

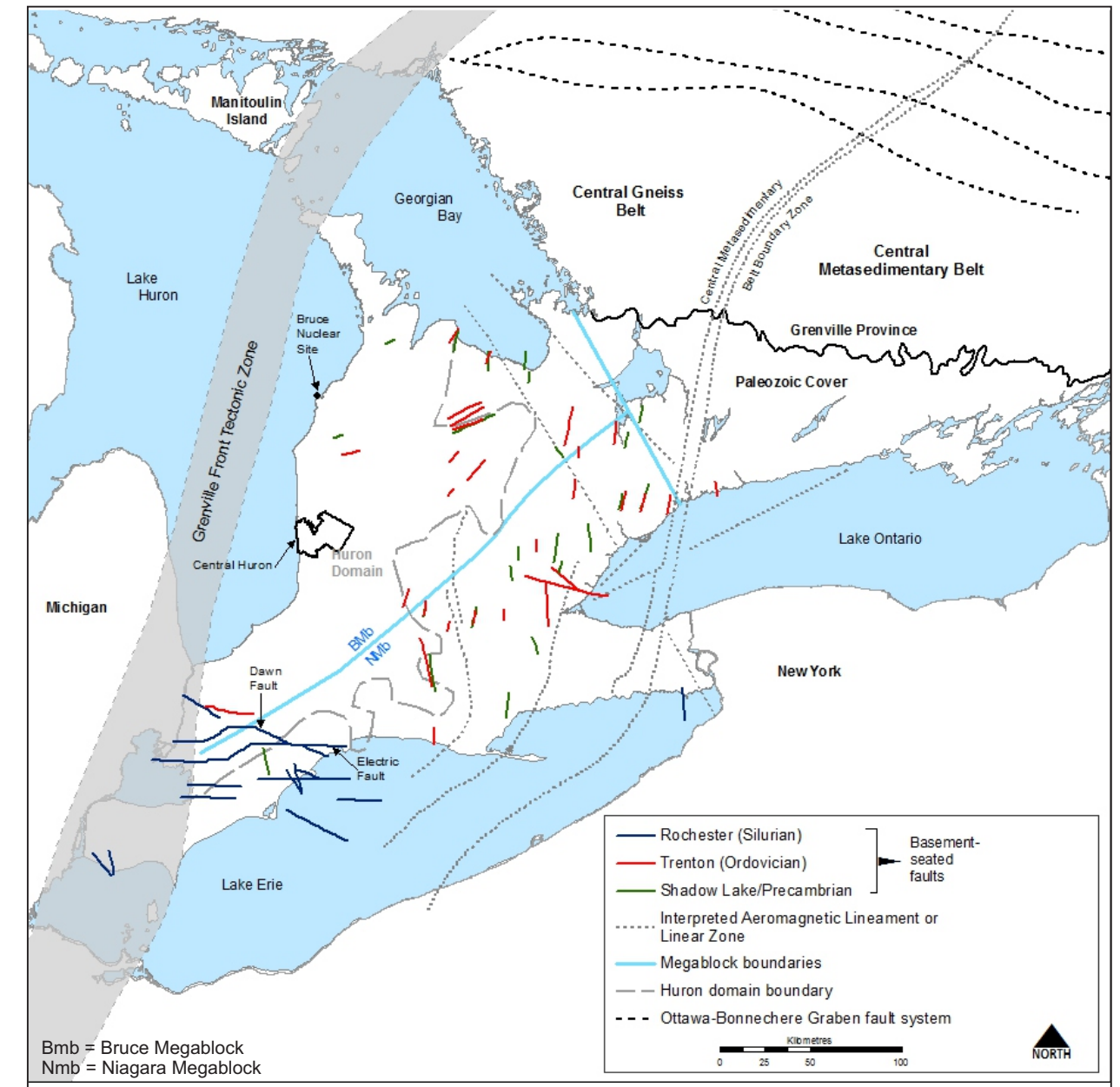
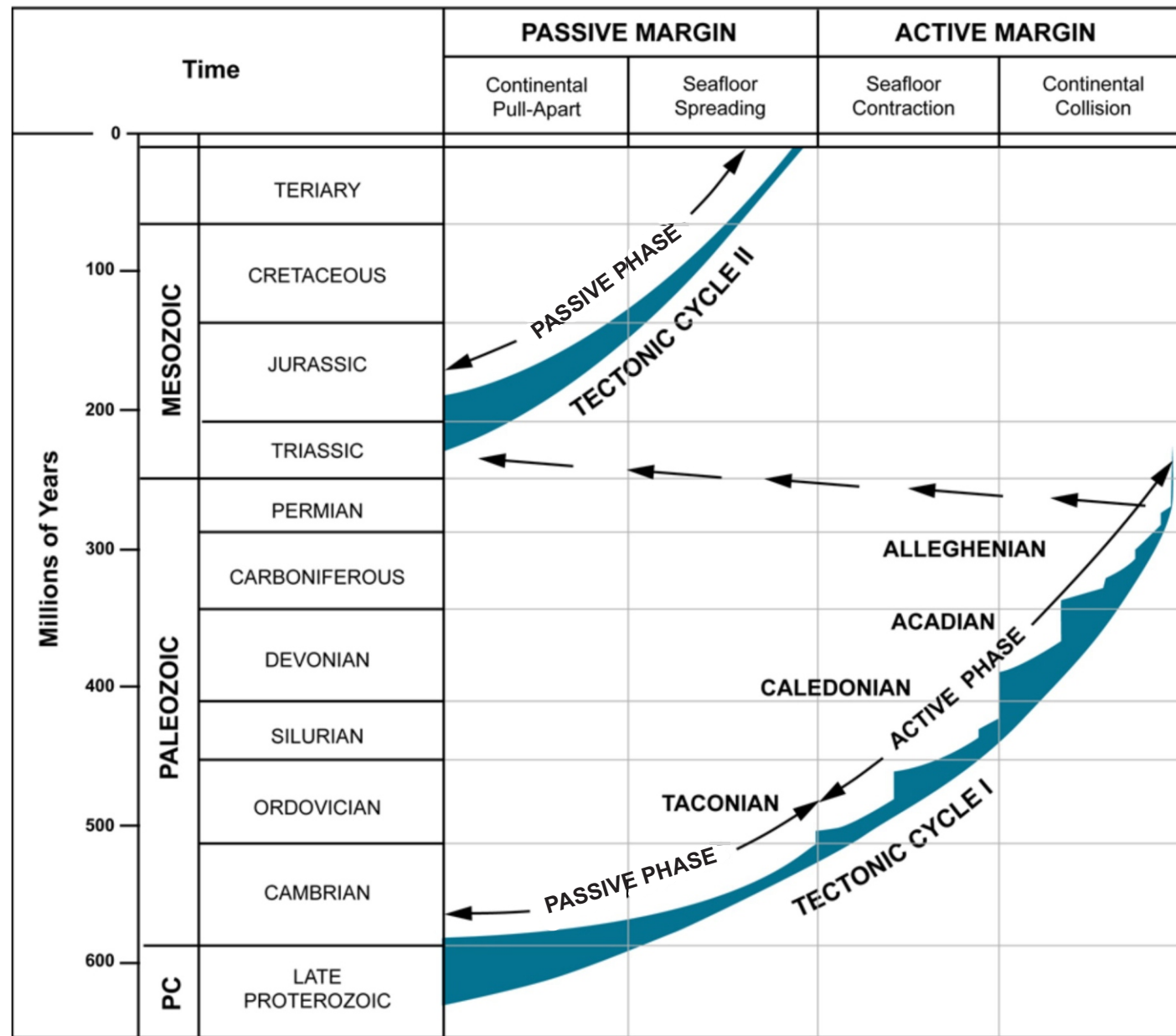
Data Source: after NWMO, 2011

FIGURE 3.3 - Regional Geological Cross-Section of the Eastern Flank of the Michigan Basin

PROJECT No: 10-214-11
NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

Prepared by: NMP/VMS
 Reviewed by: KGR
 Date: 01/20/2015





Data Source: Contacts are based on field mapping and interpretations aided by subsurface drilling, borehole stratigraphic correlation, and aeromagnetic and gravity imaging (Liberty and Bolton (1971), and compiled from Brigham (1971), Bailey and Cochrane (1984a), Bailey and Cochrane (1984b), Sanford et al. (1985), Carter and Easton (1990), Sage (1991), Jacobi and Fountain (1993), Easton and Carter (1995), Carter et al. (1996), Wallach et al. (1998), Ketchum and Davidson (2000), Boyce and Morris (2002)

