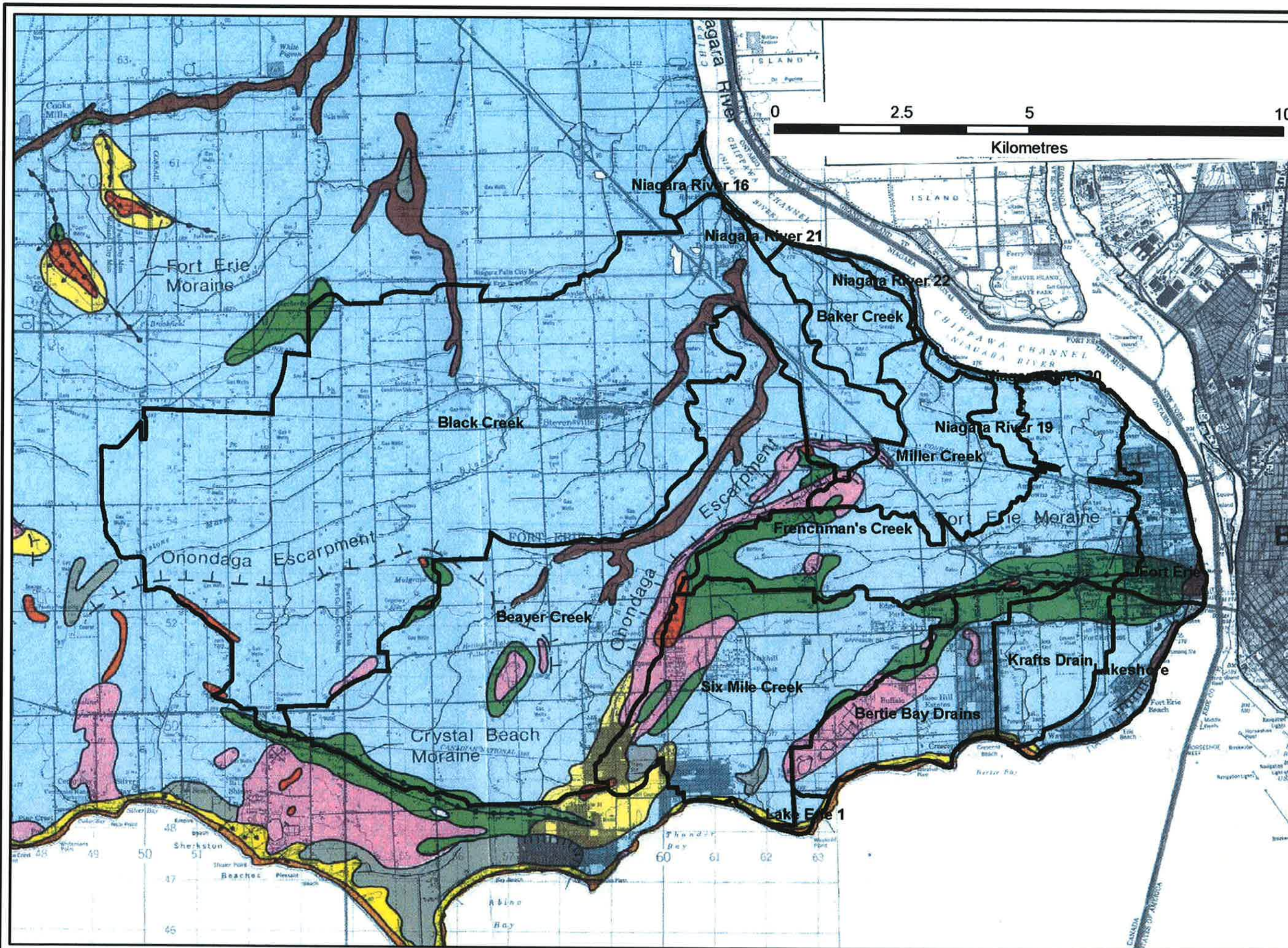






PHANEROZOIC
Cenozoic
Quaternary

RECENT

- Fill (man-made deposit)
- Modern Coastal Dune : Sand
- Modern Beach : Sand and Gravel
- Modern Alluvium : Clay, Silt, Sand and Gravel with Organic Matter
- Bog Deposit : Peat and Muck

PLIESTOCENE (Late Wisconsinan)

- Older Alluvium : Sand, Gravel, Silt and Clay
- Glaciolacustrine Beach and Nearshore Sand and Gravel
- Glaciolacustrine Nearshore and Deltaic Sand and Silt
- Glaciolacustrine Deeper Water Clay and Silt
- Halton Till : Silty and Clayey Till
- Wentworth Till : Gravely Silt Till (in drumlins) Includes Late Wisconsinan and Older Drift

Paleozoic

- Bedrock, Includes Devonian, Silurian and Ordovician Strata

SYMBOLS

- Sand and Gravel Pit or Sand Pit
- Quarry
- Abandoned Shore Bluff
- Moraine Crest
- Bedrock Escarpment
- Ice Contact Slope
- Geological Boundary (actual or interpreted)

SOURCES:

Hydrogeology mapping provided by Ontario's Ministry of Environment, Water Resources of the Niagara Frontier and the Welland River Basin - Phase I Area; prepared by Gartner Lee Limited.

Watershed mapping provided by Philips Engineering (2006).

Fort Erie Creeks Watershed Plan
Surficial Geology

DOUGAN ASSOCIATES
ECOLOGICAL CONSULTING & DESIGN

PROJECT: DA07-66A

CLIENT:

DATE: NOVEMBER 2007

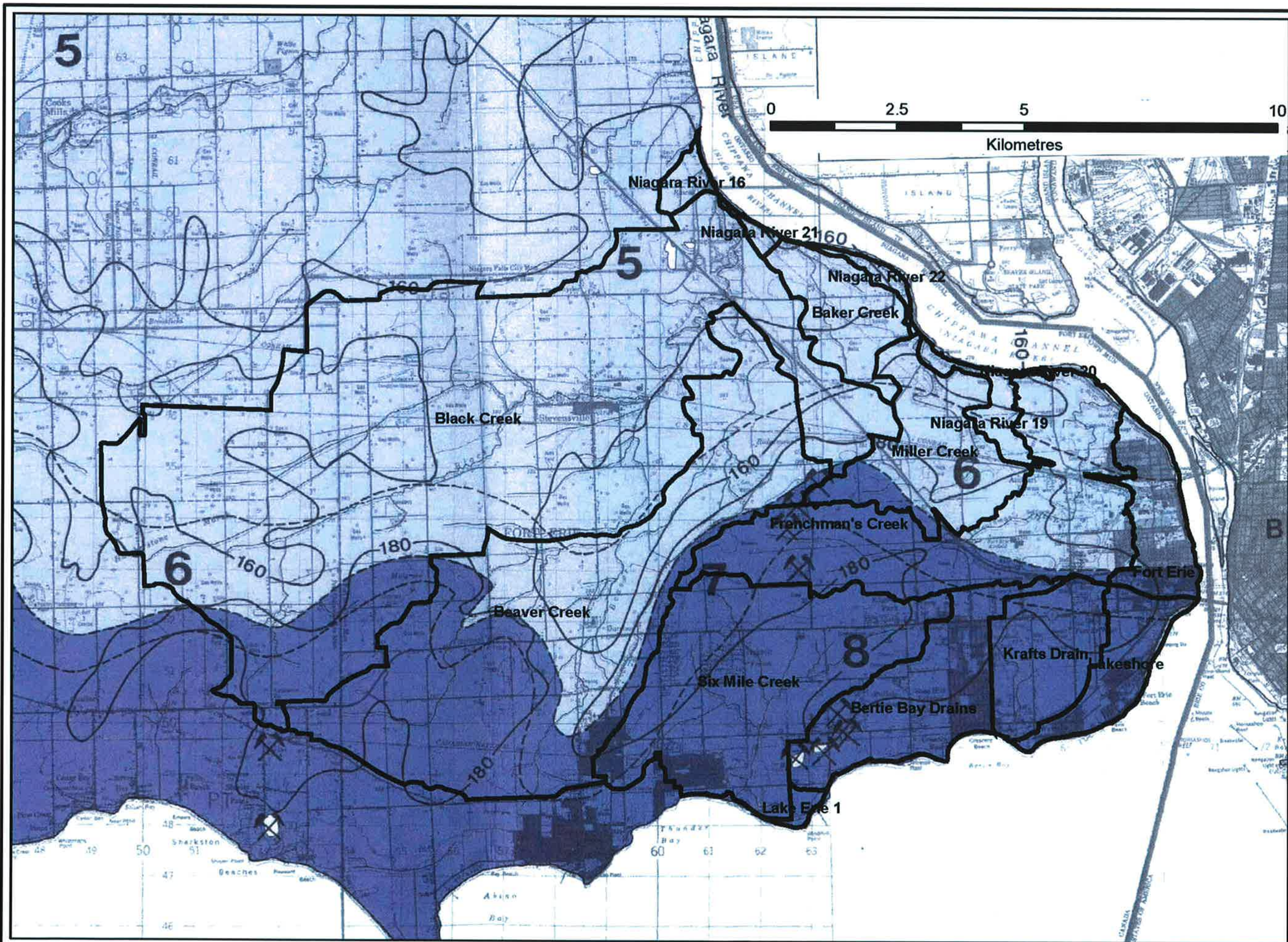
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DRAWN BY: LW

CHECKED BY:

MAP NUMBER:

2



- Devonian**
- Onondaga Formation
 - Bois Blanc Formation
- Silurian**
- 6 Bertie Formation
 - 5 Salina Formation
 - Guelph Formation
 - Lockport Formation
 - Clinton/Cataract Groups
- Ordovician**
- Queenston Formation

- Symbols**
- Quarry
 - Geological Boundary
 - 80- Bedrock Elevation Contour (masl)

SOURCES:

Surficial Geology map provided by Ontario's Ministry of Environment, Water Resources of the Niagara Frontier and the Welland River Basin - Phase I Area; prepared by Gartner Lee Limited.

Watershed mapping provided by Philips Engineering (2006).

