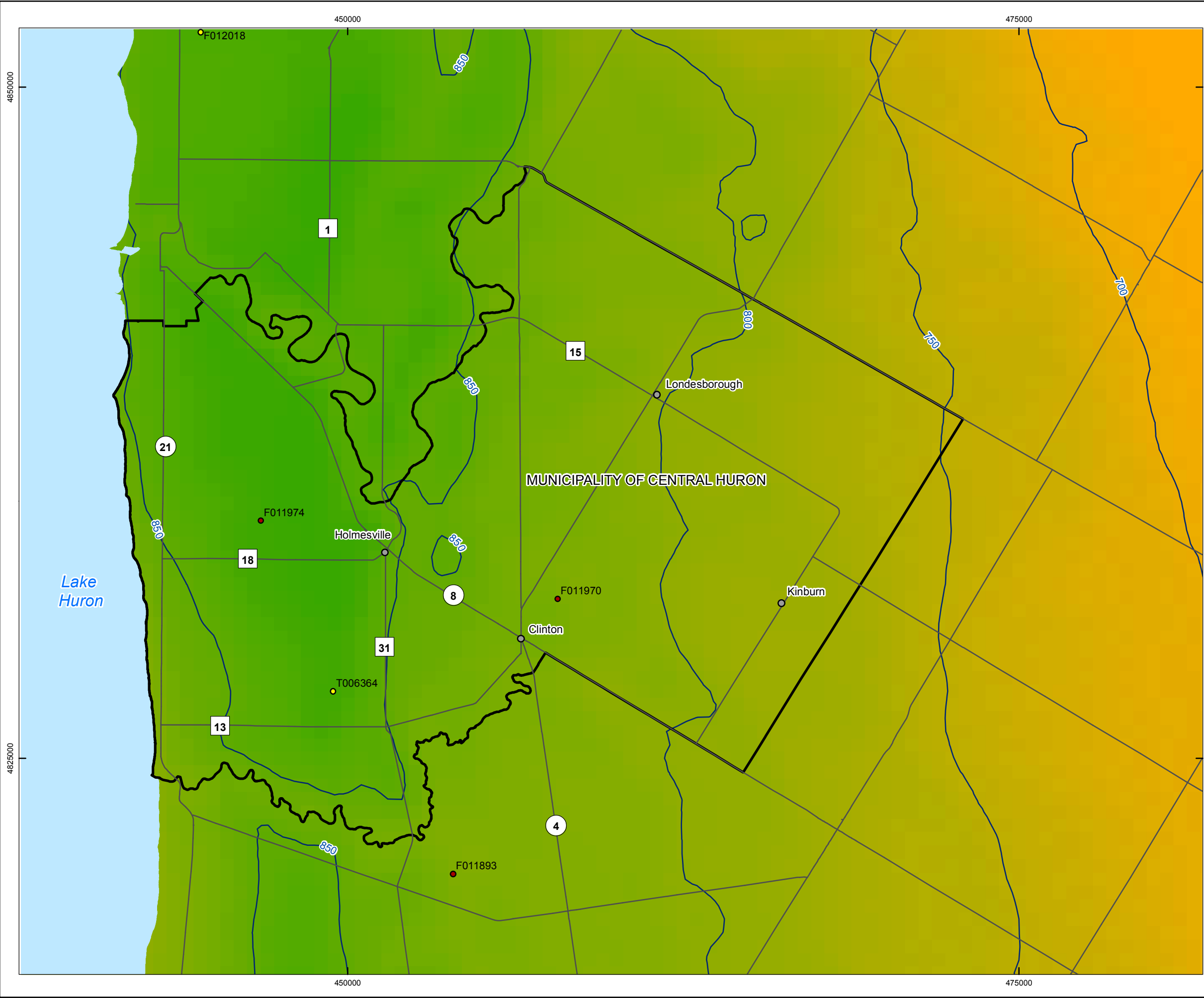


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LEGEND

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

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

- OGSRL Well with Geophysics Log
- OGSRL Well

Depth to the Cobourg Formation (mBGS)

High : 898

Low : 662

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

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
 Wells: OGSRL 2014a
 Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