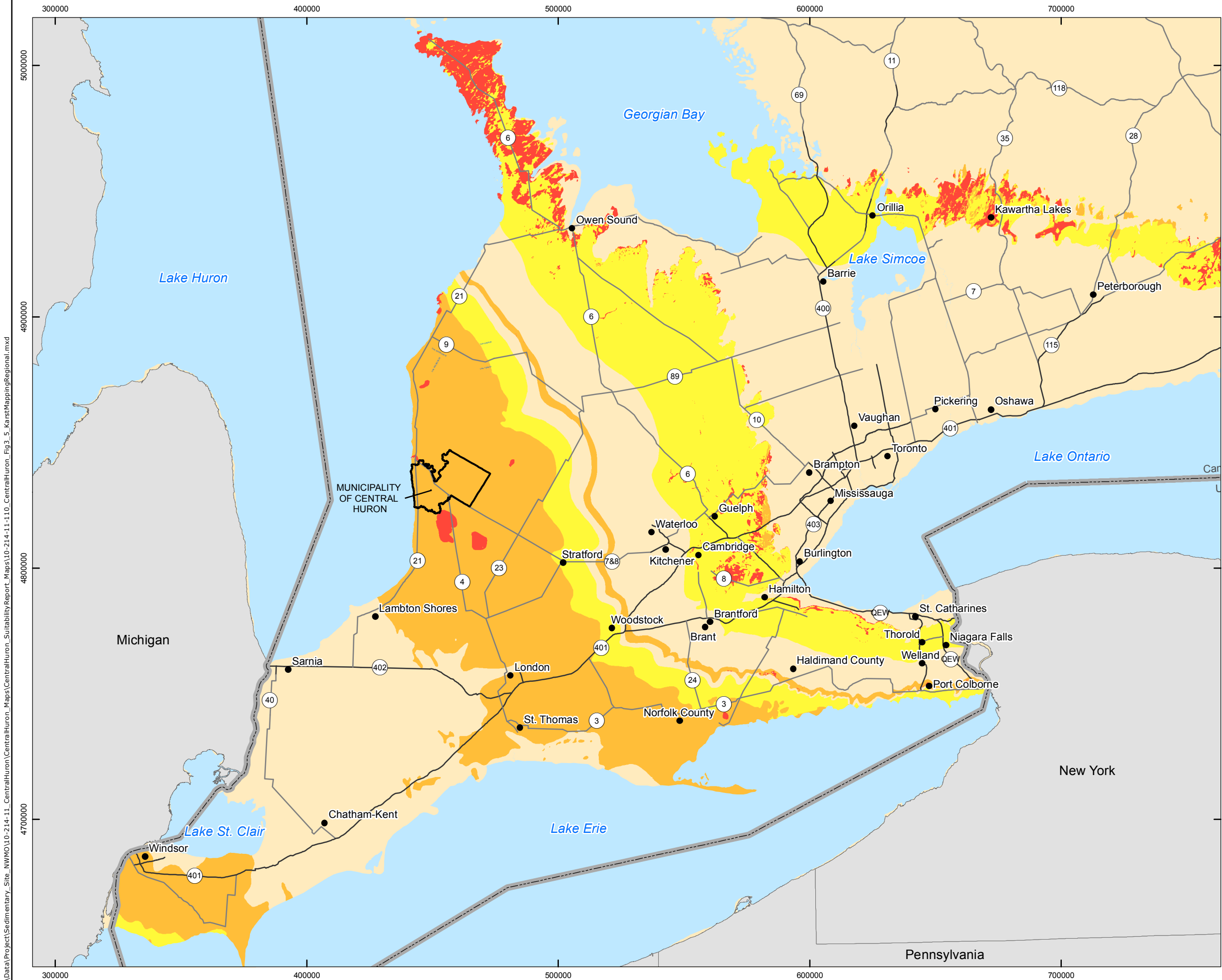
Data Source: Sanford et al. (1985).

a. Phanerozoic Tectonic Cycles

b. Tectonic Boundaries and Fault Contacts.

FIGURE 3.4 - Structural Geology of Southern Ontario: a – Phanerozoic Tectonic Cycles; b – Tectonic Boundaries and Fault Contacts	Prepared by: VMS/ADG
	Reviewed by: KGR/SNS
NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron	Date: 14/03/2015



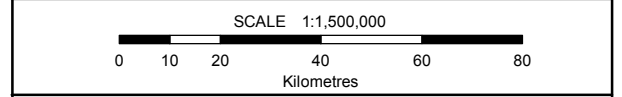


LEGEND

- Municipality of Central Huron
- Expressway
- Highway
- Canada - USA Boundary
- Waterbody

Karst

- Known
- Inferred
- Potential



COORDINATE SYSTEM: UTM NAD83 Zone 17N
 SOURCE:
 Basemap Layers: LIO, MNR, ESRI
 Geology: Brunton and Dodge, 2008, Karst of Southern Ontario and Manitoulin Island, OGS Dataset GRS005
 Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

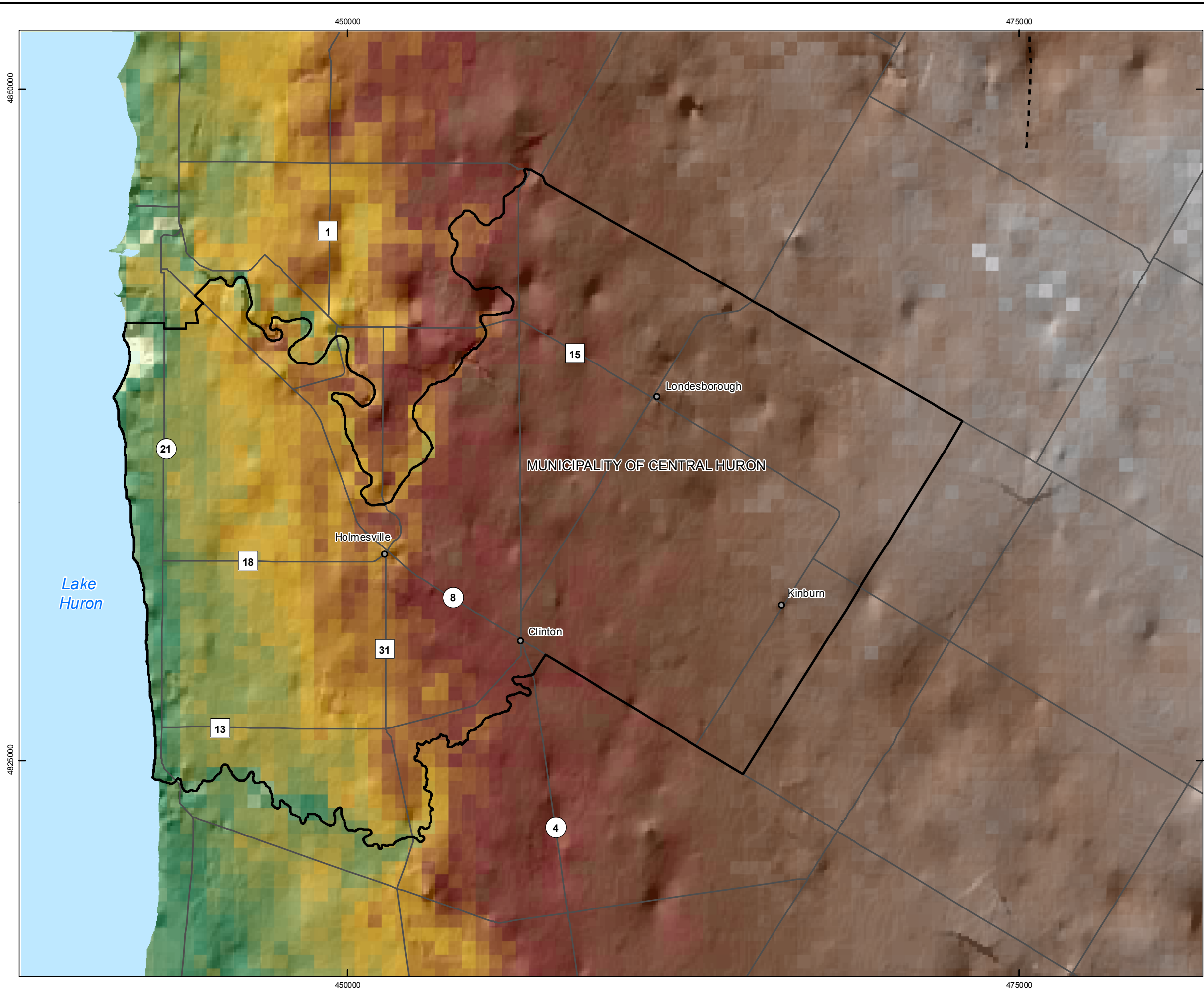
PROJECT No. 10-214-11
 Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