Fort Erie Creeks Watershed Plan
Bedrock Geology & Topography



PROJECT: DA07-66A

CLIENT:

DATE: NOVEMBER 2007

SCALE: 1:70,000

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CHECKED BY:

MAP NUMBER:

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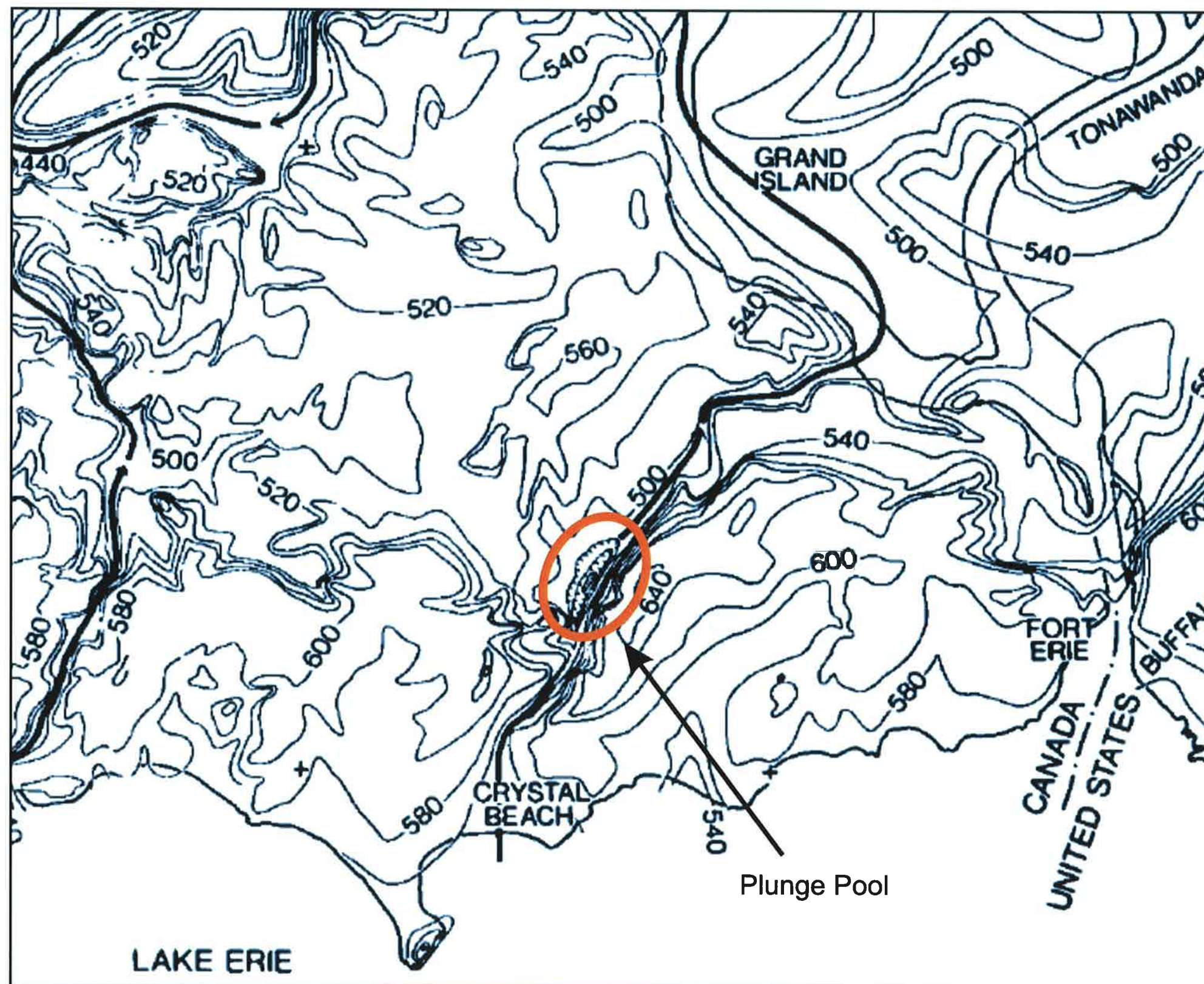
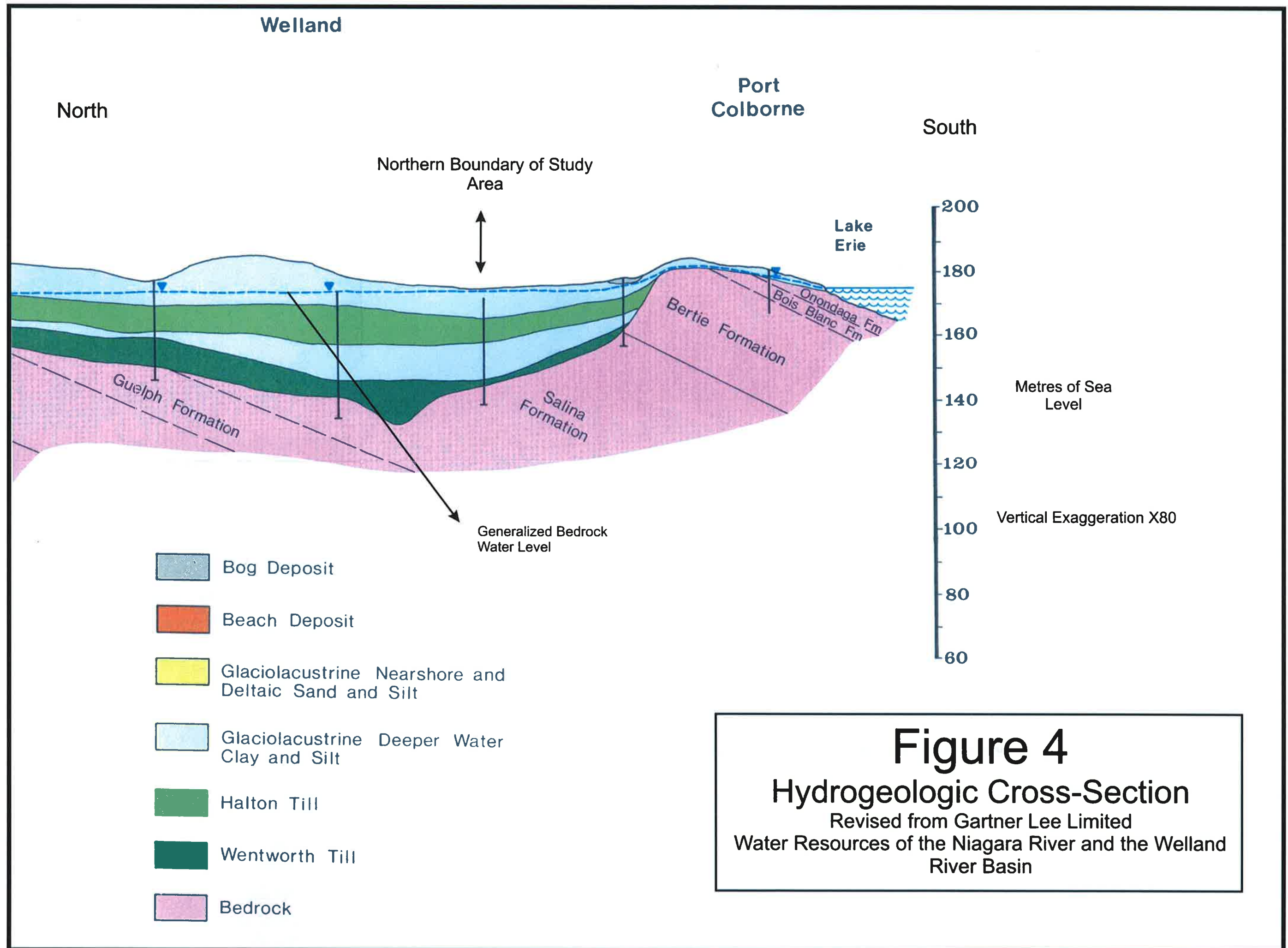


Figure 3a Bedrock Topography
(Flint and Lolcama, 1985)



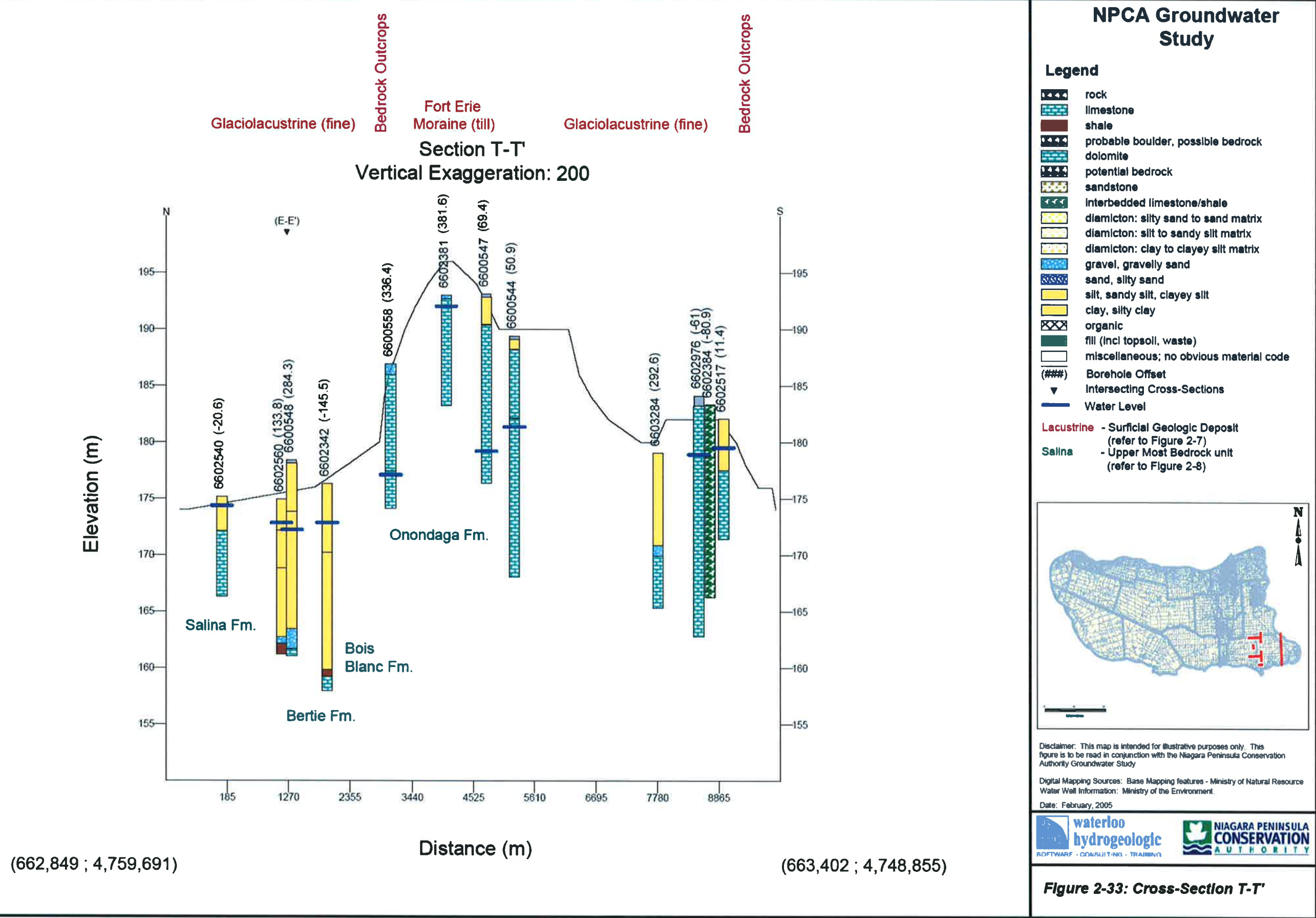
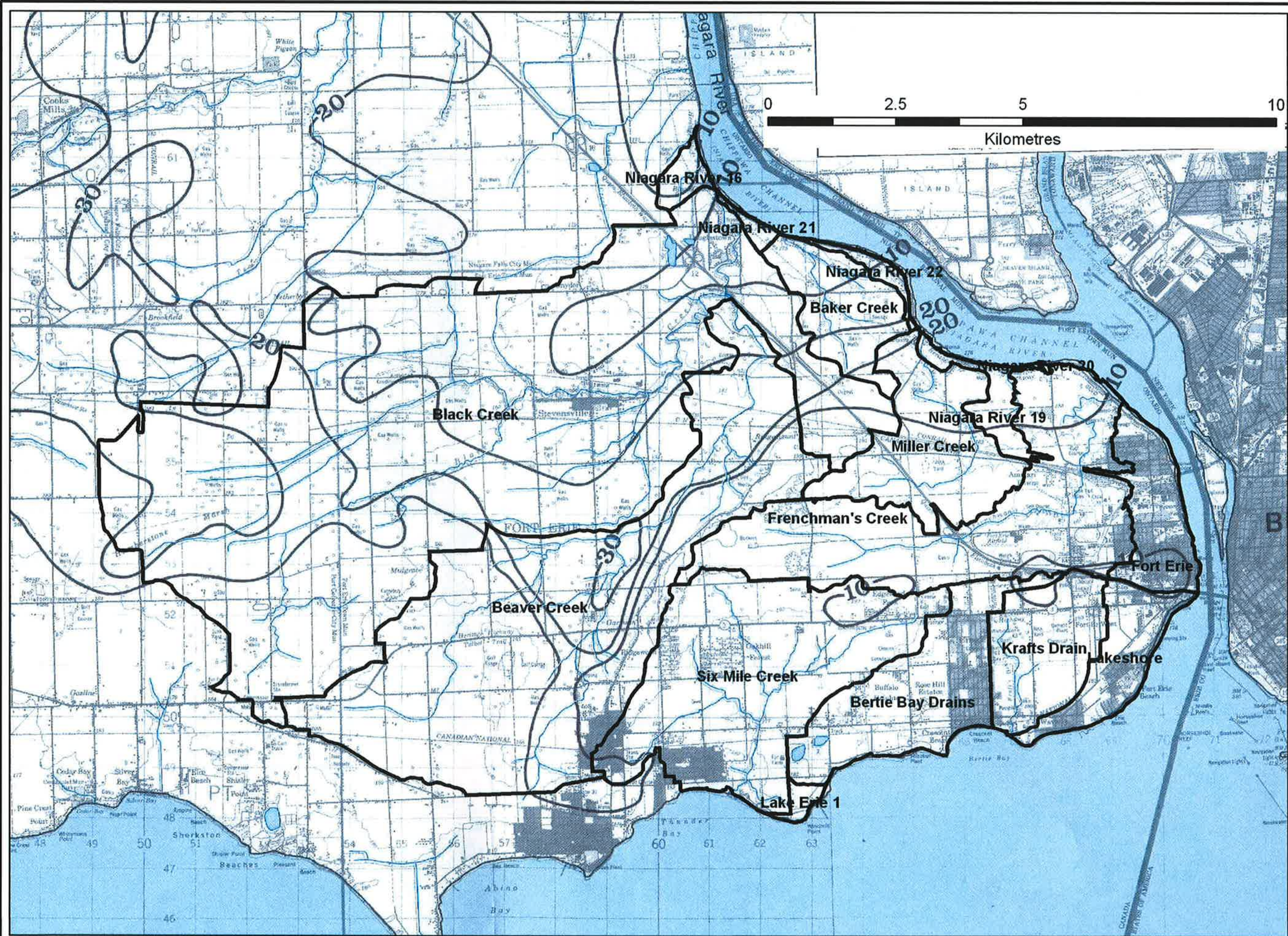