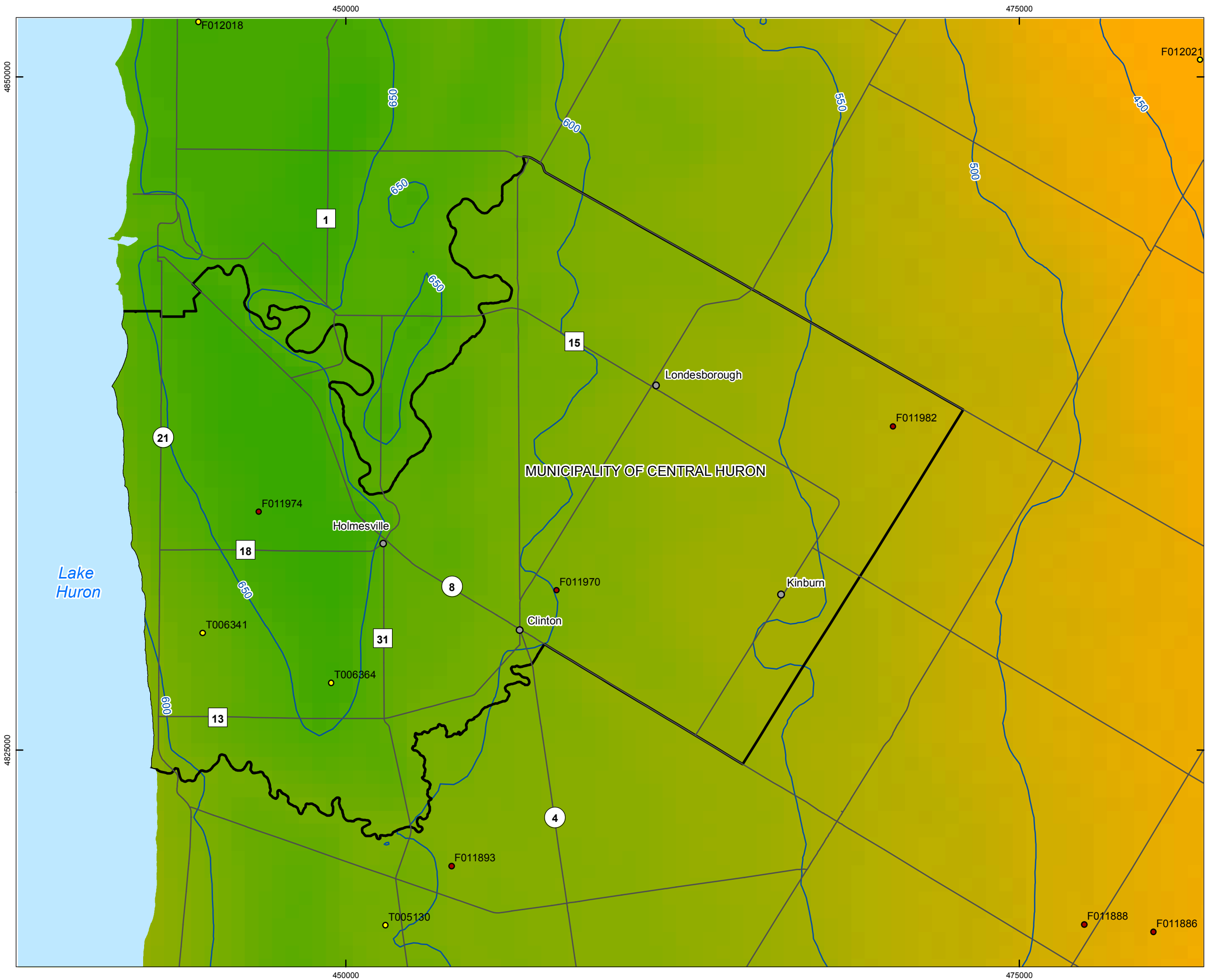
PROJECT No. 10-214-11

NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

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

FIGURE 3.15	DESIGN: ADG CAD/GIS: ADG/VMS CHECK: KGR REV: 0	
	DATE: 4/14/2015	

G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron\CentralHuron_SuitabilityReport_Maps\10-214-11-10_CentralHuron_Fig3_16_Depth_to_Queenston.mxd



LEGEND

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

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

- OGSRL Well with Geophysics Log
- OGSRL Well

Depth to the Queenston Formation (mBGS)

High : 679
Low : 426

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

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
Wells: OGSRL 2014a
Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

