permanent direct fish habitat within the area of investigation, although flows may intermittently stop during the summer (as evidenced during the summer site visit when no flow was observed under the 407 ETR structures, but flow was noted further downstream). The channel averages 2 m in width and 30-40 cm in depth in the spring and narrows considerably during summer. This watercourse flows through a natural wooded corridor. There is a diverse morphology with abundant pool habitat. Substrates are also diverse and include a mix of silt, cobble, gravel and sand. Riparian cover and instream cover is high, and includes instream woody debris, cobble and some undercut banks. The channel braids in some locations where instream woody debris is partially blocking flows. Erosion is apparent along both banks, and is amplified upstream of the facility footprint underneath the 407 ETR structures where vegetation is unable to grow. In this location under the structures, it is apparent that ATVs are crossing the watercourse. MNRF classified this watercourse as coldwater fish habitat of **high** sensitivity.

5.1.3.4 D4: Tributary of West Duffins Creek

This watercourse is fairly diffuse, flowing through a wetted corridor of cattails and *Phragmites*. Iron staining was observed near the 407 ETR culvert outlet to the west of the watercourse indicating groundwater input. Further downstream, just south of the Transitway corridor, the watercourse has been crossed in multiple locations by ATVs. Standing water was observed in the spring within the tire tracks but no channel definition was observed during either the spring or summer site visits. Downstream of the ATV disturbance, a defined channel forms, flowing through cattails, but it was dry during the summer visit. Approximately 100 m downstream of the Transitway corridor, the channel enters a woodlot where

a defined channel exists, and there is an abundance of instream woody debris within the creek. Stagnant shallow sections interspersed by dry reaches, were present in this reach during the summer low flow survey. Based on field investigations, fish habitat is of poor quality near the Transitway corridor but improves downstream. However, there is a barrier to fish passage at the forest edge caused by an elevation change. This watercourse has intermittent flow based on LGL's field investigations. MNRF originally classified this watercourse as coldwater with a **high** sensitivity; however, based on LGL field investigations, MNRF and LGL agreed on a **moderate** sensitivity classification.

5.1.3.5 D5: Tributary of West Duffins Creek

No watercourse features were identified within the vicinity of this area during the spring and summer field investigations. It is likely that these features may function as ephemeral swales that collect surface drainage from the active agricultural field in which they exist. The entire area was planted in soy crop, during summer investigations. Surface drainage via topographic lows, appear to enter a forested swale feature within 190 m south of the Transitway corridor. This feature was dry at the time of the summer survey and several steps (elevation changes) exist at the upstream end of the forest (likely eroded by field run-off in spring). Based on field investigations, D5 within the Transitway corridor does not constitute fish habitat. MNRF originally identified this feature as having **high** sensitivity, however based on field investigations, agreed that this feature does not function as fish habitat and **no** sensitivity classification should be assigned to this crossing.

5.1.3.6 D6: Tributary of Whitevale Creek

No defined channel was identified at this feature and likely functions as an ephemeral drainage swale through the active agricultural field. Based on field investigations, D6 within the Transitway corridor does not constitute fish habitat. MNRF originally identified this feature as having **high** sensitivity, however based on field investigations, agreed that this feature does not function as fish habitat and **no** sensitivity classification should be assigned to this crossing.

5.1.3.7 D7: Tributary of Whitevale Creek

No defined channel was identified at this feature and likely functions as an ephemeral drainage swale through the active agricultural field. Based on field investigations, D7 within the Transitway corridor does not constitute fish habitat. MNRF originally identified this feature as having **high** sensitivity, however based on field investigations, agreed that this feature does not function as fish habitat and **no** sensitivity classification should be assigned to this crossing.

5.1.3.8 D8: Tributary of Whitevale Creek

This watercourse within the area of investigation appears to flow intermittently as it was mostly dry during the summer field visit. This feature is small, approximately 30 cm in width and 5-10 cm in depth when it was flowing during the spring visit. A stagnant pool measuring 10 m long and 15 cm deep was present immediately downstream of the ATV trail, however reaches upstream and downstream of this point were dry during the low flow survey. It flows through an active agricultural field, with a fairly narrow buffer, but is not ploughed through. Substrates within this watercourse include silt, detritus, gravel, sand and cobble. There is very little woody riparian cover at this watercourse, with only some overhanging grasses. Within the vicinity of the Transitway corridor, ATVs cross the watercourse through an approximate 35 m reach in which there is little channel definition. Field investigations indicate fairly poor habitat conditions and this watercourse most likely supports fish habitat indirectly. MNRF originally classified this watercourse as coldwater with **high** sensitivity. However, based on field investigations, LGL requested the sensitivity change from **high** to **low**. MNRF did not agree to **low** sensitivity given coldwater intermittency and potential for supporting coldwater fish habitat downstream. The MNRF requested this watercourse be classified as **moderate** sensitivity.

5.1.3.9 D9: Tributary of Whitevale Creek

This feature originates within the Transitway corridor as an area of standing water, within a corridor of grasses and cattails. It flows on an ephemeral basis as no indication of groundwater contribution was observed within the channel and was completely dry during the summer site visit. This feature joins Whitevale Creek at D10 just downstream of the Transitway corridor and supports a downstream fish community indirectly. MNRF originally classified this watercourse as coldwater with **high** sensitivity. However, based on field investigations, LGL requested the sensitivity change from **high** to **low**. MNRF did not agree to **low** sensitivity given coldwater ephemeral conditions and potential for supporting coldwater fish habitat downstream. MNRF requested this watercourse be classified as **moderate** sensitivity.

5.1.3.10 D10: Whitevale Creek

This watercourse within the area of investigation is intermittent. It discharges from the 407 ETR culverts upstream of the Transitway corridor and is immediately crossed in several places by ATV tracks. Flow was observed during the spring site visit, but the feature was dry during the summer visit. Within the Transitway corridor, flow is diffuse through terrestrial grasses (brome) with some cattail and reed canary grass. The D9 feature intersects this watercourse downstream of the Transitway corridor and the channel becomes defined approximately 90 m downstream of this point. Channel definition, coarse substrates and undercut banks are characteristic of this channel reach for approximately 80 m. Channel dimensions in this section average 1m in width and 20-50 cm in depth when flowing (dry during summer visit). Downstream of this, approximately 200 m downstream of the Transitway corridor, the channel again becomes diffuse through a wide grassy corridor and eventually enters the woodlot to the south. MNRF originally classified this watercourse as coldwater with **high** sensitivity. However, based on field investigations, MNRF and LGL agreed on **amoderate** sensitivity classification. Due to what appears to be poor connection to downstream habitat, intermittent flow and habitat conditions within the Transitway corridor, this watercourse supports downstream fish communities indirectly.

5.1.3.11 D11: Tributary of Ganatsekiagon Creek

This watercourse within the area of investigation upstream of the Transitway corridor exits the 407 ETR culverts and is disturbed by an ATV crossing within the first 25 m. The channel downstream of the ATV trail and through the Transitway corridor is poorly defined, and was approximately 0.5 m in width and 20 cm in depth, with a pool/run morphology during the spring field investigation. During the summer site visit, the channel was not flowing and had little standing water in the cattail stand located between the 407 ETR culverts and the ATV trail. Downstream, the channel runs between agricultural fields within a buffer of natural vegetation comprised of overhanging grasses. Approximately 150 m downstream of the Transitway corridor, the watercourse is crossed in several places by ATVs trails. The channel in these locations loses all definition. Downstream of the ATV disturbances, the channel flows diffusely through grasses, and cattails. Within the area of investigation, no evidence of groundwater contribution was observed. The MNRF originally classified this watercourse as coldwater, contributing Redside Dace habitat and having **high** sensitivity. Based on the field investigations, LGL requested the sensitivity change from **high** to **moderate**. MNRF did not agree to this change in sensitivity due to this watercourse providing contributing Redside Dace habitat. This watercourse has a poor connection to downstream habitat, is intermittent in nature and exhibits poor habitat conditions within the Transitway corridor. This watercourse supports downstream fish communities indirectly.

5.1.3.12 D12: Ganatsekiagon Creek

This watercourse flows through the Transitway corridor within constructed berms that separate it from a storm water management pond to the south. The channel within this location is diffuse, measuring approximately 3 m in width and 10-20 cm in depth within a corridor of cattails and grasses. It curves east, under a fence and enters a woodlot. The channel for approximately 50 m is defined by coarse

substrates and more defined channel. However, an ATV crossing was observed downstream and channel definition is lost within the tracks. The watercourse was flowing during the spring field investigation, but was dry during the summer visit. The MNRF originally classified this watercourse as coldwater, contributing Redside Dace habitat and having **high** sensitivity. Based on the field investigations, LGL requested the sensitivity change from **high** to **low**. MNRF did not agree to this change in sensitivity due to this watercourse providing contributing Redside Dace habitat. This watercourse is degraded, flows intermittently and has poor channel definition in areas. This tributary supports downstream fish communities indirectly.

5.1.3.13 D13: Tributary of Urfe Creek

This watercourse originates from a large pond located to the south of the 407 ETR. The pond measures 75 m wide by 100 m in length and is fringed with trees, shrubs, grasses and cattails. There is relatively high instream cover with woody debris and submerged vegetation. The tributary of Urfe Creek flows out of the pond to the east. The channel is approximately 7 m wide at the outlet and is deeply entrenched with heavy tree cover and abundant instream woody debris. As the watercourse flows further east, its channel widths become reduced to approximately 2 m and depths to 20 cm (less during the summer site visit), and it loses channel definition. As this channel continues to the east, the channel loses definition completely as ATV tracks traverse the watercourse in every direction, including parallel. Although the channel is poorly defined and the area was not flowing during the summer site visit, fish were observed in several locations throughout this channel during the spring, mainly in the deeper ruts created by the ATVs. Throughout the study reach, there are multiple groundwater seeps as evidenced by iron staining and watercress (*Nasturtium officinale*). Riparian cover is high, as this watercourse flows through a woodlot, before entering the watercourse at D14. Although degraded by ATV use, this watercourse appears to provide groundwater contribution for downstream Redside Dace habitat, and provides seasonal direct fish habitat throughout. The MNRF originally classified this watercourse as coldwater, recovery Redside Dace habitat and having **high** sensitivity. Based on the field investigations, LGL requested the sensitivity change from **high** to **moderate**. MNRF did not agree to this change in sensitivity due to this watercourse providing recovery Redside Dace habitat.

5.1.3.14 D14: Tributary of Urfe Creek

This watercourse within the Transitway corridor is a permanently flowing feature that travels through a mix of forest and wetland habitat. Downstream of the 407 ETR culvert outlet, an ATV crossing is present. Other than this disturbed location, the channel is well defined throughout the reach investigated, although it is braided in some locations around woody debris. Morphology is characterized by mostly flat/slow runs with an occasional riffle through instream woody debris. Multiple groundwater seeps were apparent during the field investigations (especially during the spring visit) with abundant watercress and iron staining observed in the creek and within the riparian area. Instream cover is good with large woody debris, undercut banks and emergent vegetation. Channel dimensions throughout the area of investigation during the spring site visit averaged 0.6 m in width and 30 cm in depth. Flows were very low during the summer visit and, thus, channel dimensions were much smaller; averaging 0.2 m in width and 10 cm in depth. Substrates are silt and detritus dominant but also include some gravel and sand. The MNRF classified this watercourse as coldwater, recovery Redside Dace habitat and having **high** sensitivity. Cyprinids and catostomids were observed within the channel during both field investigations. As such, this watercourse provides direct fish habitat.

5.1.3.15 D15: Urfe Creek

This watercourse is permanently flowing and flows through a mixed forest which provides good canopy cover. The channel is entrenched along the west bank. Instream cover is good and is provided by woody debris, some undercut banks and boulders. Morphology is fairly diverse and is dominated by runs, with riffle and pool habitat also present. The channel braids in some locations around the instream woody

debris. At the upstream end of the Transitway corridor, construction at a new bridge for the Highway 407 East – Phase 1/Brock Road interchange project was ongoing during the spring visit and was completed prior to the summer site visit. As a result, sediment fencing, filter socks and erosion control blankets were present along the riparian area of the watercourse in the spring, but had been removed prior to the summer site visit. An ATV trail parallels this watercourse and crosses the channel within the Transitway corridor. At the upstream end of the channel, substrates are fairly coarse including cobble, gravel, sand, boulders and silt. These coarse substrates subside and the channel bed becomes silt dominated at the downstream area of investigation. An abundance of newly deposited silt is also present along the banks up to the bankfull level. It is assumed that this deposition of silt is a result of the upstream construction activities. Evidence of a groundwater seep was observed along the east bank of the watercourse, approximately 100 m downstream of the Transitway corridor. Channel dimensions during the spring visit averaged 2.5 m in width and 0.5 m in depth. Flows were substantially greater during the spring site visit in relation to the summer visit, when flows were very low. Fish (cyprinids) were observed during both investigations. The MNRF classified this watercourse as coldwater, contributing Redside Dace habitat, and having **high** sensitivity. This watercourse provides direct fish habitat.

5.1.3.16 D16: Brougham Creek

Due to the Highway 407 East – Phase 1/Brock Road interchange construction ongoing during the 2015 spring field investigations, access to this watercourse was restricted. Investigations for Brougham Creek within the Transitway corridor were confined to a single (summer) site investigation in addition to the secondary source review which included habitat and fisheries community data from the 407 East Environmental Assessment Report (MTO 2009) and fisheries community and sensitivity data from personal correspondence with MNRF in 2015.

Access to the site was available for the summer field visit, which occurred on September 1, 2015. The Transitway corridor is situated at the current location of the Sideline 16 crossing. The watercourse was investigated both upstream and downstream of this crossing, which itself is a CSP culvert. Upstream of Sideline 16 the channel flows within a defined channel from west to east within a fairly steep valley. Vegetation on the valley slopes is comprised of deciduous trees and the floodplain contains a mix of marsh and deciduous swamp vegetation. Morphology is mainly a mix of riffles and pools with little run habitat. Channel widths range from 0.2 m in riffles to 1.5 m in pools. Depths ranged from 5 cm to 30 cm. Watercress was common and comprised the main instream vegetation in the upstream section investigated. Instream cover is provided by watercress, cobbles, boulders and some woody debris. Substrates were coarse and were comprised of boulders, cobbles, gravel, sand and some silt. A large area of gravel appears to have been recently deposited in the watercourse from between 65 m and 75 m upstream of the Sideline 16 crossing. There was active channel work underway during the site visit in the vicinity of the realigned Brock Road bridge located approximately 90 m upstream of Sideline 16. A dam and pump operation was being used and clean water was being discharged from two bypass pump hoses. However, turbid water was coming from the upstream channel and appeared to have originated from the active work site.

The downstream end of the Sideline 16 CSP is perched by approximately 40 cm. It discharges into a large plunge pool that is approximately 7 m wide and 75 cm deep. Downstream of this plunge pool a straight, rocky channel exists that gradually narrows as it transports water down a fairly steep slope. Morphology is dominated by riffles with some pool and little run habitat. Channel widths narrowed from 7 m at the plunge pool to 1 m in the downstream riffle. Depths ranged from 75 cm to 10 cm. Substrates are comprised of boulders, cobbles, gravel, sand and silt. Instream cover is provided by boulders,

cobbles and woody debris. No instream vegetation was noted downstream. Floodplain and valley slopes were similar to upstream except that the downstream channel was more shaded.

The perched nature of the Sideline 16 culvert and the very shallow flows through the culvert likely form a barrier to fish passage. No fish were observed during LGL's field investigations.

Brougham Creek is a permanently flowing watercourse which supports Brook Trout and Rainbow Trout spawning habitat downstream of Sideline 16 (downstream of the study area). MNRF classified this watercourse as coldwater, contributing Redside Dace habitat and having **high** sensitivity.

5.1.3.17 D17: Tributary of Brougham Creek

Due to the Highway 407 East – Phase 1/Brock Road interchange construction ongoing during the 2015 spring field investigations, access to this watercourse was also restricted. Investigations for the Tributary of Brougham Creek within the Transitway corridor were therefore confined to a single (summer) site investigation. This tributary of Brougham Creek has recently been altered by the realignment of Brock Road, the widening of Highway 7 and other works associated with the extension of the 407 ETR. Historically, it crossed Sideline 16 from west to east at the location of the Transitway corridor approximately 170 m north of D16. Sideline 16 at this location has been removed and a new crossing exists upstream (west) of this location for the new Brock Road alignment. As such, a new channel has been created that conveys flows from the Brock Road culvert through the area where Sideline 16 was removed and into the historic channel downstream of the historic Sideline 16 crossing.

The constructed channel begins at the downstream end of the Brock Road culvert, which is a concrete box structure conveying very shallow (1 cm) sheet flow. The first 100 m of this channel exists in the vicinity of the historic Sideline 16. It is a rip-rap lined channel down a steep gradient. To dissipate flow energy a series of plunges (six in total) was created using large boulders as “steps”. Some of these steps are approximately 30 cm high. Flows were evident, but were very low at the time of the site visit. Water is spread out over approximately 1 m and is thus shallow (10 cm maximum). The banks are comprised of rip-rap as are the substrates within this section of channel. Bank vegetation is sparse and consists mainly of herbaceous species that were spread throughout the area in the seed mix used to stabilize the slopes. As such, shading is non-existent. There are three areas where storm water enters the watercourse. Each of these areas consists of rip-rap swales originating to the north of the channel. At the end of the realigned channel, flows enter a small forested area where large sediment (sand and gravel) deposits are evident. There is another elevation drop a few meters into this forest community where erosion has occurred. Morphology consists almost exclusively of very shallow riffles over sand and gravel substrates. Channel depths and widths are very small and range from 5 cm depth and 0.2 m width in riffles to 30 cm depth and 0.75 m width at the elevation drop.

No fish were observed in any part of this watercourse. Due to the steep gradient and the very shallow depths it is unlikely that fish can occupy any part of this watercourse within the vicinity of the Transitway corridor. In addition, air photo analysis indicates that there are a series of online ponds downstream with rip-rap spillways/discharges and no clear connection to Brougham Creek. As a result, this watercourse provides indirect fish habitat only.

According to MTO (2009), this tributary of Brougham Creek is an intermittent watercourse which has poor connectivity to downstream habitat. This supports the conclusion that this watercourse provides indirect habitat only. According to MTO/MNRF, this tributary of Brougham Creek is Redside Dace contributing habitat. MNRF originally classified this watercourse as coldwater and having **high** sensitivity. Based on the field investigations, LGL requested the sensitivity change from **high** to

moderate. MNRF did not agree to this change in sensitivity due to this watercourse providing contributing Redside Dace habitat.

5.1.3.18 D18: Tributary of Brougham Creek

This watercourse is permanently flowing, has a well-defined channel and flows through a cedar-dominant coniferous forest. Morphology is comprised mainly of riffles, with some pools and runs. Channel dimensions during the spring visit averaged 2 m in width, and 30 cm in depth. Riparian cover is high and provided by the dense cedar woodlot. Instream cover is also high, and provided by predominantly instream and overhanging woody debris.

Immediately downstream of the Highway 7 culvert, a rip rap and boulder berm has been placed across the watercourse, effectively functioning as a permanent barrier to fish movement. According to MTO, there are additional barriers upstream of Highway 7: two rip rap berms were installed as per discussions with TRCA and MNRF in order to reduce the amount of sediment entering this tributary of Brougham Creek from construction activities for the Highway 407 East – Phase 1/Brock Road interchange. Downstream of Highway 7, heavy deposition of gravel/cobble sized rip rap has been dispersed throughout the bankfull area, from the construction activities from the Highway 407 East – Phase 1/Brock Road interchange. These deposits appear to be up to 30 cm deep. According to MTO, the Highway 7 culvert will be removed in 2015 or 2016, the berms will be removed from the watercourse, and clean-up of the sediment and granular material will be undertaken by TRCA. This work will occur in the vicinity of the runningway, which is situated immediately downstream of the current Highway 7 crossing. Further downstream of the granular deposition, the natural substrates appear to be sand dominant.

Although no fish were observed during the spring and summer site investigations, this watercourse provides direct fish habitat.. MNRF classified this watercourse as coldwater, contributing Redside Dace habitat and having **high** sensitivity.

5.2 Aquatic Species at Risk

5.2.1 Rouge River

One aquatic species at risk, Redside Dace, occurs in the Rouge River watershed within the study area. This species is regulated as ‘Endangered’ under the Ontario *Endangered Species Act, 2007* (ESA). Redside Dace habitat (contributing) occurs within several tributaries, including the Main Branch of the Rouge River within the study area: R1; R2; R3; R4; and, R5 (MNRF 2015, 2016).

5.2.2 Petticoat Creek

No aquatic species at risk are known to occur within this watershed (DFO 2014).

5.2.3 Duffins Creek

One aquatic species at risk, Redside Dace, occurs in the Duffins Creek watershed within the study area. Redside Dace habitat (recovery or contributing) occurs in several tributaries of Duffins Creek within the study area. Redside Dace habitat includes stretches of channel downstream of the study area in Ganatsekiagon Creek, Urfe Creek and in the vicinity of the east end of the study area in the Brougham Creek subwatershed: D11; D12; D13; D14; D15; D16; D17 and, D18 (MNRF 2015, 2016).

5.3 Critical Fish Habitat

The study limits were reviewed for the potential presence of critical habitat (i.e., spawning areas, groundwater discharge, nursery habitat, seasonal refugia, etc.). There is evidence of critical habitat in the

form of groundwater discharge observed at several watercourses during field investigations. Groundwater discharge areas, depending upon the amount of flow, can be used by fish as seasonal refugia or spawning habitat. Details can be found in the watercourse descriptions above.

5.4 Sensitivity/Significance

The watercourses within the study area support a mix of warmwater, coolwater, and coldwater fish communities. Many of the larger watercourse systems support healthy populations of native and non-native species including many which migrate from Lake Ontario (e.g., salmonids). However, all of the watercourses in the study area have experienced some type of impact from urbanization and agriculture.

Redside Dace is protected by the Ontario *Endangered Species Act, 2007*. Watercourses which support contributing or recovery habitat may require specialized mitigation measures to prevent negative impacts to the species and its habitat, and may also require permits under the ESA from the MNRF Aurora District office, depending on the activities proposed.

As stated above, based on the available information, watercourses within the Rouge River and Duffins Creek watersheds are classified as low, moderate or high sensitivity. Field investigations confirmed many of these MNRF-provided sensitivities, however field observations also indicate some of the watercourses classified as high sensitivity do not provide fish habitat. According to the MTO Fish Guide, these sensitivity classifications are reported as given by the MNRF (2015); however, as per the protocol, they may be modified through consultation with the MNRF. A request was sent to MNRF on September 17, 2015 to confirm acceptance of the LGL interpreted sensitivities where they differed from those provided by the MNRF. A response was received on October 7, 2015 from Adam Challace of Aurora District MNRF. The final sensitivity classifications, as determined in consultation with MNRF and results of field investigations, are outlined above for each watercourse in **Section 5.1**, and in **Table 1** below.

5.5 Thermal Regime

The watercourses within the study area support a mix of warmwater, coolwater, and coldwater fish communities. In-water works timing windows were provided by MNRF in accordance with the protocol. Warmwater watercourses are subject to an in-water timing window of July 1 to March 31. Coolwater, coldwater and Redside Dace watercourses are subject to an in-water timing window of July 1 to September 15.

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
R1: Tributary of the Rouge River	17T 637112 m E 4857012 m N	Intermittent	Warmwater	Rip rap, silt	Cattails, red osier dogwood, shrub willow, Reed Canary Grass	Indirect	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae Spp. (MNRF 2015)	Moderate
R2: Tributary of the Rouge River	17T 637411 m E 4856991 m N	Ephemeral	Warmwater	Silt, detritus	<i>Phragmites</i> , cattails, jewelweed, watercress	Indirect	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae Spp. (MNRF 2015)	Moderate

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
R3: Tributary of the Rouge River	17T 637515 m E 4857050 m N	Permanent	Warmwater	Silt, gravel, cobble, detritus	Cattails, <i>Phragmites</i> , overhanging grasses, jewelweed and shrub willow (riparian)	Direct	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae spp. (MNRF 2015) Brook Stickleback (LGL 2015)	Moderate
R4: Rouge River	17T 640546 m E 4858353 m N	Permanent	Coolwater	Cobble, silt, gravel, sand, boulder	Cattail, grasses, <i>Phragmites</i> along fringe. Mixed forest riparian.	Direct	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Cyprinidae spp. (MNRF 2015) Common Carp (LGL 2015)	High

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
R5: Tributary of the Rouge River	17T 642139 m E 4858871 m N	Permanent	Coolwater	Silt, detritus	<i>Phragmites</i> , cattails, algae, shrub willow.	Direct	Coho Salmon, Chinook Salmon, Rainbow Trout, Brown Trout, Goldfish, Redside Dace, Smallmouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae spp. (MNRF 2015)	Moderate
R6: Tributary of Little Rouge Creek	17T 642502 m E 4859023 m N	Permanent	Coolwater	Silt, gravel, detritus, rip rap	Cattails, <i>Phragmites</i> , jewelweed, crack willow, instream grasses	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Creek Chub (LGL 2015)	Moderate

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
R7: Tributary of Little Rouge Creek	17T 643109 m E 4859368 m N	Permanent	Coolwater	Silt, detritus, cobble	Cattails, <i>Phragmites</i> , instream grasses, red osier dogwood, algae	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Creek Chub (LGL 2015)	Moderate
R7a: Tributary of Little Rouge Creek	17T 643257 m E 4859331 m N	Ephemeral	Coolwater	Silt, detritus, cobble	Cattails, <i>Phragmites</i> , instream grasses, red osier dogwood, algae	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae Spp. (MNRF 2015) Cyprinidae Spp. (LGL 2015)	Moderate

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
R8: Tributary of Little Rouge Creek	17T 643840 m E 4859656 m N	Permanent	Coolwater	Silt, detritus	Cattails, <i>Phragmites</i> , Canada waterweed instream/ overhanging grasses (reed canary grass), crack willow riparian	Direct	No fisheries information available (MNRF 2015) No fish observed or captured (LGL 2015)	Moderate
R9: Tributary of Little Rouge Creek	17T 644309 m E 4859602 m N	Intermittent	Coolwater	Silt, detritus	Cattails, <i>Phragmites</i> , algae instream/ overhanging grasses, dog strangling vine, goldenrod, asters, bur-marigold.	Indirect	No fisheries information available (MNRF 2015). No fish observed or captured (LGL 2015)	Low

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
R10: Little Rouge Creek	17T 644561 m E 4859934 m N	Permanent	Coldwater	Cobble, gravel, sand, silt, Boulder	Cattails, overhanging grasses instream/mixed forest along east bank and wetland veg along west side (Joe-Pye-weed, angelica, elecampane)	Direct	Rainbow trout, Atlantic Salmon, Brown Trout, Rock Bass, Smallmouth Bass, Largemouth Bass, Yellow Perch, Cyprinidae spp. (MNRF 2015) White Sucker (LGL 2015)	High
R11: Tributary of Little Rouge Creek	17T 644770 m E 4859924 m N	Ephemeral	Warmwater	Upland soils	Terrestrial vegetation (cultural meadow species)	none	None	None
P1: Petticoat Creek	17T 645216 m E 4860351 m N	Ephemeral	Warmwater	Silt, detritus	Cattails, <i>Phragmites</i> , reed canary grass, smartweed sp.	None	Rainbow Trout, Atlantic Salmon, Brook Trout, Cyprinidae spp. (MNRF 2015)	Low

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
D1: West Duffins Creek	17T 646303 m E 4862095 m N	Permanent	Coldwater	Cobble, gravel, sand, silt, boulder	Riparian grasses	Direct	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High
D2: Tributary of West Duffins Creek	17T 646450 m E 4862042 m N	Ephemeral	Coldwater	Silt, detritus	Cattails	None	none	Low
D3: Tributary of West Duffins Creek	17T 646510 m E 4862369 m N	Permanent	Coldwater	Silt, cobble, gravel, sand	Instream grasses	Direct	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High
D4: Tributary of West Duffins Creek	17T 646868 m E 4862482 m N	Intermittent	Coldwater	Silt, detritus, cobble, gravel, sand	Instream and overhanging grasses, cattails, <i>Phragmites</i>	Direct	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	Moderate

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
D5: Tributary of West Duffins Creek	17T 647495 m E 4862342 m N	Ephemeral	Warmwater	Upland soils	Active agriculture	None	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	None
D6: Tributary of Whitevale Creek	17T 647903 m E 4862503 m N	Ephemeral	Warmwater	Upland soils	Active agriculture	None	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	None
D7 Tributary of Whitevale Creek	17T 648260 m E 4862615 m N	Ephemeral	Warmwater	Upland soils	Active agriculture	None	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	None
D8: Tributary of Whitevale Creek	17T 648388 m E 4862861 m N	Intermittent	Coldwater	Silt, gravel, sand, cobble	Mostly terrestrial vegetation (asters, goldenrod) and reed canary grass	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	Moderate

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
D9: Tributary of Whitevale Creek	17T 648823 m E 4862785 m N	Ephemeral	Coldwater	Silt, detritus	Grasses, some cattail, sedges, smartweed, cultural meadow veg.	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	Moderate
D10: Whitevale Creek	17T 648871 m E 4862808 m N	Intermittent	Coldwater	Silt, detritus, gravel, sand, cobble	Instream and overhanging grasses (reed canary grass, brome), cattails, <i>Phragmites</i> , cultural meadow veg.	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	Moderate

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
D11: Tributary of Ganatsekiagon Creek	17T 649334 m E 4863064 m N	Intermittent	Coldwater	Silt, detritus	Instream and overhanging grasses, cattails	Indirect	American Brook Lamprey, Rainbow Trout, Brook Trout, Redside Dace, Largemouth Bass, Rainbow Darter, Mottled Sculpin, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High
D12: Ganatsekiagon Creek	17T 650317 m E 4863508 m N	Ephemeral	Coldwater	Silt, detritus	Instream and overhanging grasses, cattails	Indirect	American Brook Lamprey, Rainbow Trout, Brook Trout, Redside Dace, Largemouth Bass, Rainbow Darter, Mottled Sculpin, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
D13: Tributary of Urfe Creek	17T 651137 m E 4863835 m N	Intermittent	Coldwater	Silt, detritus, gravel, sand	Algae, overhanging grasses, cattails, watercress	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Fathead Minnow, Brook Stickleback (LGL 2015).	High
D14: Tributary of Urfe Creek	17T 651228 m E 4863681 m N	Permanent	Coldwater	Silt, detritus, gravel, sand	Watercress, overhanging grasses	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High
D15: Urfe Creek	17T 651702 m E 4863957 m N	Permanent	Coldwater	Cobble, gravel, silt, sand, boulder	None	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
D16: Brougham Creek	17T 652461 m E 4864320 m N	Permanent	Coldwater	Fine substrates, gravel patches	Watercress	Direct	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY ROAD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present**	MNRF/LGL Identified Habitat Sensitivity (as per Fisheries Protocol)**
D17: Tributary of Brougham Creek	17T 652626 m E 4864379 m N	Permanent	Coldwater	Upland soils	None	Indirect	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High
D18: Tributary of Brougham Creek	17T 653152 m E 4864912 m N	Permanent	Coldwater	Cobble, gravel, sand, silt, boulder	None	Direct	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High

** MNRF Correspondence, Aurora District Office received May 11, 2015, additional details received March 11, 2016

6.0 IMPACT ASSESSMENT

6.1 *Fisheries Act, 2014, Endangered Species Act, 2007*

This assessment outlines the fish habitat and fisheries resources that will be affected by the Transitway corridor and stations. This project will directly affect the watercourses discussed above in **Section 5.1**. “Serious Harm to Fish” could result as a result of the proposed works with the addition of new watercourse crossings, potential channel realignments, clearing of vegetation within the riparian areas (including wetland species), modification to drainage due to increased impermeable surfaces in the vicinity of the creeks, and the addition of storm water management features.

In addition to the impacts above, potential impacts to fish and fish habitat during construction could include erosion and sediment inputs to the watercourses, temporary disruption of flows, increased water temperatures and barriers to fish movement.

“Serious Harm to Fish”, according to Fisheries and Oceans Canada, is considered to occur based on the following;

- the **death of fish**
- a **permanent alteration** to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes;
- the **destruction of fish habitat** of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. (DFO 2015).

The impact assessment below assesses the potential for causing “Serious Harm to Fish” based on proposed impacts, the sensitivity classifications provided by the MNR and LGL’s field investigations. Appropriate notification forms have been prepared at this time based on preliminary design and will be submitted to DFO in accordance with MTO policy and documentation requirements during later stages of the project.

Several watercourses being affected by the Transitway corridor may also be considered regulated under the *Endangered Species Act, 2007* due to the presence of contributing or recovery habitat for Redside Dace. According to the *Act*, “No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species.” Regulated Redside Dace habitat, by definition, includes the bankfull stream width, in addition to the meander belt width and associated riparian habitat that is a minimum of 30 m from the meander belt measured horizontally. As the proposed works will affect the habitat of Redside Dace (contributing or recovery) in watercourses, permitting may need to occur during detail design in consultation with the MNR (see **Section 6.2**).

6.2 Watercourse Sensitivity and Design Considerations

In order to assess the potential for the works to cause “Serious Harm to Fish”, watercourse sensitivities were determined in combination with the classifications provided by the MNRF and observations during field investigations. Sensitivities were developed based Section 6 (Analysis of Fish and Fish Habitat Sensitivity) of the MTO Fish Guide. The sensitivities for each of the watercourses, and structure design considerations are presented below.

The following watercourses are classified as High sensitivity, and support ,contributing or recovery habitat for Redside Dace: R4; D11, D12; D13; D14; D15; D16; D17; and D18. Details regarding the Redside Dace habitat type as provided by the MNRF are presented in **Table 2** below. These watercourses may require open-footed or spanning structures which do not have a footprint within the channel, outward to 30 m measured horizontally from the meander belt, or which are similar to those built recently for the 407 ETR crossings. Proposed design of structures shall follow all best management practices (BMPs) outlined in the *Draft Guidance for Development Activities in Redside Dace Protected Habitat* (MNR 2011). An *Endangered Species Act* 17(2) (c) overall benefit permit may be required from the MNRF if proposed works detrimentally affect the regulated habitat. MNRF will need to be further consulted during later stages of the project to determine which watercourses will be subject to the above requirements.

TABLE 2.
REDSIDE DACE HABITAT SUMMARY

Watercourse	Redside Dace Habitat Type (MNRF, 2016)	Regulated Habitat
R1: Tributary of the Rouge River	Contributing	Possible
R2: Tributary of the Rouge River	Contributing	Possible
R3: Tributary of the Rouge River	Contributing	Possible
R4: Tributary of the Rouge River	Contributing	Possible
R5: Tributary of the Rouge River	Contributing	Possible
D11: Tributary of Ganatsekiagon Creek	Contributing	Possible
D12: Ganatsekiagon Creek	Contributing	Possible
D13: Tributary of Urfe Creek	Recovery	Yes
D14: Tributary of Urfe Creek	Recovery	Yes
D15: Urfe Creek	Contributing	Possible
D16: Brougham Creek	Contributing	Possible
D17: Tributary of Brougham Creek	Contributing	Possible
D18: Tributary of Brougham Creek	Contributing	Possible

The following watercourses are classified as High sensitivity fish habitat, but do not support Redside Dace: R10; D1; and D3. In order to avoid causing a “Serious Harm to Fish” these watercourses will likely require open-footed or spanning structures which do not have a footprint within the channel or which are similar to those built recently for the 407 ETR crossings. Structures must be sized to ensure that fish passage will not be impeded, and designed in accordance with Section 5.5.3 in the MTO Fish Guide. A *Fisheries Act* authorization may be required from DFO depending on the type of work proposed. However, “Serious Harm to Fish” is unlikely if structures are designed in accordance with the MTO Fish Guide and mitigation measures below in **Section 6.3** are implemented.

The following watercourses are classified as Moderate sensitivity fish habitat based on stream flow permanency, thermal regime, and whether the watercourse supports fish habitat directly or indirectly: R1 R2; R3; R5; R6; R7; R7-a; R8; D4; D8; D9; and D10. Culvert/structure type should be individually assessed by watercourse, in accordance with Section 5.5.3 in the MTO Fish Guide, and that will avoid causing “Serious Harm to Fish”. At watercourses supporting direct fish habitat, passage and habitat provision will be important and thus open bottomed culverts or box culverts that are embedded with substrates may be options. At those that provide indirect fish habitat, the maintenance of flows will be important, but not provision of fish passage. At these crossings pipe culverts could be selected.

A *Fisheries Act* authorization may be required from DFO depending on the type of work proposed. However, “Serious Harm to Fish” is unlikely if structures are designed in accordance with the MTO Fish Guide and mitigation measures below in **Section 6.3** are implemented.

Watercourses R1; R2; R3; and R5, which function as contributing habitat for Redside Dace may be required to follow all best management practices (BMPs) outlined in the *Draft Guidance for Development Activities in Redside Dace Protected Habitat* (MNR 2011). A 17(2) (c) overall benefit permit may be required from the MNRF if proposed works detrimentally affect the regulated habitat. MNRF will need to be further consulted during later stages of the project to determine which watercourses will be subject to the above requirements.

The following watercourses are classified as Low sensitivity fish habitat: R9; P1; and D2. All of these evaluated watercourses appear to support fish habitat indirectly. Culvert types should be individually assessed by watercourse in accordance with the MTO Fish Guide to avoid causing “Serious Harm to Fish”. Box culverts or pipe culverts can be options as flow maintenance is the main factor in the consideration of culvert types. A *Fisheries Act* authorization may be required from DFO depending on the type of work proposed. However, “Serious Harm to Fish” is unlikely if structures are designed in accordance with the MTO Fish Guide and mitigation and best management practices below in **Section 6.3** are implemented.

The following watercourses were determined to not support fish habitat (directly or indirectly) based on field investigations and consultation with MNRF: R11; D5; D6; and D7. As such, further fisheries investigations are not required at these locations, and design can go ahead without additional fisheries consideration. Although these features do not provide fish habitat, standard mitigation and best management practices identified below in **Section 6.3** should be followed to mitigate impacts on water quality of the surface drainage features adjacent to the study area.

6.3 Impacts to Watercourses by Individual Crossing

Below in **Table 3**, is a summary of the proposed works by individual watercourse crossing, site specific mitigation measures, and the net environmental effects for each watercourse based on preliminary design. Net environmental effects are calculated assuming all proposed mitigation measures are applied. Site-specific mitigation should be applied to each watercourse in addition to the general mitigation measures that are outlined in **Section 6.4**.

TABLE 3.
SUMMARY OF PROPOSED IN-STREAM WORK, MITIGATION MEASURES AND NET ENVIRONMENTAL EFFECTS

Name	Proposed Works	Net Environmental Effects	Site Specific Mitigation
R1: Tributary of the Rouge River	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to indirect, warmwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the Redside Dace timing window (July 1- September 15). Work will be done “in the dry” Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
R2: Tributary of the Rouge River	<ul style="list-style-type: none"> Concrete circular structure 	<ul style="list-style-type: none"> Impacts to indirect, warmwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the Redside Dace timing window (July 1- September 15). Work will be done “in the dry” Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
R3: Tributary of the Rouge River	<ul style="list-style-type: none"> Concrete circular structure 	<ul style="list-style-type: none"> Impacts to direct, warmwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the Redside Dace timing window (July 1 to September 15). Work will be done “in the dry” Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
R4: Rouge River	<ul style="list-style-type: none"> Clear span bridge structure 	<ul style="list-style-type: none"> Impacts to direct, coolwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works (if required) and work on the banks to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). Works are to follow all conditions of the MTO Best Management Practices Manual for Fisheries Clear Span Bridges (MTO 2015). Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
R5: Tributary of the Rouge River	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to direct, coolwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). Work will be done “in the dry” Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).

**TABLE 3.
 SUMMARY OF PROPOSED IN-STREAM WORK, MITIGATION MEASURES AND NET ENVIRONMENTAL EFFECTS**

Name	Proposed Works	Net Environmental Effects	Site Specific Mitigation
R6: Tributary of Little Rouge Creek	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to direct, coolwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater timing window (July 1 to September 15). Work will be done “in the dry”
R7: Tributary of Little Rouge Creek	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to direct, coolwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater timing window (July 1 to September 15). Work will be done “in the dry”
R7a: Tributary of Little Rouge Creek	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to direct, coolwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwatertiming window (July 1 to September 15). Work will be done “in the dry”
R8: Tributary of Little Rouge Creek	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to direct, coolwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater timing window (July 1 to September 15). Work will be done “in the dry”
R9: Tributary of Little Rouge Creek	<ul style="list-style-type: none"> Channel Realignment Existing CSP will be re-located to the west of the railway crossing structure 	<ul style="list-style-type: none"> Impacts to indirect, coolwater fish habitat associated with channel realignment and culvert placement will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater timing window (July 1 to September 15). Work will be done “in the dry” Form and function of the realigned channel shall be maintained
R10: Little Rouge Creek	<ul style="list-style-type: none"> Clear span bridge structure 	<ul style="list-style-type: none"> Impacts to direct, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works (if required) and work on the banks to be conducted within the coldwater timing window (July 1 to September 15). Works are to follow all conditions of the MTO Best Management Practices Manual for Fisheries Clear Span Bridges (MTO 2015).
R11: Tributary of Little Rouge Creek	<ul style="list-style-type: none"> Concrete circular structure 	<ul style="list-style-type: none"> No impacts to fish habitat 	<ul style="list-style-type: none"> Follow standard mitigation and best management practices for surface water quality
P1: Petticoat Creek	<ul style="list-style-type: none"> Concrete circular structure 	<ul style="list-style-type: none"> Impacts to indirect, warmwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the warmwater timing window (July 1 to March 31). Work will be done “in the dry”

**TABLE 3.
 SUMMARY OF PROPOSED IN-STREAM WORK, MITIGATION MEASURES AND NET ENVIRONMENTAL EFFECTS**

Name	Proposed Works	Net Environmental Effects	Site Specific Mitigation
D1: West Duffins Creek	<ul style="list-style-type: none"> • Clear span bridge structure 	<ul style="list-style-type: none"> • Impacts to direct, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works (if required) and work on the banks to be conducted within the coldwater timing window (July 1 to September 15). • Works are to follow all conditions of the MTO Best Management Practices Manual for Fisheries Clear Span Bridges (MTO 2015).
D2: Tributary of West Duffins Creek	<ul style="list-style-type: none"> • Clear span bridge structure 	<ul style="list-style-type: none"> • Impacts to indirect, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works (if required) and work on the banks to be conducted within the coldwater timing window (July 1 to September 15). • Works are to follow all conditions of the MTO Best Management Practices Manual for Fisheries Clear Span Bridges (MTO 2015).
D3: Tributary of West Duffins Creek	<ul style="list-style-type: none"> • Clear span bridge structure 	<ul style="list-style-type: none"> • Impacts to direct, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works (if required) and work on the banks to be conducted within the coldwater timing window (July 1 to September 15). • Works are to follow all conditions of the MTO Best Management Practices Manual for Fisheries Clear Span Bridges (MTO 2015).
D4: Tributary of West Duffins Creek	<ul style="list-style-type: none"> • Open footed structure 	<ul style="list-style-type: none"> • Impacts to direct, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works to be conducted within the coldwater timing window (July 1 to September 15). • Work will be done “in the dry”
D5: Tributary of West Duffins Creek	<ul style="list-style-type: none"> • unknown 	<ul style="list-style-type: none"> • No impacts to fish habitat 	<ul style="list-style-type: none"> • Follow standard mitigation and best management practices for surface water quality
D6: Tributary of Whitevale Creek	<ul style="list-style-type: none"> • unknown 	<ul style="list-style-type: none"> • No impacts to fish habitat 	<ul style="list-style-type: none"> • Follow standard mitigation and best management practices for surface water quality
D7 Tributary of Whitevale Creek	<ul style="list-style-type: none"> • unknown 	<ul style="list-style-type: none"> • No impacts to fish habitat 	<ul style="list-style-type: none"> • Follow standard mitigation and best management practices for surface water quality
D8: Tributary of Tributary of Whitevale Creek	<ul style="list-style-type: none"> • Open footed structure 	<ul style="list-style-type: none"> • Impacts to indirect, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works to be conducted within the coldwater timing window (July 1 to September 15). • Work will be done “in the dry”

TABLE 3.
SUMMARY OF PROPOSED IN-STREAM WORK, MITIGATION MEASURES AND NET ENVIRONMENTAL EFFECTS

Name	Proposed Works	Net Environmental Effects	Site Specific Mitigation
D9: Tributary of Whitevale Creek	<ul style="list-style-type: none"> • Realignment, into D10 structure 	<ul style="list-style-type: none"> • Impacts to indirect, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works to be conducted within the coldwater timing window (July 1 to September 15). • Work will be done “in the dry” • Form and function of the realigned channel shall be maintained
D10: Whitevale Creek	<ul style="list-style-type: none"> • Open footed structure 	<ul style="list-style-type: none"> • Impacts to indirect, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works to be conducted within the coldwater timing window (July 1 to September 15). • Work will be done “in the dry”
D11: Tributary of Ganatsekiagon Creek	<ul style="list-style-type: none"> • Open footed structure 	<ul style="list-style-type: none"> • Impacts to indirect, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). • Work will be done “in the dry” • Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
D12: Ganatsekiagon Creek	<ul style="list-style-type: none"> • Open footed structure 	<ul style="list-style-type: none"> • Impacts to indirect, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). • Work will be done “in the dry” • Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
D13: Tributary of Urfe Creek	<ul style="list-style-type: none"> • Channel realignment 	<ul style="list-style-type: none"> • Impacts to seasonal coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> • In-water works to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). • Work will be done “in the dry” • Natural channel design should be incorporated into the realigned channel • Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).

TABLE 3.
SUMMARY OF PROPOSED IN-STREAM WORK, MITIGATION MEASURES AND NET ENVIRONMENTAL EFFECTS

Name	Proposed Works	Net Environmental Effects	Site Specific Mitigation
D14: Tributary of Urfe Creek	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to direct, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). Work will be done “in the dry” Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
D15: Urfe Creek	<ul style="list-style-type: none"> Clear span bridge 	<ul style="list-style-type: none"> Impacts to direct, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works (if required) and work on the banks to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). Works are to follow all conditions of the MTO Best Management Practices Manual for Fisheries Clear Span Bridges (MTO, 2015). Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
D16: Brougham Creek	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to direct, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). Work will be done “in the dry” Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
D17: Tributary of Brougham Creek	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to indirect, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). Work will be done “in the dry” Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).
D18: Tributary of Brougham Creek	<ul style="list-style-type: none"> Open footed structure 	<ul style="list-style-type: none"> Impacts to direct, coldwater fish habitat will be determined during later design stages 	<ul style="list-style-type: none"> In-water works to be conducted within the coldwater/Redside Dace timing window (July 1 to September 15). Work will be done “in the dry” Works may be subject to the best management practices (BMPs) outlined in the <i>Draft Guidance for Development Activities in Redside Dace Protected Habitat</i> (MNR 2011).

6.4 Mitigation

6.4.1 In-water works

Where possible, structures shall be constructed outside of the watercourse banks, eliminating the need for in-water works. However, at some of the crossings in-water work may be necessary. At all locations where in-water work is proposed, cofferdams (pea gravel bags, sheet piles, etc.) will be used to isolate the work area from the watercourse to enable work to be done in-the-dry. Flow will be maintained through either damming and pumping or fluming. If possible, work shall be done during the driest part of the year when minimal flows are present. This will minimize disturbance to fish habitat at the site and downstream. To further reduce the potential for serious harm, the following environmental protection measures will be implemented:

- no in-water work (or work on watercourse banks) will be permitted from April 1 to June 30 to protect spawning warmwater fish, incubating eggs and fry emergence and September 16 to June 30 to protect cool and coldwater fish spawning, egg incubation and fry emergence, and to protect Redside Dace;
- where cofferdams are to be employed, dewatering effluent will be treated prior to discharge to receiving watercourse;
- cofferdams will be constructed using pea gravel bags, sheet piling or other appropriate material to isolate the work area: flow will be maintained at all stations;
- only clean material free of particulate matter will be placed in the watercourse; and,
- fish isolated by construction activities (if present) will be captured by a qualified fisheries specialist and safely released to the watercourse.

6.4.2 Standard Mitigation Measures

Standard erosion and sedimentation control measures will be implemented prior to soil disturbance / ground breaking, as necessary, to mitigate impacts on water quality of the surface drainage features adjacent to the study area. In addition, best management / construction practices will be implemented during construction to reduce the potential for spills or other materials to exit the work area. Mitigation measures which shall be implemented to avoid impacts to fish and fish habitat are described below.