TITLE
Karst Mapping of Southern Ontario

FIGURE 3.5	DESIGN: ADG CAD/GIS: VMS/ADG CHECK: KGR REV: 0	
	DATE: 4/14/2015	

G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron_Maps\CentralHuron_SuitabilityReport_Maps\10-214-11-10_CentralHuron_Fig3.5_KarstMappingRegional.mxd

G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron\CentralHuron_Maps\CentralHuron_SuitabilityReport_Maps\10-214-11-110_CentralHuron_Fig3_6_BedrockSurfaceTopography.mxd



LEGEND

- Municipality of Central Huron
- Highway/Major Road
- Hutton Height Buried Bedrock Valley
- Waterbody

Bedrock Surface (mASL)

High : 350

Low : 95

INDEX MAP

SCALE 1:140,000

0 1.25 2.5 5 7.5 10
Kilometres

COORDINATE SYSTEM: UTM NAD83 Zone 17N
SOURCE:
Basemap Layers: LIO, MNR, ESRI
Buried Bedrock Valley: Gao, 2011a
Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

NORTH

PROJECT No. 10-214-11

NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

TITLE

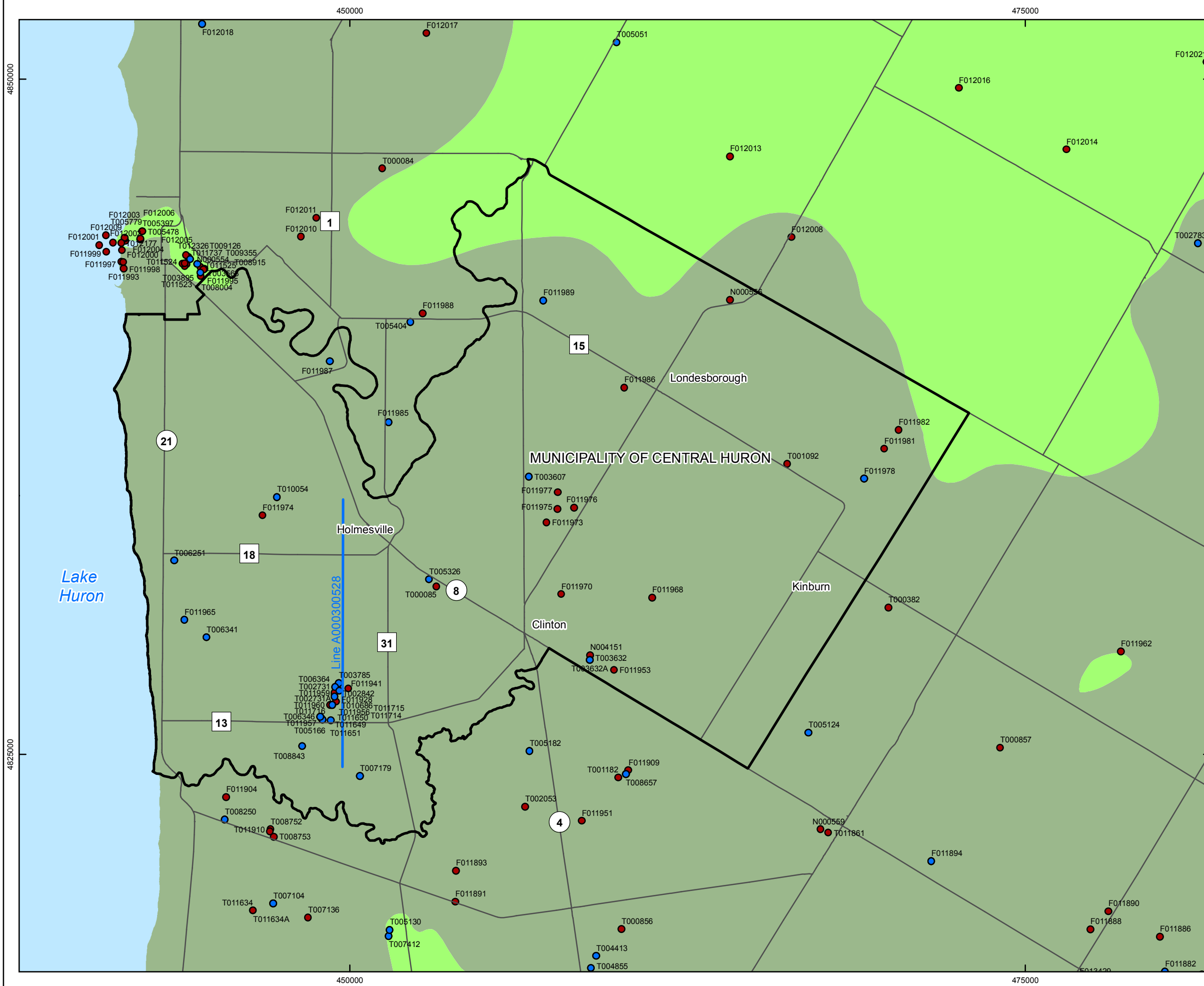
Bedrock Surface Topography in the Central Huron Area

FIGURE 3.6

DESIGN: ADG
CAD/GIS: ADG/VMS
CHECK: KGR
REV: 0

DATE: 02/09/2015

Geofirma
Engineering Ltd



LEGEND

- Municipality of Central Huron
- Highway/Major Road
- Waterbody
- Acquired 2D Seismic Data
- OGSRL Well
- OGSRL Well with Geophysics Log

Bedrock Geology
Middle Devonian
 Dundee Fm
 Lucas Fm
 Fm = Formation

INDEX MAP

SCALE 1:140,000
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 Kilometres

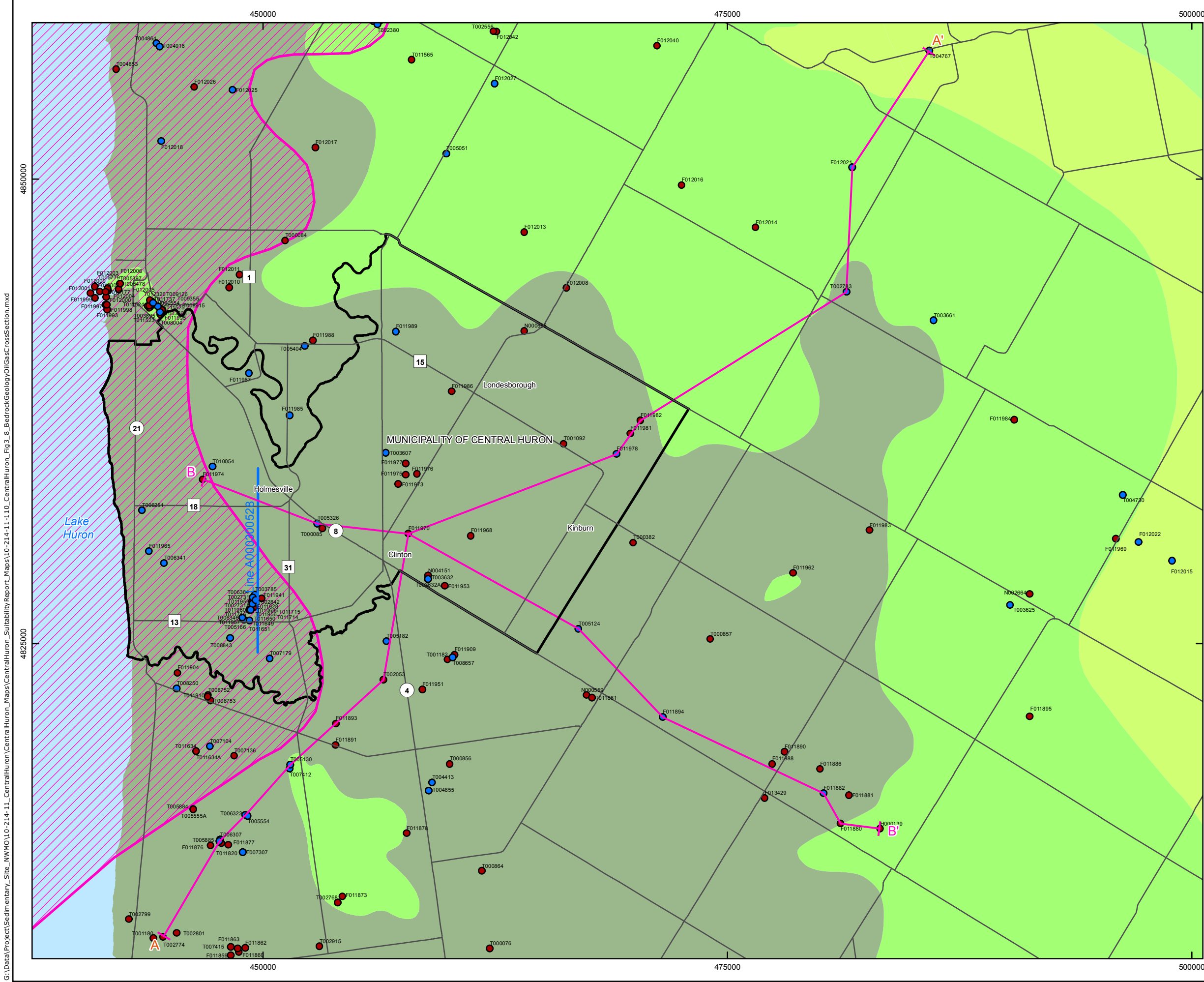
COORDINATE SYSTEM: UTM NAD83 Zone 17N
 SOURCE:
 Basemap Layers: LIO, MNR, ESRI
 Geology: OGS 2007
 Wells: OGSRL 2014a
 Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