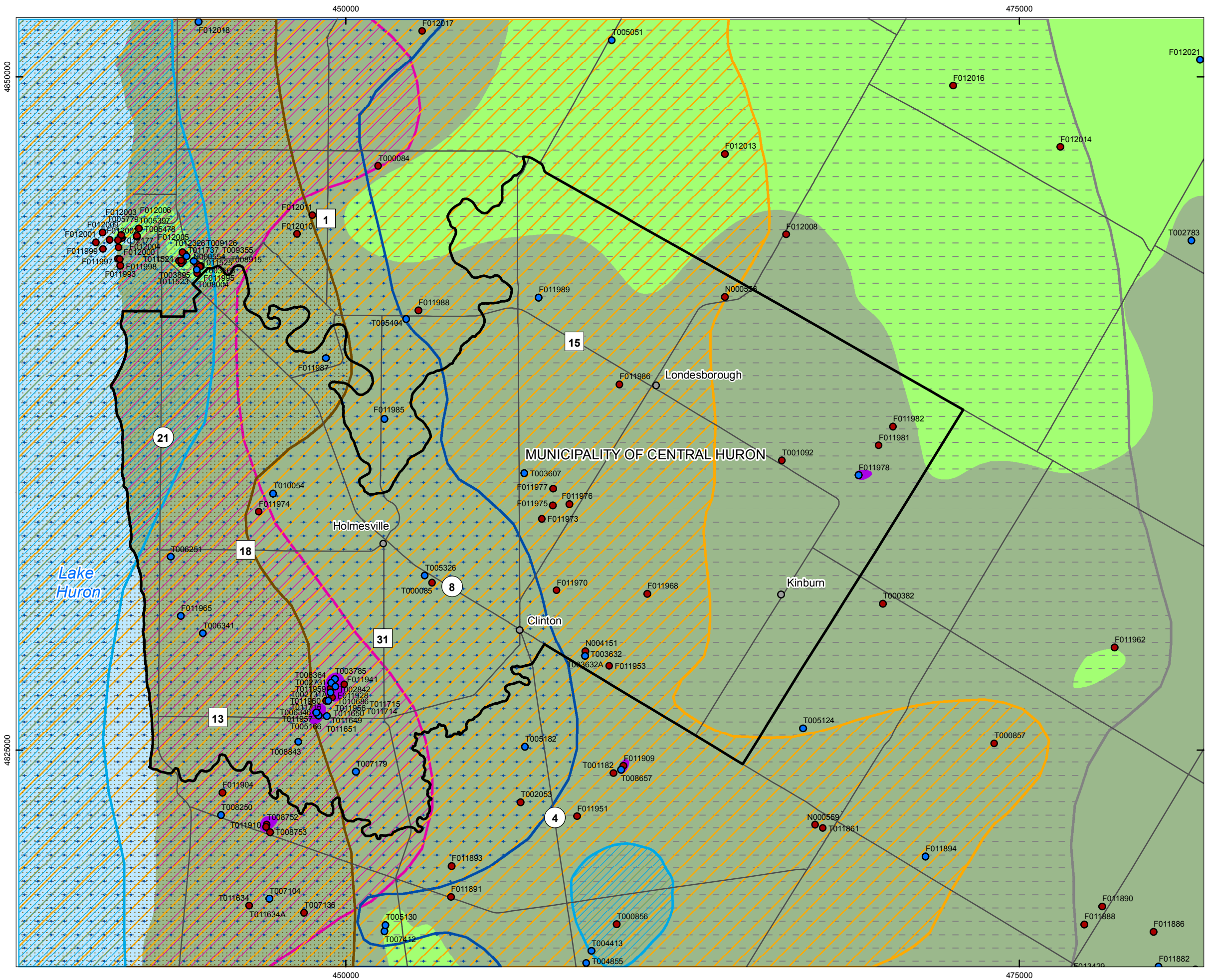
NORTH

PROJECT No. 10-214-11

Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

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

FIGURE 3.16	DESIGN: ADG CAD/GIS: ADG/VMS CHECK: KGR REV: 0	
	DATE: 4/14/2015	



LEGEND

- Municipality of Central Huron
- Highway/Major Road
- Waterbody
- OGSRL Well
- OGSRL Well with Geophysics Log
- Salina F Salt
- Salina D Salt
- Salina B Salt
- Salina A2 Salt
- Salina A1 Salt
- Pinnacle Reef
- Cambrian Sandstone