6.4.2.1 Best Construction Practices

Implementation of best construction practices during construction will reduce the potential for spills or other materials / equipment entering the water. The following measures will be employed:

1. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from any surface drainage features to prevent the entry of petroleum, oil or lubricants (POL) to the watercourses.
2. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the current MTO Construction Administration and Inspection Task Manual.
3. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from any surface drainage features to prevent their entry into the watercourse.

4. Local Regulatory Authorities will be identified in the contract package for the purpose of reporting spills. All spills that could potentially cause damage to the environment will be reported to the Spills Action Centre of the MOECC. In the event of a spill, containment and clean-up shall be completed quickly and effectively. A “Spill Response Plan” and the appropriate contingency materials to absorb or contain a spill will be on the site at all times.
5. No construction machinery or vehicles will cross any watercourse at any time during construction.

6.4.2.2 Erosion and Sedimentation Control

Effective erosion and sedimentation control will be achieved throughout the project with careful planning and design, stringent construction supervision, monitoring of the site, and maintenance of control works throughout their operational life. The following temporary erosion and sedimentation control measures will be implemented prior to soil disturbance / ground breaking to mitigate impacts on water quality and fish habitat:

1. The extent and duration that disturbed soils are exposed to the elements will be kept to a minimum.
2. Disturbed areas will be stabilized through seeding, mulching or use of an erosion control blanket, as appropriate, to provide slope protection and long-term slope stabilization.
3. Silt fencing will be placed along the watercourse margins in areas of disturbance to prevent the entry of sediment into the watercourses.
4. Flow checks will be placed at appropriate intervals in lateral ditches down gradient from areas of soil disturbance to trap suspended sediments and reduce the erosive force of runoff.

These erosion and sedimentation control measures shall remain in place until soils have been re-stabilized. A number of special provisions related to erosion and sedimentation control are recommended to be included in the contract package to ensure that the above measures are implemented including:

1. Construction Specification for Seed and Cover to stabilize disturbed areas.
2. Construction Specification for Topsoil to address the requirements for stockpiling, placing and supplying topsoil and to cover the requirements for sodding
3. Construction Specification for Temporary Erosion and Sediment Control Measures to cover the installation, maintenance, monitoring and removal of the temporary erosion and sediment control measures and the removal of sediment accumulated by the control measures.
4. Amendments to the Construction Specification for Temporary Erosion and Sediment Control Measures to specify the type of temporary erosion and sedimentation control measures to be installed and the timing constraints for the installation and removal of the control measures.
5. Any Non-Standard Special Provisions (NSSPs) required to stipulate the time interval (i.e., maximum of 20 calendar days) between the commencement and completion of any work that disturbs earth surfaces, and to provide direction for seeding, mulching or use of an erosion control blanket to be placed in areas of soil disturbance to provide slope protection and long-term slope stabilization.
6. General Specification for the Management of Excess Materials to ensure material generated during maintenance of sediment control measures will be taken off-site for disposal.

Erosion and sedimentation will have a minor effect on surface water quality provided these measures are installed pre-construction, maintained during construction and removed post-construction following soil re-stabilization.

6.4.2.3 Maintenance of Riparian Vegetation

Maintaining riparian vegetation to the extent possible will help to stabilize the watercourse banks, provide shading/cover for the watercourse, filter contaminants, and improve wildlife habitat and aesthetics. The Contractor will be responsible for vegetation management.

1. Prior to construction, trees/shrubs to be retained will be clearly identified in the field by the installation of tree/shrub protection barrier in accordance with OPSS 801 (Construction Specification for the Protection of Trees).
2. Trees/shrubs identified to remain, which become damaged by construction activities, will be repaired or replaced in accordance with MTO's NSSP - landscaping specifications.
3. In areas where riparian vegetation removal is necessary to accommodate construction, measures to protect the local fish communities shall include the following: no clearing of mature trees providing a bank stabilization function; no felling of trees into the watercourse; minimize the amount of debris produced from entering the watercourse; and only clear the vegetation required to complete the necessary works.

6.4.2.4 Storm Water Management

A storm water management study is ongoing to ensure construction and post-construction conditions maintain flow to downstream habitats, maintain existing water temperatures and ensure water quality is not impaired.

1. During the design phase a storm water management plan will be prepared that will address both water quantity and quality, in accordance with MTO guidelines and in consultation with regulatory agencies.
2. The proponent will strive to design storm water management ponds to detain the minimum of a 2 hour 25 mm storm event for 24 hours to address water quality and erosion concerns. Where agencies demonstrate a need, other detention times or additional quantity sizing requirements will be considered during the design phase in consultation with stakeholders.
3. When designing BMPs, consideration will be given to measures for reducing adverse environmental impacts to surface and groundwater, including those related to temperature and salt.
4. Bridge runoff will be discharged to storm water management facilities (preferably a pond or swale) prior to discharge to watercourses where this can be achieved and will not cause unacceptable environmental, highway design, safety or operational problems.
5. Where feasible, opportunities for providing ease of containment of accidental spills will be provided during the design of storm water management facilities (MTO 1997).

6.5 Scale of Negative Residual Effects

The scales of negative residual effects for each of the proposed watercourse works are outlined below;

For watercourses at locations where clear span bridges are proposed, calculating the scale of negative residual effects was not required. These watercourses are considered "low risk" if they meet all the

conditions of MTO Best Management Practices Manual for Fisheries Clear Span Bridges (MTO 2015). Details regarding these watercourses are presented below, in **Section 6.7.1**.

For watercourses in which concrete circular and open footing culverts are proposed, the scale of negative effects are as follows:

- Extent (size) for culvert installations are classified as “low”, as these installations affect a site, or segment, and effects are localized;
- Duration for these structure installations are “high”, as the residual changes to the fish habitat will be permanent;
- Intensity is classified as “low” as the altered habitat is expected to remain at a similar level of productivity as the baseline condition.

For watercourses in which channel realignments are proposed, the scale of negative effects are as follows;

- Extent (size) for realignments resulted in either “low” or “medium” depending on the length of the channel realignment (“low” for a site or section, and “medium” for a meander or section).
- Duration for the channel realignments are “high”, as the residual changes to the fish habitat will be permanent.
- Intensity is classified as “high” as the altered habitat has undergone significant change (infilling).

6.6 Analysis of Fish and Fish Habitat Sensitivity

Based on a combination of the fisheries assessment by LGL fisheries staff and input by MNRF regarding the interpretation of sensitivity, watercourse sensitivities within the 407 Transitway corridor range from Low to High. In addition, several watercourses provide contributing and recovery habitat for Redside Dace, which may be regulated under the Ontario *Endangered Species Act, 2007*. Details regarding interpretation of sensitivity for each individual watercourse are provided in **Section 5.0**: Existing Fish and Fish Habitat conditions, and further clarified in **Appendix D**: Draft *Fisheries Act* Documentation.

6.7 Categorization of Project Risk

6.7.1 “Low Risk” Step 3: MTO Best Management Practices

The proposed works at the following watercourses meet the conditions of the MTO Best Management Practices Manual for Fisheries Clear Span Bridges, thus are considered “low risk” (MTO 2015); R4: Rouge River, R10: Little Rouge Creek, D1: West Duffins Creek, D2, D3: Tributaries of West Duffins Creek, and D15: Urfe Creek. The proposed structure designs meet the criteria in this manual by “spanning the waterbody without altering the waterbody bed and bank”, and will be “placed entirely above the high water level (including bridge approaches, abutments, footings, and armouring)”. Clear span bridge construction must meet all the operational constraints and protection measures in order to be in compliance with the MTO Fish Guide (MTO 2013). Please note that MNRF indicated that Redside Dace habitat (contributing) is present at crossings R4 and D15, and regulated habitat may extend outward to 30 m measured horizontally from the meander belt. An *Endangered Species Act* 17(2) (c) overall benefit permit may be required from the MNRF at detail design if proposed works are to encroach in the regulated habitat.

6.7.2 “Low Risk”

The proposed works at the remaining crossings did not qualify under the MTO Best Management Practices and risk assessments were conducted to determine which works would result in “Low Risk” to fish and fish habitat and, thus do not require review from DFO. The applicable pathway of effects assessment was undertaken, and mitigation measures were applied, in order to overcome residual negative effects. With all mitigation measures taken into account, an assessment of Scale of Negative Effects was conducted for each crossing. Watercourse sensitivities, based on a combination of MNRF interpretation and field investigations, were charted for each watercourse along with the scale of negative effects to determine the level of risk at each watercourse.

Based on the risk assessments completed for each of the remaining crossings which did not meet the criteria under the MTO Best Management Practices, the works at the following watercourses result in “Low Risk” based on preliminary design; R1, R2, R3, R5, R6, R7, R7a, R8, R9, P1, D4, D8, D10, D11, D12 and D17. These works are not expected to result in “Serious Harm to Fish” given necessary mitigation measures outlined in **Section 6.4** are implemented. Review by DFO is not required at these locations.

Although according to MTO Fish Guide (MTO 2013) risk assessment, proposed works at R9, which includes a channel realignment, will result in a “Low Risk” classification. However, according to the self-assessment criteria on the DFO website, channel realignments require DFO review. A request for review by DFO regardless of the “Low Risk” classification shall be made during later stages of the project.

Please note that MNRF indicated that Redside Dace habitat (contributing) is present at crossings R1, R2, R3, R5, D11, D12 and D17. The form and function of the watercourses constituting contributing Redside Dace habitat need to be maintained and habitat, as defined for recovery and occupied watercourses, is not protected. However, if the classification becomes upgraded between this stage of the project and future stages, an *Endangered Species Act* 17(2) (c) overall benefit permit may be required from the MNRF.

Detailed rationale for the “Low Risk” classification, is provided in **Appendix D: Draft Fisheries Act Documentation**, and includes Template 10.1: Location of Work Table, 10.2: Existing Fish and Fish Habitat Conditions Summary Table, 10.4: Aquatic Assessment Summary Table, and 10.5: Risk Assessment Worksheet for each of the watercourses in which a risk assessment was conducted.

6.7.3 “Medium Risk”

Risk assessments based on the criteria outlined in **Section 6.5.2** which did not qualify as “Low Risk” will require review from DFO. Detailed rationale for the “Medium Risk” classification is also provided in **Appendix D: Draft Fisheries Act Documentation**. A combination of habitat sensitivity and scale of negative effects that brings the overall risk assessment into the medium category necessitate a review from DFO. The risk assessment conducted for the following watercourses resulted in “Medium Risk” D9, D13, D14, D16 and D18.

Please note that MNR indicated that Redside Dace habitat (contributing or recovery) is present at crossings D13, D14, D16 and D18. Regulated habitat may extend outward to 30 m measured horizontally from the meander belt. An *Endangered Species Act* 17(2) (c) overall benefit permit may be required from the MNRF at detail design if proposed works are to encroach in the regulated habitat.

6.8 Offsetting

6.8.1 Rouge River Watershed

The Draft Rouge River Fisheries Management Plan (MNR and TRCA 2010) presents many enhancement and offsetting opportunities within the watershed for the benefit of aquatic habitat. General offsetting opportunities presented in the report include:

- restoring natural multi-layer tree canopy cover within the riparian zone and uplands where available to allow for the increased infiltration and retention of water in order to maintain/restore flow balance and groundwater discharge to streams;
- protecting and enhancing wetland habitat to allow for the increased infiltration and retention of water in order to maintain/restore flow balance and groundwater discharge to streams; and,
- investigating retrofit alternatives (e.g., oil and grit separators, bioswales) for diverting or collecting run off from roads directly adjacent to watercourses for long-term stream protection and mitigation of pollutants or other enhancements recommended in the plan.

All of the watercourses that are affected by the proposed Transitway corridor would benefit from the above general offsetting opportunities as all have been affected by urbanization. Specifically, the following enhancement/offsetting opportunities in addition to those above, were noted during field investigations:

Crossing R3

- retrofit 407 ETR culvert with notch to create low flow channel to allow for fish passage

Crossing R4

- removal of concrete weir
- bank stabilization under existing 407 ETR bridges

Crossing R8

- realign watercourse away from Reesor Road
- locate potential downstream barrier and remove

Crossing R9

- restrict access of ATVs and farm equipment

Crossing R10

- remove existing silt fence, restrict access of ATVs.

6.8.2 Petticoat Creek Watershed

The Petticoat Creek Watershed Action Plan (TRCA and Rouge Park 2012) presents opportunities for enhancement. The opportunities within the 407 Transitway study area are to ensure that new development, redevelopment and retrofits of existing development incorporate best management practices in water management and the protection and enhancement of the natural heritage system. These measures should be taken within the limits of the Petticoat Creek Watershed.

6.8.3 Duffins Creek Watershed

The Duffins Creek Watershed Plan (TRCA 2002) presents many enhancement and offsetting opportunities within the watershed for the benefit of aquatic habitat. General enhancement opportunities presented in the report include:

- increasing natural cover to protect local groundwater recharge and enhance biodiversity;
- restoring riparian vegetation;
- implementing stormwater management controls; and,
- increasing in-stream woody debris to improve Rainbow Trout reproduction.

All of the watercourses that are affected by the proposed alignment would benefit from the above general enhancement opportunities as all have been affected by urbanization.

Specifically, the following enhancement/offsetting opportunities in addition to those above, were noted during field investigations:

Crossing D3

- Bank stabilization underneath 407 ETR bridges
- Restrict access of ATVs

Crossing D4

- Restrict access of ATVs

Crossing D8

- Restrict access of ATVs
- Increase riparian vegetation buffer

Crossing D9/D10

- Restrict access of ATVs

Crossing D11

- Restrict access of ATVs

Crossing D12

- Restrict access of ATVs

Crossing D13

- Restrict access of ATVs

Crossing D14

- Restrict access of ATVs

Crossing D15

- Restrict access of ATVs
- Cleanout of sediment deposition from previous construction related activities

Crossing D16

- Remove Sideline 16 culvert, which is perched, and design new 407 Transitway crossing to promote fish passage and floodplain connectivity

Crossing D17

- Remove barriers to fish passage downstream to improve connectivity to upstream habitats from direct fish habitat downstream

Crossing D18

- Remove rip rap berm downstream of the Highway 7 culvert
- Cleanout of granular material deposition from previous construction related activities (both to be undertaken by TRCA as noted above in **Section 5.1.3.17**).

6.9 Conclusions

The proposed works identified at each of the crossings above will result in a temporary alteration and disruption of fish habitat. The mitigation measures proposed in this document will minimize negative impacts to fish and fish habitat. The proposed works will take place between July 1 and September 15 in accordance with the coldwater/Redside Dace fisheries timing window, and July 1 and March 31 in accordance with the warmwater timing window. Works are also to be conducted during a period of low flow and precipitation to further reduce the potential impacts. Negative residual effects range from low to moderate. **Appendix D:** Draft *Fisheries Act* Documentation includes Templates 10.1, 10.2, 10.4 and 10.5 that summarize the process through which the level of risk at each crossing location was determined based on the scale of negative effects and the sensitivity of the fishery.

8.0 REFERENCES

- Department of Fisheries and Oceans (DFO) 2014. *Distribution of Species at Risk Mapping; Toronto and Region Conservation Authority (Map 1)*. April 2011.
- Department of Fisheries and Oceans (DFO) 2014. Projects Near Water Self-Assessment: Bridges, Causeways and Culverts. <<http://www.dfo-mpo.gc.ca/pnw-pppe/index-eng.html>> Accessed November 2015.
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- LGL Limited. 2010. *Natural Heritage Report, 407 Transitway from East of Highway 400 to Kennedy Road (W.P. 252-96-00) – Planning and Preliminary Design Study*. Prepared for the Ontario Ministry of Transportation, Central Region. King City, Ontario.
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- Ministry of Transportation. 2013. Environmental Reference for Highway Design Section 3.1: Fish and Fish Habitat. Published by Ministry of Transportation Ontario.
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- Toronto and Region Conservation Authority. 2002. *A Watershed Plan for Duffins Creek and Carruthers Creek*. Published by the Toronto and Region Conservation Authority.
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**APPENDIX A
CORRESPONDENCE WITH THE
MINISTRY OF NATURAL RESOURCES AND FORESTRY AND DEPARTMENT OF
FISHERIES AND OCEANS**

From: [Cooper, Gary](#)
To: [stephanie Lillie](#)
Subject: RE: Map of 407 Transitway study area
Date: Wednesday, April 13, 2016 1:34:41 PM
Attachments: [DFO SAR Site Summary April 13 2016.pdf](#)

Hi Stephanie,

As discussed, our internal mapping is updated all the time where the external maps are every year. Attached is a SAR summary report of the area. Let me know if you need anything else.

Thank you,

Gary

Gary Cooper

Fisheries Protection Program | Programme de Protection des Pêches
Fisheries and Oceans Canada | Pêches et Océans Canada
867 Lakeshore Road | 867 Chemin Lakeshore
Burlington, ON, L7S 1A1

Tel | Tél: 905-336-6248; Fax | Téléc: 905-336-6285

Gary.Cooper@dfo-mpo.gc.ca

Web site | site Web: <http://www.dfo-mpo.gc.ca/habitat>

Government of Canada | Gouvernement du Canada

Fisheries and Oceans Canada has changed the way new project proposals (referrals), reports of potential Fisheries Act violations (occurrences) and information requests are managed in Central and Arctic Region (Alberta, Saskatchewan, Manitoba, Ontario, Nunavut and the Northwest Territories). Please be advised that general information regarding the management of impacts to fish and fish habitat and self-assessment tools (e.g. Measures to Avoid Harm) that enable you to determine Fisheries Act requirements are available at DFO's "Projects Near Water" website at www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html. For all occurrence reports, or project proposals where you have determined, following self-assessment, that you cannot avoid impacts to fish and fish habitat, please submit to fisheriesprotection@dfo-mpo.gc.ca. For general inquiries call 1 855 852-8320.

From: stephanie Lillie [<mailto:StephanieLillie@lgl.ca>]
Sent: 2016-April-13 10:29 AM
To: Cooper, Gary

Subject: Map of 407 Transitway study area

Hi Gary,

Please find attached, our natural heritage figures. I figured sending these would be best, they show all the watercourses, and the proposed ROW for the transitway corridor.

Please let me know if you need anything further.

Thanks again for your help today!

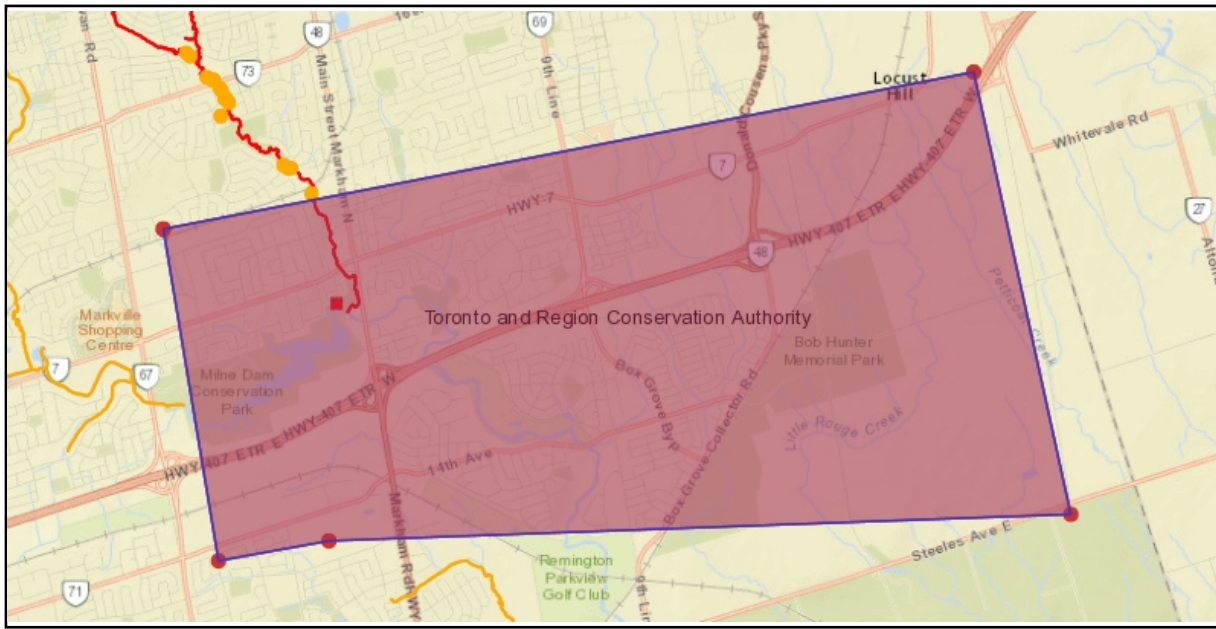
Stephanie

Stephanie Lillie B.Sc.

Fisheries Biologist, LGL Limited

22 Fisher Street, P.O. Box 280 King City, ON L7B 1A6

Tel: (905) 833-1244 E-mail: stephanielillie@lgl.com



— Protected under SARA (Extirpated, Endangered, Threatened)
— Under consideration for listing (Endangered, Threatened)
— All Special Concern Species (Sch. 1, 3 and newly listed)
 Area within which Critical Habitat is found or proposed*

* Note: Within the delineated areas, only those areas that meet the functional habitat requirements of one or more life stages of the species are considered Critical Habitat. For more information on Critical Habitat please refer to the Reference Guide and the species-specific Recovery Strategies.

Site Information

Automatically generated based on user selection

Area Centroid Latitude (DD):	<input type="text" value="43.867387"/>	Polygon Coordinates (DD):	Point 1: -79.2819, 43.876468
Longitude (DD):	<input type="text" value="-79.228392"/>	Area (km2):	<input type="text" value="52.95"/>
			Point 2: -79.188701, 43.889463
			Point 3: -79.177528, 43.852849
			Point 4: -79.262854, 43.850651
			Point 5: -79.275551, 43.849003
			Point 6: -79.2819, 43.876468

National Parks near Study Area:

First Nation Land near Study Area:

Aquatic Species at Risk Near Study Area:

Fishes		
Common Name	Scientific Name	Species at Risk Act Status
Redside Dace	Clinostomus elongatus	Special Concern
Mussels		
Common Name	Scientific Name	Species at Risk Act Status
Eastern Pondmussel	Ligumia nasuta	Endangered

Critical Habitat* has been identified for these species:

* Area in which Critical Habitat may be found

Study Area Overlaps with Population Range/Migration Areas for:

No Mammal Data Available

From: [Challice, Adam \(MNRF\)](#)
To: [stephanie Lillie](#)
Cc: [Hennyey, Allison \(MTO\)](#); [Eplett, Megan \(MNRF\)](#)
Subject: RE: 407 Transitway MNRF Request
Date: Friday, March 11, 2016 12:41:24 PM
Attachments: [BriefRationalforSensitivitychange AG Comments October 7 2015 Updated March 10 2016.pdf](#)

Hi Stephanie - see redside dace classifications added in blue where they were missing previously.

Adam Challice

MANAGEMENT BIOLOGIST | ONTARIO MINISTRY of NATURAL RESOURCES and FORESTRY | AURORA DISTRICT OFFICE
50 Bloomington Road, Aurora, Ontario, L4G 0L8 | PH: 905-713-7341 | FAX: 905.713.7361 | EMAIL: adam.challice@ontario.ca

-----Original Message-----

From: stephanie Lillie [<mailto:StephanieLillie@lgl.ca>]
Sent: March-08-16 9:18 AM
To: Challice, Adam (MNRF); Eplett, Megan (MNRF)
Subject: RE: 407 Transitway MNRF Request

Hi Adam, I'm following up again on this request.

Please let me know if I can provide anything further.

Stephanie

Stephanie Lillie B.Sc.
Fisheries Biologist, LGL Limited
22 Fisher Street, P.O. Box 280 King City, ON L7B 1A6
Tel: (905) 833-1244 E-mail: stephanielillie@lgl.com

-----Original Message-----

From: Challice, Adam (MNRF) [<mailto:Adam.Challice@ontario.ca>]
Sent: Wednesday, February 24, 2016 11:00 AM
To: stephanie Lillie; Eplett, Megan (MNRF)
Subject: RE: 407 Transitway MNRF Request

I will look at it next week when I return to the office.

Adam

From: stephanie Lillie [StephanieLillie@lgl.ca]
Sent: Tuesday, February 23, 2016 3:17 PM
To: Eplett, Megan (MNRF)
Cc: Challice, Adam (MNRF)
Subject: RE: 407 Transitway MNRF Request

Hi Megan, Adam,

I'm hoping to get an update on the below request for the Kennedy to Brock Transitway.

We're getting some heat from Parsons/MTO for this..

Please let me know if there's anything I can provide to facilitate this request.

Thanks very much,
Stephanie

From: stephanie Lillie
Sent: Tuesday, February 09, 2016 2:26 PM
To: 'Eplett, Megan (MNRF)'
Cc: 'Challice, Adam (MNRF)'
Subject: RE: 407 Transitway MNRF Request

Sorry to bother you again,

Adam helped me with the last section of the 407 Transitway (from Kennedy to Brock) We actually just now received MTO's comments on our report and they are hoping for the same breakdown Re: occupied, contributing, recovery, historical for the crossings that MNRF identified as RSD crossings.

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present** Blue Text are ACs comments March 11 2016	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
R1 Tributary of the Rouge River	17T 637112m E 4857012 m N	Intermittent	Warmwater	Rip rap, silt	Cattails, red osier dogwood, shrub willow, Reed Canary Grass	Indirect		Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae Spp. (MNRF 2015)	Moderate Contributing habitat for redside dace – stays at moderate sensitivity	Low
R2 Tributary of the Rouge River	17T 637411 mE 4856991 mN	Ephemeral	Warmwater	Silt, detritus	Phragmites, cattails, jewelweed, watercress	Indirect		Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae	Moderate Contributing habitat for redside dace – stays at moderate sensitivity	Low

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
							Spp. (MNRF 2015)			
R3 Tributary of the Rouge River	17T 637515 mE 4857050 mN	Permanent	Warmwater	Silt, gravel, cobble, detritus	Cattails, Phragmites, overhanging grasses, jewelweed and shrub willow (riparian)	Direct	Rainbow Trout, Redside Dace (Contributing Habitat), Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae spp. (MNRF 2015) Brook Stickleback (LGL 2015)	Moderate	Moderate	
R4: Rouge River	17T 640546 mE 4858353 mN	Permanent	Coolwater	Cobble, silt, gravel, sand, boulder	Cattail, grasses, Phragmites along fringe. Mixed forest	Direct	Rainbow Trout, Redside Dace (Contributing Habitat), Brown Bullhead, Rock Bass,	High	High	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
					riparian.			Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Cyprinidae spp. (MNRF 2015) Common Carp (LGL 2015)		
R5: Tributary of the Rouge River	17T 642139 m E 4858871 m N	Permanent	Coolwater	Silt, detritus	Phragmites, cattails, algae, shrub willow.	Direct		Coho Salmon, Chinook Salmon, Rainbow Trout, Brown Trout, Goldfish, Redside Dace (Contributing Habitat) , Smallmouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae spp. (MNRF 2015)	High Agree to Moderate sensitivity classification given rationale	Moderate
R6: Tributary	17T	Permanent	Coolwater	Silt, gravel,	Cattails,	Direct		Rainbow Trout, Brown	High	Moderate

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
of Little Rouge Creek	642502 m E 4859023 m N			detritus, rip rap	Phragmites, jewelweed, Crack Willow, instream grasses		Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Creek Chub (LGL 2015)		Agree to Moderate sensitivity classification given rationale	
R7: Tributary of Little Rouge Creek	17T 643109 m E 4859368 m N	Permanent	Warmwater	Silt, detritus, cobble	Cattails, Phragmites, instream grasses, red osier dogwood, algae	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Creek Chub (LGL 2015)	High Agree to Moderate sensitivity classification given rationale	Moderate	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
R7a: Tributary of Little Rouge Creek	17T 643257 mE 4859331 mN	Ephemeral	Warmwater	Silt, detritus, cobble	Cattails, Phragmites, instream grasses, red osier dogwood, algae	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae Spp. (MNRF, 2015) Cyprinidae Spp. (LGL, 2015)		High Agree to Moderate sensitivity classification given rationale	Low
R8: Tributary of Little Rouge Creek	17T 643840 m E 4859656 m N	Permanent	Coolwater	Silt, detritus	Cattails, Phragmites, Canada Waterweed instream/overhanging grasses (Reed Canary Grass), Crack Willow	Direct	No fisheries information available (MNRF 2015) No fish observed or captured (LGL 2015)		None Agree to Moderate sensitivity classification given rationale	Moderate

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
					riparian					
R9: Tributary of Little Rouge Creek	17T 644309 m E 4859602 m N	Intermittent	Coolwater	Silt, detritus	Cattails, Phragmites, algae instream/ overhanging grasses, dog strangling vine, goldenrod, asters, Bur-Marigold.	Indirect	No fisheries information available (MNRF 2015). No fish observed or captured (LGL 2015)		None Agree to low sensitivity classification given rationale	Low
R10: Little Rouge Creek	17T 644561 m E 4859934 m N	Permanent	Coldwater	Cobble, gravel, sand, silt, Boulder	Cattails, overhanging grasses instream/mixed forest along east bank and	Direct	Rainbow trout, Atlantic Salmon, Brown Trout, Rock Bass, Smallmouth Bass, Largemouth Bass, Yellow Perch, Cyprinidae spp.	High	High	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
					wetland veg along west side (Joe-Pye-weed, angelica, Elecampane)		(MNRF 2015) White Sucker (LGL 2015)			
R11: Tributary of Little Rouge Creek	17T 644770 mE 4859924 m N	Ephemeral	Warmwater	Upland soils	Terrestrial vegetation (cultural meadow species)	none	None	None	None	None
P1: Petticoat Creek	17T 645216 m E 4860351 m N	Ephemeral	Warmwater	Silt, detritus	Cattails, phragmites, Reed Canary Grass, smartweed sp.	None	Rainbow Trout, Atlantic Salmon, Brook Trout, Cyprinidae spp.(MNRF 2015)	High Should be given low sensitivity recognizing potential for cyprinid migration in	None	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
									Red Text are ACs comments Oct 7 2015	
									and out during high water	
D1: West Duffins Creek	17T 646303 m E 4862095 m N	Permanent	Coldwater	Cobble, gravel, sand, silt, boulder	Riparian grasses	Direct	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)		High	High
D2: Tributary of West Duffins Creek	17T 646450 m E 4862042 m N	Ephemeral	Warmwater ARA layer states coldwater	Silt, detritus	Cattails	None	none		None Should be given low sensitivity as its coldwater ephemeral	None
D3: Tributary of West Duffins	17T 646510 m E 4862369 m N	Permanent	Coldwater	Silt, cobble, gravel,	Instream grasses	Direct	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter,		High	High

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
Creek	N			sand			Mottled Sculpin, Cyprinidae spp. (MNRF 2015)			
D4: Tributary of West Duffins Creek	17T 646868 m E 4862482 m N	Intermittent	Coldwater	Silt, detritus, cobble, gravel, sand	Instream and overhanging grasses, cattails, Phragmites	Direct	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High Agree to Moderate sensitivity classification given rationale	Moderate	
D5: Tributary of West Duffins Creek	17T 647495 mE 4862342 mN	Ephemeral	Warmwater	Upland soils	Active agriculture	None	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High Agree to no sensitivity classification given rationale and context of agricultural	None	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
									swale	
D6: Tributary of Whitevale Creek	17T 647903 m E 4862503 m N	Ephemeral	Warmwater	Upland soils	Active agriculture	None		Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High Agree to no sensitivity classification given rationale and context of agricultural swale	None
D7 Tributary of Whitevale Creek	17T 648260 mE 4862615 mN	Ephemeral	Warmwater	Upland soils	Active agriculture	None		Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High Agree to no sensitivity classification given rationale and context of	None

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
									Red Text are ACs comments Oct 7 2015	
									agricultural swale	
D8: Tributary of Tributary of Whitevale Creek	17T 648388 m E 4862861 m N	Intermittent	Coldwater	Silt, gravel, sand, cobble	Mostly terrestrial vegetation (asters, goldenrod) and Reed Canary Grass	Indirect		Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High Change sensitivity to moderate given coldwater intermittency and its potential for supporting coldwater fish habitat downstream	Low
D9: Tributary	17T	Ephemeral	Warmwater	Silt,	Grasses,	Indirect		Rainbow Trout, Brook	High	Low

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
of Whitevale Creek	648823 m E 4862785 m N		ARA layer states coldwater	detritus	some cattail, sedges, smartweed, cultural meadow veg.		Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)		Change sensitivity to moderate given coldwater ephemeral and its potential for supporting coldwater fish habitat downstream	
D10: Whitevale Creek	17T 648871 mE 4862808 mN	Intermittent	Coldwater	Silt, detritus, gravel, sand,	Instream and overhanging grasses (Reed Canary	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp.	High Agree to Moderate sensitivity	Moderate	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
				cobble	Grass, Brome), cattails, Phragmites, cultural meadow veg.		(MNRF 2015)		classification given rationale	
D11: Tributary of Ganatsekiagon Creek	17T 649334 m E 4863064 m N	Intermittent	Coldwater	Silt, detritus	Instream and overhanging grasses, cattails	Indirect	American Brook Lamprey, Rainbow Trout, Brook Trout, Redside Dace, Largemouth Bass, Rainbow Darter, Mottled Sculpin, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High Contributing habitat for redside dace and coldwater – stays at high sensitivity	Moderate	
D12: Ganatsekiagon Creek	17T 650317 m E 4863508 m N	Ephemeral	Coldwater	Silt, detritus	Instream and overhanging grasses, cattails	Indirect	American Brook Lamprey, Rainbow Trout, Brook Trout, Redside Dace,	High Contributing habitat for redside	Low	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
							Largemouth Bass, Rainbow Darter, Mottled Sculpin, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)		dace and coldwater – stays at high sensitivity	
D13: Tributary of Urfe Creek	17T 651137 m E 4863835 m N	Intermittent	Coldwater	Silt, detritus, gravel, sand	Algae, overhanging grasses, cattails, watercress	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp.(MNRF 2015) Northern Redbelly Dace, Fathead Minnow, Brook Stickleback (LGL 2015).	High Recovery habitat for redside dace and coldwater – stays at high sensitivity	Moderate	

Red Text are ACs comments Oct 7 2015

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present** Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
D14: Tributary of Urfe Creek	17T 651228 mE 4863681 Mn	Permanent	Coldwater	Silt, detritus, gravel, sand	Watercress, overhanging grasses	Direct	Brook Trout, Redside Dace (Recovery habitat), Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High	High
D15: Urfe Creek	17T 651702 m E 4863957 m N	Permanent	Coldwater	Cobble, gravel, silt, sand, boulder	None	Direct	Brook Trout, Redside Dace (Contributing Habitat), Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High	High
D16: Brougham Creek (under construction)*	17T 652461 m E 4864320 m N	Permanent	Coldwater	Fine substrates, gravel patches	Watercress	Direct	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace (Contributing Habitat), Pumpkinseed,	High	High

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
							Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)			
D17: Tributary of Brougham Creek (under construction)*	17T 652626 m E 4864379 m N	Permanent	Coldwater	Upland soils	None	Indirect	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High Contributing habitat for redds dace and coldwater – stays at high sensitivity	Moderate	
D18: Tributary of Brougham Creek	17T 653152 mE 4864912 mN	Permanent	Coldwater	Cobble, gravel, sand, silt, boulder	None	Direct	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside	High	High	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
									<p style="color: red; margin: 0;">Red Text are ACs comments Oct 7 2015</p>	
							<p>Dace (Contributing Habitat), Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)</p>			

From: [Chalice, Adam \(MNRF\)](#)
To: [stephanie Lillie](#)
Cc: [Judson Venier](#); [Erin Blenkhorn](#); [ESA Aurora \(MNRF\)](#)
Subject: RE: Rationale for Changes in Sensitivity (407 Transitway East)
Date: Wednesday, October 07, 2015 3:17:43 PM
Attachments: [BriefRationalforSensitivitychange AC Comments October 7 2015.pdf](#)

Hi Stephanie,

Hope all is well. Attached are my comments / changes to the sensitivity classifications for the 407 transitway east crossing you provided (my comments are in red with the recommended classification bolded for those crossings where MNRF and LGL had different sensitivity assessments). Note that upon reviewing a couple of the thermal designations for a few crossings, MNRFs original classification differed from what information I had available through the Aquatic Resources Area Layer so these changes were also noted and may have affected my decision on the sensitivity.

If you need further clarification on my recommendations for sensitivity do not hesitate to call.

Regards,

Adam Chalice

MANAGEMENT BIOLOGIST | ONTARIO MINISTRY of NATURAL RESOURCES and FORESTRY | AURORA DISTRICT OFFICE
50 Bloomington Road, Aurora, Ontario, L4G 0L8 | PH: 905-713-7341 | FAX: 905.713.7361 | EMAIL: adam.chalice@ontario.ca

From: stephanie Lillie [mailto:StephanieLillie@lgl.ca]
Sent: September-17-15 10:11 AM
To: Chalice, Adam (MNRF)
Cc: Judson Venier; Erin Blenkhorn
Subject: Rationale for Changes in Sensitivity (407 Transitway East)

Hi Adam,

See attached is our rational for change in sensitivity for the watercourses affected by the transitway. In the document also is the latest habitat summary table reflecting the 2 season (spring/ summer) visits.

Please let me know if I can provide you with anything further; ie our existing conditions report, photos ect.

Also- in the next couple weeks, im going to be forwarding a new sensitivity request for our new project (407 transitway from Hurontario Street to Highway 400) should I send this request to you?

Thank you,

Stephanie

Stephanie Lillie B.Sc.

Fisheries Biologist, LGL Limited

22 Fisher Street, P.O. Box 280 King City, ON L7B 1A6

Tel: (905) 833-1244 E-mail: stephanielillie@lgl.com

R1: Highly altered, Intermittent, warmwater, appears to function as indirect fish habitat due being piped downstream
R2: Highly altered, ephemeral flow, warmwater
R5: Appears unlikely fish can migrate freely up to this section given dense vegetative conditions or would use the wetland area based on unsuitable habitat conditions both within the downstream channel, likely providing indirect habitat
R6: No critical habitat observed, riparian choked with phragmites, cattails
R7: No critical habitat observed, riparian choked with phragmites, cattails
R7a: Ephemeral flow, surface water drainage.
R8: No fish observed, however at minimum contributes indirectly to downstream coolwater fish community.
R9: ploughed through downstream of ROW, intermittent
P1: ephemeral, poor connectivity to downstream habitat
D4: poor channel definition at ROW, no critical habitat features observed. Intermittent
D5: Ephemeral, rill through field, becoming discernable within forest reach.
D6: Ephemeral, rill through field, planted though
D7: Ephemeral, rill through field, planted through
D8: Intermittent, swale with narrow vegetative buffer, likely indirect habitat, no critical habitat features observed
D9: Ephemeral, indirect fish habitat, poor downstream connectivity
D10: Ephemeral characteristics within ROW, poor downstream connectivity.
D11: intermittent, indirect habitat, poor downstream connectivity
D12: ephemeral, indirect habitat, poor channel definition
D13: Intermittent, poor channel definition, poor downstream connectivity
D17: indirect habitat, poor downstream connectivity

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
R1 Tributary of the Rouge River	17T 637112m E 4857012 m N	Intermittent	Warmwater	Rip rap, silt	Cattails, red osier dogwood, shrub willow, Reed Canary Grass	Indirect	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae Spp. (MNRF 2015)	Moderate Contributing habitat for redside dace – stays at moderate sensitivity	Low	
R2 Tributary of the Rouge River	17T 637411 mE 4856991 mN	Ephemeral	Warmwater	Silt, detritus	Phragmites, cattails, jewelweed, watercress	Indirect	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae	Moderate Contributing habitat for redside dace – stays at moderate sensitivity	Low	

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
							Spp. (MNRF 2015)			
R3 Tributary of the Rouge River	17T 637515 mE 4857050 mN	Permanent	Warmwater	Silt, gravel, cobble, detritus	Cattails, Phragmites, overhanging grasses, jewelweed and shrub willow (riparian)	Direct	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae spp. (MNRF 2015) Brook Stickleback (LGL 2015)	Moderate	Moderate	
R4: Rouge River	17T 640546 mE 4858353 mN	Permanent	Coolwater	Cobble, silt, gravel, sand, boulder	Cattail, grasses, Phragmites along fringe. Mixed forest riparian.	Direct	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch,	High	High	

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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
							Cyprinidae spp. (MNRF 2015) Common Carp (LGL 2015)			
R5: Tributary of the Rouge River	17T 642139 m E 4858871 m N	Permanent	Coolwater	Silt, detritus	Phragmites, cattails, algae, shrub willow.	Direct	Coho Salmon, Chinook Salmon, Rainbow Trout, Brown Trout, Goldfish, Redside Dace, Smallmouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae spp. (MNRF 2015)	High Agree to Moderate sensitivity classification given rationale	Moderate	
R6: Tributary of Little Rouge Creek	17T 642502 m E 4859023 m N	Permanent	Coolwater	Silt, gravel, detritus, rip rap	Cattails, Phragmites, jewelweed, Crack Willow, instream	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp.	High Agree to Moderate sensitivity classification given	Moderate	

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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
					grasses		(MNRF 2015) Northern Redbelly Dace, Creek Chub (LGL 2015)		Red Text are ACs comments Oct 7 2015 rationale	
R7: Tributary of Little Rouge Creek	17T 643109 m E 4859368 m N	Permanent	Warmwater	Silt, detritus, cobble	Cattails, Phragmites, instream grasses, red osier dogwood, algae	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Creek Chub (LGL 2015)	High Agree to Moderate sensitivity classification given rationale	Moderate	
R7a: Tributary of Little Rouge Creek	17T 643257 m E 4859331 m N	Ephemeral	Warmwater	Silt, detritus, cobble	Cattails, Phragmites, instream grasses, red osier	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass,	High Agree to Moderate sensitivity classification	Low	

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407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
					dogwood, algae		Cyprinidae Spp. (MNRF, 2015) Cyprinidae Spp. (LGL, 2015)		n given rationale	
R8: Tributary of Little Rouge Creek	17T 643840 m E 4859656 m N	Permanent	Coolwater	Silt, detritus	Cattails, Phragmites, Canada Waterweed instream/ overhanging grasses (Reed Canary Grass), Crack Willow riparian	Direct	No fisheries information available (MNRF 2015) No fish observed or captured (LGL 2015)		None Agree to Moderate sensitivity classification given rationale	Moderate
R9: Tributary of Little Rouge Creek	17T 644309 m E 4859602 m N	Intermittent	Coolwater	Silt, detritus	Cattails, Phragmites, algae instream/	Indirect	No fisheries information available (MNRF 2015). No fish observed or		None Agree to low sensitivity	Low

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
					overhanging grasses, dog strangling vine, goldenrod, asters, Bur-Marigold.		captured (LGL 2015)		Red Text are ACs comments Oct 7 2015 classification given rationale	
R10: Little Rouge Creek	17T 644561 m E 4859934 m N	Permanent	Coldwater	Cobble, gravel, sand, silt, Boulder	Cattails, overhanging grasses instream/mixed forest along east bank and wetland veg along west side (Joe-Pye-weed, angelica,	Direct	Rainbow trout, Atlantic Salmon, Brown Trout, Rock Bass, Smallmouth Bass, Largemouth Bass, Yellow Perch, Cyprinidae spp. (MNRF 2015) White Sucker (LGL 2015)		High	High

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407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
					Elecampane)					
R11: Tributary of Little Rouge Creek	17T 644770 mE 4859924 m N	Ephemeral	Warmwater	Upland soils	Terrestrial vegetation (cultural meadow species)	none	None		None	None
P1: Petticoat Creek	17T 645216 m E 4860351 m N	Ephemeral	Warmwater	Silt, detritus	Cattails, phragmites, Reed Canary Grass, smartweed sp.	None		Rainbow Trout, Atlantic Salmon, Brook Trout, Cyprinidae spp.(MNRF 2015)	High Should be given low sensitivity recognizing potential for cyprinid migration in and out during high water	None
D1: West Duffins Creek	17T 646303 m E	Permanent	Coldwater	Cobble, gravel,	Riparian grasses	Direct		Rainbow Trout, Brook Trout, Pumpkinseed,	High	High

**TABLE 1.
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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
	4862095 m N			sand, silt, boulder			Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)			
D2: Tributary of West Duffins Creek	17T 646450 mE 4862042 mN	Ephemeral	Warmwater ARA layer states coldwater	Silt, detritus	Cattails	None	none	None Should be given low sensitivity as its coldwater ephemeral	None	
D3: Tributary of West Duffins Creek	17T 646510 m E 4862369 m N	Permanent	Coldwater	Silt, cobble, gravel, sand	Instream grasses	Direct	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High	High	
D4: Tributary of West	17T 646868 m E	Intermittent	Coldwater	Silt, detritus,	Instream and overhanging	Direct	Rainbow Trout, Brook Trout, Pumpkinseed,	High Agree to	Moderate	

**TABLE 1.
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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
Duffins Creek	4862482 m N			cobble, gravel, sand	grasses, cattails, Phragmites		Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)		Moderate sensitivity classification given rationale	
D5: Tributary of West Duffins Creek	17T 647495 mE 4862342 mN	Ephemeral	Warmwater	Upland soils	Active agriculture	None	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)		High Agree to no sensitivity classification given rationale and context of agricultural swale	None
D6: Tributary of Whitevale Creek	17T 647903 m E 4862503 m N	Ephemeral	Warmwater	Upland soils	Active agriculture	None	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp.		High Agree to no sensitivity classification	None

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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
							(MNRF 2015)		n given rationale and context of agricultural swale	
D7 Tributary of Whitevale Creek	17T 648260 mE 4862615 mN	Ephemeral	Warmwater	Upland soils	Active agriculture	None		Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High Agree to no sensitivity classification given rationale and context of agricultural swale	None
D8: Tributary of Tributary of Whitevale	17T 648388 m E 4862861 m	Intermittent	Coldwater	Silt, gravel, sand, cobble	Mostly terrestrial vegetation	Indirect		Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin,	High Change sensitivity	Low

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
Creek	N				(asters, goldenrod) and Reed Canary Grass		Cyprinidae spp. (MNRF 2015)		to moderate given coldwater intermittency and its potential for supporting coldwater fish habitat downstream	
D9: Tributary of Whitevale Creek	17T 648823 m E 4862785 m N	Ephemeral	Warmwater ARA layer states coldwater	Silt, detritus	Grasses, some cattail, sedges, smartweed, cultural meadow veg.	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High Change sensitivity to moderate given	Low	

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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
									<p align="center">Red Text are ACs comments Oct 7 2015</p>	
D10: Whitevale Creek	17T 648871 mE 4862808 mN	Intermittent	Coldwater	Silt, detritus, gravel, sand, cobble	Instream and overhanging grasses (Reed Canary Grass, Brome), cattails, Phragmites, cultural	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)		High Agree to Moderate sensitivity classification given rationale	Moderate

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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
					meadow veg.				Red Text are ACs comments Oct 7 2015	
D11: Tributary of Ganatsekiagon Creek	17T 649334 m E 4863064 m N	Intermittent	Coldwater	Silt, detritus	Instream and overhanging grasses, cattails	Indirect	American Brook Lamprey, Rainbow Trout, Brook Trout, Redside Dace, Largemouth Bass, Rainbow Darter, Mottled Sculpin, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High Contributing habitat for redside dace and coldwater – stays at high sensitivity	Moderate	
D12: Ganatsekiagon Creek	17T 650317 m E 4863508 m N	Ephemeral	Coldwater	Silt, detritus	Instream and overhanging grasses, cattails	Indirect	American Brook Lamprey, Rainbow Trout, Brook Trout, Redside Dace, Largemouth Bass, Rainbow Darter, Mottled Sculpin, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High Contributing habitat for redside dace and coldwater – stays at high sensitivity	Low	

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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present** Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
D13: Tributary of Urfe Creek	17T 651137 m E 4863835 m N	Intermittent	Coldwater	Silt, detritus, gravel, sand	Algae, overhanging grasses, cattails, watercress	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp.(MNRF 2015) Northern Redbelly Dace, Fathead Minnow, Brook Stickleback (LGL 2015).	High Recovery habitat for redds dace and coldwater – stays at high sensitivity	Moderate

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
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Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)** Red Text are ACs comments Oct 7 2015	LGL Interpreted sensitivity
D14: Tributary of Urfe Creek	17T 651228 mE 4863681 Mn	Permanent	Coldwater	Silt, detritus, gravel, sand	Watercress, overhanging grasses	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High	High
D15: Urfe Creek	17T 651702 m E 4863957 m N	Permanent	Coldwater	Cobble, gravel, silt, sand, boulder	None	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)	High	High
D16: Brougham Creek (under construction)*	17T 652461 m E 4864320 m N	Permanent	Coldwater	Fine substrates, gravel patches	Watercress	Direct	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae	High	High

**TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE**

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
									Red Text are ACs comments Oct 7 2015	
							spp. (MNRF 2015)			
D17: Tributary of Brougham Creek (under construction)*	17T 652626 m E 4864379 m N	Permanent	Coldwater	Upland soils	None	Indirect	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)	High Contributing habitat for redside dace and coldwater – stays at high sensitivity		Moderate
D18: Tributary of Brougham Creek	17T 653152 mE 4864912 mN	Permanent	Coldwater	Cobble, gravel, sand, silt, boulder	None	Direct	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy	High		High

TABLE 1.
407 TRANSITWAY (EAST OF KENNEDY RD TO EAST OF BROCK ROAD)
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	UTM Coordinates	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Present**	Species	MNRF Identified Habitat Sensitivity (as per Fisheries Protocol)**	LGL Interpreted sensitivity
									Red Text are ACs comments Oct 7 2015	
							Sculpin, Cyprinidae spp. (MNRF 2015)			

From: stephanie Lillie
To: "[Challice, Adam \(MNRF\)](#)"
Cc: "EBlenkhorn@lglcambridge.com"; [Judson Venier](#)
Subject: RE: Highway 407 Transitway MTO information request
Date: Thursday, August 27, 2015 4:44:33 PM
Attachments: [WatercourseSurveyID.CPG](#)
[WatercourseSurveyID.DBF](#)
[WatercourseSurveyID.PRJ](#)
[WatercourseSurveyID.SBN](#)
[WatercourseSurveyID.SBX](#)
[WatercourseSurveyID.SHP](#)
[WatercourseSurveyID.SHX](#)
[LGLSensitivityTablewoldnumbers.pdf](#)

Hi Adam,

Please see attached, the shapefiles for the new points.