Figure 4a WHI Fort Erie Cross-Section



— 30 — Drift Thickness Contour
(interval 10 metres)

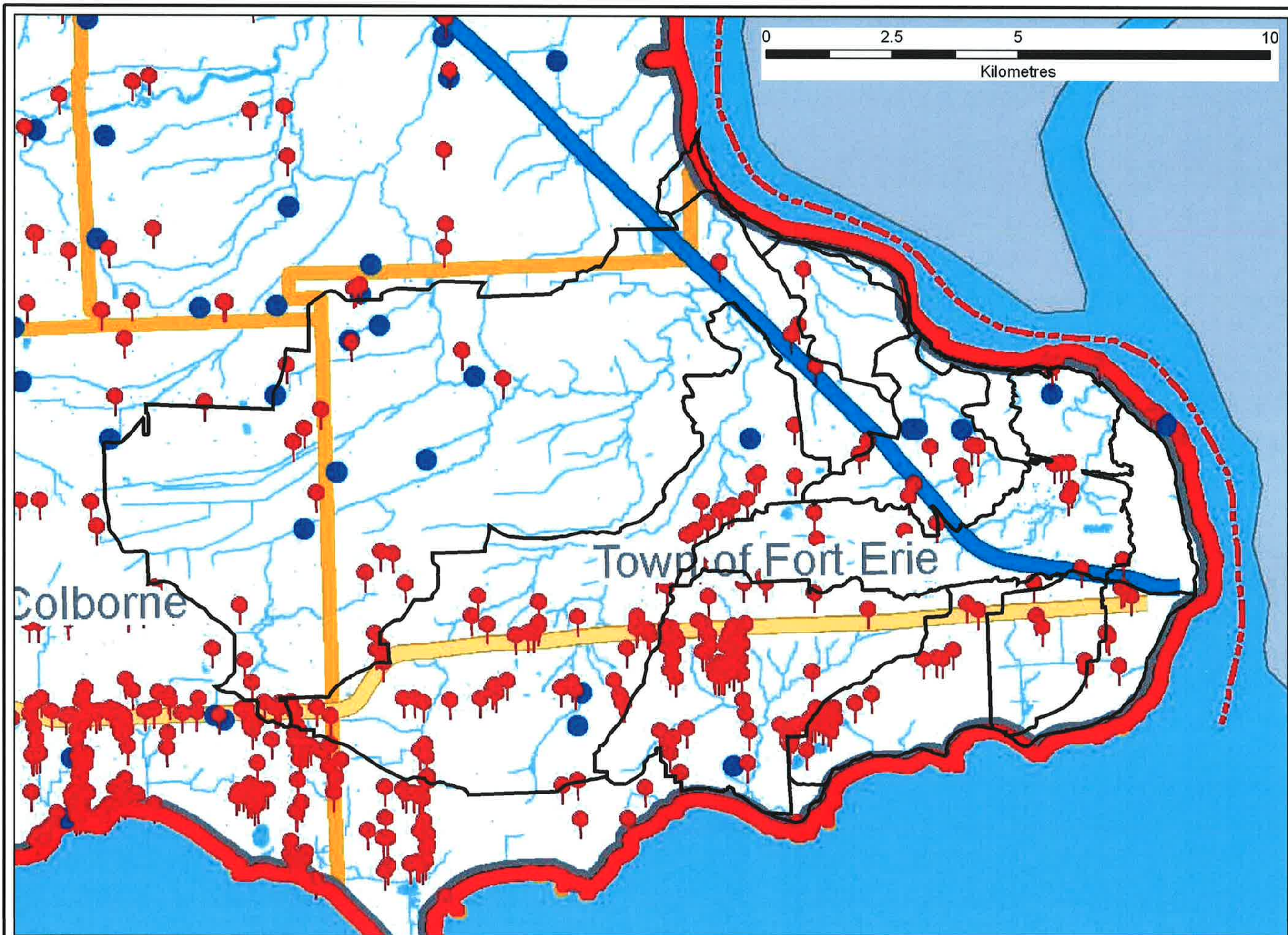
SOURCES:
Hydrogeology mapping provided by Ontario's Ministry of Environment, Water Resources of the Niagara Frontier and the Welland River Basin - Phase I Area; prepared by Gartner Lee Limited.
Watershed mapping provided by Philips Engineering (2006).

Fort Erie Creeks Watershed Plan Drift Thickness



PROJECT: DA07-66A
CLIENT:
DATE: NOVEMBER 2007
SCALE: 1:70,000
DRAWN BY: LW
CHECKED BY:

MAP NUMBER:
5



Legend

- Data Interpretation Boundary
- Study Area Boundary
- Municipal Boundaries
- International Boundary
- Major Highways
- Highways
- Roads
- Rivers, Streams, Creeks
- Ponds, Reservoirs, Lakes
- Well Water Record Data Gap
- Wells Constructed in Bedrock
- Wells Constructed in Overburden

SOURCES:

Niagara Groundwater Study
- WHI, 2005

Fort Erie Creeks Watershed Plan Well Water Locations



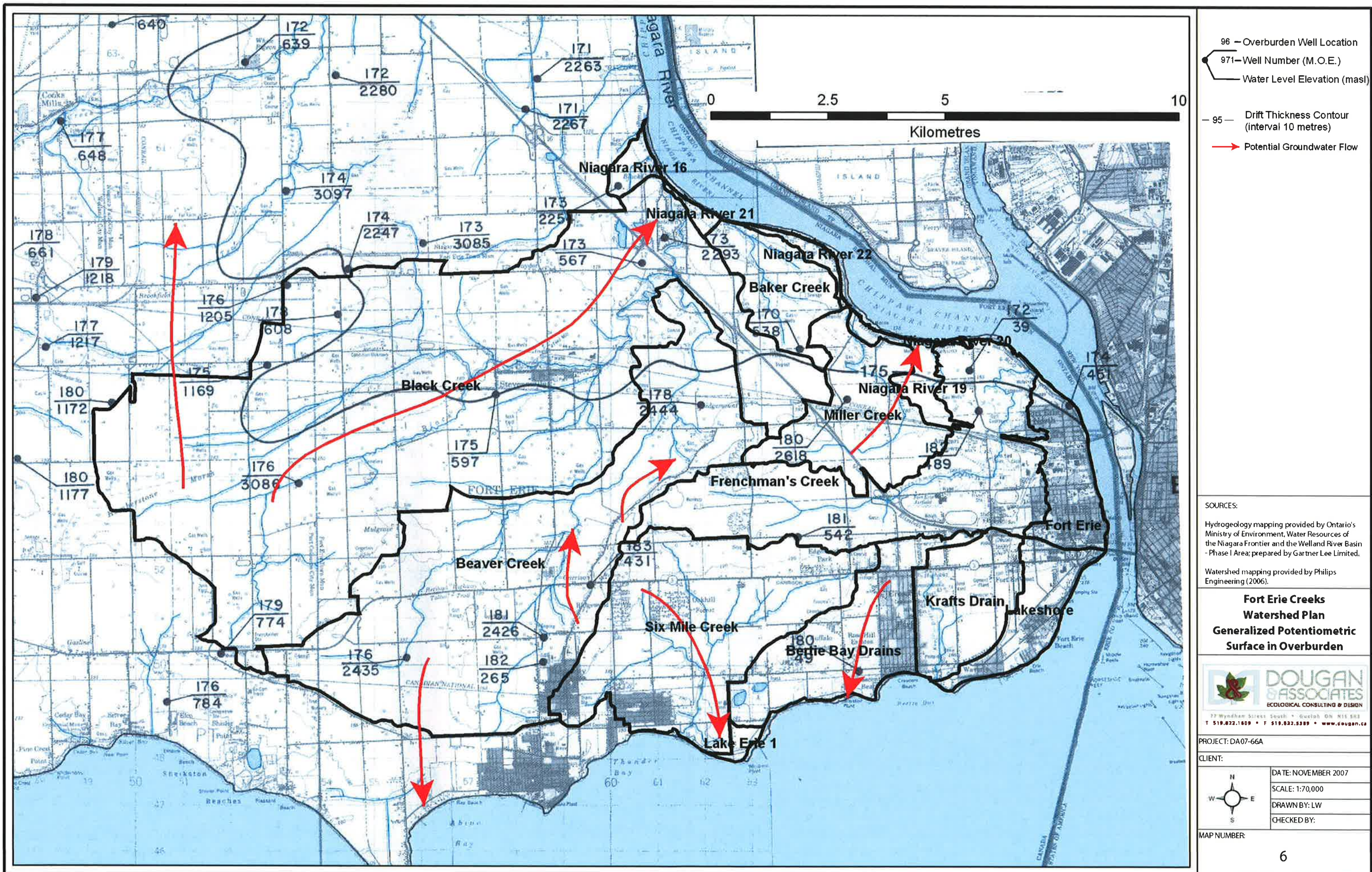
PROJECT: DA07-66A

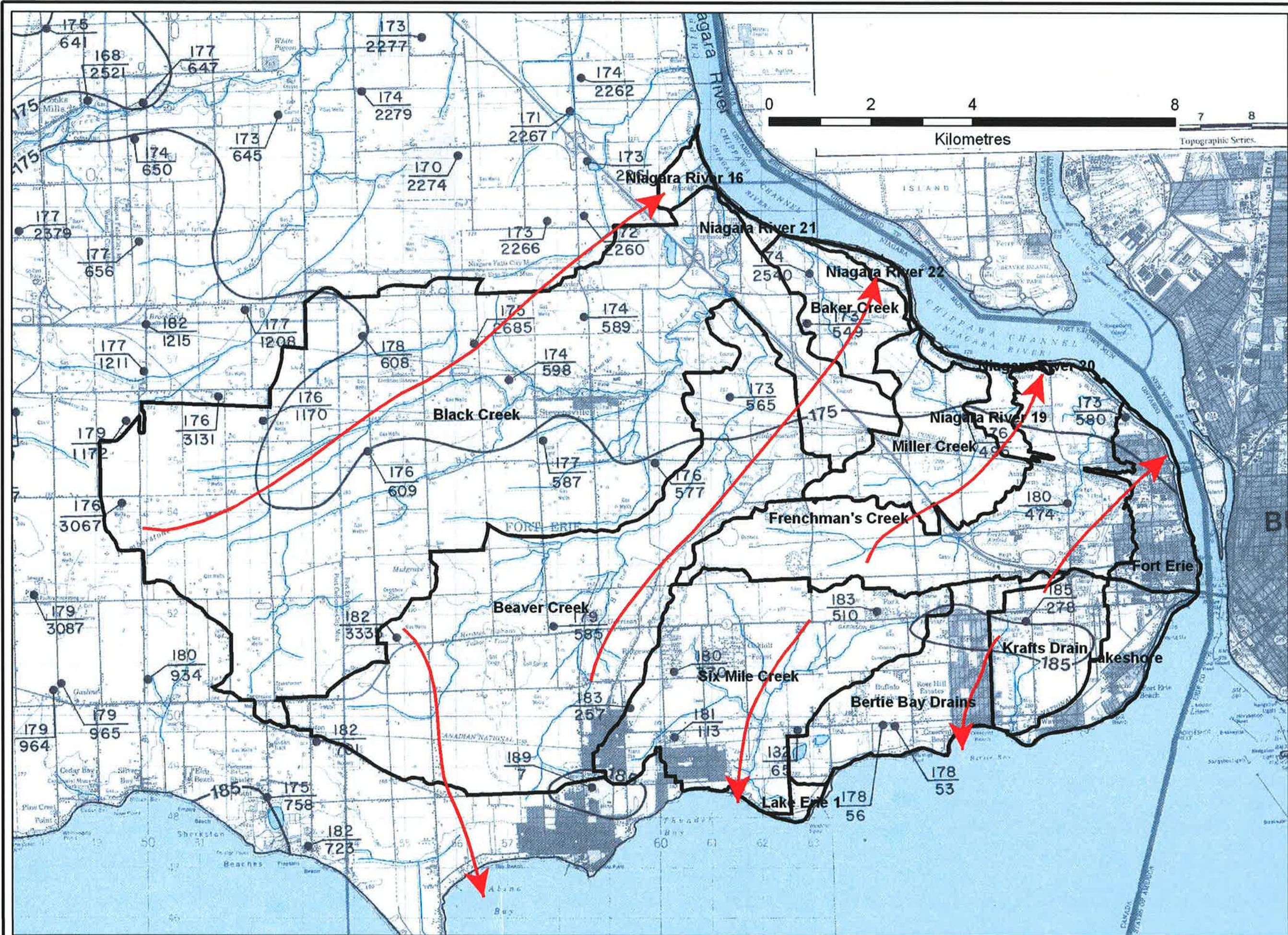
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DATE: NOVEMBER 2007
SCALE: 1:70,000
DRAWN BY: LW
CHECKED BY:

MAP NUMBER:

5a





- 91 — Water Level Elevation (masl)
- 2326 — Well Number (M.O.E.)
- — Bedrock Well Location
- 95 — Well Level Elevation, Contour (interval 10 metres)
- — Potential Groundwater Flow

SOURCES:

Hydrogeology mapping provided by Ontario's Ministry of Environment, Water Resources of the Niagara Frontier and the Welland River Basin - Phase I Area; prepared by Gartner Lee Limited.

Watershed mapping provided by Philips Engineering (2006).

Fort Erie Creeks Watershed Plan Generalized Potentiometric Surface in Bedrock

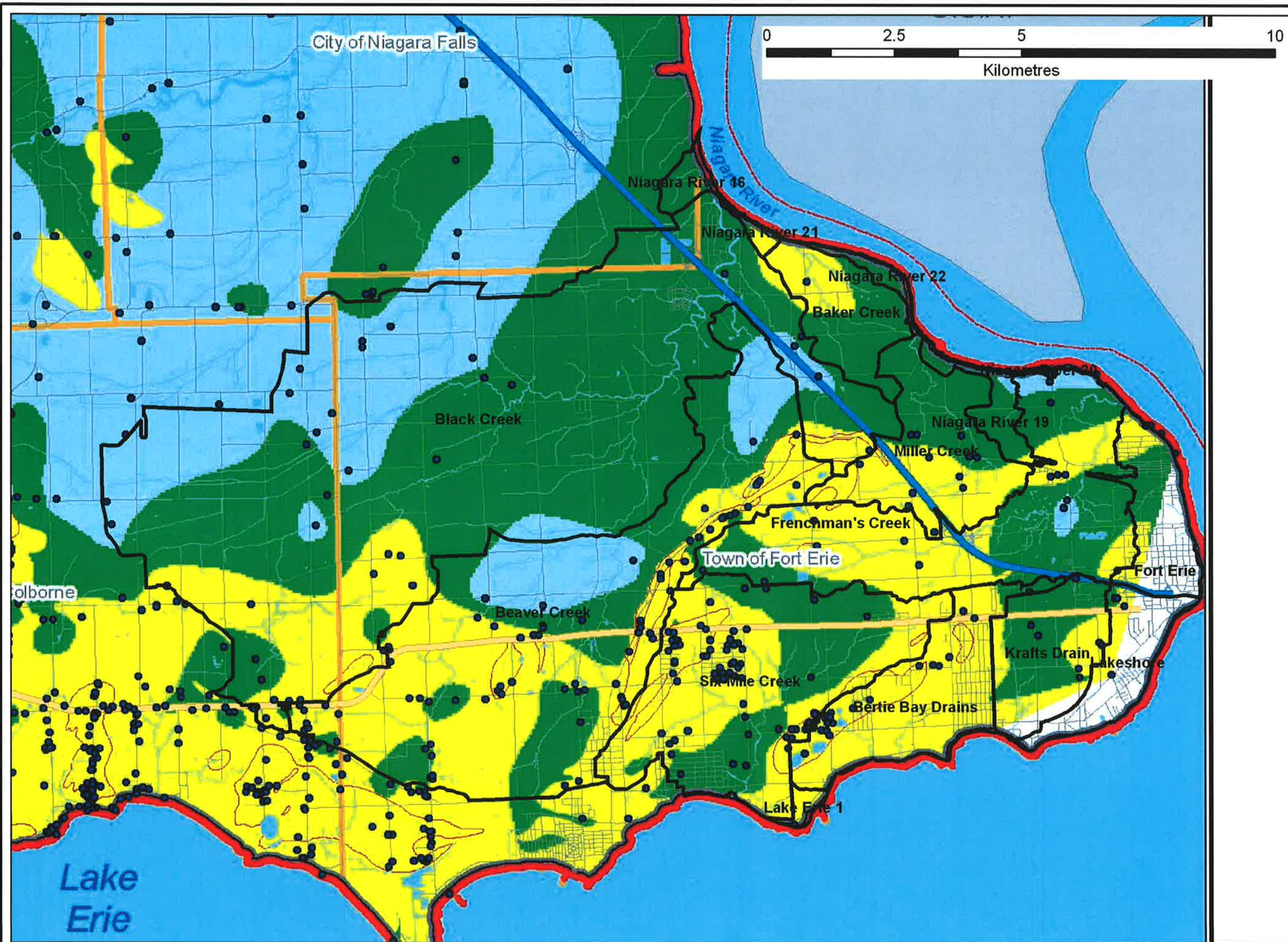


PROJECT: DA07-66A

CLIENT:

DATE: NOVEMBER 2007
SCALE: 1:70,000
DRAWN BY: LW
CHECKED BY:

MAP NUMBER:



Legend

- Data Interpretation Boundary
- Study Area Boundary
- Municipal Boundaries
- International Boundary
- Major Highways
- Highways
- Roads
- Rivers, Streams, Creeks
- Ponds, Reservoirs, Lakes
- Well Water Record Data Gap
- Wells Used in Analysis

Intrinsic Suseptibility

- High (Karst Area)
- High (Bedrock Outcrop)
- High
- Medium
- Low

SOURCES:

Niagara Groundwater Study
- WHI, 2005

**Fort Erie Creeks
Watershed Plan
Shallow Intrinsic Suseptibility**

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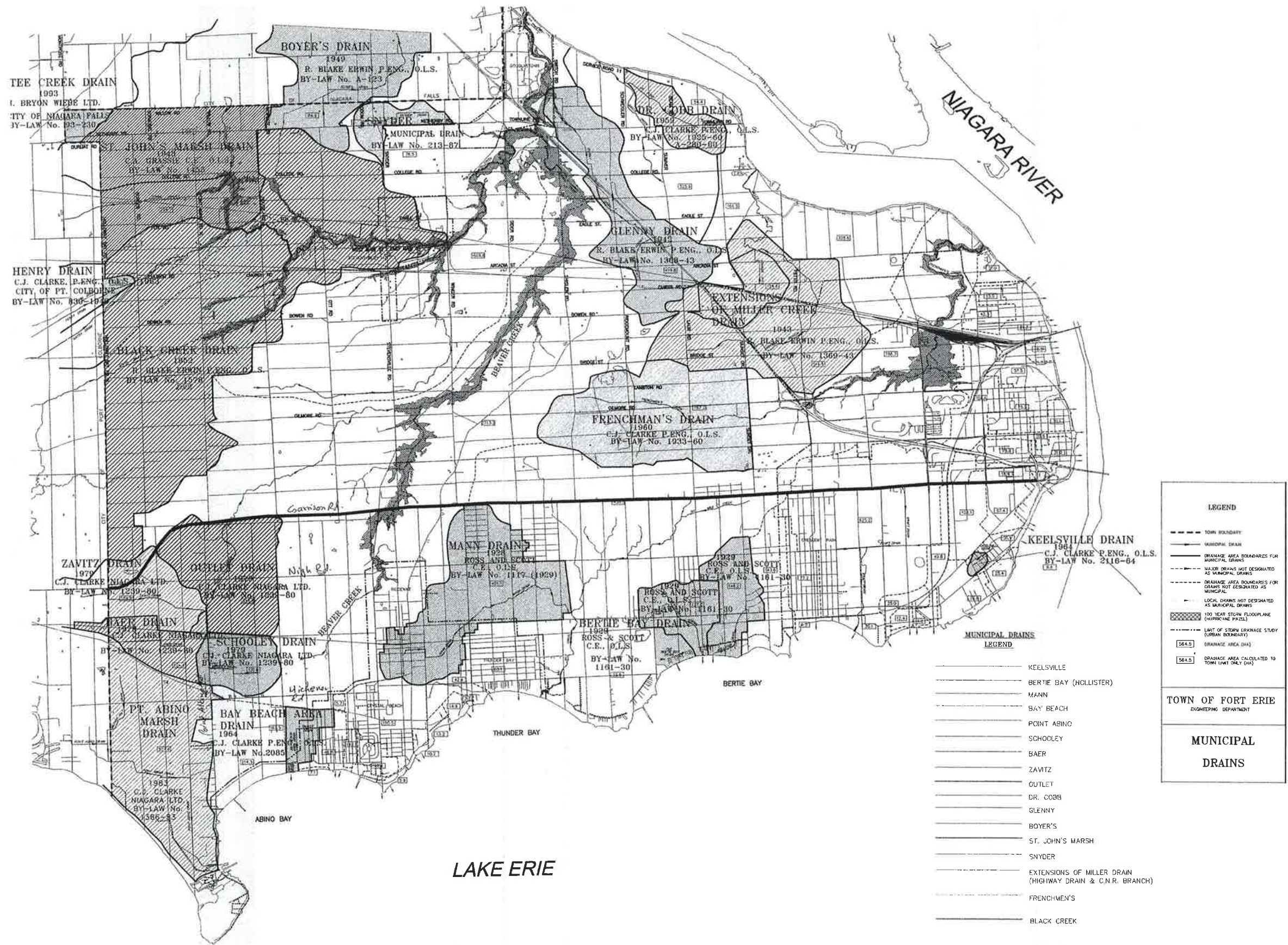
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MAP NUMBER:

7a



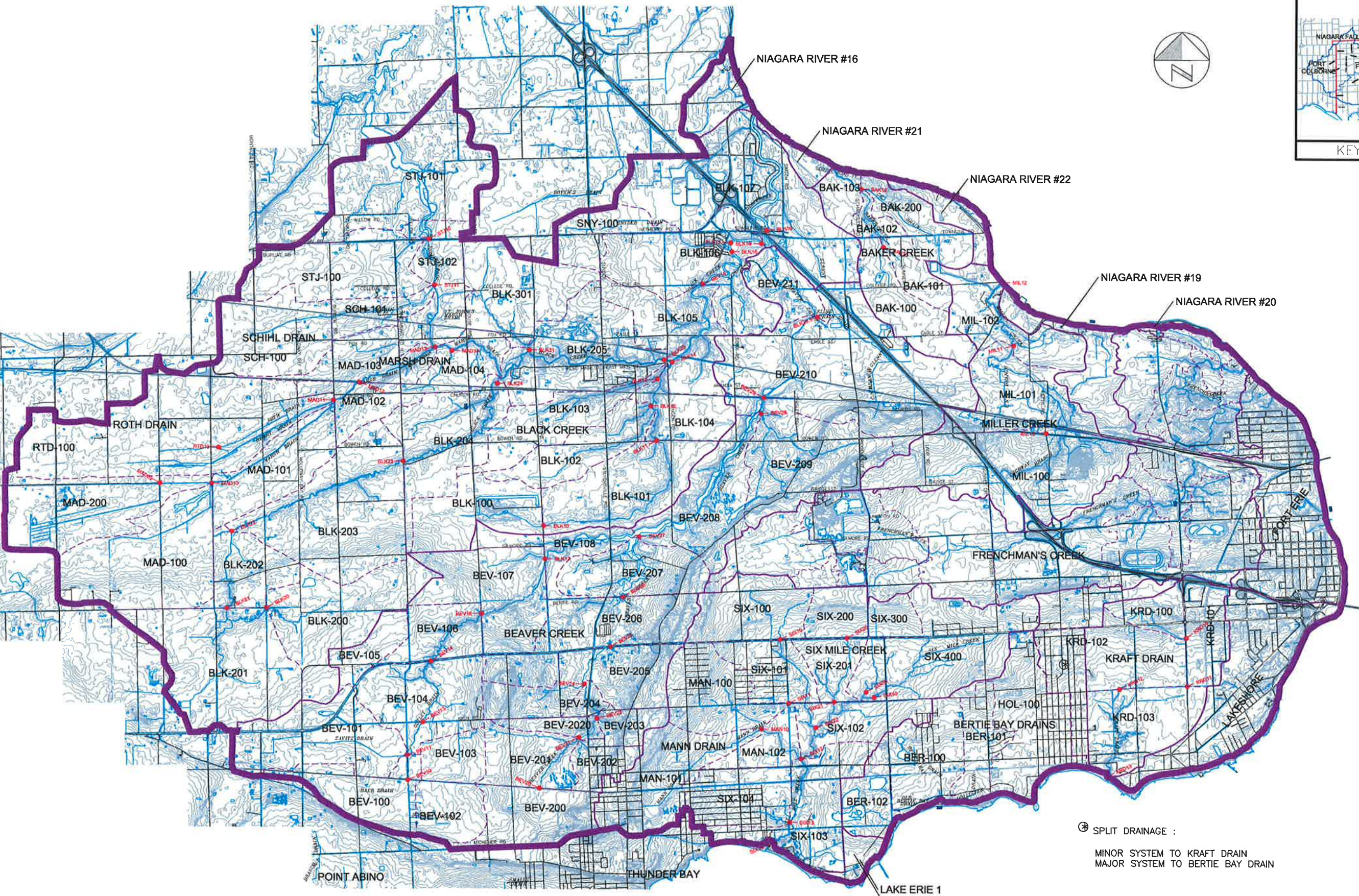
SOURCE : TOWN OF FORT ERIE

FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

MUNICIPAL DRAINS



Scale
NTS
Consultant File No.
105116
Figure No.
8



③ SPLIT DRAINAGE :
 MINOR SYSTEM TO KRAFT DRAIN
 MAJOR SYSTEM TO BERTIE BAY DRAIN

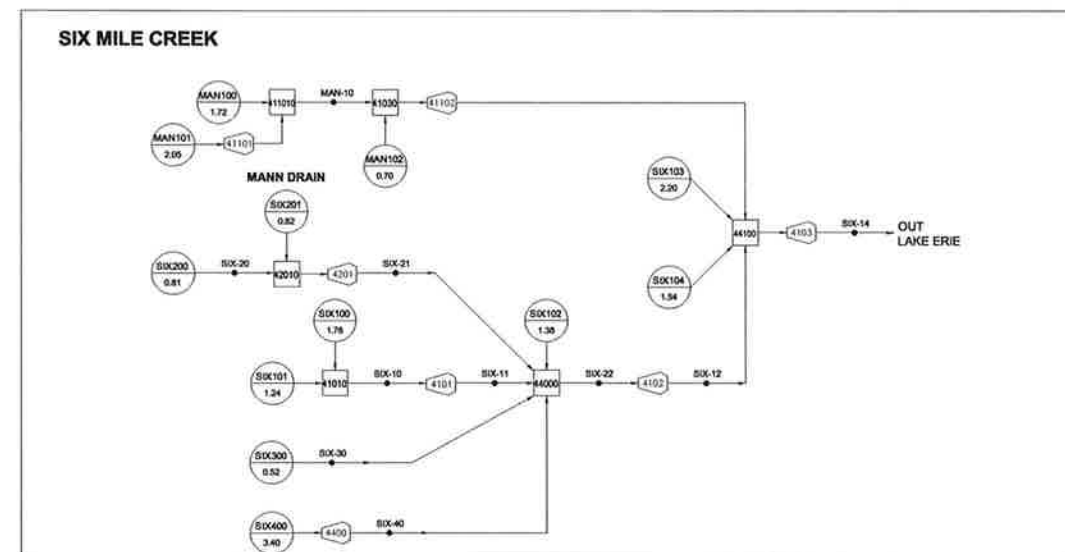
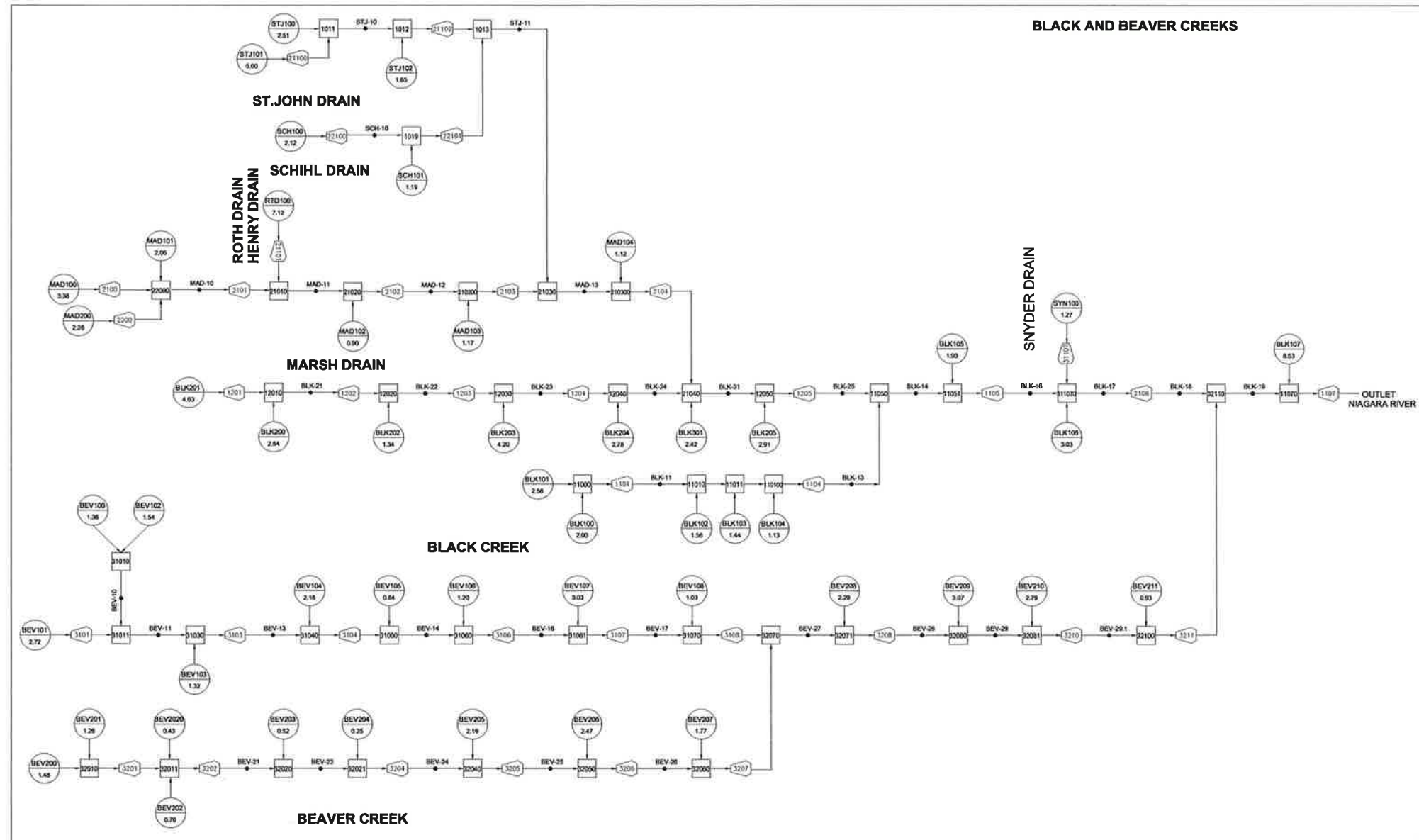
FORT ERIE CREEKS
 WATERSHED PLAN
 NIAGARA PENINSULA
 CONSERVATION AUTHORITY

