

Ministry of Transportation (MTO)

Fish and Fish Habitat Existing Conditions Report: Hanlon Expressway / Wellington Road 34 Midblock Interchange (GWP No. 3059-20-00)

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1. Introduction

AECOM Canada Limited (AECOM) has been retained by the Ontario Ministry of Transportation (MTO) to undertake a Preliminary Design Review, Detailed Design (to a Design-Build-Ready status) under Class Environmental Assessment (EA) for Provincial Transportation Facilities (2000) for improvements to Highways 6 and 401 in the Township of Puslinch, Wellington County, and the City of Hamilton (GWP 3042-14-00). The planned transportation improvements will provide a better connection between the Highways 6 and 401 corridors which will reduce road congestion, collision potential and associated costs and encourage the utilization of Hanlon Expressway (Highway 6 north of Highway 401) which will support municipal planning initiatives.

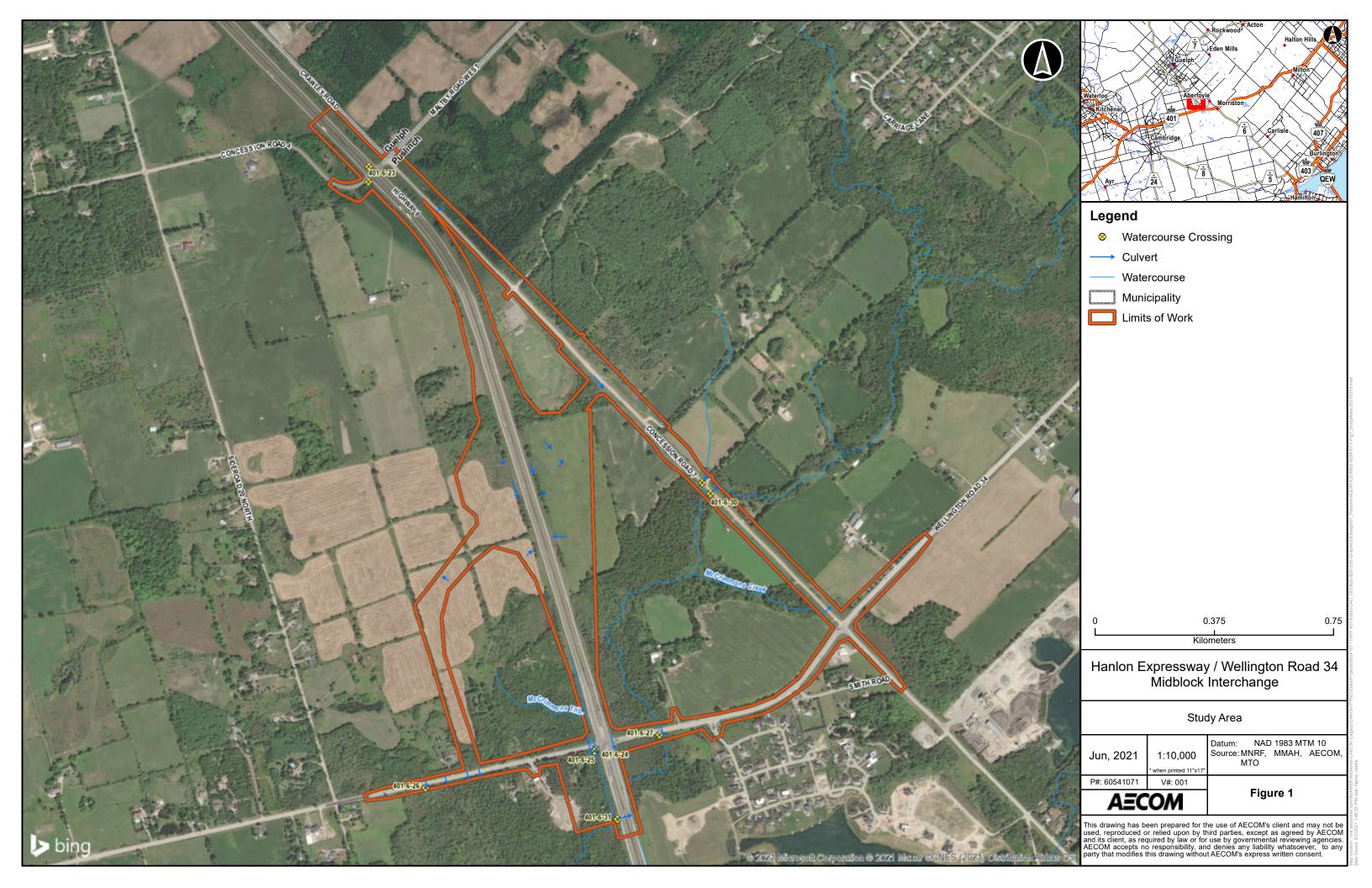
The first phase of implementing the GWP 3042-14-00 improvements will include the improvements along Hanlon Expressway north of Highway 401. This first phase, henceforth referred to as the Hanlon Expressway / Wellington Road 34 Midblock Interchange project (GWP 3059-20-00), includes the new Wellington Road 34 flyover structure at Hanlon Expressway, the new interchange on Hanlon Expressway midway between Wellington Road 34 and Maltby Road, and other associated connecting roadways.

The purpose of this report is to present the fish and fish habitat existing conditions for the Hanlon Expressway / Wellington Road 34 Midblock Interchange sites. Assessment of the potential impacts of the project to fish and fish habitat and recommended mitigation measures in accordance with the MTO Environmental Reference for Highway Design (ERHD, 2006) will be provided under separate cover. Documentation of existing fish and fish habitat conditions, as presented herein, was conducted in accordance with the MTO Environmental Guide for Fish and Fish Habitat (the Guide) (2020), and the 2020 pilot protocol entitled MTO/DFO/MNRF Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings, Version 3 (the Protocol) (2020).

The Midblock Interchange structures are located along Hanlon Expressway, Wellington Road 34 and Concession Road 7 between the Highway 401 and the Hanlon Expressway/Maltby Road intersection. See Figure 1 for the project Study Area. As per Section 3.1.2 of the ERHD, for the purposes of documenting existing fish and fish habitat conditions, the area of assessment is divided into two (2) zones: the Zone of Detailed Assessment (ZDA), which includes the area within MTO right-of-way (ROW), from 0 m to 50 m downstream of the ROW, and from 0 m to 20 m upstream of the ROW and the Zone of General Assessment (ZGA), which included from 50 m to 200 m downstream of the ROW and from 20 m to 50 m upstream of the ROW (of which only a general description of the aquatic environment is documented); however, due to property access constraints, the majority of the watercourses were assessed only within the ROW. **Table 1** (Template D1) below provides the Latitude and Longitude for the structures assessed under the Protocol in this report.

Table 1: Location of Work (Template D1)

Waterbody ID	Road/Highway	Municipality	Latitude	Longitude
401-6-23	Concession Road 4	Guelph	43.473175	-80.189839
401-6-24	Wellington Road 34	Wellington County	43.457155	-80.180820
401-6-25	Wellington Road 34	Wellington County	43.457101	-80.180870
401-6-26	Wellington Road 34	Wellington County	43.456023	-80.187423
401-6-27	Wellington Road 34	Wellington County	43.457579	-80.178354
401-6-30	Concession Road 7	Wellington County	43.464426	-80.176444
401-6-31	Hanlon Expressway	Wellington County	43.455177	-80.179957



2. Background Data Collection

Background information on the fish and fish habitat features of the Study Area were obtained through review of existing material from the following sources:

- MNRF Make-a-Map online application tool (MNRF, 2021);
- MNRF Make-a-Map: Land Information Ontario (LIO, 2021);
- MNRF Guelph District Office correspondence (2017, 2021);
- Fisheries and Oceans Canada (DFO) SAR online mapping (DFO, 2021);
- Environmental Assessment and Preliminary Design Report, Freelton Noertherly 16.9 km to Guelph (September 1995)
- Transportation Environmental Study Report (TESR), The Preliminary Design and EA for Highway 401 Improvements from Hespeler Road to Halton Region Boundary (GWP 8-00-00) (November, 2012)
- GWP 8-00-00 Highway 401 Preliminary Design and Class Environmental Assessment Study Final Report (June 2014); and,
- Aerial photography (2021).

McCrimmons Creek and its tributaries drain primarily agricultural areas in the northern and western portions of the Study Area. The creek and several of its tributaries have been designated by the MNRF as coldwater streams. The McCrimmons Creek system's fisheries have been surveyed in at least three separate studies since the Hanlon Expressway was completed in 1976 to determine the effects of the highway facility on the watercourse and the need for habitat rehabilitation. Migratory fishes including Brown Trout (Salmo trutta) and Brook Trout (Salvelinus fontinalis) have been identified within the Study Area.

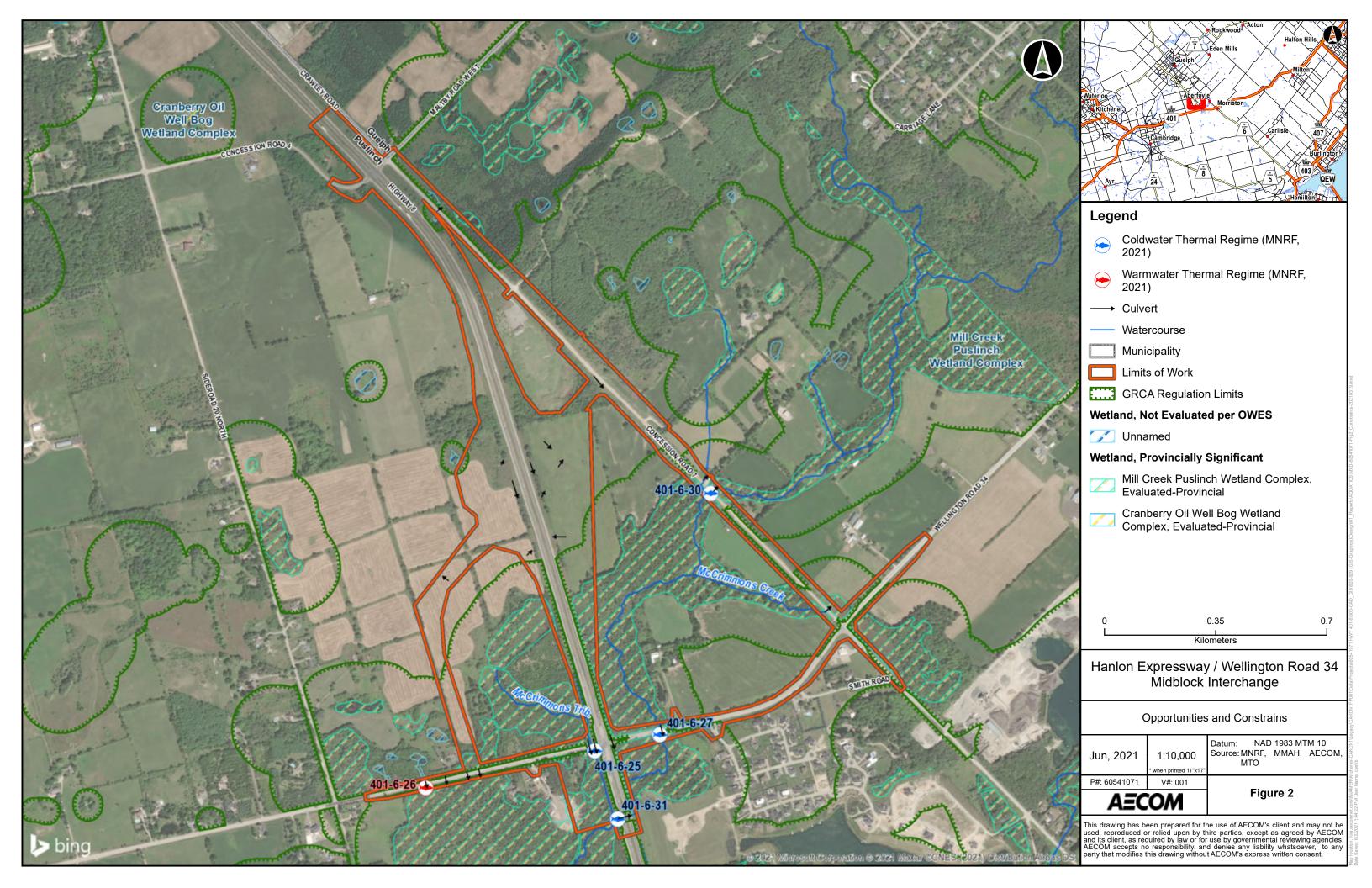
Reaches of McCrimmons Creek and its tributaries (primarily downstream of the study area) have been subject to extensive rehabilitation efforts by local fishing clubs, the MNRF and others. As part of the supplementary investigations, habitat assessments were conducted throughout the McCrimmons Creek area to document the existing conditions of watercourses potentially affected by proposed highway improvements.

The following fish species are known to occur in McCrimmons Creek: Blacknose Dace, Bluntnose Minnow, Brook Stickleback, Brook Trout, Brown Trout, Central Mudminnow, Common Shiner, Creek Chub, Fathead Minnow, Rainbow Darter, Rock Bass, White Sucker (MNRF, 2021). Additionally, MNRF has identified Brook and Brown Trout spawning habitat within McCrimmons Creek and its tributaries.

A review of the resources listed in Section 2, including DFO's online aquatic SAR mapping tool and MNRF Make-a-Map: Natural Heritage Information, did not identify any aquatic SAR within the Study Area.

A request for available background data associated with the entire Highways 401 and 6 Study Area (GWP 3042-14-00) was submitted to the Guelph district MNRF on April 27, 2017 and updated species information on March 11, 2021. The information request included the following: waterbody types, habitat information/location, fish species present including in-water work timing window, MNRF management objectives, MNRF interpretation of fish and fish habitat sensitivity, presence and location of fisheries, groundwater discharge areas and benthic invertebrate data. The background information collected from the sources listed above, including information provided by from MNRF, has been incorporated into this report. A copy of agency correspondence can be found in **Appendix A**.

Constraints and Opportunities figures summarizing existing conditions are provided in Figure 2.



Fish and Fish Habitat Existing Conditions

3.1 Field Investigations

In 2017 and 2018, AECOM ecologists conducted detailed fish and fish habitat assessments of the water features within the overall Highways 401 and 6 project footprint. AECOM ecologists visited the sites to document existing habitat conditions in order to facilitate making a determination on whether or not the proposed works would result in a harmful alteration, disruption or destruction of fish habitat (HADD), or the death of fish, and therefore require a *Fisheries Act Authorization*. A photographic record was documented during the field surveys and is provided in **Appendix B**. Field notes recorded during the fish habitat assessments are provided in **Appendix C**.