I apologize that they have changed a bit. We didn't have an alignment when we first were asked to do this request. The points have been realigned along the technically preferred route. Most of the points have shifted a very small distance.

Also attached is the table with the old reference numbers in red.

My colleague is going to send over our rationale for sensitivity adjustment once our summer field investigation is complete (latest by next week). It is fairly brief (many are agricultural swales).. if you would like a copy of the existing conditions and photo appendix to assist you, please let me know. I am on vacation next week so Judson (jvenier@lgl.com) can be contacted.

Thanks for your help
Stephanie

From: Challice, Adam (MNRF) [<mailto:Adam.Challice@ontario.ca>]
Sent: Wednesday, August 26, 2015 9:30 AM
To: stephanielillie@lgl.com
Cc: Judson Venier
Subject: RE: Highway 407 Transitway MTO information request

Hi Stephanie,

Hope all is well. The latest table provided is a little misleading – specifically the column 'MNRF Identified Habitat Sensitivity as per Fisheries protocol'. In reality, this sensitivity is based upon many factors beyond the sensitivity of the habitat alone. MTO's Environmental Guide for Fish and Fish Habitat defines sensitivity based upon **1. Species Sensitivity, 2. Species' Dependence on Habitat, 3. Rarity of the Species or Habitat present and 4. Habitat Resiliency**. Please provide a rationale for each sensitivity that conflicts from MNRFs original designation considering all of these different variables.

Also, please include the original site number from the original table (attached) so that I can relate each site back to our original table. The site numbers have changed as have coordinates for many sites, making it difficult to relate sites between tables, and although I haven't actually mapped them

yet, you should be aware that our sensitivity may change due to the change in spatial location of the site. This is almost a new information request due to the high number of sites that have now moved significant distances.

If you have a shapefile of the latest location sites, that would also help the process greatly.

Also,

Adam Challice

MANAGEMENT BIOLOGIST | ONTARIO MINISTRY of NATURAL RESOURCES and FORESTRY | AURORA DISTRICT OFFICE

50 Bloomington Road, Aurora, Ontario, L4G 0L8 | PH: 905-713-7341 | FAX: 905.713.7361 | EMAIL: adam.challice@ontario.ca

From: Stephanie Lillie [<mailto:stephanielillielgl@bellnet.ca>]
Sent: August-25-15 11:35 AM
To: Challice, Adam (MNRF)
Cc: Judson Venier
Subject: RE: Highway 407 Transitway MTO information request

Hi Adam,

I hope all is well with you and your enjoying the last days of summer!

I'm hoping for some input from your end regarding the watercourse sensitivities along the proposed corridor of the 407 Transitway. Attached is the Existing Fish and Fish habitat summary table. Some of our interpreted sensitivities based on our field investigations to date (summer investigations are currently ongoing) are different than the ones you provided. I'm hoping to get some input weather MNR agrees with our modified sensitivity rankings.

If you would like to review a copy of our draft existing conditions report, photo appendix, habitat mapping ect. to help with this request, please let me know and I'll send them along.

One other thing we were hoping to get input on is regarding the Redside Dace habitat within the study area. Would it be possible you could let us know if the crossings identified as RSD are Occupied, Contributing or Recovery? That would be of great assistance.

Thanks,
Stephanie

Stephanie Lillie B.Sc.
Fisheries Biologist, LGL Limited
22 Fisher Street, P.O. Box 280 King City, ON L7B 1A6
Tel: (905) 833-1244 E-mail: stephanielillie@lgl.com

From: Challice, Adam (MNRF) [<mailto:Adam.Challice@ontario.ca>]
Sent: Monday, May 11, 2015 4:15 PM
To: stephanielillielgl@bellnet.ca
Subject: RE: Highway 407 Transitway MTO information request

Hi Stephanie,

Wow, this one is long overdue. Here is the fisheries info. The SAR, wetlands and ansi data will follow over the coming days.

Regards,

Adam Challice

MANAGEMENT BIOLOGIST | ONTARIO MINISTRY of NATURAL RESOURCES and FORESTRY | AURORA DISTRICT OFFICE

50 Bloomington Road, Aurora, Ontario, L4G 0L8 | PH: 905-713-7341 | FAX: 905.713.7361 | EMAIL: adam.challice@ontario.ca

From: Stanley, Elizabeth (MNRF)
Sent: May-07-15 10:20 AM
To: Challice, Adam (MNRF)
Cc: Farrell, Tom (MNRF)
Subject: FW: Highway 407 Transitway MTO information request

Adam – please follow up with Stephanie on this – see below.

Thanks,

Elizabeth

From: Burkart, Jackie (MNRF)
Sent: May 7, 2015 10:02 AM
To: Stanley, Elizabeth (MNRF)
Subject: FW: Highway 407 Transitway MTO information request

Hi Elizabeth – can you please advise Stephanie as to who to contact or alternately, pass this along to the new assignee?

Thanks,

Jackie

From: Stephanie Lillie [<mailto:stephanielillielgl@bellnet.ca>]
Sent: May 5, 2015 5:05 PM
To: Burkart, Jackie (MNRF)
Cc: Sowel Kang

Subject: RE: Highway 407 Transitway MTO information request

Hi Jackie,

I understand Aurora is no longer with the Aurora District Office, who can I contact to get an update on the status of the below request, originally sent August 5, 2014?

Thanks
Stephanie

From: Burkart, Jackie (MNR) [<mailto:Jackie.Burkart@ontario.ca>]
Sent: Monday, August 25, 2014 2:26 PM
To: stephanielillie@lgl.com
Cc: Sowel Kang; Judson Venier
Subject: RE: Highway 407 Transitway MTO information request

Hi Stephanie,

Your request has been passed on to Aurora McAllister for review and comment.

Jackie

Jackie Burkart

District Planner

Ministry of Natural Resources | 50 Bloomington Road, Aurora, ON L4G 0L8 | Phone: 905-713-7368 | Fax: 905-713-7360 |

Email: jackie.burkart@ontario.ca |

From: Stephanie Lillie [<mailto:stephanielillie@bellnet.ca>]
Sent: August 25, 2014 2:06 PM
To: Burkart, Jackie (MNR)
Cc: Sowel Kang; Judson Venier
Subject: FW: Highway 407 Transitway MTO information request

Hi Jackie,

I am following up to find out the status of the below information request sent by Judson Venier on August 5th. (information attached)

If you need anything further to help with this request, please do not hesitate to contact myself, or Judson.

Thank you very much,
Stephanie

From: Judson Venier [<mailto:jvenier@lgl.com>]
Sent: Tuesday, August 05, 2014 3:50 PM
To: Burkart, Jackie (MNR)
Cc: gkauffman@lgl.com; cagnew@lgl.com; skang@lgl.com; stephanielillie@lgl.com
Subject: Highway 407 Transitway MTO information request

Hi Jackie,

Please find attached a formal Aurora District information request form, a MTO standard letter request for information (with embedded table) and a map of the study area. Can you please fill out the table and complete our information request at your earliest convenience?

Thank you and I hope all is well,

Judson

Judson M. Venier, M.Sc.
Fisheries Biologist
LGL Limited
22 Fisher Street, P.O. Box 280
King City, ON L7B 1A6
Tel: 905-833-1244
Fax: 905-833-1255
e-mail: jvenier@lgl.com

Highway 407 East Extension Phase 2

Waterbody Name and location (UTM)	Watercourse classification (i.e., warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats etc.)	Historical data on fish species present, including whether the subject waterbody(s) are considered to support any vulnerable, threatened or endangered aquatic species	MNR fisheries management objectives, if applicable	MNR interpretation of fish and fish habitat sensitivity (scale of high, moderate, low or unknown as per DFO's Risk Management Framework)	In-water timing windows for construction
Site 1: Tributary of Beaver Creek 17T 636112 m E 4857378 m N	Coolwater		011, 076, 080, 184, 311, 313, 337, 180 spc.		High	July 1 – Sept. 15
Site 2: Tributary of the Rouge River 17T 637044 m E 4857211 m N	Warmwater		076, 184, 233, 311, 313, 316, 317, 331, 337, 180 spc.		Moderate	July 1- Mar 31
Site 3: Rouge River 17T 638828 m E 4857886 m N	Coolwater		076, 184, 233, 311, 313, 316, 317, 331, 180 spc.		High	July 1 – Sept. 15
Site 4: Mount Joy Creek 17T 640634 m E 4858984 m N	Coldwater		076, 184, 311, 313, 316, 317, 331, 180 spc.		Moderate	July 1 – Sept. 15
Site 5: Tributary of the Rouge River 17T 642139 m E 4858871 m N	Coolwater		073, 075, 076, 078, 181, 184, 316, 331, 337, 180 spc.		High	July 1 – Sept. 15
Site 6: Tributary of the Rouge River 17T 642502 m E 4859023 m N	Warmwater		076, 078, 311, 313, 316, 317, 180 spc.		High	July 1 – Sept. 15
Site 7: Tributary of the Rouge River 17T 643109 m E 4859368 m N	Warmwater		076, 078, 311, 313, 316, 317, 180 spc.		High	July 1 – Sept. 15
Site 8: Tributary of the Rouge River 17T 643840 m E 4859656 m N	Coolwater		No Information available			
Site 9: Tributary of the Rouge River 17T 644309 m E 4859602 m N	Coolwater		No Information available			

Waterbody Name and location (UTM)	Watercourse classification (i.e., warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats etc.)	Historical data on fish species present, including whether the subject waterbody(s) are considered to support any vulnerable, threatened or endangered aquatic species	MNR fisheries management objectives, if applicable	MNR interpretation of fish and fish habitat sensitivity (scale of high, moderate, low or unknown as per DFO's Risk Management Framework)	In-water timing windows for construction
Site 10: Little Rouge Creek 1T 644561 m E 4859934 m N	Coldwater		076, 077, 078, 311, 316, 317, 331, 337, 180 spc.		High	July 1 – Sept. 15
Site 11: Tributary of Petticoat Creek 17T 645170 m E 4860551 m N	Warmwater		076, 077, 080, 180 spc.		High	July 1 – Sept. 15
Site 12: Tributary of Petticoat Creek 17T 645684 m E 4860570 m N	Warmwater		076, 077, 080, 180 spc.		High	July 1 – Sept. 15
Site 13: West Duffins Creek 17T 646303 m E 4862095 m N	Coldwater		076, 080, 313, 337, 381, 180 spc.		High	July 1 – Sept. 15
Site 14: Tributary of West Duffins Creek 17T 646510 m E 4862369 m N	Coldwater		076, 080, 313, 337, 381, 180 spc.		High	July 1 – Sept. 15
Site 15: Tributary of West Duffins Creek 17T 646868 m E 4862482 m N	Coldwater		076, 080, 313, 337, 381, 180 spc.		High	July 1 – Sept. 15
Site 16: Tributary of West Duffins Creek 17T 647389 m E 4862538 m N	Coldwater		076, 080, 313, 337, 381, 180 spc.		High	July 1 – Sept. 15
Site 17: Tributary of West Duffins Creek 17T 647258 m E 4861971 m N	Coldwater		076, 080, 313, 337, 381, 180 spc.		High	July 1 – Sept. 15
Site 18: Tributary of West Duffins Creek 17T 648085 m E 4862228 m N	Coldwater		076, 080, 313, 381, 180 spc.		High	July 1 – Sept. 15
Site 19: Tributary of West Duffins Creek 17T 648388 m E 4862861 m N	Coldwater		076, 080, 313, 381, 180 spc.		High	July 1 – Sept. 15
Site 20: Tributary of West Duffins Creek 17T 648818 m E 4862873 m N	Coldwater		076, 080, 313, 381, 180 spc.		High	July 1 – Sept. 15
Site 21: Tributary of Ganatsekiagon Creek 17T 649334 m E 4863064 m N	Coldwater		011, 076, 080, 184, 317, 337, 381, 382, 180 spc.	Redside Dace regulated habitat downstream	High	July 1 – Sept. 15

Waterbody Name and location (UTM)	Watercourse classification (i.e., warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats etc.)	Historical data on fish species present, including whether the subject waterbody(s) are considered to support any vulnerable, threatened or endangered aquatic species	MNR fisheries management objectives, if applicable	MNR interpretation of fish and fish habitat sensitivity (scale of high, moderate, low or unknown as per DFO's Risk Management Framework)	In-water timing windows for construction
Site 22: Ganatsekiagon Creek 17T 650317 m E 4863508 m N	Coldwater		011, 076, 080, 184, 317, 337, 381, 382, 180 spc.	Redside Dace regulated habitat downstream	High	July 1 – Sept. 15
Site 23: Tributary of Urfe Creek 17T 651137 m E 4863835 m N	Coldwater	Redside Dace recovery habitat	080, 184, 313, 381, 180 spc.	Regulated Redside Dace habitat	High	July 1 – Sept. 15
Site 24: Urfe Creek 17T 651702 m E 4863957 m N	Coldwater		080, 184, 313, 381, 180 spc.	Redside Dace regulated habitat downstream	High	July 1 – Sept. 15
Site 25: Brougham Creek 17T 652461 m E 4864320 m N	Coldwater		011, 076, 078, 080, 184, 313, 316, 317, 337, 382, 180 spc.	Redside Dace regulated habitat downstream	High	July 1 – Sept. 15
Site 26: Spring Creek 17T 652626 m E 4864379 m N	Coldwater		011, 076, 078, 080, 184, 313, 316, 317, 337, 382, 180 spc.	Redside Dace regulated habitat downstream	High	July 1 – Sept. 15
Site 27: Tributary of West Duffins Creek 17T 653206 m E 4864776 m N	Coldwater		011, 076, 078, 080, 184, 313, 316, 317, 337, 382, 180 spc.	Redside Dace regulated habitat downstream	High	July 1 – Sept. 15

NOTE:

- The applicant shall complete the waterbody name and location (column 1) and attach a Google Earth map or MTO project map identifying each waterbody and submit to MNR.
- MNR is required as per Step 3 of the Fisheries Protocol to provide the applicant with the information outlined in the table above (columns 2-7) within **20 working days**.

August 5, 2014

Jackie Burkart
District Planner
Ministry of Natural Resources- Aurora District
50 Bloomington Rd
Aurora ON
L4G0L8

Re: Request for Background Information, Highway 407 Transitway East of Kennedy Road to East of Brock Road.

Attention: Ms. Burkart,

In accordance with the *MTO/DFO/MNR Protocol for Protecting Fish and Fish Habitat on Provincial Highway Undertakings* (2013), this letter is to provide notification to the Ministry of Natural Resources that the Ministry of Transportation is undertaking Environmental Assessment Planning and Preliminary Design of the Highway 407 Transitway Project located within the Regional Municipalities of York and Durham in addition to requesting background natural heritage data for this area.

The Highway 407 Transitway Project area extends from east of Kennedy Road to east of Brock Road. It includes the 18 km section of the Transitway and 8 stations. The project includes route selection within an approximately 500 m corridor north and the south of the existing Highway 407, pavement design, drainage design and/or improvements and design of approximately 17 crossing structures. Alternatives will be reviewed for environmental (and other) impacts within this 1 km corridor. A map is included with this submission to clarify the boundaries of the study area.

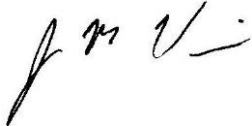
In addition to the Aurora District data request form, which is included with this request, please see the table below (and attached map) for a list of the watercourses and waterbodies within the 407 Transitway study limits and their locations. Watercourses include tributaries of the Rouge River, Petticoat Creek, and Duffins Creek. The map shows the watercourses which are numbered in sequential order from west to east.

As per Step 3 of the MTO/DFO/MNR Fisheries Protocol, we request that MNR complete the attached table that includes information on fish community and habitat.

We look forward to MNR's response to our request within **20 working days**, as specified in the Protocol.

Sincerely,

LGL Limited
environmental research associates

A handwritten signature in black ink, appearing to read 'J M Venier'.

Judson M. Venier, M.Sc.
Fisheries Biologist

Attachments: Table of Watercourses, Map of study area

cc: **Grant N. Kauffman, M.E.S, Vice President, Ontario Region**

Highway 407 East Extension Phase 2

Waterbody Name and location (UTM)	Watercourse classification (i.e., warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats etc.)	Historical data on fish species present, including whether the subject waterbody(s) are considered to support any vulnerable, threatened or endangered aquatic species	MNR fisheries management objectives, if applicable	MNR interpretation of fish and fish habitat sensitivity (scale of high, moderate, low or unknown as per DFO's Risk Management Framework	In-water timing windows for construction
Site 1: Tributary of Beaver Creek 17T 636112 m E 4857378 m N						
Site 2: Tributary of the Rouge River 17T 637044 m E 4857211 m N						
Site 3: Rouge River 17T 638828 m E 4857886 m N						
Site 4: Mount Joy Creek 17T 640634 m E 4858984 m N						
Site 5: Tributary of the Rouge River 17T 642139 m E 4858871 m N						
Site 6: Tributary of the Rouge River 17T 642502 m E 4859023 m N						
Site 7: Tributary of the Rouge River 17T 643109 m E 4859368 m N						
Site 8: Tributary of the Rouge River 17T 643840 m E 4859656 m N						
Site 9: Tributary of the Rouge River 17T 644309 m E 4859602 m N						
Site 10: Little Rouge Creek 1T 644561 m E 4859934 m N						
Site 11: Tributary of Petticoat Creek 17T 645170 m E 4860551 m N						

Waterbody Name and location (UTM)	Watercourse classification (i.e., warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats etc.)	Historical data on fish species present, including whether the subject waterbody(s) are considered to support any vulnerable, threatened or endangered aquatic species	MNR fisheries management objectives, if applicable	MNR interpretation of fish and fish habitat sensitivity (scale of high, moderate, low or unknown as per DFO's Risk Management Framework)	In-water timing windows for construction
Site 12: Tributary of Petticoat Creek 17T 645684 m E 4860570 m N						
Site 13: West Duffins Creek 17T 646303 m E 4862095 m N						
Site 14: Tributary of West Duffins Creek 17T 646510 m E 4862369 m N						
Site 15: Tributary of West Duffins Creek 17T 646868 m E 4862482 m N						
Site 16: Tributary of West Duffins Creek 17T 647389 m E 4862538 m N						
Site 17: Tributary of West Duffins Creek 17T 647258 m E 4861971 m N						
Site 18: Tributary of West Duffins Creek 17T 648085 m E 4862228 m N						
Site 19: Tributary of West Duffins Creek 17T 648388 m E 4862861 m N						
Site 20: Tributary of West Duffins Creek 17T 648818 m E 4862873 m N						
Site 21: Tributary of Ganatsekiagon Creek 17T 649334 m E 4863064 m N						
Site 22: Ganatsekiagon Creek 17T 650317 m E 4863508 m N						
Site 23: Tributary of Urfe Creek 17T 651137 m E 4863835 m N						

Waterbody Name and location (UTM)	Watercourse classification (i.e., warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats etc.)	Historical data on fish species present, including whether the subject waterbody(s) are considered to support any vulnerable, threatened or endangered aquatic species	MNR fisheries management objectives, if applicable	MNR interpretation of fish and fish habitat sensitivity (scale of high, moderate, low or unknown as per DFO's Risk Management Framework)	In-water timing windows for construction
Site 24: Urfe Creek 17T 651702 m E 4863957 m N						
Site 25: Brougham Creek 17T 652461 m E 4864320 m N						
Site 26: Spring Creek 17T 652626 m E 4864379 m N						
Site 27: Tributary of West Duffins Creek 17T 653206 m E 4864776 m N						

NOTE:

- The applicant shall complete the waterbody name and location (column 1) and attach a Google Earth map or MTO project map identifying each waterbody and submit to MNR.
- MNR is required as per Step 3 of the Fisheries Protocol to provide the applicant with the information outlined in the table above (columns 2-7) within **20 working days**.

APPENDIX B
PHOTOGRAPHIC RECORDS

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R1: Facing south (upstream) from north of the runningway (Spring 2015).



R1: Facing north (downstream) from south of the runningway (Spring 2015).



R1: Similar view as previous photo, facing downstream, south of runningway (Summer 2015).



R1: Downstream view of the 407ETR culvert showing minimal standing water (Summer 2015).



R2: Facing northeast (downstream) from north of the runningway (Spring 2015).



R2: Facing north (downstream) from the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R2: Facing north (upstream), from just south of transitway crossing (Summer 2015).



R3: Facing north (downstream) from the runningway (Spring 2015)



R3: Facing south (upstream) from the runningway (Spring 2015)



R3: Facing north (downstream) from south of the runningway (Summer 2015).



R3: Upstream view from Highway 407 culvert. Flow documented and baitfish observed in Summer 2015.



R3: Facing south (upstream) from upstream of the runningway within the golf course (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R3: Facing south (upstream) from upstream of the runningway (Summer 2015). Viewpoint slightly upstream from previous photo.



R4: Facing south (downstream) from upstream of the runningway (Spring 2015).



R4: Facing west, at the dry storm water pond outlet within the runningway (Spring 2015).



R4: Facing south (downstream), along the east bank within the runningway facing the groundwater seeps (Spring 2015).



R4: Facing south (downstream), along east bank. Similar view as previous photo (Summer 2015).



R4: Facing north (upstream) from south of the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R4: Facing north (upstream) from south of the runningway. Similar view as previous photo (Summer 2015).



R4: Facing south (downstream) from south of the runningway (Spring 2015). (note the weir in the background).



R5: Facing north (upstream) from south of the runningway (Spring 2015).



R5: Southeasterly view of wetland and 407 ETR SWM pond outfall (Summer 2015).



R5: Facing east (upstream) from south of the runningway where the watercourse becomes channelized (Spring 2015).



R5: Facing east (upstream) along channelized reach, further upstream from previous photo (Summer 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R5: Facing north (upstream) at structure inlet under Copper Creek Drive (Summer 2015).



R5: Wetland channel located further downstream of Copper Creek Drive, showing wetland indicators (Summer 2015).



R6: Facing south (downstream) from the 407 ETR (Spring 2015).



R6: Facing south (downstream) from the runningway (Spring 2015).



R6: Facing south (downstream) from the runningway, similar view as previous photo (Summer 2015)



R6: Facing north (upstream) from Copper Creek Drive (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R7: Facing north (upstream) from Copper Creek Drive (Spring 2015).



R7: Facing south (downstream) from the 407 ETR (Spring 2015).



R7: Facing south (downstream) from the 407 ETR, similar view as previous photo (Summer 2015).



R7a: Facing east (upstream) towards the SWM pond (Spring 2015).



R7a: Hickenbottom inlet located a short distance west of previous photo (Summer 2015).



R8: Facing north (upstream) from the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R8: Facing north (upstream) from the runningway, similar view as previous (Summer 2015).



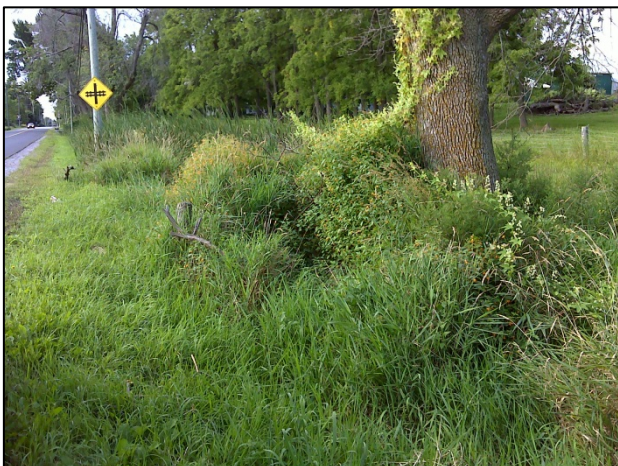
R8: Facing south (downstream) from the runningway (Spring 2015).



R8: Facing south (downstream) from the runningway, similar view as previous (Summer 2015).



R8: Facing south (downstream) from downstream of the runningway (Spring 2015).



R8: Facing south (downstream) from downstream of the runningway (Summer 2015).



R9: Facing north (upstream) from the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R9: Facing north (upstream) from the runningway, showing dry channel in Summer 2015.



R9: Facing south (downstream) from the runningway (Spring 2015).



R9: Facing south (downstream) from downstream of the runningway showing dry channel (Summer 2015).



R9: Facing south (downstream) from downstream of the runningway (Spring 2015).



R9: Facing south (downstream) from downstream of the runningway, similar view as previous (Summer 2015).



R10: Facing east, at runningway crossing (Summer 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R10: Facing south (downstream) from upstream of the runningway (Spring 2015).



R10: Facing south (downstream) from the runningway (Spring 2015).



R10: Facing south (downstream) from the runningway, similar view as previous (Summer 2015).



R10: Facing north (upstream) from downstream of the runningway (Spring 2015).



R10: Facing south (downstream) from downstream of the runningway (Spring 2015).



R11: Facing south (downstream) from the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



R11: Facing south (downstream) from the runningway, similar view as previous (Summer 2015).



P1: Facing south (downstream) from the runningway (Spring 2015).



P1: Facing south (downstream) from the runningway (Summer 2015).



D1: Facing south (downstream) from the runningway (Spring 2015).



D1: Facing north (upstream) from downstream of the runningway (Spring 2015).



D1: Facing south (downstream) within the vicinity of the runningway (Summer 2015).

PHOTO APPENDIX
407 Transitway from Kennedy
Road to Brock Road



D2: facing south (downstream) from 407 ETR bridge slope at standing water within floodplain in vicinity of runningway (Summer 2015).



D2: facing south (downstream) from 407 ETR bridge slope at standing water within floodplain in vicinity of runningway (Summer 2015).



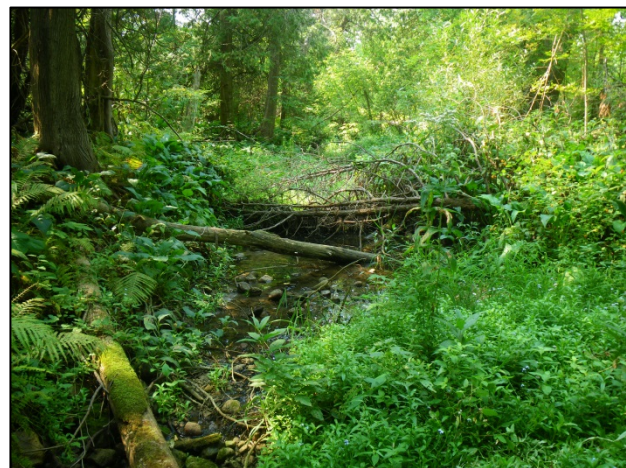
D3: Facing south (downstream) from the runningway (Spring 2015).



D3: Facing north (upstream) from the runningway (Spring 2015).



D3: Facing south (downstream) from downstream of the runningway (Spring 2015).



D3: Channel in vicinity of runningway facing upstream (north) (Summer 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



D4: Facing north (upstream) from the runningway (Spring 2015).



D4: Facing south (downstream) from the runningway (Spring 2015).



D4: Facing south (downstream) from the runningway, similar view as previous photo (Summer 2015).



D4: Facing south (downstream) from downstream of the runningway (Spring 2015).



D5: Facing south (downstream) from the runningway (Spring 2015).



D6: Facing south (downstream) from the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



D6: Facing south (downstream) from the runningway (Summer 2015).



D7: Facing south (downstream) from the runningway (Spring 2015).



D8: Facing north (upstream) from the runningway (Spring 2015).



D8: Facing south (downstream) from the runningway (Spring 2015).



D8: Facing south (downstream) from the runningway. (Summer 2015).



D9: Facing south (downstream) from the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



D9: Facing south (downstream) from the runningway (Spring 2015).



D9: Facing south (downstream) from the runningway, view slightly downstream from previous photo (Summer 2015).



D10: Facing south (downstream) from the runningway (Spring 2015).



D10: Facing south (downstream) from downstream of the runningway (Spring 2015).



D10: Facing south (downstream) from downstream of the runningway, similar view as previous (Summer 2015).



D11: Facing north (upstream) from the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



D11: Facing south (downstream) from the runningway (Spring 2015).



D11: Facing south (downstream) at the runningway location (Summer 2015).



D12: Facing north (upstream) from the runningway (Spring 2015).



D12: Facing south (downstream) from downstream of the runningway (Spring 2015).



D12: Facing south (downstream) at the runningway (Summer 2015).



D13: Facing north (upstream) from the runningway at the pond (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



D13: Facing east (downstream) from the runningway downstream of the pond outlet (Spring 2015).



D13: Facing east (downstream) along the runningway (Spring 2015).



D13: Facing west (upstream) along the runningway near the confluence with D14 (Spring 2015).



D13: Facing west (upstream) along the runningway in similar location to previous photo (Summer 2015).



D14: Facing north (upstream) from the runningway (Spring 2015).



D14: Facing south (downstream) from the runningway (Spring 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



D14: Facing north (upstream) within the runningway at confluence with watercourse from D13 (Summer 2015).



D15: Facing south (downstream) from the runningway (Spring 2015).



D15: Facing north (upstream) from downstream of the runningway (Spring 2015).



D15: Facing south (downstream) from the runningway: same position as the photo above (Summer 2015).



D16: Upstream (west) of runningway (Summer 2015).



D16: Facing west (upstream) within runningway at Sideline 16 perched culvert (Summer 2015).

PHOTO APPENDIX

407 Transitway from Kennedy Road to Brock Road



D17: Facing east (downstream) from upstream of runningway (Summer 2015).



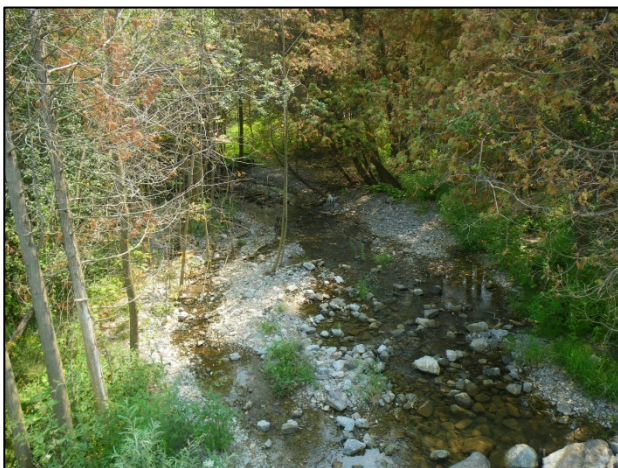
D17: Facing east (downstream) from within runningway (Summer 2015).



D18: Facing north (upstream) from the runningway (Spring 2015).



D18: Facing south (downstream) from downstream of the runningway (Spring 2015)



D18: Facing south (downstream) at runningway (Summer 2015).


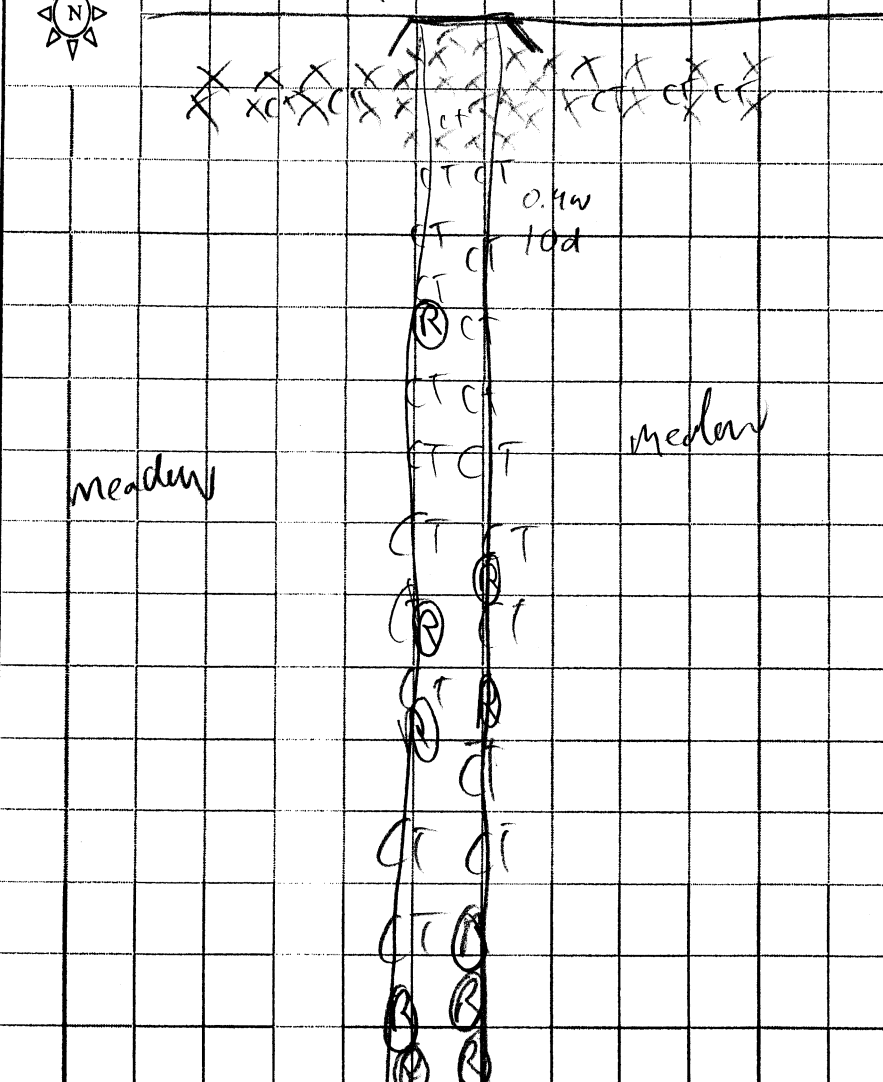
**APPENDIX C
WATERCOURSE FIELD RECORD FORMS
AND HABITAT MAPPING**

GENERAL INFORMATION									
PROJECT #: JA 8429		PROJECT DESCRIPTION: 407 Transway			DAY: 01	MONTH: 05	YEAR: 2015		
Is STREAM/REALIGNMENT required for this section: Yes No Unknown									
COLLECTORS: SCC		WEATHER CONDITIONS: overcast 16°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9608-9618									
LOCATION									
NAME OF WATERBODY: Trib of the Rouge River		DRAINAGE SYSTEM: Rouge River		CROSSING #: R1		STATION #: U15, P15			
LOCATION OF CROSSING: ~ 1 km west of Meadown Road									
UTM EASTING & NORTHING: 17T 63747 mE 4856886 mN					MTO CHAINAGE: CR				
TOWNSHIP: Markham					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Highly meadow, golf course					SOURCES OF POLLUTION: golf course, highly runoff				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		(N/A)	
Other Describe:						Size (w x h) m2			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: Subsection 407				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
		X			X				
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area				100					
mean depth wetted (m)				10cm					
mean width wetted (m)				0.4m					
Mean bankfull width (m)				2.5m					
Mean bankfull depth (m)				0.4m					
Substrate				8/4					
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Ci	Muck Mu	Detritus D	

Rp Rep
20

80

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	X						
Right Upstream Bank	X						
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
			Ryegrass 20%	shrubs Instream 5% Overhanging 5%		Cattails Instream 80% Overhanging	
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60-30%	30 – 1%	None		
			X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
					100		
Predominant Species					Cattails		
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent culvert under 407		
					perman barrier		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other None		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
Riparian plantings							
COMMENTS :							
Additional Notes Appended? No Yes number of pages							

SECTION IDENTIFIER: U/S/D/S		SECTION LOCATION: R1		SECTION LENGTH (m): 150 m		SCALE (cm / m):	
		407		PROJECT #: 8429		MAPPER: JCC	
		NAME OF WATERBODY: R. B. de Boye/Bur		CROSSING #: R1		STATION #: U/S/D/S	
		DATE: DD-MMM-YY 01-05-15		<p style="text-align: center;">LEGEND</p> <p>10d depth (cm) 6w width</p> <p>→ Riffle ⇒ Run/Glide ○ Pool ■ Island/Bar</p> <p>⊞ Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris</p> <p>CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress</p> <p>Fe Iron Staining ///// Eroded Bank XXX Riprap / Other Stabilization</p> <p>○ Instream Log/Tree AAA Dam/Weir/Obstruction ⊗ Riparian Tree</p> <p>└ Seep/Spring ----- Undercut Bank</p> <p>— Barrier to Fish Movement -S- Seasonal Barrier</p> <p>-x-x- Fence line ┌ Culvert</p>			
PROFILE:		Horz. Scale		Vert. Scale			
		golf course					

GENERAL INFORMATION									
PROJECT #: JA8429		PROJECT DESCRIPTION: 407 Transition			DAY: 01	MONTH: 05	YEAR: 2015		
Is STREAM REALIGNMENT required for this section: Yes No Unknown									
COLLECTORS: SLC			WEATHER CONDITIONS: Overcast 16°C		TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9597 - 9607									
LOCATION									
NAME OF WATERBODY: Trail of the Pigeon River			DRAINAGE SYSTEM: Pigeon RVR		CROSSING #: R2		STATION #: US/DS		
LOCATION OF CROSSING: 750m West of McCown Road									
UTM EASTING & NORTHING: 17T 637411 m E 4856991 m N					MTO CHAINAGE:				
TOWNSHIP: Mer kh					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: golf course, meadow, Highway					SOURCES OF POLLUTION: golf course, highway runoff				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: US/DS				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	X		X						
TOTAL SECTION LENGTH (m): 250m					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area				100					
mean depth wetted (m)				5cm					
mean width wetted (m)				0.3m					
Mean bankfull width (m)				10m					
Mean bankfull depth (m)				20m					
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
								80	20


BANK STABILITY								
	Stable	Slightly Unstable	Moderately Unstable	Unstable				
Left Upstream Bank	X							
Right Upstream Bank	X							
HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris <i>shrubs</i> Instream 5 Overhanging 10	Organic debris	Vascular plants <i>cuttings</i> Instream 60% Overhanging	None	
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60-30%	X	30 – 1%	None		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
Predominant Species					<i>60%</i> <i>cattails</i>			
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent <i>fence (large fish)</i>			
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater <i>yearly water cuts @ upstrm end</i>		Other			
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
<i>Buffer from golf course, plantings</i>								
COMMENTS :								
Additional Notes Appended? No Yes number of pages _____								

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):		SCALE (cm / m):	
US/DS		R2		150m			
						PROJECT #: JA 8429	
						MAPPER: JLL	
						NAME OF WATERBODY: 303 of Rouge Riv	
						CROSSING #: R2	
						STATION #: US/DS	
						DATE: DD-MMM-YY 01-05-2015	
						LEGEND	
						10d depth (cm) 6w width	
						→ Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ■ Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // // Eroded Bank xxx Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ↳ Seep/Spring - - - Undercut Bank - Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert	
						PROFILE:	
golf course							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):		SCALE (cm / m):	
d/s		R2		100 m			
						PROJECT #:	
						8430	
						MAPPER:	
						JLL	
						NAME OF WATERBODY:	
Trib of Rock River							
CROSSING #:		R2					
STATION #:		P/S					
DATE: DD-MMM-YY		01-05-15					
LEGEND							
						10d depth (cm) 6w width	
						→ Riffle	
						⇨ Run/Glide	
						○ Pool	
						■ Island/Bar	
						▨ Fine Substrate	
						### Gravel Substrate	
						oOooO Cobble / Boulder	
						*** Debris	
						CT Cattail	
						SV/FV Submerg/Float Veg	
						EV Emergent Vegetation	
						W Watercress	
						Fe Iron Staining	
						///// Eroded Bank	
						XXX Riprap / Other Stabilization	
PROFILE:		Horz. Scale		Vert. Scale		○ Instream Log/Tree	
						AAA Dam/Weir/Obstruction	
						⊗ Riparian Tree	
						└▶ Seep/Spring	
						----- Undercut Bank	
						— Barrier to Fish Movement	
						-S- Seasonal Barrier	
						-x-x- Fence line	
						┌└ Culvert	

GENERAL INFORMATION									
PROJECT #: TA 8429		PROJECT DESCRIPTION: 407 Trans Hwy			DAY: 01	MONTH: 05	YEAR: 2015		
Is STREAM REALIGNMENT required for this section: Yes No Unknown									
COLLECTORS: SLC			WEATHER CONDITIONS: Overcast 16°C		TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9585 - 9596, 9619 - 9220									
LOCATION									
NAME OF WATERBODY: trib of the Rouge R. w/ Rouge R. w/			DRAINAGE SYSTEM: Rouge R. w/		CROSSING #: R3		STATION #: US/D5		
LOCATION OF CROSSING: 650 m west of Meccann Road									
UTM EASTING & NORTHING: 17T 637515 mE 4857050mN					MTO CHAINAGE:				
TOWNSHIP: Markham					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: 60% forest, meadow, highway					SOURCES OF POLLUTION: golf course, highway runoff				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	X		X						
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	inside culvert	Other			
Percentage of area	20			80					
mean depth wetted (m)	0.2 m								
mean width wetted (m)	0.4-3m								
Mean bankfull width (m)	0.6-1.5m								
Mean bankfull depth (m)	0.4 m								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Sl	Clay Cl	Muck Mu	Détritus D	
		10	10		70			10	

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank		X					
Right Upstream Bank	X						
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
	5		5	Instream Overhanging		Instream 40 Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 80 %	60 - 30 %	30 - 1 %	None		
			X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species					Cattails, phragmites, grasses		
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent gradient drops ~5m		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other None		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<p>- buffer vegetated buffer would be down beneficial U/S How the gub come</p>							
COMMENTS:							
<p>Brook stickleback observed with the channel</p>							
Additional Notes Appended? No Yes number of pages							

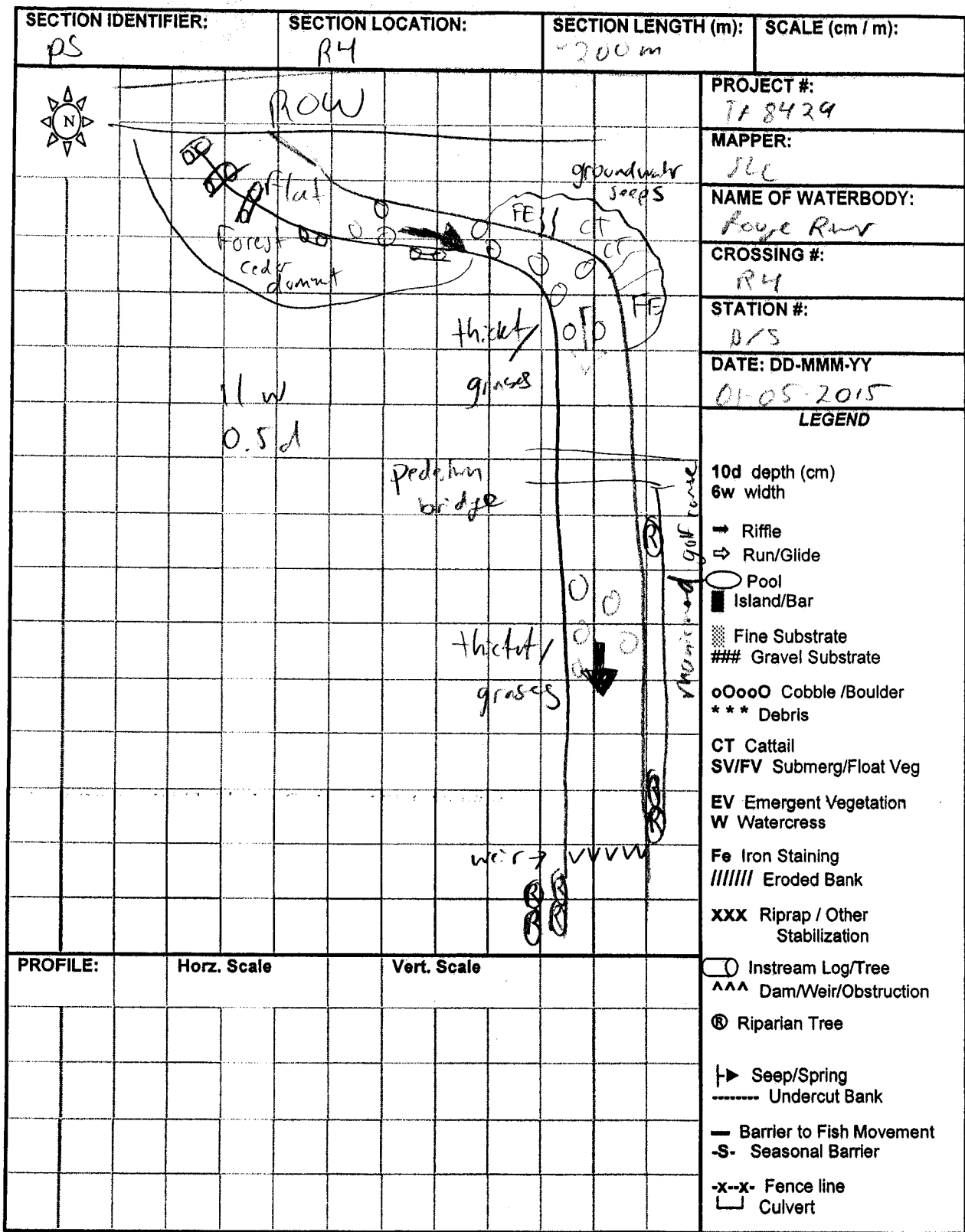
SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):		SCALE (cm / m):			
V)		R3		100 m					
		NOW				PROJECT #: 8429			
		phunge				MAPPER: SLC			
		ct				NAME OF WATERBODY: Trail of Rose Run			
		Ⓡ				CROSSING #: R3			
				0.5 m deep		STATION #: V15			
						DATE: DD-MMM-YY 01-05-2015			
		phunge				LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate oOooO Cobble / Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining ///// Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree AAA Dam/Weir/Obstruction Ⓡ Riparian Tree ▶ Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert			
		dogwood							
		diffuse wetland wetland							
		Ⓡ							
		Ⓡ							
		photo b. fee							
PROFILE:		Horz. Scale		Vert. Scale					
				manipulated golf course					

SECTION IDENTIFIER: 05		SECTION LOCATION: R3		SECTION LENGTH (m): 70 m		SCALE (cm / m):			
		PROJECT #: 8429		MAPPER: JLL		NAME OF WATERBODY: Trib of Rouge River			
		CROSSING #: R3		STATION #: 015		DATE: DD-MMM-YY 01-05-2015			
		LEGEND							
		10d depth (cm)		6w width		→ Riffle		⇨ Run/Glide	
		○ Pool		■ Island/Bar		▨ Fine Substrate		### Gravel Substrate	
		oOoO Cobble / Boulder		*** Debris		CT Cattail		SV/FV Submerg/Float Veg	
EV Emergent Vegetation		W Watercress		Fe Iron Staining		///// Eroded Bank			
XXX Riprap / Other Stabilization		○ Instream Log/Tree		▲▲▲ Dam/Weir/Obstruction		⊗ Riparian Tree			
▶ Seep/Spring		----- Undercut Bank		— Barrier to Fish Movement		-S- Seasonal Barrier			
-x-x- Fence line		┌└ Culvert							
PROFILE:		Horz. Scale		Vert. Scale					