PROJECT No. 10-214-11

NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Sedimentary Sites

TITLE
Bedrock Geology, Oil and Gas Wells and 2D Seismic Line of the Central Huron Area

FIGURE 3.7	DESIGN: ADG CAD/GIS: ADG/VMS CHECK: KGR REV: 0	
	DATE: 9/3/2015	



LEGEND

- Municipality of Central Huron
- Highway/Major Road
- Waterbody
- Acquired 2D Seismic Data
- OGSRL Well
- OGSRL Well with Geophysics Log
- Cross-Section (see Figures 3.12 and 3.13)
- Cambrian Sandstone

Bedrock Geology

Middle Devonian

- Dundee Fm
- Lucas Fm
- Amherstburg Fm

Lower Devonian

- Bois Blanc Fm

Fm = Formation

SCALE 1:200,000
0 1 2 4 6 8 Kilometres

COORDINATE SYSTEM: UTM NAD83 Zone 17N
SOURCE:
Basemap Layers: LIO, MNR, ESRI
Cambrian Sandstone: Bailey & Cochrane, 1984a
Geology: OGS 2007
Wells: OGSRL 2014a
Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

PROJECT No. 10-214-11

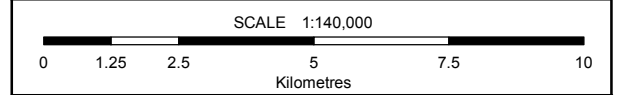
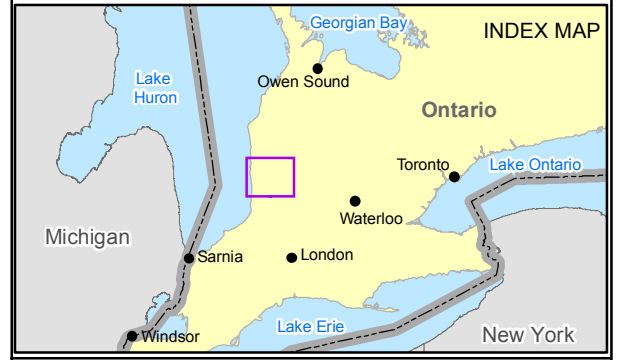
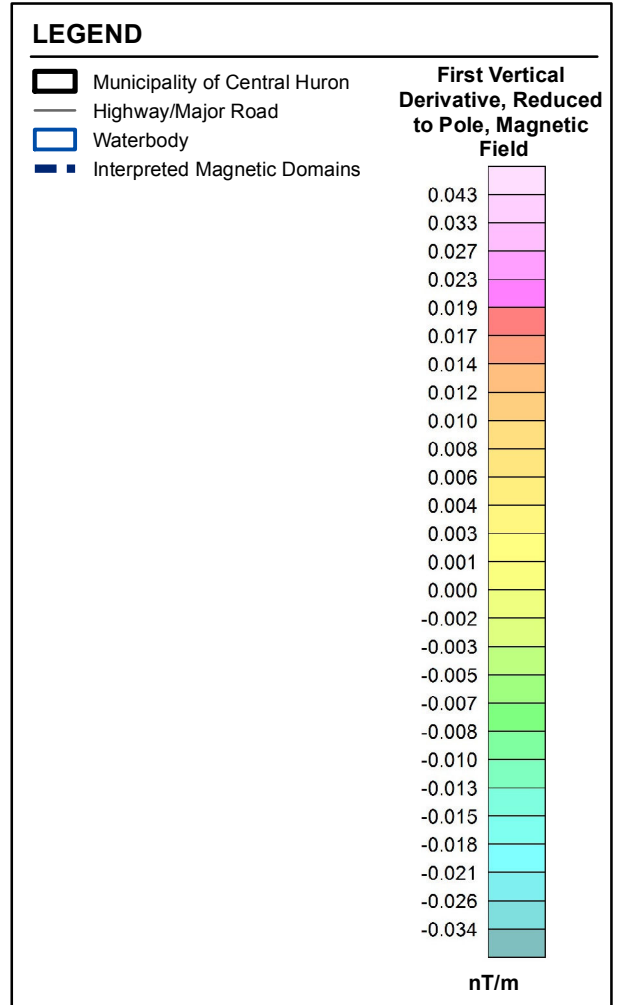
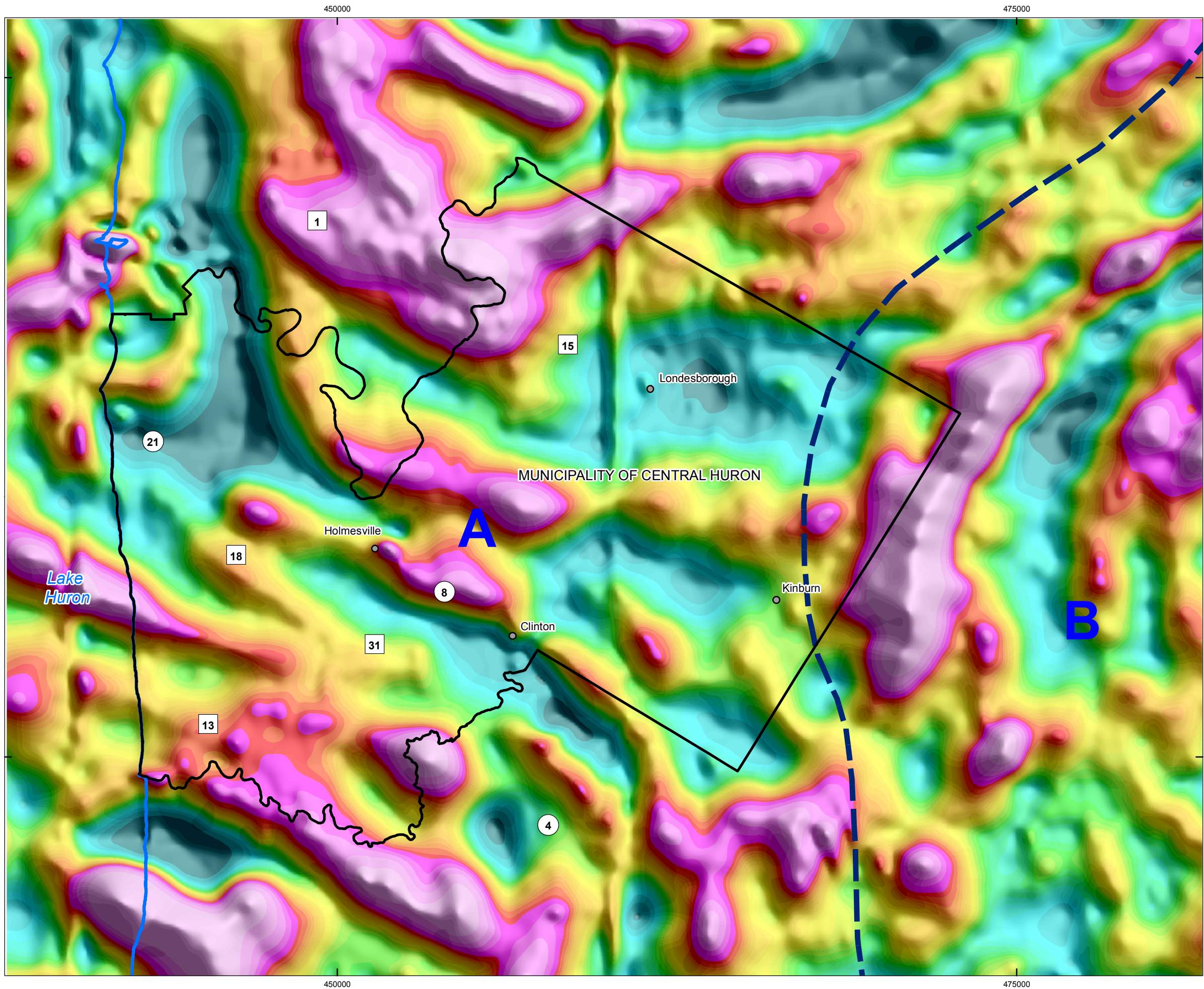
NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Sedimentary Sites