Bedrock Geology

Middle Devonian

- Dundee Fm
- Lucas Fm

Fm = Formation

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
Cambrian Sandstone: Bailey & Cochrane, 1984a
Fault Mapping and Pinnacle Reefs: MRD276 Regional structure and isopach maps of potential hydrocarbon-bearing strata for southern Ontario, OGS, 2011
Geology: MRD219 Paleozoic Geology of Southern Ontario, OGS, 2007
Salt Occurrence & Salt Dissolution: Sanford, 1977
Wells: OGSRL 2014a
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PROJECT No. 10-214-11

Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

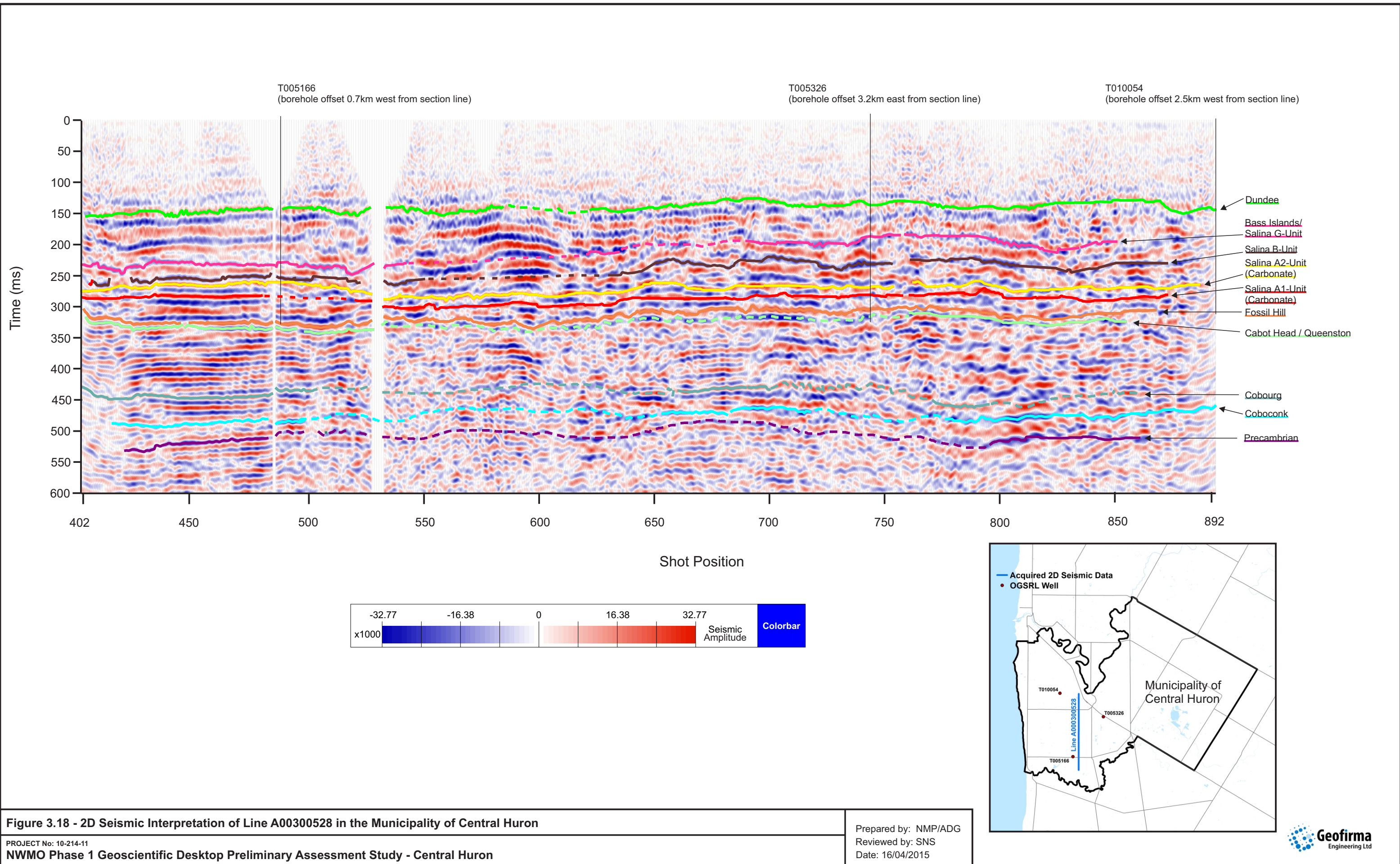
TITLE

Location of Pinnacle Reefs, Salt Occurrence, and Cambrian Sandstone in the Central Huron Area