GENERAL INFORMATION									
PROJECT #: TA 8420		PROJECT DESCRIPTION: ULTI...			DAY: 61	MONTH: 05	YEAR: 2015		
Is STREAM REALIGNMENT required for this section: Yes: No: Unknown:									
COLLECTORS: SLL		WEATHER CONDITIONS: Overcast 16°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9541-9568									
LOCATION									
NAME OF WATERBODY: Royce River		DRAINAGE SYSTEM: Royce River		CROSSING #: R4		STATION #: US/DS			
LOCATION OF CROSSING: 500 m East of Markham Road									
UTM EASTING & NORTHING: 17T 640546 mE 4858353 mN				MTO CHAINAGE:					
TOWNSHIP: Markham				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Volleyballs, natural highway, golf course					SOURCES OF POLLUTION: highway runoff, golf course				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:						Size (w x h) m2			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river <input checked="" type="checkbox"/>	Channelized	Permanent <input checked="" type="checkbox"/>	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m): 250m				CURRENT VELOCITY (m/s):					
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	20		20	60					
mean depth wetted (m)	0.5 m								
mean width wetted (m)	11m								
Mean bankfull width (m)	15m								
Mean bankfull depth (m)	0.8 m								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Ci	Muck Mu	Detritus D	
	10	40	10	10	30				

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank		X					
Right Upstream Bank			X				
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
		5	5	Instream 5 Overhanging 5		Instream Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None		
				X			
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
					10		
Predominant Species					rotted phyto, grass		
MIGRATORY OBSTRUCTIONS:	None		Seasonal Weir ~ 250m d/s of ROW, barrier to Small fish		Permanent Small fish		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater large seeps to the SE of entry 407		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<ul style="list-style-type: none"> - create larger buffer between the golf course + channel. - Bank stabilization underneath entry 407 - removal of Weir ~ 250 m d/s of ROW 							
COMMENTS:							
Common carp observed within the channel							
Additional Notes Appended? No Yes number of pages							

SECTION IDENTIFIER: US		SECTION LOCATION: R4		SECTION LENGTH (m): ~50m	SCALE (cm / m):
				PROJECT #: DA8429	
				MAPPER: JLC	
				NAME OF WATERBODY: Rouge River	
				CROSSING #: R4	
				STATION #: US	
DATE: DD-MMM-YY 01-05-2015				LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate oOoO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // // Eroded Bank xxx Riprap / Other Stabilization ○ Instream Log/Tree AAA Dam/Weir/Obstruction ⊗ Riparian Tree † Seep/Spring - - - - Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line L Culvert	
PROFILE:	Horz. Scale	Vert. Scale			



GENERAL INFORMATION									
PROJECT #: 8429		PROJECT DESCRIPTION: 407 Transitway			DAY: 01	MONTH: 05	YEAR: 2015		
Is STREAM REALIGNMENT required for this section: Yes No Unknown									
COLLECTORS: SLC		WEATHER CONDITIONS: Sunny, 16°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9520-9538, 9539-9540									
LOCATION									
NAME OF WATERBODY: Tributary of the Rouge		DRAINAGE SYSTEM: Rouge Rvr			CROSSING #: RS		STATION #: US/RS		
LOCATION OF CROSSING: 50 m East of North Line									
UTM EASTING & NORTHING: 17T 642139 mE 4858871mN					MTO CHAINAGE:				
TOWNSHIP: Markham					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Highly, Natural, commercial					SOURCES OF POLLUTION: Runoff from highly commercial estates				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river	Channellized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	X		X						
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area				100					
mean depth wetted (m)	20cm								
mean width wetted (m)	1m-67m								
Mean bankfull width (m)	4m-67m								
Mean bankfull depth(m)	40cm								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
								90	10

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	X						
Right Upstream Bank	X						
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris algae detritus	Vascular plants cattails, phragmites	None
				Instream		Instream 50%	
			Overhanging < 5			Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None		
			X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent cattails, phragmites		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None - 400m piped downstream?		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other None		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
removal of garbage - more create buffer / vegetated banks							
COMMENTS:							
Additional Notes Appended? No Yes number of pages							

SECTION IDENTIFIER: US		SECTION LOCATION: RS		SECTION LENGTH (m): 100m		SCALE (cm / m):	
						PROJECT #: TA 8429	
						MAPPER: JLL	
						NAME OF WATERBODY: Trill of Royal River	
						CROSSING #: RS	
						STATION #: US	
						DATE: DD-MMM-YY 01-05-2015	
						<p align="center">LEGEND</p> <p>10d depth (cm) 6w width</p> <p>→ Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar</p> <p>▨ Fine Substrate ### Gravel Substrate oOoO Cobble/Boulder *** Debris</p> <p>CT Cattail SV/FV Submerg/Float Veg</p> <p>EV Emergent Vegetation W Watercress</p> <p>Fe Iron Staining ///// Eroded Bank</p> <p>XXX Riprap / Other Stabilization</p>	
PROFILE:		Horz. Scale		Vert. Scale		<p>○ Instream Log/Tree AAA Dam/Weir/Obstruction ⊗ Riparian Tree ▶ Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line └┘ Culvert</p>	

SECTION IDENTIFIER: D/S		SECTION LOCATION: R5		SECTION LENGTH (m): 200m		SCALE (cm / m):	
						PROJECT #: TA8429	
						MAPPER: SLC	
						NAME OF WATERBODY: Tisd. Page River	
						CROSSING #: R5	
						STATION #: D/S	
						DATE: DD-MMM-YY 01-05-2015	
LEGEND							
10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate o o o o Cobble / Boulder * * * Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining ///// Eroded Bank xxx Riprap / Other Stabilization ○ Instream Log/Tree AAA Dam/Weir/Obstruction ⊗ Riparian Tree ▶ Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line ┌└ Culvert							
PROFILE:		Horz. Scale		Vert. Scale			

GENERAL INFORMATION									
PROJECT #: JA 8429		PROJECT DESCRIPTION: 401 Trans Hwy			DAY: 01	MONTH: 05	YEAR: 2015		
Is STREAM/REALIGNMENT required for this section? Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>									
COLLECTORS: SLC		WEATHER CONDITIONS: Sunny 16°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9504 - 9519									
LOCATION									
NAME OF WATERBODY: Little Rouge Creek		DRAINAGE SYSTEM: Rouge Riv			CROSSING #: RB		STATION #: V5/D5		
LOCATION OF CROSSING: 500 m East of N.11th Line									
UTM EASTING & NORTHING: 17T 642502 m E 4859023 m N					MTO CHAINAGE:				
TOWNSHIP: Markham					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, residential, rural					SOURCES OF POLLUTION: runoff from highway, residential area				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river <input checked="" type="checkbox"/>	Channellized	Permanent <input checked="" type="checkbox"/>	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area		10	5	85					
mean depth wetted (m)	20-50 d								
mean width wetted (m)	3.5 m								
Mean bankfull width (m)	8.5 m								
Mean bankfull depth (m)	0.7 d								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Sl	Clay Cl	Muck Mu	Detritus D	
			10		80				

Trib of Little Rouge Creek

Approx 10

BANK STABILITY								
	Stable	Slightly Unstable	Moderately Unstable	Unstable				
Left Upstream Bank	X							
Right Upstream Bank	X							
HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris		Organic debris	Vascular plants	None
			10	Instream 5	Overhanging 5	algae	20 Instream 20 Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None			
			X					
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
	algae 20				80			
Predominant Species	algae				Cattails, phragmites			
MIGRATORY OBSTRUCTIONS:	None X		Seasonal		Permanent			
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater Iron staining		Other			
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
- riparian planting 5								
COMMENTS:								
Cypripids observed in pool d/s of 407								
Additional Notes Appended? No Yes number of pages								


SECTION IDENTIFIER: U/S, DS		SECTION LOCATION: R6		SECTION LENGTH (m): 200 m		SCALE (cm / m):	
						PROJECT #: 8429	
						MAPPER: SLC	
						NAME OF WATERBODY: Tr. S of Rouge Rvr	
						CROSSING #: R6	
						STATION #: U/S, DS	
						DATE: DD-MMM-YY 01-05-2015	
						LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ■ Fine Substrate ### Gravel Substrate ○○○○ Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // // // Eroded Bank XXX Riprap / Other Stabilization □ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ↳ Seep/Spring - - - - Undercut Bank - - - Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert	
PROFILE:		Horz. Scale		Vert. Scale			

GENERAL INFORMATION									
PROJECT #: 1A 8429		PROJECT DESCRIPTION: 407 Transitory			DAY: 01	MONTH: 05	YEAR: 2015		
Is STREAM/REALIGNMENT required for this section: Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>									
COLLECTORS: JLC			WEATHER CONDITIONS: Sunny 16°C		TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9487-9498									
LOCATION									
NAME OF WATERBODY: Rouge River			DRAINAGE SYSTEM: Rouge Riv		CROSSING #: R7, R7A		STATION #: US/D5		
LOCATION OF CROSSING: 400 m west of Donald Cousin Parkway									
UTM EASTING & NORTHING: 17 643109 mE 4859368 mN					MTO CHAINAGE:				
TOWNSHIP: Markham					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: highly residential commercial					SOURCES OF POLLUTION: runoff from highly residential commercial				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (Include on habitat map)					
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	X		X						
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	inside culvert	Other			
Percentage of area		5	5	90					
mean depth wetted (m)	0.4m								
mean width wetted (m)	2-7m								
Mean bankfull width (m)	20m								
Mean bankfull depth (m)	0.6m								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
		5			80			15	

7/2/15
Lake
North
creek

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	X						
Right Upstream Bank	X						
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
			20-25 5	Instream Overhanging 5		Instream 40 Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60%	60 - 30%	30 - 1%	None		
			X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species					100 cattails, phragmites		
MIGRATORY OBSTRUCTIONS:	None		Seasonal pipe crossing to R7-A seasonal barrier		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other None		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
- riparian plantings							
COMMENTS:							
cypress absent in pool dis of 407							
Additional Notes Appended? No Yes number of pages							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):	SCALE (cm / m):
US/PS		R7 R7-A		300m	
					PROJECT #: 8429
					MAPPER: SLC
					NAME OF WATERBODY: Tri. & Rouge Riv
					CROSSING #: R7 - R7-A
					STATION #: US/PS
					DATE: DD-MMM-YY 01-05-2015
					LEGEND
10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ● Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining ///// Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree AAA Dam/Weir/Obstruction ⊗ Riparian Tree ↳ Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line └ Culvert					
PROFILE:	Horz. Scale	Vert. Scale			

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
			PROJECT #:
			MAPPER:
			NAME OF WATERBODY:
			CROSSING #:
			STATION #:
			DATE: DD-MMM-YY
			LEGEND
			10d depth (cm) 6w width
			➔ Riffle ⇨ Run/Glide
			○ Pool ■ Island/Bar
			⊞ Fine Substrate ### Gravel Substrate
			oOooO Cobble /Boulder *** Debris
			CT Cattail SV/FV Submerg/Float Veg
			EV Emergent Vegetation W Watercress
			Fe Iron Staining ///// Eroded Bank
			XXX Riprap / Other Stabilization
PROFILE:	Horz. Scale	Vert. Scale	○ Instream Log/Tree AAA Dam/Weir/Obstruction
			⊗ Riparian Tree
			└▶ Seep/Spring ----- Undercut Bank
			— Barrier to Fish Movement -S- Seasonal Barrier
			-x-x- Fence line ┌└ Culvert

GENERAL INFORMATION									
PROJECT #: FA 8429		PROJECT DESCRIPTION: 407 Trushy			DAY: 01	MONTH: 05	YEAR: 2015		
Is STREAM REALIGNMENT required for this section? Yes No Unknown									
COLLECTORS: JLL		WEATHER CONDITIONS: Sunny 16°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9481-9486, 9394-9406									
LOCATION									
NAME OF WATERBODY: Fisher Creek		DRAINAGE SYSTEM: Reesor Rvr			CROSSING #: R8	STATION #: US-05			
LOCATION OF CROSSING: West of Reesor Road									
UTM EASTING & NORTHING: 17T 643840 m E 4859656 m N					MTO CHAINAGE:				
TOWNSHIP: Markham					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: highly agricultural					SOURCES OF POLLUTION: road, agriculture				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river <input checked="" type="checkbox"/>	Channelized <input checked="" type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	inside culvert	Other			
Percentage of area	90	10							
mean depth wetted (m)	0.3-0.4m								
mean width wetted (m)	0.5								
Mean bankfull width (m)	1.5								
Mean bankfull depth (m)	80cm								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Sl	Clay Cl	Muck Mu	Detritus D	

Trib of
Little
Reesor
Creek

10 10

BANK STABILITY				
	Stable	Slightly Unstable	Moderately Unstable	Unstable
Left Upstream Bank	X			
Right Upstream Bank	X			

HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
	W 10			Instream 5 Overhanging 5		Instream Overhanging grasses 2010	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None		
			X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
					10 cattails, phragmites		
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None X		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other None		

POTENTIAL ENHANCEMENT OPPORTUNITIES:


- realign away from River Road
 - locate, remove potential barriers to fish passage
 d/s of area of investigation

COMMENTS:

No fish observed

Additional Notes Appended? No Yes number of pages

SECTION IDENTIFIER: US/PS		SECTION LOCATION: A8		SECTION LENGTH (m): 300	SCALE (cm / m):
					PROJECT #: 8929
					MAPPER: JCC
					NAME OF WATERBODY: Trib of Rouge River
					CROSSING #: A8
					STATION #: US/PS
					DATE: DD-MMM-YY 01-05-2015
LEGEND					
10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate ○○○○ Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // // Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ↳ Seep/Spring - - - - Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert					
PROFILE:	Horz. Scale	Vert. Scale	hydro vals in stream		

SECTION IDENTIFIER:		SECTION LOCATION:				SECTION LENGTH (m):				SCALE (cm / m):	
										PROJECT #:	
										MAPPER:	
										NAME OF WATERBODY:	
										CROSSING #:	
										STATION #:	
										DATE: DD-MMM-YY	
										<p align="center">LEGEND</p> <p>10d depth (cm) 6w width</p> <p>➔ Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar</p> <p>▨ Fine Substrate ### Gravel Substrate</p> <p>oOooO Cobble / Boulder *** Debris</p> <p>CT Cattail SV/FV Submerg/Float Veg</p> <p>EV Emergent Vegetation W Watercress</p> <p>Fe Iron Staining ///// Eroded Bank</p> <p>XXX Riprap / Other Stabilization</p> <p>○ Instream Log/Tree ^^^ Dam/Weir/Obstruction</p> <p>⊗ Riparian Tree</p> <p>└▶ Seep/Spring ----- Undercut Bank</p> <p>— Barrier to Fish Movement -S- Seasonal Barrier</p> <p>-x-x- Fence line ┌└ Culvert</p>	
PROFILE:		Horz. Scale			Vert. Scale						

GENERAL INFORMATION									
PROJECT #: TA8429		PROJECT DESCRIPTION: 407 Transway			DAY: 29	MONTH: 04	YEAR: 2015		
Is STREAM/REALIGNMENT required for this section? Yes: No: Unknown:									
COLLECTORS: SLC		WEATHER CONDITIONS: pt cloudy 18°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9907-9416									
LOCATION									
NAME OF WATERBODY: Little Rouge River		DRAINAGE SYSTEM: Rouge River			CROSSING #: R9		STATION #: U/S, D/S		
LOCATION OF CROSSING: 300 m east of Mesur Road									
UTM EASTING & NORTHING: 17T 644309 mE 4859602 mN					MTO CHAINAGE:				
TOWNSHIP: Mackinac					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Agriculture, hwy, railroad					SOURCES OF POLLUTION: train track, agriculture, highway				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river X	Channelized	Permanent X	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area				100					
mean depth wetted (m)	0.1								
mean width wetted (m)	0.5-1								
Mean bankfull width (m)	2								
Mean bankfull depth (m)	0.4								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Ci	Muck Mu	Detritus D	

Trib of
Little
Rouge
creek


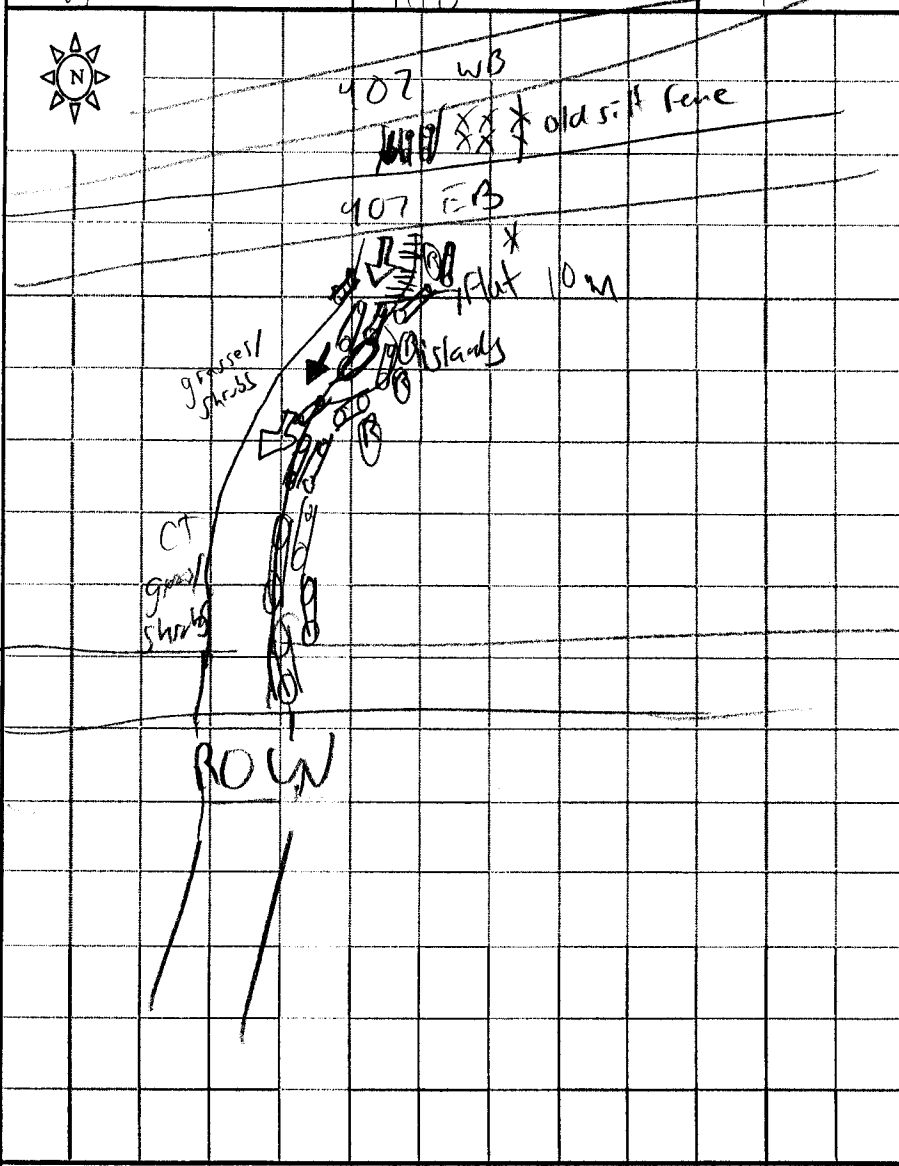
100

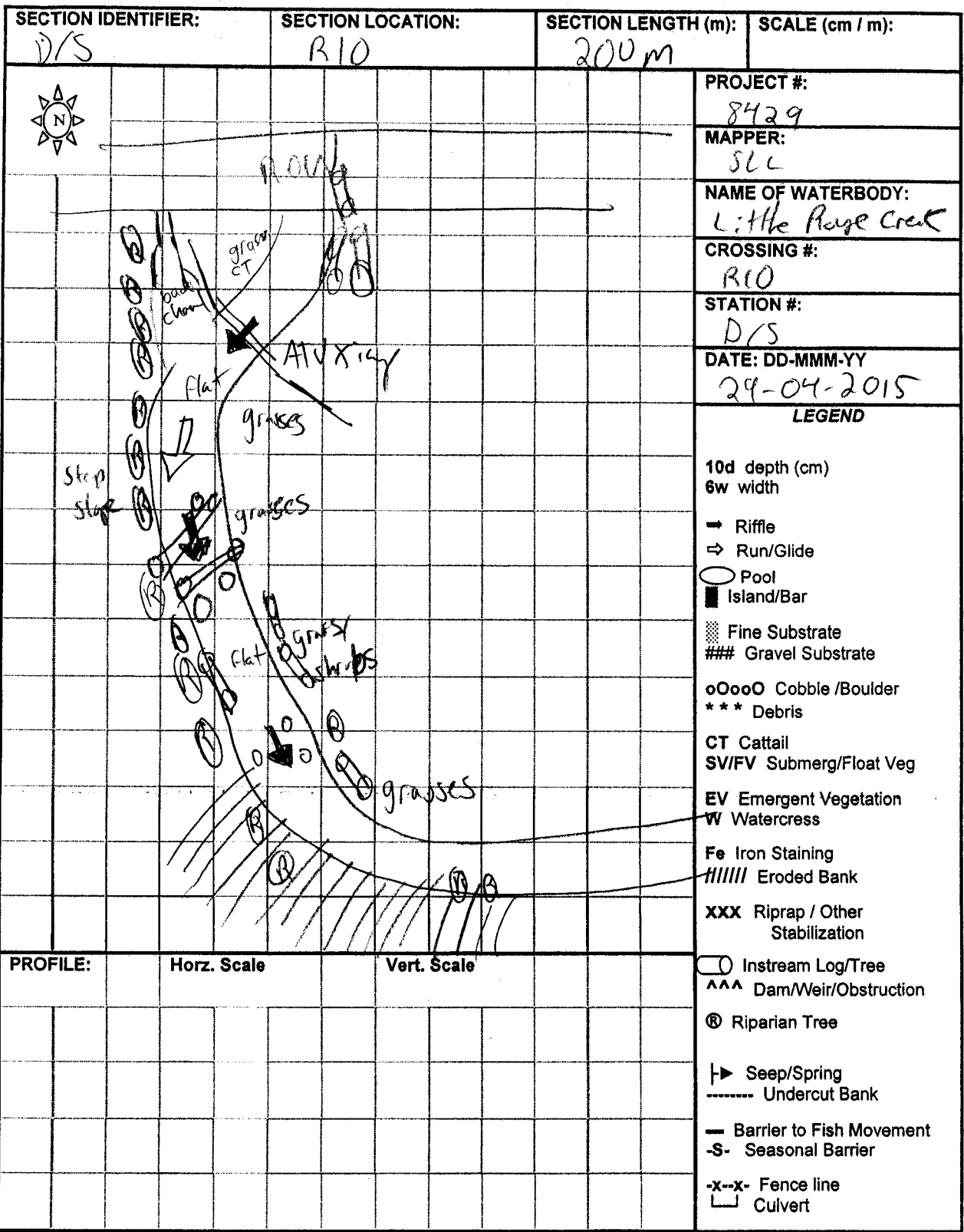
BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	X						
Right Upstream Bank	Y						
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
	5			Instream Overhanging 5		Instream 10 Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60%	60- 30%	30 - 1%	None		
				X			
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
					grasses 10		
Predominant Species					grass, eelgrass		
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent diffuse section ploughed through		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
- create a buffer from agricultural activities - the bridges for farm/tractor crossing + ATV crossing							
COMMENTS :							
Additional Notes Appended? No Yes number of pages							

SECTION IDENTIFIER: US/PS		SECTION LOCATION: R9		SECTION LENGTH (m): 200 m	SCALE (cm / m):
					PROJECT #: 8429
					MAPPER: SLC
					NAME OF WATERBODY: Trib of the Rouge River
					CROSSING #: R9
					STATION #: US/PS
DATE: DD-MMM-YY 29-04-2015					LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // // // Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ▶ Seep/Spring - - - - - Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert
PROFILE:	Horz. Scale	Vert. Scale			

GENERAL INFORMATION									
PROJECT #:	8429	PROJECT DESCRIPTION:	407 Transition	DAY:	29	MONTH:	04	YEAR:	2015
Is STREAM REALIGNMENT required for this section:									
Yes No Unknown									
COLLECTORS:	WEATHER CONDITIONS:			TIME STARTED:	TIME FINISHED:				
PHOTOS NUMBERS AND DESCRIPTIONS:									
9417 - 9442									
LOCATION									
NAME OF WATERBODY:	DRAINAGE SYSTEM:	CROSSING #:	STATION #:						
Little Rouge Creek	Rouge River	R10	US/D5						
LOCATION OF CROSSING:									
600 m east of Reesor Road									
UTM EASTING & NORTHING:					MTO CHAINAGE:				
17T 644561 m E 4859934 m N									
TOWNSHIP:					MNR DISTRICT:				
Markham					Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE:					SOURCES OF POLLUTION:				
Natural valleys, agricultural, highway					highway runoff, agriculture				
EXISTING STRUCTURE TYPE									
Bridge	Box Culvert	Open Foot Culvert	CSP	N/A					
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:					SECTION LOCATION: (include on habitat map)				
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	X		X						
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	40	10	30	20					
mean depth wetted (m)	20-80cm								
mean width wetted (m)	7m								
Mean bankfull width (m)	9m								
Mean bankfull depth(m)	50-1.3m								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
	5	40	20	20	15				

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank				X			
Right Upstream Bank			X				
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
	5		5	Instream 5 Overhanging		Instream Overhanging 5	
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60-30%	30 – 1%	None		
			X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species					Riparian grasses		
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
					None		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
					None		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<ul style="list-style-type: none"> - removal of old silt bank from high constriction - bank stabilization, plantings - restrict ATV crossings 							
COMMENTS :							
<ul style="list-style-type: none"> - dead white sucker adult observed, indicate no barriers to large fish downstream of site 							
Additional Notes Appended? No Yes number of pages _____							

SECTION IDENTIFIER: US		SECTION LOCATION: R10		SECTION LENGTH (m): 100m	SCALE (cm / m):		
 	PROJECT #: 8429				LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ■ Fine Substrate ### Gravel Substrate oOooO Cobble/Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ▶ Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line ┌└ Culvert		
	MAPPER: JCC						
	NAME OF WATERBODY: Little Rouge Creek						
	CROSSING #: R10						
	STATION #: US						
	DATE: DD-MMM-YY 29-04-2015						
	PROFILE:		Horz. Scale	Vert. Scale			



GENERAL INFORMATION									
PROJECT #: TA 8429		PROJECT DESCRIPTION: 407 Transboundary			DAY: 28	MONTH: R 04	YEAR: 2015		
is STREAM REALIGNMENT required for this section: Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>									
COLLECTORS: SLC			WEATHER CONDITIONS: pt cloudy 18°C		TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9225 -9245									
LOCATION									
NAME OF WATERBODY: Duffins Creek			DRAINAGE SYSTEM: Duffins Creek		CROSSING #: D1		STATION #: US/DS		
LOCATION OF CROSSING: 1 km east of York/Durham line									
UTM EASTING & NORTHING: 17T 646303mE 4862095mN					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Natural, (also to east) meadow/w/ willow to the west, highway, agriculture					SOURCES OF POLLUTION: highway runoff, agriculture				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:					SECTION LOCATION: (include on habitat map)				
TYPE:	Stream / river <input checked="" type="checkbox"/>	Channelized	Permanent <input checked="" type="checkbox"/>	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	inside culvert	Other			
Percentage of area	60	10	20						
mean depth wetted (m)	top end 30-40	bottom end 50-60							
mean width wetted (m)	5m								
Mean bankfull width (m)	15m								
Mean bankfull depth (m)	1.5m								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
	5	40	30	15	0				

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank			X				
Right Upstream Bank			X				
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
	10	5	5	Instream 10 Overhanging 5		Instream Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60%	60- 30%	30 - 1%	None		
			X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							X
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
			Seeps all along WS bank				
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
- bank/ plantings riparian							
COMMENTS :							
Some seeps dis on west bank gravel island 7/50 m dis w lots of woody debris / deep pool / runs 7/ on deep							
Additional Notes Appended? No Yes number of pages							


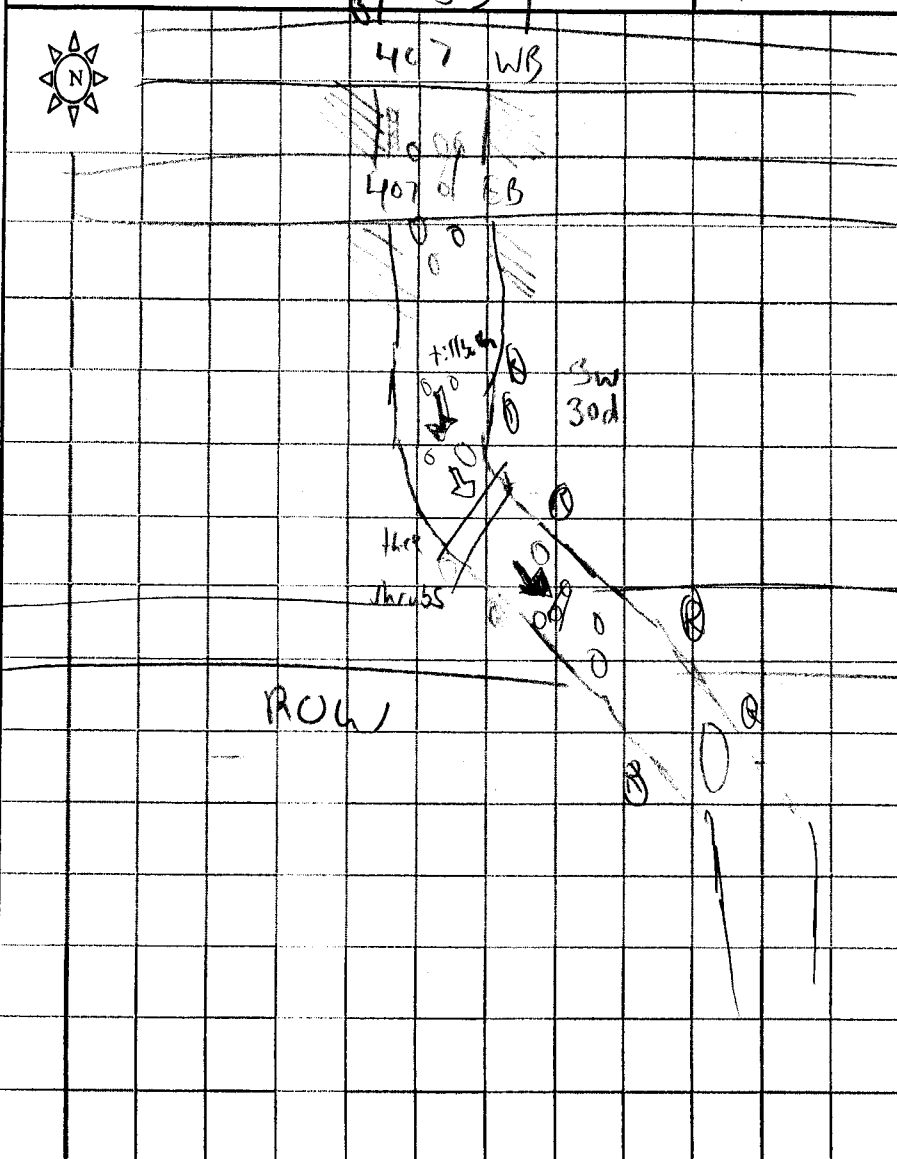
SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):	SCALE (cm / m):
V/S		P1		100 m	
					PROJECT #: 8429
					MAPPER: SLC
					NAME OF WATERBODY: West Duffins Creek
					CROSSING #: P1
					STATION #: V/S
					DATE: DD-MMM-YY 28-04-2015
					LEGEND
					10d depth (cm) 6w width
					→ Riffle
					⇨ Run/Glide
					○ Pool
					■ Island/Bar
					••• Fine Substrate
					### Gravel Substrate
					oOooO Cobble /Boulder
					* * * Debris
					CT Cattail
					SV/FV Submerg/Float Veg
					EV Emergent Vegetation
					W Watercress
					Fe Iron Staining
					///// Eroded Bank
					XXX Riprap / Other Stabilization
PROFILE:		Horz. Scale	Vert. Scale		
					○ Instream Log/Tree
					AAA Dam/Weir/Obstruction
					⊗ Riparian Tree
					└▶ Seep/Spring
					----- Undercut Bank
					— Barrier to Fish Movement
					-S- Seasonal Barrier
					-x-x- Fence line
					┌└ Culvert

SECTION IDENTIFIER: D/S		SECTION LOCATION: D1		SECTION LENGTH (m): 200m		SCALE (cm / m):	
						PROJECT #: 8929	
						MAPPER: JCC	
						NAME OF WATERBODY: West Dubfus Creek	
						CROSSING #: D1	
						STATION #: D/S	
						DATE: DD-MMM-YY 28-04-2015	
						LEGEND	
10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate ○○○○ Cobble / Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ▶ Seep/Spring - - - - Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert							
PROFILE:	Horz. Scale	Vert. Scale					

GENERAL INFORMATION									
PROJECT #: TA 842 d		PROJECT DESCRIPTION: 4077 transfer			DAY: 29	MONTH: 04	YEAR: 2015		
is STREAM REALIGNMENT required for this section: Yes No Unknown									
COLLECTORS: SLC		WEATHER CONDITIONS: All clouds 16°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: Ph 9362 - 9381									
LOCATION									
NAME OF WATERBODY: Trib. of West Dufferin		DRAINAGE SYSTEM: Dufferin Creek			CROSSING #: D3		STATION #: US/DS		
LOCATION OF CROSSING: 1.2 km east of York/Dufferin Line									
UTM EASTING & NORTHING: 17T 646510 mE 4862369 mN				MTO CHAINAGE:					
TOWNSHIP: Pickering				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Natal - cedar woods / marsh					SOURCES OF POLLUTION:				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:						Size (w x h) m2			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: <small>(include on habitat map)</small>					
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	40	20-30	30						
mean depth wetted (m)	0.50	0.50							
mean width wetted (m)	3								
Mean bankfull width (m)	7								
Mean bankfull depth (m)	1.0								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
		30	20	10	40				

BANK STABILITY								
	Stable	Slightly Unstable	Moderately Unstable	Unstable				
EW Left Upstream Bank		X						
WR Right Upstream Bank	X							
HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris		Organic debris	Vascular plants	None
	2	1	5	Instream 5	Overhanging 10		Instream None	Overhanging grass
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None			
			X					
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
					grass			
Predominant Species								
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent			
					None			
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other			
					None			
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
- bank erosion measures underneath existing 407 bridges - Restored ATV access								
COMMENTS :								
Channel breaks in spots only. every cedar. Ice pools have till on bottom								
Additional Notes Appended? No Yes number of pages								


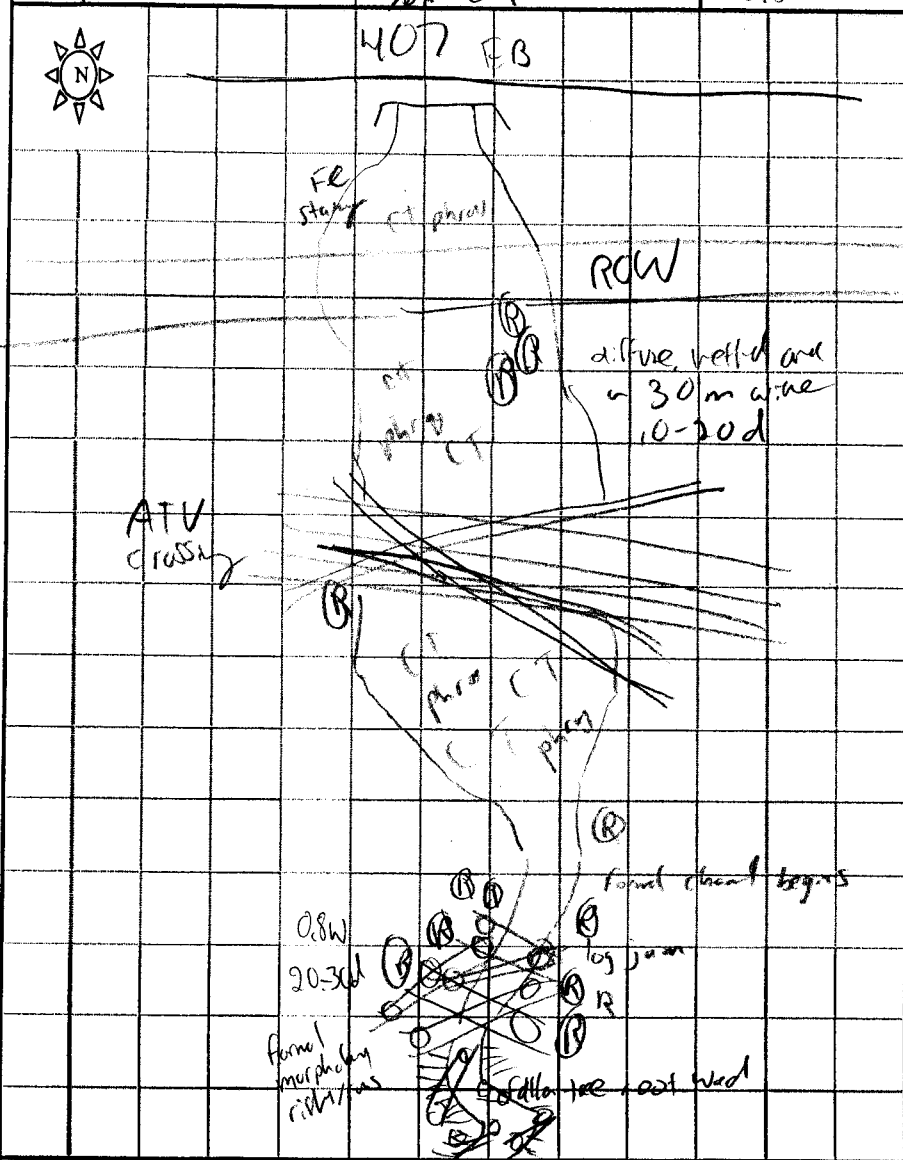
erosion
measures
10
table

SECTION IDENTIFIER: U/S		SECTION LOCATION: 81 D3 1		SECTION LENGTH (m): 100m	SCALE (cm / m):	
					PROJECT #: 8429	
					MAPPER: SLL	
					NAME OF WATERBODY: Trs of West Duffins	
					CROSSING #: P3	
					STATION #: U/S	
					DATE: DD-MMM-YY 29-04-2015	
					LEGEND	
					10d depth (cm) 6w width	
					→ Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate ○ Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining ///// Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree └▶ Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line ┌└ Culvert	
					PROFILE:	Horz. Scale

SECTION IDENTIFIER: D/S		SECTION LOCATION: D3		SECTION LENGTH (m): 200 m		SCALE (cm / m):	
						PROJECT #: 8429	
						MAPPER: JCC	
						NAME OF WATERBODY: Trib of Wet Puddles	
						CROSSING #: D3	
						STATION #: D/S	
						DATE: DD-MMM-YY 29-04-2015	
<p style="text-align: center;">LEGEND</p> <p>10d depth (cm) 6w width</p> <p>→ Riffle ⇒ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate oOoO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining ///// Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree ▲▲▲ Dam/Weir/Obstruction ⊗ Riparian Tree ▶ Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line ┌└ Culvert</p>							
PROFILE:		Horz. Scale		Vert. Scale			

GENERAL INFORMATION									
PROJECT #: TA 8429		PROJECT DESCRIPTION: 407 Transition			DAY: 29	MONTH: 04	YEAR: 2015		
Is STREAM REALIGNMENT required for this section? Yes: No: Unknown:									
COLLECTORS: SLC		WEATHER CONDITIONS: partly cloudy 18°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9349-9361									
LOCATION									
NAME OF WATERBODY: E. S. of West Duffins		DRAINAGE SYSTEM: Duffins Creek			CROSSING #: D4		STATION #: US/D 5		
LOCATION OF CROSSING: 700 m West of North Road									
UTM EASTING & NORTHING: 17T 646868 m E 4862482 m N					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Agricultural, natural, highway					SOURCES OF POLLUTION: Agriculture, highway runoff				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river <input checked="" type="checkbox"/>	Channelized	Permanent <input checked="" type="checkbox"/>	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	15		15	70					
mean depth wetted (m)	20cm								
mean width wetted (m)	3m								
Mean bankfull width (m)	30m								
Mean bankfull depth (m)	30cm								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Sl	Clay Cl	Muck Mu	Detritus D	
		10	10	10	70				


BANK STABILITY								
	Stable	Slightly Unstable	Moderately Unstable	Unstable				
Left Upstream Bank		X						
Right Upstream Bank		X						
HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris		Organic debris	Vascular plants	None
	5		2.5	Instream 5	Overhanging 5		Cattails, Phragmites Instream 30 Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None			
				X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
Predominant Species					Cattails, Phragmites			
MIGRATORY OBSTRUCTIONS:	None		Seasonal diffuse flow thru with a ATV x 2			Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater Fe Study south of 407			Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
- restrict ATVs from crossing creek								
COMMENTS :								
Additional Notes Appended? No Yes number of pages								

SECTION IDENTIFIER: US/DS		SECTION LOCATION: D4		SECTION LENGTH (m): 250m		SCALE (cm / m):		
							PROJECT #: 8429	
							MAPPER: JLC	
							NAME OF WATERBODY: Tributary to Lake St. Lawrence	
							CROSSING #: D4	
							STATION #: US/DS	
							DATE: DD-MMM-YY 24-09-2015	
							LEGEND	
							10d depth (cm) 6w width	
							→ Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ■ Fine Substrate ### Gravel Substrate ○○○○ Cobble / Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining //// Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree AAA Dam/Weir/Obstruction R Riparian Tree > Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line ┌ Culvert	
							PROFILE:	Horz. Scale

GENERAL INFORMATION									
PROJECT #: JA 8429		PROJECT DESCRIPTION: 407 Transition			DAY: 29	MONTH: 04	YEAR: 2015		
Is STREAM/REALIGNMENT required for this section? Yes No Unknown									
COLLECTORS: JLL		WEATHER CONDITIONS: pt cloudy 18°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9298-9307									
LOCATION									
NAME OF WATERBODY: Fib at the cross		DRAINAGE SYSTEM: Duffin Creek			CROSSING #: D8		STATION #: US/05		
LOCATION OF CROSSING: 800 m east of North Road									
UTM EASTING & NORTHING: 17T 648388 mE 4862861 mN					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Agricultural, natural, highway					SOURCES OF POLLUTION: agr. culture, highway runoff				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river X	Channellized	Permanent X	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	100								
mean depth wetted (m)	5-10cm								
mean width wetted (m)	30cm								
Mean bankfull width (m)	4m								
Mean bankfull depth (m)	50cm								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
		10	10	10	70				

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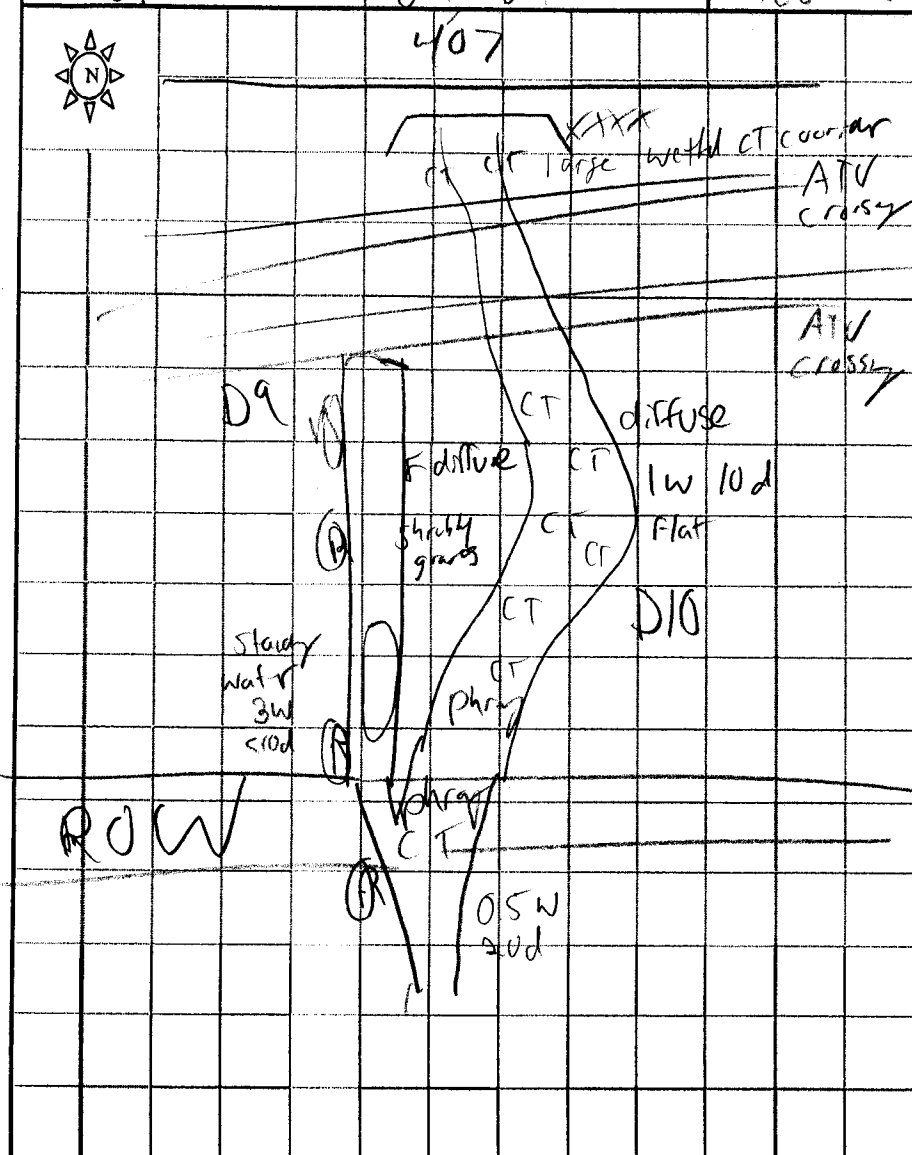
BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank		X					
Right Upstream Bank		X					
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
	2.5		2.5	Instream Overhanging		Instream 10 Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None		
				X			
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species					grasses		
MIGRATORY OBSTRUCTIONS:	None		Seasonal diffuse flow @ ATV trail		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other None		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<ul style="list-style-type: none"> - restrict ATVs from crossing creek - create a buffer between the creek and agricultural activities 							
COMMENTS:							
Additional Notes Appended? No Yes number of pages							

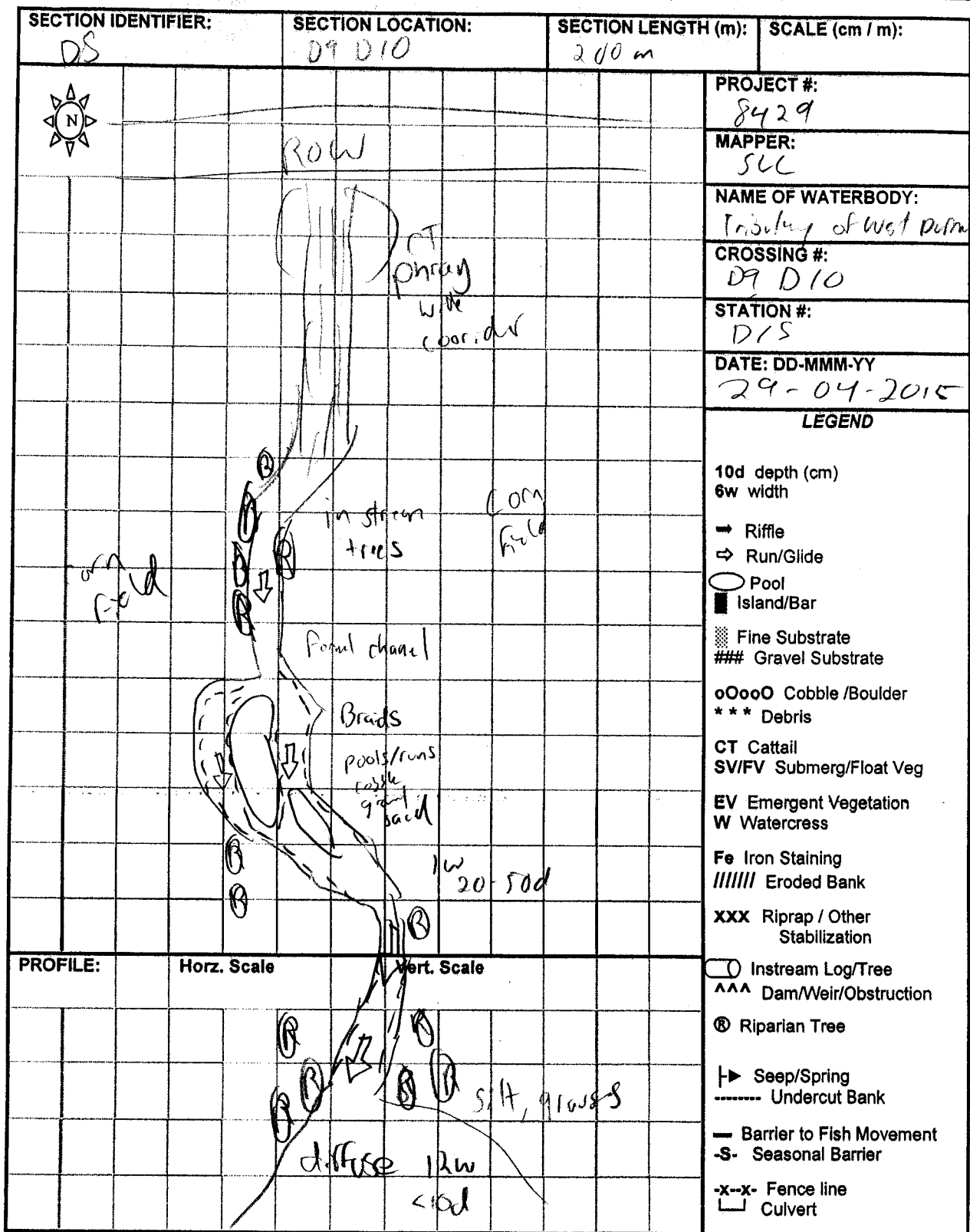
SECTION IDENTIFIER:		SECTION LOCATION:				SECTION LENGTH (m):		SCALE (cm / m):		
									PROJECT #:	
										MAPPER:
										NAME OF WATERBODY:
										CROSSING #:
										STATION #:
										DATE: DD-MMM-YY
										LEGEND
										10d depth (cm) 6w width
										⇒ Riffle ⇨ Run/Glide
										○ Pool ■ Island/Bar
									⊞ Fine Substrate ### Gravel Substrate	
									oOooO Cobble /Boulder *** Debris	
									CT Cattail SV/FV Submerg/Float Veg	
									EV Emergent Vegetation W Watercress	
									Fe Iron Staining ///// Eroded Bank	
									XXX Riprap / Other Stabilization	
PROFILE:		Horz. Scale		Vert. Scale					○ Instream Log/Tree AAA Dam/Weir/Obstruction	
									⊗ Riparian Tree	
									└▶ Seep/Spring ----- Undercut Bank	
									— Barrier to Fish Movement -S- Seasonal Barrier	
									-x-x- Fence line ┌└ Culvert	