WATERSHED BOUNDARY



Scale 1:60,000
 Consultant File No. 105116
 Figure No. 9

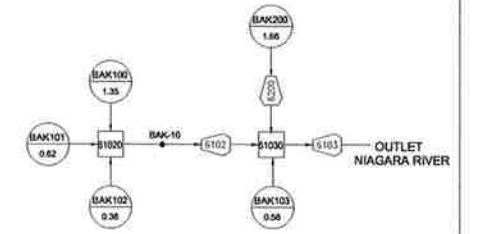
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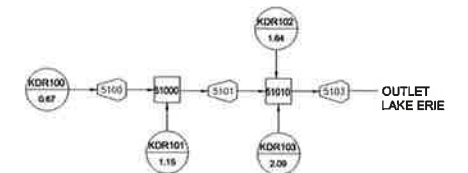
LEGEND

- SUB-AREA NUMBER
AREA (KM²)
- ADDHYD
(HYDROGRAPH NUMBER)
- ROUTE CHANNEL
(HYDROGRAPH NUMBER)
- NODE NUMBER

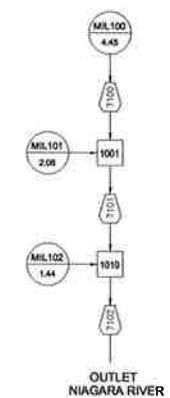
BAKER CREEK



KRAFT DRAIN



MILLER CREEK



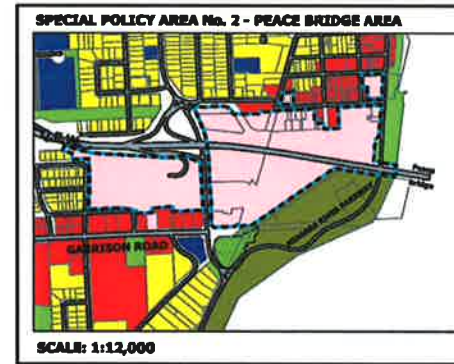
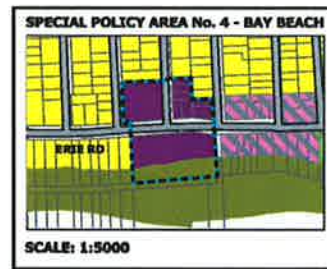
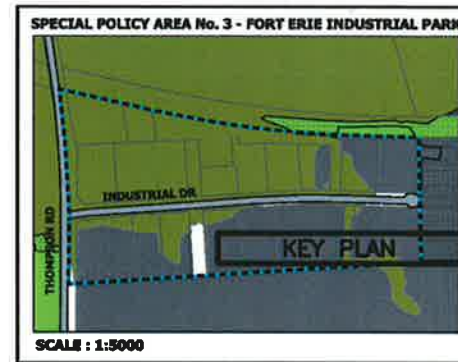
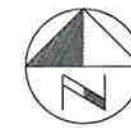
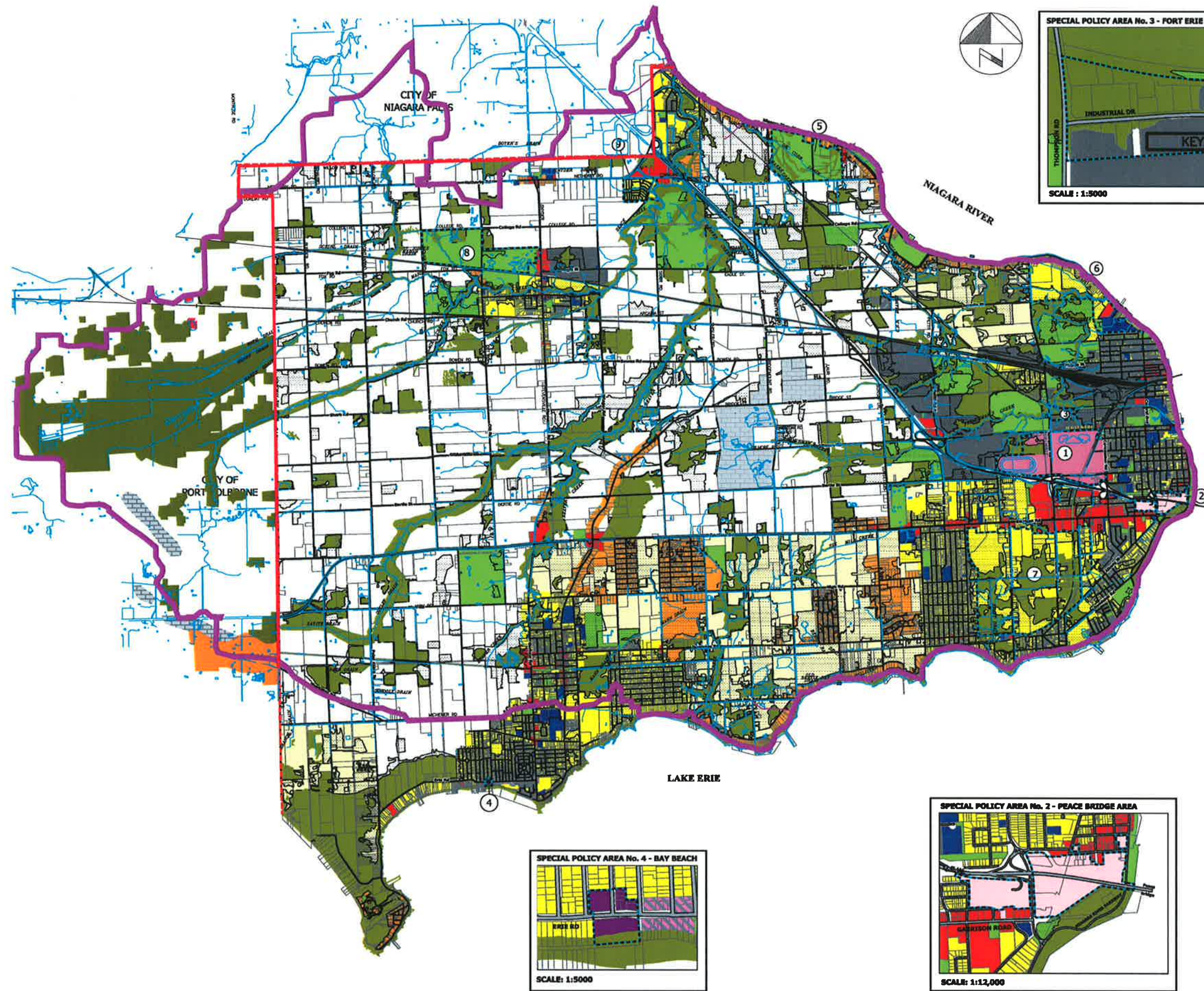
FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

MODELING SCHEMATIC



Scale
NTS
Consultant File No.
105116
Figure :
10

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TOWN OF FORT ERIE OFFICIAL PLAN (PROPOSED)

FORT ERIE LAND USE PLAN

LEGEND

DESIGNATIONS

- Agricultural
- Rural
- Rural Residential
- Urban Residential
- Core Mixed Use
- Commercial
- Industrial - Business Park
- Extractive Industrial
- Institutional
- Open Space
- Environmental Protection
- Environmental Conservation
Refer to Schedule C and Section 8 of the
Official Plan for Interpretation

SPECIAL POLICY AREAS

- 1 - Urban Entertainment Area
- 2 - Peace Bridge Area
- 3 - Fort Erie Industrial Park
- 4 - Bay Beach
- 5 - Niagara River Golf Course
- 6 - Frenchman's Creek
- 7 - Kraft Drain Area
- 8 - Zooz
- 9 - Mobile Home Park

OTHER INFORMATION

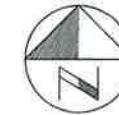
- Municipal Boundary
- Right of Way
- Travelled Road

FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

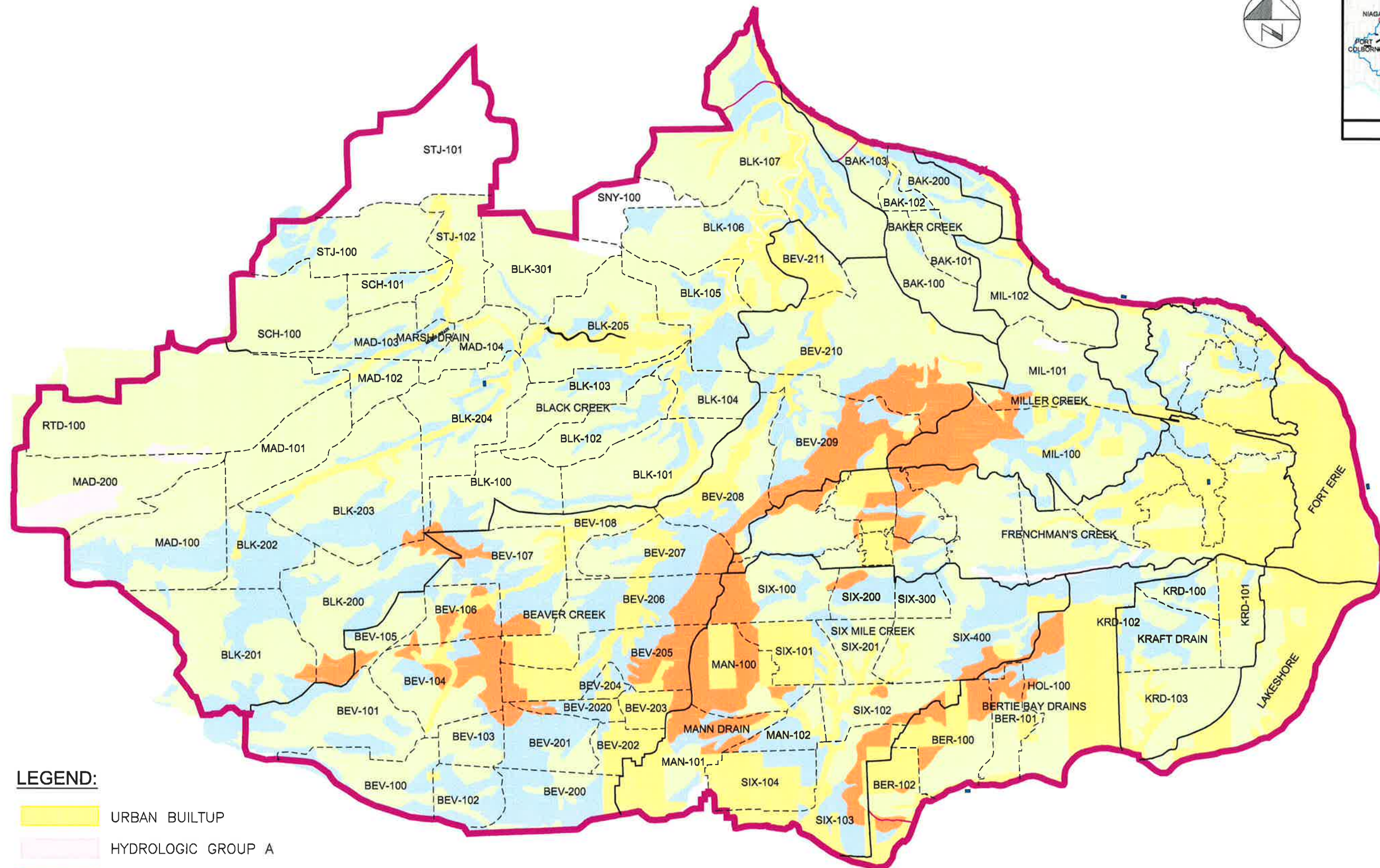
LAND USE MAP



Scale
1:30,000
Consultant File No.
105116
Figure No.
11



KEY PLAN



LEGEND:

- URBAN BUILTUP
- HYDROLOGIC GROUP A
- HYDROLOGIC GROUP B
- HYDROLOGIC GROUP C
- HYDROLOGIC GROUP D

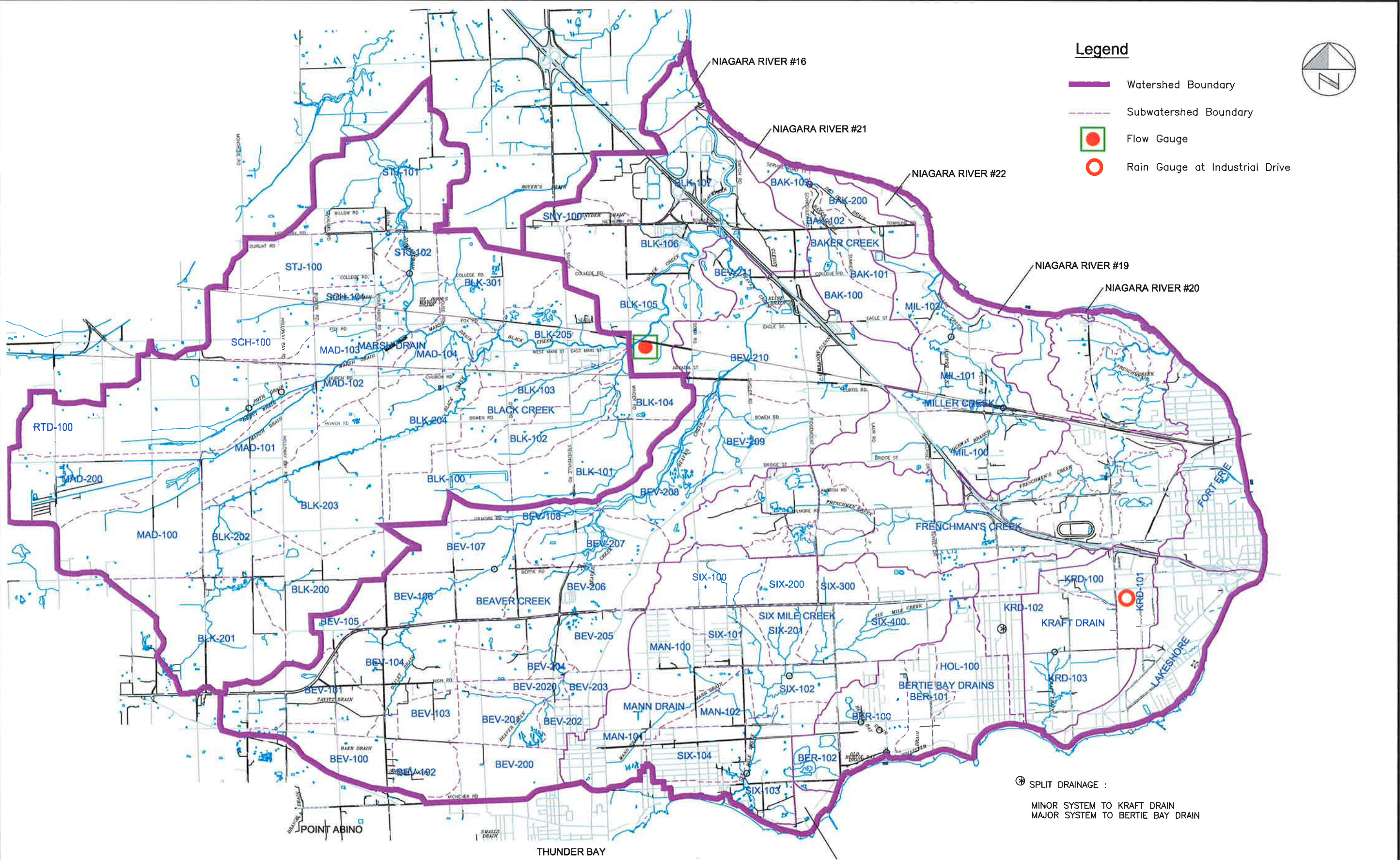
FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

HYDROLOGIC SOIL GROUPS



Scale	NTS
Consultant File No.	105116
Figure No.	12

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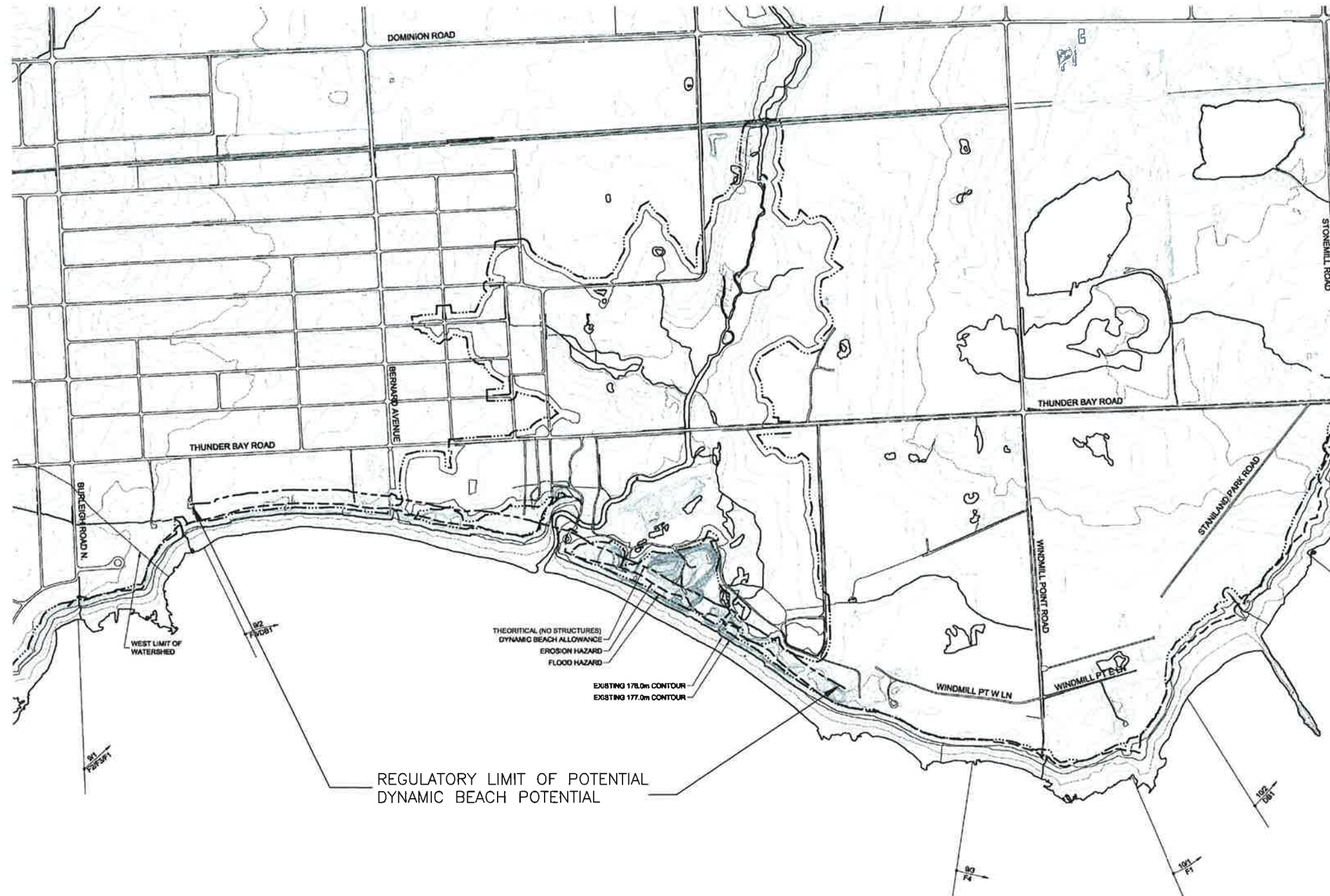


FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

WATERSHED
USED FOR CALIBRATION



Scale	NTS
Consultant File No.	105116
Figure No.	13



Lake Erie

Scale 1:5000
100 0m 100 200 300

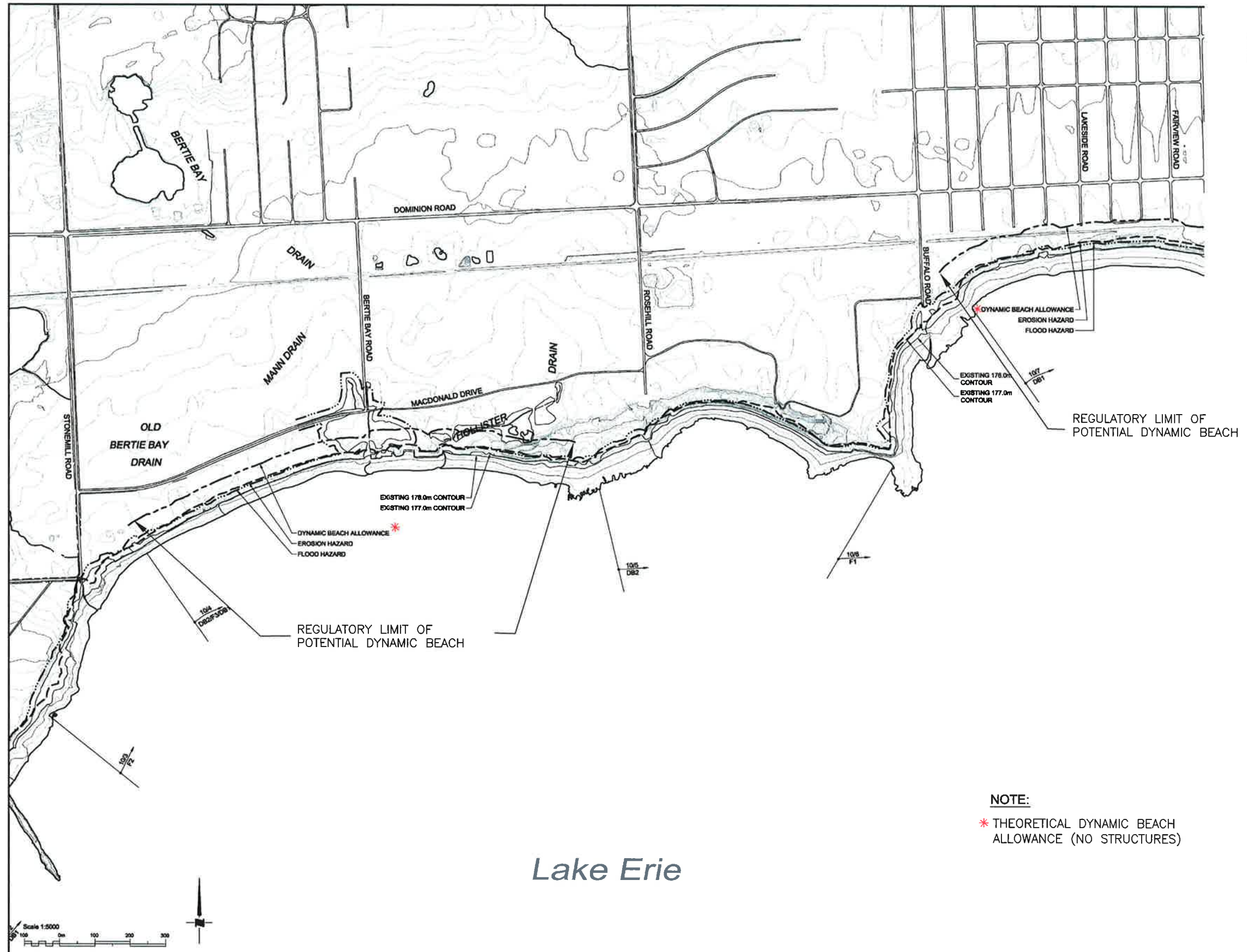


FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

LAKE ERIE SHORELINE
HAZARD AREA 1



Scale
NTS
Consultant File No.
105116
Figure No.
15



Lake Erie

NOTE:

* THEORETICAL DYNAMIC BEACH ALLOWANCE (NO STRUCTURES)

FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

LAKE ERIE SHORELINE
HAZARD AREA 2



Scale
NTS
Consultant File No.
105116
Figure No.
16



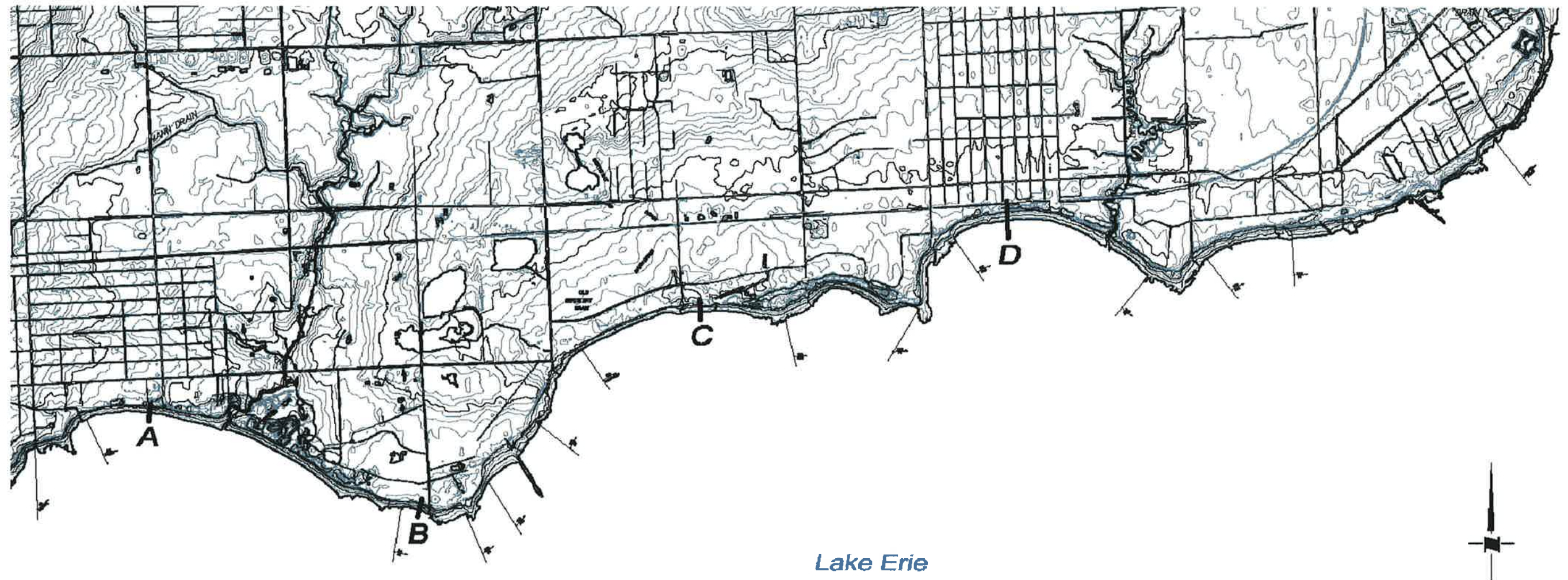
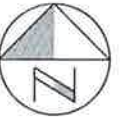
Lake Erie

FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

LAKE ERIE SHORELINE
HAZARD AREA 3



Scale
NTS
Consultant File No.
105116
Figure No.
17



FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AREA

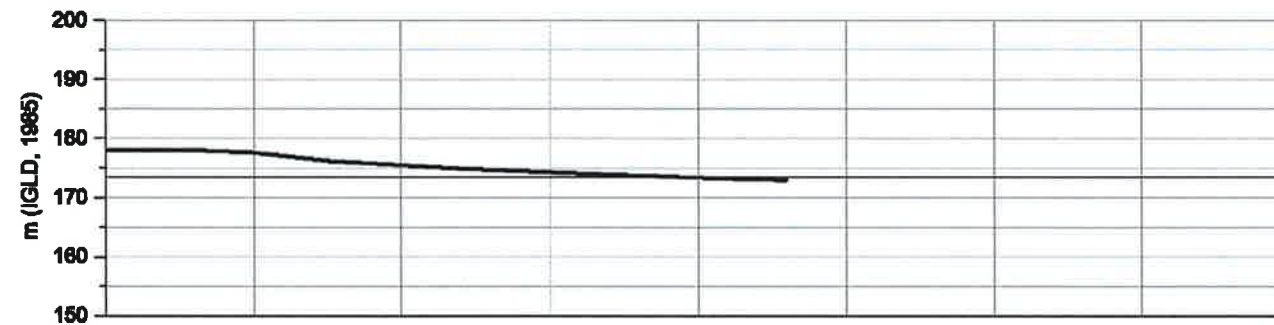
LOCATIONS OF
SURVEYED CROSS SECTION



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Consultant File No.	105116
Figure No.	18



SECTION A



SECTION B



SECTION C



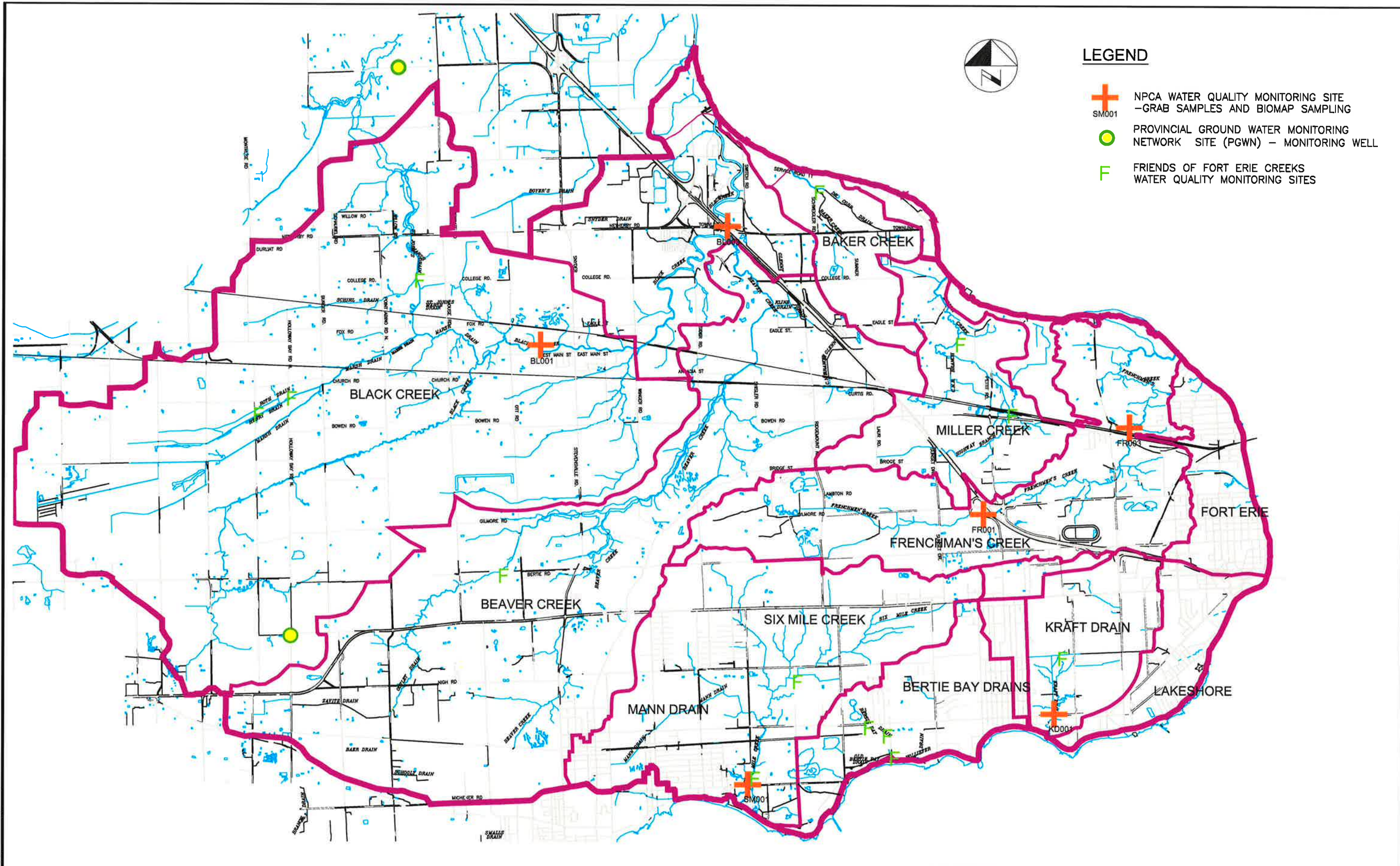
SECTION D

FORT ERIE CREEKS
WATERSHED PLAN
NIAGARA PENINSULA
CONSERVATION AUTHORITY

SURVEYED CROSS SECTION



Scale NTS
Consultant File No.
105116
Figure No.
19



LEGEND

- + NPCA WATER QUALITY MONITORING SITE
-GRAB SAMPLES AND BIOMAP SAMPLING
- PROVINCIAL GROUND WATER MONITORING NETWORK SITE (PGWN) - MONITORING WELL
- F FRIENDS OF FORT ERIE CREEKS WATER QUALITY MONITORING SITES

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FORT ERIE CREEKS WATERSHED PLAN NIAGARA PENINSULA CONSERVATION AUTHORITY	NPCA WATER QUALITY MONITORING SITES		Scale
			NTS
			Consultant File No. 105116
			Figure No. 20