Appendix F

Terrestrial and Aquatic Ecology

DRAFT

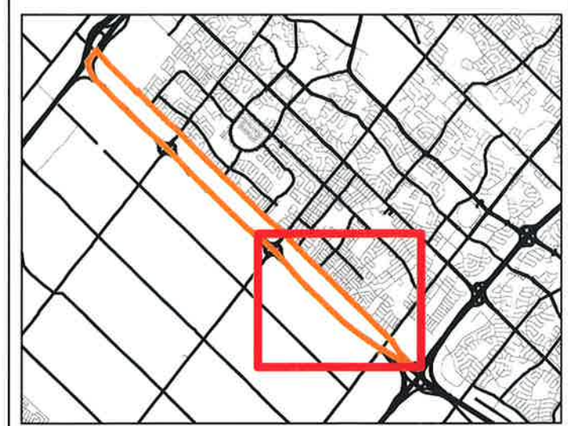
Figure 2

Ninth Line Corridor Review

Existing Conditions

Legend

- Study Area Boundary
- Utility Line
- Railway
- Highway
- Primary Road
- Secondary Road



NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Map Produced by Natural Resource Solutions Inc.
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Project: 1464
Date: May 5, 2014

NAD83 - UTM Zone 17
Size: 11x17"
1:11,000

0 200 400 600 Meters

N

Path: X:\1464_MississaugaNinthLineCorridorReview\1464_MississaugaNinthLineCorridorReview_Zoom1.mxd

NATURAL RESOURCE SOLUTIONS INC.
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FISH SAMPLING

PROJECT (Number & Name): 1464 9th Line.
Field Staff: BEB AMC
Station: EMS-009
Waterbody: UNNAMED SWP
Drainage System:
Location in System:
Appr. Reach Length (m): 50
Survey Date: JUNE 3, 2015
Water Quality:
Time Measured: 11:00

Site Location:
GPS Datum:
Zone: 17T
Easting: 0600858
Northing: 4822054

Sampling Area (m²):
Water Depth (m):
Weather Conditions:
Wind: 2S
Cloud Cover (%): 5
Precip: NONE
pH: DNC
Air Temp. (°C): 18
Water Temp. (°C): 18
Conduct.(µs/cm): DNC

SAMPLING METHOD

Sampling Protocol & Description:
Gear used: Electrofishing Boat (circled: Electrofishing Backpack) Angling Seine Net Minnow Trap
Pulsating Frequency (Hz): 40
Start Time: 10:30
End Time: 11:00
Total Set/Sampling Time:
Voltage: 100-150
Amps: 3-5
Shocking Seconds: 411
Net Length:
Power (Volts x Amps = Watts):
Number of netters: 1
Net Size:

COLLECTION

Common Name or Scientific Name	Total Length mm / Bulk Largest mm	Fork Length mm / Bulk Shortest mm	Weight g / Bulk Weight g	Comment / Bulk Tally	Final #
COMMON CARP	400	350	791.4		1
BLACK CRAPPIE	145	138	50.2	PARASITE MARKS	1
BLUNTNOSE MINNOW	65	54	7.9		3
GOLDEN SHINER	134	128	24.7		1
CREEK CHUB	70	67	4.5		1
BLACK CRAPPIE	92	87	10.7		1
BLUE GILL	62	42	23.4		5

STATION CODES: Electrofishing EMS-000 Angling AGL-000 Minnow Trap MNT-000 Seine Net SEN-000

DNC- Did Not Collect
NA- Not Applicable

NATURAL RESOURCE SOLUTIONS INC.
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FISH SAMPLING

PROJECT (Number & Name): 1464 9th Line
Field Staff: BEB AMC
Station: EMS-006
Waterbody: UNAMED SWMP
Drainage System:
Location in System:
Appr. Reach Length (m):
Survey Date: JUNE 3, 2015
Water Quality:
Time Measured: 11:45