GENERAL INFORMATION									
PROJECT #: TA 8429		PROJECT DESCRIPTION: 407 Transition			DAY: 29	MONTH: 09	YEAR: 2015		
Is STREAM/REALIGNMENT required for this section? Yes No Unknown									
COLLECTORS: JLL			WEATHER CONDITIONS: pt cloudy 18°C		TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9308-9332									
LOCATION									
NAME OF WATERBODY: White Lake			DRAINAGE SYSTEM: White Lake		CROSSING #: 09/D10		STATION #: US/25		
LOCATION OF CROSSING: 1.1 km west of 24 sideline									
UTM EASTING & NORTHING: 17T 648823 NE 4862785 MN					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Agriculture, natural, Highway					SOURCES OF POLLUTION: highway runoff, agriculture				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (Include on habitat map)					
TYPE:	Stream / river <input checked="" type="checkbox"/>	Channelized	Permanent <input checked="" type="checkbox"/>	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	25	5		70					
mean depth wetted (m)	0.15								
mean width wetted (m)	1m								
Mean bankfull width (m)	8m								
Mean bankfull depth (m)	0.25								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
		10	10	10	70				

Tribe of
White Lake
CK +
White Lake
CK

BANK STABILITY								
	Stable	Slightly Unstable	Moderately Unstable	Unstable				
Left Upstream Bank	X							
Right Upstream Bank	X							
HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris		Organic debris	Vascular plants	None
	5		2.5 W	Instream <i>combined 2.5%</i> Overhanging			Instream 30 Overhanging 30	
SHORE COVER (% stream shaded):	100 - 90 %		90 - 60%	60-30%		30 - 1%	None	
						X		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
Predominant Species					cattails, grasses			
MIGRATORY OBSTRUCTIONS:	None			Seasonal <i>diffuse flow 200m S of ROW</i>		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning			Evidence of Groundwater		Other <i>None</i>		
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
<p>- Restrict ATV'S from crossing watercourse. Loges barrier between agricultural & watercourse</p>								
COMMENTS:								
<p> </p>								
Additional Notes Appended? No Yes number of pages								


SECTION IDENTIFIER: U15		SECTION LOCATION: D9 D10 407		SECTION LENGTH (m): 100 m		SCALE (cm / m):	
						PROJECT #: 8429	
						MAPPER: JCC	
						NAME OF WATERBODY: Tr. Subwy of West 0.1 km S	
						CROSSING #: D9 D10	
						STATION #: U15	
DATE: DD-MMM-YY 29-04-2015							
PROFILE:		Horz. Scale		Vert. Scale		<p>LEGEND</p> <p>10d depth (cm) 6w width</p> <p>→ Riffle ⇒ Run/Glide</p> <p>○ Pool ■ Island/Bar</p> <p>▨ Fine Substrate ### Gravel Substrate</p> <p>oOoO Cobble /Boulder *** Debris</p> <p>CT Cattail SV/FV Submerg/Float Veg</p> <p>EV Emergent Vegetation W Watercress</p> <p>Fe Iron Staining ///// Eroded Bank</p> <p>XXX Riprap / Other Stabilization</p> <p>○ Instream Log/Tree AAA Dam/Weir/Obstruction</p> <p>⊗ Riparian Tree</p> <p>┆▶ Seep/Spring ----- Undercut Bank</p> <p>— Barrier to Fish Movement -S- Seasonal Barrier</p> <p>-x-x- Fence line ┌└ Culvert</p>	



GENERAL INFORMATION									
PROJECT #: JA 8429		PROJECT DESCRIPTION: 407 Trans. hwy 1			DAY: 29	MONTH: 04	YEAR: 2015		
Is STREAM REALIGNMENT required for this section? Yes No Unknown									
COLLECTORS: SLC			WEATHER CONDITIONS: Pt cloudy 18°C		TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9333-9346									
LOCATION									
NAME OF WATERBODY: Tr. Sect Ganatsekajamick			DRAINAGE SYSTEM: Duffins Creek		CROSSING #: D11		STATION #: US/D5		
LOCATION OF CROSSING: 500 m west of 24 Sdline									
UTM EASTING & NORTHING: 17T 649334mE 4863064mN					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Agriculture, highway					SOURCES OF POLLUTION: highway runoff, agric. effluent				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river	Channellized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	X		X						
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	20	20		60					
mean depth wetted (m)	0.2m								
mean width wetted (m)	0.5-2.0m								
Mean bankfull width (m)	15m 40m								
Mean bankfull depth (m)	0.3m								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt SI	Clay CI	Muck Mu	Detritus D	


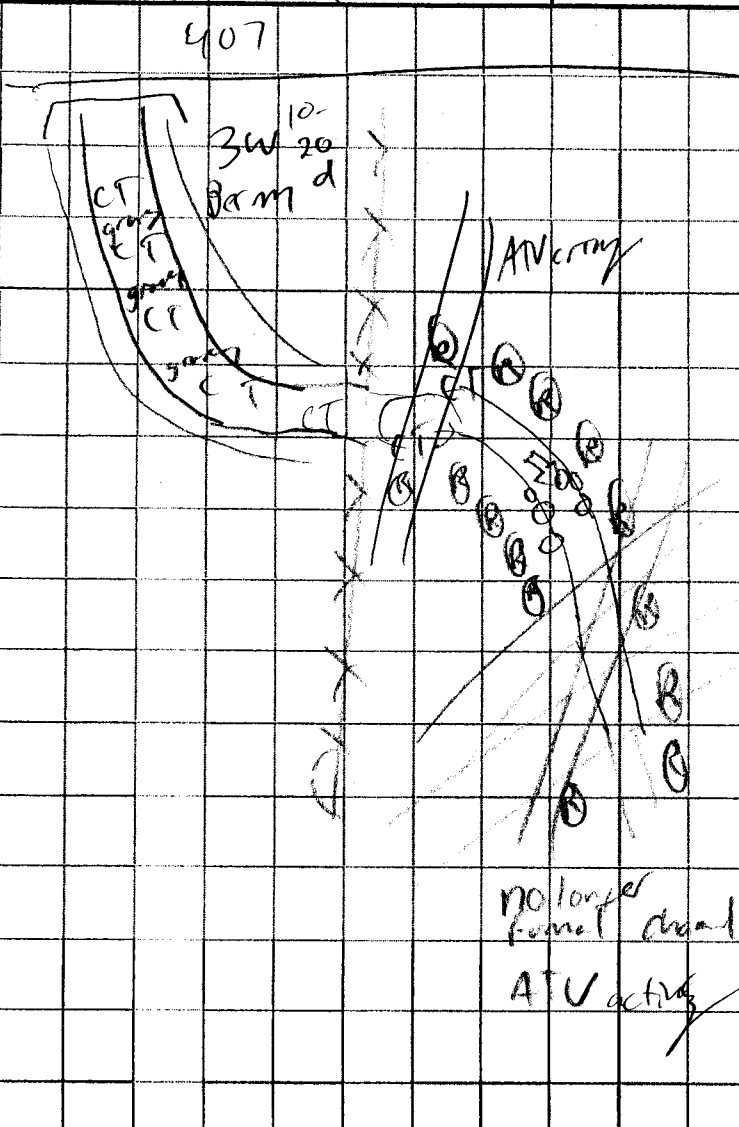
100

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	X						
Right Upstream Bank	X						
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris Instream Overhanging 2.5	Organic debris	Vascular plants Instream Overhanging 430	None
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60-30%	30 – 1%	None		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species					grasses		
MIGRATORY OBSTRUCTIONS:	None			Seasonal d. base d/s of ROW		Permanent	
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning			Evidence of Groundwater		Other None	
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<ul style="list-style-type: none"> - Restrict use of ATVs cross creek - create larger buffer from agricultural activities 							
COMMENTS :							
Additional Notes Appended? No Yes number of pages							

SECTION IDENTIFIER:		SECTION LOCATION:				SECTION LENGTH (m):				SCALE (cm / m):	
										PROJECT #:	
										MAPPER:	
										NAME OF WATERBODY:	
										CROSSING #:	
										STATION #:	
										DATE: DD-MMM-YY	
										<p style="text-align: center;">LEGEND</p> <p>10d depth (cm) 6w width</p> <p>→ Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar</p> <p>⊞ Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris</p> <p>CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress</p> <p>Fe Iron Staining ///// Eroded Bank</p> <p>XXX Riprap / Other Stablization</p>	
PROFILE:		Horz. Scale		Vert. Scale						<p>○ Instream Log/Tree AAA Dam/Weir/Obstruction ⊗ Riparian Tree</p> <p>└▶ Seep/Spring ----- Undercut Bank</p> <p>— Barrier to Fish Movement -S- Seasonal Barrier</p> <p>-x-x- Fence line ┌└ Culvert</p>	

GENERAL INFORMATION									
PROJECT #: TA 8429		PROJECT DESCRIPTION: 407 Transway			DAY: 28	MONTH: 04	YEAR: 2015		
Is STREAM REALIGNMENT required for this section: Yes No Unknown									
COLLECTORS: JLC		WEATHER CONDITIONS: Sunny 15°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9249-9256, 9276-9279									
LOCATION									
NAME OF WATERBODY: Banatsekiagon Creek		DRAINAGE SYSTEM: Duffins creek			CROSSING #: D12		STATION #: CS/D5		
LOCATION OF CROSSING: 500m East of 29th sidelane									
UTM EASTING & NORTHING: 17T 650317mE 4863508mN					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Native, agricultural, highway					SOURCES OF POLLUTION: highly forested, agricultural				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river <input checked="" type="checkbox"/>	Channelized <input checked="" type="checkbox"/>	Permanent <input checked="" type="checkbox"/>	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	5			95					
mean depth wetted (m)	15cm								
mean width wetted (m)	3m								
Mean bankfull width (m)	6m								
Mean bankfull depth (m)	35cm								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
		5	5		90				

BANK STABILITY								
	Stable	Slightly Unstable	Moderately Unstable	Unstable				
Left Upstream Bank	X							
Right Upstream Bank	X							
HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris		Organic debris	Vascular plants	None
				Instream 2.5	Overhanging 2.5		grass	
							Instream 20m 10	
							Overhanging 10m	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60%	60 - 30%	30 - 1%	None			
				X				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
Predominant Species					Cattails 10			
					Cattails, grass			
MIGRATORY OBSTRUCTIONS:	None		Seasonal ATV Trails - channel forces debris		Permanent			
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other			
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
- Restrict ATV crossing activities								
COMMENTS:								
Additional Notes Appended? No Yes number of pages								

SECTION IDENTIFIER: US/DS		SECTION LOCATION: D12		SECTION LENGTH (m): 250m		SCALE (cm / m):		
							PROJECT #: 8429	
							MAPPER: JLC	
							NAME OF WATERBODY: Gambel's Creek	
							CROSSING #: D12	
							STATION #: US/DS	
							DATE: DD-MMM-YY 28-11-2015	
							LEGEND	
							10d depth (cm) 6w width	
							→ Riffle ⇨ Run/Glide	
							○ Pool ■ Island/Bar	
▨ Fine Substrate ### Gravel Substrate								
oOooO Cobble /Boulder *** Debris								
CT Cattail SV/FV Submerg/Float Veg								
EV Emergent Vegetation W Watercress								
Fe Iron Staining ///// Eroded Bank								
XXX Riprap / Other Stabilization								
○ Instream Log/Tree ^^^ Dam/Weir/Obstruction								
⊗ Riparian Tree								
└▶ Seep/Spring ----- Undercut Bank								
— Barrier to Fish Movement -S- Seasonal Barrier								
-x-x- Fence line ┌└ Culvert								
PROFILE:	Horz. Scale	Vert. Scale						

GENERAL INFORMATION									
PROJECT #: TA 8129		PROJECT DESCRIPTION: 407 Transition			DAY: 28	MONTH: 04	YEAR: 2015		
Is STREAM/REALIGNMENT required for this section: Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>									
COLLECTORS: SIC		WEATHER CONDITIONS: Sunny 19°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9257, 9280-9281, 1124 - 1136									
LOCATION									
NAME OF WATERBODY: Trib of Vire creek		DRAINAGE SYSTEM: W. of Vire Creek			CROSSING #: D13		STATION #: NA		
LOCATION OF CROSSING: 1 Km west of Brak Road									
UTM EASTING & NORTHING: 17T 651137 m E 4863835 m N					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Natural, highway					SOURCES OF POLLUTION: highway runoff				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		MIA	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river	Channellized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	10		10	80					
mean depth wetted (m)	20cm								
mean width wetted (m)	40cm								
Mean bankfull width (m)	30m								
Mean bankfull depth(m)	25cm								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Sl	Clay Cl	Muck Mu	Détritus D	

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank							
Right Upstream Bank							
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris Instream Overhanging 5	Organic debris	Vascular plants Instream Overhanging 5	None
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60%	60- 30%	30 - 1% X	None		
VEGETATION TYPE (%):	Submergent		Floating		Emergent Grass		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal ATV trails → ^{man} spots no for channel			Permanent	
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater Fe Stagn			Other	
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
- restrict ATV activity							
COMMENTS:							
Additional Notes Appended? No Yes number of pages							

SECTION IDENTIFIER:		SECTION LOCATION: D13		SECTION LENGTH (m): 300 m		SCALE (cm / m):	
<p>401</p> <p>URDF CR DM</p> <p>CT</p> <p>SV/FV</p> <p>EV</p> <p>W</p> <p>Fe</p> <p>Iron Staining</p> <p>occasional sections of channel not broad, many flats, rarely slow flow & fish obs</p>						PROJECT #: 8429	
						MAPPER: JLL	
						NAME OF WATERBODY: Trib of URDF Creek	
						CROSSING #: D13	
						STATION #:	
DATE: DD-MMM-YY 28-04-2015						<p>LEGEND</p> <p>10d depth (cm) 6w width</p> <p>→ Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar</p> <p>▨ Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris</p> <p>CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress</p> <p>Fe Iron Staining ///// Eroded Bank</p> <p>XXX Riprap / Other Stabilization</p> <p>○ Instream Log/Tree AAA Dam/Weir/Obstruction</p> <p>⊗ Riparian Tree</p> <p>└▶ Seep/Spring ----- Undercut Bank</p> <p>— Barrier to Fish Movement -S- Seasonal Barrier</p> <p>-x-x- Fence line └┘ Culvert</p>	
PROFILE:		Horz. Scale		Vert. Scale			

GENERAL INFORMATION									
PROJECT #: 8429		PROJECT DESCRIPTION: 467 Trans Hwy			DAY: 28	MONTH: 6/1	YEAR: 2015		
Is STREAM REALIGNMENT required for this section: Yes No Unknown									
COLLECTORS: JCL		WEATHER CONDITIONS: Sunny 18°C			TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 1137-1149									
LOCATION									
NAME OF WATERBODY: Tr. of water creek			DRAINAGE SYSTEM: Duffins Creek		CROSSING #: D14		STATION #: U/D's		
LOCATION OF CROSSING: 1 km west of Brock Road									
UTM EASTING & NORTHING: 17T 651 228 mE 4863681 mN					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Natural, hwy					SOURCES OF POLLUTION: Highly runoff				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river <input checked="" type="checkbox"/>	Channelized	Permanent <input checked="" type="checkbox"/>	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	inside culvert	Other			
Percentage of area	10	10	20	60					
mean depth wetted (m)	30m								
mean width wetted (m)	2m								
Mean bankfull width (m)	3m								
Mean bankfull depth (m)	50cm								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Détritus D	
			10	10	70			10	

BANK STABILITY								
	Stable	Slightly Unstable	Moderately Unstable	Unstable				
Left Upstream Bank	X							
Right Upstream Bank	X							
HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris		Organic debris	Vascular plants	None
	5			Instream 5	Overhanging 5		Instream 5	Overhanging 5
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %		30 - 1 %	None		
			X					
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
Predominant Species					Watercress, grasses			
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent			
	X							
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other			
			Feeding, watercress					
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
- restricty ATV use								
COMMENTS :								
Additional Notes Appended? No Yes number of pages								

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):	SCALE (cm / m):
V/S		D14		50m	
		PROJECT #:		8429	
		MAPPER:		JLL	
		NAME OF WATERBODY:		Milk Creek	
		CROSSING #:		D14	
		STATION #:		V/S	
		DATE: DD-MMM-YY		28-07-2015	
LEGEND					
10d depth (cm) 6w width					
→ Riffle					
⇨ Run/Glide					
○ Pool					
■ Island/Bar					
⊞ Fine Substrate					
### Gravel Substrate					
oOooO Cobble /Boulder					
*** Debris					
CT Cattail					
SV/FV Submerg/Float Veg					
EV Emergent Vegetation					
W Watercress					
Fe Iron Staining					
///// Eroded Bank					
xxx Riprap / Other Stabilization					
PROFILE:		Horz. Scale		Vert. Scale	
○ Instream Log/Tree					
AAA Dam/Weir/Obstruction					
⊙ Riparian Tree					
▶ Seep/Spring					
----- Undercut Bank					
— Barrier to Fish Movement					
-S- Seasonal Barrier					
-x-x- Fence line					
└┘ Culvert					

SECTION IDENTIFIER: D/S		SECTION LOCATION: D14		SECTION LENGTH (m): 200 m		SCALE (cm / m):	
						PROJECT #: 8424	
						MAPPER: JSC	
						NAME OF WATERBODY: Wife Creek	
						CROSSING #: D14	
						STATION #: D/S	
						DATE: DD-MMM-YY 28-04-2015	
						LEGEND	
						10d depth (cm) 6w width	
						→ Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // // // Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ▸ Seep/Spring - - - - Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert	
						PROFILE:	

GENERAL INFORMATION									
PROJECT #: 8429		PROJECT DESCRIPTION: 407 Prairies			DAY: 28	MONTH: 04	YEAR: 2015		
Is STREAM REALIGNMENT required for this section: Yes No Unknown									
COLLECTORS: SLC			WEATHER CONDITIONS: Sunny 18°C		TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9258 - 9274									
LOCATION									
NAME OF WATERBODY: Upper Creek		DRAINAGE SYSTEM: A.R.S. Creek		CROSSING #: D15		STATION #:			
LOCATION OF CROSSING: 450 m West of Brock Road									
UTM EASTING & NORTHING: 17T 651702 mE 4863957					MTO CHAINAGE:				
TOWNSHIP: Pickering					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Forest, agric. field, highway					SOURCES OF POLLUTION:				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:						Size (w x h) m2			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream/river <input checked="" type="checkbox"/>	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	50	20	30						
mean depth wetted (m)	4.5m	3.0m							
mean width wetted (m)	2.5								
Mean bankfull width (m)	5-6m								
Mean bankfull depth (m)	0.6m								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	
	10	40	30	10	20				

BANK STABILITY				
	Stable	Slightly Unstable	Moderately Unstable	Unstable
Left Upstream Bank	X			
Right Upstream Bank	X			

HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris		Organic debris	Vascular plants	None
	S	S		Instream S			Instream	
				Overhanging S			Overhanging	

SHORE COVER (% stream shaded):	100 - 90 %	90 - 60%	60 - 30%	30 - 1%	None
		X	X		

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
Predominant Species				None

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent
		Log jams	

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
		Yes past bank 200m d/s	

POTENTIAL ENHANCEMENT OPPORTUNITIES:

- restrict ATV use
- clear of solid deposition from previous construction activities

COMMENTS:

ATV trail parallel, crosses creek ~ 50 m S of
 at chky 407

large drop - wooden post @ false low drop
 - 100 m S of 407. several puddles

✓ 150 m d/s S/H danks substrate. dipping in creek +
 ✓ 200 m d/s channel banks that wash banks
 woody debris post hole 100 cm

Additional Notes Appended? No Yes number of pages

GENERAL INFORMATION									
PROJECT #: 8429		PROJECT DESCRIPTION: 407 Trassly			DAY: 28	MONTH: 09	YEAR: 2015		
Is STREAM REALIGNMENT required for this section? Yes No Unknown									
COLLECTORS: JCC			WEATHER CONDITIONS: Sunny 16°C		TIME STARTED:		TIME FINISHED:		
PHOTOS NUMBERS AND DESCRIPTIONS: 9191 - 9222									
LOCATION									
NAME OF WATERBODY: Brougham Creek		DRAINAGE SYSTEM: Duffins Creek		CROSSING #: D18		STATION #:			
LOCATION OF CROSSING: 280 m East of Brock Road									
UTM EASTING & NORTHING: 17T 882461 mE 4864320 mN					MTO CHAINAGE:				
TOWNSHIP: Pickering 65352 4864412					MNR DISTRICT: Aurora				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Natural (cedar woodlot)					SOURCES OF POLLUTION: highly erodible, construction				
EXISTING STRUCTURE TYPE									
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A	
Other Describe:							Size (w x h) m2		
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)					
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	X		X						
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):				
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
Percentage of area	20	10	60						
mean depth wetted (m)	20-30								
mean width wetted (m)	2m	40-50cm							
Mean bankfull width (m)	2m								
Mean bankfull depth (m)	0.5m								
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt SI	Clay CI	Muck Mu	Detritus D	
	5	10	30	10	3				

trib of

Further dis depth measurements, substrate
 max sample, ...
 loose banks, in undercut banks

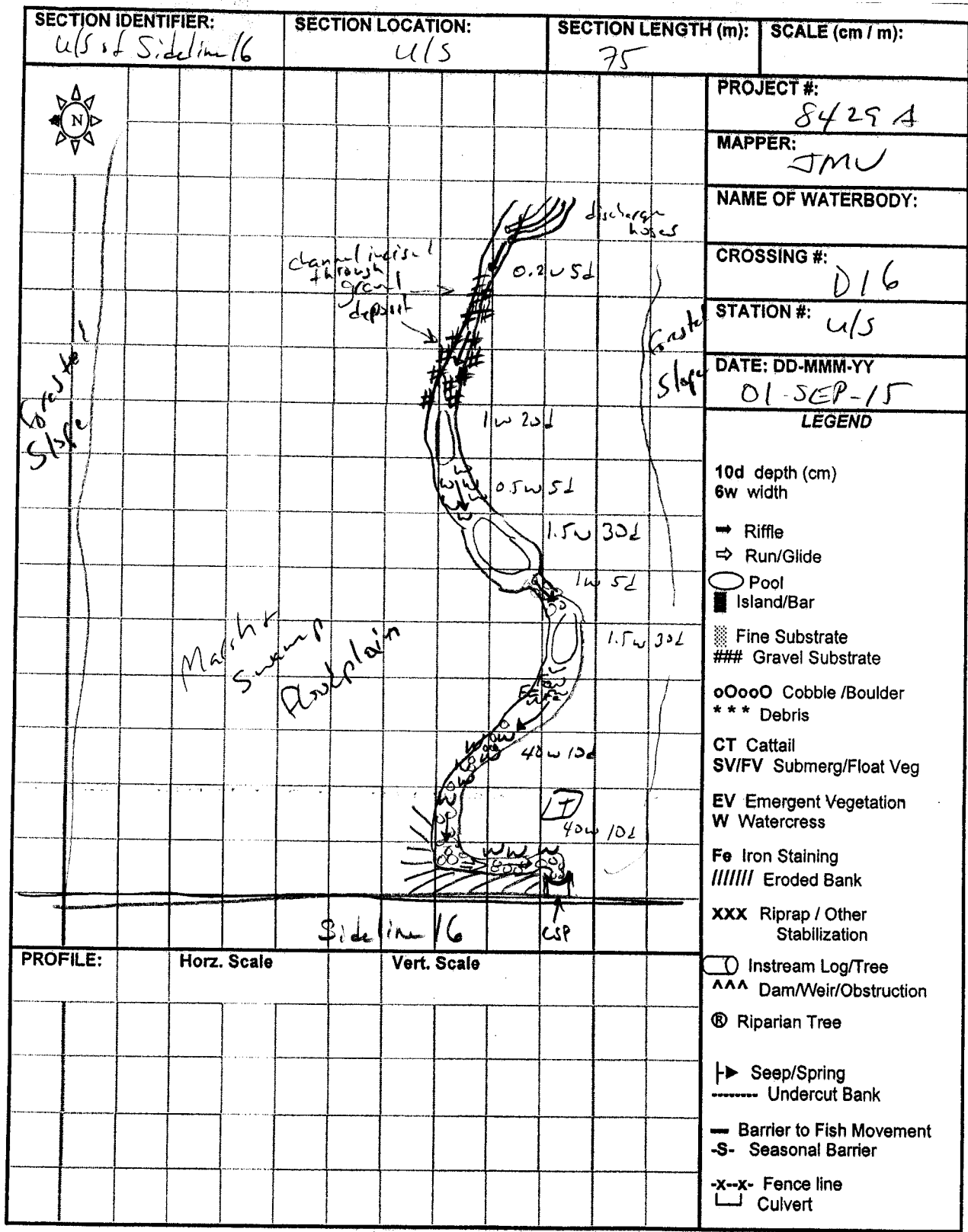
BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank		X					
Right Upstream Bank		X					
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
	5	5	5	Instream 5 Overhanging 10	leaves roots	Instream Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None		
		X					
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
	riprap barrier @ Hwy 7						
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<p>- remove rip rap barrier @ highway 7 structure that is currently restricting fish passage</p> <p>- remove granular material from watercourse banks</p>							
COMMENTS:							
<p>deposition of granular material in stream + on the banks throughout the entire section mapped.</p> <p>deposition created floodplain @ Highway 7 pool habitat space.</p> <p>Woody - heavy debris more common further d/s</p>							
Additional Notes Appended? No Yes number of pages							

SECTION IDENTIFIER: 115		SECTION LOCATION: D18		SECTION LENGTH (m): 50m		SCALE (cm / m):	
						PROJECT #: 8429	
						MAPPER: JCL	
						NAME OF WATERBODY: Trib of Bragden Creek	
						CROSSING #: D18	
						STATION #: 115	
DATE: DD-MMM-YY 28-04-2015						LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ● Fine Substrate ### Gravel Substrate oOoO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining ///// Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree AAA Dam/Weir/Obstruction ⊗ Riparian Tree ▶ Seep/Spring ----- Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line └┘ Culvert	
PROFILE:		Horz. Scale		Vert. Scale			

SECTION IDENTIFIER: D15		SECTION LOCATION: D18		SECTION LENGTH (m): 150m		SCALE (cm / m):	
						PROJECT #: 8429	
						MAPPER: JLC	
						NAME OF WATERBODY: Baldwin Run at Bridgeway creek	
						CROSSING #: D18	
						STATION #: D15	
DATE: DD-MMM-YY 28-04-15						LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ▨ Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ▸ Seep/Spring - - - Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert	
PROFILE:		Horz. Scale		Vert. Scale			
						2w 25d 2w 25d 2w 25d	

GENERAL INFORMATION										
PROJECT #:	8429 A	PROJECT DESCRIPTION:	4077thway	DAY:	01	MONTH:	09	YEAR:	2015	
Is STREAM/REALIGNMENT required for this section?										
Yes No Unknown										
COLLECTORS:	JMU	WEATHER CONDITIONS:	Sunny 25°C Humid	TIME STARTED:		TIME FINISHED:				
PHOTOS NUMBERS AND DESCRIPTIONS:										
LOCATION										
NAME OF WATERBODY:	Brougham Cr	DRAINAGE SYSTEM:	Duffins Cr	CROSSING #:	016	STATION #:				
LOCATION OF CROSSING: U/S + d/s of Sideline 16 crossing, d/s of realigned Brock Rd. bridge										
UTM EASTING & NORTHING:					MTO CHAINAGE:					
17T 653041mE 4864225mN										
TOWNSHIP: Pickering - Durham Region					MNR DISTRICT: Aurora					
LAND USE AND POLLUTION										
SURROUNDING LAND USE: Agriculture, infrastructure					SOURCES OF POLLUTION: Active construction, channel works, highway runoff, agricultural runoff					
EXISTING STRUCTURE TYPE										
Bridge	Box Culvert	Open Foot Culvert	CSP		N/A					
Other Describe:						Size (w x h) m2				
SECTION TYPE AND MORPHOLOGY										
SECTION IDENTIFIER:				SECTION LOCATION: (include on habitat map)						
TYPE:	Stream / river	Channellized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:				
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			None				
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):					
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other				
Percentage of area	10	20	70							
mean depth wetted (m)	0.15	0.30	0.10							
mean width wetted (m)	0.40 u/s 1.5 d/s	1.30 u/s 5.00 d/s	0.5 u/s 4.0 d/s							
Mean bankfull width (m)	← 2.5 u/s →		← 5.0 d/s →							
Mean bankfull depth (m)	← 0.5 u/s →		← 0.5 d/s →							
Substrate	Ba, Co, Gr, Sa	Sa, Gr, Co, Po, Si	Gr, Co, Ba							
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Ci	Muck Mu	Détritus D		

BANK STABILITY								
	Stable	Slightly Unstable	Moderately Unstable	Unstable				
Left Upstream Bank				✓				
Right Upstream Bank	✓							
HABITAT								
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris		Organic debris	Vascular plants	None
		40	30	Instream 10			Instream 20	
				Overhanging 10			Overhanging	
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60 %	60 - 30 %	30 - 1 %	None			
		✓						
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
					100			
Predominant Species					Watercress			
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent			
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other			
			Watercress, Marsh					
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
<p>D/S end of CSP parcel - Transitioning crossing should be new to thus eliminate barrier caused by parcel culvert. Also, very shallow flow thru culvert - no substrates.</p>								
COMMENTS:								
<p>Culvert perched ~40cm. Large pool (plunge) here. Active channel works up @ time of visit - turbid water coming from construction area under new bridge.</p>								
Additional Notes Appended? <input checked="" type="radio"/> No <input type="radio"/> Yes number of pages								



SECTION IDENTIFIER:		SECTION LOCATION: 26		SECTION LENGTH (m): 150~		SCALE (cm / m):	
						PROJECT #: 8429A	
						MAPPER: JMU	
						NAME OF WATERBODY: Boughn Cr.	
						CROSSING #: D16	
						STATION #: D16 215	
DATE: DD-MMM-YY 01 SEP 15						LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ● Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // Eroded Bank XXX Riprap / Other Stabilization ○ Instream Log/Tree AAA Dam/Weir/Obstruction ⊗ Riparian Tree ▸ Seep/Spring - - - Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert	
PROFILE:		Horz. Scale		Vert. Scale			

GENERAL INFORMATION											
PROJECT #:	8429A		PROJECT DESCRIPTION:	407 Transitway		DAY:	01	MONTH:	09	YEAR:	2015
Is STREAM/REALIGNMENT required for this section:											
Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>											
COLLECTORS:	JMU		WEATHER CONDITIONS:	Sunny 28°C Humid		TIME STARTED:	TIME FINISHED:				
PHOTOS NUMBERS AND DESCRIPTIONS:											
LOCATION											
NAME OF WATERBODY:	Trib of Broughen Cr.		DRAINAGE SYSTEM:	Duffins Cr.		CROSSING #:	D17			STATION #:	
LOCATION OF CROSSING:											
UTM EASTING & NORTHING:					MTO CHAINAGE:						
17T 652996 mE, 4864379 mN											
TOWNSHIP:					MNR DISTRICT:						
Pickering - Durham Reg.					Aurora						
LAND USE AND POLLUTION											
SURROUNDING LAND USE:					SOURCES OF POLLUTION:						
Agriculture, Infrastructure					Active construction highway runoff						
EXISTING STRUCTURE TYPE											
Bridge		Box Culvert		Open Foot Culvert		CSP		N/A			
Other Describe:							Size (w x h) m2				
SECTION TYPE AND MORPHOLOGY											
SECTION IDENTIFIER:					SECTION LOCATION: (include on habitat map)						
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:					
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			None					
TOTAL SECTION LENGTH (m):					CURRENT VELOCITY (m/s):						
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other					
Percentage of area	1	10	89								
mean depth wetted (m)	0.05	0.20	0.05								
mean width wetted (m)	1.0	0.75	0.5								
Mean bankfull width (m)	4.0	4.0	4.0								
Mean bankfull depth (m)	0.20	0.40	0.20								
Substrate	Gr, Sc, Co	Bo, Gr, Sc, Co	Bo, Gr, Co, Ss								
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Ci	Muck Mu	Detritus D			

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	✓						
Right Upstream Bank	✓						
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Large Woody Debris	Organic debris	Vascular plants	None
		30	50	Instream 1 Overhanging		Instream Overhanging 2	
SHORE COVER (% stream shaded):	100 - 90%	90 - 60%	60 - 30%	30 - 1%	None		
			✓				
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species					100 grasses		
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent sheet flow in culvert, drops, ponds down-stream		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning none		Evidence of Groundwater none		Other none		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<p>Bank Rd (realigned) box culvert has very shallow (1cm) sheet flow - impossible First 150m realigned is area where Sidelined 16 used to be - rip rap channel with large boulders - steep gradient + boulders are drops. There are 6 drops, some of which are as much as 30cm - barriers. Flow is shallow + spread out over 2/3m, which makes it difficult for fish passage. 3 areas where storm water enters. Migration of sediments (sand + gravel) into d/s forested area. Another</p>							
COMMENTS:							
<p>elevation drop in this area with the + depths reduced for much of d/s section. Unlikely possible to fish. From air photo, series of ponds d/s w/ rip rap spillways/discharges. No clear connection to Browns Cr. Area likely to direct habitat only.</p>							
Additional Notes Appended? <input checked="" type="checkbox"/> No Yes number of pages							

SECTION IDENTIFIER: D/S of Brook		SECTION LOCATION: W/in Brook		SECTION LENGTH (m): 250m		SCALE (cm / m):	
						PROJECT #: 8429A	
						MAPPER: JMU	
						NAME OF WATERBODY: Trs of Boughen Cr.	
						CROSSING #: D17	
						STATION #: D/S of Brook	
DATE: DD-MMM-YY 01 SEP 15						LEGEND 10d depth (cm) 6w width → Riffle ⇨ Run/Glide ○ Pool ■ Island/Bar ■ Fine Substrate ### Gravel Substrate oOooO Cobble /Boulder *** Debris CT Cattail SV/FV Submerg/Float Veg EV Emergent Vegetation W Watercress Fe Iron Staining // // // Eroded Bank xxx Riprap / Other Stabilization ○ Instream Log/Tree ^^^ Dam/Weir/Obstruction ⊗ Riparian Tree ▸ Seep/Spring - - - Undercut Bank — Barrier to Fish Movement -S- Seasonal Barrier -x-x- Fence line □ Culvert	
PROFILE:		Horz. Scale		Vert. Scale			

**APPENDIX D
DRAFT FISHERIES ACT
DOCUMENTATION**

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input checked="" type="checkbox"/> Bridges <input type="checkbox"/> Culverts <input type="checkbox"/> Other, specify _____		
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Species:	SAR Location:	
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R10: Little Rouge Creek	
	GPS Coordinates: 17T 644561 m E 4859934 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing a clear span bridge at R10, Little Rouge Creek		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR cool/coldwater timing window for in water works (July 1st to September 15th) • Footings will be installed outside of the high water mark • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent, coldwater fish habitat. See Template 10.2 for details.		
	Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos		
	Section C	MTO Signatures	
I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.			
Name: Judson Venier		Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		
	<input type="checkbox"/> Ditching/Storm water management	<input type="checkbox"/> Shoreline stabilization	<input type="checkbox"/> Culverts
	<input type="checkbox"/> Channel modifications	<input type="checkbox"/> Riparian vegetation management	<input type="checkbox"/> Fords
	<input type="checkbox"/> Shoreline infilling	<input checked="" type="checkbox"/> Bridges	<input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D1: West Duffins Creek	
	GPS Coordinates: 17T 646303 m E 4862095 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing a clear span bridge at D1, West Duffins Creek		
Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".			
Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows):			
<ul style="list-style-type: none"> Construction will be completed during the MNR cool/coldwater timing window for in water works (July 1st to September 15th) Footings will be installed outside of the high water mark All work to be completed "in the dry". Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 			
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent, coldwater fish habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		
	<input type="checkbox"/> Ditching/Storm water management	<input type="checkbox"/> Shoreline stabilization	<input type="checkbox"/> Culverts
	<input type="checkbox"/> Channel modifications	<input type="checkbox"/> Riparian vegetation management	<input type="checkbox"/> Fords
	<input type="checkbox"/> Shoreline infilling	<input checked="" type="checkbox"/> Bridges	<input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D2: Tributary of West Duffins Creek	
	GPS Coordinates: 17T 646450 m E 4862042 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing a clear span bridge at D2, Tributary of West Duffins Creek		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows):			
<ul style="list-style-type: none"> • Construction will be completed during the MNR cool/coldwater timing window for in water works (July 1st to September 15th) • Footings will be installed outside of the high water mark • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 			
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Ephemeral, coldwater fish habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		
	<input type="checkbox"/> Ditching/Storm water management	<input type="checkbox"/> Shoreline stabilization	<input type="checkbox"/> Culverts
	<input type="checkbox"/> Channel modifications	<input type="checkbox"/> Riparian vegetation management	<input type="checkbox"/> Fords
	<input type="checkbox"/> Shoreline infilling	<input checked="" type="checkbox"/> Bridges	<input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D3: Tributary of West Duffins Creek	
	GPS Coordinates: 17T 646510 m E 4862369 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing a clear span bridge at D3, Tributary of West Duffins Creek		
Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".			
Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows):			
<ul style="list-style-type: none"> Construction will be completed during the MNR cool/coldwater timing window for in water works (July 1st to September 15th) Footings will be installed outside of the high water mark All work to be completed "in the dry". Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 			
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent, coldwater fish habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		
	<input type="checkbox"/> Ditching/Storm water management	<input type="checkbox"/> Shoreline stabilization	<input type="checkbox"/> Culverts
	<input type="checkbox"/> Channel modifications	<input type="checkbox"/> Riparian vegetation management	<input type="checkbox"/> Fords
	<input type="checkbox"/> Shoreline infilling	<input checked="" type="checkbox"/> Bridges	<input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: Urfe Creek is Redside Dace contributing habitat	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D15: Urfe Creek	
	GPS Coordinates: 17T 651702 m E 4863957 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing a clear span bridge at D15, Urfe Creek		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows):			
<ul style="list-style-type: none"> • Construction will be completed during the MNR cool/coldwater timing window for in water works (July 1st to September 15th) • Footings will be installed outside of the high water mark • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 			
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent, coldwater fish habitat. Contributing Redside Dace. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	



Section
10

MINISTRY OF TRANSPORTATION

APPENDIX 10.A
Project Notification Form 1
(“Low Risk”) with
Checklist and Template Tables

Environmental Guide for Fish and Fish Habitat

Version: March 2013

VERSION HISTORY

VERSION #	DATE	DESCRIPTION OF MAJOR CHANGE
1.0	Dec-2008	<ul style="list-style-type: none">• New Appendix A.2 with Notification Form Checklist and Template Tables added.
2.0	Jun-2009	<ul style="list-style-type: none">• Templates 10.2 & 10.3 updated to clarify type of information to be entered.• GPS Coordinates and MTO Region added to No HADD Notification Form
3.0	Mar-2013	<ul style="list-style-type: none">• Removed “No HADD” terminology and updated to “Low Risk”• Amalgamated Appendix 10.A1 and 10.A2 to reflect changes to the Protocol.• Removed references to Step 4 and Step 5 – Preliminary and Comprehensive Fisheries Assessments• Updated Template numbers• Updated DFO Risk Management Framework to January 2012 Version

LOW RISK NOTIFICATION FORM CHECKLIST

Project Title:	Project #:
Required Contents for Low Risk Notification Form	QA/QC Checklist (✓ when complete)
GENERAL	
Project within 30 m of a watercourse but does not meet conditions of an Operational Statement (as per Step 1 of the Protocol)	✓
Collected fish and fish habitat information from MNR (as per Step 5 of the Protocol)	✓
Fish and fish habitat field assessment conducted	✓
SECTION A: PROPONENT INFORMATION	
MTO staff contact information (e.g. project manager, maintenance superintendent)	
SECTION B: PROJECT INFORMATION	
<i>Types of Activities</i>	
– Check only one, the most relevant activity	
<i>Species at Risk</i>	
– Check either “yes” or “no” as indicated on DFO’s Aquatic Species at Risk Reach Maps or as provided by MNR SAR Biologist. – If “yes” list species (if known)	✓
<i>SAR Location</i>	
– If Species at Risk have been identified, provide UTM / GPS Coordinates for the known location within the study area	✓
<i>Nearest Community</i>	
– Provide the name of the nearest city/town	✓
<i>Municipality</i>	
– Provide the lower level municipality name(s) in which the project is located	✓
<i>Location of Project</i>	
– Provide a concise description of the geographic location of entire project. The location should be related to features easily identified on a map such as a bridge, stream confluence, or road intersection.	✓
<i>GPS Coordinates</i>	
– GPS coordinates for each of the waterbodies within the project limits	✓
<i>Name of Waterbody</i>	
– Provide the name for each applicable waterbody – Where the form is for numerous waterbodies attach a topographic map or Location of Work Table (Template 10.1) all waterbody names and locations	✓

Project Title:	Project #:
Required Contents for Low Risk Notification Form	QA/QC Checklist (✓ when complete)
<i>Proposed Start / Completion Dates</i>	
– Provide dates in long format e.g. September 15, 2013.	
<i>Description of Project</i>	
– Provide a concise description of the works / undertakings in and within 30 m of waterbodies	✓
<i>Rationale for Low Risk Determination</i>	
– State that a Fisheries Assessment was conducted and the criteria used in making decision (e.g. Low sensitivity and Low Scale of Negative Effects).	✓
– If relevant, reference DFO’s Review of Water crossing projects under the Fisheries Act memo, April 2007 (see Fish Guide Appendix 7.A)	
– Attach Aquatic Effects Assessment Summary (Template 10.3)	✓
– Attach Risk Assessment Worksheet (Template 10.4)	✓
<i>Proposed Mitigation</i>	
– Provide in-water timing windows – List Ontario Standard Specifications and MTO Standard Special Provisions to be used – List any other relevant mitigation measures	✓
<i>Description of Fish and Fish Habitat</i>	
– Provide fish and fish habitat sensitivity as provided by MNR or through the Comprehensive Fisheries Assessment	✓
– List fish species present and any sensitive habitat as provided by MNR or through the Comprehensive Fisheries Assessment	✓
– Provide a summary of existing fish and fish habitat conditions, attach Existing Fish and Fish Habitat Conditions Summary Table (see Template 10.2)	✓
– Reference Fish and Fish Habitat Existing Conditions Report or Fish and Fish Habitat Impact Assessment Report	✓
<i>Attached Documents</i>	
Include reference to attached documents, such as:	
– Templates, tables and maps listed in the above; site photos	✓
– Design drawings depicting work in and within 30 m of waterbodies	
– Fish and Fish Habitat Existing Conditions Report or Fish and Fish Habitat Impact Assessment Report	✓
SECTION C: MTO SIGNATURES	
<i>1st Signature</i>	
– The Fisheries Assessment Specialist who conducted the Fisheries Assessment	
<i>2nd Signature</i>	
– MTO manager	

TEMPLATE 10.1 Location of Work Table

Waterbody	Highway	Municipality	Location of Stream (GPS Coordinates)
R1: Tributary of the Rouge River	Highway 407 Transitway	City of Markham	17T 637112 m E 4857012 m N
R2: Tributary of the Rouge River	Highway 407 Transitway	City of Markham	17T 637411 m E 4856991 m N
R3: Tributary of the Rouge River	Highway 407 Transitway	City of Markham	17T 637515 m E 4857050 m N
R5: Tributary of the Rouge River	Highway 407 Transitway	City of Markham	17T 642139 m E 4858871 m N
R6: Tributary of Little Rouge Creek	Highway 407 Transitway	City of Markham	17T 642502 m E 4859023 m N
R7: Tributary of Little Rouge Creek	Highway 407 Transitway	City of Markham	17T 643109 m E 4859368 m N
R7a: Tributary of Little Rouge Creek	Highway 407 Transitway	City of Markham	17T 643257 m E 4859331 m N
R8: Tributary of Little Rouge Creek	Highway 407 Transitway	City of Markham	17T 643840 m E 4859656 m N
R9: Tributary of Little Rouge Creek	Highway 407 Transitway	City of Markham	17T 644309 m E 4859602 m N
P1: Petticoat Creek	Highway 407 Transitway	City of Markham	17T 645216 m E 4860351 m N
D4: Tributary of West Duffins Creek	Highway 407 Transitway	City of Pickering	17T 646868 m E 4862482 m N
D8: Tributary of Whitevale Creek	Highway 407 Transitway	City of Pickering	17T 648388 m E 4862861 m N
D10: Whitevale Creek	Highway 407 Transitway	City of Pickering	17T 648871 m E 4862808 m N
D11: Tributary of Ganatsekiagon Creek	Highway 407 Transitway	City of Pickering	17T 649334 m E 4863064 m N
D12: Ganatsekiagon Creek	Highway 407 Transitway	City of Pickering	17T 650317 m E 4863508 m N
D17: Tributary of Brougham Creek	Highway 407 Transitway	City of Pickering	17T 652626 m E 4864379 m N

NOTES:

- Complete this table if the Notification Form addresses many waterbodies. Alternatively, a topographic map clearly depicting all applicable waterbodies could be used.
- Template 10.1 - Location of Work Table may be included in the Fish and Fish Habitat Existing Conditions Report.