TITLE
Location of Cross-Sections and 2D Seismic Line

FIGURE 3.8	DESIGN: ADG CAD/GIS: ADG/VMS CHECK: KGR REV: 0	
	DATE: 10/7/2015	

G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron_Maps\CrossSection.mxd

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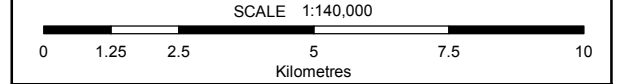
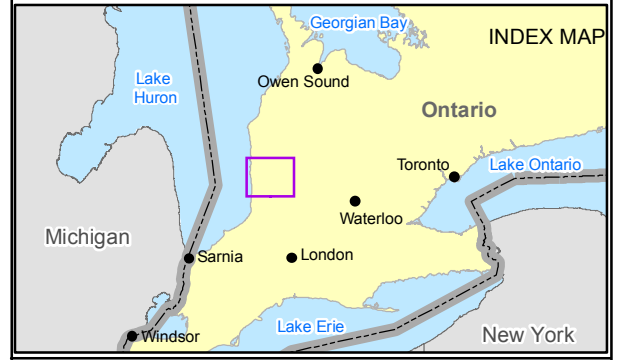
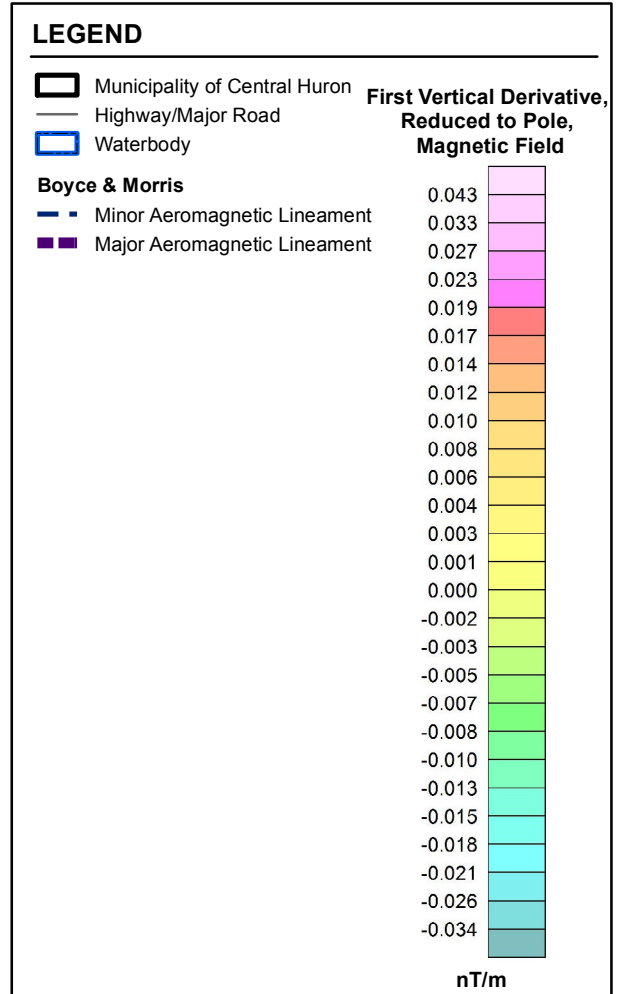
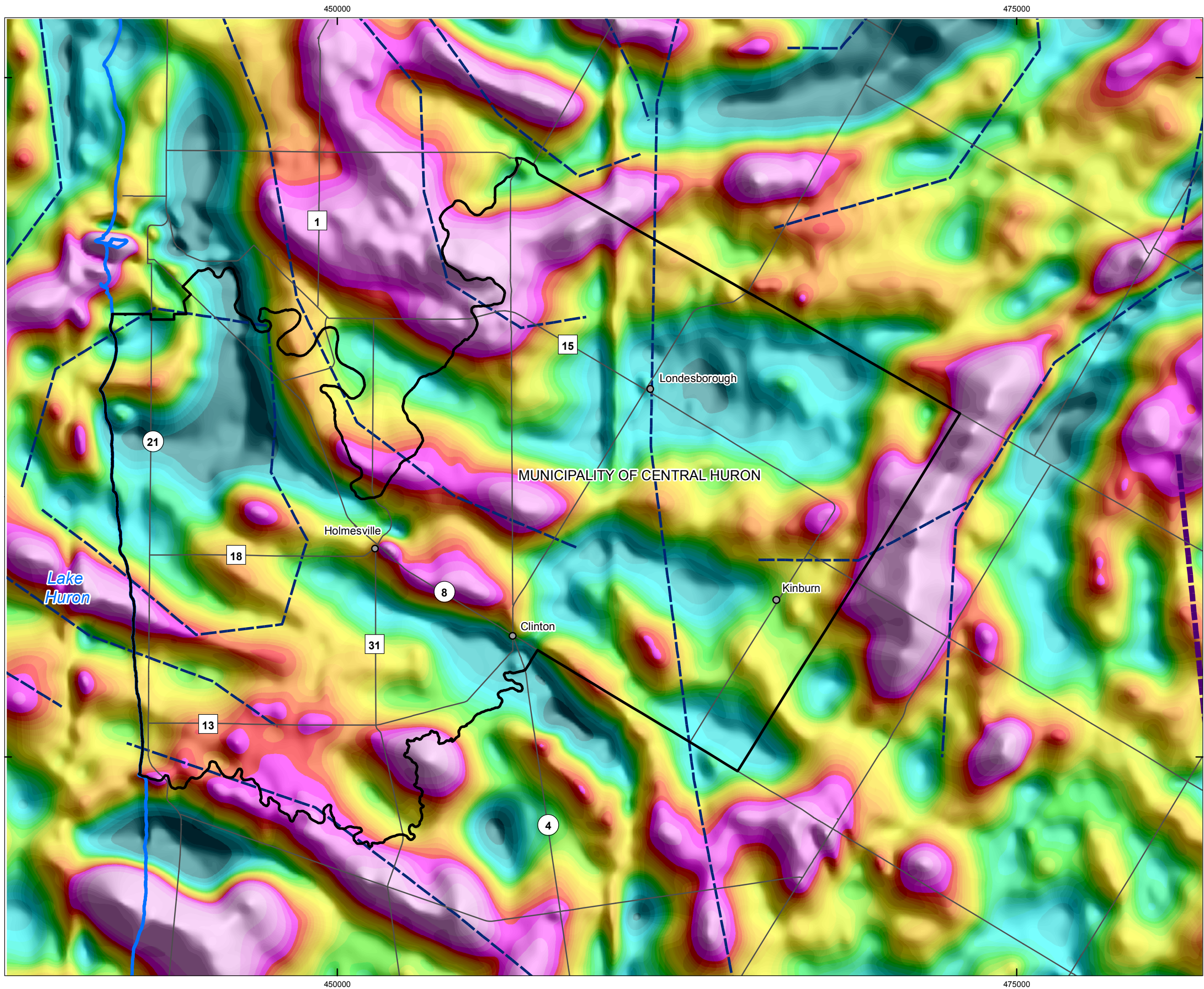
COORDINATE SYSTEM: UTM NAD83 Zone 17N
 SOURCE:
 Basemap Layers: LIO, MNR, ESRI
 Interpreted Domains: PGW, 2015
 Magnetic Data: GSC, 2014; Spector, 1999
 Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