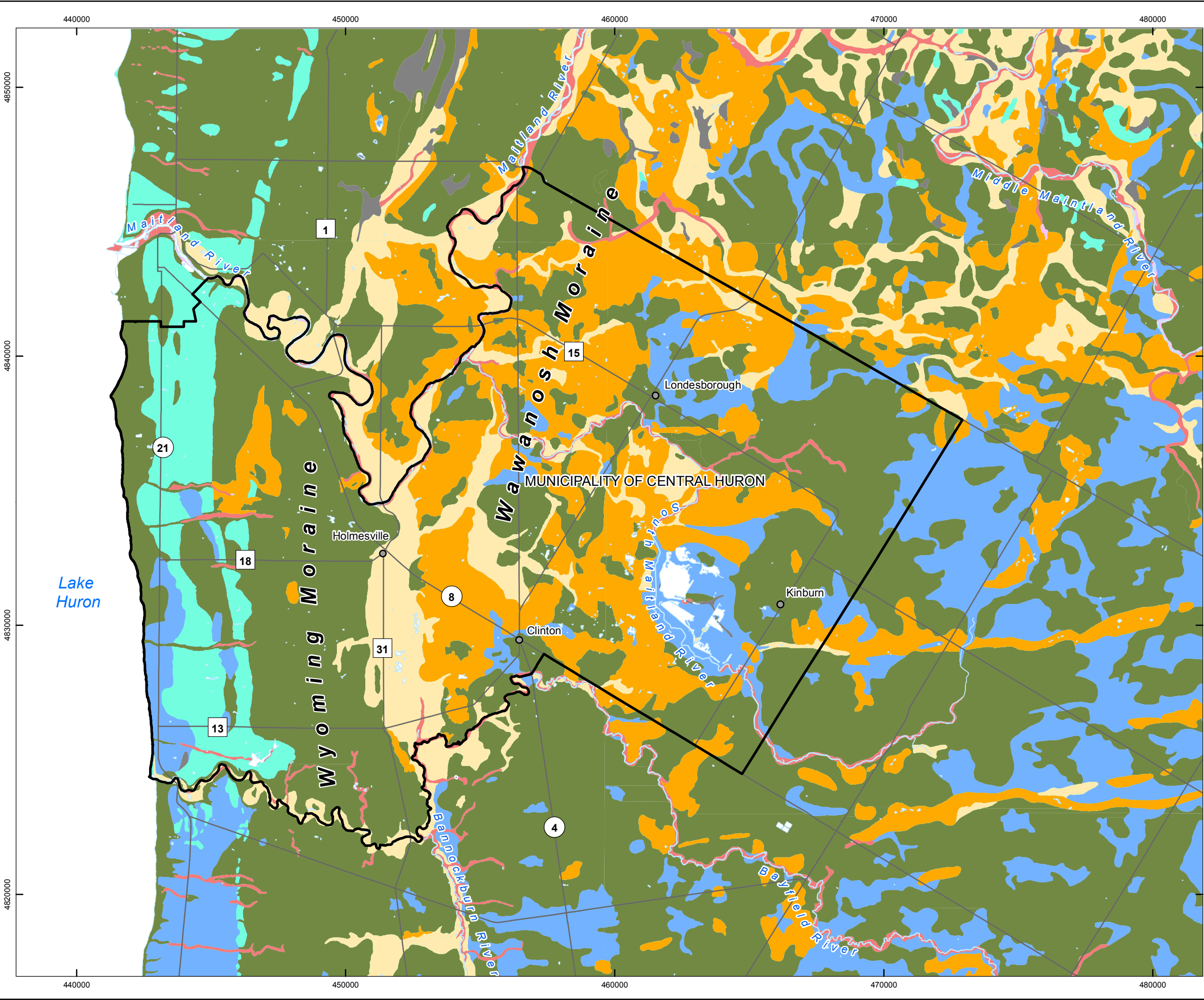
FIGURE 3.17

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

Geofirma
Engineering Ltd



G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron\Maps\CentralHuron_Maps\CentralHuron_SuitabilityReport_Maps\10-214-11-10_CentralHuron_Fig3_19_SurficialGeology_Community.mxd



LEGEND

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

Surficial Geology

- Wetland
- Lacustrine
- Fluvial
- Glaciolacustrine (coarse)
- Glaciolacustrine (fine)
- Glaciofluvial (ice-contact)
- Glaciofluvial (outwash)
- Glacial (morainal)