TEMPLATE 10.2
Summary Table

Existing Fish and Fish Habitat Conditions

Waterbody	Flow (Permanent, Intermittent or Ephemeral)	Thermal Regime (warm/cool/cold)	Substrate Type	Vegetation (Riparian & In-Stream*)	Supports a Fishery (directly, indirectly or none)	Fish Species Present**
R1: Tributary of the Rouge River	Intermittent	Warmwater	Rip rap, silt	Cattails, red osier dogwood, shrub willow, Reed Canary Grass	Indirect	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae Spp. (MNRF 2015)
R2: Tributary of the Rouge River	Ephemeral	Warmwater	Silt, detritus	<i>Phragmites</i> , cattails, jewelweed, watercress	Indirect	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae Spp. (MNRF 2015)
R3: Tributary of the Rouge River	Permanent	Warmwater	Silt, gravel, cobble, detritus	Cattails, <i>Phragmites</i> , overhanging grasses, jewelweed and shrub willow (riparian)	Direct	Rainbow Trout, Redside Dace, Brown Bullhead, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae spp. (MNRF 2015) Brook Stickleback (LGL 2015)
R5: Tributary of the Rouge River	Permanent	Coolwater	Silt, detritus	<i>Phragmites</i> , cattails, algae, shrub willow.	Direct	Coho Salmon, Chinook Salmon, Rainbow Trout, Brown Trout, Goldfish, Redside Dace,

						Smallmouth Bass, Yellow Perch, Rainbow Darter, Cyprinidae spp. (MNRF 2015)
R6: Tributary of Little Rouge Creek	Permanent	Coolwater	Silt, gravel, detritus, rip rap	Cattails, <i>Phragmites</i> , jewelweed, crack willow, instream grasses	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Creek Chub (LGL 2015)
R7: Tributary of Little Rouge Creek	Permanent	Warmwater	Silt, detritus, cobble	Cattails, <i>Phragmites</i> , instream grasses, red osier dogwood, algae	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Creek Chub (LGL 2015)
R7a: Tributary of Little Rouge Creek	Ephemeral	Warmwater	Silt, detritus, cobble	Cattails, <i>Phragmites</i> , instream grasses, red osier dogwood, algae	Direct	Rainbow Trout, Brown Trout, Rock Bass, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Cyprinidae spp. (MNRF 2015) Cyprinidae Spp. (LGL 2015)
R8: Tributary of Little Rouge Creek	Permanent	Coolwater	Silt, detritus	Cattails, <i>Phragmites</i> , Canada waterweed instream/overhanging grasses (reed canary grass), crack willow riparian	Direct	No fisheries information available (MNRF 2015) No fish observed or captured (LGL 2015)
R9: Tributary of	Intermittent	Coolwater	Silt, detritus	Cattails,	Indirect	No fisheries

Little Rouge Creek				<i>Phragmites</i> , algae instream/overhanging grasses, dog strangling vine, goldenrod, asters, bur-marigold.		information available (MNRF 2015). No fish observed or captured (LGL 2015)
P1: Petticoat Creek	Ephemeral	Warmwater	Silt, detritus	Cattails, <i>Phragmites</i> , reed canary grass, smartweed sp.	None	Rainbow Trout, Atlantic Salmon, Brook Trout, Cyprinidae spp.(MNRF 2015)
D4: Tributary of West Duffins Creek	Intermittent	Coldwater	Silt, detritus, cobble, gravel, sand	Instream and overhanging grasses, cattails, <i>Phragmites</i>	Direct	Rainbow Trout, Brook Trout, Pumpkinseed, Rainbow Darter, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)
D8: Tributary of Whitevale Creek	Intermittent	Coldwater	Silt, gravel, sand, cobble	Mostly terrestrial vegetation (asters, goldenrod) and reed canary grass	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)
D10: Whitevale Creek	Intermittent	Coldwater	Silt, detritus, gravel, sand, cobble	Instream and overhanging grasses (reed canary grass, brome), cattails, <i>Phragmites</i> , cultural meadow vegetation	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)
D11: Tributary of Ganatsekiagon Creek	Intermittent	Coldwater	Silt, detritus	Instream and overhanging grasses, cattails	Indirect	American Brook Lamprey, Rainbow Trout, Brook Trout, Redside Dace, Largemouth Bass, Rainbow Darter, Mottled Sculpin, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)
D12: Ganatsekiagon Creek	Ephemeral	Coldwater	Silt, detritus	Instream and overhanging grasses, cattails	Indirect	American Brook Lamprey, Rainbow Trout, Brook Trout, Redside Dace, Largemouth Bass, Rainbow Darter, Mottled Sculpin, Slimy Sculpin, Cyprinidae spp.

						(MNRF 2015)
D17: Tributary of Brougham Creek	Permanent	Coldwater	Upland soils	None	Indirect	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNRF 2015)

NOTES:

- Template 10.2 - Existing Fish and Fish Habitat Conditions Summary Table should be included in the Fish and Fish Habitat Existing Conditions Report or combined Existing Conditions and Impact Assessment Report.

*In-stream vegetation refers to emergent, submergent and floating aquatic vegetation.

**Please indicate whether this information is from background secondary source data (indicate source) or obtained through field investigations.

TEMPLATE 10.3 Aquatic Effects Assessment Summary Table

Waterbody	Pathway of Effect (s)	Stressor (Potential Impact)	Mitigation Measures	Residual Effects
R1,R2,R3,R5,R6,R7,R7a,R8,P1 D4,D8,D10,D11,D12,D17	L1 (Vegetation Clearing); L2 (Grading); L3 (Excavation); L4 (Riparian Planting); B2 (Use of Industrial Equipment); W1 (Placement of Material); W7 (Flow management) W9 (Structure Removal)	Change in sediment concentrations	MTO standard erosion and sedimentation controls (OPSS 805), Seed and Cover (OPSS 572), Topsoil (OPSS 570), Light Duty Silt Fence Barriers, Temporary Rock Flow Checks, and Construction Monitoring	With proper implementation and maintenance of mitigation measures, no permanent negative effects will occur
	L1 L3 L4 W7	Change in water temperature	Manage all water from un/dewatering activities to prevent excess heating before re-entering waterbody, avoid all existing trees where possible (OPSS 565), re-establish riparian vegetation as quickly as possible	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	L1 L4 W1 W7	Change in nutrient concentrations	Manage all water from un/dewatering activities to prevent contamination before re-entering watercourses	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	L1 L4 W1 W7 W9	Change in food supply	Re-establish riparian vegetation as quickly as possible	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	L1 L4 B2 W7 W9	Change in contaminant concentrations	Operate, store and maintain (e.g., re-fuel, lubricate) all equipment and associated materials in a manner that prevents the entry of any deleterious	With proper implementation and maintenance of mitigation measures, no negative effects will occur

			substance to the watercourses. Any part of equipment entering the watercourse or operating on the bank shall be free of fluid leaks and externally cleaned/degreased, ensure a Spills Management Plan is on-site at all times (including all necessary materials, personnel, etc.) for implementation in the event of an accidental spill during construction, MTO standard erosion and sediment controls as detailed above	
	L4 W1 W7	Change in habitat structure and cover	For open footed structures, culvert footings will be installed outside of the high water level. Banks will be restored and riparian vegetation will be re-established as soon as possible. For concrete circular structures, the culvert will be countersunk to incorporate natural substrates, a low flow channel and floodplain	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	B2	Potential mortality of fish/eggs/ova from equipment	Relocate stranded fish (if present) from isolated/unwatered areas, maintain flow	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W3 (Water extraction)	Direct mortality of fish	Relocate stranded fish (if present) from isolated/unwatered areas, maintain flow	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W7 W8(Fish	Displacement or stranding of fish	Relocate stranded fish (if present) from	With proper implementation

	passage issues)		isolated/unwatered areas, maintain flow; flow and fish passage will be maintained throughout construction	and maintenance of mitigation measures, no negative effects will occur
	W8	Chance in access to habitats	For open footed structures, flow and fish passage will be maintained throughout construction. For the concrete circular structures, flow will be maintained to downstream habitats; however fish passage will be temporarily obstructed during installation.	With proper implementation and maintenance of mitigation measures, no negative effects will occur
R9	L1 (Vegetation Clearing); L2 (Grading); L3 (Excavation); L4 (Riparian Planting); B2 (Use of Industrial Equipment); W1 (Placement of Material); W7 (Flow management)	Change in sediment concentrations	MTO standard erosion and sedimentation controls (OPSS 805), Seed and Cover (OPSS 572), Topsoil (OPSS 570), Light Duty Silt Fence Barriers, Temporary Rock Flow Checks, and Construction Monitoring	With proper implementation and maintenance of mitigation measures, no permanent negative effects will occur to habitats downstream of the affected section
	L1 L3 L4 W7	Change in water temperature	Manage all water from un/dewatering activities to prevent excess heating before re-entering waterbody, avoid all existing trees where possible (OPSS 565), re-establish riparian vegetation as quickly as possible	With proper implementation and maintenance of mitigation measures, no negative effects will occur to downstream habitats
	L1 L4 W1 W7	Change in nutrient concentrations	Manage all water from un/dewatering activities to prevent contamination before re-entering watercourses	With proper implementation and maintenance of mitigation measures, no negative effects will occur to downstream

				habitats
	L1 L4 W1 W7 W9	Change in food supply	Re-establish riparian vegetation as quickly as possible	With proper implementation and maintenance of mitigation measures, no negative effects will occur to downstream habitats
	L1 L4 B2 W7 W9	Change in contaminant concentrations	Operate, store and maintain (e.g., re-fuel, lubricate) all equipment and associated materials in a manner that prevents the entry of any deleterious substance to the watercourses. Any part of equipment entering the watercourse or operating on the bank shall be free of fluid leaks and externally cleaned/degreased, ensure a Spills Management Plan is on-site at all times (including all necessary materials, personnel, etc.) for implementation in the event of an accidental spill during construction, MTO standard erosion and sediment controls as detailed above	With proper implementation and maintenance of mitigation measures, no negative effects will occur to downstream habitats
	L4 W1 W7	Change in habitat structure and cover	This channel is being realigned	Habitat structure and cover will be permanently altered
	B2	Potential mortality of fish/eggs/ova from equipment	Relocate stranded fish (if present) from isolated/unwatered areas, construction will occur when the channel is dry	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W3 (Water extraction)	Direct mortality of fish	Relocate stranded fish (if present) from isolated/unwatered areas, construction will occur when the	With proper implementation and maintenance of mitigation measures, no

			channel is dry	negative effects will occur
	W7 W8(Fish passage issues)	Displacement or stranding of fish	Relocate stranded fish (if present) from isolated/unwatered areas, maintain flow; construction will occur when the channel is dry	With proper implementation and maintenance of mitigation measures, no negative effects will occur

NOTES:

- Complete the Summary Table for each waterbody that requires a Fisheries Assessment (step 7).
- For details on completing the Aquatic Effects Assessment refer to Section 5 of the Guide and DFO's Practitioners Guide to the Risk Management Framework for DFO Habitat Management Staff.

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: R1: Tributary of the Rouge River MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities		In-water Activities
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated 		<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

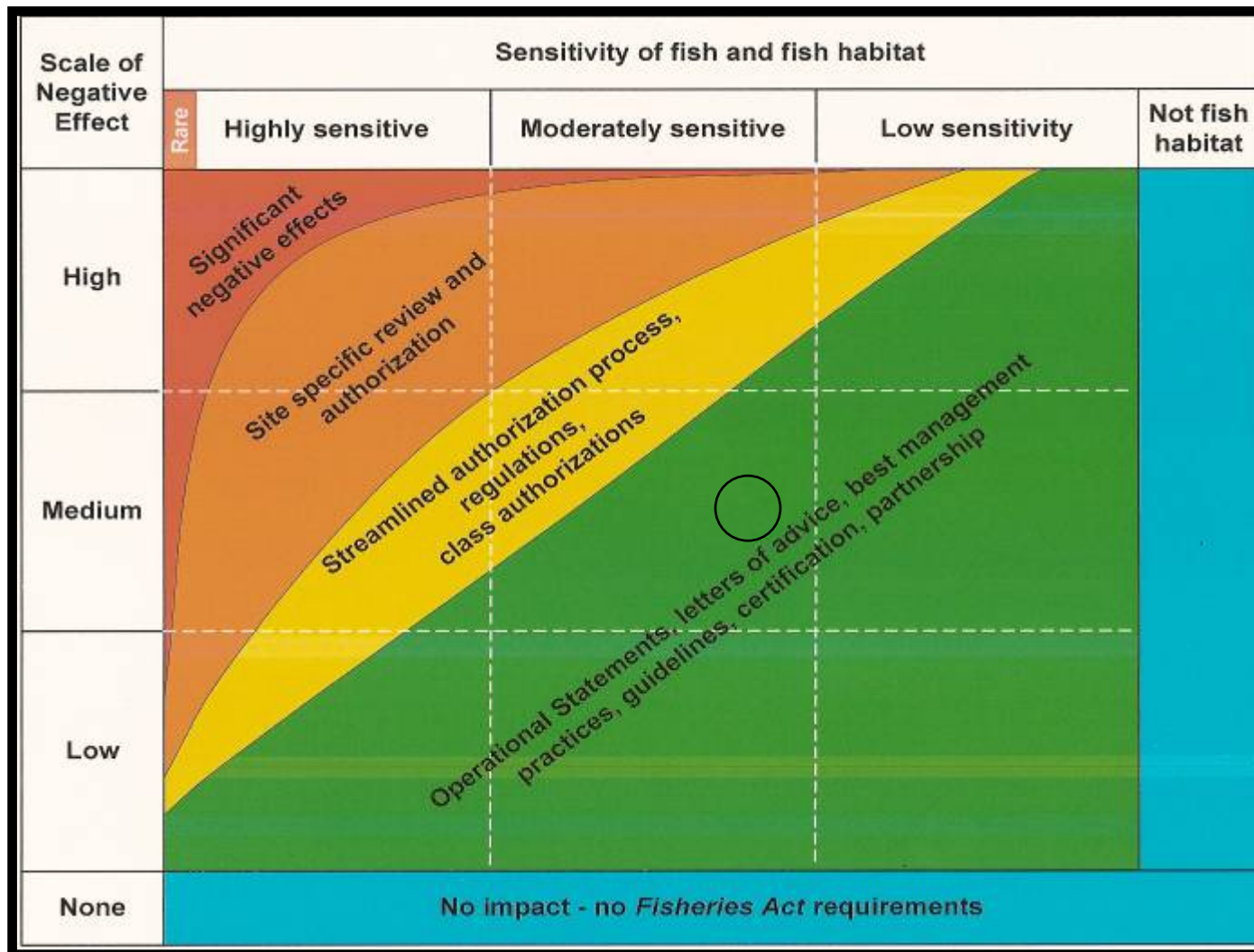
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	No direct fish habitat is present within the study area. MNRF indicated this watercourse is contributing Redside Dace habitat. Redside Dace are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input checked="" type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	No direct habitat is present within the subject watercourse or study area. The watercourse supports downstream fish communities indirectly.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input checked="" type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	No fish are present within the subject watercourse or the study area. The watercourse is intermittent, and conveys surface water. This habitat type is common. The downstream receiving watercourse (Main branch of the Rouge River supports Redside Dace.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input checked="" type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is stable and resistant to change due to the intermittent flow conditions.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open foot structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in indirect fish habitat
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the indirect habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as indirect habitat and will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/ circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of indirect fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
	MTO W.P. No.:		
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input type="checkbox"/> Bridges		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: This watercourse is contributing habitat for Redside Dace.	
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R1: Tributary of the Rouge River	
	GPS Coordinates: 637112 m E 4857012 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at R1		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) • Culvert footings will be located outside of the bankfull width of the watercourse • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Intermittent feature and indirect habitat. Redside Dace contributing habitat. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet						
<p>Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover</p>	<p>MTO Assessor: Judson Venier Waterbody: R2: Tributary of the Rouge River MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>				
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p> <p>Use PoE Diagrams and attach if necessary</p> <table style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Land-based Activities</th> <th style="text-align: center;">In-water Activities</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues </td> </tr> </tbody> </table>			Land-based Activities	In-water Activities	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
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<p>Residual Negative Effects from Aquatic Effects Assessment*:</p> <p><input type="checkbox"/> Residual Negative Effects: (Describe): _____</p>						
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	<p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers 				

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

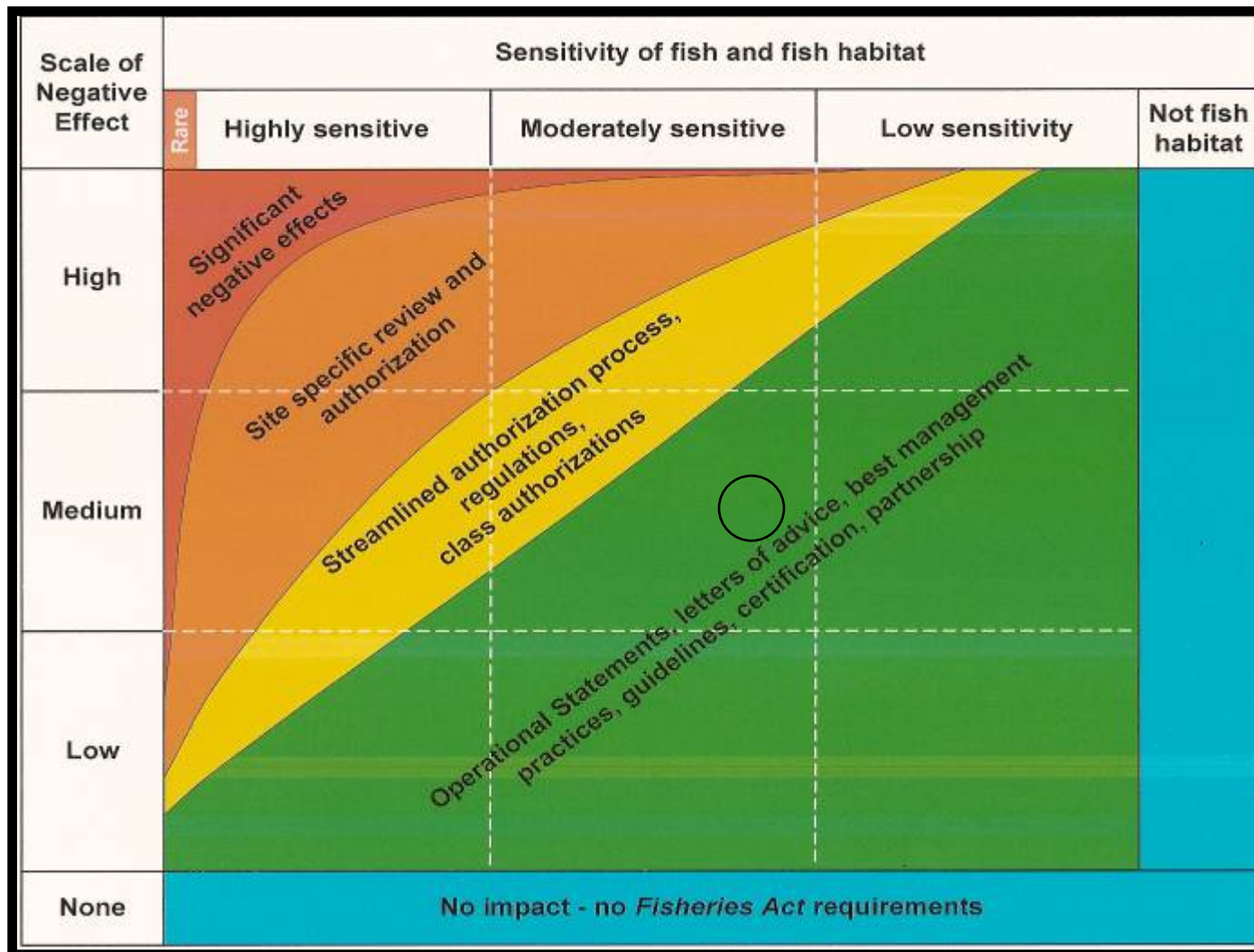
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	Ephemeral, indirect warmwater fish habitat is present within the study area. MNRF indicated this watercourse is Redside Dace contributing habitat. Redside Dace are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High ✓	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low ✓	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Ephemeral, indirect warmwater fish habitat present within the study area.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Indirect warmwater fish habitat is present within the study area and the watercourse is ephemerally flowing. This habitat type is common. The downstream receiving watercourse (Main branch of the Rouge River supports Redside Dace.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low ✓	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system warmwater, stable and resistant to change.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	A concrete circular pipe structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in indirect fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater than one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more than one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as indirect fish habitat. This culvert will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
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Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	<input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: This watercourse is contributing habitat for Redside Dace.	
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R2: Tributary of the Rouge River	
	GPS Coordinates: 17T 637411 mE 4856991 mN		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing a concrete circular structure at R2		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Ephemeral feature and indirect habitat. Redside Dace contributing habitat. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet						
<p>Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover</p>	<p>MTO Assessor: Judson Venier Waterbody: R3: Tributary of the Rouge River MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>				
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p>						
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<p>Residual Negative Effects from Aquatic Effects Assessment*:</p> <p><input type="checkbox"/> Residual Negative Effects: (Describe): _____</p>						
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* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

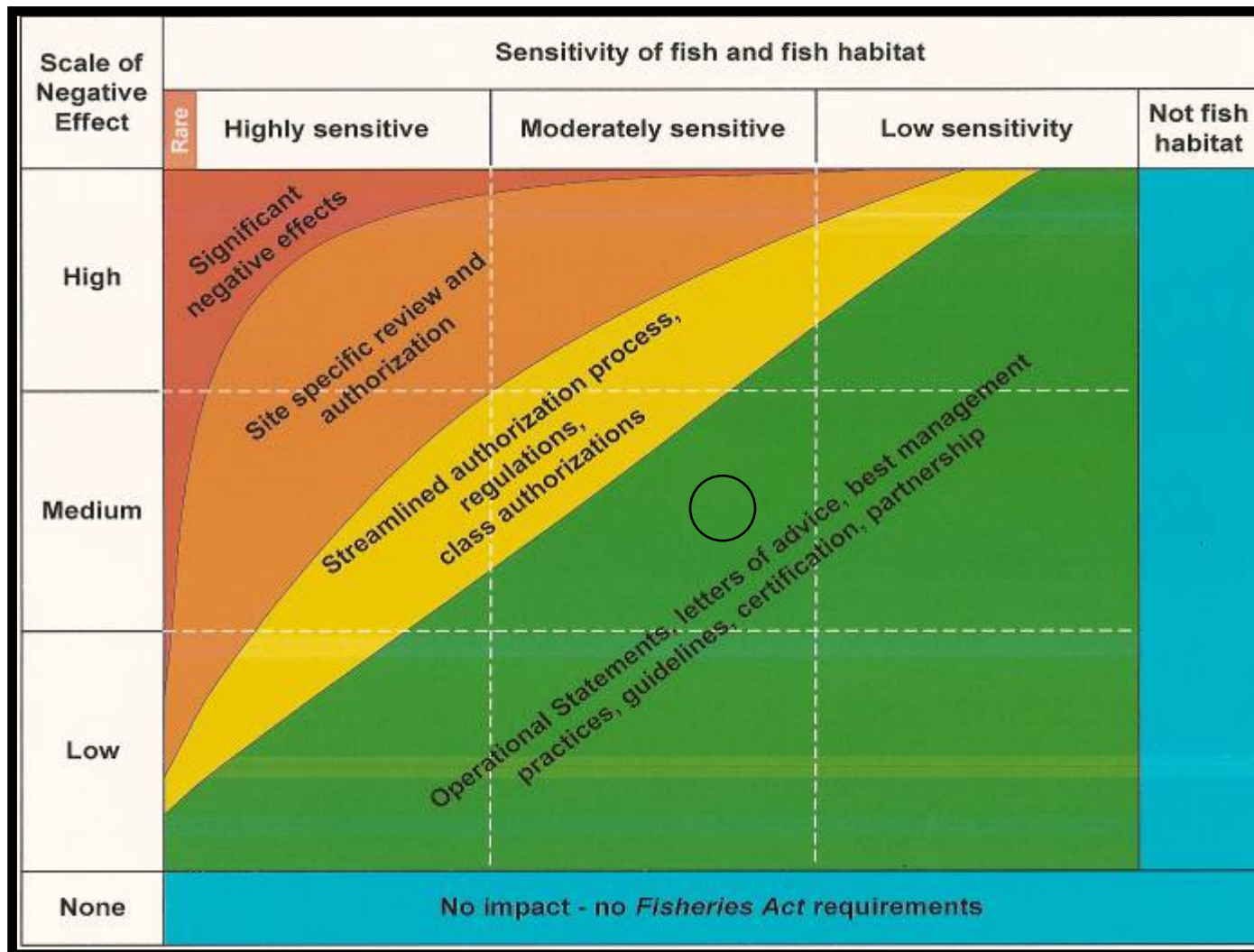
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	Direct warmwater fish habitat is present within the study area. MNRF indicated this watercourse is Redside Dace contributing habitat. Redside Dace are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Direct warmwater fish habitat present within the study area. Habitat may be used as feeding and rearing habitat. No critical habitat was identified.
	Moderate <input checked="" type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input checked="" type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Direct warmwater fish habitat is present within the study area and the watercourse is permanently flowing. This habitat type is common. The downstream receiving watercourse (main branch of the Rouge River supports Redside Dace.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input checked="" type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system warmwater, stable and resistant to change.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	A concrete circular pipe structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as direct fish habitat. This culvert will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.


LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.



A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input type="checkbox"/> Bridges		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: This watercourse is contributing habitat for Redside Dace.	
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R3: Tributary of the Rouge River	
	GPS Coordinates: 17T 637515 m E 4857050 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing a concrete circular structure at R3		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent feature and direct habitat. Redside Dace contributing habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet						
<p>Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover</p>	<p>MTO Assessor: Judson Venier Waterbody: R5: Tributary of the Rouge River MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>				
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p>						
<p>Use PoE Diagrams and attach if necessary</p> <table style="width: 100%;"> <thead> <tr> <th style="width: 50%; text-align: center;">Land-based Activities</th> <th style="width: 50%; text-align: center;">In-water Activities</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues </td> </tr> </tbody> </table>			Land-based Activities	In-water Activities	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
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* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

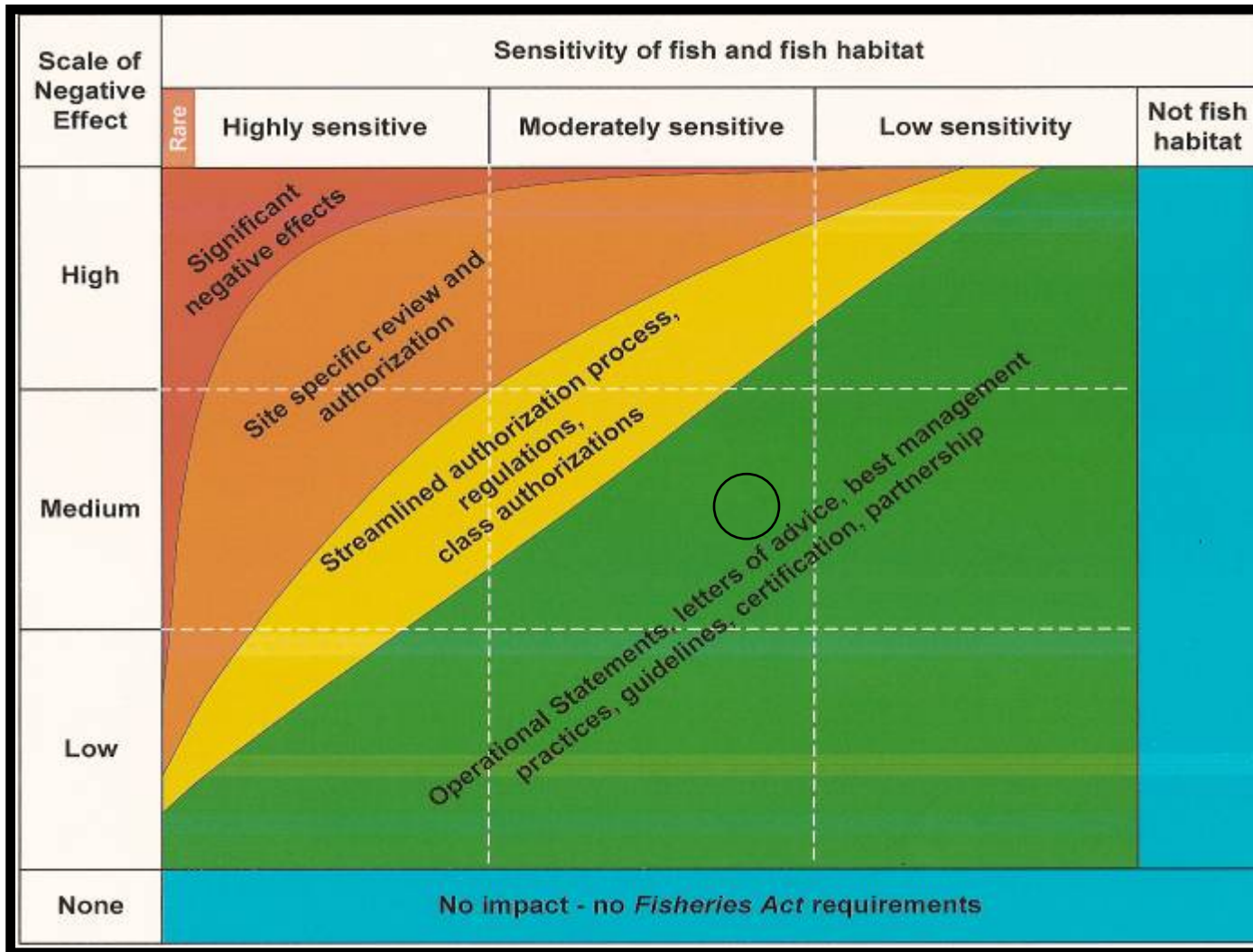
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	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High ✓	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Direct warmwater fish habitat present within the study area. Habitat may be used as feeding and rearing habitat. No critical habitat was identified.
	Moderate ✓	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Direct warmwater fish habitat is present within the study area and the watercourse is permanently flowing. The downstream receiving waterbody (Main Branch of the Rouge River) supports Redside Dace. This habitat type is common. The downstream receiving watercourse (main branch of the Rouge River supports Redside Dace.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low ✓	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is stable and resistant to change.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open footed structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as direct fish habitat. This watercourse will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/ circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input type="checkbox"/> Bridges		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: This watercourse is contributing habitat for Redside Dace.	
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R5: Tributary of the Rouge River	
	GPS Coordinates: 17T 642139 m E 4858871 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at R5		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) • Culvert footings will be located outside of the bankfull width of the watercourse • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent coolwater fish habitat, Redside Dace contributing habitat. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: R6: Tributary of Little Rouge Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management 	
<input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated	<input checked="" type="checkbox"/> Fish Passage Issues	
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

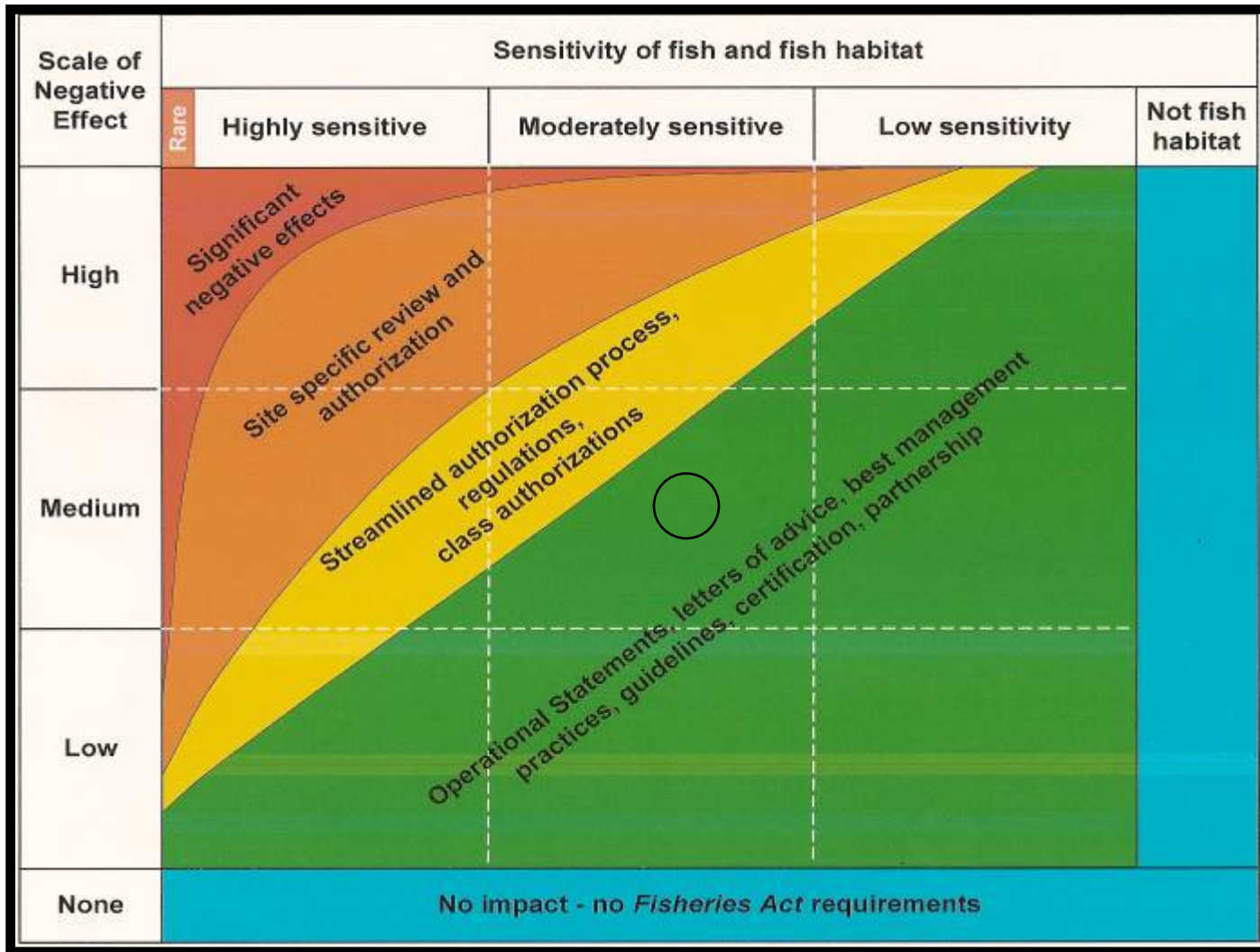
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	Direct coolwater fish habitat is present within the study area. Species present are moderately resilient to change and perturbation
	Moderate ✓	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Direct coolwater fish habitat present within the study area. Habitat may be used as feeding and rearing habitat. No critical habitat was identified.
	Moderate ✓	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Direct coolwater fish habitat is present within the study area and the watercourse is permanently flowing. Species present and habitat type are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is coolwater, stable and moderately resistant to change.
	Moderate ✓	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open footed structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as direct fish habitat. This watercourse will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input type="checkbox"/> Bridges		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Species:	SAR Location:	
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R6: Tributary of Little Rouge Creek	
	GPS Coordinates: 17T 642502 m E 4859023 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at R6		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR cool/coldwater timing window for in water works (July 1st to September 15th) • Culvert footings will be located outside of the bankfull width of the watercourse • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent coolwater fish habitat. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: R7: Tributary of Little Rouge Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 	
<input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated		
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

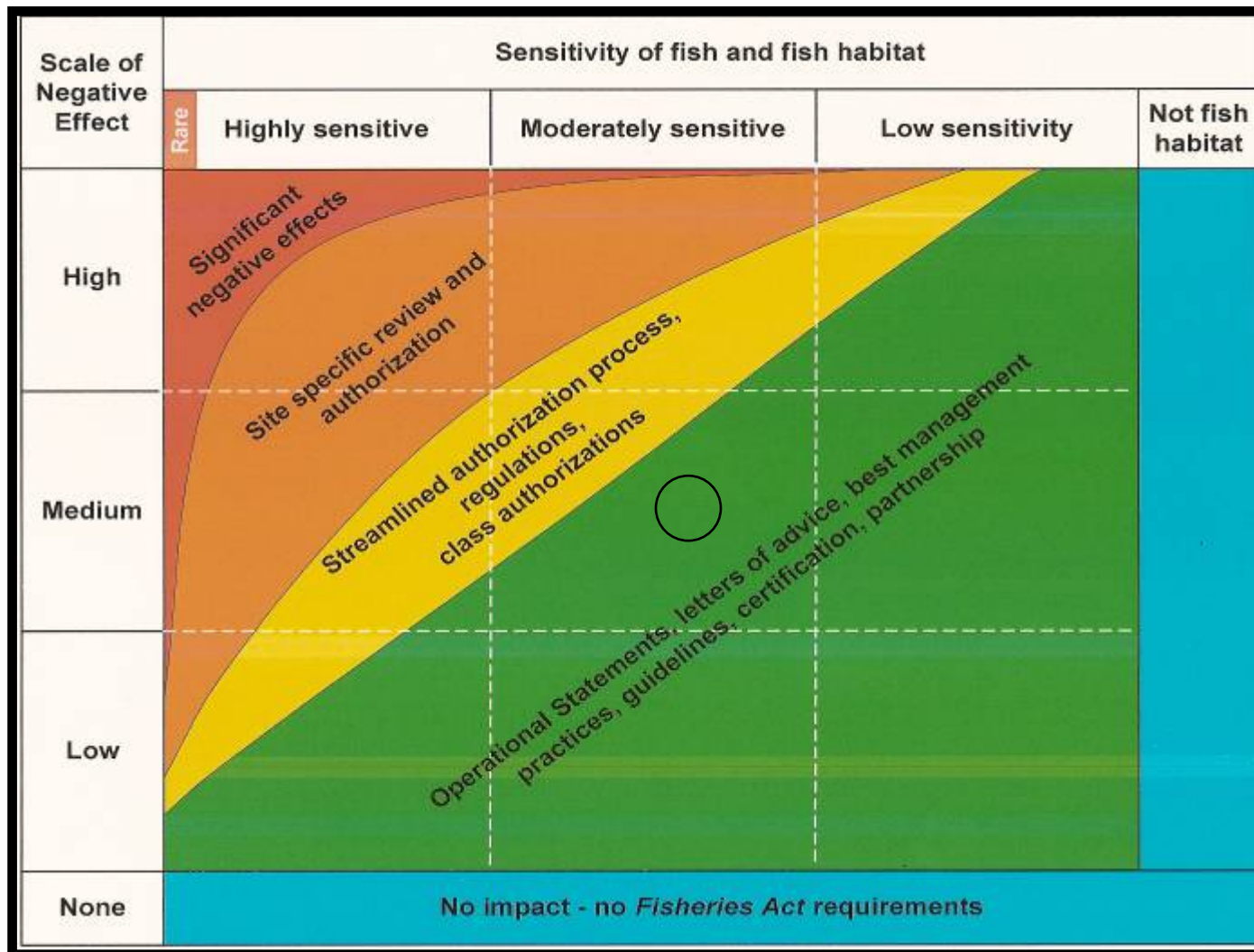
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	Direct coolwater fish habitat is present within the study area. Species present are moderately resilient to change and perturbation
	Moderate ✓	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Direct coolwater fish habitat present within the study area. Habitat may be used as feeding and rearing habitat. No critical habitat was identified.
	Moderate ✓	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Direct coolwater fish habitat is present within the study area and the watercourse is permanently flowing. Species present and habitat type are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is coolwater, stable and resistant to change.
	Moderate ✓	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open footed structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as direct fish habitat. This watercourse will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/ circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
	MTO W.P. No.:		
Section B	Project Information		
	Types of Activities:		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	<input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R7: Tributary of Little Rouge Creek	
	GPS Coordinates: 17T 643109 m E 4859368 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at R7		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coolwater timing window for in water works (July 1st to September 15th) Culvert footings will be located outside of the bankfull width of the watercourse All work to be completed "in the dry". Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent coolwater fish habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: R7a: Tributary of Little Rouge Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 	
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

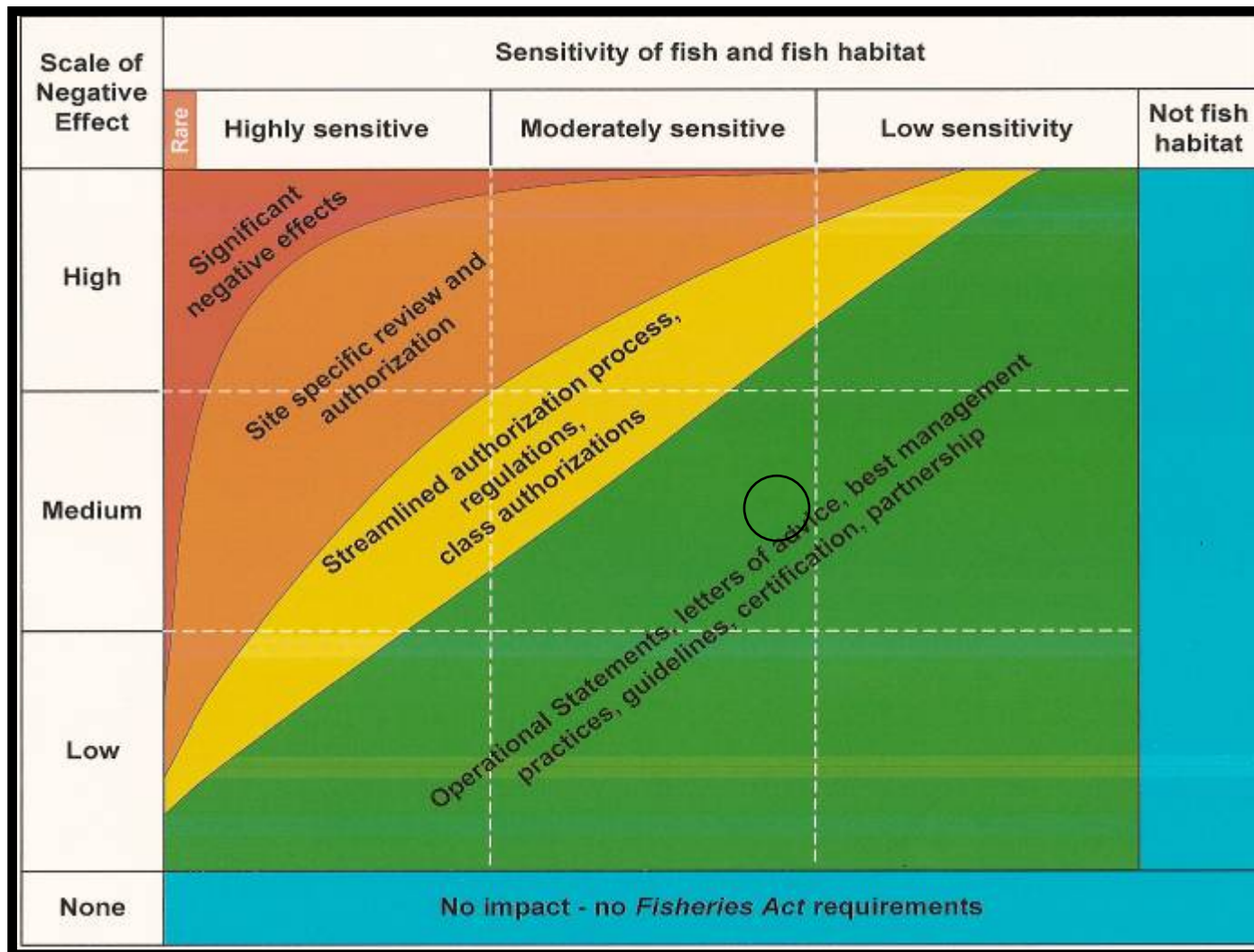
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	Ephemerally flowing, direct coolwater fish habitat is present within the study area. Species present are moderately resilient to change and perturbation
	Moderate ✓	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over-wintering habitat, nursery, rearing habitat).	Low ✓	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Ephemeral, direct coolwater fish habitat present within the study area. Habitat within the study area is of low quality. No critical habitat was identified.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Direct coolwater fish habitat is present within the study area and the watercourse is ephemerally flowing. Species present and habitat type are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low ✓	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is ephemeral, coolwater, stable and resistant to change.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open footed structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as direct fish habitat. This watercourse will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
	MTO W.P. No.:		
Section B	Project Information		
	Types of Activities:		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	<input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R7a: Tributary of Little Rouge Creek	
	GPS Coordinates: 17T 643257 m E 4859331 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at R7a		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coolwater timing window for in water works (July 1st to September 15th) Culvert footings will be located outside of the bankfull width of the watercourse All work to be completed "in the dry". Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Ephemeral coolwater fish habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet				
<p>Impact Description (describe project impacts to fish & fish habitat): Channel realignment, CSP relocation, will result in an alteration of indirect fish habitat. Form and function will be maintained</p>	<p>MTO Assessor: Judson Venier Waterbody: R8: Tributary of Little Rouge Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>		
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p>				
<p>Use PoE Diagrams and attach if necessary</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center; border: none;"> <p>Land-based Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p> </td> <td style="width: 50%; text-align: center; border: none;"> <p>In-water Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues </td> </tr> </table>			<p>Land-based Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p>	<p>In-water Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
<p>Land-based Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p>	<p>In-water Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 			
<p>Residual Negative Effects from Aquatic Effects Assessment*:</p> <p><input type="checkbox"/> Residual Negative Effects: (Describe): _____</p>				
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	<p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers 		

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

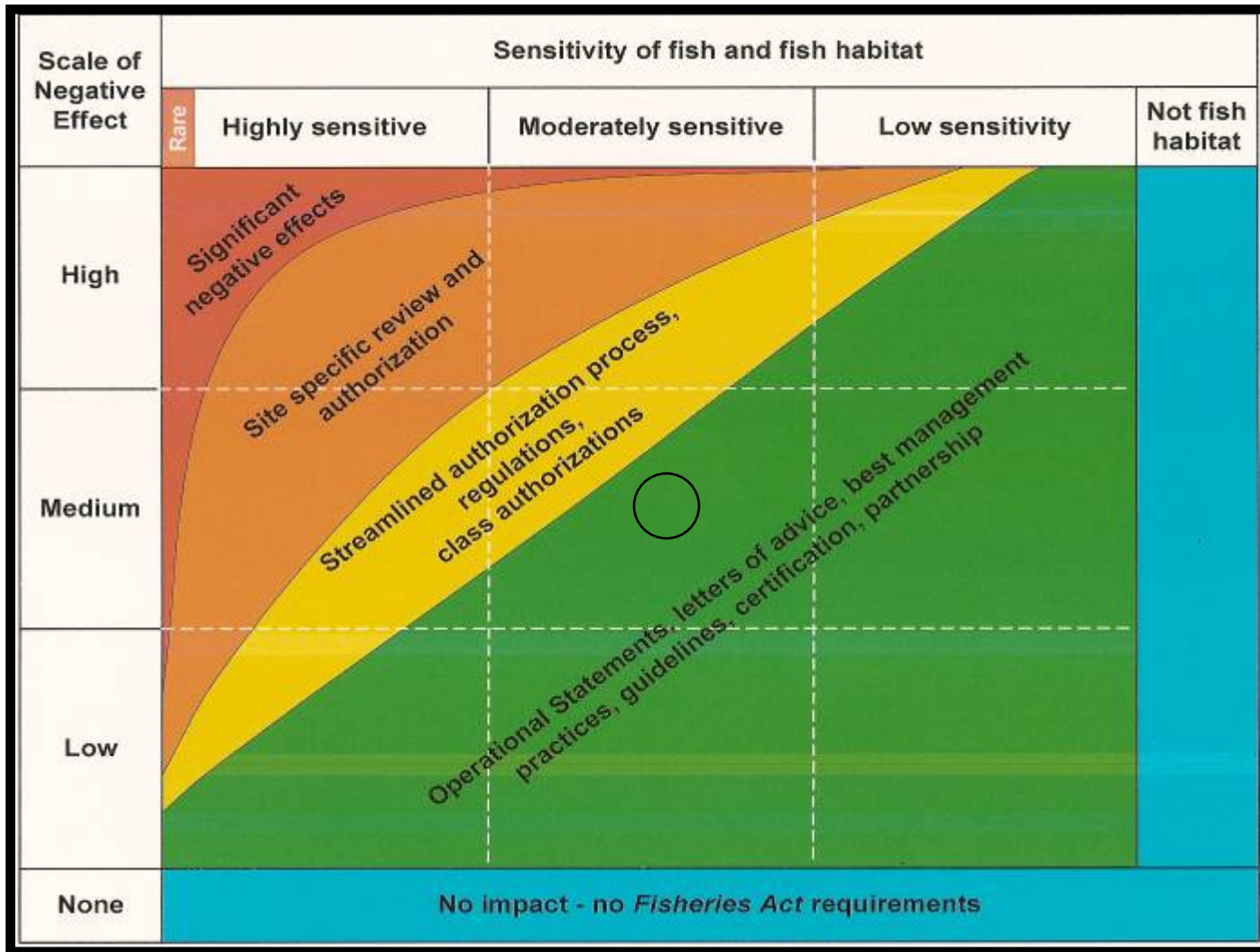
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	Direct coolwater fish habitat is present within the study area. Coolwater species are moderately resilient to change and perturbation
	Moderate ✓	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Direct coolwater fish habitat present within the study area. Habitat may be used as feeding and rearing habitat. No critical habitat was identified.
	Moderate ✓	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Direct coolwater fish habitat is present within the study area and the watercourse is permanently flowing. Species present and habitat type are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is coolwater, stable and moderately resistant to change.
	Moderate ✓	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open footed structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as direct fish habitat. This watercourse will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.