PROJECT No. 10-214-11
 NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

TITLE
First Vertical Derivative of the Pole Reduced Magnetic Field in the Central Huron Area

FIGURE 3.9	DESIGN: NMP CAD/GIS: VMS/ADG CHECK: KGR REV: 0	
	DATE: 4/14/2015	

G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron_Maps\CentralHuron_SuitabilityReport_Maps\10-214-11-10_CentralHuron_Fig3_10_Boyce_and_Morris_Lineaments_Aeromag.mxd



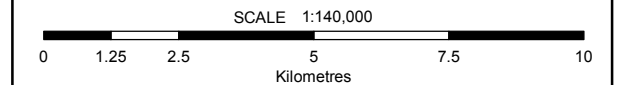
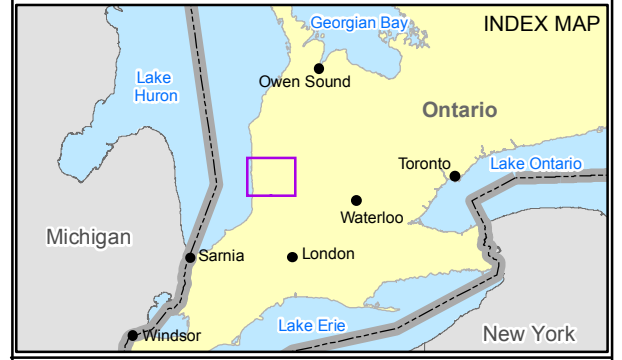
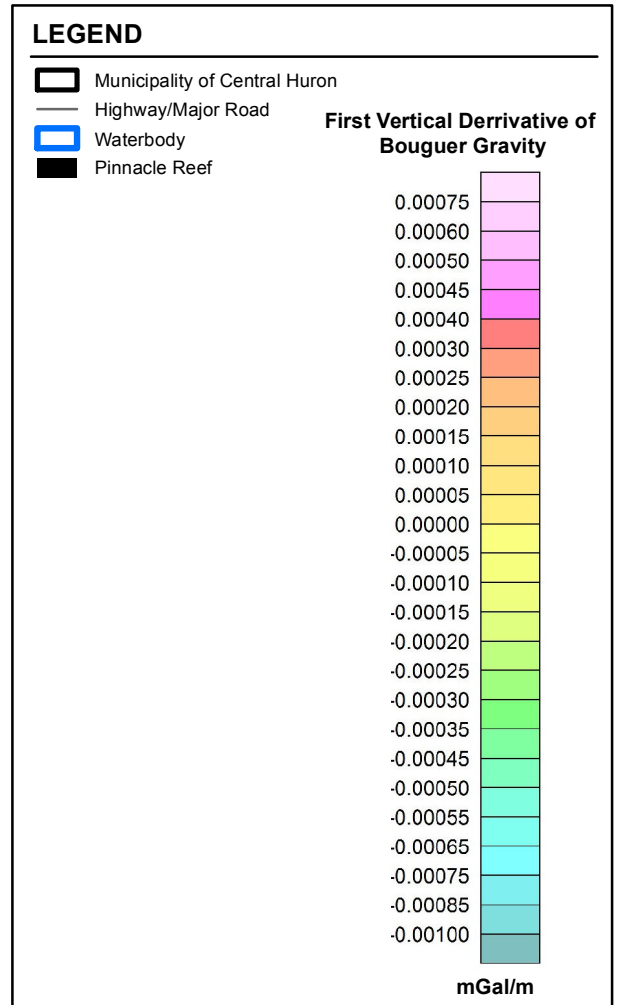
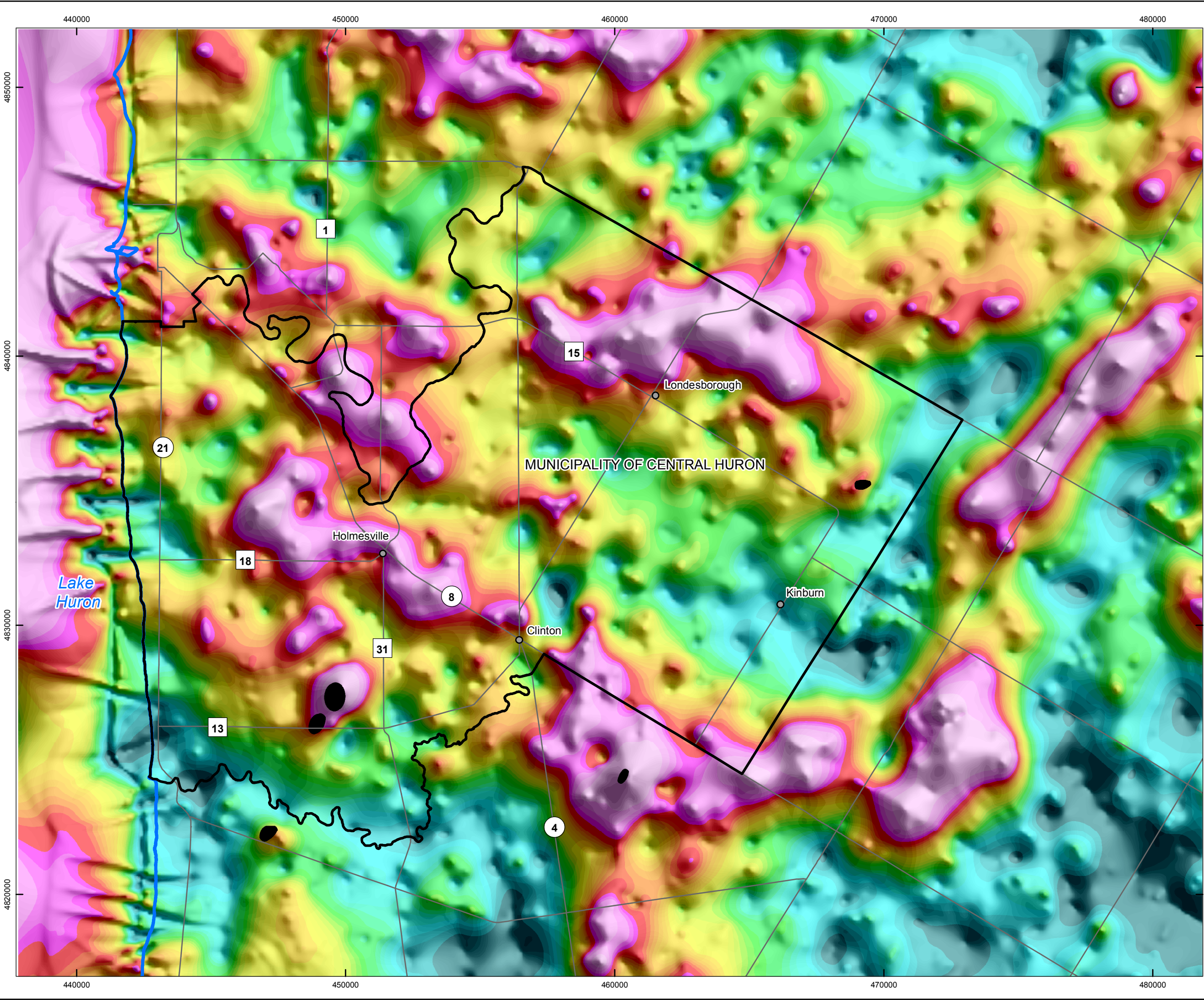
COORDINATE SYSTEM: UTM NAD83 Zone 17N
 SOURCE:
 Basemap Layers: LIO, MNR, ESRI
 Lineaments: Boyce and Morris 2002
 Magnetic Data: GSC, 2014; Spector, 1999
 Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

PROJECT No. 10-214-11
 NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

TITLE
Boyce and Morris (2002) Aeromagnetic Lineaments and Aeromagnetic Data in the Central Huron Area