Site Location:
GPS Datum:
Zone: 17T
Easting: 0600774
Northing: 4822043

Sampling Area (m²):
Water Depth (m): max 0.25m
Weather Conditions:
Wind: 2S
Cloud Cover (%): 5
Precip: NONE
pH: DNC
Air Temp. (°C): 18°
Water Temp. (°C): 18
Conduct.(µs/cm): DNC

SAMPLING METHOD

Sampling Protocol & Description:
Gear used: Electrofishing Boat; Angling; Seine Net; Minnow Trap; Electrofishing Backpack
Pulsating Frequency (Hz): 70
Start Time: 11:20
End Time: 11:45
Total Set/Sampling Time:
Voltage: 100
Amps: 5-8
Shocking Seconds: 471
Net Length:
Power (Volts x Amps = Watts):
Number of netters: 1
Net Size:

COLLECTION

Common Name or Scientific Name	Total Length mm / Bulk Largest mm	Fork Length mm / Bulk Shortest mm	Weight g / Bulk Weight g	Comment / Bulk Tally	Final #
BLACK CRAPPIE	85	82	16.5		2
BLUE GILL	64	62	10.5		2

STATION CODES: Electrofishing EMS-000; Angling AGL-000; Minnow Trap MNT-000; Seine Net SEN-000

DNC- Did Not Collect
NA- Not Applicable

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HABITAT CHARACTERIZATION

PROJECT (Number & Name): 1464 north Ln
Field Staff: BEB
Station: AHP-010 **Site Location:**
Waterbody: East Lisgar Branch 16 mile Cr GPS Datum: Easting:
Drainage System: Lake On Zone: Northing:
Location in System: SE of Britannia RD
Appr. Reach Length (m):
Survey Date: 03-June-15 **Weather Conditions:**
Time Started: 1130 Wind: 2 S Cloud Cover (%): 10
Time Finished: 1200 Precipitation: 0

ADJACENT LANDS

Valley	Slope:	Gentle (< 5°)	Moderate (5 - 15°)	Steep (> 15°)	
	Extent of Natural Vegetation (m)	0-10	10 to 20	20 to 30	30+
	Vegetation Type: T. Grasses & cattail sp				
Riparian Zone	Flood Plain - extent of frequent flood (m):	0-10	10 to 20	20 to 30	30+
	Vegetation Type: Cattail sp				
	Vegetation Density (H/M/L):				
Canopy	Type: 0	Quality and % shade: 0			
Land Use	SWM Pond				
Other Notes	(groundwater, soils, pools, vegetation, etc.) Large Shallow SWM pond				

CHANNEL MORPHOLOGY

Bankfull Width Range (m): 100-150	Wetted Width Range (m): 100-150	Gradient (H/M/L):
Bank Height (range (m)): 0.1-0.4		Meander/Straight:
Bank Slope (degrees from surface of water): 100		Bank Stability: H
Bank Vegetation Type: T. Grasses / Cattail sp		Bank Veg. Density (H/M/L):

CHANNEL SUBSTRATE %

Clay: 20	Gravel:	Boulder:	Muck: 40
Silt: 40	Pebble:	Bedrock:	Detritus:
Sand:	Cobble:	Marl:	Other:

INSTREAM HABITAT AND COVER (Y/N)

Pools: Y	Undercut Banks:	Boulder/Rock:
Riffles:	Woody Debris:	Cobble:
Backwater:	Vegetation: Y	Other:

INSTREAM VEGETATION

Type (submerg./emerg./floating)	Family/Genus/species	Description/Abundance
Emerg	Cattail sp	abundant near shore

CODES:	SWI Surface Water Input	SCS Stream Cross Section
AHP Aquatic Habitat Point	GWI Groundwater Input	DOX Dissolved Oxygen Stn
AHY Aquatic Habitat Area	CKC Creek Crossing	VSS Visual Survey Stn
TMP Temp Monitor Stn	WEL Well	WQS Water Quality Stn
FLW Flow Monitor Stn	CUL Culvert	