A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
	MTO W.P. No.:		
Section B	Project Information		
	Types of Activities:		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	<input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R8: Tributary of Little Rouge Creek	
	GPS Coordinates: 17T 643840 m E 4859656 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at R8		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR cool/coldwater timing window for in water works (July 1st to September 15th) Culvert footings will be located outside of the bankfull width of the watercourse All work to be completed "in the dry". Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 			
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Direct, coolwater fish habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet						
<p>Impact Description (describe project impacts to fish & fish habitat): Channel realignment, CSP relocation, will result in an alteration of indirect fish habitat. Form and function will be maintained</p>	<p>MTO Assessor: Judson Venier Waterbody: R9: Tributary of Little Rouge Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>				
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p>						
<p>Use PoE Diagrams and attach if necessary</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: center; width: 50%;">Land-based Activities</th> <th style="text-align: center; width: 50%;">In-water Activities</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top; border: none;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input type="checkbox"/> No Residual Effects – Effects Fully Mitigated </td> <td style="vertical-align: top; border: none;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues </td> </tr> </tbody> </table>			Land-based Activities	In-water Activities	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input type="checkbox"/> No Residual Effects – Effects Fully Mitigated 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
Land-based Activities	In-water Activities					
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<p>Residual Negative Effects from Aquatic Effects Assessment*:</p> <p><input checked="" type="checkbox"/> Residual Negative Effects: (Describe): Permanent alteration of intermittent, indirect fish habitat</p>						
<table style="width: 100%; border: none;"> <tbody> <tr> <td style="vertical-align: top; width: 33%; border: none;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage </td> <td style="vertical-align: top; width: 33%; border: none;"> <ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ </td> <td style="vertical-align: top; width: 33%; border: none;"> <p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers </td> </tr> </tbody> </table>			<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	<p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers 	
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* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

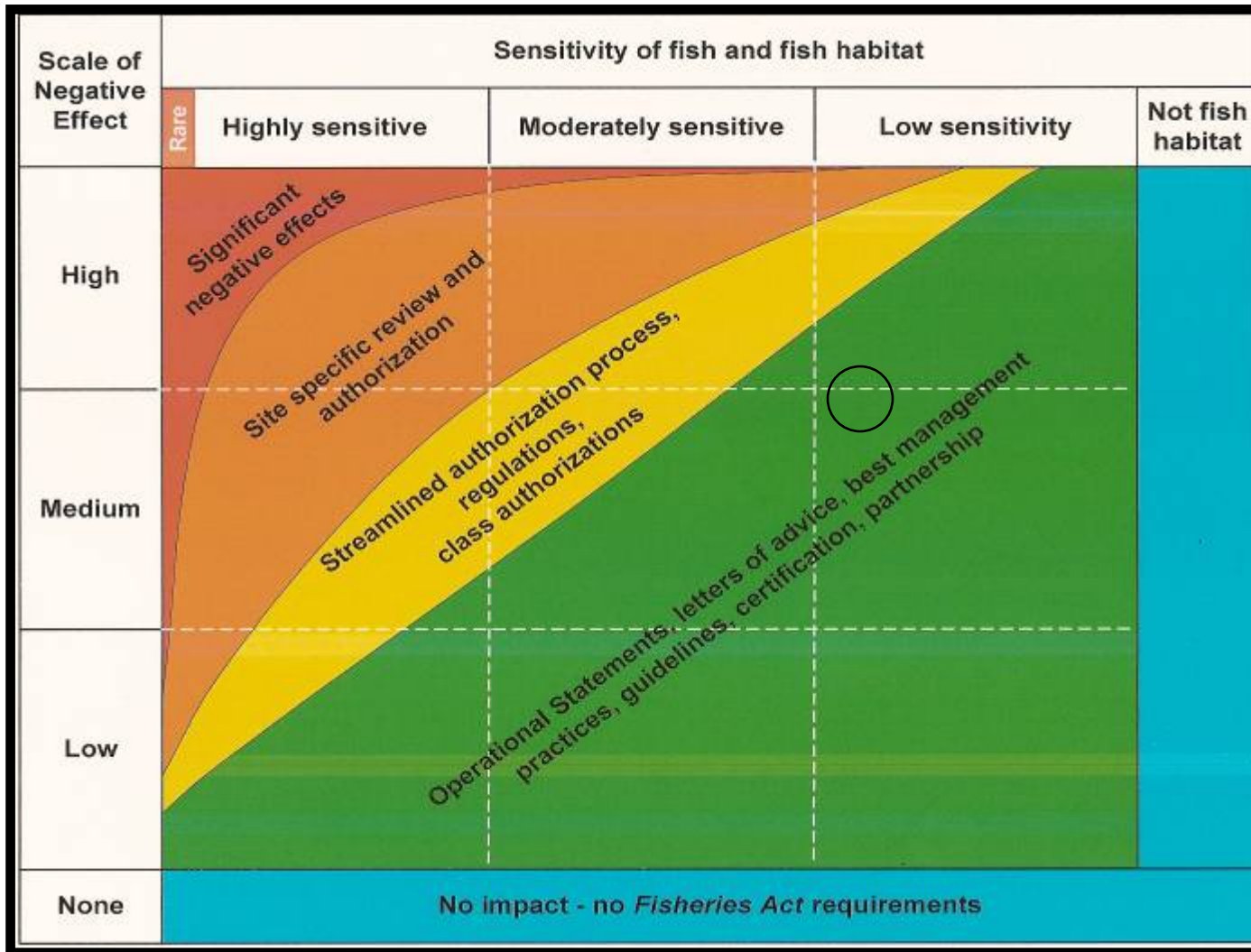
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	Intermittent, indirect coolwater fish habitat is present within the study area. Coolwater species are moderately resilient to change and perturbation
	Moderate ✓	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low ✓	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	This watercourse is not directly used by fish
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Indirect coolwater fish habitat is present within the study area and the watercourse is intermittently flowing. Species present and habitat type are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low ✓	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is coolwater and intermittent, therefore is stable and resistant to change.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	A small section of intermittently flowing channel is being affected.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater than one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more than one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The channel realignment will result in permanent alteration of the existing channel.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low □	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Habitat will be permanently removed.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High ✓	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The proposed channel realignment and culvert relocation will result in permanent alteration of indirect fish habitat, based on the moderate/high scale of negative effects and low sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		
	<input type="checkbox"/> Ditching/Storm water management	<input type="checkbox"/> Shoreline stabilization	<input checked="" type="checkbox"/> Culverts
	<input checked="" type="checkbox"/> Channel modifications	<input type="checkbox"/> Riparian vegetation management	<input type="checkbox"/> Fords
	<input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Bridges	<input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Markham	Municipality/District/County: Region of York	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): R9: Tributary of Little Rouge Creek	
	GPS Coordinates: 17T 644309 m E 4859602 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
Description of Project: MTO will be realigning a section and relocating a CSP at intermittent, indirect fish habitat.			
Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".			
Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows):			
<ul style="list-style-type: none"> Construction will be completed during the MNR cool/coldwater timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. Form and function will be maintained with the realigned channel. 			
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Intermittent, indirect, coolwater fish habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: P1: Petticoat Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities		In-water Activities
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated 		<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

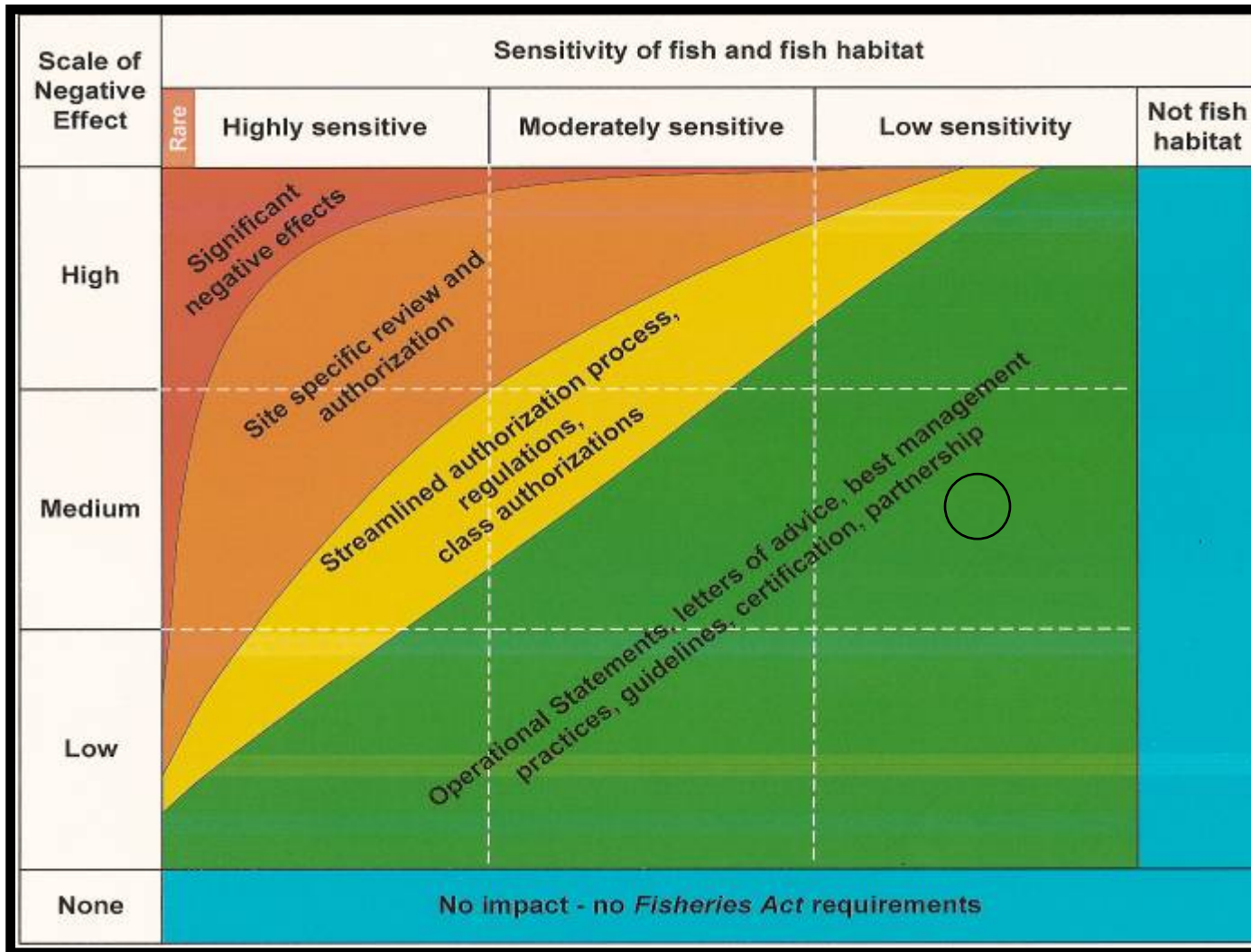
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low ✓	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	This watercourse is ephemeral and no direct fish habitat is present within the study area. The watercourse within the study area has poor connection to downstream habitat.
	Moderate □	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High □	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low ✓	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	No direct fish habitat present within the subject watercourse or study area. This watercourse supports downstream fish communities indirectly.
	Moderate □	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High □	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	No fish species present within the subject watercourse or study area. The watercourse is ephemeral, and a defined channel is not present.
	Moderate □	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High □	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low ✓	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is stable and resistant to change due to the ephemeral flow conditions.
	Moderate □	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High □	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	A concrete circular pipe, x m in diameter will be installed at this crossing. A new permanent footprint of x m will result.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater than one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more than one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the ephemeral habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	This feature will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Low sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input type="checkbox"/> Bridges		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Species:	SAR Location:	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): P1: Petticoat Creek	
	GPS Coordinates: 17T 645216 m E 4860351 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing a concrete circular pipe crossing structure at P1		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR warmwater timing window for in water works (July 1st to March 31st) • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Ephemeral, no direct fish habitat. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: D4: Tributary of West Duffins Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 	
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

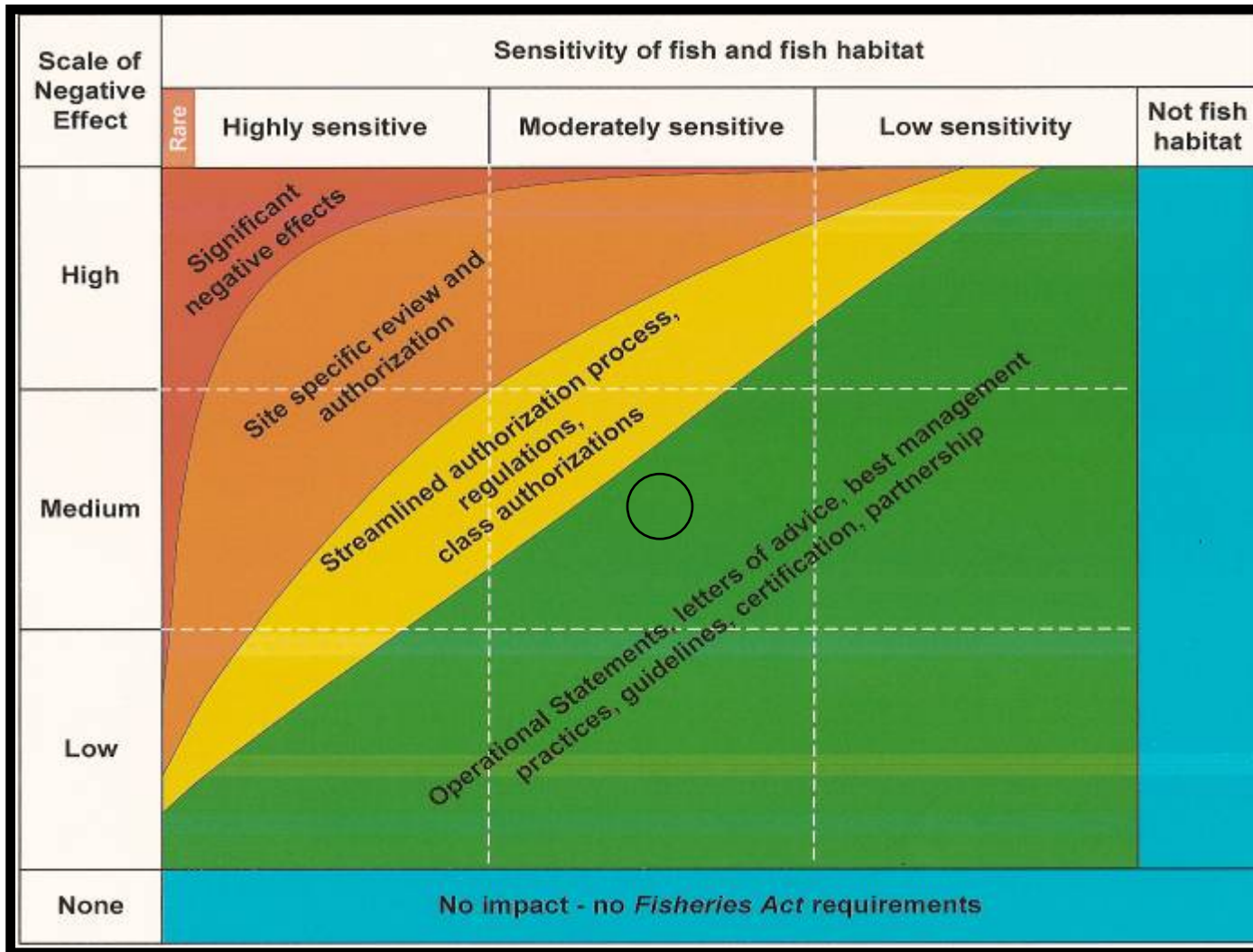
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	This watercourse is intermittent, and seasonal coldwater fish habitat is present within the study area. Coldwater fish species are highly sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input checked="" type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Seasonal coldwater fish habitat occurs within the subject watercourse or study area. The watercourse itself within the study area is highly degraded and likely can only function as a migratory corridor.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input checked="" type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Seasonal coldwater fish habitat is present within the study area. Species present and habitat type are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is moderately stable and resistant to change due to the seasonal flow conditions.
	Moderate <input checked="" type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open foot structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the seasonal habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	This feature will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	<input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D4: Tributary of West Duffins Creek	
	GPS Coordinates: 17T 646868 m E 4862482 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open foot crossing structure at D4		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish". Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coldwater timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Culvert footings will be located outside of the bankfull width of the watercourse Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Intermittent, coldwater fish habitat. See Template 10.2 for details.			
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: D10: Tributary of Whitevale Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities		In-water Activities
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing 		<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
<input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated		
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

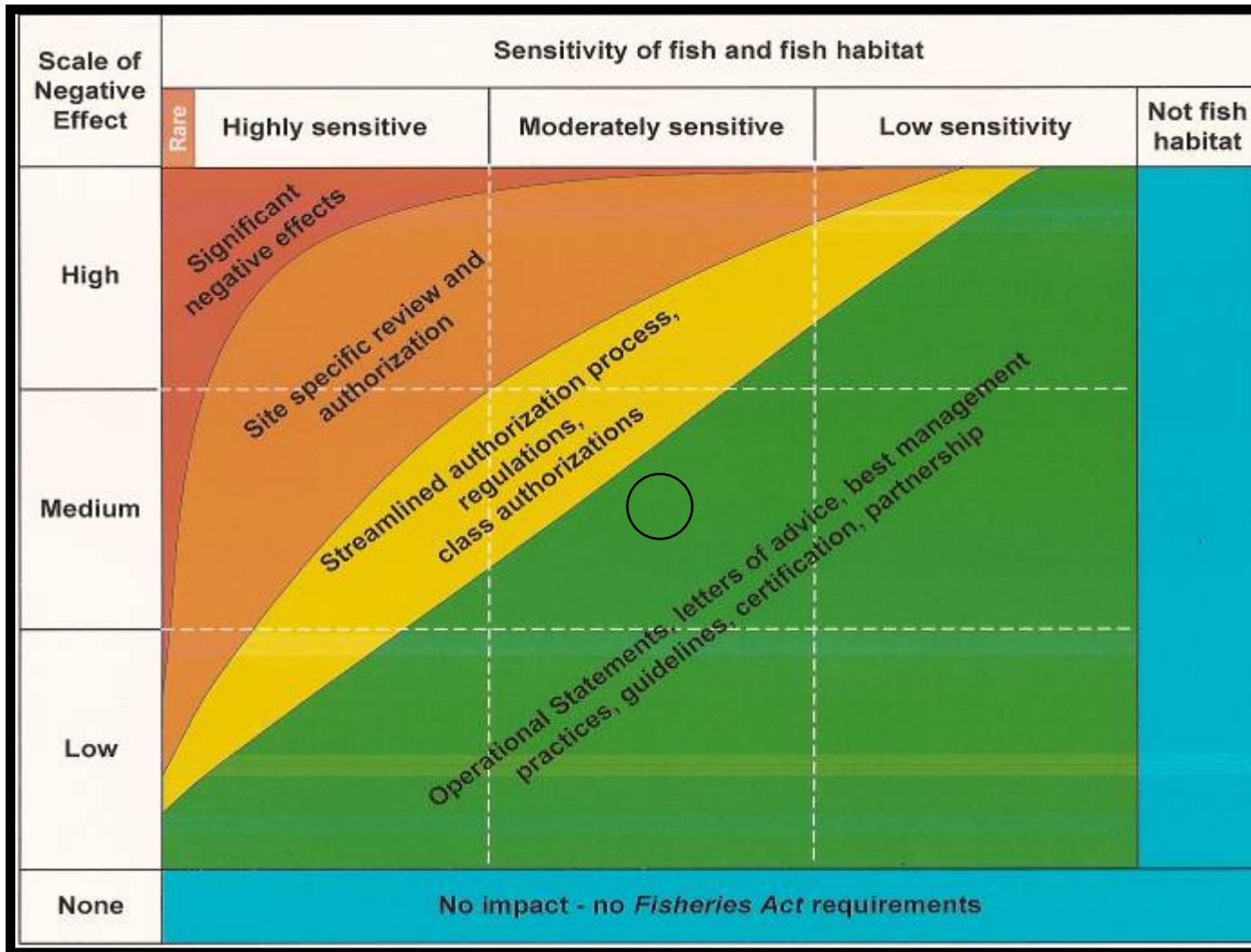
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	This watercourse is intermittent, and no direct fish habitat is present within the study area. This tributary contributes to coldwater fish downstream of the study area. Coldwater fish species are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input checked="" type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	No direct fish habitat present within the subject watercourse or study area. This watercourse supports downstream fish communities indirectly.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input checked="" type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	No fish species present within the subject watercourse or study area. Habitat type and supported fish species are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is moderately stable and resistant to change due to the seasonal flow conditions.
	Moderate <input checked="" type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open foot structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in indirect fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the seasonal habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	This feature will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of indirect fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	<input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SAR Location:	
	Species:		
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D10: Tributary of Whitevale Creek	
	GPS Coordinates: 17T 648871 m E 4862808 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open foot crossing structure at D10		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coldwater timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Culvert footings will be located outside of the bankfull width of the watercourse Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Intermittent, coldwater fish habitat. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: D11: Tributary of Ganatsekiagon Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 	
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

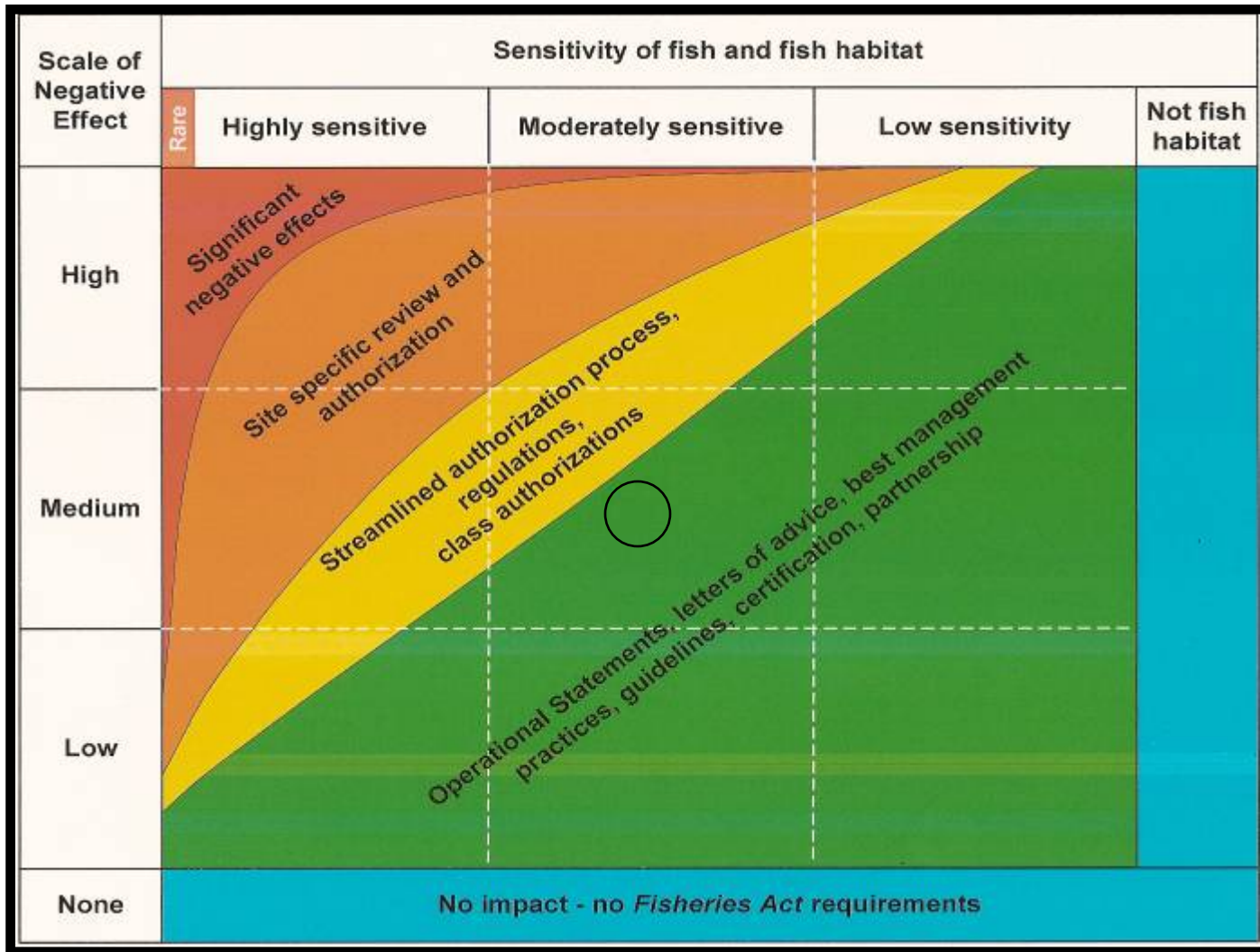
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	MNR has indicated this watercourse should be treated as a high sensitivity system, however this watercourse is intermittent, and no direct fish habitat is present within the study area. The downstream communities support coldwater fish and Redside Dace. Coldwater species and Redside Dace are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High ✓	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over-wintering habitat, nursery, rearing habitat).	Low ✓	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	No direct fish habitat present within the subject watercourse or study area. This watercourse supports downstream fish communities indirectly.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	No fish species present within the subject watercourse or study area. This habitat type is prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system has low resistance to change due to the coldwater conditions. However, the watercourse is seasonal.
	Moderate ✓	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open foot structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in indirect fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the seasonal habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	This feature will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.


LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.



A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of indirect fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input type="checkbox"/> Bridges		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: This watercourse is contributing Redside Dace habitat	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D11: Tributary of Ganatsekiagon Creek	
	GPS Coordinates: 17T 649334 m E 4863064 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open foot crossing structure at D11		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) • All work to be completed "in the dry". • Culvert footings will be located outside of the bankfull width of the watercourse • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Intermittent, indirect coldwater fish habitat, Redside Dace contributing. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: D12: Tributary of Ganatsekiagon Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 	
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

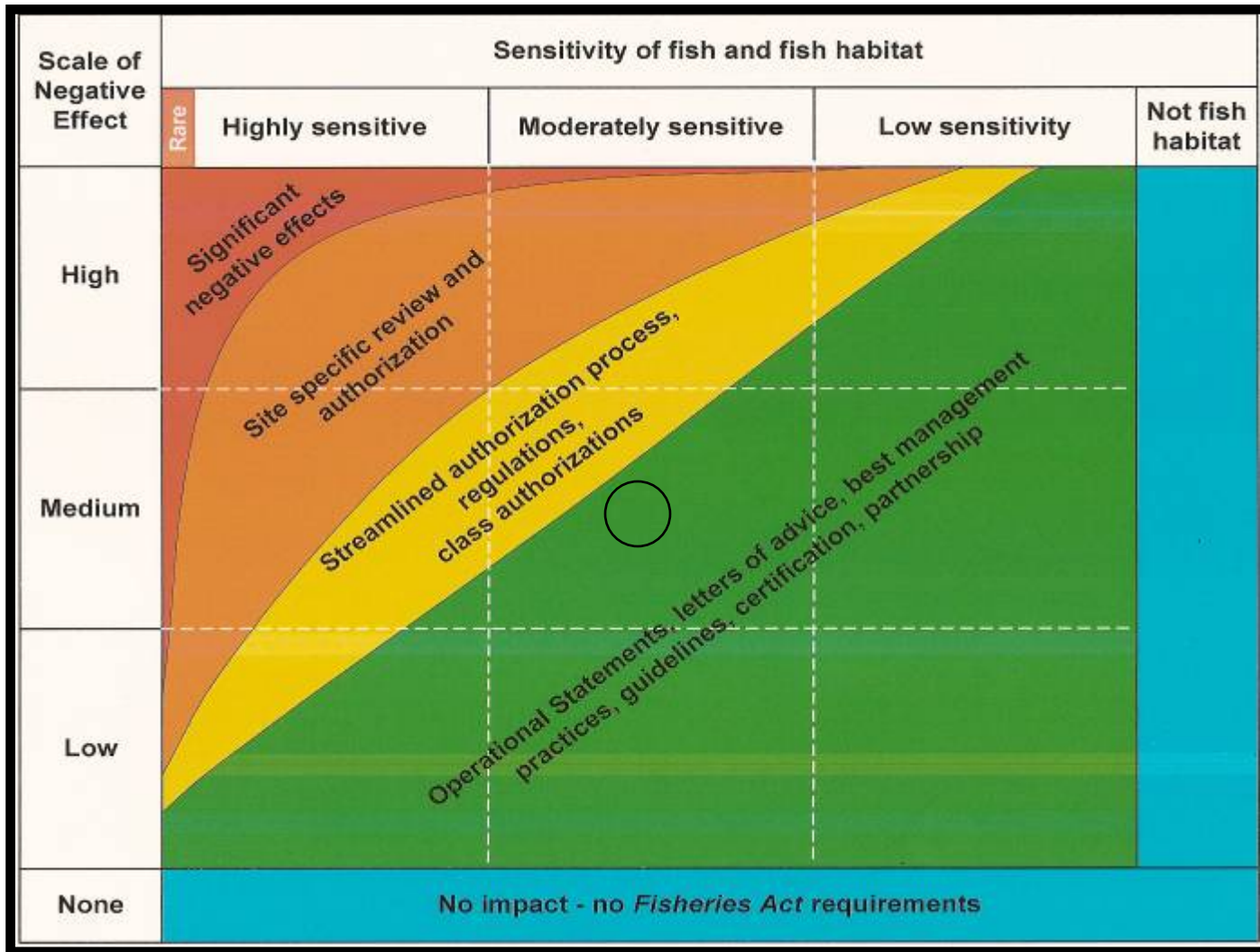
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	MNR has indicated this watercourse should be treated as a high sensitivity system, however this watercourse is ephemeral, and no direct fish habitat is present within the study area. The downstream communities support coldwater fish and Redside Dace. Coldwater species and Redside Dace are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High ✓	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over-wintering habitat, nursery, rearing habitat).	Low ✓	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	No direct fish habitat present within the subject watercourse or study area. This watercourse supports downstream fish communities indirectly.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	No fish species present within the subject watercourse or study area. This habitat type is prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system has low resistance to change due to the coldwater conditions. However, the watercourse is ephemeral.
	Moderate ✓	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open foot structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in indirect fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the ephemeral habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	This feature will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of indirect fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input type="checkbox"/> Bridges		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: This watercourse is contributing Redside Dace habitat.	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D12: Ganatsekiagon Creek	
	GPS Coordinates: 17T 650317 m E 4863508 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open foot crossing structure at D12		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) • All work to be completed "in the dry". • Culvert footings will be located outside of the bankfull width of the watercourse • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Ephemeral, indirect coldwater fish habitat Redside Dace contributing. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: D17: Tributary of Brougham Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 	
<input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated		
Residual Negative Effects from Aquatic Effects Assessment*:		
<input type="checkbox"/> Residual Negative Effects: (Describe): _____		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

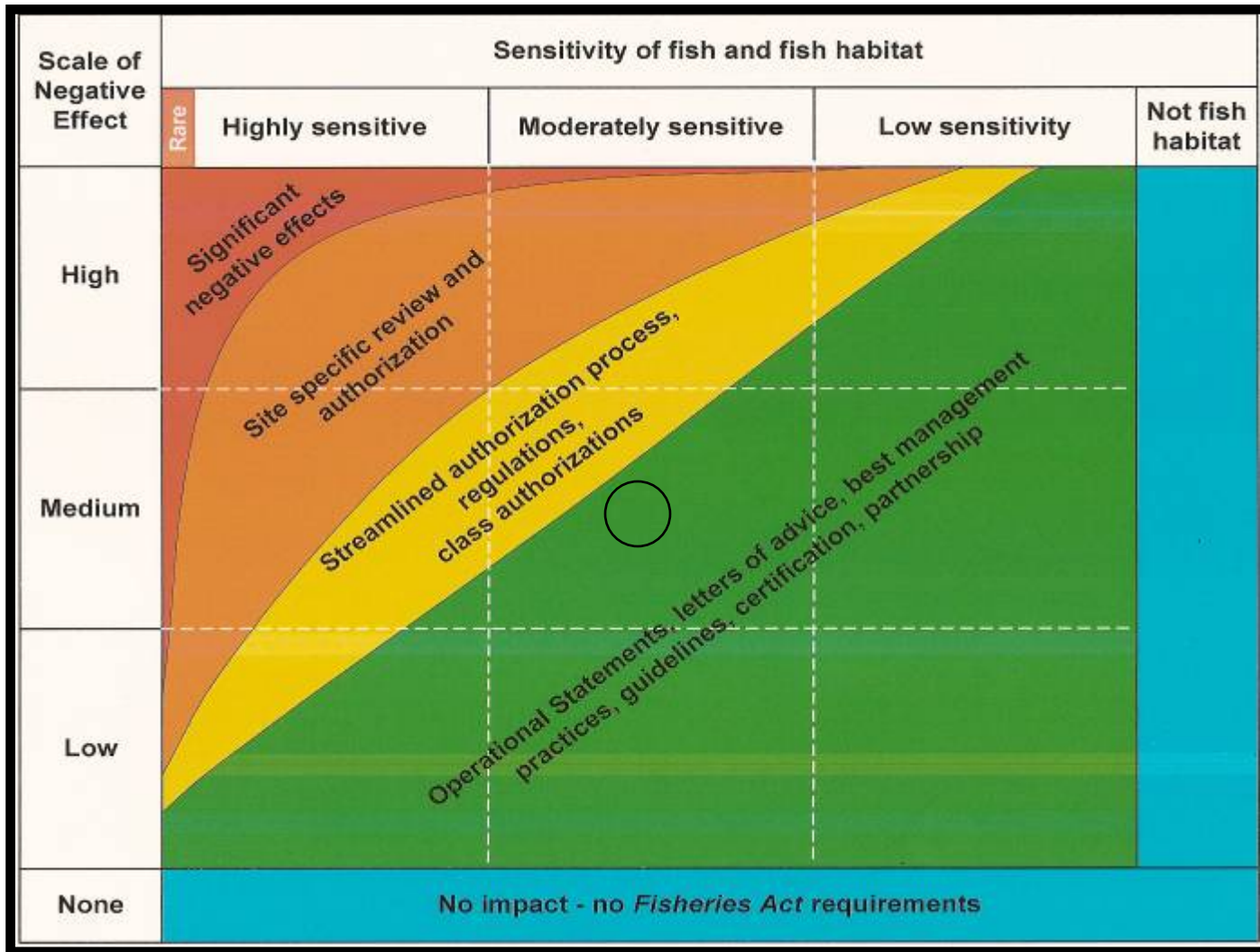
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	MNR has indicated this watercourse should be treated as a high sensitivity system. This watercourse is permanently flowing, however, no direct fish habitat is present within the study area. The downstream communities support coldwater fish and Redside Dace. Coldwater species and Redside Dace are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High ✓	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low ✓	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	No direct fish habitat present within the subject watercourse or study area. This watercourse supports downstream fish communities indirectly.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low ✓	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	No fish species present within the subject watercourse or study area. This habitat type is prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system has low resistance to change due to the coldwater conditions. However, the watercourse is functioning as indirect habitat, therefore is without specialized habitat.
	Moderate ✓	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open foot structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in indirect fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the indirect habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	This feature will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.


LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.



A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of indirect fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities:		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	<input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: This watercourse is Redside Dace contributing habitat.	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D17: Tributary of Brougham Creek	
	GPS Coordinates: 17T 652626 m E 4864379 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open foot crossing structure at D17		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish". Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Culvert footings will be located outside of the bankfull width of the watercourse Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent, indirect coldwater fish habitat. Contributing Redside Dace See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet						
<p>Impact Description (describe project impacts to fish & fish habitat): Culvert installation will result in a minor change in structure and cover</p>	<p>MTO Assessor: Judson Venier Waterbody: D8: Tributary of Whitevale Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>				
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p> <p>Use PoE Diagrams and attach if necessary</p> <table style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Land-based Activities</th> <th style="text-align: center;">In-water Activities</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues </td> </tr> </tbody> </table>			Land-based Activities	In-water Activities	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
Land-based Activities	In-water Activities					
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<p>Residual Negative Effects from Aquatic Effects Assessment*:</p> <p><input type="checkbox"/> Residual Negative Effects: (Describe): _____</p>						
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	<p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers 				

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

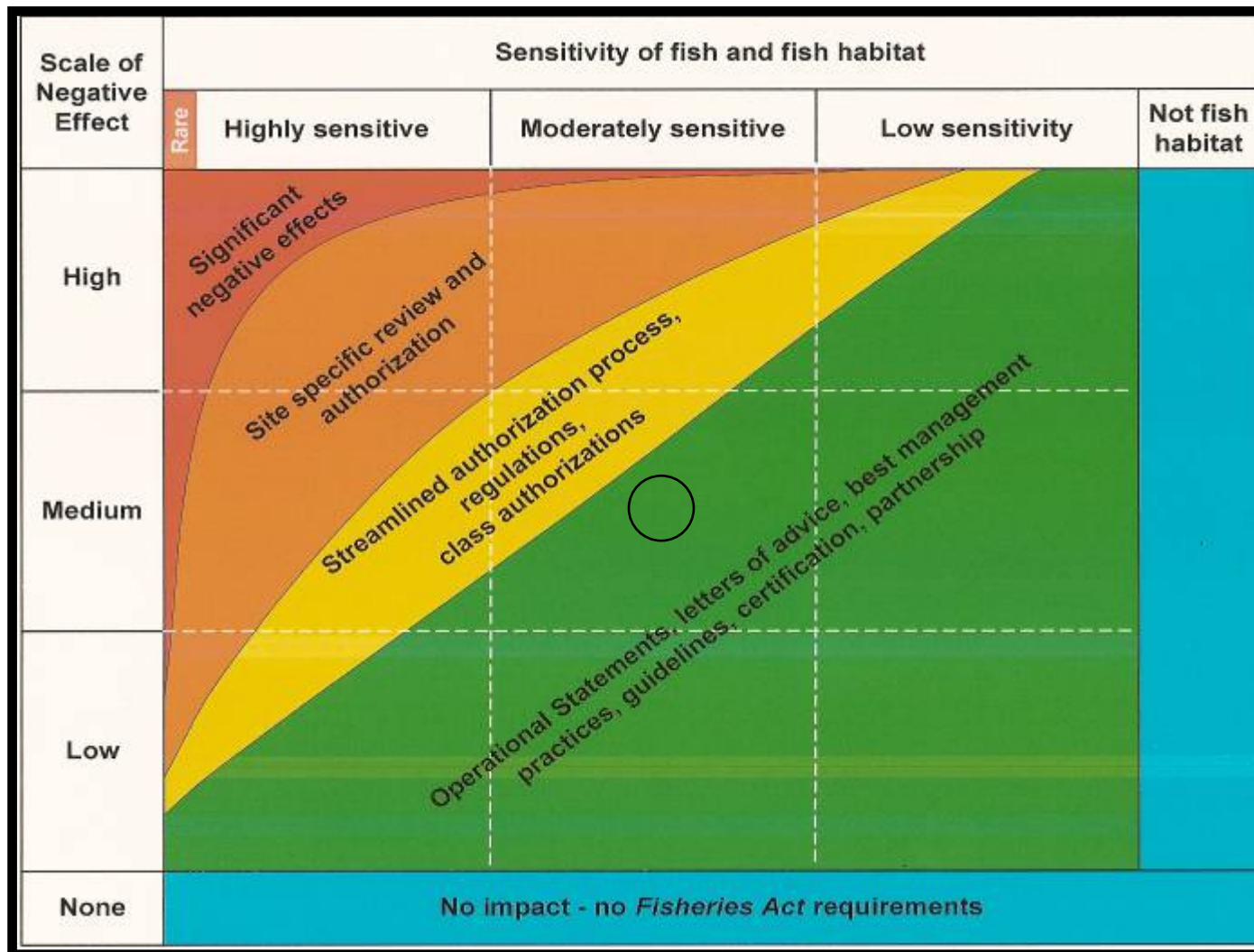
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	This watercourse is intermittent, and no direct fish habitat is present within the study area. This tributary contributes to coldwater fish downstream of the study area. Coldwater fish species are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input checked="" type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	No direct fish habitat present within the subject watercourse or study area. This watercourse supports downstream fish communities indirectly.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input checked="" type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	No fish species present within the subject watercourse or study area. Habitat type and supported fish species are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is moderately stable and resistant to change due to the seasonal flow conditions.
	Moderate <input checked="" type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open foot structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in indirect fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the seasonal habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	This feature will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.


LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/ circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.



A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk ✓	Low risk. The culvert installation will cause a permanent footprint of approximately x m ² of indirect fish habitat. Despite the permanent footprint which the culvert installation will cause, the works will not result in "Serious Harm" based on the Medium scale of negative effects and Moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk □	
	High Risk □	
	Significant Effects □	

MTO PROJECT NOTIFICATION FORM 1

LOW RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager: XX	Email:	
	Telephone No.:	Fax No.:	
MTO W.P. No.:			
Section B	Project Information		
	Types of Activities: <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Channel modifications <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Shoreline infilling <input type="checkbox"/> Bridges		<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Species:	SAR Location:	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D8: Tributary of Whitevale Creek	
	GPS Coordinates: 17T 648388 m E 4862861 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open foot crossing structure at D8		
	Rationale for Low Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish".		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coldwater timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Culvert footings will be located outside of the bankfull width of the watercourse Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Intermittent, coldwater fish habitat. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a low risk of impact to fish and fish habitat.		
	Name: Judson Venier	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	



Section
10

MINISTRY OF TRANSPORTATION

APPENDIX 10.B
Project Notification Form 2
(“Moderate/High Risk”) with
Checklist and Template Tables

Environmental Guide for Fish and Fish Habitat

Version: March 2013

VERSION HISTORY

VERSION #	DATE	DESCRIPTION OF MAJOR CHANGE
2.0	Dec-2008	<ul style="list-style-type: none">• New Appendix A.2 with Notification Form Checklist and Template Tables added.
3.0	Jun-2009	<ul style="list-style-type: none">• Templates 10.2 & 10.3 updated to clarify type of information to be entered.• GPS Coordinates and MTO Region added to No HADD Notification Form
4.0	Mar-2013	<ul style="list-style-type: none">• Removed "HADD" terminology and updated to "Moderate/High Risk"• Removed references Comprehensive Fisheries Assessment• Updated Template numbers• Updated DFO Risk Management Framework to January 2012 Version

MODERATE/HIGH RISK NOTIFICATION FORM CHECKLIST

Project Name:	Project #:
Required Contents for Moderate/High Risk Notification Form	QA/QC Checklist (✓ when complete)
GENERAL	
Project within 30 m of a watercourse but does not meet conditions of an Operational Statement (as per Step 1 of the Protocol)	✓
Collected fish and fish habitat information from MNR (as per Step 2 of the Protocol)	✓
Fish and fish habitat field assessment conducted	✓
SECTION A: PROPONENT INFORMATION	
MTO staff contact information (e.g. project manager, maintenance superintendent)	
SECTION B: PROJECT INFORMATION	
<i>Types of Activities</i>	
– Check only one, the most relevant activity	
<i>Species at Risk</i>	
– Check either “yes” or “no” as indicated on DFO’s Aquatic Species at Risk Reach Maps or as provided by MNR SAR Biologist. – If “yes” list species (if known)	✓
<i>Location</i>	
– If Species at Risk have been identified, provide UTM / GPS Coordinates for the known location within the study area	✓
<i>Nearest Community</i>	
– Provide the name of the nearest city/town	✓
<i>Municipality</i>	
– Provide the lower level municipality name(s) in which the project is located	✓
<i>Location of Project</i>	
– Provide a concise description of the geographic location of entire project. The location should be related to features easily identified on a map such as a bridge, stream confluence, or road intersection.	✓
<i>GPS Coordinates</i>	
– GPS coordinates for each of the waterbodies within the project limits	✓
<i>Name of Waterbody</i>	
– Provide the name for each applicable waterbody – Where the form is for numerous waterbodies attach a topographic map or Location of Work Table (Template 10.1) listing all waterbody names and locations	✓
<i>Proposed Start / Completion Dates</i>	
– Provide dates in long format e.g. September 15, 2013.	

Project Name:	Project #:
Required Contents for HADD Notification Form	QA/QC Checklist (✓ when complete)
<i>Description of Project</i>	
Provide a concise description of the works / undertakings in and within 30 m of waterbodies	✓
<i>Rationale for Moderate/High Risk Determination</i>	
– State that a Fisheries Assessment was conducted and the criteria used in making decision (e.g. High sensitivity and High Scale of Negative Effects).	✓
– Attach Aquatic Effects Assessment Summary (Template 10.3)	✓
– Attach Risk Assessment Worksheet (Template 10.4)	✓
<i>Proposed Mitigation</i>	
– Provide in-water timing windows	✓
– List Ontario Standard Specifications and MTO Special Provisions to be used	
– List any other relevant mitigation measures	
<i>Description of Fish and Fish Habitat</i>	
– Provide fish and fish habitat sensitivity as provided by MNR or through the Fisheries Assessment	✓
– List fish species present and any sensitive habitat as provided by MNR or through the Fisheries Assessment	✓
– Provide a summary of existing fish and fish habitat conditions, attach Existing Fish and Fish Habitat Conditions Summary Table (see Template 10.2)	✓
– Reference Fish and Fish Habitat Existing Conditions Report or Fish and Fish Habitat Impact Assessment Report	✓
<i>Attached Documents</i>	
Include reference to attached documents, such as:	
– Templates, tables and maps listed in above; site photos	✓
– Design drawings depicting work in and within 30 m of waterbodies	
– Fish and Fish Habitat Existing Conditions Report or Fish and Fish Habitat Impact Assessment Report (or combined report)	✓
– Relevant components of the TESR	
– Any others as warranted by the complexity of the project or as requested by local DFO.	
SECTION C: MTO SIGNATURES	
<i>1st Signature</i>	
– The Fisheries Assessment Specialist who conducted the assessment	
<i>2nd Signature</i>	
– MTO manager	

TEMPLATE 10.1 Location of Work Table

Waterbody	Highway	Municipality	Location of Stream (GPS Coordinates)
D9: Tributary of Whitevale Creek	Highway 407 Transitway	City of Pickering	17T 648823 m E 4862785 m N
D13: Tributary of Urfe Creek	Highway 407 Transitway	City of Pickering	17T 651137 m E 4863835 m N
D14: Tributary of Urfe Creek	Highway 407 Transitway	City of Pickering	17T 651228 m E 4863681 m N
D16: Brougham Creek	Highway 407 Transitway	City of Pickering	17T 652461 m E 4864320 m N
D18: Tributary of Brougham Creek	Highway 407 Transitway	City of Pickering	17T 653152 m E 4864912 m N

NOTES:

- Complete this table if the Notification Form addresses many waterbodies. Alternatively, a topographic map clearly depicting all applicable waterbodies could be used.
- Template 10.1 - Location of Work Table may be included in the Fish and Fish Habitat Existing Conditions Report.

TEMPLATE 10.2 Existing Fish and Fish Habitat Conditions Summary Table

Waterbody	Flow (Permanent, Intermittent or Ephemeral)	Thermal Regime (warm/cool/cold)	Substrate Type	Vegetation (Riparian & In-Stream*)	Supports a Fishery (directly, indirectly or none)	Fish Species Present**
D9: Tributary of Whitevale Creek	Ephemeral	Warmwater	Silt, detritus	Grasses, some cattail, sedges, smartweed, cultural meadow vegetation	Indirect	Rainbow Trout, Brook Trout, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)
D13: Tributary of Urfe Creek	Intermittent	Coldwater	Silt, detritus, gravel, sand	Algae, overhanging grasses, cattails, watercress	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015) Northern Redbelly Dace, Fathead Minnow, Brook Stickleback (LGL 2015).
D14: Tributary of Urfe Creek	Permanent	Coldwater	Silt, detritus, gravel, sand	Watercress, overhanging grasses	Direct	Brook Trout, Redside Dace, Pumpkinseed, Mottled Sculpin, Cyprinidae spp. (MNRF 2015)
D16: Brougham Creek	Permanent	Coldwater	Fine substrates, gravel patches	Watercress	Direct	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth

						Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNR 2015)
D18: Tributary of Brougham Creek	Permanent	Coldwater	Cobble, gravel, sand, silt, boulder	None	Direct	American Brook Lamprey, Rainbow Trout, Brown Trout, Brook Trout, Redside Dace, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Rainbow Darter, Slimy Sculpin, Cyprinidae spp. (MNR 2015)

NOTES:

– Template 10.2 - Existing Fish and Fish Habitat Conditions Summary Table should be included in the Fish and Fish Habitat Existing Conditions Report or combined Existing Conditions and Impact Assessment Report.

*In-stream vegetation refers to emergent, submergent and floating aquatic vegetation.

**Please indicate whether this information is from background secondary source data (indicate source) or obtained through field investigations.