FIGURE 3.10	DESIGN: NMP CAD/GIS: VMS CHECK: KGR REV: 0	
	DATE: 4/14/2015	

G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron_Maps\CentralHuron_SuitabilityReport_Maps\10-214-11-10_CentralHuron_Fig3_11_1VDBouguerGravity.mxd



COORDINATE SYSTEM: UTM NAD83 Zone 17N

SOURCE:
 Basemap Layers: LIO, MNR, ESRI
 Pinnacle Reefs: MRD276 Regional structure and isopach maps of potential hydrocarbon-bearing strata for southern Ontario, OGS, 2011
 Gravity Data: GSC, 2014; PGW, 2015
 Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

PROJECT No. 10-214-11

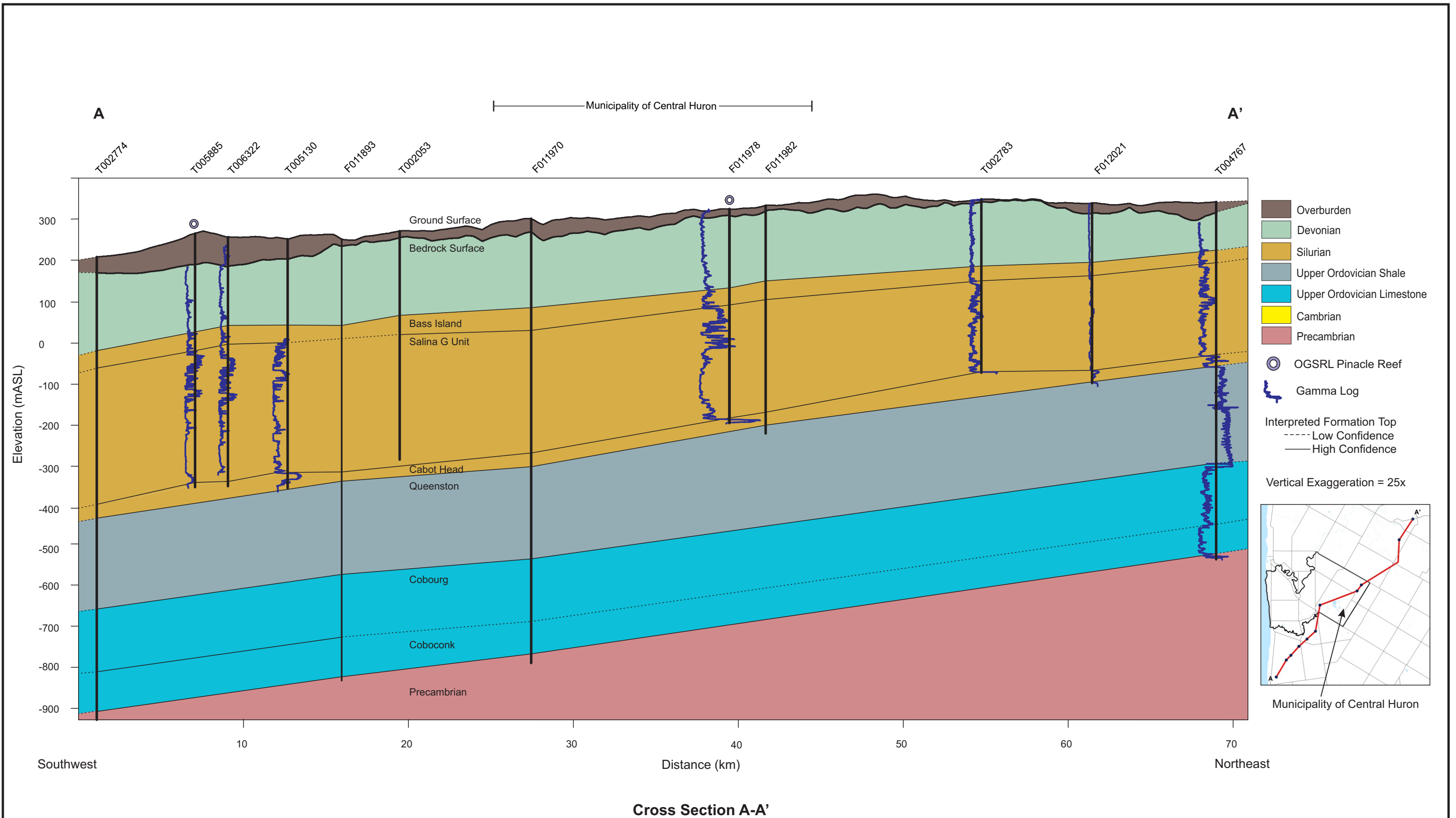
NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

TITLE

First Vertical Derivative of the Bouguer Gravity in the Central Huron Area

FIGURE 3.11

DESIGN: NMP	
CAD/GIS: VMS	
CHECK: KGR	
REV: 0	
DATE: 10/7/2015	



Geological Cross Section A-A'
NWMO Phase I Geoscientific Desktop Preliminary Assessment Study - Central Huron

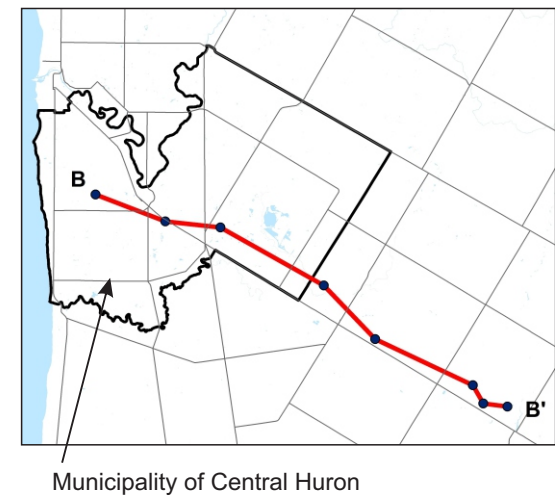
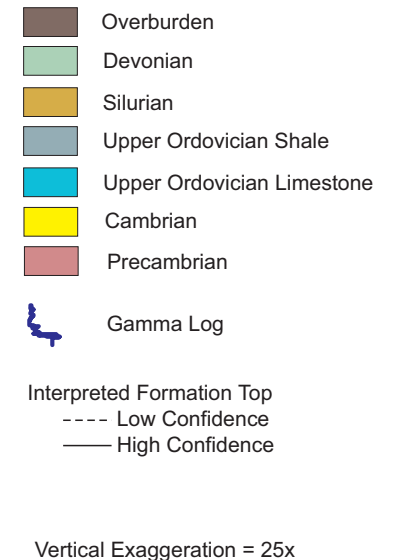
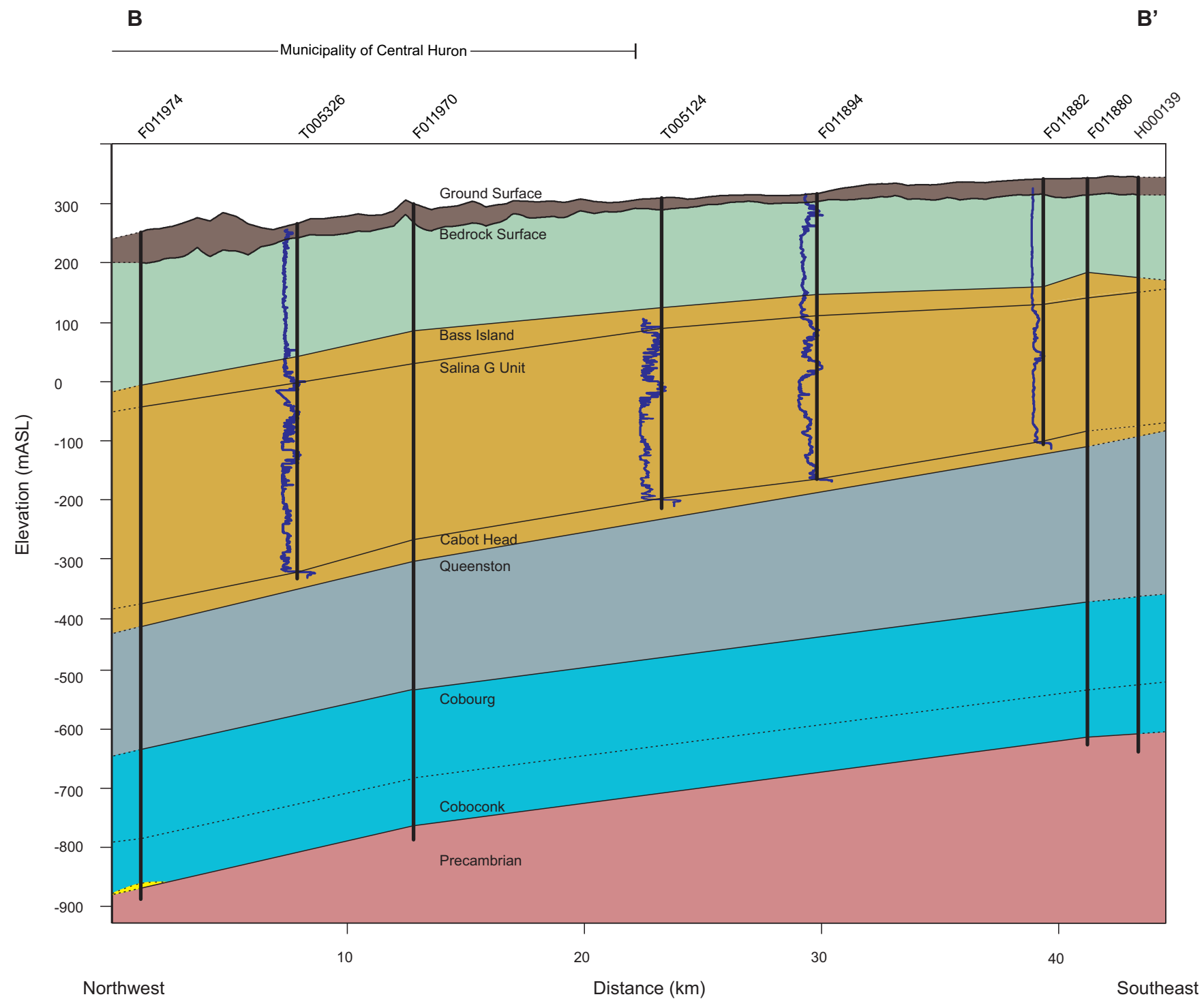
FIGURE 3.12