Fisheries assessments were conducted in accordance with the requirements under the 2016 Protocol; however, the Protocol was updated in 2020, and as such the data collected has been assessed under the new Protocol as directed by MTO.

3.2 Fish and Fish Habitat Existing Conditions

A detailed description of the existing conditions documented during the field investigations is presented below. **Table 2** provides a summary of the existing fish habitat conditions based on Template D2A of the Guide.

3.2.1 Station 401-6-23

Within the assessed upstream and downstream reach, the drainage feature outlets west of Hanlon Expressway onto rip-rap, and is dispersed through terrestrial vegetation (meadow lands) with no defined bed or bank. No stream bed material or aquatic vegetation was observed during the 2017 field investigation. The feature functions as an ephemeral drainage-conveyance area based on the absence of stream bed material or defined banks observed during field investigations. The feature does not provide direct or supporting fish habitat. According to DFO online mapping (2020), aquatic SAR habitat has not been identified within this watercourse.

3.2.2 Station 401-6-24

Within the assessed upstream and downstream reach, the feature functions as an ephemeral drainage-conveyance channelrunning adjacent to the Hanlon Expressway. In channel vegetation consisted of cattails (*Typha* sp.) and common reed (*Phragmites* sp.¹). The feature does not provide direct fish habitat, but contributes flow to the outlet at the southern limit of the Study Area. According to DFO online mapping (2020), aquatic SAR habitat has not been identified within this feature.

3.2.3 Station 401-6-25 [SR-7A]

This McCrimmons Creek Tributary is a coldwater system (MNRF, 2017) that flows under Wellington Road 34 to its confluence with the main branch of McCrimmons Creek downstream of the crossing.

Within the assessed upstream reach, the watercourse is representative of a naturalized system with a morphology that consists of flats (85%), runs (10%) and pools (5%). At the time of site investigation, the mean wetted width was

¹ Phragmites australis is an aquatic invasive species

approximately 1.4 m and the mean wetted depth approximately 0.14 m. Substrates were mainly comprised of detritus, sand, gravel and silt. Banks were slightly unstable and the associated riparian cover was high (60-90% cover), consisting of trees and shrubs. Instream cover (70% total cover) was provided primarily by organic debris (35%), instream woody debris (30%), overhanging woody debris (20%), undercut banks (10%) and boulders (5%). Groundwater upwellings and watercress were observed.

Within the assessed downstream reach, the watercourse is representative of a naturalized system with a morphology that primarily consists off runs (85%) and riffles (15%). At the time of field reconnaissance, the mean wetted width was approximately 1.1 m and the mean wetted depth approximately 0.18 m. Substrates were mainly comprised of clay and gravel. Banks were moderately unstable due to erosion and the associated riparian cover was high (60-90% cover), consisting of trees and shrubs. Instream cover (70% total cover) was provided primarily by undercut banks (40%), woody debris (30%) and organic debris (30%). Groundwater upwellings, watercress and suitable salmonid spawning habitat were observed.

The watercourse is permanent, and provides habitat for coldwater species (MNRF 2021). Fish were captured during field investigations. Fish community assemblage can be found in Error! Reference source not found.. The a ssessed reach provides habitat for migration, spawning, feeding and rearing, including Brook Trout (a sensitive species); however, the coldwater habitat with groundwater upwellings is generally non-limiting throughout the Study Area . According to DFO online mapping (2020), aquatic SAR habitat has not been identified within this watercourse.

3.2.4 Station 401-6-26 [SR-11]

This unnamed stream is presumed to be a tributary of McCrimmons Creek and flows north to south through a wetland, crossing Wellington Road 34 west of Hanlon Expressway.

Within the assessed upstream reach, the morphology consists of pools (30%), riffles (10%) and runs (10%) flowing through a greater wetland (50%). At the time of field reconnaissance, the mean wetted width of the defined channel was approximately 0.4 m and the mean wetted depth approximately 0.13 m. Substrates were mainly comprised of detritus and muck. Banks were not well defined and the associated riparian cover was moderate (30-60% cover), consisting of common reed, trees and shrubs. Instream cover (80% total cover) was provided primarily by emergent vegetation (90%) and organic debris (10%). Groundwater upwellings, organic oily sheen and iron staining were observed.

Within the assessed downstream reach, the morphology consists of flats (20%) flowing through a greater wetland (80%), with only a partially defined channel visible. At the time of field reconnaissance, the mean wetted width of the defined channel was approximately 0.5 m and the mean wetted depth approximately 0.15 m. Substrates were mainly comprised of detritus and muck. Banks were not well defined and the associated riparian cover was moderate (30-60% cover), consisting of common reed, trees and shrubs. Instream cover (80% total cover) was provided primarily by emergent vegetation (90%) and woody debris (10%). Groundwater upwellings, organic oily sheen and iron staining were observed.

The watercourse is permanent, and provides habitat for warmwater species (MNRF 2021). Fish were captured during field investigations. See Error! Reference source not found. for the fish community assemblage. The a ssessed reach provides habitat for fish migration, feeding and rearing. No sensitive or significant habitat was observed. According to DFO online mapping (2020), aquatic SAR habitat has not been identified within this watercourse.

3.2.5 Station 401-6-27 [SR-5]

This main branch of McCrimmons Creek is a coldwater system (MNRF, 2017) that flows under Wellington Road 34 to its confluence with Mill Creek downstream of the Study Area.

The upstream reach was not assessed due to property access limitations and was not visible from the ROW.

Within the assessed downstream reach, the watercourse is representative of a naturalized system with a morphology that consists of runs (40%), flats (30%), riffles (15%) and pools (15%). At the time of field reconnaissance, the mean wetted width was approximately 1.5 m and the mean wetted depth approximately 0.25 m. Substrates were mainly comprised of gravel, sand, cobble and silt. Banks were stable and the associated riparian cover was high (60-90% cover), consisting of trees and shrubs. Instream cover (70% total cover) was provided primarily by undercut banks (30%), woody debris (30%), cobble (20%) and organic debris (20%). Groundwater upwellings, watercress and suitable salmonid spawning habitat were observed.

The watercourse is permanent, and provides habitat for coldwater species (MNRF 2021). Fish were captured during field investigations. The fish community assemblage can be found in Error! Reference source not found.. The assessed reach provides habitat for migration, spawning, feeding and rearing, including Brook Trout (a sensitive species); however, the coldwater habitat with groundwater upwellings is generally non-limiting throughout the Study Area. According to DFO online mapping (2020), aquatic SAR habitat has not been identified within this watercourse.

3.2.6 Station 401-6-30 [CR7-1 and CR7-2]

The main branch of McCrimmons Creek (CR-1) crosses Concession Road 7 west of Hanlon Expressway and confluences with a small side tributary (CR7-2) within the MTO ROW.

Within the assessed upstream and downstream reaches, the feature consists of a Provincially Significant Wetland (PSW) with no defined channel. Substrates were mainly comprised of detritus and muck. Banks were not defined and the associated riparian cover was moderate (30-60% cover), consisting of common reed, trees and shrubs. Instream cover (80% total cover) was provided primarily by emergent vegetation (90%) and organic debris (10%). Iron staining was observed.

The watercourse is permanent, and provides habitat for coldwater species (MNRF 2021). Fish were captured during field investigations. The fish community assemblage can be found in Error! Reference source not found.. The assessed reach provides habitat for migration, spawning, feeding and rearing, including Brook Trout (a sensitive species); however, the coldwater habitat with groundwater upwellings is generally non-limiting throughout the Study Area. According to DFO online mapping (2020), aquatic SAR habitat has not been identified within this watercourse.

3.2.7 Station 401-6-31 [H6-2]

This main branch of McCrimmons Creek crosses the Hanlon Expressway at the southern limit of the Study Area south of Wellington Road 34.

The downstream reach could only be assessed for approximately 10 m within the ROW due to property access limitations. Within the assessed downstream reach, the watercourse is representative of a naturalized system with a morphology that consists of runs (50%), flats (40%), and riffle (10%). At the time of field assessment, the mean wetted width was approximately 1.3 m with a bankfull depth of 1.5 m and a mean wetted depth of 0.15 m and bankfull depth of 0.45 m. Substrates were mainly comprised of sand with lesser amounts of clay, and cobble and

gravel with sparse boulders at the culvert outlet. Banks were slightly unstable with undercut banks and the associated riparian cover was high (60-90% cover), consisting of herbaceous vegetation and vascular macrophytes at the culvert outlet and trees and shrubs further downstream. Instream cover (90% total cover) was provided primarily by instream vascular macrophytes (50%), undercut banks (30%), and cobble (10%). Groundwater upwellings, watercress and suitable salmonid spawning habitat were observed

The upstream reach was not assessed due to property access limitations and was not visible from the ROW. The watercourse is permanent and provides habitat for coldwater species (MNRF 2021). The fish community assemblage is the same as 401-6-27 and can be found in Error! Reference source not found..

3.3 Fish Community

Sufficient information was not available within the background information review and through initial MNRF correspondence to characterize the fish community in Study area; **Table 2** summarizes the existing fish community assemblage identified through AECOM field investigations (2017, 2018), and recent MNRF correspondence (2021) at the above noted stations based on Template D2B of the Guide.

Table 2: Existing Fish and Fish Habitat Conditions Summary Table (Template D2A)

Waterbody ID	Date	Flow	Thermal Regime*	Fish Habitat*	Substrate Type	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat
Station 401-6-23 Unnamed	25-Jul-17	Ephemeral	N/A	Not fish habitat	N/A	N/A	Meadow species; No aquatic vegetation present	None	None
Station 401-6-24 Unnamed	25-Jul-17	Ephemeral	N/A	Not fish habitat	N/A	N/A	Cattails, Common Reed	None	None
Station 401-6-25 McCrimmons Creek Tributary	25-Jul-17	Permanent	Cold	Direct	Clay, gravel, boulder, sand, silt, detritus	Upstream: Flats (85%) Runs (10%) Pools (5%) Downstream: Runs (85%) Riffles (15%)	Watercress	None	Spawning areas*
Station 401-6-26 McCrimmons Creek Tributary	26-Jul-17	Permanent	Warm	Direct	Muck, detritus	Upstream: Greater wetland (50%) Pools (30%) Riffles (10%) Runs (10%) Downstream: Greater wetland (80%) Flats (20%)	Cattails	None	Groundwater upwelling
Station 401-6-27 McCrimmons Creek	27-Jul-17	Permanent	Cold	Direct	Silt, sand, clay, cobble, gravel, detritus	Downstream: Runs (40%) Flats (30%) Riffles (15%) Pools (15%).	Watercress	None	Spawning areas*
Station 401-6-30 McCrimmons Creek Tributary	25-Jul-17	Permanent	Cold	Direct	Muck, silt, detritus	N/A	Cattails	Mill Creek Puslinch Wetland Complex PSW	None
Station 401-6-31 McCrimmons Creek	26-Jul-17	Permanent	Cold	Direct	Sand, clay, cobble, gravel, boulder	Downstream Run (50%) Flats (40%) Riffle (10%)	Watercress, Cattails	None	Trout spawning habitat*

^{*}Information provided by MNRF (2021).

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Table 3: Existing Fish Community Summary Table (Template D2B)

Waterbody ID	Fish Species Present	Year Class(es)	Species at Risk Present	In-water Works Timing Window*
401-6-23 Unnamed	None (AECOM, 2018; MNRF, 2021)	N/A	None	Roadside conveyance only
401-6-24 Unnamed	None (AECOM, 2018)	N/A	None	Roadside conveyance only
401-6-25 McCrimmons Creek Tributary	Blacknose Dace, Bluntnose Minnow, Brook Stickleback, Brook Trout, Brown Trout, Central Mudminnow, Common Shiner, Creek Chub, Fathead Minnow, Rainbow Darter, Rock Bass, White Sucker (MNRF, 2021)	All	None	July 1 st - Sept 30 th
401-6-26 McCrimmons Creek Tributary	Central Mudminnow (AECOM, 2018)	Adult	None	July 1 – March 31
401-6-27 McCrimmons Creek	Blacknose Dace, Bluntnose Minnow, Brook Stickleback, Brook Trout, Brown Trout, Central Mudminnow, Common Shiner, Creek Chub, Fathead Minnow, Rainbow Darter, Rock Bass, White Sucker (MNRF, 2021) Brook Trout, Brown Trout (AECOM, 2018)	All	None	July 1st- Sept 30th
401-6-30 McCrimmons Creek Tributary		N/A	None	July 1st- Sept 30th
401-6-31 McCrimmons Creek	Blacknose Dace, Bluntnose Minnow, Brook Stickleback, Brook Trout, Brown Trout, Central Mudminnow, Common Shiner, Creek Chub, Fathead Minnow, Rainbow Darter, Rock Bass, White Sucker (MNRF, 2021)	All	None	July 1st- Sept 30th

3.4 Summary of Existing Fish and Fish Habitat

Through the background information review, consultation with MNRF and fish habitat field investigations, it was determined that one (1) of the watercourses within the Study Area is an ephemeral feature, not suitable for fish use. Five (5) watercourses within the Study Area are permanent features that provide direct fish habitat. Significant habitat is present at McCrimmons Creek and its tributaries (401-6-24, 401-6-25 and 401-6-27) due to the trout spawning habitat and coldwater thermal regime.

4. General Assessment of Potential Impacts of the Project

Table 4 (Template D3) provides a high-level overview of the project and associated works that could potentially affect fish and fish habitat.

Table 4: Design Considerations Table (Template D3)

Factors to Consider In-water Works Timing Window	Design Considerations Provided by the Fisheries Assessment Specialist ■ Confirmed by MNRF that McCrimmon Creek and its tributaries are considered cold water, except 401-6-26 which is warmwater. Timing Window where work can occur is July 1st- Sept 30 th for the coldwater features, and July 1 st — March 31 st for the warmwater feature. ■ In-water work is required.	Describe How Each Factor Was Addressed Through Design This column will be updated in the Impact Assessment Report.
Fish Passage	 Migratory fish present include Brook Trout and Brown Trout. Currently no fish impediments are present within the Study Area. 	■ This column will be updated in the Impact Assessment Report
Significant Fish Habitat*	 The assessed reaches provide habitat for migration, spawning, feeding and rearing. Sensitive spawning habitat is present in McCrimmons Creek and its tributaries. No habitat classified as critical by the Species at Risk Act (SARA) was identified. Groundwater upwellings were observed in the assessed reaches. Culvert works should be designed to maintain groundwater upwellings that provide ground to surface water connection for Brook Trout spawning. 	■ This column will be updated in the Impact Assessment Report
Constraints and Opportunities	Constraint: A PSW was identified within Study Area. Opportunity: Incoporation of design best management practices (BMP)s for culvert works (e.g. refuge pools, low-flow channels, etc.).	■ This column will be updated in the Impact Assessment Report
Other considerations	 Should stream bed protection be proposed in detail design, it should consist of native material where possible and any rock protection below the highwater mark should be round riverstone in accordance with Ontaio Provincial Standard Sepecification (OPSS)1005 and Non Standard Special Provision (NSSP)008. Aquatic invasive species have been found within the Study Area (<i>Phragmites australis</i>). 	■ This column will be updated in the Impact Assessment Report

5. Potential Enhancement/Offsetting Measures

Mill Creek Puslinch Wetland Complex is a PSW found within the Study Area. This area needs to be protected during the construction phase of the project. Design considerations shall be incorporated during detailed design, and mitigation measures shall be implemented prior to and during the construction to ensure no harm occurs to this significant feature.