FLOW CONDITIONS

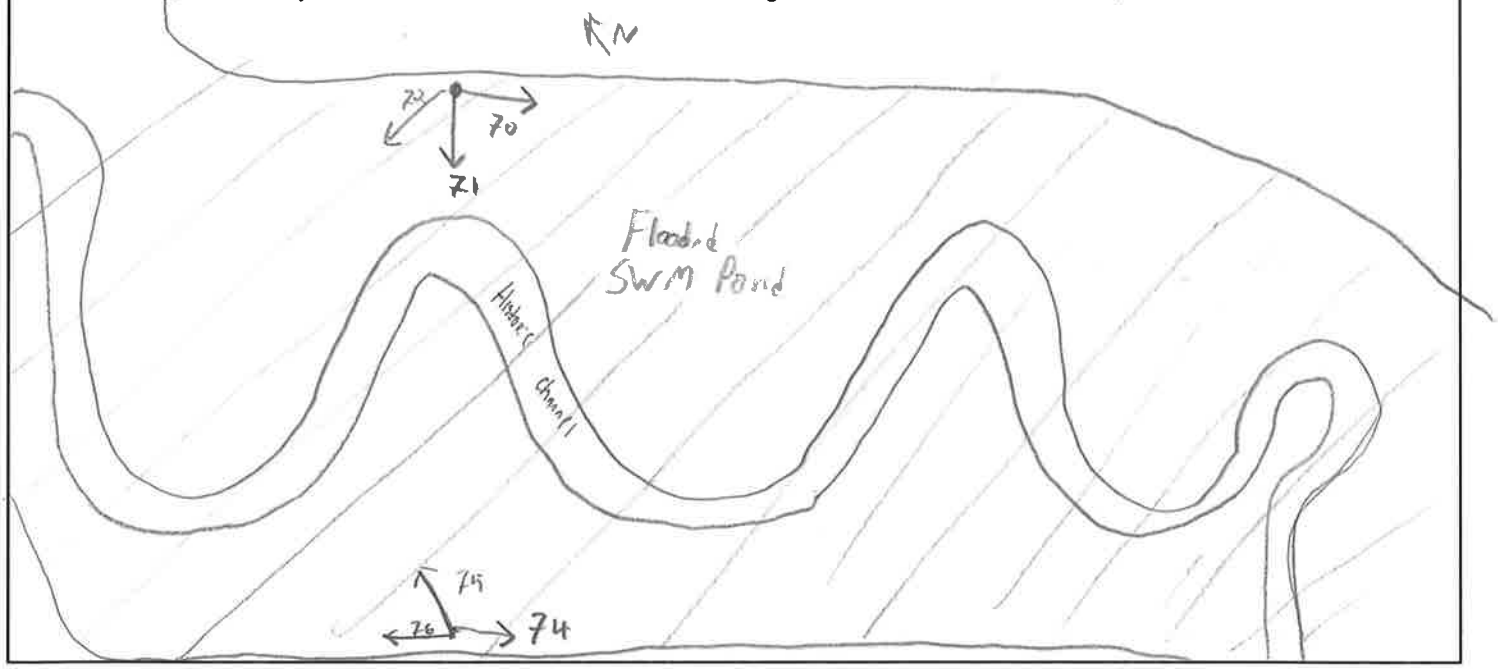
Cross-Section	Wetted Width (m)	Bankful Width (m)	5 Depths, equally spaced (cm)	Discharge/Pool/Riffle/Run/Notes
1				
2				
3				
4				
5				

WATER QUALITY

Water Temp. (°C):	18	D.O. (ppm):	DNC	pH:	DNC	Visible Characteristics/Other Parameters:
Air Temp. (°C):	17	D.O. (%):	DNC	TDS (ppm):	DNC	100% Turbidity
Time Taken:	1130	Conductivity (µs/cm):	DNC			
Location Taken:						

SITE DRAWING

Include: watercourse and name, flow direction, riffle/pool/run habitat, side tributaries, station location, approx. reach length, channel modifications, adjacent landuse, roads & road names, bridges, culverts, north arrow, etc...



PHOTOS TAKEN

Photo #	Description	Photo #	Description
40070	SE	40076	NW
40071	SW		
40072	W		
40074	SE		
40075	N		

GENERAL COMMENTS

Fish observed, unusual conditions, differences from previous site visit, landowner comments, topography, general land use and vegetation, etc.:

Large flooded pond area w/ evidence of historic channel throughout
turbidity very high w/ max depth 0.4 m

DNC- Did Not Collect
NA- Not Applicable

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HABITAT CHARACTERIZATION

PROJECT (Number & Name):	1464 ninth Line		
Field Staff:	BEB		
Station:	AHP-009	**Site Location:**	
Waterbody:	East Lisgar Branch of 16 mile cr	GPS Datum: NAD83	Easting:
Drainage System:	Lake On	Zone: 17T	Northing:
Location in System:	SE of Britannia Rd		
Appr. Reach Length (m):			
Survey Date:	03-June-15	**Weather Conditions:**	
Time Started:	1200	Wind: 2 SE	Cloud Cover (%): 0
Time Finished:	1230	Precipitation: 0	

ADJACENT LANDS

Valley	Slope:	Gentle (< 5°)	Moderate (5 - 15°)	Steep (> 15°)	
	Extent of Natural Vegetation (m)	0-10	10 to 20	20 to 30	30+
	Vegetation Type: T. Grasses, Cattail sp				
Riparian Zone	Flood Plain - extent of frequent flood (m):	0-10	10 to 20	20 to 30	30+
	Vegetation Type: T. Grasses, Cattail sp				
	Vegetation Density (H/M/L):				
Canopy	Type: Q	Quality and % shade: Q			
Land Use	SWM Pond				
Other Notes	**(groundwater, soils, pools, vegetation, etc.)** Large SWM pond				

CHANNEL MORPHOLOGY

Bankfull Width Range (m): 200-300	Wetted Width Range (m): 200-300	Gradient (H/M/L):	
Bank Height (range (m)): 0.3-0.4		Meander/Straight:	
Bank Slope (degrees from surface of water): 150°		Bank Stability: H	
Bank Vegetation Type: Cattail / T. Grasses		Bank Veg. Density (H/M/L):	

CHANNEL SUBSTRATE %

Clay:	10	Gravel:		Boulder:		Muck:	40
Silt:	50	Pebble:		Bedrock:		Detritus:	
Sand:		Cobble:		Marl:		Other:	

INSTREAM HABITAT AND COVER (Y/N)

Pools:	Y	Undercut Banks:		Boulder/Rock:	
Riffles:		Woody Debris:		Cobble:	
Backwater:		Vegetation:	Y	Other:	

INSTREAM VEGETATION

Type (submerg./emerg./floating)	Family/Genus/species	Description/Abundance
emerg	Cattail sp	dense along edge of stream bed

CODES:	SWI Surface Water Input	SCS Stream Cross Section
AHP Aquatic Habitat Point	GWI Groundwater Input	DOX Dissolved Oxygen Stn
AHY Aquatic Habitat Area	CKC Creek Crossing	VSS Visual Survey Stn
TMP Temp Monitor Stn	WEL Well	WQS Water Quality Stn
FLW Flow Monitor Stn	CUL Culvert	

FLOW CONDITIONS

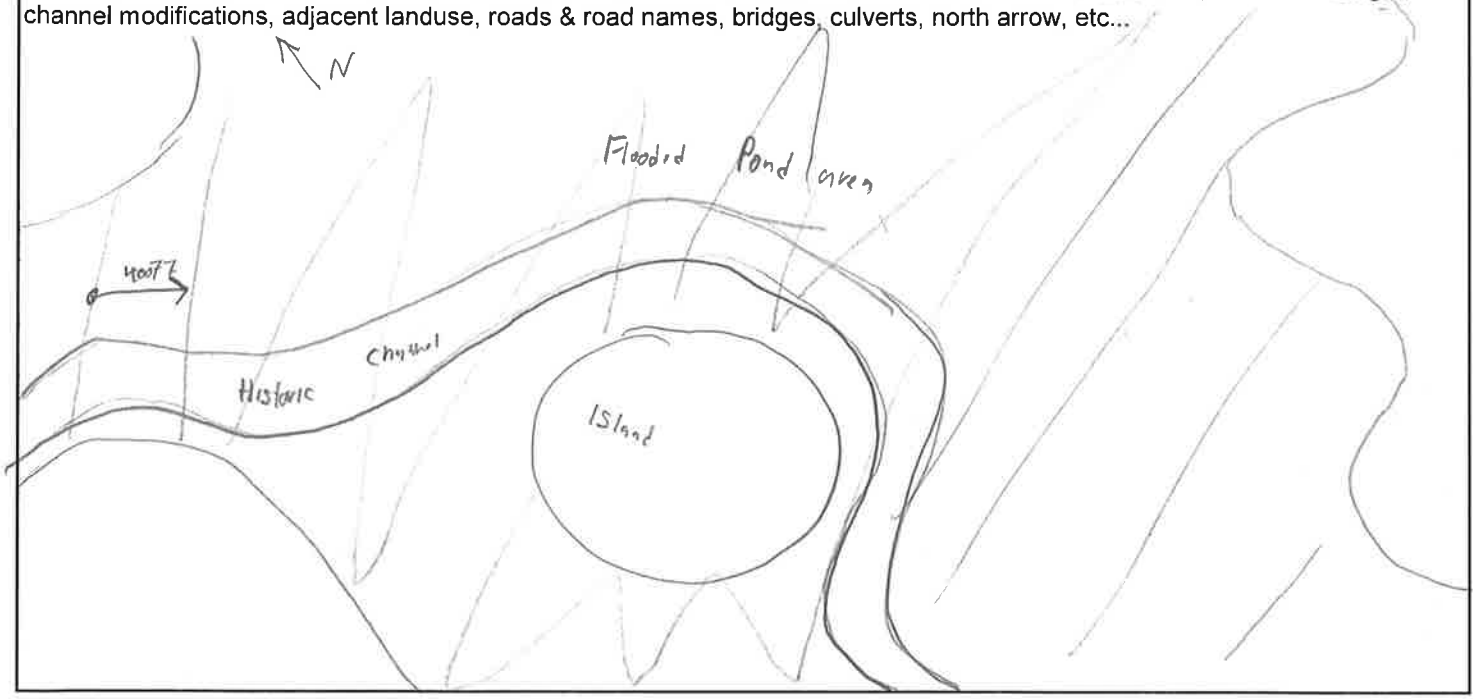
Cross-Section	Wetted Width (m)	Bankful Width (m)	5 Depths, equally spaced (cm)	Discharge/Pool/Riffle/Run/Notes
1				
2				
3				
4				
5				

WATER QUALITY

Water Temp. (°C):	19	D.O. (ppm):	DNC	pH:	DNC	Visible Characteristics/Other Parameters:
Air Temp. (°C):	20	D.O. (%):	DNC	TDS (ppm):	DNC	very high Turbidity
Time Taken:	1230	Conductivity (µs/cm):	DNC			
Location Taken:						

SITE DRAWING

Include: watercourse and name, flow direction, riffle/pool/run habitat, side tributaries, station location, approx. reach length, channel modifications, adjacent landuse, roads & road names, bridges, culverts, north arrow, etc...



PHOTOS TAKEN

Photo #	Description	Photo #	Description
400077	SE		

GENERAL COMMENTS

Fish observed, unusual conditions, differences from previous site visit, landowner comments, topography, general land use and vegetation, etc.:

Very wide flooded swm pond area w evidence of historic channel within large flood plain. Max depth 0.4m., Substrate very soft silt/organic substrate

DNC- Did Not Collect
NA- Not Applicable

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FISH SAMPLING

PROJECT (Number & Name):
Field Staff: BEB AMC
Station: EMS-007
Waterbody: UNNAMED SLUM POND
Drainage System:
Location in System:
Appr. Reach Length (m): 40
Survey Date: JUNE 3, 2015
Water Quality:
Time Measured: 12:10

Site Location:
GPS Datum:
Zone: 17T
Easting: 0600764
Northing: 4922169

Sampling Area (m²):
Water Depth (m):
Weather Conditions:
Wind: 3 SE
Cloud Cover (%): 5
Precip: NONE
pH: DNC
Air Temp. (°C): 18
Water Temp. (°C): 21°C
Conduct.(µs/cm): DNC

SAMPLING METHOD

Sampling Protocol & Description:
Gear used: Electrofishing Boat; Electrofishing Backpack (circled); Angling; Seine Net; Minnow Trap
Pulsating Frequency (Hz): 70
Start Time: 11:50
End Time: 12:10
Total Set/Sampling Time:
Voltage: 150
Amps: 5-8
Shocking Seconds: 452
Net Length:
Power (Volts x Amps = Watts):
Number of netters: 1
Net Size:

COLLECTION

Common Name or Scientific Name	Total Length mm / Bulk Largest mm	Fork Length mm / Bulk Shortest mm	Weight g / Bulk Weight g	Comment / Bulk Tally	Final #
BLUNT NOSE MIN.	46	42	2.4		2
FAT HEAD	77	74	3.2		1

STATION CODES: Electrofishing EMS-000; Angling AGL-000; Minnow Trap MNT-000; Seine Net SEN-000

DNC- Did Not Collect
NA- Not Applicable

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HABITAT CHARACTERIZATION

PROJECT (Number & Name): 1464 ninth Ln
Field Staff: BEB
Station: AHP-008
Site Location:
Waterbody: East Lisgar Branch of 16 mile cr
GPS Datum: NAD83 Easting:
Drainage System: Lake On
Zone: 17T Northing:
Location in System: SE of Britania RD
Appr. Reach Length (m):
Survey Date: 03-June-15
Weather Conditions:
Time Started: 1230
Wind: 3 SE Cloud Cover (%): 10
Time Finished: 1300
Precipitation: 0

ADJACENT LANDS

Valley	Slope:	Gentle (< 5°)	Moderate (5 - 15°)	Steep (> 15°)	
	Extent of Natural Vegetation (m)	0-10	10 to 20	20 to 30	30+
	Vegetation Type: T. Grasses, Phrag, Cattail				
Riparian Zone	Flood Plain - extent of frequent flood (m):	0-10	10 to 20	20 to 30	30+
	Vegetation Type: Cattail sp / Phrag				
	Vegetation Density (H/M/L):				
Canopy	Type: Ø	Quality and % shade: Ø			
Land Use	SWM Pond				
Other Notes	(groundwater, soils, pools, vegetation, etc.)				

CHANNEL MORPHOLOGY

Bankfull Width Range (m): 50 - 100	Wetted Width Range (m): 50-95	Gradient (H/M/L):	
Bank Height (range (m)): 0.2 - 0.4		Meander/Straight:	
Bank Slope (degrees from surface of water): 150°		Bank Stability: High	
Bank Vegetation Type: T. Grasses / Cattail sp		Bank Veg. Density (H/M/L):	

CHANNEL SUBSTRATE %

Clay: 20	Gravel:	Boulder:	Muck: 20
Silt: 60	Pebble:	Bedrock:	Detritus:
Sand:	Cobble:	Marl:	Other:

INSTREAM HABITAT AND COVER (Y/N)

Pools:	Y	Undercut Banks:	N	Boulder/Rock:	N
Riffles:	N	Woody Debris:	N	Cobble:	N
Backwater:	N	Vegetation:	Y	Other:	

INSTREAM VEGETATION

Type (submerg./emerg./floating)	Family/Genus/species	Description/Abundance
Phrag	Cattail sp	abundant near edge of w.b.

CODES:		
	SWI Surface Water Input	SCS Stream Cross Section
AHP Aquatic Habitat Point	GWI Groundwater Input	DOX Dissolved Oxygen Stn
AHY Aquatic Habitat Area	CKC Creek Crossing	VSS Visual Survey Stn
TMP Temp Monitor Stn	WEL Well	WQS Water Quality Stn
FLW Flow Monitor Stn	CUL Culvert	

FLOW CONDITIONS

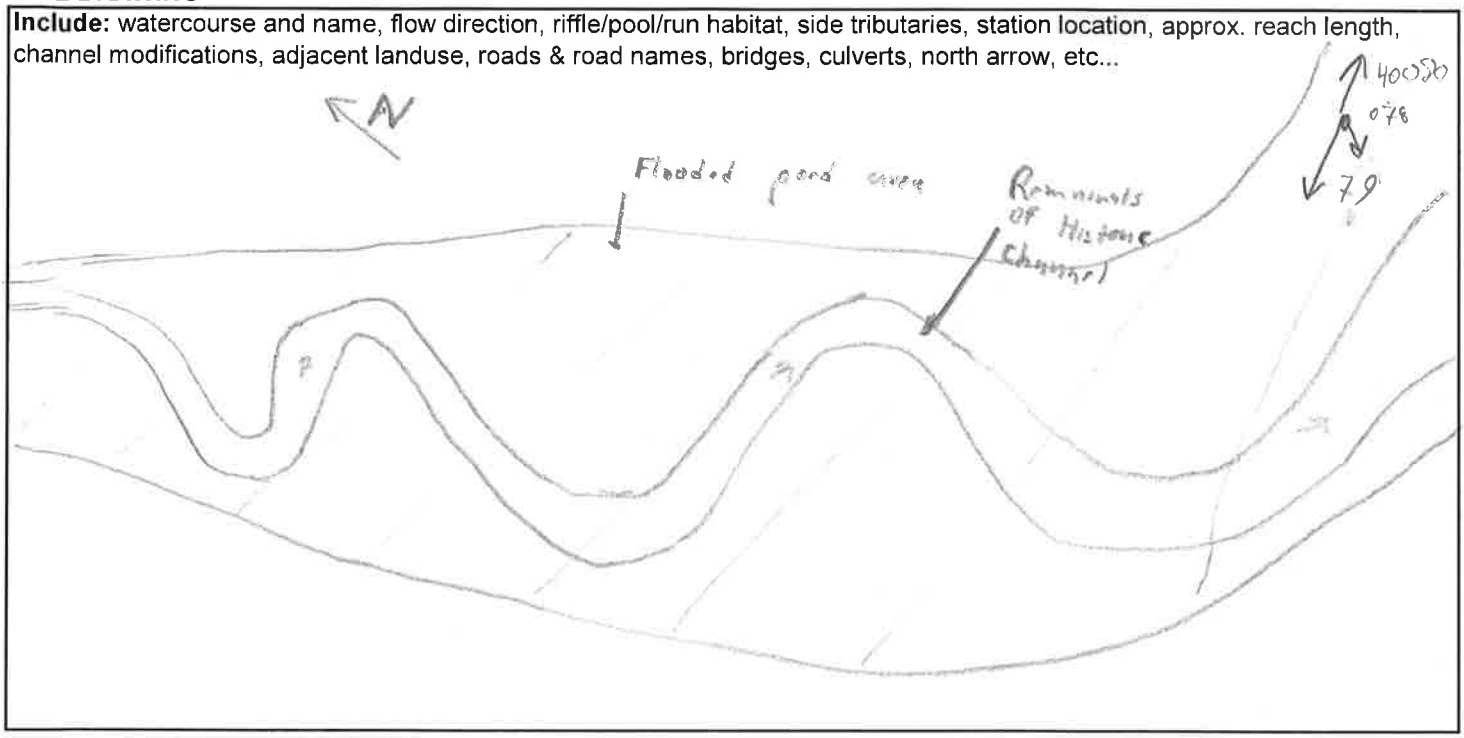
Cross-Section	Wetted Width (m)	Bankful Width (m)	5 Depths, equally spaced (cm)	Discharge/Pool/Riffle/Run/Notes
1				
2				
3				
4				
5				

WATER QUALITY

Water Temp. (°C):	19	D.O. (ppm):	DNC	pH:	DNC	Visible Characteristics/Other Parameters:
Air Temp. (°C):	21	D.O. (%):	DNC	TDS (ppm):	DNC	very high turbidity
Time Taken:	1300	Conductivity (µs/cm):	DNC			
Location Taken:						

SITE DRAWING

Include: watercourse and name, flow direction, riffle/pool/run habitat, side tributaries, station location, approx. reach length, channel modifications, adjacent landuse, roads & road names, bridges, culverts, north arrow, etc...



PHOTOS TAKEN

Photo #	Description	Photo #	Description
40078	S		
40078	W		
40078	E		

GENERAL COMMENTS

Fish observed, unusual conditions, differences from previous site visit, landowner comments, topography, general land use and vegetation, etc.:

Abundant cattail sp along water edge, very shallow flooded pond (max depth 0.4m) evidence of historic channel definition throughout. abundant Common Carp obs spawning throughout area

DNC- Did Not Collect
NA- Not Applicable

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FISH SAMPLING

Page __ of __

PROJECT (Number & Name): 1464 9TH LINE
Field Staff: BEB AMC
Station: EMS-008
Waterbody: UNAMED SWM P.
Drainage System:
Location in System:
Appr. Reach Length (m): 30
Survey Date: JUNE 3, 2015
Water Quality:
Time Measured: 13:00

Site Location:
GPS Datum:
Zone: 17T
Easting: 0600665
Northing: 4822204

Sampling Area (m²):
Water Depth (m): MAX 0.6m

Weather Conditions:
Wind: 3 SE
pH: DNC
Conduct.(µs/cm): DNC
Cloud Cover (%): 5
Air Temp. (°C): 23
Precip: NONE
Water Temp. (°C): 19

SAMPLING METHOD

Sampling Protocol & Description:
Gear used: Electrofishing Boat, Electrofishing Backpack, Angling, Seine Net, Minnow Trap
Pulsating Frequency (Hz): 70
Voltage: 100
Amps: 5-8
Power (Volts x Amps = Watts):
Start Time: 12:50
End Time: 13:00
Total Set/Sampling Time:
Shocking Seconds: 549
Number of netters: 1
Net Length:
Net Size:

COLLECTION

Common Name or Scientific Name	Total Length mm / Bulk Largest mm	Fork Length mm / Bulk Shortest mm	Weight g / Bulk Weight g	Comment / Bulk Tally	Final #
BLACK CRAPPIE	141	136	31.2		1
PUMPKINSEED	104	73	83.5	POSSIBLE HYBRID W/ BLUEGILL	3
BLUNTNOSE MIN	76	67	1.4		1

STATION CODES: Electrofishing EMS-000; Angling AGL-000; Minnow Trap MNT-000; Seine Net SEN-000

DNC- Did Not Collect
NA- Not Applicable