Doc. No.:10-214-11-110_CentralHuron_Fig3_12_CrossSectionA.cdr

Prepared by: NDR/ADG/NMP
 Reviewed by: KGR/SNS
 Date: Oct 7, 2015

SOURCE:
 Wells: OGSRL, 2014a
 Pinnacle Reef: OGS, 2011





Cross Section B-B'

Geological Cross Section B-B'
NWMO Phase I Geoscientific Desktop Preliminary Assessment Study - Central Huron

FIGURE 3.13

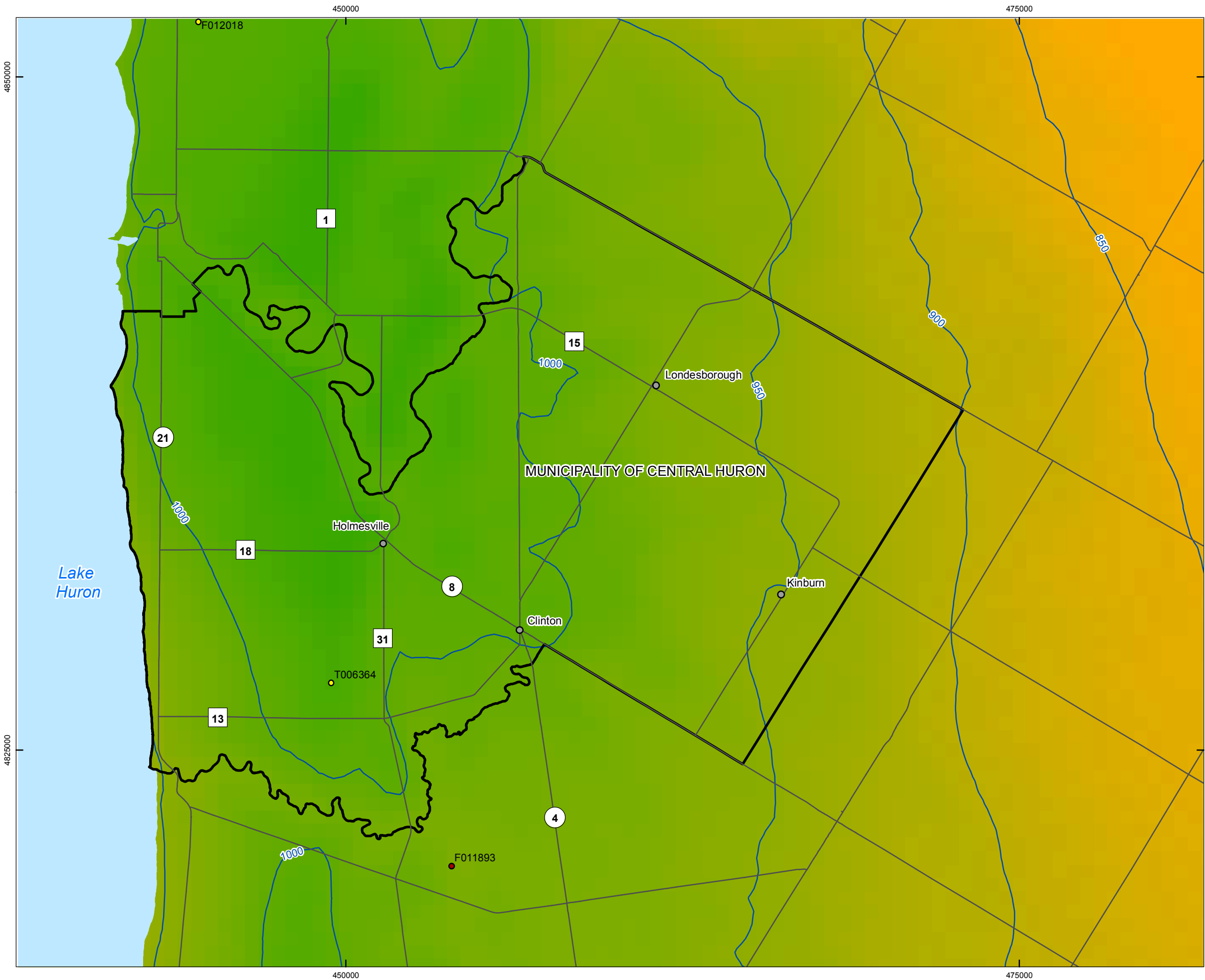
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Prepared by: NDR/ADG
 Reviewed by: KGR/SNS
 Date: Feb 4, 2015

SOURCE:
 Wells: OGSRL, 2014a



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LEGEND

- Municipality of Central Huron
- Highway/Major Road
- Waterbody

OGSRL Well with Data Used to Create Top of the Coboconk Formation

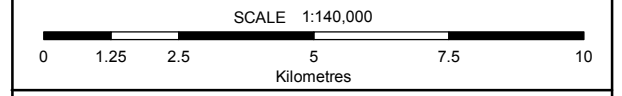
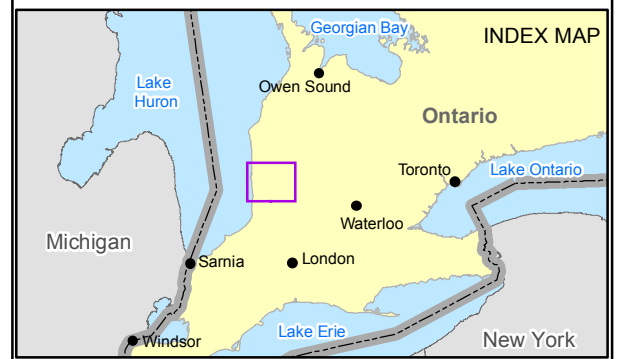
- OGSRL Well with Geophysics Log
- OGSRL Well

Depth to the Coboconk Formation (mBGS)

High : 1047

Low : 809

Contour of Depth to the Coboconk Formation (50m interval)



COORDINATE SYSTEM: UTM NAD83 Zone 17N
 SOURCE:
 Basemap Layers: LIO, MNR, ESRI
 Wells: OGSRL 2014a
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 NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

TITLE
Depth to Top of the Coboconk Formation in the Central Huron Area

FIGURE 3.14	DESIGN: ADG CAD/GIS: ADG/VMS CHECK: KGR REV: 0	
	DATE: 4/14/2015	