Watercourse crossings should be designed to keep the destruction of fish habitat to a minimum by avoiding and/or reducing in-water works to the extent possible and completing in-water works within the MNRF timing windows provided in **Table 3** (Template D2B). This includes minimizing the footprint of the crossing structures (e.g. open bottom culverts in trout spawning stream, natural channel design), and minimizing the temporary disturbance associated with construction.

From a review of proposed works, the design considerations identified in **Table 4** (Template D3), potential fish habitat enhancements could include the provision of utilizing native stream bed material where possible. Any rock protection below the highwater mark should be round riverstone in accordance with OPSS1005 and OPSS 825. Additionally, culvert works should be designed in away that maintain groundwater upwellings to provide ground to surface water connection for Brook Trout spawning.

6. Conclusions

Through the background information review, consultation with MNRF and the 2017-2018 fish and fish habitat field investigations, it has been determined that McCrimmons Creek and its tributaries within the Study Area are permanently flowing, coldwater and warmwater features that support a diverse fish community including sensitive spawning habitat for trout. As such, the in-water work timing window, as determined by MNRF, for the coldwater features is from July 1 and September 31; or conversely restricted (i.e., not allowed) between October 1 and June 30, while the warmwater feature in-water work timing window is from July 1 – March 31 (i.e., no in-water work is permitted from April 1 – June 30), of any given year,.

AECOM Fisheries Biologists approved in the MTO Registry, Appraisal and Qualification System (RAQS) as Fisheries Assessment Specialists will assess the potential negative impacts of the proposed work as part of preliminary impact assessment (under separate cover) on the detail design available prior to tendering the design build contract. A final Fisheries Impact Assessment should be completed by a RAQs qualified Fisheries Assessment Specialists under the Design Builder once detail design is complete and prior to construction to ensure the full impacts of the planned undertaking are considered and align with legislation.

7. Literature Cited

Central Lake Ontario Conservation (CLOCA) 2011:

Bowmanville/Soper Creek Watershed Existing Conditions Report (2011).

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Appendix A

Agency Correspondence

From: Piette, Jessica

Sent: April-27-17 9:00 AM

To: 'melinda.thompson@ontario.ca'; annemarie.laurence@ontario.ca

Kime, Heather; Leech, Fred; Schmied, Sarah; Ellis, Julie; Buck, Graham

(MNR) < Graham. Buck@ontario.ca > (Graham. Buck@ontario.ca)

FW: Request for Informatino - Hwy 401/Hwy 6 Improvements Project Subject:

Attachments: LET-60541071-Rfl-20170424_Final.pdf; MNRF Request for Info Letter-

2017-04-21(2)-401-6 Final.docx;

WIP HWY6 401 BackgroundReview_20170323.pdf

Good morning Melinda and Anne Marie,

Please find below and attached a request for background information for the preliminary design review, detailed design and class environmental assessment for improvements to Highways 6 & 401 from Hamilton North Limits to Guelph South Limits in the Township of Puslinch, Highway 6 (Hanlon Expressway) from Maltby Road northerly to the Speed River in the City of Guelph and Guelph/Eramosa Township. Please refer to the attached request for information letters and map for the precise locations of the Study Areas.

Please do not hesitate to contact me should you have any questions.

Thank you and have a great day.

Jessica

Cc:

Jessica Piette, (Hon) B.ES.

Terrestrial Ecologist, Water & Natural Resources, Environment D +1-519-650-8618 jessica.piette@aecom.com

AECOM

50 Sportsworld Crossing Road, Unit 290 Kitchener, Ontario, N2P 0A4, Canada T +1-519-650-5313 aecom.com

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From: Ellis, Julie

Sent: Tuesday, April 25, 2017 6:54 PM

To: graham.buck@ontario.ca

Cc: Piette, Jessica; Kime, Heather; Leech, Fred; Schmied, Sarah

Subject: Request for Informatino - Hwy 401/Hwy 6 Improvements Project

Good Evening Graham,

The Ministry of Transportation (MTO) has retained AECOM Canada Ltd. to undertake preliminary design review, detailed design and class environmental assessment for improvements to Highways 6 & 401 from Hamilton North Limits to Guelph South Limits in the Township of Puslinch, Highway 6

Guelph/Eramosa Township.

We are conducting a background review of the natural environment existing conditions present within the Study Areas of these two Projects. Please refer to the attached request for information letters and map for the precise locations of the Study Areas.

I am directing the request for information to you because as it is my understanding that my colleague Jessica Piette has contacted you previously regarding this project. If you have any questions about the project or require any clarifications please feel free to contact either Jessica or myself.

Should these requests need to be sent to another individual at the Guelph District please advise and I'll redirect them asap.

Thanks,

Julie Ellis B.Sc.
Terrestrial Ecologist
D 1-905-747-7610
M 1-416-476-6413
julie.ellis@aecom.com

Date April 25, 2017

Ministry of Natural Resources and Forestry Guelph District Ontario Government Bldg, 1 Stone Rd W, Guelph, ON N1G 4Y2

Re: Request for Information

Attention: Graham Buck

In accordance with the MTO/DFO/MNRF Protocol for Protecting Fish and Fish Habitat on Provincial Highway Undertakings - Version 3, 2016, this letter is to request fisheries information from the Ministry of Natural Resources and Forestry (MNRF) for the Ministry of Transportation's (MTO) undertaking of Natural Heritage Features and Species at Risk Records Request for Information for the Highways 6 & 401 from Hamilton North Limits to Guelph South Limits.

The Ministry of Transportation (MTO) has retained AECOM Canada Ltd. to undertake preliminary design review, detailed design and class environmental assessment for improvements to Highways 6 & 401 from Hamilton North Limits to Guelph South Limits in the Township of Puslinch, Highway 6 (Hanlon Expressway) from Maltby Road northerly to the Speed River in the City of Guelph and Guelph/Eramosa Township.

The proposed highway improvements are expected to include: new bridges, replacement of culverts and/or extensions, culvert rehabilitation and maintenance, and potential wingwall improvements.

In a north to south progression from College Avenue in the City of Guelph to the 401 along the Hanlon Parkway, the identified crossings within the study area include:

- Hanlon's Creek
- Mill Creek
- Aberfoyle Creek

In an east to west progression from the eastern study limits along the 401 to the western study limits, the identified crossings within the study area include:

- Irish Creek
- Unnamed tributary (1)
- Mill Creek
- Aberfoyle Creek
- Unnamed tributary (2)
- Unnamed tributary (3)
- Mountsberg Creek

In a north to south progression from the 401 to the southern study limits along the Highway 6 through Morriston, the identified crossings within the study area include:

Bronte Creek

Other watercourses identified within the study area include:

Fletcher Creek

Fisheries and Oceans Canada (DFO) provides a Distribution of Aquatic SAR mapping for the study area. The DFO mapping provides a general indication of the potential habitat, but does not confirm presence or absence from the site. The DFO mapping for the drainage features within the study area do not have any SAR listed.

As per Step 2 of the MTO/DFO/MNR Fisheries Protocol, we request that MNRF complete the attached table that includes information on fish communities and habitat.

Please see the attached for details regarding the watercourses within the project limits.

We look forward to MNRF's response to our request within **30 working days**, as specified in the Protocol.

Michael Godard Fisheries Biologist

c.c. James Corcoran, Senior Environmental Planner, MTO Fred Leech, Senior Environmental Planner, AECOM Sarah Schmied, Environmental Planner, AECOM

Waterbody Name and location (GPS coordinates & Google Earth map)	Watercourse classification (i.e. warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats, groundwater upwellings, migratory corridors etc.)	Historical data on fish species present, including whether the subject waterbody(s) [SPECIFY LOCATION] are considered to support any vulnerable, threatened or endangered aquatic species	MNR fisheries management objectives, if applicable	In-water timing windows for construction
Hanlon's Creek –					
43.50343 °N 80.22878 °W					
Mill Creek -					
43.45538°N					
80.17928°W Aberfoyle Creek -					
43.49912°N					
80.17276°W					
Irish Creek –					
43.42678°N					
80.26972°W Unnamed Trib (1)					
- 43.43960°N					
80.21879°W					
Bronte Creek -					
43.44700°N					
80.11442°W Unnamed tributary					
(2) –43.46352°N					
80.09111°W					
Unnamed tributary					
(3) - 43.46438°N					
80.08682°W Mountsberg Creek					
-43.46843°N					
80.07257°W					

Fletcher Creek -			
43.41967°N			
80.09150°W			

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 MNRF.
- MNRF is required as per Step 2 of the Fisheries Protocol to provide the applicant with the information outlined in the table above (columns 2-6) within **30 working days**.

Ministry of Natural Resources And Forestry Ministère des Richesses naturelles et des Forets

Guelph District 1 Stone Road West Guelph, Ontario N1G 4Y2 Telephone: (519) 826-4955 Facsimile: (519) 826-4929



June 30, 2017

Jessica Piette, (Hon) B.ES.
Terrestrial Ecologist, Water & Natural Resources, Environment AECOM
50 Sportsworld Crossing Road, Unit 290
Kitchener, Ontario, N2P 0A4, Canada
1-519-650-8618
jessica.piette@aecom.com

Dear Jessica,

Thank you for your inquiry regarding the presence of species at risk and natural heritage features for Highway 6, Maddaugh Road to Highway 401 in the cities of Hamilton and Guelph, Ontario.

Digital mapping for some natural heritage features is available from Land Information Ontario (LIO). MNRF recommends contacting LIO to obtain relevant feature mapping. Datasets of potential interest (and the corresponding LIO dataset) include – wetlands ('Wetland Unit' dataset), ANSI ('ANSI dataset), wooded areas ('Wooded Areas'), wintering areas ('Wintering Areas'), and fish spawning areas ('Spawning Areas').

The Ministry of Natural Resources and Forestry (MNRF) has had an opportunity to review the natural heritage records and information available at the Guelph District Office, for the above noted file. Please see below for the following information and comments to address your questions noted in the email correspondence.

Wetlands

There are five Provincially Significant Wetland Complexes within the study area, including Beverly Swamp Wetland Complex, Cranberry Oil Well Bog Wetland Complex, East Morriston Swamp, Fletcher Creek Swamp, and Mill Creek Puslinch Wetland Complex.

Digital mapping of wetlands can be obtained from Land Information Ontario (LIO). The Warehouse Dataset Name is 'Wetlands' within LIO. LIO manages key provincial datasets, and is responsible for housing most of the Ministry's digital natural heritage and resource data. The LIO Warehouse also includes spatial data from a variety of other sources and agencies, including federal ministries and conservation authorities. The LIO website provides instructions on how to request/obtain data, and a full listing of all data in the Warehouse. The link to the LIO website is as follows: http://www.mnr.gov.on.ca/en/Business/LIO/index.html. LIO staff can also be contacted at lio@ontario.ca or at (705) 755-1878 for assistance.

<u>ANSI</u>

Fletcher Creek Swamp Forest Regional Life Science ANSI and Galt Moraine Regional Earth Science ANSI are within the study area,

Digital mapping of Areas of Natural and Scientific Interest can be obtained from Land Information Ontario (LIO). The Warehouse Dataset Name is 'ANSI' within LIO. LIO manages key provincial datasets, and is responsible for housing most of the Ministry's digital natural heritage and resource data. The LIO Warehouse also includes spatial data from a variety of other sources and agencies, including federal ministries and conservation authorities. The LIO website provides instructions on how to request/obtain data, and a full listing of all data in the Warehouse. The link to the LIO website is as follows: http://www.mnr.gov.on.ca/en/Business/LIO/index.html. LIO staff can also be contacted at lio@ontario.ca or at (705) 755-1878 for assistance.

Species at Risk

The Ministry notes that there are several species at risk (SAR) records for the area.

Species Name	Scientific Name	STATUS
Bank Swallow	Riparia riparia	THR
Barn Swallow	Hirundo rustica	THR
Bobolink	Dolichonyx oryzivorus	THR
Eastern Meadowlark	Sturnella magna	THR
Eastern Ribbonsnake	Thamnophis sauritus	SC
Eastern Small-footed Myotis	Myotis leibii	END
Grasshopper Sparrow	Ammodramus savannarum	SC
Jefferson Salamander	Ambystoma jeffersonianum	END
Little Brown Myotis	Myotis lucifugus	END
Monarch	Danaus plexippus	SC
Northern Myotis	Myotis septentrionalis	END
Redside Dace	Clinostomus elongatus	END
Snapping Turtle	Chelydra serpentina	SC
Tri-colored Bat	Perimyotis subflavus	END
Unisexual Ambystoma (Jefferson Salamander dependent)	Ambystoma laterale – (2) jeffersonianum	END

Please note that because the province has not been surveyed comprehensively for the presence of species at risk (SAR), the absence in the NHIC database of an EO in a particular geographic area does not indicate the absence of the species in that area. Consequently, the presence of an EO is useful to flag the presence of the species in the area, but is not an appropriate tool to determine whether a species is absent, or whether it should be surveyed for or not in a particular area.

Consequently, we provide the following advice with respect to determining the presence of species at risk on a property for which a land-use change or on-the-ground activity is being proposed (note that some of the following may not apply to a given type of proposed activity, or for a given study area):

I. Habitat Inventory

The District recommends undertaking a comprehensive botanical inventory of the entire area that may be subject to direct and indirect impacts from the proposed activity. The vegetation communities and aquatic habitats in the study area should be classified as per the "Ecological Land Classification (ELC) for Southern Ontario" system, to either the "Ecosite" or "Vegetation Type" level. With respect to aquatic habitats in the study area, we recommend you collect data on the physical characteristics of the waterbodies and inventory the riparian zone vegetation, so that these habitats can be classified as per the Aquatic Ecosites described in the ELC manual.

II. Potential SAR on the property

A list of species at risk that have the potential to occur in the area can be produced by cross- referencing the ecosites described during the habitat inventory with the habitat descriptions of species at risk known to occur in the county or regional municipality within which the area is located. The species-specific COSEWIC status reports (www.cosewic.gc.ca) are a good source of information on species at risk habitat needs and will be helpful in determining the suitability of the property's ecosites for a given species.

Please note that the Species at Risk in Ontario list (SARO) is a living document and is amended periodically as a result of species assessment and re-assessments conducted by the Committee on the Status of Species at Risk in Ontario (COSSARO). The SARO list can be accessed on the webpage http://www.ontario.ca/environment-and-energy/species-risk-ontario-list

COSSARO also maintains a list of species to be assessed in the future. It is recommended to take COSSARO's list of anticipated assessments into consideration, especially when the proposed start date of the activity is more than 6 months away, or the project will be undertaken over a period greater than 6 months. The list can be viewed by going to http://www.ontario.ca/page/how-comment-protecting-species-risk.

III. SAR surveys

The District is of the opinion that each species at risk identified under Step II should be surveyed for, regardless of whether or not the species has been previously recorded in the area, or whether previous records are historical in nature. The survey report should describe how each species at risk was surveyed for, and provide a rationale for why, if any, certain species appearing on the county/ regional municipal list were not the subject of the survey. These rationales must be based on evidence demonstrating either that: suitable habitat for the species is not present on the property or; the project will not have any impacts -including indirect impacts- on the species. Some SAR surveys require an authorization under the *Endangered Species Act 2007* and/or a Scientific Collector's Permit; please contact the Guelph District office if you require further direction regarding these.

Guelph District additionally recommends contacting the municipal planning approval authority and the conservation authority to determine if they have any additional information or records of interest for the study area. Please contact our office if your investigations reveal the presence of species at risk on the subject property. MNRF will be happy to provide further advice regarding the provisions of the *Endangered Species Act* at that time.

We require more detailed information on the proposed project in order to assess the impacts of the works on Species at Risk. When project details have been determined, please fill out an Information Gathering Form (IGF) for any threatened or endangered species listed in the provided letter and submit it to our office (to ESA.Guelph@ontario.ca). The IGF can be found here (along with its associated guide). Please include detailed descriptions of the undertakings such as proposed timing and phasing of the project and details on what is required at each phase.

All sections and tables should be filled out in their entirety – incomplete forms will be returned and may delay the review process. Any applicable supplemental information that will assist with the review process should also be submitted with the IGF (e.g. field survey results, site plan/drawings, ELC mapping, etc.). Please note that forms are reviewed in the order in which they are received by MNRF and we will contact you with our response once the review is complete.

Sincerely,

Welinda Thompson

MELINDA J. THOMPSON

MANAGEMENT BIOLOGIST ONTARIO MINISTRY of NATURAL RESOURCES and FORESTRY melinda.thompson@ontario.ca

cc. Anne Marie Laurence, Management Biologist Tara McKenna, District Planner From: Bonaldo, Michelle (MNRF) <michelle.bonaldo@ontario.ca>

Sent: April-26-17 9:08 AM
To: Godard, Michael

Subject: FW: Fish Collection Licenses?

Good morning Michael. No worries but I did receive your email. The response is below. ©

Warm regards, Michelle

From: Bonaldo, Michelle (MNRF) Sent: April 18, 2017 9:26 AM

To: 'Godard, Michael'

Subject: RE: Fish Collection Licenses?

Thank you Michael,

I will send your application along for approvals.

Michelle

Michelle Bonaldo

Resource Clerk

Resource Operations Team

Ministry of Natural Resources and Forestry

Guelph District

Ph. 519 826-4909 Fx 519 826-4929

Michelle.bonaldo@ontario.ca

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From: Godard, Michael [mailto:Michael.Godard@aecom.com]

Sent: April 17, 2017 2:27 PM **To:** Bonaldo, Michelle (MNRF)

Subject: RE: Fish Collection Licenses?

Hi Michelle!

Things are good. Super busy but that's the world we live in I think ©

From: Sent:	Godard, Michael April-26-17 8:05 AM
To:	Bonaldo, Michelle (MNRF)
Subject:	RE: Fish Collection Licenses?
Morning Michelle,	
Just curious as to whether or field and wasn't 100% of its	not the file came through ok? I sent it from my phone while I was in the size.
Thanks!	
Michael	
Michael Godard, B.Sc. (Hons) Fisheries Biologist, Water & Nat D +1-519-650-8636 M +1-519-503-7956 michael.godard@aecom.com	ural Resources, Environment, Canada
AECOM 50 Sportsworld Crossing Road Unit 290 Kitchener, ON, N2P 0A4, Canada T +1-519-650-5313 aecom.com	a
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From: Godard, Michael [mailto Sent: Monday, April 24, 2017 To: Bonaldo, Michelle (MNRF) Cc: Hodges, Nick Subject: Re: Fish Collection L	
Hi Michelle.	
We received a new more acc wasn't overlay accurate.	curate study area figure. Can we please add it to the FCL as my last one
Thank you!	
Michael	

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: Godard, Michael

Sent: April-17-17 2:27 PM

To: Bonaldo, Michelle (MNRF) **Subject:** RE: Fish Collection Licenses?

Attachments: 401-6 FCL Application-2017-04-17-compiled.pdf

Hi Michelle!

Things are good. Super busy but that's the world we live in I think ©

I am sending a bit of a vague Fish Collection License application as we will be sending an information request separately but are hoping to get out and start with the aquatic habitat assessments and fish collections in early May in order to meet our project timelines. Please see attached.

Thanks for all of your help! I hope you had (and maybe are still having) a fantastic long weekend!

Michael

Michael Godard, B.Sc. (Hons)

Fisheries Biologist, Water & Natural Resources, Environment, Canada

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M +1-519-503-7956

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From: Bonaldo, Michelle (MNRF) [mailto:michelle.bonaldo@ontario.ca]

Sent: Thursday, April 13, 2017 2:39 PM

To: Godard, Michael

Subject: RE: Fish Collection Licenses?

Hi Michael, I am doing well, thank you. How are things with you?

If you have LCF applications to send along, you can send them to me.

I hope you have a wonderful long weekend.

Michelle ©

From: Godard, Michael [mailto:Michael.Godard@aecom.com]

Sent: April 13, 2017 2:29 PM

Hi Michelle,
How are you?
I was wondering who I should be sending Fish Collection Licenses to since Art Timmerman's retirement?
Thanks!!!
Michael
Michael Godard, B.Sc. (Hons) Fisheries Biologist, Water & Natural Resources, Environment, Canada

AECOM

D +1-519-650-8636 M +1-519-503-7956

50 Sportsworld Crossing Road Unit 290 Kitchener, ON, N2P 0A4, Canada T +1-519-650-5313 aecom.com

michael.godard@aecom.com

Subject: Fish Collection Licenses?

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Waterbody Name and location (GPS coordinates & Google Earth map)	Watercourse classification (i.e. warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats, groundwater upwellings, migratory corridors etc.)	Historical data on fish species present, including whether the subject waterbody(s) [SPECIFY LOCATION] are considered to support any vulnerable, threatened or endangered aquatic species	MNR fisheries management objectives, if applicable	In-water timing windows for construction *Prohibited Time Period*
Hanlon's Creek – 43.50343 °N 80.22878 °W	Coldwater		Bluntnose Minnow Brook Stickleback Brook Trout Central Mudminnow Creek Chub Eastern Blacknose Dace Fathead Minnow Longnose Dace Mottled Sculpin Northern Redbelly Dace Pumpkinseed White Sucker		October 1 – June 30
Mill Creek - 43.45538°N 80.17928°W	Cold	Brook trout spawning Brown trout spawning	Bluntnose Minnow Brook Stickleback Brook Trout Brown Trout		October 1 to June 30

			Central Mudminnow Common Shiner Creek Chub Eastern Blacknose Dace Fathead	
			Minnow	
			Rainbow Darter	
			Rock Bass	
			White Sucker	
Aberfoyle	No			
Creek -	information			
43.49912°N	in our			
80.17276°W	records for			
	this			
Irish Creek –	coordinate	Northern Pike	White Sucker	March 15 –
43.42678°N	Warm	Spawning	Northern Pike	June 30
80.26972°W		Spawning	Central	Julie 30
00.20772 ***			Mudminnow	
			Brook	
			Stickleback	
			Pumpkinseed	
Unnamed	Cold		Bluntnose	October 1 –
Trib (1) –			Minnow	June 30
43.43960°N			Brook	
80.21879°W			Stickleback	
			Brook Trout	
			Brown Trout	
			Central	
			Mudminnow	
			Common Shiner	
			Creek Chub	
			Eastern	
			Blacknose Dace Fathead	
			Minnow	
			Rainbow Darter	
			Rock Bass	
		1	TOOK Dass	

			White Sucker	
Bronte Creek	No fisheries			
-43.44700°N	information			
80.11442°W	on file			
Unnamed	No fisheries			
tributary (2) –	information			
43.46352°N	on file			
80.09111°W				
Unnamed	No fisheries			
tributary (3) -	information			
43.46438°N	on file			
80.08682°W				
Mountsberg	Cold	Northern Pike	Banded Killifish	October 1 –
Creek -		spawning area	Brassy Minnow	June 30
43.46843°N		downstream	Brook	
80.07257°W			Stickleback	
			Brook Trout	
			Central	
			Mudminnow	
			Creek Chub	
			Eastern	
			Blacknose Dace	
			Fathead	
			Minnow	
			Largemouth	
			Bass	
			Northern Hog	
			Sucker	
			Northern Pike	
			Pearl Dace	
			Pumpkinseed	
			White Sucker	
Fletcher	Cold	Brook Trout	Brook	October 1 –
Creek -		spawning area	Stickleback	June 30
43.41967°N		downstream	Brook Trout	
80.09150°W			Central	
			Mudminnow	
			Creek Chub	
			Eastern	
			Blacknose Dace	

Largemouth	
Bass	
Mottled Sculpin	
Northern Pike	
Northern	
Redbelly Dace	
Pearl Dace	
Pumpkinseed	
Spottail Shiner	
White Sucker	
Yellow Perch	

From: Wedgewood, Jamie R. (MNRF) < Jamie.R. Wedgewood@ontario.ca>

Sent: July-28-17 12:32 PM

To: Godard, Michael

Cc: Laurence, Anne Marie (MNRF); Buck, Graham (MNRF)

Subject: RE: Request for Informatino - Hwy 401/Hwy 6 Improvements Project

Attachments: Fisheries Info.pdf

Hi Michael,

I've attached the completed Fisheries Information Table. Feel free to contact me if you have further questions related to this information.

Jamie Rose Wedgewood

Jamíe Rose Wedgewood

A/Management Biologist

Ontario Ministry of Natural Resources and Forestry

Guelph District 1 Stone Rd. W.

N1G 4Y2

(P): 519-826-4936

Jamie.R.Wedgewood@ontario.ca

From: Godard, Michael [mailto:Michael.Godard@aecom.com]

Sent: July-28-17 11:29 AM

To: Buck, Graham (MNRF); Wedgewood, Jamie R. (MNRF)

Cc: Piette, Jessica; Hodges, Nick; Mendoza, Jessica

Subject: FW: Request for Informatino - Hwy 401/Hwy 6 Improvements Project

Hi Graham and Jamie!

I sent the email below to both Anne - Marie and Melinda and got out of offices from both of them in which they suggested to contact you two in their absences.

Can you please let me know if you're able to provide a response in their absence?

Many thanks!

Michael

Michael Godard, B.Sc. (Hons)

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From: Godard, Michael

Sent: Friday, July 28, 2017 11:15 AM

To: 'Melinda.Thompson@ontario.ca'; annemarie.laurence@ontario.ca

Cc: Piette, Jessica; Hodges, Nick; Mendoza, Jessica

Subject: FW: Request for Informatino - Hwy 401/Hwy 6 Improvements Project

Good morning Melinda and Anne Marie,

Thank you very much for your response for the 401/6 project earlier in June. We were recently going through all of the data and noticed no fisheries information was included with the response. I have attached the original email with the files which were included in the original submission. Will there be a separate email with regards to fisheries? If you could please let us know the status for this information it would be greatly be appreciated.

Please do not hesitate to contact me should you require further information or have any questions.

Thank you,

Michael

Michael Godard, B.Sc. (Hons)

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From: Thompson, Melinda (MNRF) [mailto:Melinda.Thompson@ontario.ca]

Sent: Friday, June 30, 2017 3:15 PM

To: Piette, Jessica

Cc: McKenna, Tara (MNRF)

Subject: RE: Request for Informatino - Hwy 401/Hwy 6 Improvements Project

Hello Jessica

Please see the attached screening for the area in question



AECOM
30 Leek Crescent, Floor 4
Richmond Hill, ON, Canada L4B 4N4
www.aecom.com

905 882 4401 tel 905 882 4399 fax

October 24, 2017

Tara McKenna
District Planner
Ministry of Natural Resources and Forestry, Guelph District
1 Stone Road West
Guelph, ON N1G 4Y2
Tara.mckenna@ontario.ca

Dear Ms. McKenna:

RE: Highways 6 & 401 Improvements from Hamilton North Limits to Guelph South Limits including a New Alignment of a Segment of Highway 6 Detailed Design and Class Environmental Assessment (G.W.P. 3042-14-00)

The Ministry of Transportation (MTO) has retained AECOM Canada Ltd. to undertake a preliminary design review, followed by the development of a detailed design for two coordinated projects:

- Highways 6 & 401 improvements from Hamilton North Limits to Guelph South Limits including the new alignment of a segment of Highway 6 (G.W.P 3042-14-00), in the Township of Puslinch; and,
- Improvements to Highway 6 (Hanlon Expressway) from Maltby Road northerly to the Speed River (G.W.P 14-00-00), in the City of Guelph and Guelph/Eramosa Township.

It is anticipated that one or both of these projects will be delivered as a design build project.

In addition, AECOM Canada has been retained to develop a conventional detail design contract package for replacement of the Concession Road 7 bridge over Highway 401.

AECOM has been in contact with the Ministry of Natural Resources and Forestry (MNRF) for these projects as follows:

- G.W.P. 3042-14-00:
 - Study commencement notification on June 9, 2017;
 - Request for information on April 27, 2017 with responses on June 30, 2017 and July 28, 2017; and,
 - Introductory Agency Meeting at the MNRF Guelph Office on June 30. 2017.
- G.W.P. 14-00-00:
 - Study commencement notification on August 4, 2017;

- Request for information on April 27, 2017 with responses on June 30, 2017 and July 28, 2017; and,
- Introductory Agency Meeting to be scheduled.

For G.W.P 3042-14-00, AECOM is in the process of completing preliminary field investigations within the study area and at this time is working to determine next steps with regard to species-specific surveys for a number of species at risk that may occur within the study area. MTO and AECOM would like to request a meeting with MNRF in order to discuss 2017 findings and discuss our next steps.

Discussion points include but would not be limited to:

- Site-specific methods for identification of suitable maternity roost trees, snag density surveys and acoustic surveys for bat species at risk;
- Jefferson salamander surveys and DNA testing requirements;
- Potential up-listing of monarch and brook trout;
- Clearing of forested areas to accommodate the section of new Highway 6 alignment, interchanges and connecting roads;
- Mitigation expectations with respect of SAR and forest impacts.

Further, MTO and AECOM would like to discuss the anticipated project delivery model with MNRF in order to determine the appropriate design stage at which potential permitting documents or permit applications should be submitted.

Sincerely,

AECOM Canada Ltd.

Heather Kime, B. Sc. (Hons.)

Consultant Terrestrial Ecologist

Cc: C. Organ - MTO Senior Project Manager

S. Jewell - MTO Project Manager

J. Corcoran - MTO Senior Environmental Planner

E. Roadhouse - MTO Environmental PlannerP. Puccini - AECOM Project Manager

G. Coy - AECOM Deputy Project Manager F. Leech - AECOM Senior Environmental Planner

S. Schmied - AECOM Environmental Planner

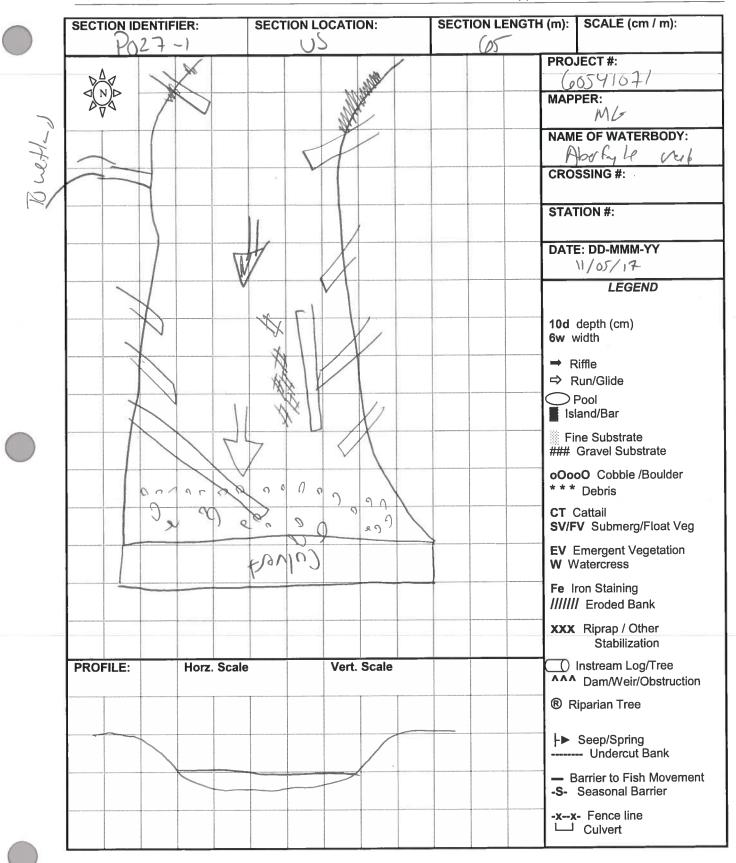


Appendix B

Field Data Sheets

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Section 4: Field Investigations Appendix 4.B: Pond/Lake Field Record Form

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Ministry of Transportation

Environmental Guide for Fish and Fish Habitat

Section 4: Field Investigations Appendix 4.A: Watercourse Field Record Form

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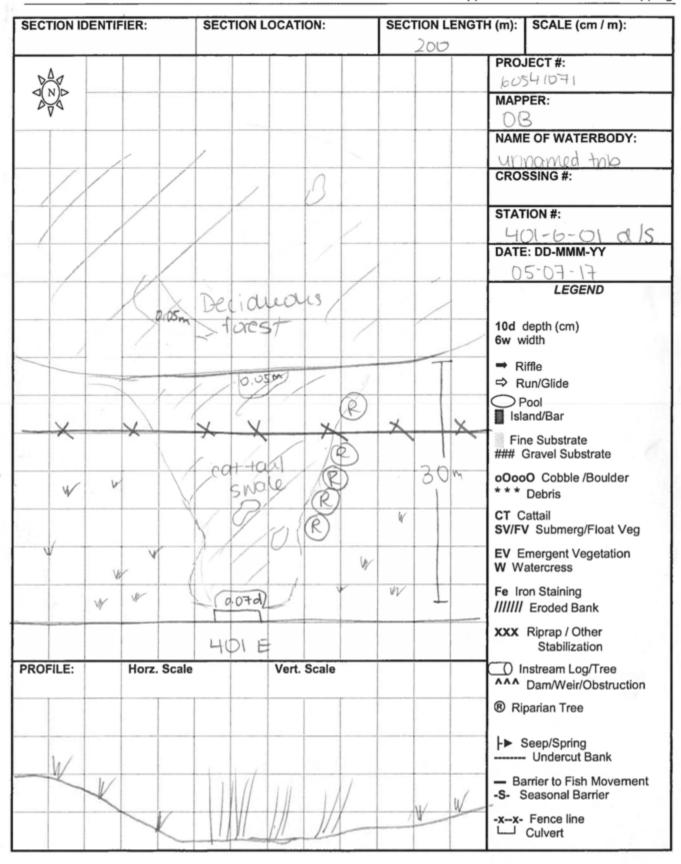
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Section 4: Field Investigations Appendix 4.A: Watercourse Field Record Form

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Environmental Guide for Fish and Fish Habitat

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SECTION TYPE AND MORPHOLOGY	
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(include on habitat map)	
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O O O CURRENT VELOCITY (m/s):	W 1 - T-
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	Other
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Section 4: Field Investigations Appendix 4.A: Watercourse Field Record Form

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HABITAT	PART WY				V12 411		44.6		
IN-STREAM COVER	Undercut banks	Boulders	Cobble	Woody Debris		Organic \(\frac{1}{2}\)	Vascular Ma	crophytes	None
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area):								-	
				Overhanging		-	Overhangin	ġ	
SHORE COV	'ER	100 – 90 %	90 –	60% 60	- 30%	30	0 – 1%	No	ne
(% stream sha	ded):	0	9	λ	0		0	C)
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	pecies					Ca	Heyls		
MIGRATORY	Nor	ne	/	Seasonal	-	1	Permanent)	
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CRITICAL HABI [*] LIMITING:	TAT	-		and the second	and the second		***************************************		
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PROFILE:	Horz. Scale		Vert. Scale			nstream Log/Tree Dam/Weir/Obstruction
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						Fence line Culvert
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Section 4: Field Investigations Appendix 4.A: Watercourse Field Record Form

GENER	AL IN	FORMATION	ON								
PROJE		-5/17 -15		ROJECT DE:	SCRIPTION:	DAY: 05	MON	NTH: 7	YEAR:	+	
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EXISTIN	IG STR	UCTURE	TYPE		,						
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Other O	Desc	cribe:						Size (w x	ch) m ²		
			RPHOLOGY								
SECTIO	N IDEN	NTIFIER:			N LOCATION: n habitat map)						
TYPE:	Strea	am / river	Channelize	ed Perm	anent Inte	ermittent	Ephem	neral ASS	SOCIATI	ED WETL	AND:
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	1	Stable	S	lightly Un	stable Mo	derately Un	stable	Unstable	Э
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IABITAT	Line by		There	A PRINCIPAL PRIN	E PROPERTY.	Charles and the	THE TENT		None
	dercut anks	Boulders	Cobble	Instream Overhar	n ~	Organic debris	Instream 5	ascular Macrophytes stream 50 verhanging 50	
SHORE COVER	1	00 – 90 %	90 -	60%	60- 30%		30 – 1%	No	ne
(% stream shaded)	:	Ø	C)	0		0	C)
VEGETATION TYPE (%):		Submerge	nt		Floating		Emergent		lone
Predomina Speci	72555	-			-	CC	H tails		-
IIGRATORY DBSTRUCTIONS:	None	_		Seaso	onal		Permanent intermit		
OTENTIAL RITICAL HABITAT IMITING:	Spaw	ning		Evide	ence of Groundwa	ater	Other	_	
The second secon	CEMENT	OPPORTUNIT	IES:		Marie Contract	50 183	ADE TO A	THE PARTY OF	MAG.

COMMENTS:

- · cattail swale at they 401 with limited standing water at culvert mouth
- · swale extends past property boundary into accidurans forest
- o not fish habitat , birds observed
- · no PTE site assessed 30m to fence, then visually assessed remainder of site

Additional Notes Appended?

O No O Yes

number of pages

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
	comens forest	PRO. (a) 9 MAPI OC NAMI CROS STAT L OC DATE 10d of 6w w R R R R R Fir	PER: SHIDFI PER: E OF WATERBODY: C MOOD + 10 b SSING #: TON #: 10 - 6 - 0 2 d /s E: DD-MMM-YY 05 / 0 4 1 4 LEGEND depth (cm) idth iffle un/Glide
W 30m	Walfo.25d W	00000 *** CT C SV/F EV E W W Fe In	O Cobble /Boulder Debris cattail / Submerg/Float Veg mergent Vegetation attercress on Staining Eroded Bank Riprap / Other
PROFILE: Horz. Sc	ale Vert. Scale	^^^	Stabilization nstream Log/Tree Dam/Weir/Obstruction parian Tree
· W V	W W	— Ba-s- S	Seep/Spring Undercut Bank errier to Fish Movement Seasonal Barrier Fence line Culvert

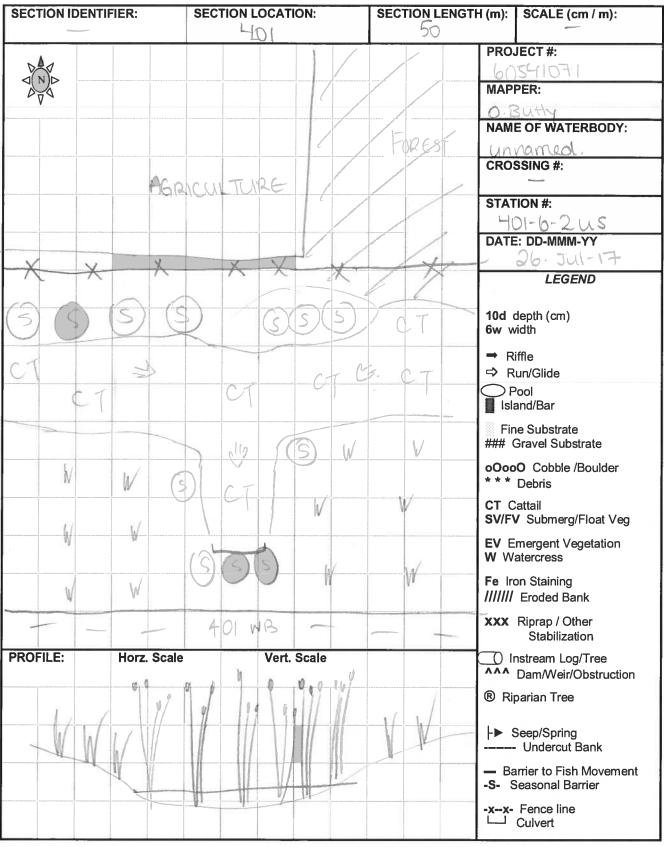
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Section 4: Field Investigations Appendix 4.A: Watercourse Field Record Form

GENER	AL INF	ORMATIC	NC							731		
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Other O	Desc	ribe:								Size (w x h)	m²	
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BANK STABILIT	Υ					14 W.H. C.	4					
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SHORE COV		10	00 – 90 %	90 –	60%	60-	30%		30 – 1%		Noi	ne
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OBSTRUCTIONS	S:								-	The state of the s		
POTENTIAL	5	Spawn	ing	**********	Evide	nce of Grou	undwa	iter	Other			
CRITICAL HABIT		•		AND THE PARTY OF T			Part of the State		,			
LIMITING: POTENTIAL EN						£-				LOCAL DE		- 12
None												
Remarks: Remarks west with si Not Remarks	Swa tendi	les Fal	Featur water	e is	Sul habi	led is strate	\$ C \$ c	cattails af number	ad ht	Slet	ritus	
Additional Note	s Appen	ded?	O No O	Yes	number	of pages _						





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		NT required for					No street,	
O Yes	O No		Unknown					
COLLECTOR			ATHER CONDI	TIONS:	TIM	E STARTE	D:	TIME FINISHED:
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AIR TEMP:	2 "		WATER TEMP	: _			CONDUCTIVITY	
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21-	-	DESCRIPTIONS):					
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TYPE: Stre	eam / river	0	Permanent	Interm		0	a.	TED WETLAND:
TYPE: Stre	eam / river	O TH (m): 200	Permanent O	Interm	JRRENT V	O VELOCITY	(m/s):	,
TYPE: Stre	O O Run	O TH (m): 200	Permanent O	Interm		O VELOCITY	a.	Other
TOTAL SECT SUB- SECTION(S)	O O Run	O TH (m): 200	Permanent O	Interm	JRRENT V	O VELOCITY its	(m/s):	,
TYPE: Stre	O TION LENGT	O TH (m): 200	Permanent O	Interm Ø	Fla	O VELOCITY ots	(m/s):	Other
TOTAL SECT SUB- SECTION(S) Percentage of area Mean depth	O TION LENGT	O TH (m): 200	Permanent O	Interm Ø	Fla	O VELOCITY tts	(m/s):	Other
SUB- SECTION(S) Percentage of area Mean depth wetted (m)	O TION LENGT	O TH (m): 200	Permanent O	Interm Ø	Fla	O VELOCITY its	(m/s):	Other
TYPE: Street SUB- SECTION(S) Percentage of area Mean depth wetted (m) Mean width wetted (m)	O TION LENGT	O TH (m): 200	Permanent O	Interm Ø	Fla	O VELOCITY its	(m/s):	Other
TOTAL SECT SUB- SECTION(S) Percentage of area Mean depth wetted (m) Mean width	O TION LENGT	O TH (m): 200	Permanent O	Interm Ø	Fla	OVELOCITY Its	(m/s):	Other
TYPE: Street SUB- SECTION(S) Percentage of area Mean depth wetted (m) Mean width wetted (m) Mean bankfull	O TION LENGT	O TH (m): 200	Permanent O	Interm Ø	Fla	OVELOCITY Its	(m/s):	Other
TYPE: Street SUB- SECTION(S) Percentage of area Mean depth wetted (m) Mean width wetted (m) Mean bankfull width (m) Mean bankfull	O TION LENGT	O TH (m): 200	Permanent O	Interm Ø	Fla CO	OVELOCITY Its D 25	(m/s):	Other

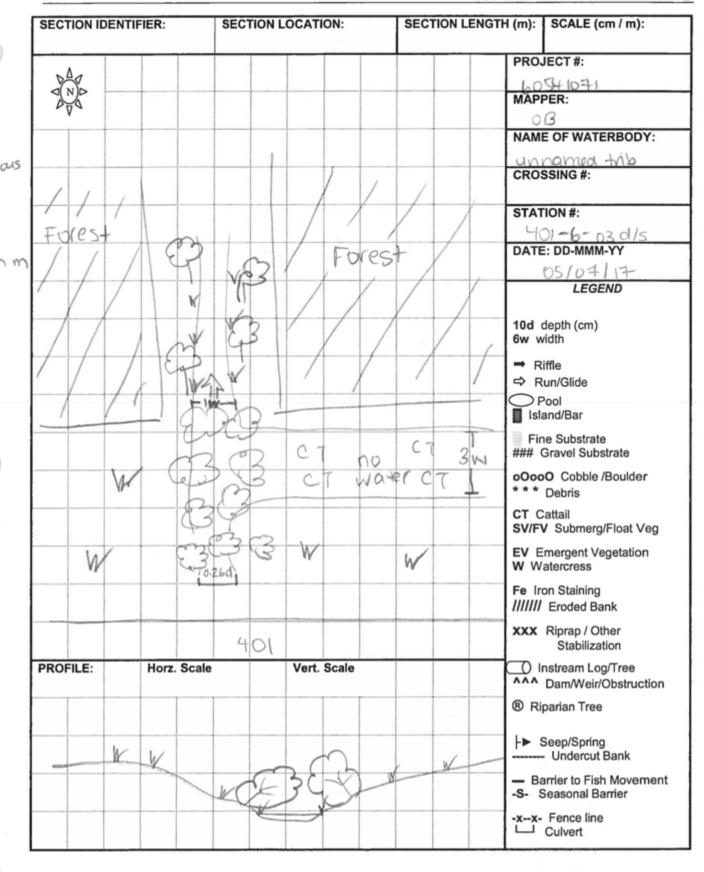
Additional Notes Appended?

O No O Yes

Appendix 4.A: Watercourse Field Record Form

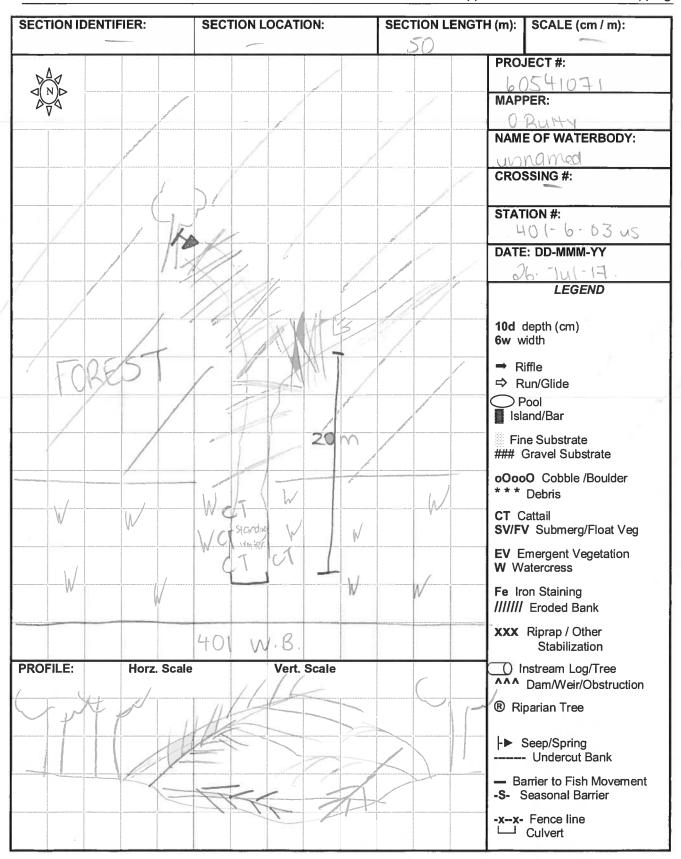
			Stable	S	lightly Uns	stable	Moderately Un	stable	Unstable	9
Left Up	stream B	ank	Q		0		О		0	
Right Up	stream B	ank	Q (0		О		О	
IN-STREAM COVER (% surface area):	Underd		Boulders	Cobble	Woody D Instream		Organic debris	Vascular Ma Instream Overhanging	-	None
SHORE CO	VER	10	00 – 90 %	90 -	60%	60- 30	%	30 – 1%	No	ne
(% stream sha	aded):		X)	0		0	C)
VEGETATION (%):	TYPE		Submerge	ent		Floating		Emergent	N	lone
	ominant Species		-			-			. 10	0
MIGRATORY OBSTRUCTION	2000	None	_		Seaso	nal		Permanent		
POTENTIAL CRITICAL HAB LIMITING:		Spawn	ning		Evider	nce of Ground	water	Other		1
POTENTIAL EN	HANCEN	MENT (OPPORTUNIT	IES:	III TAN	No. of Parties		A STATE OF THE PARTY OF THE PAR	THE PERSON	
, none										
									-	
· no PT	E-O ol fi	nage isse: sh sh n	ssed to habitat	brober	ty bo	urdanj e wateri	os at the est current	- 15m d/s	s of will	0 A ,

number of pages



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60546	errore de la companya del companya del companya de la companya de	IT required for	this section:		6	07	ec. T	
O Yes	O No	OF THE PARTY	Unknown					
COLLECTOR			EATHER CONDIT	TIONS:	TIME STAI	RTED:	TIME FINIS	HED:
AUI		1	Cloudy	10.10.	140			
AIR TEMP:	21.6		WATER TEMP	17.8	_			
PHOTO NUM	BERS AND D	ESCRIPTIONS	109-1					
LOCATION	tenno la		Aut at 1	THE REAL PROPERTY.				THE WATER
NAME OF W	ATERBODY:	DRAIN	NAGE SYSTEM:	CR	OSSING #:	STATION 401		/ <
LOCATION O	OF CROSSING	# 401W,	, hert of	Hu. 6	The st			
Sparity.				, , , , , , , , , , , , , , , , , , ,				
GPS COORD	INATES:	5147 4810	568	MTO CH	HAINAGE:		1436 IVITY (µS/cm): 32 N#: -6-34 h) m ²	
TOWNSHIP:	Greld	h		MNR DI	STRICT:	turora		
	ND POLLUTION		- Wilderson C	221170				
	ING LAND USI	E:			ES OF POLL		ra	
Hwy 40	W			Hu	y runo+	FF		
EXISTING ST	RUCTURE TY	YPE	at ball of	STATE OF THE PERSON NAMED IN		A section		Sal Tarak
Bridge		Box Culver	to Oper	n Foot Culver	t O	CSP O	N	I/A O
Other O Des	scribe:					Size (w x	h) m ²	
The second secon	PE AND MOR	PHOLOGY	Chief to	425 74				
SECTION IDE	NTIFIER:		SECTION LOCA (include on habitat m					
TYPE: Stre	eam / river	Channelized	Permanent	Intermitte	nt Ephe	meral ASS	OCIATED WETL	AND:
	Ø	0	D.	0	(0	TIME FINISI 1430 FIVITY (µS/cm): 92 N#: 1-6-34 N/ (h) m ² SOCIATED WETL	
TOTAL SECT	ION LENGTH	1 (m): 50	to HELL	CURF	RENT VELOC	ITY (m/s):		1000 000
SUB-	Run	Poo) Ri	iffle	Flats	Inside cul	N#: -6-3U/ N/ h) m ² OCIATED WETL. Vert Co	Other
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width (m) Mean								
bankfull depth(m)		_	-		0.40		0.	50
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		THE PARTY OF						

						1450	dishir-in	17.16	
	Stable	S	lightly Unstable	Mode	rately Unst	able	·	Jnstable	!
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Right Upstream Ba	nk O		ø		0		o ar Macrophytes m lola nging No		
HABITAT			THE RESERVED	n- Wi B		307	TE AM		
IN-STREAM Undered banks (% surface area):		Cobble	Woody Debris Instream 50 % Overhanging	<	Organic debris	Vascul Instrea Overha	m (0)		None
SHORE COVER	100 – 90 %	90 –	60% 60-	- 30%	;	30 – 1%		Nor	ie
(% stream shaded):	0	Ģ	?	0		0		0	
VEGETATION TYPE (%):	Submerge	ent	Floating		E	mergen	t	N	one
Predominant Species		p							
MIGRATORY OBSTRUCTIONS:	one		Seasonal			Perma	nent		
POTENTIAL S CRITICAL HABITAT LIMITING:	pawning		Evidence of Gro	undwater	>	Other	. 4		2
None									
COMMENTS:						× 10 mg			



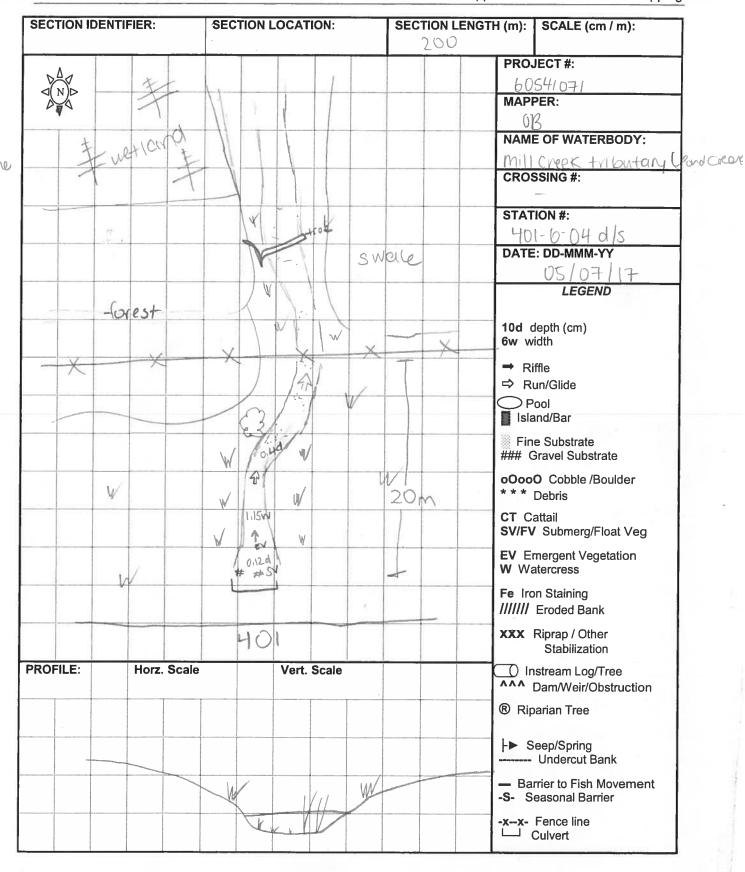
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PROJECT #:		PRO	PROJECT DESCRIPTION:		DAY: MON			YEAR:		
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O Yes	O No		Unknown							
COLLECTOR			EATHER CO	NDITIONS:	TIN	IE STAR	TED:	TIME FINE	SHED:	
	DB . A O			um		12:05		12:38		
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LOCATION										
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AND USE A	- 1						0.00			
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D. J.										
XISTING ST			.bel	F C	0		222.0		0	
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Other O Des	cribe:						Size (w x h) m ²		
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ECTION IDE	NTIFIER:		SECTION L							
YPE: Stre	am / river	Channelized	Permane	anent Intermitte		Ephem	eral ASSO	CIATED WET	LAND:	
	×	0	184			0	135			
OTAL SECT	ON LENGTI	1 (m): 200		С	URRENT	VELOCIT	(m/s):	derate		
SUB-	Run	Po	ol	Riffle	Fla	ats	Inside culve	ert	Other	
SECTION(S)	0			0	0		0			
Percentage of area	85			15						
Mean depth	.19			7-16/200						
wetted (m)	0.40	2		05	100					
Mean width wetted (m)	1.15			0.07		/				
Mean bankfull	4.0			3.0						
width (m)	70.0	خدد ا		3.0					-	
Mean bankfull		_)	
depth(m) Substrate	5001	200) Gr					improme	
Dadwale	3081 20	T		O 501		214	01		T	
Bedrock	Boulder	Cobble	Gravel	Sand		Silt	Clay	Muck	Detritus	

Left Upstream Right Upstream Right Upstream RABITAT IN-STREAM COVER (% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%): Predominant Species	Bank Bank rcut Bouks 100 - 9 O	-	Slightly Uns O O bble Woody I Instream Overhar	Debris	debris	Unsta O O ular Macrophyte		
Left Upstream Right Upstream IABITAT IN-STREAM COVER (% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%): Predominant Species	Bank Bank rcut Bouks 100 - 9 O	Ŏ d d d d d d d d d d d d d d d d d d d	O O bble Woody I Instream Overhar	Debris	O Organic debris	O O ular Macrophyte		
Right Upstream ABITAT IN-STREAM COVER (% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%): Predominant Species	Bank rcut Bouks 100 - 9 O	o Co	bble Woody I Instream	1	O Organic debris	O ular Macrophyte		
ABITAT IN-STREAM COVER (% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%): Predominant Species	rcut Bouks 100 - 9 O St	olders Co	Instream Overhar	1	Organic Vasc debris	ular Macrophyte		
N-STREAM Under COVER (% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%): Predominant Species	100 – 9 O	-	Instream	1	debris	0.51	s None	
(% stream shaded): VEGETATION TYPE (%): Predominant Species	O St	0 %	90 - 60%		Over	hanging /	-	
(%): Predominant Species	Su		0	60- 30% O	30 – 1	%	None O	
	Submergent 80			Floating	Emerge 20		None	
IIGRATORY BSTRUCTIONS:	None	Vone		onal	Perm	Permanent		
OTENTIAL RITICAL HABITAT IMITING: OTENTIAL ENHANCE	Spawning MENT OPPO	PRTUNITIES:	1	nce of Groundwa	ter Othe	r		
·None								
COMMENTS: this butary to the shape	+ (Dund (180X)	fle, slow	s at mear	vest of thur nder 27m a)	s where	ramp	

number of pages

O No O Yes

Additional Notes Appended?



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	AM REALIGNMEN		771-171-111	NO I	02 1	07	Total Control	CULT
O Yes	O No		Unknown					
COLLEC			EATHER COND	ITIONS:	TIME	STARTED:		TIME FINISHED:
03	, AO	C	canwair	n	14	:50		15:10
AIR TEM	IP: 4		WATER TEM	IP: 5.4		CO	602	f (μS/cm):
РНОТО	NUMBERS AND E	ESCRIPTIONS	3:			í		, Carrier
OCATIO	ON			100 Mike	(GIZZA	SEC. NAME OF	PARAME	
AME O	F WATERBODY:	DRAIN	AGE SYSTEM	: CF	ROSSING	#: S	TATION #:	100 0 70 000
Will C	check tribu	tarul			'>		401-6	-04 u/s
	ON OF CROSSING				J.	man in ful		in anathra
H	my 401 W	OF HU	4 6 N	, PO3	6			
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XISTIN	G STRUCTURE T	YPE		The state	-			
	G STRUCTURE T	PE Box Culver	tO Ope	en Foot Culve	ert O	CSP	0	N/A O
Br			tO Ope	en Foot Culve	ert O			
Br Other O	nidge O Describe:	Box Culver			ert O		O ze (w x h) m	
Br Other O	ridge O Describe:	Box Culver	SECTION LOC	ATION:	ert O			
Brother O ECTION	Describe: N TYPE AND MORNIDENTIFIER:	Box Culver	SECTION LOC (Include on habitat	ATION:		Siz	ze (w x h) m	2
ther O	Describe: N TYPE AND MORNIDENTIFIER: Stream / river	Box Culver	SECTION LOC (include on habitat	ATION: map)		Siz	ze (w x h) m	
Brother O	Describe: NTYPE AND MORNIDENTIFIER: Stream / river	Box Culver PHOLOGY Channelized O	SECTION LOC (Include on habitat	ATION: map) Intermitt	ent E	Siz Sphemeral	ASSOCIA	2
ther O ECTION YPE:	Describe: N TYPE AND MORN IDENTIFIER: Stream / river O SECTION LENGTH	Box Culver PHOLOGY Channelized O	SECTION LOC (Include on habitat Permanent O	Intermitt O CUR	ent E	Sizephemeral O LOCITY (m/	ASSOCIA	2
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ther O ECTION ECTION YPE: OTAL S SUB-	Describe: NTYPE AND MORNIDENTIFIER: Stream / river O SECTION LENGTH	PHOLOGY Channelized O	SECTION LOC (Include on habitat Permanent O	Intermitt O CUR	ent E	Sizephemeral O LOCITY (m/	ASSOCIA	ATED WETLAND:
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ther O ECTION YPE: OTAL S SUB- SECTION Percent of are	Describe: NTYPE AND MORNIDENTIFIER: Stream / river O SECTION LENGTH N(S) O age Sa Opth	PHOLOGY Channelized O I (m): 50	SECTION LOC (Include on habitat Permanent O	Intermitt O CUR	ent E	Sizephemeral O LOCITY (m/	ASSOCIA	ATED WETLAND:
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THE OF THE STATE O	Describe: NTYPE AND MORNIFIER: Stream / river O EECTION LENGTH N(S) O age a Epth (m) O didth (m) O O O O O O O O O O O O O O O O O O O	PHOLOGY Channelized O I (m): 50	SECTION LOC (Include on habitat Permanent O	Intermitte O CUR Riffle O 5	ent E	Sizephemeral O LOCITY (m/	ASSOCIA	ATED WETLAND:
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Additional Notes Appended?

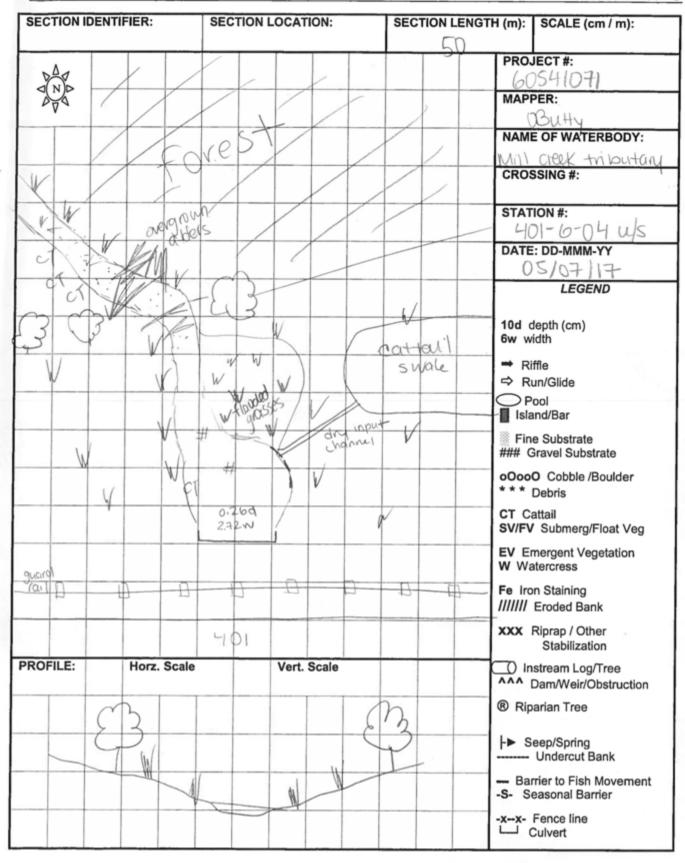
O No O Yes

Left Upstream		Stable	S	lightly Unstable	Moderately Ur	nstable	Unstable	
	m Bank	0		O.		enodina+	0	
Right Upstream	m Bank	0		0	Ø.	SUPER	0	
ABITAT			REPORTED IN	STATE OF THE PARTY	CONTRACTOR OF THE PARTY OF THE	NEW TOWN		
1.5 (1.5 (1.5 (1.5 (1.5 (1.5 (1.5 (1.5 (dercut anks	Boulders	Cobble	Woody Debris Instream 20 Overhanging 2	Organic debris	Vascular Ma Instream Overhanging	30	lone ()
SHORE COVER (% stream shaded):	2 1	100 – 90 % 90 O		60%	50- 30% Ø	30 – 1% O		
VEGETATION TYPE (%):		Submerge 20	nt	Floating	co++c	Emergent BO	None)
Predomina Speci		grasses			terrest	ial grasses	herraceau	S
MIGRATORY NO OBSTRUCTIONS:		e		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT IMITING:	Spaw	ning		Evidence of G	roundwater	Other	_	
COMMENTS:	500		THE IT IN		5 P 5 10	THE REAL PROPERTY.	75-06	

number of pages

Ministry of Transportation Environmental Guide for Fish and Fish Habitat

Section 4: Field Investigations Appendix 4.C: Fish Habitat Mapping



Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

Section 4: Field Investigations Appendix 4.A: Watercourse Field Record Form

GENERAL IN PROJECT #:			ECT DESCRIPTI	ON: D	AY:	MONTH	: YEA	AR:	
6054			1401/Hung	6	05	67	2	017	
s STREAM R	EALIGNME	NT required for	this section:						
O Yes	O No		Unknown		12.2				Y STATE OF
OULECTOR			ATHER CONDI		TIM	E STARTE		TIME FINIS	
AIR TEMP:	UB	10	lear, war	M		12:45	ONDUCTIVIT	13:2	40
UK IEWP:	24		WATER TEMP	3.7		1	805	r (µS/cm):	
		DESCRIPTIONS	:						
	-62								
OCATION AME OF WA	TERRORY	DDAIN	AGE SYSTEM:	01	ROSSIN	C #-	STATION #:		
		DRAIN	AGE STSTEM:	"	KUSSIN	G #:		55 46	
OCATION O		G-					401-6-0	25 9/5	
			of ramy	D. PO	48				
PS COORDI	NATES: O	366202 L	OEFO 181	МТО	HAINA	GE:	-		
OWNSHIP:	^	1		MNR	ISTRIC	T: ^			
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AND USE AN				20115	050.05	DOLLUT	N.		
URROUNDIN		SE:			CES OF	POLLUTIO	JN:		
Huy, -	101621			- Ru	1)00				
XISTING ST	RUCTURE T	YPE							
Bridge	0	Box Culver	nor Oper	n Foot Culve	ert O	CS	SP O	N	VA O
						T	-		
ther O Des	cribe:						Size (w x h) m	2	
ECTION TYP		RPHOLOGY							
ECTION IDE	NTIFIER:		SECTION LOCA (include on habitat m						
							LASSOCIA	ATED WET	AND.
YPE: Stre	am / river	Channelized	Permanent	Intermitt	ent	Ephemera	ASSOCIA	ATED WET	LAND:
	×	0	0	0		0			
OTAL SECTI	ON LENGTH	H (m): 200)	CUR	RENT	/ELOCITY ((m/s):		
SUB-	Run	Poo	l Ri	ffle	Fla	ts I	nside culvert		Other
ECTION(S)	0	0		0	C		0		
Percentage							7		
of area	100								
Mean depth	0.8								
wetted (m)	10.0							11/17/	
flean width wetted (m)	8		No.						
	0		Maria I		-/-				
Mean bankfull	9.5								_
width (m)	1.0			/				-	
Mean	1.8			/					1
bankfull	1.0			((
depth(m) Substrate	4060					-			
Jupatrate	40 Mu 105a 10	Si'		I INCHES					
Bedrock	Boulder	Cobble	Gravel	Sand	5	ilt	Clay	Muck	Detritu
Br	Во	Co	Gr	Sa		Si	CI	Mu	D

	TY		Stable	S	lightly Ur	nstable Mo	derately Un	stable	Unstable	е
Left Up	stream E	Bank	0		O.		Ø	0)
Right Up	stream I	Bank	0		O		ø		0	
HABITAT			46 3000			No.		THE REAL PROPERTY.	150/150	
IN-STREAM COVER (% surface area):	Under		Boulders	Cobble	Instream 15 Overhanging 4(Organic debris	Vascular M Instream Overhangin		None
SHORE COVER (% stream shaded):		1			60%	60- 30% O		30 – 1% O	None	
VEGETATION (%):		Submergent			Floating		Emergent IS		None	
	ominant Species		grasses			_	9	rasses		
MIGRATORY OBSTRUCTION	S48	None	V		Seas	Seasonal			t	
POTENTIAL CRITICAL HAB LIMITING:		Spawr	ning Truping	ids	Evid	dence of Groundwa	ater	Other		
POTENTIAL EN	the state of the s	-	The second secon			1000		E 19.81	4386	
· avon	da	ilve	A to I	educe	flou	o & bank	c erosi	00		

-		CAU	re.
CON	am	EN.	15:

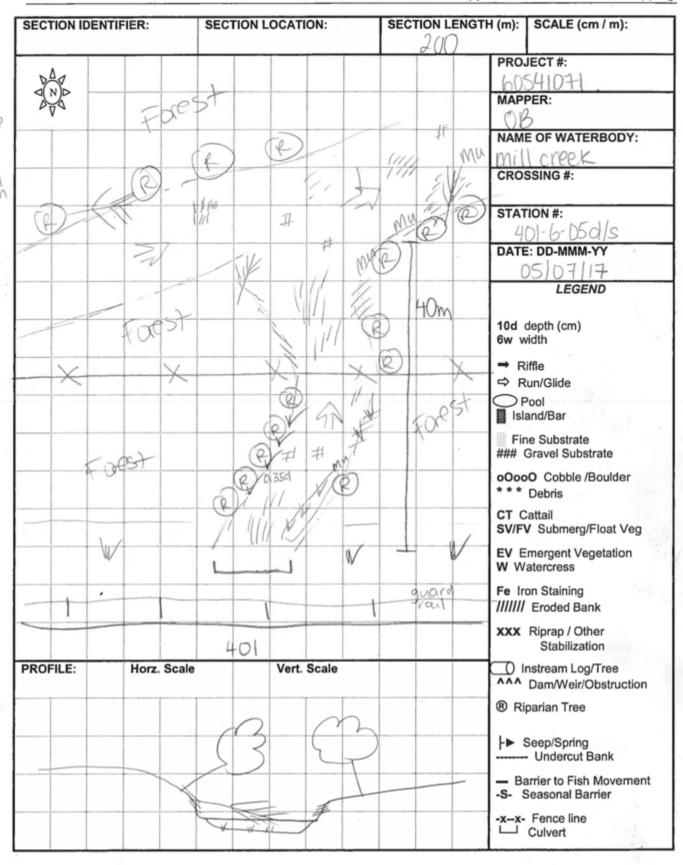
- · Will Creek permanent stream flowing through deciduous -forest
- · tributary (?) joins at N40 m a/s of culvert
- fish, ampliban, binth c habitat.
- · YOY fish (rypnnids) observed, dathers observed
- Im on either bank suft depusited muck/sitt, gravel substrate centre of channel, potentially from high flows enough bank/ top soil

Additional Notes Appended?

O No O Yes

number of pages

Ministry of Transportation Environmental Guide for Fish and Fish Habitat Section 4: Field Investigations Appendix 4.C: Fish Habitat Mapping



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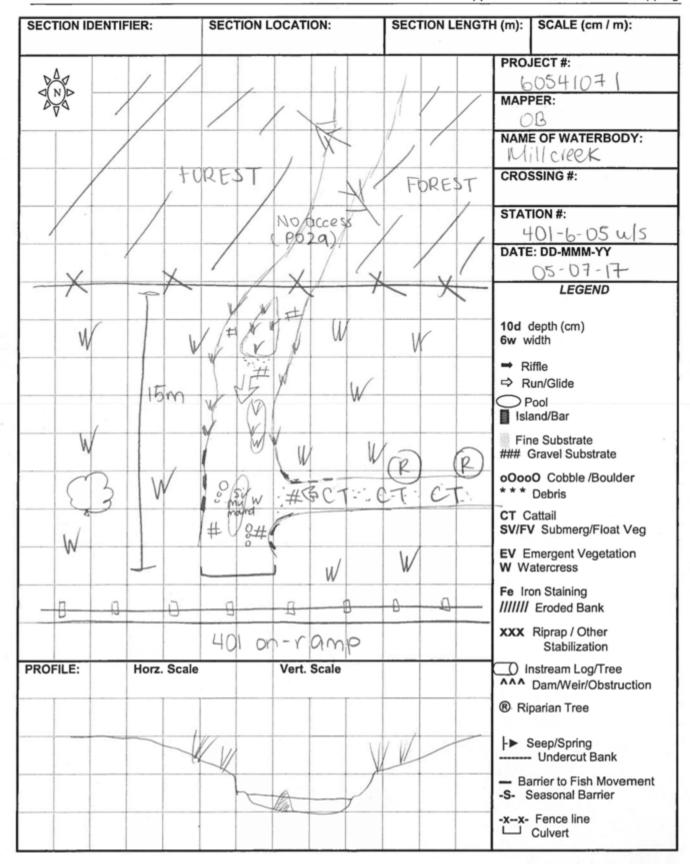
Environmental Guide for Fish and Fish Habitat

Section 4: Field Investigations
Appendix 4.A: Watercourse Field Record Form

GENERAL IN	FORMATIO	N							
PROJECT #:	071		ECT DESCRIPT		AY:	MONTH:	YEA		
60541		NT required for	this section		<u>75</u>	107	20	1+	
O Yes	O No		Unknown						
COLLECTOR			ATHER COND	ITIONS:	TIE	ME STARTED:		TIME FINIS	HED:
013 4	0		dear, wo	m		14:00		14:40	2
AIR TEMP:	24	Li tuli	WATER TEM		3	CO	TIVITOUDI	Y (μS/cm):	all inter
РНОТО NUM	BERS AND I	DESCRIPTIONS							
LOCATION		63-7	\					_	
NAME OF WA	TERBODY:	DRAIN	AGE SYSTEM:	С	ROSSI	NG#: S	TATION #:		o Indian
mill cre	ek						401-6	0-05	u/s
		G:	Ç (III.)			2020	10.		
Huy "	401 04	-Offugue	No lon-	rame) (100 29			
3PS COORDI	NATES: 5	66247	1810B17	MTO	CHAIN	AGE:	PER PER		
TOWNSHIP:	Guelph	1		MNR	DISTRI	CT: AUNOR	a	4.90	in Slow and
AND USE A						1 101 01			
URROUNDI						F POLLUTION:		- matri	of Island
fores	t, hur)		ru	notf				
								de de	
XISTING ST	- 2								
Bridge	0	Box Culver	to Ope	n Foot Culv	ert O	CSP	0	1	I/A O
Other O Des	adha.							2	
SECTION TYP		SPHOLOGY				Siz	te (w x h) m		
SECTION IDE			SECTION LOC						
TYPE: Stre	am / river	Channelized	Permanent	Intermit	tent	Enhamaral	LASSOCIA	ATED WET	LAND:
TPE: Sue	am / river				tent	Ephemeral	1		LANTO.
OTAL SECT	N FNCT	0	Ø	0	DDENT	O VELOCITY (m/	e).	1.1	
OTAL SECTI	ON LENGTH	1 (m): 50 m	1 (15 to fe	n/e)	KKENI	VELOCITY (III)	»). N/	A	
SUB-	Run	Poo	l R	tiffle	F	lats Ins	ide culvert	115	Other
SECTION(S)	0	0		0		0	0		
Percentage		/	121				- ///	Br In	
of area	100								
Mean depth	0.3	/							
wetted (m)	.0.0								
Mean width wetted (m)	Q.4				/				
Mean	1,1		7 7 7 7		/			1	
bankfull	4.1							1 /	
width (m)	TA			-				-	
Mean bankfull	0.7							/	
depth(m)	0. 1			4				1/	
Substrate	50Gr 2	(Si Co		a rimi		man ord	r Viete		
Bedrock	Boulder	Cobble	Gravel	Sand	T		lay	Muck	Detritus
Br	Во	Co	Gr	Sa		Si	CI	Mu	D

Appendix 4.A: Watercourse Field Record Form

Left Upst	tream Ba	Stable O	Slig	ghtty Unstable		y Unstable	Unstable O
Right Upst	tream Ba	ank O		is (0	0
IN-STREAM COVER (% surface area):	HORE COVER stream shaded): ETATION TYPE (%): Boulders Boulders		25	Woody Debris Instream Overhanging	Orga deb	21,000,00	50 5
		100000000000000000000000000000000000000	90 - 60	2000	30%	30 – 1%	None
	_	Submerge	nt O	Floating	òx	O Emergent	None
Predon	1,100	Water cress		_	te	11estrial-	
Species No OBSTRUCTIONS:		lone		Seasonal		Permanent	
CRITICAL HABIT	AT	_	-	watera	ress		
	Personal Property	ent opportunit Oding bank					
Stabilize Stabilize Stabilize Mill Cre enoding dense	eek bar fixes	crossing	Huy L ng in begins	tol at the sitt much at proper	146 N	Id up in	stream



> full reach assessed ROW aggregate pit access
Section 4: Field Investigations

Ministry of Transportation

Environmental Guide for Fish and Fish Habitat

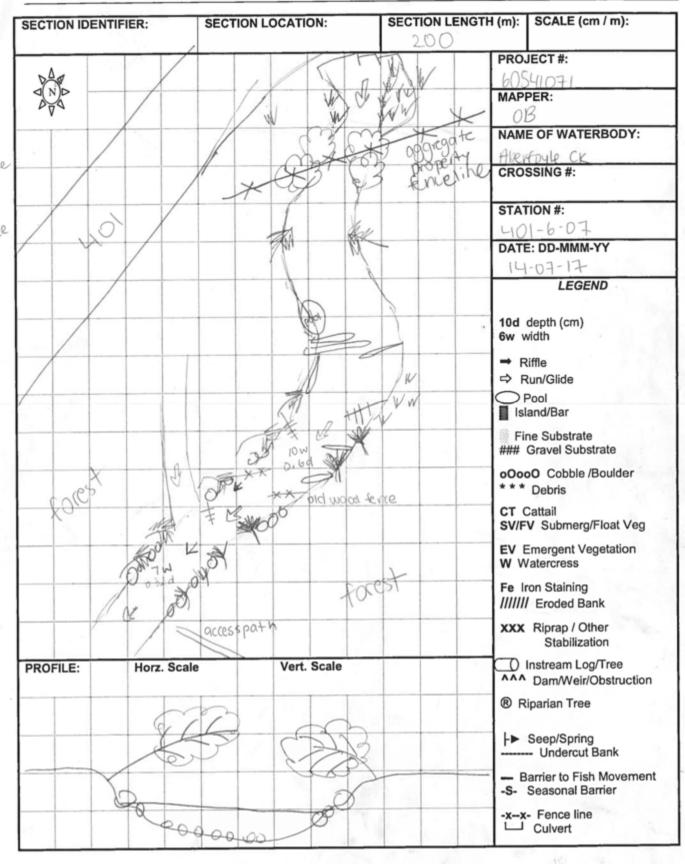
Appendix 4.A: Watercourse Field Record Form

GENERA	LINE	ORMATIC	ON									
PROJECT	T#:				ECT DESC	RIPTION:	DAY:	MON	2	YEA		
600			AIT -		01-6	- constitution	14	1.0	27	1 20	コナ	04.000000000000
	W RE				this sectio	n:						
O Yes	TORE	ON	0		Unknown ATHER CO	MOITIONS	. 7	IME STAR	TED:	1	TIME FINIS	uen.
O		RVR			mid, clou			10:30	TEU:		11:25	neu.
AIR TEM		7		ITM	WATER	remp:		10.00	CONDUC	TIVITY	(µS/cm):	6703333
		+					8.4		190	63E		removed of
PHOTO N	UMB 3	b-50	DESC	RIPTIONS	int 46 L	unvert	pics	(wask	od u/s	duir	9 95505	ssment)
LOCATIO												
NAME OF				DRAIN	AGE SYST	EM:	CROSS	SING #:	STATI			
		CIECK							40	-6-	70/5	5
LOCATIO	N OF	CROSSIN	NG:	0001	a) 110	11 2		0.10	mno ()	,	m 1 m	march 1997
Hbe	1101	le/In	111 6	CIECK	0+ 40	11 8	agging	jute p	roper+	4 (PU 48)
GPS COC	ORDIN	ATES:	566	901 48	10924	N	ITO CHAI	NAGE:				
TOWNSH	IIP:	Milto	n			N	INR DISTR	RICT:	de d		III (gen	
LAND US	E ANI	D POLLU	TION									
SURROU	NDIN	G LAND U	JSE:	,		S		OF POLLU				
MIXE	af	1200	hi	ghway	ate pi		Hunio	991999	unost			
OF THE PERSON NAMED IN COLUMN				99919	UTE PI	12		1000				
EXISTING		707.		Day Culum	i de	Ones Fact	Cubic t C		CCP O			VA O
Bu	idge C	,		Box Culver		Open Foot	Cuivert O		CSP O	0.1	P	WA U
Other O	Descr	ribe:	Č	barre	cultert				Size (w	x h) m ²		
SECTION	TYPE	AND MC	RPHO	DLOGY								10.00
SECTION	IDEN	TIFIER:			SECTION I (include on ha							
TYPE:	Strea	m / river	Cha	nnelized	Perman	ent Int	ermittent	Ephem	neral AS	SOCIA	TED WET	LAND:
		òs.	623.8	0	100		0	0		-	-	
TOTAL S	ECTIO	N LENGT	TH (m)						TY (m/s):	in richar	740	
	*****			2100								
SUB-		Rur	1	Poo	ol	Riffle		Flats	Inside c			Other
1000		, 0		0		0		0	0			
Percenta of area		75		5		20	1		/	/		
Mean de					_		1	/		/		
wetted (-	000		038	5	@3		/		/		
Mean wi		8		1125		8			1			1
wetted (U		11 4		4	4		1		-	1
Mean		9		12.9	0	9			/		//	
width (r		1		12.	3	1	and the	Tide or a	/	/	1 /	
Mean	1	1 -						1			/	1
bankfu		1.5		1.5		1.5		/	/		1/	-/
depth(r Substra		306 9	5B0	4059	. 3	230 5B	0			-		/
			551	4051	10Gr 3	06' 50 06' 50		ly a		,		/
Bedrock		Boulder		Cobble	Gravel	Sai	1000	Silt	Clay		Muck	Detritus
Br		Bo		Co	Gr	S	a	Si	CI		Mu	D

Appendix 4.A: Watercourse Field Record Form

Left Upst		Stable	S	lightly Unstable	Moderately Ur	nstable	Unstable	
Right Upstream Bank				0	0		0	
Right opsi	tream Bank	Ø		o	0		О	
IABITAT	ALKIN)	REXENT	BIRNIE.	NEGALE EN		TO BE STATE OF THE	18 6	
COVER (% surface area):	Undercut banks	Boulders	Cobble 70	Woody Debris Instream 20 Overhanging 60	Organic debris	Vascular Mac		None
SHORE COVE	-11	00 – 90 % O	90 -	7	30% O	30 – 1% O	Nor	
VEGETATION T (%):	YPE	Submerge 5	ent	Floating		Emergent	N	one
Predon	minant pecies					_	-	
MIGRATORY DBSTRUCTIONS	None) _		Seasonal		Permanent		
historic								
	SW WI	here it @	onfluer	4 401 E co nces with Po				16.5
McChina	1015	ed (fish 1	nabitat	in provening) - personal	comm from	1991ega	te pr
McChimn historically	modifi			-Delater of	THE CONTRACTOR OF THE CONTRACT			. 0
McChimn historically good fish h	nabrium							
McChimn historically good fish I flows throw	nabriumix nontrial	ed +016	st w/	abundant sho	re cover, pr	manly over	er hangir	ng tie
McChimn historically good fish I flows throw	nabriumix nontrial	ed +016	st w/		re cover, pr	manly over	er hangir	ng tie

in certific of chances primarily grave



GENER	AL IN	FORMATION	ON								
PROJE	CT#: 5410	71		OJECT DESCR	RIPTION:	DAY:		NTH:	YEA 20		ADDIT SOF
Is STRE	AM RE	ALIGNM	ENT required	for this section	n:	TON					
O Yes		ON	0 (O Unknown							
COLLE				WEATHER CO	NDITIONS:	TII	ME STAR			TIME FINIS	HED:
0	BI	2VR		20Aly CU	adyina	m	13:(
AIR TEI	MP: 2	0	to help to	WATER	TEMP:			CON	621	(µS/cm):	Total County
РНОТО		ERS AND	DESCRIPTIO	NS:							
NAME O		TERBODY	: DR/	AINAGE SYST	EM:	CROSSI	NG #:	ST	ATION #:		
		Creck	.							D7 W	9
LOCATI	ON OF	CROSSII	NG:						101 0	010	
Hu	4	01 M (@ Huy 6	Non-r	amp						
GPS CC	ORDIN	NATES:			МТС	CHAIN	AGE:			chequ'	
TOWNS	HIP:	Guela)h		MNF	R DISTRI	CT:			100	They (III)
LAND U	ISE AN	D POLLU	TION								
		G LAND U			SOL	JRCES C	F POLL	JTION:		1019/	run Sin
fi	rest	, high	way		1	niahwh	V. (v. 10)	and	runut	f	
1910		,				June	11 0001	ICI · CI	1 0110	101.15	
EXISTIN	IG STR	UCTURE	TYPE								
В	Bridge (0	Box Cul	vert ©	Open Foot Cu	lvert O		CSP ()	1	VA O
			3 K	0((6)			-				
Other O	Desc	ribe:				4		Size	(w x h) m	2	
			DRPHOLOGY								
SECTIO	N IDEN	ITIFIER:	-	SECTION L	OCATION: bitat map)						
TYPE:	Strea	m / river	Channelized	Permane	ent Intern	nittent	Ephen	neral	ASSOCIA	TED WET	LAND:
		Ø	0	×			0				
TOTAL	SECTION 1	ON I ENG					VELOC):		
TOTAL	SECTION	ON LENG	TH (m): 50)							
SUE	3-	Rur	n F	Pool	Riffle	F	lats	Insid	e culvert		Other
SECTIO	ON(S)	0		0	0		0		0		
Percen of ar		10			W.			1			
Mean d		0.3	5 /	18			- 311-13	/	1		
Mean v	vidth	8	/			-	-/				
wetted		0									
Mea bank width	full	10				/			/		
Mea	in full	0.8						/			
Subst		40 Sa 30 Gr	2000				/	10	State	(/
Bedroo	ck	Boulder	Cobble	Gravel	Sand	+	Silt	CI		Muck	Detritus
Br		Во	Co	Gr	Sa		Si	0		Mu	D

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Environmental	Guide	for	Fish	and	Fish	Habitat

(% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%):	cut Boulders	Cobble			O O	stable	O O	е	
Right Upstream B HABITAT IN-STREAM Under COVER bank (% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%):	cut Boulders		O Woody De						
IN-STREAM Under COVER (% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%):	cut Boulders		Woody De		0		0		
IN-STREAM Under COVER (% surface area): SHORE COVER (% stream shaded): VEGETATION TYPE (%):	500						0		
(% stream shaded): VEGETATION TYPE (%):	COVER banks 6 surface area):		del			Organic debris Instream Overhanging			
(%):	100 – 90 % O	Control of the contro		60- 30% O		30 – 1% O			
Control of the Contro	Submerge 50			loating		Emergent	0	None	
Predominant Species				-	terresty	ncil elb.	-	-	
MIGRATORY OBSTRUCTIONS:	RATORY None		Seasonal			Permanent			
Control of the Contro	E-01-10-10				lence of Groundwater Other				
LIMITING: POTENTIAL ENHANCEM		150			No.				
						~200m 0- smal (3	1 5 the 1 5 th	ám, e	
'Substrate pr 4> no silt o 'Stable banks	dream cover politicat, ci invanily sav sleposition fi no evidence	sh observations of grant	tos rued ruel m nd in Dsion	th losse Abertouli			pp (O)		
trout, darte woody materi greenfrogs obs	swed.		ge for t	ish					