TEMPLATE 10.3 Aquatic Effects Assessment Summary Table

Waterbody	Pathway of Effect (s)	Stressor (Potential Impact)	Mitigation Measures	Residual Effects
D9,D13	L1 (Vegetation Clearing); L2 (Grading); L3 (Excavation); L4 (Riparian Planting); B2 (Use of Industrial Equipment); W1 (Placement of Material); W7 (Flow management)	Change in sediment concentrations	MTO standard erosion and sedimentation controls (OPSS 805), Seed and Cover (OPSS 572), Topsoil (OPSS 570), Light Duty Silt Fence Barriers, Temporary Rock Flow Checks, and Construction Monitoring	With proper implementation and maintenance of mitigation measures, no permanent negative effects will occur to habitats downstream of the affected section
	L1 L3 L4 W7	Change in water temperature	Manage all water from un/dewatering activities to prevent excess heating before re-entering waterbody, avoid all existing trees where possible (OPSS 565), re-establish riparian vegetation as quickly as possible	With proper implementation and maintenance of mitigation measures, no negative effects will occur to downstream habitats
	L1 L4 W1 W7	Change in nutrient concentrations	Manage all water from un/dewatering activities to prevent contamination before re-entering watercourses	With proper implementation and maintenance of mitigation measures, no negative effects will occur to downstream habitats
	L1 L4 W1 W7 W9	Change in food supply	Re-establish riparian vegetation as quickly as possible	With proper implementation and maintenance of mitigation measures, no negative effects will occur to downstream habitats
	L1 L4 B2 W7 W9	Change in contaminant concentrations	Operate, store and maintain (e.g., re-fuel, lubricate) all equipment and associated materials in a manner that prevents the entry of any deleterious substance to the	With proper implementation and maintenance of mitigation measures, no negative effects will occur to downstream habitats

			watercourses. Any part of equipment entering the watercourse or operating on the bank shall be free of fluid leaks and externally cleaned/ degreased, ensure a Spills Management Plan is on-site at all times (including all necessary materials, personnel, etc.) for implementation in the event of an accidental spill during construction, MTO standard erosion and sediment controls as detailed above	
	L4 W1 W7	Change in habitat structure and cover	This channel is being realigned	Habitat structure and cover will be permanently altered
	B2	Potential mortality of fish/eggs/ova from equipment	Relocate stranded fish (if present) from isolated/unwatered areas, construction will occur when the channel is dry	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W3 (Water extraction)	Direct mortality of fish	Relocate stranded fish (if present) from isolated/unwatered areas, construction will occur when the channel is dry	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W7 W8 (Fish passage issues)	Displacement or stranding of fish	Relocate stranded fish (if present) from isolated/unwatered areas, maintain flow; construction will occur when the channel is dry	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W8	Change in access to habitats	Construction will occur when the channel is dry	Habitat will be permanently altered
D14,D16,D18	L1 (Vegetation Clearing); L2 (Grading); L3 (Excavation);	Change in sediment concentrations	MTO standard erosion and sedimentation controls (OPSS 805), Seed and	With proper implementation and maintenance of mitigation measures, no

	L4 (Riparian Planting); B2 (Use of Industrial Equipment); W1 (Placement of Material); W7 (Flow management) W9 (Structure Removal)		Cover (OPSS 572), Topsoil (OPSS 570), Light Duty Silt Fence Barriers, Temporary Rock Flow Checks, and Construction Monitoring	permanent negative effects will occur
	L1 L3 L4 W7	Change in water temperature	Manage all water from un/dewatering activities to prevent excess heating before re-entering waterbody, avoid all existing trees where possible (OPSS 565), re-establish riparian vegetation as quickly as possible	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	L1 L4 W1 W7	Change in nutrient concentrations	Manage all water from un/dewatering activities to prevent contamination before re-entering watercourses	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	L1 L4 W1 W7 W9	Change in food supply	Re-establish riparian vegetation as quickly as possible	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	L1 L4 B2 W7 W9	Change in contaminant concentrations	Operate, store and maintain (e.g., re-fuel, lubricate) all equipment and associated materials in a manner that prevents the entry of any deleterious substance to the watercourses. Any part of equipment entering the watercourse or operating on the bank shall be free of fluid leaks and externally cleaned/ degreased, ensure a Spills Management Plan is on-site at all times	With proper implementation and maintenance of mitigation measures, no negative effects will occur

			(including all necessary materials, personnel, etc.) for implementation in the event of an accidental spill during construction, MTO standard erosion and sediment controls as detailed above	
	L4 W1 W7	Change in habitat structure and cover	For open footed structures, culvert footings will be installed outside of the high water level. Banks will be restored and riparian vegetation will be re-established as soon as possible. For concrete circular structures, the culvert will be countersunk to incorporate natural substrates, a low flow channel and floodplain	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	B2	Potential mortality of fish/eggs/ova from equipment	Relocate stranded fish (if present) from isolated/unwatered areas, maintain flow	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W3 (Water extraction)	Direct mortality of fish	Relocate stranded fish (if present) from isolated/unwatered areas, maintain flow	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W7 W8(Fish passage issues)	Displacement or stranding of fish	Relocate stranded fish (if present) from isolated/unwatered areas, maintain flow; Flow and fish passage will be maintained throughout construction	With proper implementation and maintenance of mitigation measures, no negative effects will occur
	W8	Chance in access to habitats	For open footed structures, flow and fish passage will be maintained throughout	With proper implementation and maintenance of mitigation measures, no

			construction. For the concrete circular structures, flow will be maintained to downstream habitats; however fish passage will be temporarily obstructed during installation.	negative effects will occur
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NOTES:

- Complete the Summary Table for each waterbody that requires a Fisheries Assessment (step 7).
- For details on completing the Aquatic Effects Assessment refer to Section 5 of the Guide and DFO's Practitioners Guide to the Risk Management Framework for DFO Habitat Management Staff.

Pathways of Effects and Residual Negative Effects Matrix

PoE Negative Effect	Vegetation Clearing	Excavation	Riparian Planting	Grading	Cleaning or Maintenance of Bridges or Other Structures	Streamside Livestock Grazing	Use of Explosives	Use of Industrial Equipment	Water Extraction	Addition or Removal of Aquatic Vegetation	Change in Timing, Duration and Frequency of Flow	Structure Removal	Placement of Material or Structures in Water	Dredging	Organic Debris Management	Wastewater Management	Fish Passage Issues
	Change in habitat structure and cover	X		X	X		X				X	X	X	X	X	X	
Change in sediment concentration	X	X	X	X	X	X	X	X		X	X	X	X	X	X		
Change in water temperature	X	X	X			X				X	X					X	
Change in food supply	X		X							X	X	X	X	X	X		
Change in nutrient concentration	X		X			X	X			X	X		X	X	X		
Change in contaminant concentrations	X		X		X		X	X		X	X	X		X	X	X	

Change in baseflow		X															
Change in organic inputs / nutrient concentrations					X												
Change in dissolved oxygen concentrations									X								
Change in pathogens / bacterial levels					X												
Pathogens, disease, vectors, exotics															X		
Change in migration / access to habitat										X					X	X	
Chemical barriers to fish passage					X												
Changes in thermal cues or temperature barriers																	X
Lethal or sublethal effects on fish						X											
Potential mortality of fish / eggs/ ova					X		X										
Direct or indirect mortality of fish					X			X									
Displacement or stranding of fish										X							
Incidental entrainment, impingement or mortality of resident species																	X
Interbasin transfer of species																	X

Issue addressed by other government bodies in Ontario

TEMPLATE 10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet						
<p>Impact Description (describe project impacts to fish & fish habitat): Channel realignment at an ephemerally flowing channel which provides indirect fish habitat.</p>	<p>MTO Assessor: Judson Venier Waterbody: D9: Tributary of Whitevale Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>				
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p> <p>Use PoE Diagrams and attach if necessary</p> <table style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">Land-based Activities</td> <td style="width: 50%; text-align: center;">In-water Activities</td> </tr> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input type="checkbox"/> No Residual Effects – Effects Fully Mitigated </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input checked="" type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues </td> </tr> </table>			Land-based Activities	In-water Activities	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input type="checkbox"/> No Residual Effects – Effects Fully Mitigated 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input checked="" type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
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<p>Residual Negative Effects from Aquatic Effects Assessment*:</p> <p><input checked="" type="checkbox"/> Residual Negative Effects: (Describe): _Permanent alteration of approximately 90 m of ephemeral, indirect fish habitat</p>						
<table style="width: 100%;"> <tr> <td style="width: 33%; vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage </td> <td style="width: 33%; vertical-align: top;"> <ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ </td> <td style="width: 33%; vertical-align: top;"> <p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers </td> </tr> </table>			<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	<p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers 	
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* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix
 NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Template 10.5 – Risk Assessment Worksheet

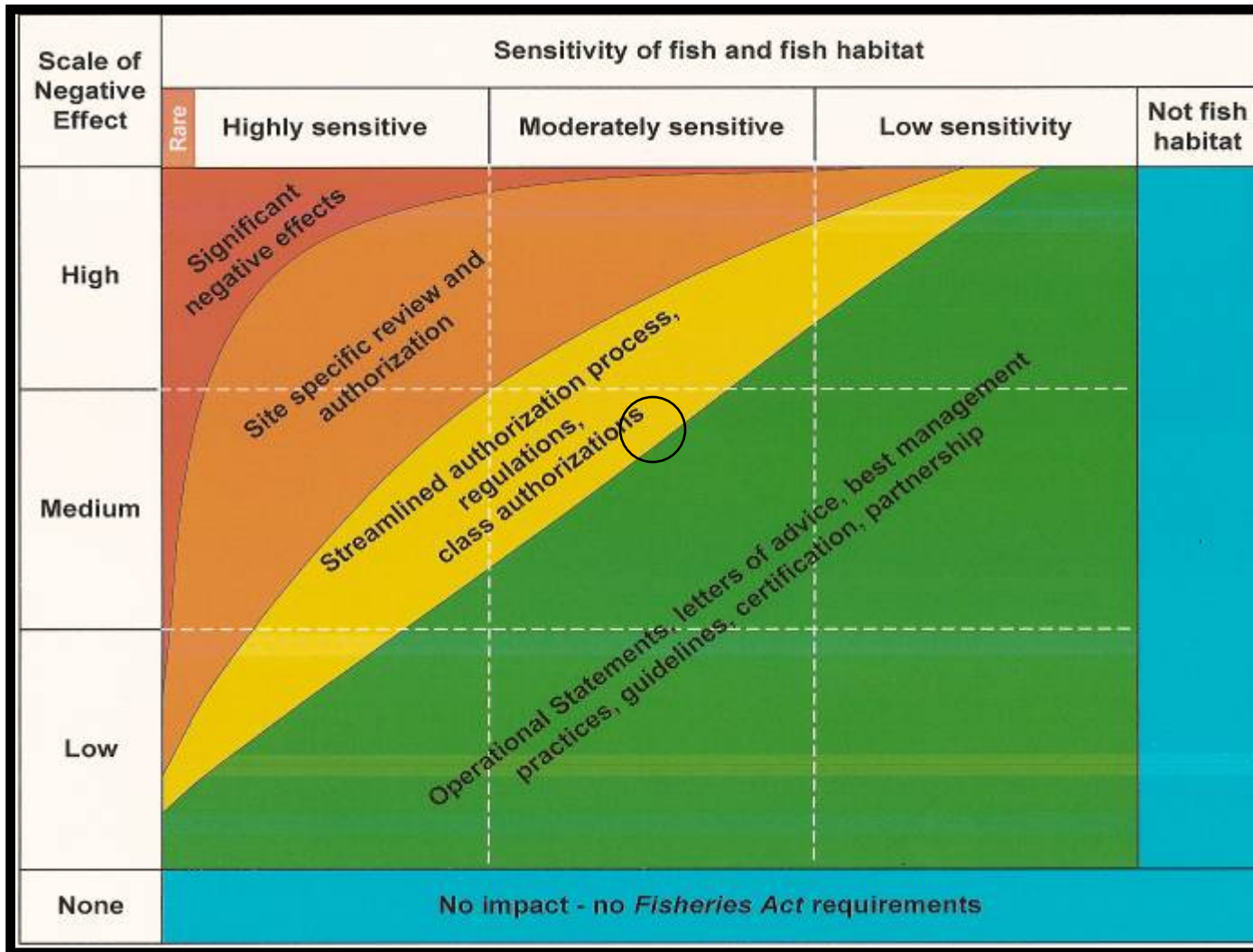
Assessment of Sensitivity of Fish and Fish Habitat			
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	This watercourse is ephemeral, and no direct fish habitat is present within the study area. This tributary contributes to coldwater fish downstream of the study area. Coldwater fish species are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over-wintering habitat, nursery, rearing habitat).	Low <input checked="" type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	No direct fish habitat present within the subject watercourse or study area. This watercourse supports downstream fish communities indirectly.
	Moderate <input type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input checked="" type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	No fish species present within the subject watercourse or study area. Habitat type and supported fish species are prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input checked="" type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is and resistant to change due to the ephemeral flow conditions.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	A small section of ephemerally flowing channel is being affected.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater than one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted, (e.g. stream channel length reduced more than one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The channel realignment will result in permanent alteration of the existing channel.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low □	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Habitat will be permanently removed.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High ✓	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.



A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk <input type="checkbox"/>	Medium risk. The proposed channel realignment will result in permanent alteration of indirect fish habitat, based on the moderate/high scale of negative effects and moderate sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk ✓	
	High Risk <input type="checkbox"/>	
	Significant Effects <input type="checkbox"/>	

MTO PROJECT NOTIFICATION FORM 2

MODERATE/HIGH RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager:		Email:
	Telephone No.:		Fax No.:
	MTO W.P. No.:		
Section B	Project Information		
	<u>Types of Activities:</u> <input type="checkbox"/> Ditching/Storm water management <input checked="" type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	<input type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Species:	SAR Location:	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D9: Tributary of Whitevale Creek	
	GPS Coordinates: 17T 648823 m E 4862785 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be realigning of ephemeral, indirect fish habitat.		
	Rationale for Moderate/High Risk Determination: A channel realignment results in permanent, significant alteration of the channel.		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR coldwater timing window for in water works (July 1st to September 15th) • All work to be completed "in the dry". • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. • Form and function will be maintained with the realigned channel. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Ephemeral, coldwater contributing fish habitat. See Template 10.2 for details.		
	Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos		
	Section C	MTO Signatures	
I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a moderate/high risk of impact to fish and fish habitat.			
Name:		Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	
For Internal DFO & OMNR Use:			

Section D	Department of Fisheries and Oceans - District Office:		Fax No.:
	<input type="checkbox"/> Decision Supported	Habitat File No.:	
	<input type="checkbox"/> Decision Not Supported	Rationale:	
	Name:		Phone No.:
	Signature:		Date:
	Ministry of Natural Resources Area Office Receipt of Notification Form		
	Name:	Signature:	Date:



TEMPLATE 10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet				
<p>Impact Description (describe project impacts to fish & fish habitat): Channel realignment of approximately 330 m of seasonal, coldwater fish habitat, which contributes to Redside Dace downstream of the study area</p>	<p>MTO Assessor: Judson Venier Waterbody: D13: Tributary of Urfe Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>		
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p> <p>Use PoE Diagrams and attach if necessary</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center; vertical-align: top;"> <p>Land-based Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p> </td> <td style="width: 50%; text-align: center; vertical-align: top;"> <p>In-water Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input checked="" type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues </td> </tr> </table>			<p>Land-based Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p>	<p>In-water Activities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input checked="" type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
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<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	<p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers 		

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix
NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Template 10.5 – Risk Assessment Worksheet

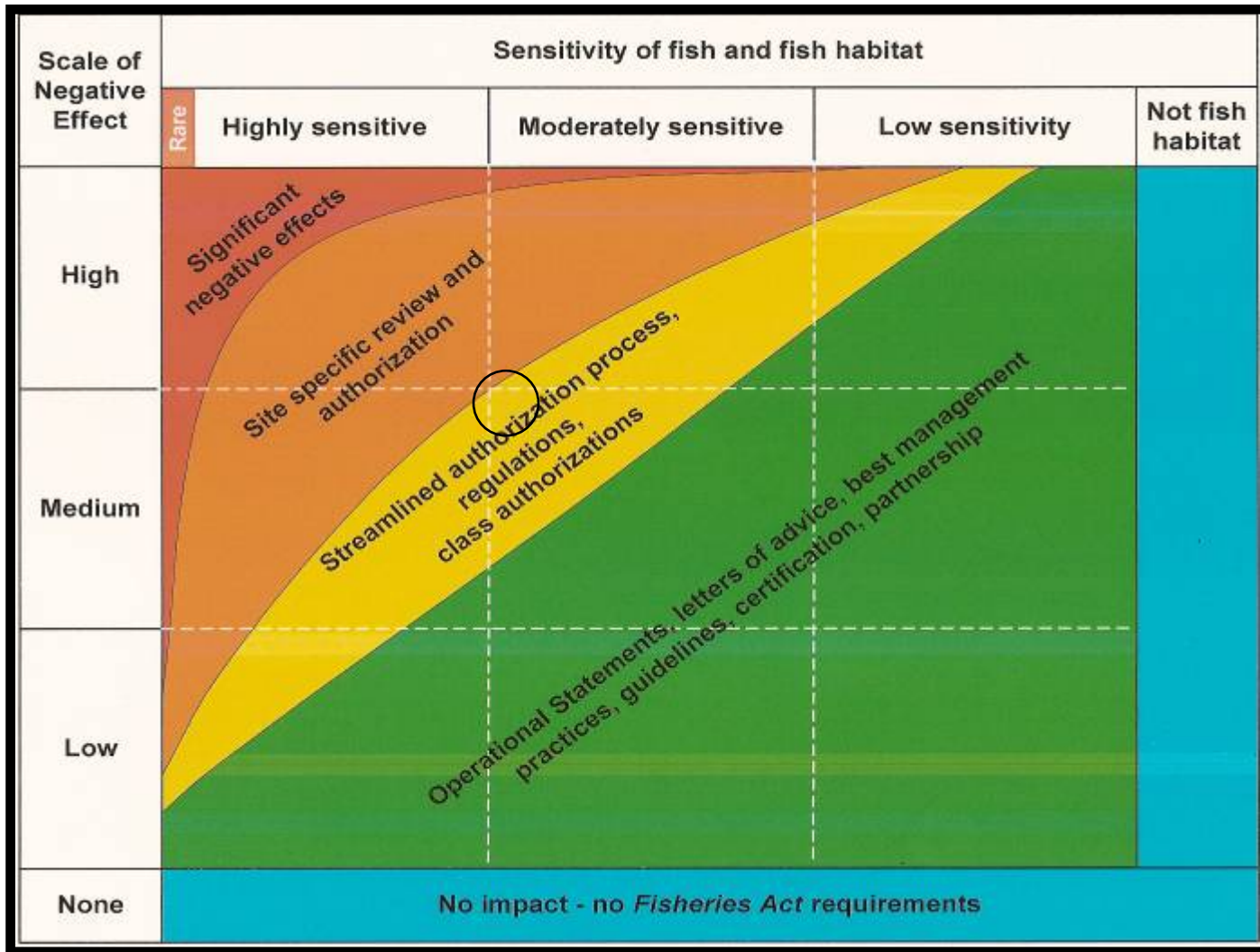
Assessment of Sensitivity of Fish and Fish Habitat			
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	This watercourse functions as seasonal, coldwater fish habitat and Redside Dace recovery habitat within the study area. Coldwater fish species and Redside Dace are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over-wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Seasonal use by fish. Although habitat is highly degraded by ATV use, high cover, and groundwater seeps were identified during field investigations. Therefore, the habitat could support multiple life cycle functions.
	Moderate <input checked="" type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input checked="" type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Supported fish species (Redside Dace) are rare, however, the habitat type is type is prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system is coldwater and not resistant to change, however flow is seasonal.
	Moderate <input checked="" type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low <input type="checkbox"/>	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	~330 m of seasonal, coldwater fish habitat is being affected.
	Medium ✓	Ecological unit moderately reduced in size, length of watercourse impacted – greater than one meander wavelength (e.g. channel reach or lake region)	
	High <input type="checkbox"/>	Majority of ecological unit impacted, (e.g. stream channel length reduced more than one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low <input type="checkbox"/>	Short term (days – a few weeks).	The channel realignment will result in permanent alteration of the existing channel.
	Medium <input type="checkbox"/>	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low <input type="checkbox"/>	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Habitat will be permanently removed.
	Medium <input type="checkbox"/>	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High ✓	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk <input type="checkbox"/>	Medium risk. The proposed channel realignment will result in permanent alteration of ~330 m of seasonal, coldwater fish habitat, based on the moderate/high scale of negative effects and moderate/high sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk ✓	
	High Risk <input type="checkbox"/>	
	Significant Effects <input type="checkbox"/>	

MTO PROJECT NOTIFICATION FORM 2

MODERATE/HIGH RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager:		Email:
	Telephone No.:		Fax No.:
	MTO W.P. No.:		
Section B	Project Information		
	<u>Types of Activities:</u> <input type="checkbox"/> Ditching/Storm water management <input checked="" type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	<input type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species:	SAR Location: This watercourse is recovery habitat for Redside Dace	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D13: Tributary of Urfe Creek	
	GPS Coordinates: 17T 651137 m E 4863835 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be realigning ~330 m of seasonal, coldwater fish habitat.		
	Rationale for Moderate/High Risk Determination: A channel realignment results in permanent, significant alteration of direct coldwater fish habitat and recovery habitat for Redside Dace.		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Seasonal, coldwater fish habitat, Redside Dace recovery habitat. See Template 10.2 for details.		
	Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos		
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a moderate/high risk of impact to fish and fish habitat.		
	Name:	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

Section D	For Internal DFO & OMNR Use:		
	Department of Fisheries and Oceans - District Office:		Fax No.:
	<input type="checkbox"/> Decision Supported	Habitat File No.:	
	<input type="checkbox"/> Decision Not Supported	Rationale:	
	Name:		Phone No.:
	Signature:		Date:
	Ministry of Natural Resources Area Office Receipt of Notification Form		
	Name:	Signature:	Date:



10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet						
<p>Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover</p>	<p>MTO Assessor: Judson Venier Waterbody: D14: Tributary of Urfe Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003</p>	<p>For DFO Use Only Date: Reviewed By: Approved By: File No:</p>				
<p>Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)</p> <p>Use PoE Diagrams and attach if necessary</p> <table style="width: 100%;"> <thead> <tr> <th style="width: 50%; text-align: center;">Land-based Activities</th> <th style="width: 50%; text-align: center;">In-water Activities</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues </td> </tr> </tbody> </table>			Land-based Activities	In-water Activities	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues
Land-based Activities	In-water Activities					
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <p><input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 					
<p>Residual Negative Effects from Aquatic Effects Assessment*:</p> <p><input type="checkbox"/> Residual Negative Effects: (Describe): _____</p>						
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	<p>Addressed by other government bodies in Ontario</p> <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers 				

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix

NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Assessment of Sensitivity of Fish and Fish Habitat

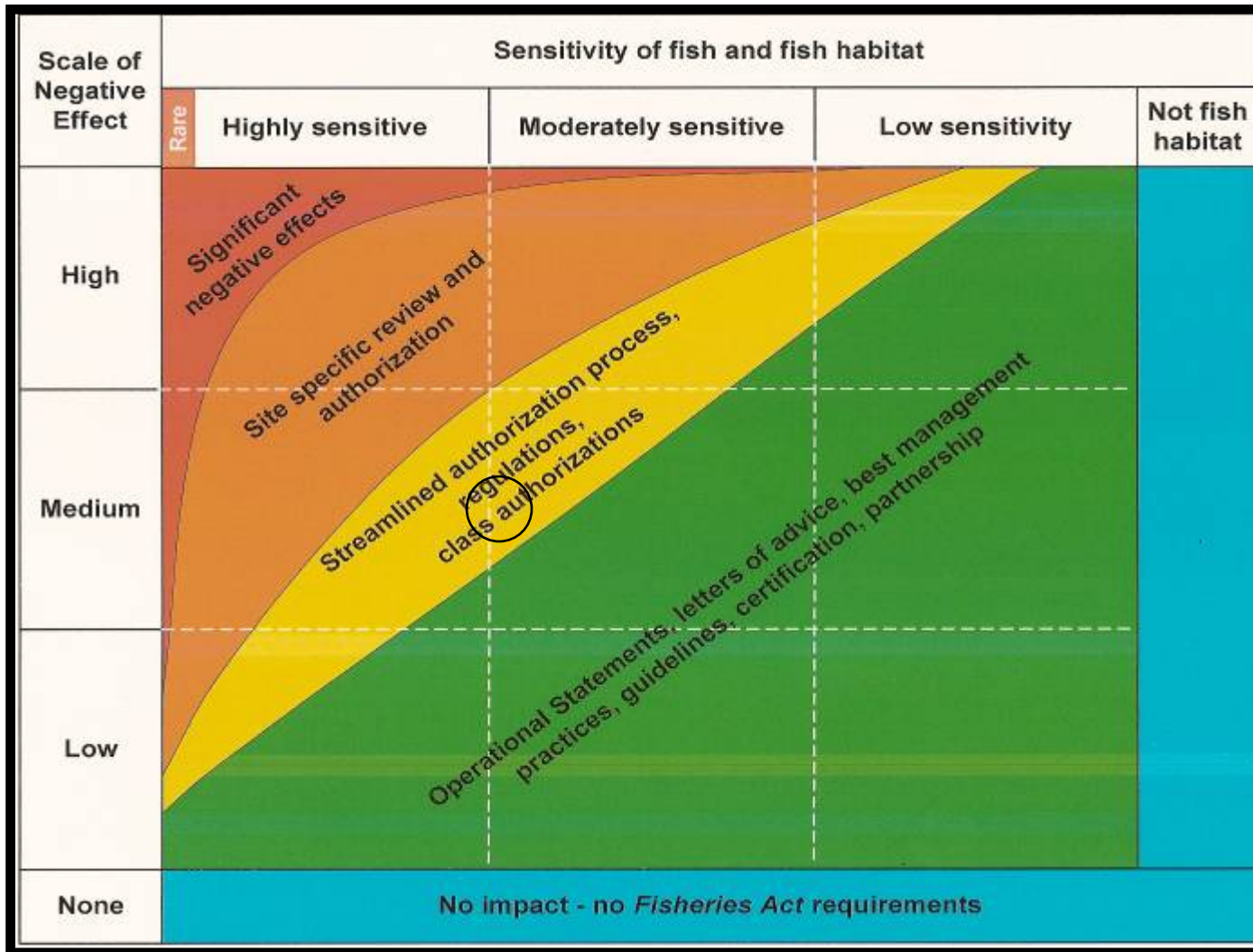
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	MNRF has indicated this watercourse should be treated as a high sensitivity system. This watercourse supports coldwater fish and Redside Dace recovery habitat. Coldwater species and Redside Dace are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Direct, coldwater fish habitat present within the study area. This watercourse supports Redside Dace.
	Moderate <input checked="" type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input checked="" type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Redside Dace are a rare species, however habitat type is prevalent.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system coldwater and unable to buffer temperature changes.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input checked="" type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open foot structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	This feature will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk <input type="checkbox"/>	Medium risk. The proposed culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat, based on the moderate scale of negative effects and moderate/high sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk ✓	
	High Risk <input type="checkbox"/>	
	Significant Effects <input type="checkbox"/>	

MTO PROJECT NOTIFICATION FORM 2

MODERATE/HIGH RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager:		Email:
	Telephone No.:		Fax No.:
	MTO W.P. No.:		
Section B	Project Information		
	<u>Types of Activities:</u> <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: Watercourse supports Redside Dace recovery habitat.	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D14: Tributary of Urfe Creek	
	GPS Coordinates: 17T 651228 m E 4863681 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at D14		
	Rationale for Moderate/High Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish", however risk is medium based on the watercourse being classified as coldwater, permanent, and Redside Dace contributing habitat		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Culvert footings will be located outside of the bankfull width of the watercourse Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent, coldwater Redside Dace Recovery habitat. See Template 10.2 for details.		
	Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos		
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a moderate/high risk of impact to fish and fish habitat.		
	Name:	Signature:	Date:

	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
	Name:	Signature: (Manager)	Date:
Section D	For Internal DFO & OMNR Use:		
	Department of Fisheries and Oceans - District Office:		Fax No.:
	<input type="checkbox"/> Decision Supported	Habitat File No.:	
	<input type="checkbox"/> Decision Not Supported	Rationale:	
	Name:		Phone No.:
	Signature:		Date:
	Ministry of Natural Resources Area Office Receipt of Notification Form		
	Name:	Signature:	Date:



TEMPLATE 10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: D16: Brougham Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input checked="" type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 	
Residual Negative Effects from Aquatic Effects Assessment*: <input type="checkbox"/> Residual Negative Effects: (Describe):		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix
 NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Template 10.5 – Risk Assessment Worksheet

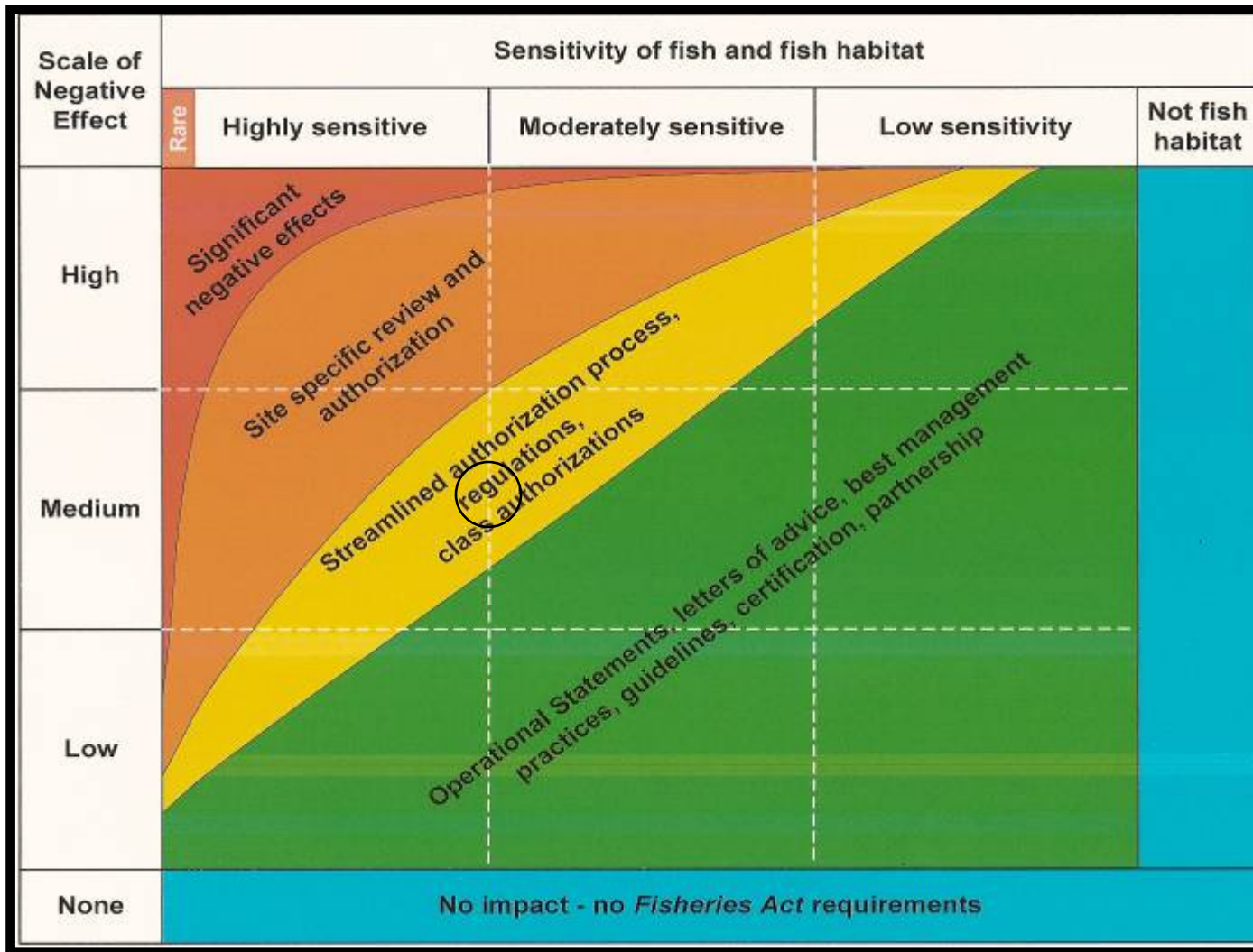
Assessment of Sensitivity of Fish and Fish Habitat			
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	This watercourse is permanent, and direct fish habitat is present within the study area. This tributary is coldwater and Redside Dace contributing habitat. Coldwater fish species are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over-wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Direct, coldwater fish habitat present within the study area. This watercourse is classified as Redside Dace recovery habitat.
	Moderate <input checked="" type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Redside Dace are a rare species; and Redside Dace recovery habitat is limited.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input checked="" type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system coldwater and unable to buffer temperature changes. Specialized habitat was not identified during field investigations.
	Moderate <input checked="" type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open footed structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater than one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted, (e.g. stream channel length reduced more than one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as direct fish habitat. This watercourse will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk <input type="checkbox"/>	Medium risk. The proposed culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat, based on the moderate scale of negative effects and moderate/high sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk ✓	
	High Risk <input type="checkbox"/>	
	Significant Effects <input type="checkbox"/>	

MTO PROJECT NOTIFICATION FORM 2

MODERATE/HIGH RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager:		Email:
	Telephone No.:		Fax No.:
	MTO W.P. No.:		
Section B	Project Information		
	<u>Types of Activities:</u> <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: Watercourse is identified as Redside Dace contributing habitat	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D16: Brougham Creek	
	GPS Coordinates: 17T 652461 m E 4864320 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at D16		
	Rationale for Moderate/High Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish", however risk is medium based on the watercourse being classified as coldwater, permanent, and Redside Dace recovery habitat		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> • Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) • All work to be completed "in the dry". • Culvert footings will be located outside of the bankfull width of the watercourse • Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; • Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. • All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. • Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. • A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. • No construction machinery or vehicles will cross any watercourse at any time during construction; • Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. • Erosion and sediment control measures will be monitored and maintained as per OPSS 805. • Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. • Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent, coldwater Redside Dace contributing habitat. See Template 10.2 for details.		
Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos			
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a moderate/high risk of impact to fish and fish habitat.		
	Name:	Signature:	Date:
I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.			
Name:	Signature: (Manager)	Date:	

Section D	For Internal DFO & OMNR Use:		
	Department of Fisheries and Oceans - District Office:		Fax No.:
	<input type="checkbox"/> Decision Supported	Habitat File No.:	
	<input type="checkbox"/> Decision Not Supported	Rationale:	
	Name:		Phone No.:
	Signature:		Date:
	Ministry of Natural Resources Area Office Receipt of Notification Form		
	Name:	Signature:	Date:



TEMPLATE 10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet		
Impact Description (describe project impacts to fish & fish habitat): Culvert installation, will result in a minor change in structure and cover	MTO Assessor: Judson Venier Waterbody: D18: Tributary of Brougham Creek MTO Project Title: 407 Transitway from East of Kennedy Road to East of Brock Road MTO WP#: 13-20003	For DFO Use Only Date: Reviewed By: Approved By: File No:
Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)		
Use PoE Diagrams and attach if necessary		
Land-based Activities	In-water Activities	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Vegetation Clearing <input checked="" type="checkbox"/> Excavation <input checked="" type="checkbox"/> Use of Industrial Equipment <input checked="" type="checkbox"/> Riparian Planting <input checked="" type="checkbox"/> Grading <input type="checkbox"/> Use of Explosives <input type="checkbox"/> Cleaning or Maintenance of Bridges or Other Structures <input type="checkbox"/> Streamside Livestock Grazing <input checked="" type="checkbox"/> No Residual Effects – Effects Fully Mitigated 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Industrial Equipment <input checked="" type="checkbox"/> Water Extraction <input checked="" type="checkbox"/> Addition or Removal of Aquatic Vegetation <input checked="" type="checkbox"/> Change in Timing, Duration and Frequency of Flow <input type="checkbox"/> Structure Removal <input type="checkbox"/> Explosives <input checked="" type="checkbox"/> Placement of Material or Structures in Water <input type="checkbox"/> Dredging <input type="checkbox"/> Organic Debris Management <input type="checkbox"/> Wastewater Management <input checked="" type="checkbox"/> Fish Passage Issues 	
Residual Negative Effects from Aquatic Effects Assessment*: <input type="checkbox"/> Residual Negative Effects: (Describe):		
<ul style="list-style-type: none"> <input type="checkbox"/> Change in habitat structure and cover <input type="checkbox"/> Change in sediment concentrations <input type="checkbox"/> Change in water temperature <input type="checkbox"/> Change in food supply <input type="checkbox"/> Change in nutrient concentration <input type="checkbox"/> Change in baseflow <input type="checkbox"/> Change in dissolved oxygen concentrations <input type="checkbox"/> Change in migration / access to habitat <input type="checkbox"/> Chemical barriers to fish passage 	<ul style="list-style-type: none"> <input type="checkbox"/> Direct or indirect mortality of fish <input type="checkbox"/> Displacement or stranding of fish <input type="checkbox"/> Incidental entrainment, impingement or mortality of resident species <input type="checkbox"/> Lethal or sublethal effects on fish <input type="checkbox"/> Potential mortality of fish/eggs/ova <input type="checkbox"/> Other: _____ 	Addressed by other government bodies in Ontario <ul style="list-style-type: none"> <input type="checkbox"/> Change in contaminant concentrations <input type="checkbox"/> Change in organic inputs/nutrient concentrations <input type="checkbox"/> Interbasin transfer of species <input type="checkbox"/> Change in pathogens/bacterial levels <input type="checkbox"/> Pathogens, disease, vectors, exotics <input type="checkbox"/> Changes in thermal cues or temperature barriers

* Refer to Template 10.3: Aquatic Effects Assessment and the Pathways of Effects and Residual Negative Effects Matrix
 NOTE that the RMF review is based on the residual negative effects, after taking into consideration the proposed mitigation. The review does not include components of the project that will improve or otherwise offset / compensate for lost fish habitat.

Template 10.5 – Risk Assessment Worksheet

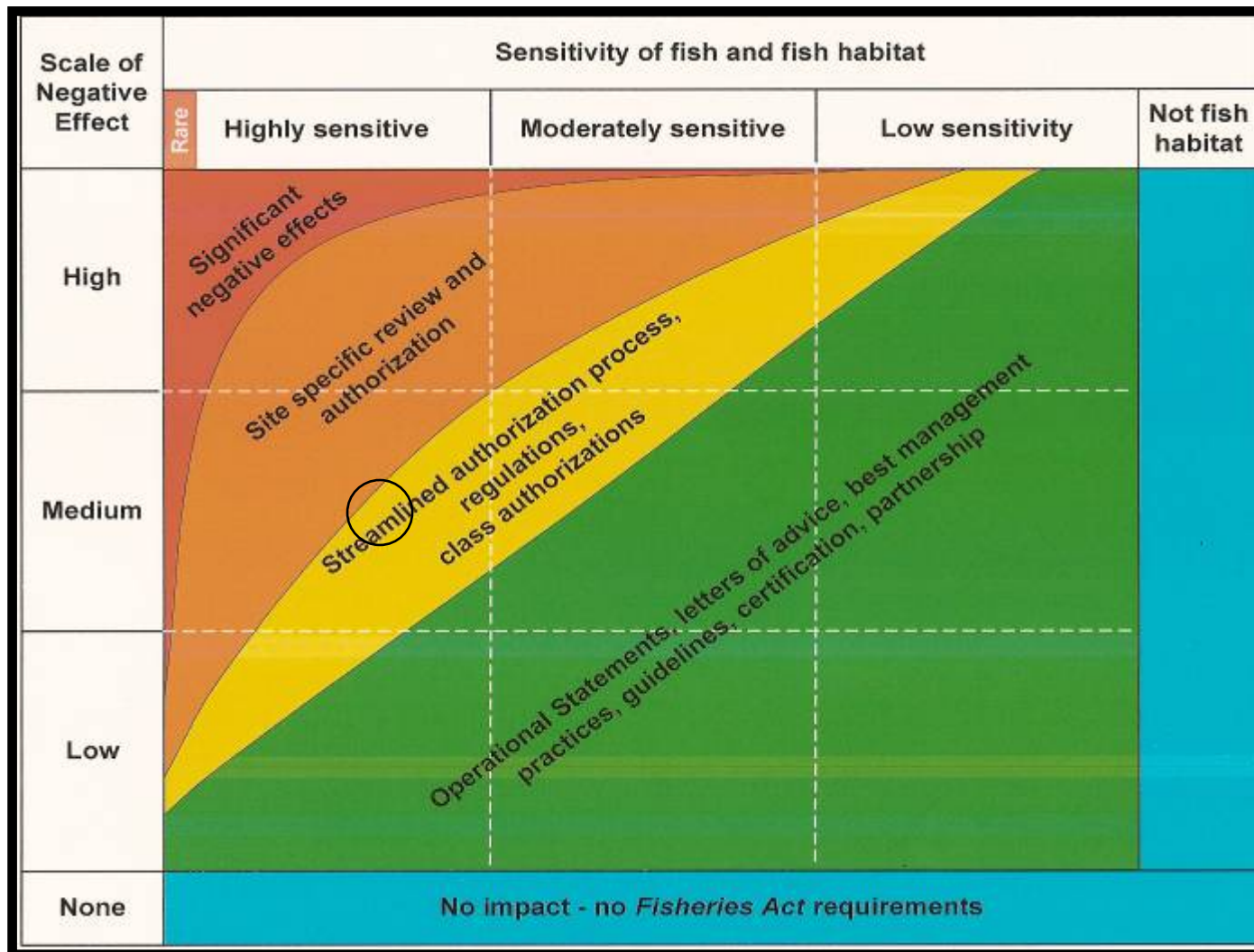
Assessment of Sensitivity of Fish and Fish Habitat			
Attribute	Sensitivity	Examples/Measure	Rationale for Scale Ranking
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low <input type="checkbox"/>	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	This watercourse is permanent, and direct fish habitat is present within the study area. This tributary is coldwater and Redside Dace contributing habitat. Coldwater fish species are sensitive to change and perturbation.
	Moderate <input type="checkbox"/>	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High <input checked="" type="checkbox"/>	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over-wintering habitat, nursery, rearing habitat).	Low <input type="checkbox"/>	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Direct, coldwater fish habitat present within the study area. This watercourse is classified as Redside Dace contributing habitat.
	Moderate <input checked="" type="checkbox"/>	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High <input type="checkbox"/>	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. * Where the scale for species or habitat is different select the most appropriate scale	Low <input type="checkbox"/>	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	Redside Dace are a rare species; and Redside Dace habitat is limited.
	Moderate <input type="checkbox"/>	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High <input checked="" type="checkbox"/>	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low <input type="checkbox"/>	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	The system coldwater and unable to buffer temperature changes.
	Moderate <input type="checkbox"/>	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High <input checked="" type="checkbox"/>	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	Scale	Examples/Measure	Rationale for Scale Ranking
<p>Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected.</p> <p>The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.</p>	Low ✓	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	An open footed structure, x by x in size will be installed at this crossing. A new permanent footprint of x m will result in direct fish habitat.
	Medium □	Ecological unit moderately reduced in size, length of watercourse impacted – greater than one meander wavelength (e.g. channel reach or lake region)	
	High □	Majority of ecological unit impacted, (e.g. stream channel length reduced more than one meander wavelength) would include impacts to an entire watershed or lake	
<p>Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).</p>	Low □	Short term (days – a few weeks).	The new culvert will be a permanent change in the direct habitat conditions.
	Medium □	Medium term (months - year).	
	High ✓	Long term (multiple years – permanent).	
<p>Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.</p>	Low ✓	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	Current habitat is functioning as direct fish habitat. This watercourse will function in a similar manner subsequent to the current channel conditions.
	Medium □	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High □	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

LEGEND

- MP Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
- END Endangered Species
- THR Threatened Species
- SAR Species at Risk under the *Species at Risk Act*
- SC Special Concern Species
- ESA Ontario *Endangered Species Act*



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for <i>Scale of Negative Effect</i> , <i>Sensitivity of Fish and Fish Habitat</i> Rankings as well as Risk Decision	Low Risk <input type="checkbox"/>	Medium risk. The proposed culvert installation will cause a permanent footprint of approximately x m ² of direct fish habitat, based on the moderate scale of negative effects and moderate/high sensitivity of the fish community. The mitigation measures proposed during the construction phase will prevent negative impacts to the downstream fishery and will prevent impacts from sedimentation and/or erosion.
	Medium Risk ✓	
	High Risk <input type="checkbox"/>	
	Significant Effects <input type="checkbox"/>	

MTO PROJECT NOTIFICATION FORM 2

MODERATE/HIGH RISK

Section A	Proponent Information		
	Ministry of Transportation Office: Central Region		MTO Region: Central Region
	Mailing Address: 1201 Wilson Avenue, Building D, 4 th Floor, Atrium Tower		
	Street Address (if different than above):		
	City/Town: Downsview	Province/Territory: ON	Postal Code: M3M 1J8
	MTO Project Manager:		Email:
	Telephone No.:		Fax No.:
	MTO W.P. No.:		
Section B	Project Information		
	<u>Types of Activities:</u> <input type="checkbox"/> Ditching/Storm water management <input type="checkbox"/> Channel modifications <input type="checkbox"/> Shoreline infilling	<input type="checkbox"/> Shoreline stabilization <input type="checkbox"/> Riparian vegetation management <input type="checkbox"/> Bridges	<input checked="" type="checkbox"/> Culverts <input type="checkbox"/> Fords <input type="checkbox"/> Other, specify _____
	Aquatic Species at Risk present within the project limits: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Species: Redside Dace	SAR Location: Watercourse is identified as Redside Dace contributing habitat	
	Name of Nearest Community to the project (City, Town): Pickering	Municipality/District/County: Region of Durham	
	Location of the Project: 407 Transitway, Kennedy to Brock	Name of Waterbody(ies) (River, Lake, Bay): D18: Tributary of Brougham Creek	
	GPS Coordinates: 17T 653152 m E 4864912 m N		
	Proposed Start Date Works/Undertakings:	Proposed Completion Date Works/Undertakings:	
	Description of Project: MTO will be installing an open footed crossing structure at D18		
	Rationale for Moderate/High Risk Determination: Proposed mitigation will prevent any potential impacts from resulting in "Serious Harm to Fish", however risk is medium based on the watercourse being classified as coldwater, permanent, and Redside Dace contributing habitat		
	Proposed Mitigation (e.g., MTO Special Provisions, In-water works timing windows): <ul style="list-style-type: none"> Construction will be completed during the MNR coldwater/Redside Dace timing window for in water works (July 1st to September 15th) All work to be completed "in the dry". Culvert footings will be located outside of the bankfull width of the watercourse Fish trapped in dewatering areas (if present) will be captured by a qualified fisheries Specialist and released to the watercourse immediately; Dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse. All dewatering activities will be restricted to the in-water fisheries timing window. All equipment maintenance and refuelling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling will be conducted at least 30 m distance from the watercourse and watercourse banks. Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse. A Spill Response Plan and the appropriate contingency materials to absorb or contain a spill will be on the site at all times. No construction machinery or vehicles will cross any watercourse at any time during construction; Erosion and sedimentation control measures will be installed prior to ground breaking as per the requirements of OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures. Erosion and sediment control measures will be monitored and maintained as per OPSS 805. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the MTO Construction Administration and Inspection Task Manual. Construction Specifications including, protection of Trees, seed and cover and topsoil should be implemented. 		
	Description of Fish and Fish Habitat Present at the Worksite, if applicable (i.e. species, substrate type, vegetation): Permanent, coldwater Redside Dace contributing habitat. See Template 10.2 for details.		
	Attached Documents and Photos: LGL Environmental Impact Assessment Report, Templates 10.1, 10.2, 10.4, key map and photos		
Section C	MTO Signatures		
	I, the undersigned, have reviewed the fish and fish habitat information and the proposed mitigation. In accordance with the MTO/DFO/OMNR Fisheries Protocol, I have determined that the proposed works have a moderate/high risk of impact to fish and fish habitat.		
	Name:	Signature:	Date:
	I, the undersigned, representing the above named office of the Ministry of Transportation, ensure that a fisheries assessment of the above named project has been carried out as per the provisions of the MTO/DFO/OMNR Fisheries Protocol.		
Name:	Signature: (Manager)	Date:	

Section D	For Internal DFO & OMNR Use:		
	Department of Fisheries and Oceans - District Office:		Fax No.:
	<input type="checkbox"/> Decision Supported	Habitat File No.:	
	<input type="checkbox"/> Decision Not Supported	Rationale:	
	Name:		Phone No.:
	Signature:		Date:
	Ministry of Natural Resources Area Office Receipt of Notification Form		
	Name:	Signature:	Date:

