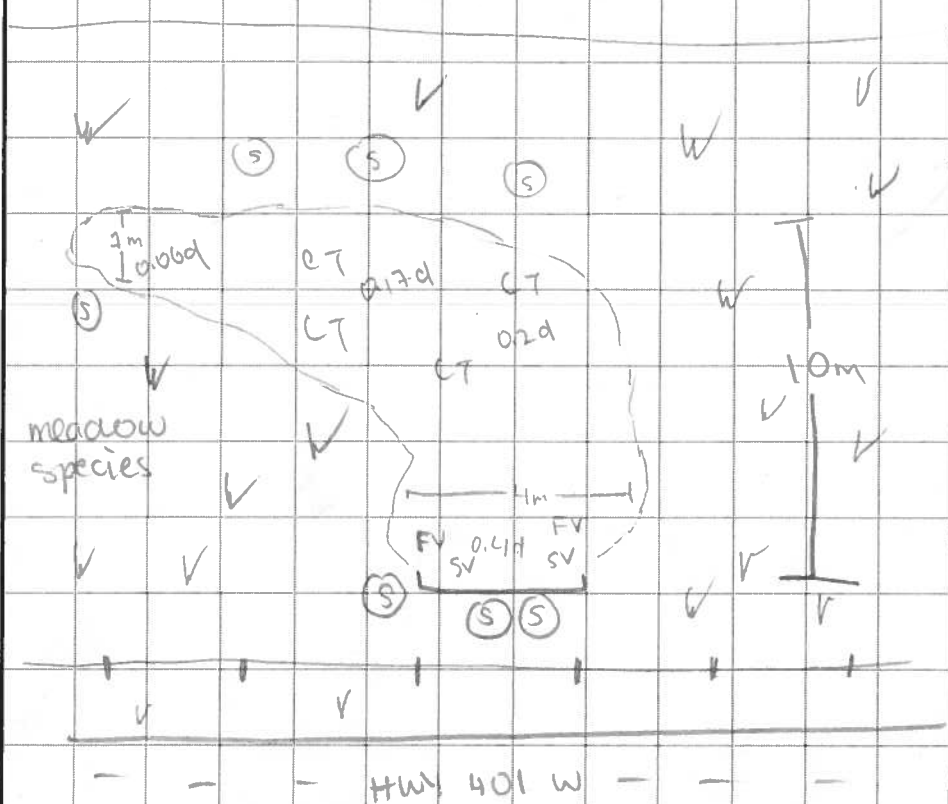
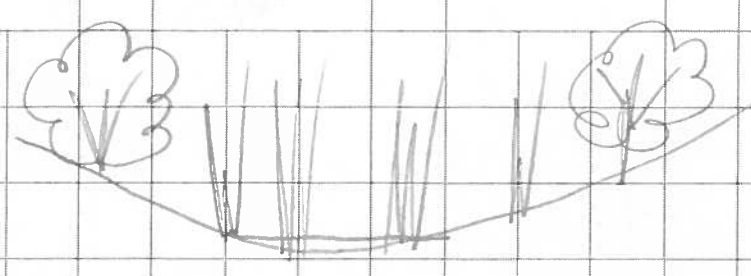


SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):		SCALE (cm / m):	
						PROJECT #: 40541071	
						MAPPER: OB	
						NAME OF WATERBODY: Aberfoyle CK	
						CROSSING #:	
						STATION #: H01-b-07 u/s.	
DATE: DD-MMM-YY 14-Jul-17						LEGEND 10d depth (cm) 6w width ➡ Riffle ⇨ Run/Glide ○ Pool ▭ 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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 20	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: OB, AO		WEATHER CONDITIONS: cloudy		TIME STARTED: 13:10		TIME FINISHED: 13:31			
AIR TEMP: 18		WATER TEMP: 16.7 °C		CONDUCTIVITY (µS/cm): 1170 1165					
PHOTO NUMBERS AND DESCRIPTIONS: 232-242- photo 242 a/s extent.									
LOCATION									
NAME OF WATERBODY: Unnamed trib		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-8 u/s			
LOCATION OF CROSSING: Hwy 401 west of Hwy 68									
GPS COORDINATES: 0567436 481121				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: forest, highway, meadow				SOURCES OF POLLUTION: runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (Include on habitat map) —						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): ~20 m				CURRENT VELOCITY (m/s): NONE					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other Standing water			
Percentage of area						100			
Mean depth wetted (m)						0.2			
Mean width wetted (m)						3			
Mean bankfull width (m)						3			
Mean bankfull depth (m)						0.5			
Substrate						70 MK 30 DT			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	

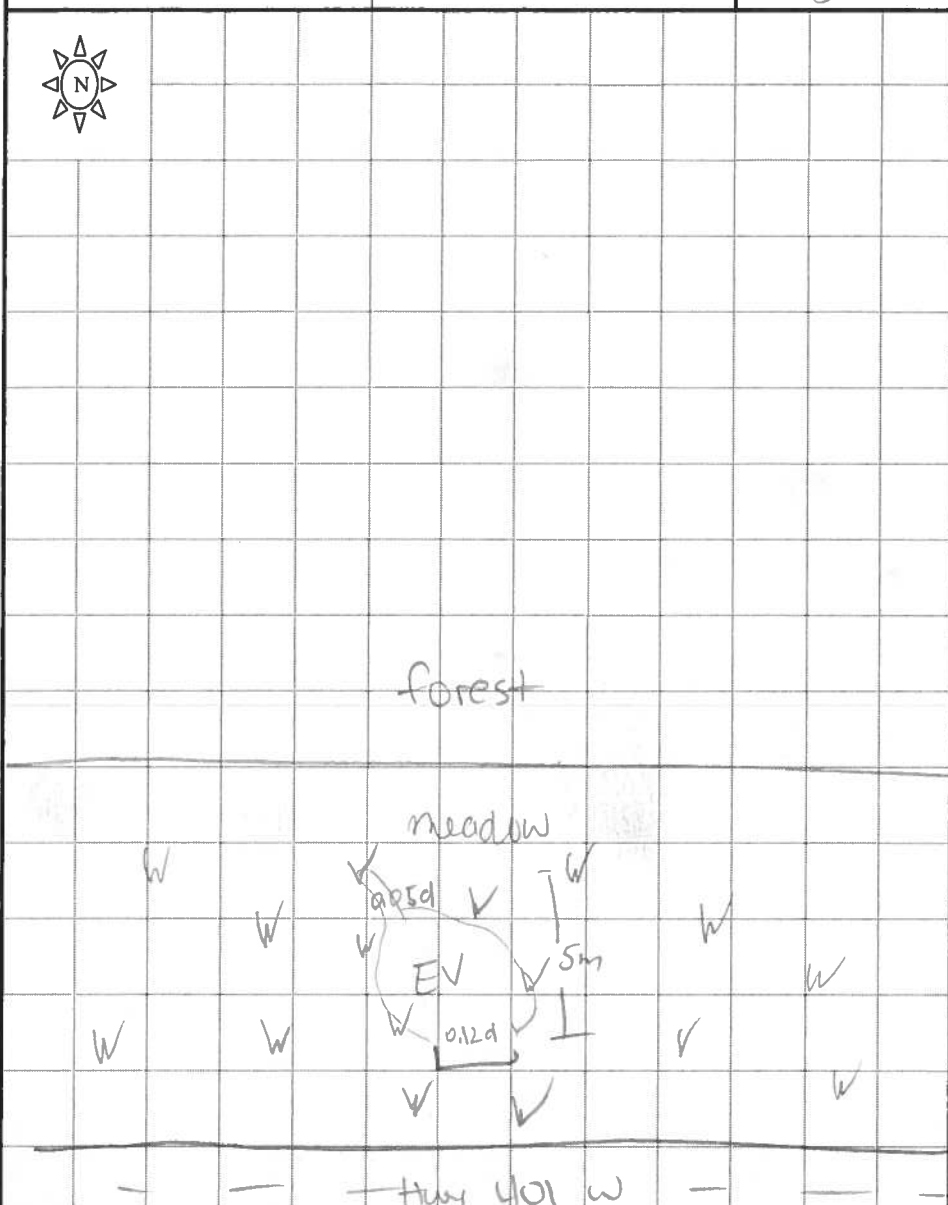
BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	☒	☐	☐	☐			
Right Upstream Bank	☒	☐	☐	☐			
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	—	—	—	Instream — Overhanging —	—	Instream 50 Overhanging 50	—
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None		
	☐	☐	☒	☐	☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
	15		10		75		—
Predominant Species	algae		duckweed		cat tails		—
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
	—		—		no connectivity		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
	—		—		—		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
remove garbage.							
COMMENTS:							
- cat tail drainage swale adjacent to Hwy 401 & mixed forest - soft substrate - high grade from Hwy. - dense vegetation growth - deeper water at culvert mouth may support warm water small bodied fishes — none observed - frogs observed. - no ups connectivity to fish bearing watercourses							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
		20	—
 MIXED FOREST 		PROJECT #: 60541071	
		MAPPER: OB	
		NAME OF WATERBODY: unnamed	
		CROSSING #: —	
		STATION #: 401-6-08w/s	
		DATE: DD-MMM-YY 20-Jul-17	
		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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 20	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: OB, AO		WEATHER CONDITIONS: cloudy		TIME STARTED: 13:40		TIME FINISHED: 13:57			
AIR TEMP: 21		WATER TEMP: 22.30 18.8C		CONDUCTIVITY (µS/cm): 2230					
PHOTO NUMBERS AND DESCRIPTIONS: 243-262									
LOCATION									
NAME OF WATERBODY: unnamed trib		DRAINAGE SYSTEM: -		CROSSING #: -		STATION #: 401-6-08 a/s			
LOCATION OF CROSSING: Hwy 401 East of Hwy 6 N									
GPS COORDINATES: 0567473 4811076				MTO CHAINAGE: -					
TOWNSHIP: Guelph				MNR DISTRICT: -					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, forest, meadow				SOURCES OF POLLUTION: none					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:			SECTION LOCATION: (Include on habitat map)						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: -			
TOTAL SECTION LENGTH (m): 5				CURRENT VELOCITY (m/s): NONE					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other Starting water			
Percentage of area						100			
Mean depth wetted (m)						0.08			
Mean width wetted (m)						0.8			
Mean bankfull width (m)						4			
Mean bankfull depth (m)						0.5			
Substrate	100 mg								
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
	—	—	—	Instream — Overhanging —	—	Instream 100 Overhanging	—
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None		
	☒	☐	☐	☐	☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
	—		—		100		—
Predominant Species	—		—		grasses		—
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
	—		—		off-line, low flows		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
	—		—		—		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
none							
COMMENTS:							
drainage collection feature with small pool of water at culvert, mostly buried in terrestrial grasses no a/s connectivity. w/s reach also has no connectivity not fish habitat. natural sheen on water standing water sediment build-up at culvert mouth suggests periods of flow. } off-line drainage feature							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m): 5	SCALE (cm / m):
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PROJECT #:
60541071

MAPPER:
JB

NAME OF WATERBODY:
unnamed

CROSSING #:
—

STATION #:
401-6-8ds

DATE: DD-MMM-YY
20-Jul-17

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

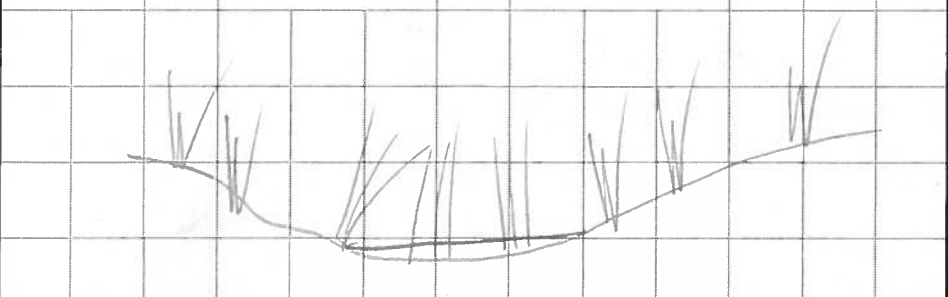
® Riparian Tree

└▶ Seep/Spring
----- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

-x-x- Fence line
└ Culvert

PROFILE:	Horz. Scale	Vert. Scale
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GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 20	MONTH: Jul	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☐ Unknown									
COLLECTORS: AD OB		WEATHER CONDITIONS: cloudy		TIME STARTED: 14:00		TIME FINISHED: 14:15			
AIR TEMP: 23		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 263-277									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-9ds			
LOCATION OF CROSSING: Hwy 401 east of 6N									
GPS COORDINATES: 0560238 4811088				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy				SOURCES OF POLLUTION: runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☒ Describe: steel pipe						Size (w x h) m ² : 80 x 40cm ² height measured to substrate, rest buried			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —		SECTION LOCATION: (include on habitat map) —							
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☐	Ephemeral ☒	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 50 / W				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area	NO WATER PRESENT								
Mean depth wetted (m)	/								
Mean width wetted (m)	/								
Mean bankfull width (m)	/								
Mean bankfull depth (m)	/								
Substrate	/								
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
	—	—	—	—	—	100 —	—
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None		
	☒	☐	☐	☐	☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species	—		—		100 phragmites		—
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent phrag, flow		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
remove garbage, debris, phragmites							
COMMENTS:							
• phragmites swale fed by steel pipe, no water at time of investigation • highly carved-out substrate suggests periods of high flow ↳ erosion has channelized narrow section at mouth • not fish habitat • no d/s connectivity • many snails!							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER: —	SECTION LOCATION: —	SECTION LENGTH (m): 50	SCALE (cm / m): —
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PROJECT #:
60541071

MAPPER:
JB

NAME OF WATERBODY:
unnamed

CROSSING #:

STATION #:
401-6-9ds

DATE: DD-MMM-YY
20-Jul-17

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
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GENERAL INFORMATION									
PROJECT #: 60541091		PROJECT DESCRIPTION: 401-6		DAY: 20	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☐ Unknown									
COLLECTORS: AO OB		WEATHER CONDITIONS: cloudy		TIME STARTED: 14:15		TIME FINISHED: 14:32			
AIR TEMP: 21		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 278-297									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-10 ds			
LOCATION OF CROSSING: Hwy 401 E of 6 N									
GPS COORDINATES: 0568871 4811081				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Highway, agriculture				SOURCES OF POLLUTION: runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☒ Describe: Steel pipe						Size (w x h) m ² —			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (Include on habitat map) —						
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	NO WATER PRESENT								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent <i>cobble grade barriers</i>		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<i>remove garbage.</i>							
COMMENTS:							
• No water present at time of investigation • placed cobble in channel creating grade barriers • no d/s connectivity • not fish habitat. • channelized, leading to grasses where water collects.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

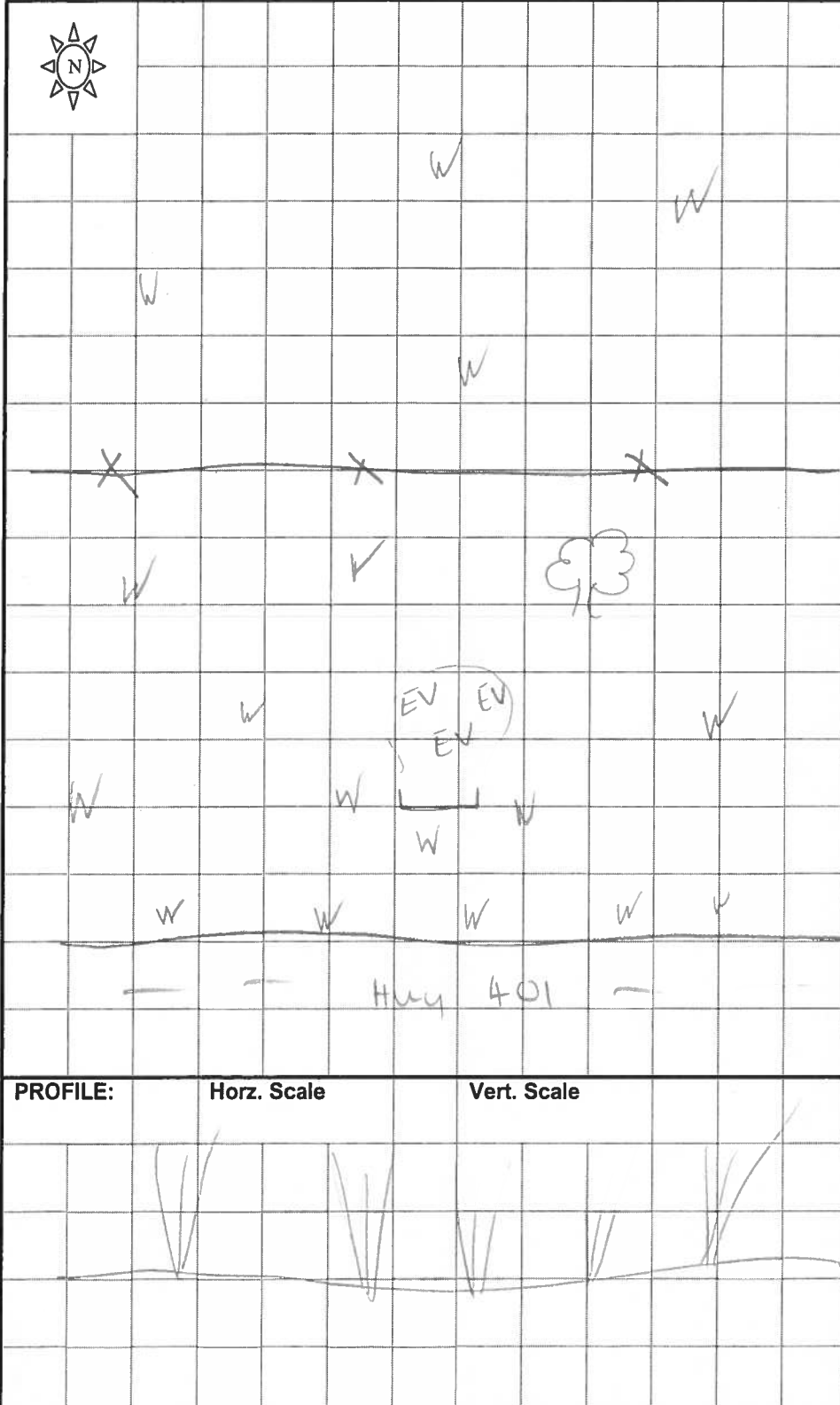
Page 3 of 5

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 20	MONTH: July	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☒ No ☐ Unknown									
COLLECTORS: OB, AO		WEATHER CONDITIONS: light rain, w mly		TIME STARTED: 12:15		TIME FINISHED: 12:21			
AIR TEMP: 18		WATER TEMP:			CONDUCTIVITY (µS/cm):				
PHOTO NUMBERS AND DESCRIPTIONS: 218-222									
LOCATION									
NAME OF WATERBODY: unnamed trib		DRAINAGE SYSTEM:		CROSSING #:		STATION #: 401-6-12 uS			
LOCATION OF CROSSING: Hwy 401 west of Hwy 68									
GPS COORDINATES: D569353 481115				MTO CHAINAGE:					
TOWNSHIP:				MNR DISTRICT:					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, meadow				SOURCES OF POLLUTION:					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:			SECTION LOCATION: (Include on habitat map)						
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	Culvert not found (buried?)								
Mean depth wetted (m)	dry phragmites swale on								
Mean width wetted (m)	hill side								
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION:		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section:									
☐ Yes ☐ No ☒ Unknown									
COLLECTORS: AO, OB		WEATHER CONDITIONS: sunny, warm		TIME STARTED: 9:00		TIME FINISHED: 9:20			
AIR TEMP: 24		WATER TEMP: —			CONDUCTIVITY (µS/cm): —				
PHOTO NUMBERS AND DESCRIPTIONS: 13-23									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM:		CROSSING #:		STATION #: 401-6-12 ds			
LOCATION OF CROSSING: Hwy 401 west of Hwy 65									
GPS COORDINATES: 0569334 4811071				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hay, meadow				SOURCES OF POLLUTION: Runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (Include on habitat map)						
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			NO WATER						
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	

BANK STABILITY							
		Stable	Slightly Unstable	Moderately Unstable	Unstable		
Left Upstream Bank		O	O	O	O		
Right Upstream Bank		O	O	O	O		
HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
				Instream		Instream	
				Overhanging		Overhanging	
SHORE COVER (% stream shaded):		100 – 90 % O	90 – 60% O	60- 30% O	30 – 1% O	None O	
VEGETATION TYPE (%):		Submergent		Floating	Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:		None		Seasonal	Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:		Spawning		Evidence of Groundwater	Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
none							
COMMENTS:							
- small cat tail swale in meadow, not holding water at time of investigation - not fish habitat - not channelized, no d/s connectivity - water settles into grass likely							
Additional Notes Appended? O No O 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							
○ 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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: AO, OB		WEATHER CONDITIONS: clear, warm		TIME STARTED: 9:25		TIME FINISHED: 9:45			
AIR TEMP: 24		WATER TEMP: 19.3		CONDUCTIVITY (µS/cm): 773					
PHOTO NUMBERS AND DESCRIPTIONS: 24 - 54									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-13 ds			
LOCATION OF CROSSING: Hwy 401 E of Hwy 6N									
GPS COORDINATES: 0569460 4811069				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Meadow, Hwy				SOURCES OF POLLUTION: runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☒ Describe: <u>steel pipe</u>						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (include on habitat map) —						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 80				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other standing water (pond)			
Percentage of area						100			
Mean depth wetted (m)						0.12			
Mean width wetted (m)						10			
Mean bankfull width (m)						10			
Mean bankfull depth (m)						1.0			
Substrate						100 mc			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris		Organic debris	Vascular Macrophytes
	—	—	—	Instream — Overhanging —		—	Instream 76 Overhanging 10
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☒	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species	—		—		100 cat-tails, phrag		—
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent no connectivity		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning —		Evidence of Groundwater —		Other —		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
remove phragmites							
COMMENTS:							
very small - phragmites swale (dry at time of investigation) draining via narrow channel through grasses to intermittent pond - measurements taken at pond - holding some water - no d/s connectivity from pond - pond bird + amphibian habitat, may hold warmwater fish in one deeper area (0.3 m)							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER: _____	SECTION LOCATION: _____	SECTION LENGTH (m): 100	SCALE (cm / m): _____
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PROJECT #:
60541071

MAPPER:
OB

NAME OF WATERBODY:
unnamed

CROSSING #:

STATION #:
401-6-13 ds

DATE: DD-MMM-YY
21-Jul-17

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 _____
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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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 20	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section:									
☐ Yes ☒ No ☐ Unknown									
COLLECTORS: AO, OB		WEATHER CONDITIONS: cloudy, light rain		TIME STARTED: 10:00		TIME FINISHED:			
AIR TEMP: 21		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 204-									
LOCATION									
NAME OF WATERBODY: unnamed trib		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401 6-14 us			
LOCATION OF CROSSING: highway 401 west of Highway 6 S, PO66									
GPS COORDINATES: 0569883 4811136				MTO CHAINAGE: —					
TOWNSHIP: Quebec				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Highway, meadow				SOURCES OF POLLUTION: Runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (include on habitat map) —						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 30				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area	NO WATER PRESENT								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
	—	—	—	Instream — Overhanging —	—	Instream 50 Overhanging 50	—
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☒	None ☐		
VEGETATION TYPE (%):	Submergent —		Floating —		Emergent 100		None
Predominant Species	—		—		cat-tails		—
MIGRATORY OBSTRUCTIONS:	None —		Seasonal intermittent connectivity, water levels		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning —		Evidence of Groundwater —		Other —		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
• enhance connectivity to pond							
COMMENTS:							
• cat-tail swale at Highway 401 with connectivity to w/s pond during high water levels (evidence = debris in fence, flattened grasses) • no water present at time of investigation – muddy/moist substrate suggests it recently held water. • collection of water from drainage ditch west of culvert • high grade hill north of culvert likely drains water into pond, which subsequently may overflow into culvert/swale.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
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PROJECT #:
60541071

MAPPER:
OB

NAME OF WATERBODY:
unnamed trib

CROSSING #:
-

STATION #:
401-6-14us

DATE: DD-MMM-YY
20-Jul-17

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

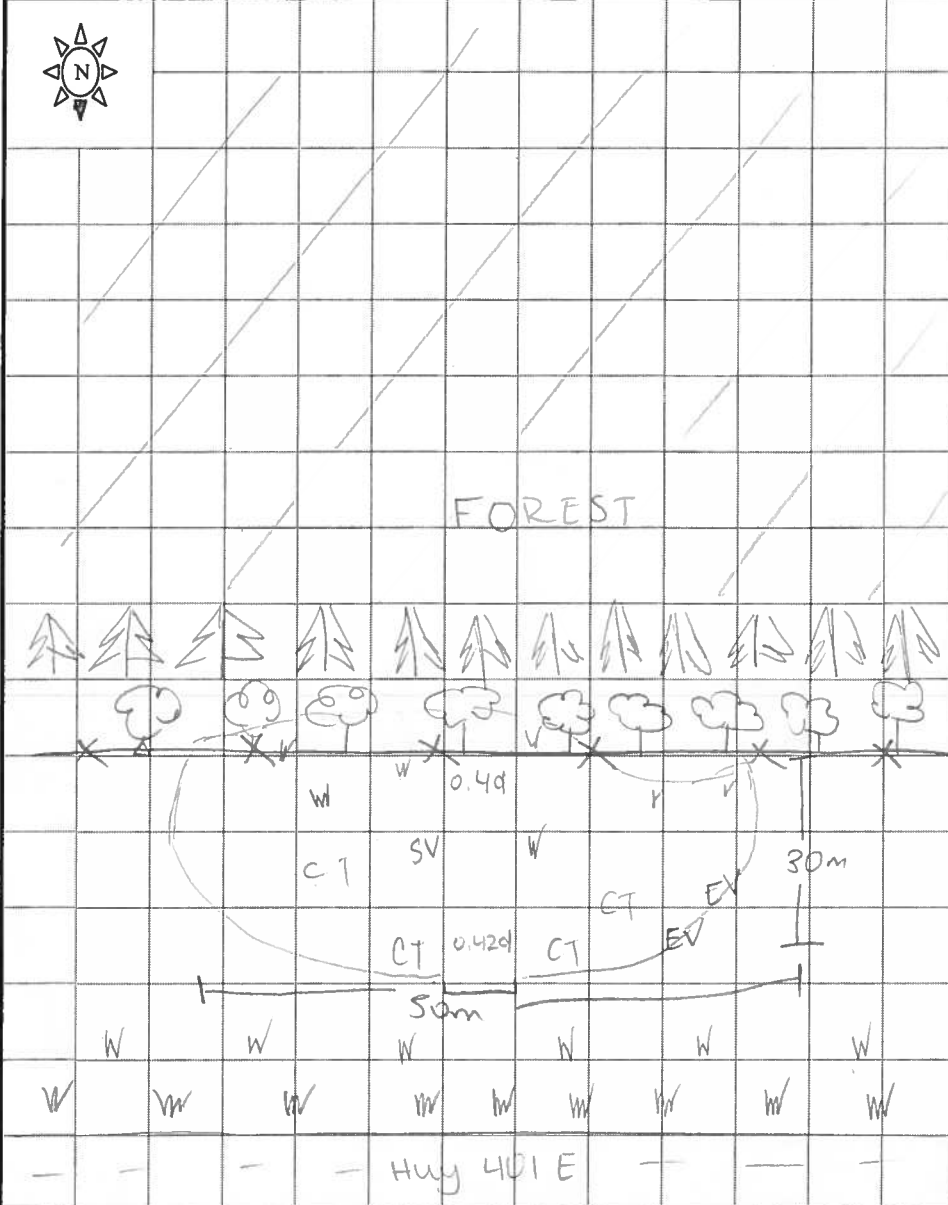
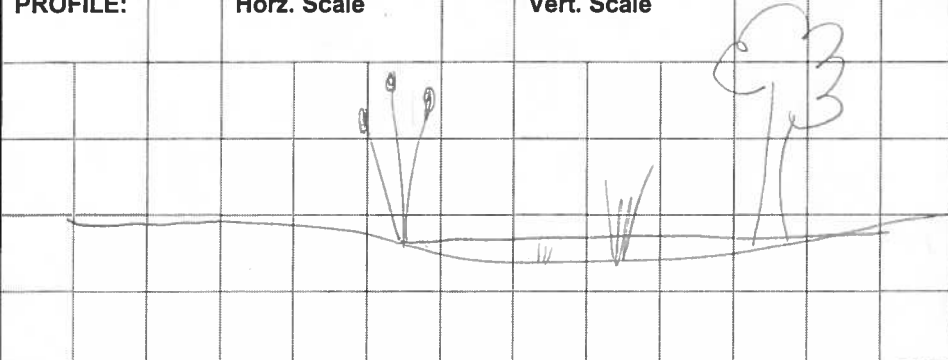
-x-x- Fence line
□ Culvert

PROFILE:	Horz. Scale	Vert. Scale

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: AO, DB		WEATHER CONDITIONS: clear, warm		TIME STARTED: 9:50		TIME FINISHED: 10:25			
AIR TEMP: 24		WATER TEMP: 20.5		CONDUCTIVITY (µS/cm): 276					
PHOTO NUMBERS AND DESCRIPTIONS: 55-86									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: -		CROSSING #: -		STATION #: 401-6-14/ds.			
LOCATION OF CROSSING: Hwy 401 East of Hwy 6 N									
GPS COORDINATES: 0569090 4811075				MTO CHAINAGE: -					
TOWNSHIP: Guelph				MNR DISTRICT: -					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, meadow, coniferous forest				SOURCES OF POLLUTION: runoff, overland flow					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: -			SECTION LOCATION: (Include on habitat map) -						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: -			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s): -					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other standing water			
Percentage of area						100			
Mean depth wetted (m)						0.4			
Mean width wetted (m)						15			
Mean bankfull width (m)						undefined			
Mean bankfull depth (m)						undefined			
Substrate						100 MBL			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
	—	—	—	Instream 30 Overhanging 20	—	Instream 50 Overhanging	—
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None		
	☐	☐	☒	☐	☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
	10		—		60		30
Predominant Species	grasses unknown sp		—		cat tails		
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
	—		—		off-line		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
	—		—		—		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
remove garbage							
COMMENTS:							
- cat-tail swale holding water - water standing, overflow into forest due to low gradient - many tadpoles - no d/s connectivity - drainage function - potential warm water fish habitat							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

depth in m

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m): 50		SCALE (cm / m):	
 						PROJECT #: 60541071	
						MAPPER: OB	
						NAME OF WATERBODY: unnamed	
						CROSSING #:	
						STATION #: 401-6-14ds	
						DATE: DD-MMM-YY 21-07-2017	
						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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section:									
☐ Yes ☐ No ☒ Unknown									
COLLECTORS: AO, ORB		WEATHER CONDITIONS: clear, warm		TIME STARTED: 10:30		TIME FINISHED: 10:50			
AIR TEMP: 24		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 87-98									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: ←		CROSSING #: —		STATION #: 401-6-15ds			
LOCATION OF CROSSING: Hwy 401 west of 65									
GPS COORDINATES: 0570336 4811192				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Highway, meadow, pine forest				SOURCES OF POLLUTION: overland flow, runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (include on habitat map) —						
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	NO WATER								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
				Instream		Instream	
				Overhanging		Overhanging	
SHORE COVER (% stream shaded):	100 – 90 % ☒	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent <i>Ephemeral</i>		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None							
COMMENTS:							
- dry culvert with no defined channel or collection basin - meadow grasses + herbs at mouth of culvert indicate it infrequently collects water - no channels leading from culvert - drainage feature - not fish habitat							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

Page 3 of 5

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 20	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☐ Unknown									
COLLECTORS: OB, AO		WEATHER CONDITIONS: cloudy, humid		TIME STARTED: 9:35		TIME FINISHED: 9:50			
AIR TEMP: 21		WATER TEMP: —			CONDUCTIVITY (µS/cm): —				
PHOTO NUMBERS AND DESCRIPTIONS: 194-203									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-15 u/s			
LOCATION OF CROSSING: Highway 401 west of Highway 6									
GPS COORDINATES: 0570315 4811250					MTO CHAINAGE: —				
TOWNSHIP: Guelph					MNR DISTRICT: —				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Highway, Agricultural.					SOURCES OF POLLUTION: agricultural, road runoff				
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (include on habitat map) —						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☐	Ephemeral DRAINAGE ☒	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): —				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area	NO WATER PRESENT								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
				Instream		Instream	
				Overhanging		Overhanging	
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
none - drainage conveyance only.							
COMMENTS:							
• Drainage conveyance feature under highway 401 • no defined drainage ditches - gradient used to collect water at culvert • no water present at time of investigation • meadow species/grasses at culvert suggest infrequent flows • Not fish habitat							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
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PROJECT #:
60541071

MAPPER:
OB

NAME OF WATERBODY:
unnamed

CROSSING #:
—

STATION #:
401-6-15 u/s

DATE: DD-MMM-YY
20-07-2017

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
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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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 25	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.O. OB		WEATHER CONDITIONS: Partly Cloudy 17°C		TIME STARTED: 0915		TIME FINISHED: 0940			
AIR TEMP: 17°C		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 1-16									
LOCATION									
NAME OF WATERBODY: Unnamed Tributary		DRAINAGE SYSTEM:		CROSSING #: —		STATION #: 401-6-16715			
LOCATION OF CROSSING: → off-ramp Hwy 6									
GPS COORDINATES: 17T 0570598 4811307				MTO CHAINAGE: —					
TOWNSHIP: Brudenell				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, urban meadow, mixed forest				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —				SECTION LOCATION: (include on habitat map) —					
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☐	Ephemeral ☒	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 200				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area	NO WATER								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris		Organic debris	Vascular Macrophytes	None
				Instream			Instream	
				Overhanging			Overhanging	
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐		30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None	
Predominant Species								
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent			
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other			
POTENTIAL ENHANCEMENT OPPORTUNITIES:								
Remove garbage.								
COMMENTS:								
Ephemeral drainage Swale with no water present. No aquatic vegetation present. Not fish habitat. Drainage convergence function. No defined channel. Grasses present in drainage Swale.								
Additional Notes Appended? ☐ No ☐ Yes number of pages _____								

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
		200	
PROJECT #: 60541071			
MAPPER: O. Butty			
NAME OF WATERBODY: unnamed trib			
CROSSING #: 			
STATION #: 401-6-1605			
DATE: DD-MMM-YY 25-Jul-17			
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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 20	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section:									
☐ Yes ☒ No ☐ Unknown									
COLLECTORS: OB, AD		WEATHER CONDITIONS: cloudy, humid		TIME STARTED: 9 10		TIME FINISHED: 9 31			
AIR TEMP: 21°C		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 184-193									
LOCATION									
NAME OF WATERBODY: unnamed trib		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-16 US			
LOCATION OF CROSSING: R067 Highway 401 west of Highway 6									
GPS COORDINATES: 05 70583 4811391				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Agricultural, Highway				SOURCES OF POLLUTION: overland flow road runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (Include on habitat map) —						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☐	Ephemeral (drainage) ☒	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area	NO WATER PRESENT								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		

POTENTIAL ENHANCEMENT OPPORTUNITIES:

remove garbage

COMMENTS:

- drainage conveyance feature at Highway 401 west of Highway 6
- water collects from drainage ditches adjacent to Hwy 401, running east & west
- no water present at time of investigation
- dense shrub growth surrounding culvert
- placed cobble in mouth of culvert
- no connectivity, not fish habitat.
- meadow species in drainage ditches suggests infrequent flow

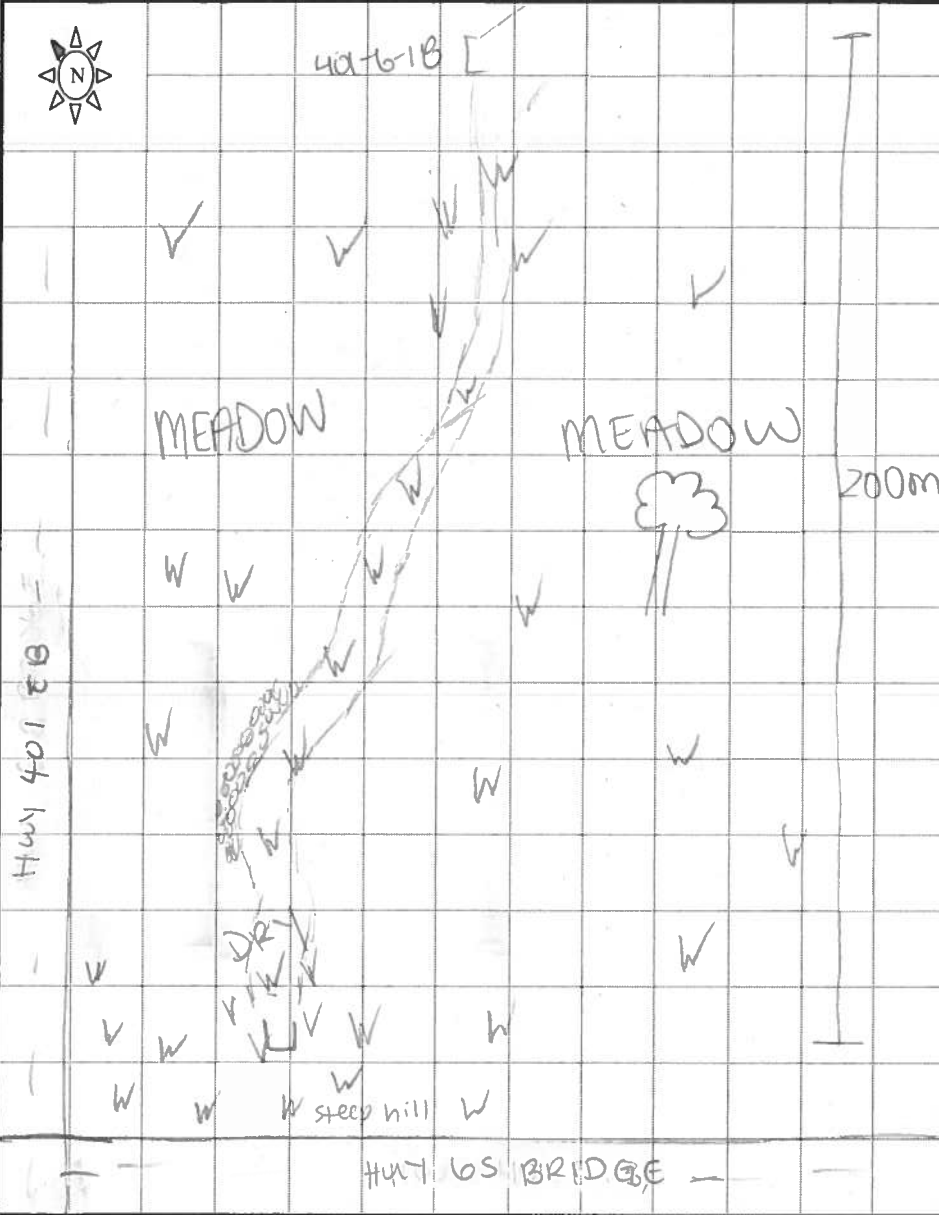
Additional Notes Appended? ☐ No ☐ Yes number of pages _____

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m): 50		SCALE (cm / m):	
						PROJECT #: 60541071	
						MAPPER: OB	
						NAME OF WATERBODY: unnamed trib	
						CROSSING #:	
						STATION #: 401-6-1645	
DATE: DD-MMM-YY 20-07-2017						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			

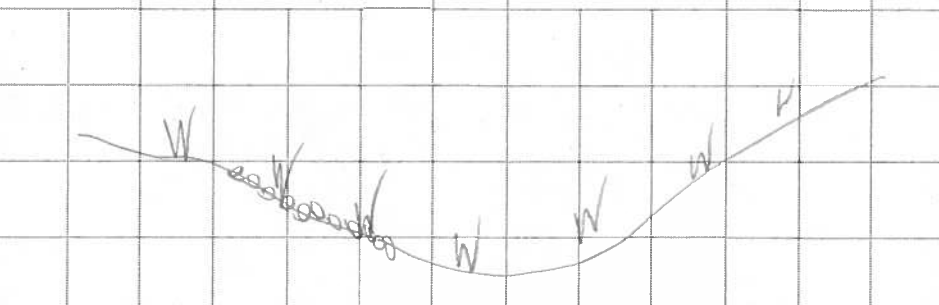
GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 25	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.O., O.B.		WEATHER CONDITIONS: Partly Cloudy		TIME STARTED: 09:50		TIME FINISHED: 10:10			
AIR TEMP: 17°C		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 17-29									
LOCATION									
NAME OF WATERBODY: Unnamed Trib.		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-17 D/S			
LOCATION OF CROSSING: On ramp to 401E from Hwy 6.									
GPS COORDINATES: 17T 0570886 4811516				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, cultural meadow				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☒ Describe: CPVC						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —				SECTION LOCATION: (Include on habitat map) —					
TYPE:	Stream / river ☐	Channelized ☒	Permanent ☐	Intermittent ☐	Ephemeral ☒	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m): 200				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area									
Mean depth wetted (m)			NO WATER						
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
				Instream		Instream	
				Overhanging		Overhanging	
SHORE COVER (% stream shaded):		100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐	
VEGETATION TYPE (%):		Submergent		Floating	Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:		None		Seasonal	Permanent <i>Rip-rap</i>		
POTENTIAL CRITICAL HABITAT LIMITING:		Spawning		Evidence of Groundwater	Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
<i>Remove garbage</i>							
COMMENTS:							
<i>Ephemeral drainage swale w/ rip-rap placed across swale approximately 15m downstream of the culvert. Not fish habitat. Channelized swale is adjacent to 401E. 200m length assessed to 401-6-18715. No aquatic vegetation present. Terrestrial vegetation abundant throughout swale. Band of rip-rap placed across swale intended to reduce flow velocity.</i>							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION: Hwy 401		SECTION LENGTH (m): 300	SCALE (cm / m): —
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 	PROJECT #: 60541071
	MAPPER: OB
	NAME OF WATERBODY: unnamed trib
	CROSSING #: —
	STATION #: 401-6-17ds
	DATE: DD-MMM-YY 25-Jul-17

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	
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PROFILE:	Horz. Scale	Vert. Scale
		

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: AO, OB		WEATHER CONDITIONS: clear, warm		TIME STARTED: 11:30		TIME FINISHED: 12:00			
AIR TEMP: 26		WATER TEMP: 24.8		CONDUCTIVITY (µS/cm): 1430					
PHOTO NUMBERS AND DESCRIPTIONS: 99-119									
LOCATION									
NAME OF WATERBODY: unnamed trib		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-18ds			
LOCATION OF CROSSING: Hwy 401 EB at Hwy 6S									
GPS COORDINATES: 05710414 4811605				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Highway, meadow				SOURCES OF POLLUTION: runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —		SECTION LOCATION: (Include on habitat map)							
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 100				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other starting water			
Percentage of area						100			
Mean depth wetted (m)						0.2			
Mean width wetted (m)						0.7			
Mean bankfull width (m)						1.0			
Mean bankfull depth (m)						0.8			
Substrate						80 mu 20 Co			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	0	0	0	0			
Right Upstream Bank	0	0	0	0			

HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	—	—	—	Instream — Overhanging —	—	Instream 30 Overhanging 30	40

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None	
	0	0	0	0	0	

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
	5	—	35	60
Predominant Species	algae	—	cat tails	

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent
	—	—	no d/s connectivity

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
	—	—	—

POTENTIAL ENHANCEMENT OPPORTUNITIES:
Remove garbage

COMMENTS:
intermittent channel with some pockets of standing water conveying drainage through meadow where channel ends and collects into grasses cobble placed to carry runoff from highway not fish habitat due to v. low water levels

Additional Notes Appended? ☐ No ☐ Yes number of pages _____

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
		100	

	PROJECT #: 60541071
	MAPPER: OB
	NAME OF WATERBODY: unnamed
	CROSSING #:
	STATION #: 401-6-18ds
	DATE: DD-MMM-YY 21-Jul-17

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

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 26	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section:									
☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.O. OB		WEATHER CONDITIONS: Cloudy		TIME STARTED: 1000		TIME FINISHED: 1010			
AIR TEMP: 20.2		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 35-50									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-1845			
LOCATION OF CROSSING: 401 W at Hwy 6 off ramp.									
GPS COORDINATES: 17T0570982 4811645				MTO CHAINAGE: —					
TOWNSHIP: —				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy. 401 W + off Ramp.				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe: —						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —				SECTION LOCATION: — (include on habitat map)					
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:			
	☐	☐	☐	☐	☒	—			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other			
	☐	☐	☐	☐	☐				
Percentage of area	NO WATER								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species			No WATER				
MIGRATORY OBSTRUCTIONS:	None		Seasonal			Permanent	
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater			Other	
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None.							
COMMENTS:							
Ephemeral drainage feature in well-defined channel. No water or aquatic vegetation present. Significant substrate erosion from high flow events evident. Terrestrial grasses overlying the channel. Not fish habitat. Bird breeding habitat present.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION: 401	SECTION LENGTH (m): 50	SCALE (cm / m):
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PROJECT #:
60541071

MAPPER:
OB

NAME OF WATERBODY:
unnamed

CROSSING #:

STATION #:
401-6-18 us

DATE: DD-MMM-YY
26-Jul-17

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
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PROJECT #:
60541071

MAPPER:
OB

NAME OF WATERBODY:
unnamed

CROSSING #:

STATION #:
401-6-18 us

DATE: DD-MMM-YY
26-Jul-17

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

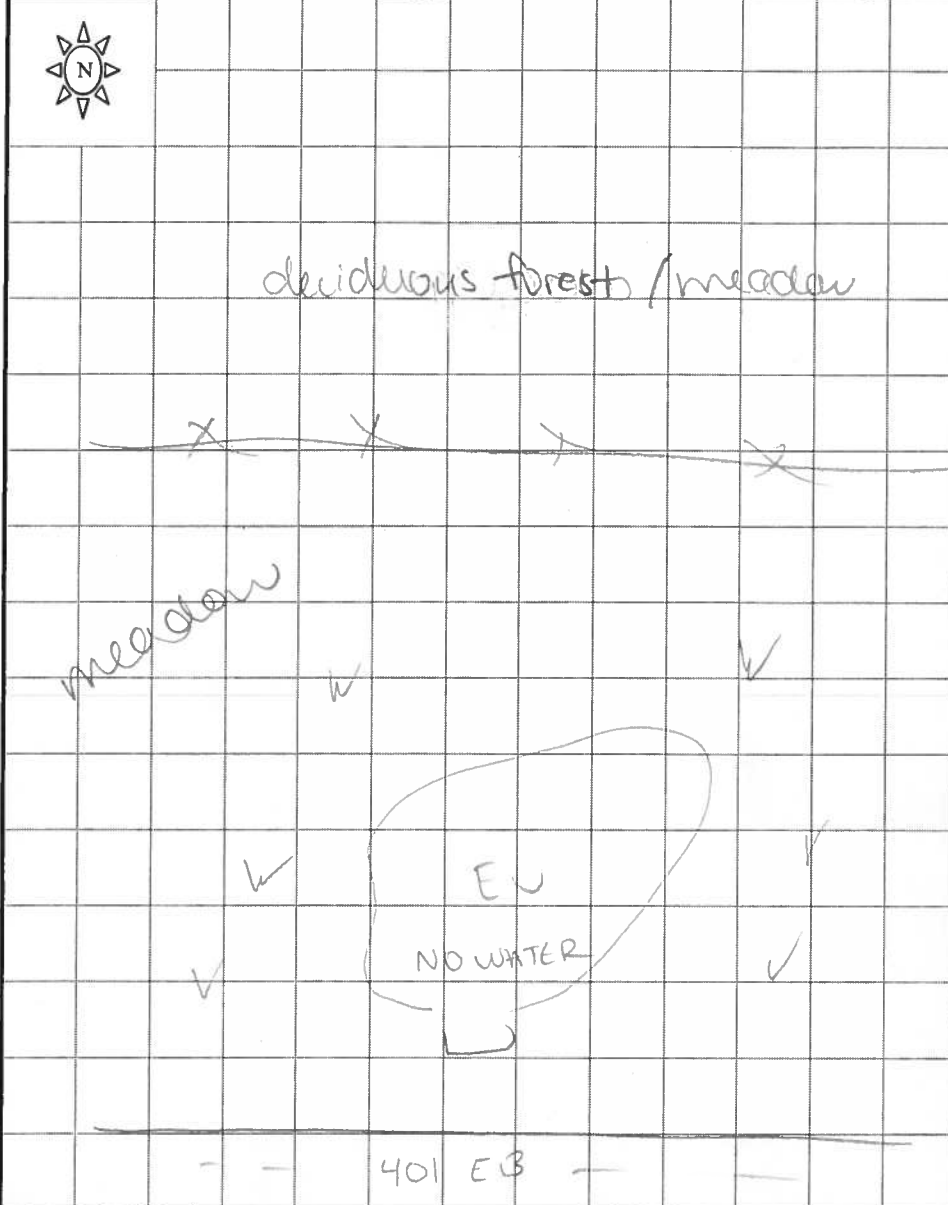
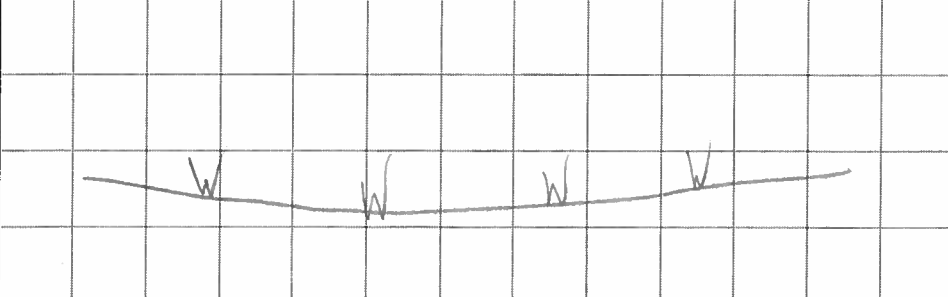
└▶ Seep/Spring
----- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

-x-x- Fence line
□ Culvert

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section:									
☐ Yes ☐ No ☒ Unknown									
COLLECTORS: AO, OB		WEATHER CONDITIONS: clear, warm		TIME STARTED: 12:20		TIME FINISHED: 12:32			
AIR TEMP: 26		WATER TEMP: —		CONDUCTIVITY (µS/cm): —					
PHOTO NUMBERS AND DESCRIPTIONS: 120-131									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: L(01)-6-19 ds			
LOCATION OF CROSSING: thru 401 E of 68									
GPS COORDINATES: 057180 4811077					MTO CHAINAGE: —				
TOWNSHIP: Guelph					MNR DISTRICT: —				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: hwy, meadow, forest					SOURCES OF POLLUTION: none				
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (include on habitat map) —						
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									
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
				Instream		Instream	
				Overhanging		Overhanging	
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None		
	☐	☐	☐	☐	☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
none							
COMMENTS:							
· Small grassy swale not holding water at time of investigation · no connectivity · not fish habitat · drainage feature only							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):		SCALE (cm / m):	
 deciduous forest / meadow 						PROJECT #: 60541071	
						MAPPER: JB	
						NAME OF WATERBODY:	
						CROSSING #:	
						STATION #: 401-6-19ds	
DATE: DD-MMM-YY 21-Jul-17						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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 26	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.O.B.		WEATHER CONDITIONS: Cloudy		TIME STARTED: 0950		TIME FINISHED: 1000			
AIR TEMP: 19.6		WATER TEMP: —			CONDUCTIVITY (µS/cm): —				
PHOTO NUMBERS AND DESCRIPTIONS: 24-34									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-1945			
LOCATION OF CROSSING: 401W									
GPS COORDINATES: 17T 0571487 4811929				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Cultural Meadow, Hwy				SOURCES OF POLLUTION: hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☒		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (include on habitat map) —						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☐	Ephemeral ☒	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area	NO WATER								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris		Organic debris	Vascular Macrophytes
				Instream			Instream
				Overhanging			Overhanging
SHORE COVER (% stream shaded):		100 – 90 % ☐	90 – 60% ☐	60- 30% ☐		30 – 1% ☐	None ☐
VEGETATION TYPE (%):		Submergent		Floating		Emergent	
Predominant Species				No WATER			
MIGRATORY OBSTRUCTIONS:		None		Seasonal		Permanent ☒	
POTENTIAL CRITICAL HABITAT LIMITING:		Spawning		Evidence of Groundwater		Other	
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None							
COMMENTS:							
Drainage feature from cultural meadow. No water or aquatic vegetation was observed. No defined channel. Not fish habitat. Bird breeding habitat.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER: /	SECTION LOCATION: /	SECTION LENGTH (m): 50	SCALE (cm / m): /
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PROJECT #:
60541071

MAPPER:
OB

NAME OF WATERBODY:
unnamed

CROSSING #:
-

STATION #:
401-6-19 US

DATE: DD-MMM-YY
26-Jul-17

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
^^^ Dam/Weir/Obstruction
® Riparian Tree

└▶ Seep/Spring
----- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

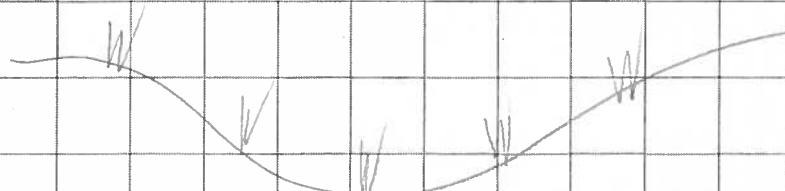
-x-x- Fence line
┌ Culvert

PROFILE:	Horz. Scale	Vert. Scale
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GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: OB, AO		WEATHER CONDITIONS: Clear, warm		TIME STARTED: 12:35		TIME FINISHED: 12:50			
AIR TEMP: 26		WATER TEMP: —			CONDUCTIVITY (µS/cm): —				
PHOTO NUMBERS AND DESCRIPTIONS: 132-135									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-20 ds			
LOCATION OF CROSSING: Hwy 401 east of 68									
GPS COORDINATES: 45717.16 4811956				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, forest.				SOURCES OF POLLUTION: overland flow road runoff.					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☐ Describe: Culvert not found, may be buried						Size (w x h) m ² —			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (Include on habitat map) —						
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	NO water								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None			Seasonal		Permanent	
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning			Evidence of Groundwater		Other	
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
none							
COMMENTS:							
• culvert not found, may be buried in hillside under dense vines/shrubs • no water present at time of investigation • natural low point may lead to collection point for surrounding meadow/forest.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
 forest low valley assumed culvert location (buried) Hwy 401 E/B		PROJECT #:	60541071
		MAPPER:	1913
		NAME OF WATERBODY:	unnamed.
		CROSSING #:	
		STATION #:	401-6-2005
		DATE: DD-MMM-YY	21-Jul-2017
		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	
			

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 26	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.C. DB		WEATHER CONDITIONS: Partly Cloudy		TIME STARTED: 0915		TIME FINISHED: 0940			
AIR TEMP: 19°C		WATER TEMP: 14.6		CONDUCTIVITY (µS/cm): 3216					
PHOTO NUMBERS AND DESCRIPTIONS: 15-23									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: /		CROSSING #: /		STATION #: 401-6-2045			
LOCATION OF CROSSING: Hwy 401W, west of county Road 36									
GPS COORDINATES: 17T 0571695 4812018				MTO CHAINAGE: /					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, Wetland				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: /			SECTION LOCATION: (include on habitat map) /						
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 Wetland			
Percentage of area						100			
Mean depth wetted (m)						0.16			
Mean width wetted (m)						undefined			
Mean bankfull width (m)						undefined			
Mean bankfull depth (m)						undefined			
Substrate						50% M 50% D			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
	/	/	/	/	90	100	/
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None		
	☒	☐	☐	☐	☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
	/		/		100% Cattails		/
Predominant Species	/		/		Cattails		/
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
	/		/		Choked Cattails		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
	/		/		/		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None							
COMMENTS:							
Permanent wetland feature with standing water at mouth of culvert. Feature is choked by cattails and organic debris and not suitable fish habitat. Can be considered breeding bird habitat. Water within the wetland is covered by a layer of cattail-whiskers.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER: —	SECTION LOCATION: 401	SECTION LENGTH (m): 50	SCALE (cm / m): —
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PROJECT #:
60541091

MAPPER:
OB

NAME OF WATERBODY:
unnamed

CROSSING #:
—

STATION #:
401-6-20 US

DATE: DD-MMM-YY
26-Jul-17

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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☐ Unknown									
COLLECTORS: DB, AO		WEATHER CONDITIONS: clear, warm		TIME STARTED: 12:52		TIME FINISHED: 13:00			
AIR TEMP: 26		WATER TEMP:			CONDUCTIVITY (µS/cm):				
PHOTO NUMBERS AND DESCRIPTIONS: 136-156									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM:		CROSSING #:		STATION #: 401-6-21 AS			
LOCATION OF CROSSING: Hwy 401 east of Hwy 6S.									
GPS COORDINATES: 0572030 4812084					MTO CHAINAGE:				
TOWNSHIP: Guelph					MNR DISTRICT:				
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, mixed forest					SOURCES OF POLLUTION: runoff				
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:			SECTION LOCATION: (Include on habitat map)						
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	No water								
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
				Instream		Instream	
				Overhanging		Overhanging	
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
none							
COMMENTS:							
CSP draining into grassy collection basin - dry at time of investigation no d/s connectivity not fish habitat may be fed by westerly phragmites swale @ higher elevation when water is present. drainage feature only.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
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PROJECT #:
60541071

MAPPER:
OB

NAME OF WATERBODY:
unnamed

CROSSING #:
—

STATION #:
401-6-21 ds

DATE: DD-MMM-YY
21-Jul-17

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

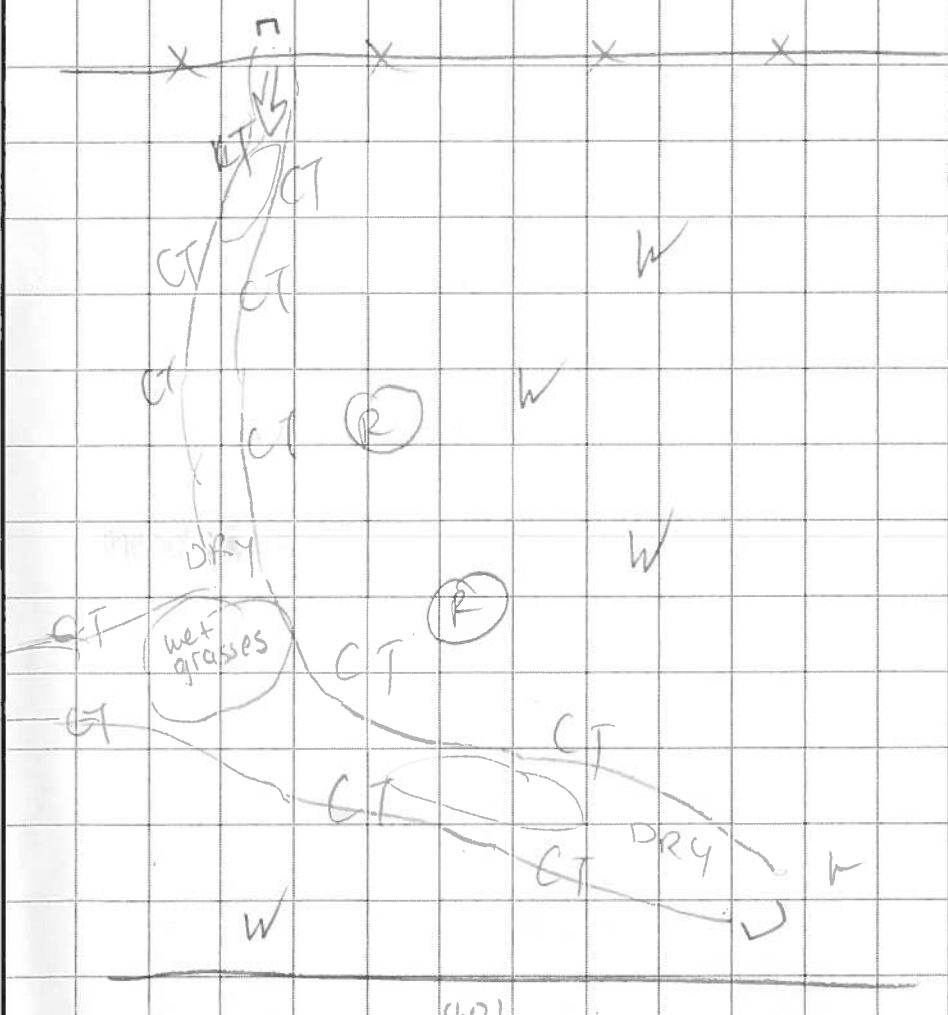
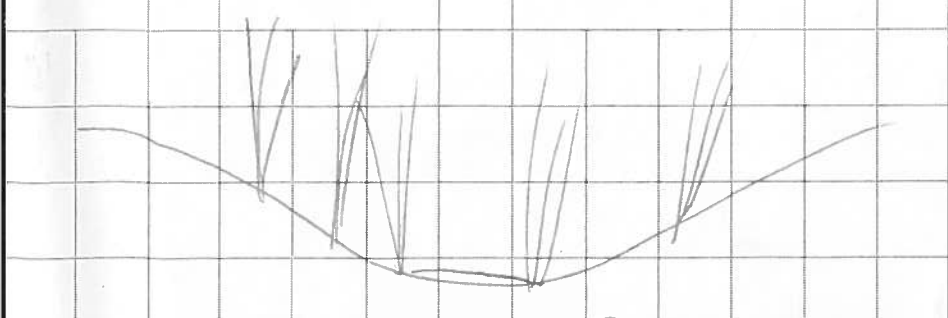
PROFILE:	Horz. Scale	Vert. Scale
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LEGEND

○ 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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017		
Is STREAM REALIGNMENT required for this section:								
☐ Yes ☐ No ☒ Unknown								
COLLECTORS: OB AO		WEATHER CONDITIONS: Clear, warm		TIME STARTED: 13:05		TIME FINISHED: 13:35		
AIR TEMP: 26		WATER TEMP: 23.1		CONDUCTIVITY (µS/cm): 2288				
PHOTO NUMBERS AND DESCRIPTIONS: 157-188								
LOCATION								
NAME OF WATERBODY: unnamed trib		DRAINAGE SYSTEM: -		CROSSING #: -		STATION #: 401-6-22ds		
LOCATION OF CROSSING: Hwy 401 east of Hwy 6S								
GPS COORDINATES: 0572500 4812275				MTO CHAINAGE: -				
TOWNSHIP: Guelph				MNR DISTRICT: -				
LAND USE AND POLLUTION								
SURROUNDING LAND USE: meadow, Hwy				SOURCES OF POLLUTION: none fl				
EXISTING STRUCTURE TYPE								
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐
Other ☐ Describe:						Size (w x h) m ² -		
SECTION TYPE AND MORPHOLOGY								
SECTION IDENTIFIER: -			SECTION LOCATION: (include on habitat map) -					
TYPE:	Stream / river ☐	Channelized ☒	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: -		
TOTAL SECTION LENGTH (m): 200				CURRENT VELOCITY (m/s): -				
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other standing water		
Percentage of area							100	
Mean depth wetted (m)							0.10	
Mean width wetted (m)							0.30	
Mean bankfull width (m)							2.5	
Mean bankfull depth (m)							1.0	
Substrate							100 Mu	
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
	—	—	—	— —	—	15 15	70
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60 % ☐	60 – 30 % ☒	30 – 1 % ☐	None ☐		
VEGETATION TYPE (%):	Submergent 10		Floating —		Emergent 90		None
Predominant Species	algae		—		phragmites		—
MIGRATORY OBSTRUCTIONS:	None —		Seasonal intermittent flow		Permanent —		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning —		Evidence of Groundwater —		Other —		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
remove garbage, phragmites.							
COMMENTS:							
- mostly dry channel / wet grasses with dense phrag & CT growth running adjacent to 401 eastbound - south input from residential property / lawn (plastic pipe) w/ defined channel - west input from phrag swale at higher elevation, no defined channel - drainage feature only, no connectivity - natural sheen on water - amphibians (frogs) present - wetland type habitat							
Additional Notes Appended? ☒ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m):		SCALE (cm / m):	
 Residential  401				PROJECT #:		60541071	
				MAPPER:		GB	
				NAME OF WATERBODY:		unnamed	
				CROSSING #:			
				STATION #:		401-6-22ds	
				DATE: DD-MMM-YY		21-Jul-17	
PROFILE: Horz. Scale Vert. Scale  CT CT CT				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			

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 21	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section:									
☐ Yes ☐ No ☒ Unknown									
COLLECTORS: OB, AO		WEATHER CONDITIONS: clear, warm		TIME STARTED: 13:40		TIME FINISHED: 14:00			
AIR TEMP: 26°C		WATER TEMP: 20.5°C		CONDUCTIVITY (µS/cm): 1149					
PHOTO NUMBERS AND DESCRIPTIONS: 241-252									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM: -		CROSSING #: -		STATION #: 401-6-22us			
LOCATION OF CROSSING: Hwy 401 east of Hwy 65									
GPS COORDINATES: 0572432 4812299				MTO CHAINAGE: -					
TOWNSHIP: Guelph				MNR DISTRICT: -					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Highway, meadow, agriculture				SOURCES OF POLLUTION: Runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☐		N/A ☐	
Other ☒ Describe: steel pipe						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:			SECTION LOCATION: (include on habitat map)						
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: -			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s): -					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other Standing Water			
Percentage of area						100			
Mean depth wetted (m)						0.30			
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate						UNDEFINED (SWALE) 100 Mu.			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
	-	-	-	-	-	100 -	-

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

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
	-	-	100	
Predominant Species	-	-	phragmites	

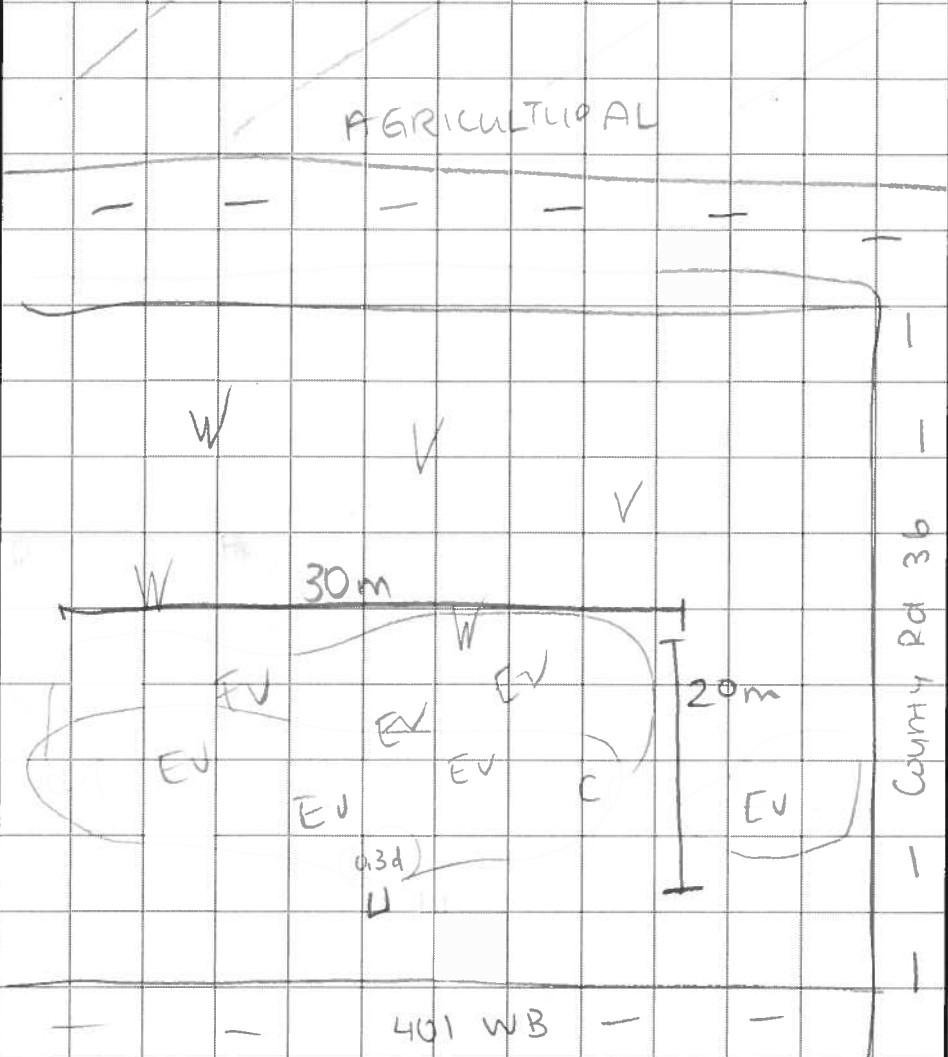
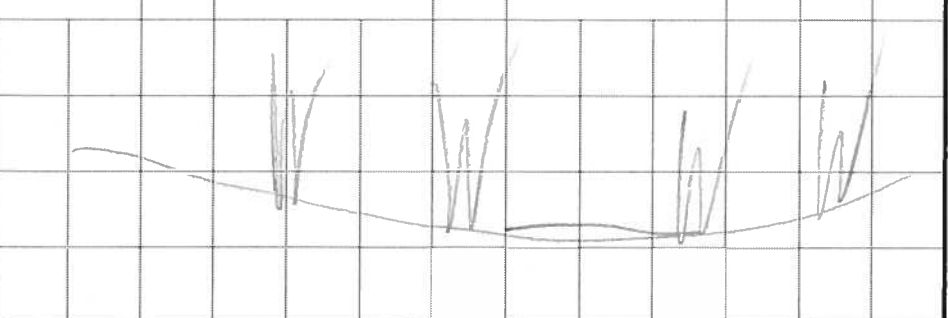
MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent
	-	-	phragmites choked

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
	-	-	-

POTENTIAL ENHANCEMENT OPPORTUNITIES:
remove phragmites, garbage.

COMMENTS:
- phrag, cat tail swale running adjacent to Hwy 401 - water in culvert collection basin only - drainage feature, no w/s connectivity - not likely fish habitat - Songbirds (finches, other unknown sp.) present

Additional Notes Appended? ☐ No ☐ Yes	number of pages _____
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SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
 		PROJECT #: 60541071	
		MAPPER: QB	
		NAME OF WATERBODY: unnamed.	
		CROSSING #:	
		STATION #: 401-6-22us	
		DATE: DD-MMM-YY 21-07-17	
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 #:		PROJECT DESCRIPTION:		DAY:	MONTH:	YEAR:	
60541071		401-6		25	07	2017	
Is STREAM REALIGNMENT required for this section:							
☐ Yes		☐ No		☒ Unknown			
COLLECTORS:		WEATHER CONDITIONS:		TIME STARTED:		TIME FINISHED:	
A.O., D.B.		Mainly Clear		1045		1100	
AIR TEMP:		WATER TEMP:		CONDUCTIVITY ($\mu\text{S/cm}$):			
19°C							
PHOTO NUMBERS AND DESCRIPTIONS:							
31-37							
LOCATION							
NAME OF WATERBODY:		DRAINAGE SYSTEM:		CROSSING #:	STATION #:		
Unnamed Trib.					401-6-23A-US		
LOCATION OF CROSSING: Crosses under Hwy 6 S. just north of McElroy Rd.							
GPS COORDINATES:				MTO CHAINAGE:			
17T 056 5526 4813729							
TOWNSHIP:				MNR DISTRICT:			
Guelph				Aurora			
LAND USE AND POLLUTION							
SURROUNDING LAND USE:				SOURCES OF POLLUTION:			
Hwy				Hwy runoff			
EXISTING STRUCTURE TYPE							
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☐	
						N/A ☐	
Other ☒ Describe: Steel Gate						Size (w x h) m ²	
SECTION TYPE AND MORPHOLOGY							
SECTION IDENTIFIER:				SECTION LOCATION: (Include on habitat map)			
TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:	
	☐	☒	☐	☐	☒		
TOTAL SECTION LENGTH (m):				CURRENT VELOCITY (m/s):			
50							
SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other	
	☐	☐	☐	☐	☐		
Percentage of area							
Mean depth wetted (m)							
Mean width wetted (m)							
Mean bankfull width (m)							
Mean bankfull depth(m)							
Substrate							
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris		Organic debris	Vascular Macrophytes
				Instream			Instream
				Overhanging			Overhanging
SHORE COVER (% stream shaded):		100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐	
VEGETATION TYPE (%):		Submergent		Floating		Emergent	
Predominant Species		NO WATER					
MIGRATORY OBSTRUCTIONS:		None		Seasonal		Permanent ☒	
POTENTIAL CRITICAL HABITAT LIMITING:		Spawning		Evidence of Groundwater		Other	
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
Remove Garbage							
COMMENTS:							
Ephemeral Drainage swale between Hwy 68 and Hwy 64 draining into a steel grate at south extent. No water or aquatic vegetation present. Terrestrial vegetation is abundant in the swale. Not fish habitat.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m): 50	SCALE (cm / m):
					PROJECT #: 60541071
					MAPPER: JTB
					NAME OF WATERBODY: Unnamed
					CROSSING #:
					STATION #: 401-6-23 Aus
					DATE: DD-MMM-YY 25-Jul-17
					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			

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 25	MONTH: Jul	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: AO, OB		WEATHER CONDITIONS: Mainly Clear		TIME STARTED: 1105		TIME FINISHED:			
AIR TEMP: 19°C		WATER TEMP:		CONDUCTIVITY (µS/cm):					
PHOTO NUMBERS AND DESCRIPTIONS: 38-49									
LOCATION									
NAME OF WATERBODY: unnamed trib.		DRAINAGE SYSTEM:		CROSSING #:		STATION #: 401-6-23415			
LOCATION OF CROSSING: Hwy 6 @ Maithai Rd.									
GPS COORDINATES: 17T 565512 4813712				MTO CHAINAGE:					
TOWNSHIP: Guelph				MNR DISTRICT: Aucara					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, Residential				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:			SECTION LOCATION: (include on habitat map)						
TYPE:	Stream / river ☐	Channelized ☒	Permanent ☐	Intermittent ☐	Ephemeral ☒	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s):					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area									
Mean depth wetted (m)									
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species			No WATER				
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent rip-rap		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None							
COMMENTS:							
Ephemeral drainage Swale west of Hwy 6 South. No Water or aquatic vegetation was observed in the Swale. Not fish habitat. Placed rip-rap at the mouth of the culvert would be permanent migration obstruction. Swale is well-vegetated with terrestrial vegetation. Filtrix Sack (ESC measure) staked across Swale within Study area (photo 49).							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 25	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: AO, BB		WEATHER CONDITIONS: Mainly Clear		TIME STARTED: 11:20		TIME FINISHED: 11:30			
AIR TEMP: 20		WATER TEMP:			CONDUCTIVITY (µS/cm):				
PHOTO NUMBERS AND DESCRIPTIONS: 50-57									
LOCATION									
NAME OF WATERBODY: Unnamed T.L.		DRAINAGE SYSTEM:		CROSSING #:		STATION #: 401-6-23715			
LOCATION OF CROSSING: Hwy 6 South, South of Maltby Rd									
GPS COORDINATES: 17T 0565526 4813681				MTO CHAINAGE:					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, Agricultural, Residential				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:				SECTION LOCATION: (Include on habitat map)					
TYPE:	Stream / river ☐	Channelized ☒	Permanent ☐	Intermittent ☐	Ephemeral ☒	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m): 200				CURRENT VELOCITY (m/s):					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area									
Mean depth wetted (m)	NO WATER								
Mean width wetted (m)									
Mean bankfull width (m)									
Mean bankfull depth (m)									
Substrate									
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris		Organic debris	Vascular Macrophytes
				Instream			Instream
				Overhanging			Overhanging
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☐	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species							
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None							
COMMENTS:							
Ephemeral Drainage Swale south of Maltby Rd and adjacent to Hwy 6 south. Swale is well vegetated with terrestrial vegetation. No water or aquatic vegetation present. Not fish habitat. Rip-rap lines the base of the swale from the culvert to ~ 5m PIS. Rip-rap photo							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION: 65 / Malheur Rd	SECTION LENGTH (m): 200	SCALE (cm / m):
				PROJECT #: 60541071
				MAPPER: OB
				NAME OF WATERBODY: unnamed
				CROSSING #: —
				STATION #: 401-6-23.05
				DATE: DD-MMM-YY 25-Jul-13
				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		

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

GENERAL INFORMATION									
PROJECT #: 60341071		PROJECT DESCRIPTION: 401-6		DAY: 25	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☐ Unknown									
COLLECTORS: AO, OB		WEATHER CONDITIONS: Sunny		TIME STARTED: 13:46		TIME FINISHED: 1400			
AIR TEMP: 23°C		WATER TEMP: 18.1		CONDUCTIVITY (µS/cm): 946					
PHOTO NUMBERS AND DESCRIPTIONS: 92-101									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: /		CROSSING #: /		STATION #: 401-6-24 ds			
LOCATION OF CROSSING: South of RR34 and west of Hwy 6 south									
GPS COORDINATES: 17T 0566273 4811909				MTO CHAINAGE: /					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy 6, Mixed woodlot				SOURCES OF POLLUTION: hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: /				SECTION LOCATION: (include on habitat map) /					
TYPE:	Stream / river ☐	Channelized ☒	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: /			
TOTAL SECTION LENGTH (m): 200				CURRENT VELOCITY (m/s): /					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other Standing water			
Percentage of area						100%			
Mean depth wetted (m)						0.02			
Mean width wetted (m)						0.8			
Mean bankfull width (m)						3.0			
Mean bankfull depth (m)						1.2			
Substrate						90% Mu, 10% Si			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
	☒	☒	☒	Instream ☒ Overhanging ☒	☒	Instream 100% Overhanging ☒	
SHORE COVER (% stream shaded):	100 - 90 % ☐	90 - 60% ☒	60- 30% ☐	30 - 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species	☒		☒		100% phragmites		☒
MIGRATORY OBSTRUCTIONS:	None ☒		Seasonal ☒		Permanent low flow + choked phragmites ☒		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning ☒		Evidence of Groundwater ☒		Other ☒		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
Remove phragmites							
COMMENTS:							
Intermittent drainage swale south of RR34 and west of Hwy 6 South. Some standing water was observed. Rip-rap surrounds the culvert. First 100m of channel is choked by phragmites. Second 100m of study area has riparian shrubery overhanging swale. Not fish habitat.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m): 200	SCALE (cm / m):
					PROJECT #: 60541071
					MAPPER: NB
					NAME OF WATERBODY: unnamed
					CROSSING #:
					STATION #: 401-6-2405
					DATE: DD-MMM-YY 25-Jul-17
					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			

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 25	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: OB, AO		WEATHER CONDITIONS: Clear, warm		TIME STARTED: 13:20		TIME FINISHED: 13:30			
AIR TEMP: 23		WATER TEMP: 19.2		CONDUCTIVITY (µS/cm): 1091					
PHOTO NUMBERS AND DESCRIPTIONS: 84-91									
LOCATION									
NAME OF WATERBODY: unnamed		DRAINAGE SYSTEM:		CROSSING #:		STATION #: 401-6-24 wks			
LOCATION OF CROSSING: Hwy 65 @ Wellington Rd 34									
GPS COORDINATES: 0546262 4811930				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy / mixed forest				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —				SECTION LOCATION: (include on habitat map) —					
TYPE:	Stream / river ☐	Channelized ☒	Permanent ☐	Intermittent ☒	Ephemeral ☐	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other standing water			
Percentage of area						100			
Mean depth wetted (m)						0.03			
Mean width wetted (m)						0.8			
Mean bankfull width (m)						1.0			
Mean bankfull depth (m)						0.9			
Substrate						100 mm			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
	—	—	—	—	—	60 —	—
SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☒	30 – 1% ☐	None ☐		
VEGETATION TYPE (%):	Submergent —		Floating —		Emergent 60 cat-tails		None 40
Predominant Species	—		—		—		—
MIGRATORY OBSTRUCTIONS:	None —		Seasonal —		Permanent intermittent-flow		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning —		Evidence of Groundwater potential (see notes)		Other —		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
remove garbage.							
COMMENTS:							
- Intermittent channelized watercourse running adjacent to Hwy 6S, dense cat tail growth - primarily drainage conveyance - nearby groundwater input at 401-6-25us - potential groundwater input to this channel as well (none observed) - Not likely fish habitat.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m): 50	SCALE (cm / m):
---------------------	-------------------	--	-----------------

PROJECT #:
60541671

MAPPER:
OB

NAME OF WATERBODY:
unnamed

CROSSING #:
—

STATION #:
401-6-24us

DATE: DD-MMM-YY
25-Jul-17

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 25	MONTH: 09	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.C. CB		WEATHER CONDITIONS: Mainly Clear		TIME STARTED: 1245		TIME FINISHED: 1315			
AIR TEMP: 21°C		WATER TEMP: 12.5		CONDUCTIVITY (µS/cm): 701					
PHOTO NUMBERS AND DESCRIPTIONS: 58-83									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: /		CROSSING #: /		STATION #: 401-6-25415			
LOCATION OF CROSSING: North of R.R. 34 and west of Hwy 6 South.									
GPS COORDINATES: 17T 0566254 4811925				MTO CHAINAGE: /					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy, Mixed Woodlot.				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: /			SECTION LOCATION: (include on habitat map) /						
TYPE:	Stream / river ☒	Channelized ☐	Permanent ☒	Intermittent ☐	Ephemeral ☐	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m): 50.				CURRENT VELOCITY (m/s): Slow moderate					
SUB-SECTION(S)	Run ☒	Pool ☐	Riffle ☐	Flats ☒	Inside culvert ☐	Other			
Percentage of area	10	/	5	85	/	/			
Mean depth wetted (m)	0.30	/	0.70	0.14	/	/			
Mean width wetted (m)	1.20	/	0.8	1.40	/	/			
Mean bankfull width (m)	1.50	/	1.0	1.60	/	/			
Mean bankfull depth (m)	0.50	/	0.40	0.40	/	/			
Substrate	60% D, 30% S, 10% G	/	30% S, 20% G, 50% D	30% D, 20% S	/	/			
Bedrock Br	Boulder Bo ☒	Cobble Co	Gravel Gr ☒	Sand Sa ☒	Silt Si ☒	Clay Ci	Muck Mu	Detritus D ☒	
	5		5	30	15%			55%	

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

HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	25	10	/	Instream 30 Overhanging 20	35	Instream / Overhanging /	/

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

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
	100	/	/	/
Predominant Species	Watercress			

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
		Upwelling + Watercress	

POTENTIAL ENHANCEMENT OPPORTUNITIES:
None

COMMENTS:
Permanent Stream North of R.R. 34 and West of Hwy 6 South. The Stream is slow flowing with substrate of coarse sand and gravel covered in detritus. Little vegetation stabilizes the banks which are undercut and supported mainly by surrounding canopy root structure. Groundwater upwelling was observed east of the channel. Watercress was observed in the channel just upstream of the culvert. This study area would be considered fish habitat with woody debris and undercut banks as supporting cover. Upwelling of groundwater flowed into channel. Bird breeding habitat present.

Additional Notes Appended?	O No O Yes	number of pages _____
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cedar

PICS 5B-

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

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

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m): 50		SCALE (cm / m):	
						PROJECT #: 60541n71	
						MAPPER: JBuit	
						NAME OF WATERBODY: Unmod.	
						CROSSING #:	
						STATION #: 401-6-25 us	
DATE: DD-MMM-YY 25-Jul-17						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			

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION:		DAY: 25	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.O., O.B.		WEATHER CONDITIONS: Sunny		TIME STARTED: 1400		TIME FINISHED: 1430			
AIR TEMP: 23°C		WATER TEMP: 13.1		CONDUCTIVITY (µS/cm): 703					
PHOTO NUMBERS AND DESCRIPTIONS: 102-121									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: /		CROSSING #: /		STATION #: 401-6-25 P/S			
LOCATION OF CROSSING: South of RR34 and west of Hwy 6 South									
GPS COORDINATES: 17T 0566269 4811903				MTO CHAINAGE: /					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Hwy 6,				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: /		SECTION LOCATION: (Include on habitat map) /							
TYPE:	Stream / river ☒	Channelized ☐	Permanent ☒	Intermittent ☐	Ephemeral ☐	ASSOCIATED WETLAND:			
TOTAL SECTION LENGTH (m): 200				CURRENT VELOCITY (m/s): /					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area	85	/	15	/	/	/			
Mean depth wetted (m)	0.18	/	0.13	/	/	/			
Mean width wetted (m)	1.1	/	0.80	/	/	/			
Mean bankfull width (m)	1.4	/	0.15	/	/	/			
Mean bankfull depth (m)	0.8	/	0.90	/	/	/			
Substrate	80% 20% G1 Gr	/	60% 40% G1 Gr	/	/	/			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris	Organic debris	Vascular Macrophytes	None
	40	/	/	Instream 20 Overhanging 15	35	Instream / Overhanging /	/
SHORE COVER (% stream shaded):	100 - 90 %	90 - 60%	60- 30%	30 - 1%	None		
	☐	☒	☐	☐	☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species	/		/		/		/
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
	/		/		/		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
	/		/		/		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
Bank stabilization							
COMMENTS:							
Permanent stream south of RR34 and west of Hwy 6 south. Stream has consolidated clay substrate with gravel and sand deposits throughout the study area. No aquatic vegetation was observed. Woody debris and smaller riparian trees that had fallen across the stream provide fish habitat. Moderate erosion of banks and significant undercuts provide fish habitat. The stream starts to slightly meander ~50m D/S of the culvert. Fish were observed within the study area.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m): 200	SCALE (cm / m):
					PROJECT #: 60541071
					MAPPER: OB
					NAME OF WATERBODY: unnamed
					CROSSING #: 1
					STATION #: 401-6-25 ds
					DATE: DD-MMM-YY 25-Jul-17
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		

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 26	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.C. CB.		WEATHER CONDITIONS: Cloudy		TIME STARTED: 1110		TIME FINISHED: 1130			
AIR TEMP: 20°C		WATER TEMP: 18.0 °C		CONDUCTIVITY (µS/cm): 1085					
PHOTO NUMBERS AND DESCRIPTIONS: 51-73									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-26015			
LOCATION OF CROSSING: C.R. 34 West of Hwy 6 South									
GPS COORDINATES: 17T 0565740 4811771				MTO CHAINAGE: —					
TOWNSHIP:				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Mixed forest/wetland				SOURCES OF POLLUTION: Road runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —				SECTION LOCATION: (include on habitat map) —					
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☒	Intermittent ☐	Ephemeral ☐	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 200				CURRENT VELOCITY (m/s):					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☒	Inside culvert ☐	Other Wetland			
Percentage of area	—			10	—	190			
Mean depth wetted (m)	—			0.06	—	0.05			
Mean width wetted (m)	—			undefined	—	undefined			
Mean bankfull width (m)	—			undefined	—	undefined			
Mean bankfull depth (m)	—			undefined	—	undefined			
Substrate	—			Mu 56% P 56%	—	Mu 50% P 50%			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
	/	/	/	20	/	90 70	/

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	☐	☒	☐	☐	☐

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
Predominant Species	/	/	100 Cattails, grasses	

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning /	Evidence of Groundwater upwelling GW + iron staining	Other /

POTENTIAL ENHANCEMENT OPPORTUNITIES:
None.

COMMENTS:
Permanent wetland drainage feature south of C.R. 34 and west of Hwy 6 south. Small amounts of flow observed within undefined wetland. into mixed woodlot. Upwelling from spring in woodlot with significant iron staining noted, contributing flow. Bird breeding habitat present. Potential fish habitat.

Additional Notes Appended? ☐ No ☐ Yes	number of pages _____
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SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
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PROJECT #:
60541071

MAPPER:
CB

NAME OF WATERBODY:
unnamed

CROSSING #:
-

STATION #:
401-6-26 ds

DATE: DD-MMM-YY
26-Jul-17

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
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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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 25	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.O.O.B.		WEATHER CONDITIONS: Sunny		TIME STARTED: 1445		TIME FINISHED: 1515			
AIR TEMP: 23°C		WATER TEMP: 18.7		CONDUCTIVITY (µS/cm): 976					
PHOTO NUMBERS AND DESCRIPTIONS: 1-14									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-26415			
LOCATION OF CROSSING: West on RR34									
GPS COORDINATES: 17T 565736 4811800				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Coniferous Woodlot				SOURCES OF POLLUTION: Runoff from roadway					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —				SECTION LOCATION: (include on habitat map) —					
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☒	Intermittent ☐	Ephemeral ☐	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☒	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other Standing water			
Percentage of area	15					95%			
Mean depth wetted (m)	0.05					0.10			
Mean width wetted (m)	0.30					undefined			
Mean bankfull width (m)	undefined					undefined			
Mean bankfull depth (m)	undefined					undefined			
Substrate	Mu 100/L					D50 Mu 50			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	

BANK STABILITY							
	Stable	Slightly Unstable	Moderately Unstable	Unstable			
Left Upstream Bank	☒	☐	☐	☐			
Right Upstream Bank	☒	☐	☐	☐			
HABITAT							
IN-STREAM COVER (% surface area): 13.0	Undercut banks /	Boulders /	Cobble /	Woody Debris Instream 25 Overhanging	Organic debris 35	Vascular Macrophytes Instream 70% Overhanging 100%	None
SHORE COVER (% stream shaded):	100 - 90 % ☐	90 - 60% ☐	60- 30% ☐	30 - 1% ☒	None ☐		
VEGETATION TYPE (%):	Submergent		Floating /		Emergent 100% Cattails		None
Predominant Species	/		/		Cattails		
MIGRATORY OBSTRUCTIONS:	None /		Seasonal /		Permanent Cattails		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning /		Evidence of Groundwater Iron Staining		Other /		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None							
COMMENTS:							
Wetland pocket north of RR34 receiving water draining from upstream through a coniferous woodlot. The majority of the wetland consists of standing water choked by cattails. Two small runs flow through the study area flowing into the culvert. The upstream area of the study site has aquatic grasses and then no aquatic vegetation at the W/S extent. There is potential for fish habitat.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m): 50	SCALE (cm / m):
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PROJECT #:
60541071

MAPPER:
OBUTHY

NAME OF WATERBODY:
unnamed

CROSSING #:
—

STATION #:
401-6-26 US

DATE: DD-MMM-YY
25-Jul-17

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 27	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.D. OB		WEATHER CONDITIONS: Cloudy, Drizzle		TIME STARTED: 1000		TIME FINISHED: 1630			
AIR TEMP: 20°C		WATER TEMP: 17.4°C		CONDUCTIVITY (µS/cm): 761					
PHOTO NUMBERS AND DESCRIPTIONS: 167-179									
LOCATION									
NAME OF WATERBODY: Unnamed		DRAINAGE SYSTEM: /		CROSSING #: /		STATION #: 401-6-30 u/s			
LOCATION OF CROSSING: South of concession Rd 7, at lot 4507									
GPS COORDINATES: 17T 0566627 4812728				MTO CHAINAGE: /					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Residential, Wetland.				SOURCES OF POLLUTION: Road runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: /				SECTION LOCATION: (include on habitat map) /					
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☒	Intermittent ☐	Ephemeral ☐	ASSOCIATED WETLAND: /			
TOTAL SECTION LENGTH (m): 50				CURRENT VELOCITY (m/s): /					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☒	Inside culvert ☐	Other ☒			
Percentage of area	/		/		80		/		
Mean depth wetted (m)	/		/		0.1-		/		
Mean width wetted (m)	/		/		0.7		/		
Mean bankfull width (m)	/		/		undefined		/		
Mean bankfull depth (m)	/		/		undefined		/		
Substrate	/		/		Mu 50% Si 20% D 30%		/		
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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 /	Woody Debris	Organic debris 30%	Vascular Macrophytes	None /
				Instream		Instream 90%	
				Overhanging		Overhanging 40%	
SHORE COVER (% stream shaded):	100 - 90 % ☐	90 - 60 % ☒	60 - 30 % ☐	30 - 1 % ☐	None ☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
Predominant Species	/		/		Cattails		/
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning /		Evidence of Groundwater Iron Staining		Other /		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None							
COMMENTS:							
Permanent wetland feature south on C.R. 7. Small flow through wetland, though no defined channel. Cattails and aeruginosa vegetation present. Potential fish habitat. Bird breeding habitat. Notes: Provincially Evaluated Wetland.							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m): 50		SCALE (cm / m):	
						PROJECT #: 60541071	
						MAPPER: O. B. H. N.	
						NAME OF WATERBODY: unnamed	
						CROSSING #: —	
						STATION #: 401-6-30US	
						DATE: DD-MMM-YY 27-Jul-17	
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			

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 27	MONTH: Jul	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.D., D.B.		WEATHER CONDITIONS: light rain		TIME STARTED: 10:30		TIME FINISHED: 10:45			
AIR TEMP: 17		WATER TEMP: 17.4		CONDUCTIVITY (µS/cm): 761					
PHOTO NUMBERS AND DESCRIPTIONS: 180-186									
LOCATION									
NAME OF WATERBODY: unnamed wetland		DRAINAGE SYSTEM: —		CROSSING #:		STATION #: 401-6-30ds			
LOCATION OF CROSSING: Concession Rd 7 @ File number 4507									
GPS COORDINATES: 0566619 4812720				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: —					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Forest, wetland, road				SOURCES OF POLLUTION: overland flow					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ² —			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —				SECTION LOCATION: (Include on habitat map) —					
TYPE:	Stream / river ☐	Channelized ☐	Permanent ☒	Intermittent ☐	Ephemeral ☐	ASSOCIATED WETLAND: Site is wetland.			
TOTAL SECTION LENGTH (m): 200				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other			
Percentage of area				100					
Mean depth wetted (m)				0.25					
Mean width wetted (m)				0.3					
Mean bankfull width (m)				UNDEFINED					
Mean bankfull depth (m)									
Substrate				100 Mu					
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	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	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
	—	—	—	—	—	40 50	10
SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None		
	☐	☒	☐	☐	☐		
VEGETATION TYPE (%):	Submergent		Floating		Emergent		None
	—		—		100		—
Predominant Species	—		—		cat tails		—
MIGRATORY OBSTRUCTIONS:	None		Seasonal		Permanent		
	—		—		—		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning		Evidence of Groundwater		Other		
	—		—		—		
POTENTIAL ENHANCEMENT OPPORTUNITIES:							
None							
COMMENTS:							
permanent wetland feature crossing concession Rd 7 with flowing water through mixed forest potential fish habitat breeding bird + amphibian habitat soft substrate, narrow channel, abundant aquatic + terrestrial vegetation Note: Provincially Evaluated Wetland							
Additional Notes Appended? ☐ No ☐ Yes number of pages _____							

SECTION IDENTIFIER:		SECTION LOCATION:		SECTION LENGTH (m): 200		SCALE (cm / m):	
						PROJECT #: 60541071	
						MAPPER: OB	
						NAME OF WATERBODY: unnamed	
						CROSSING #: -	
						STATION #: 401-6-30ds	
						DATE: DD-MMM-YY 27 Jul-17	
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 #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 26	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.O., O.B.		WEATHER CONDITIONS: Cloudy		TIME STARTED: 1300		TIME FINISHED: 1330			
AIR TEMP: 21°C		WATER TEMP: 14.1		CONDUCTIVITY (µS/cm): 881					
PHOTO NUMBERS AND DESCRIPTIONS: 74-95									
LOCATION									
NAME OF WATERBODY:		DRAINAGE SYSTEM:		CROSSING #:		STATION #: 401-6-317/5			
LOCATION OF CROSSING: Hwy 6 South, South of C.R. 34									
GPS COORDINATES: 17T 0566345 4811690				MTO CHAINAGE:					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: Mixed forest, private property, highway				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER:			SECTION LOCATION: (include on habitat map)						
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	50	—	10	40	—	—			
Mean depth wetted (m)	0.30	—	0.12	0.15	—	—			
Mean width wetted (m)	1.3	—	1.0	1.4	—	—			
Mean bankfull width (m)	1.5	—	1.2	1.5	—	—			
Mean bankfull depth (m)	0.70	—	0.24	0.45	—	—			
Substrate	80% Sa, 20% Cl	—	90% Cl, 10%	90% Sa, 10% D	—	—			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	

BANK STABILITY				
	Stable	Slightly Unstable	Moderately Unstable	Unstable
Left Upstream Bank	O	Q	O	O
Right Upstream Bank	O	Q	O	O

HABITAT							
IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	40%	/	/	Instream 20% Overhanging /	80%	Instream 50% Overhanging /	/

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

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
	20%	/	80%	/
Predominant Species	Watercress	/	Watercress	/

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent
	/	/	/

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
	/	Watercress	/

POTENTIAL ENHANCEMENT OPPORTUNITIES:

None.

COMMENTS:

Permanent stream that has a confluence to 401-6-25015. Could only access 10m of watercourse without PTE. Fish observed in watercourse. Noted abundance of caddisflies. Large patches of watercress, cobble, a few boulders, sand and gravel at wing-walled CSP. Majority of substrate was sand.

Additional Notes Appended? ☐ No ☐ Yes number of pages _____

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
		PROJECT #: 60541071	
		MAPPER: FB	
		NAME OF WATERBODY: tribe of Mcrimmons Ck	
		CROSSING #: —	
		STATION #: 401-6-31ds	
		DATE: DD-MMM-YY 26-07-2017	
		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	

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

GENERAL INFORMATION									
PROJECT #: 60541071		PROJECT DESCRIPTION: 401-6		DAY: 26	MONTH: 07	YEAR: 2017			
Is STREAM REALIGNMENT required for this section: ☐ Yes ☐ No ☒ Unknown									
COLLECTORS: A.O. DB		WEATHER CONDITIONS: Cloudy		TIME STARTED: 1340		TIME FINISHED: 1400			
AIR TEMP: 21°C		WATER TEMP: 17.5		CONDUCTIVITY (µS/cm): 968					
PHOTO NUMBERS AND DESCRIPTIONS: 96-108									
LOCATION									
NAME OF WATERBODY: Unnamed stream		DRAINAGE SYSTEM: —		CROSSING #: —		STATION #: 401-6-32ds			
LOCATION OF CROSSING: Hwy 65 just north of 401 on ramp									
GPS COORDINATES: 17T 0566478 4811214				MTO CHAINAGE: —					
TOWNSHIP: Guelph				MNR DISTRICT: Aurora					
LAND USE AND POLLUTION									
SURROUNDING LAND USE: private property				SOURCES OF POLLUTION: Hwy runoff					
EXISTING STRUCTURE TYPE									
Bridge ☐		Box Culvert ☐		Open Foot Culvert ☐		CSP ☒		N/A ☐	
Other ☐ Describe:						Size (w x h) m ²			
SECTION TYPE AND MORPHOLOGY									
SECTION IDENTIFIER: —			SECTION LOCATION: (include on habitat map) —						
TYPE:	Stream / river ☒	Channelized ☐	Permanent ☒	Intermittent ☐	Ephemeral ☐	ASSOCIATED WETLAND: —			
TOTAL SECTION LENGTH (m): 10m				CURRENT VELOCITY (m/s): —					
SUB-SECTION(S)	Run ☒	Pool ☐	Riffle ☐	Flats ☐	Inside culvert ☐	Other Standing			
Percentage of area	20%	—	—	—	—	80%			
Mean depth wetted (m)	0.40	—	—	—	—	0.35			
Mean width wetted (m)	1.4	—	—	—	—	1.4			
Mean bankfull width (m)	undefined	—	—	—	—	Undefined			
Mean bankfull depth (m)	undefined	—	—	—	—	Undefined			
Substrate	50% m 50% s	—	—	—	—	Max 50% 0.50%			
Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D	