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
 Geology: OGS 2010, MRD128-REV Surficial Geology of Southern Ontario, 1:50,000, 2010 Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

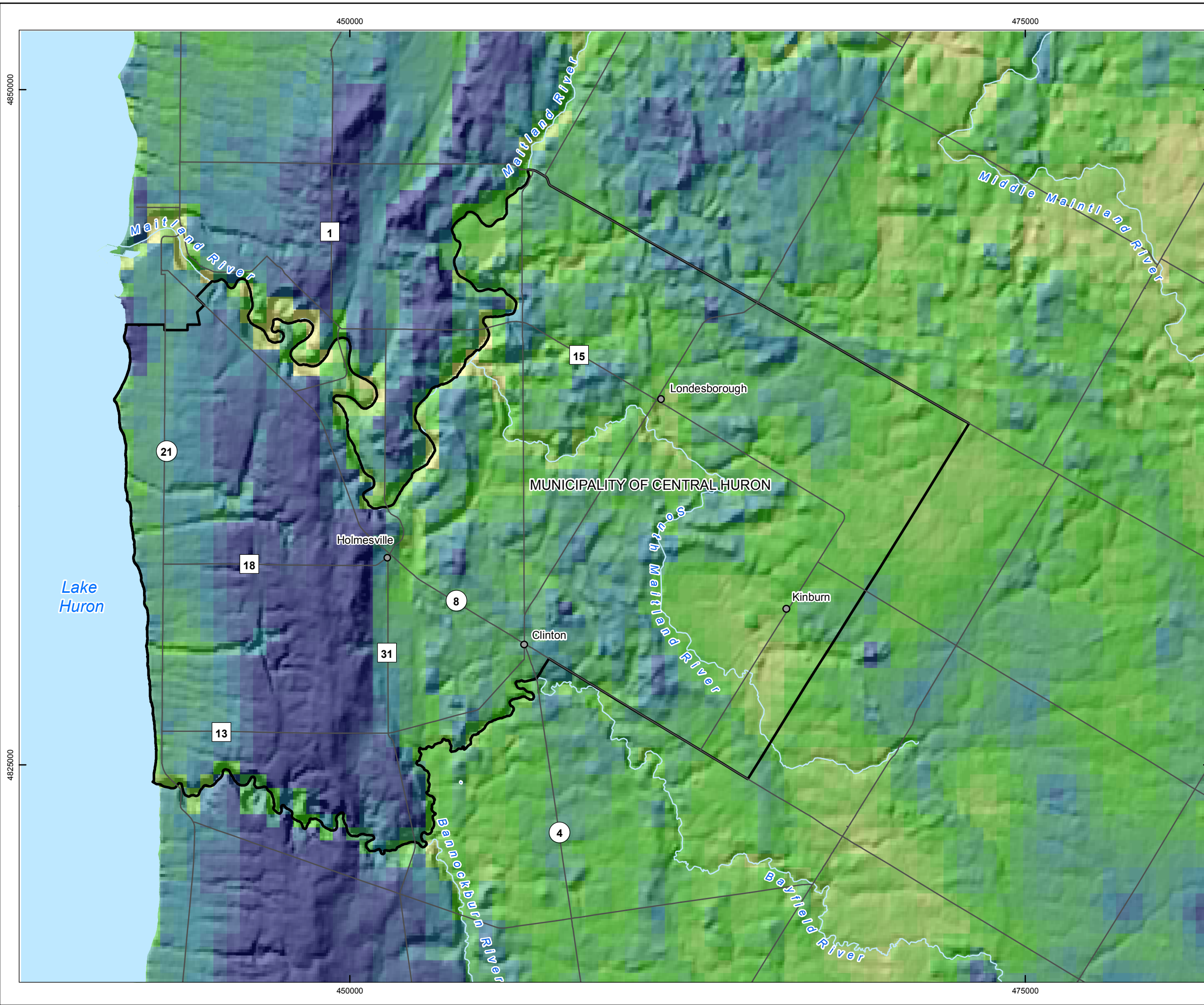
PROJECT No. 10-214-11.110

NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

TITLE
Surficial Geology of the Central Huron Area

FIGURE 3.19	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_20_OverburdenThickness.mxd



LEGEND

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

Overburden Thickness (m)

High : 116

Low : 0

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
Overburden Thickness: Gao, C., 2006
Produced by Geofirma Engineering Ltd under license from Ontario Ministry of Natural Resources, ©Queens Printer 2011

PROJECT No. 10-214-11

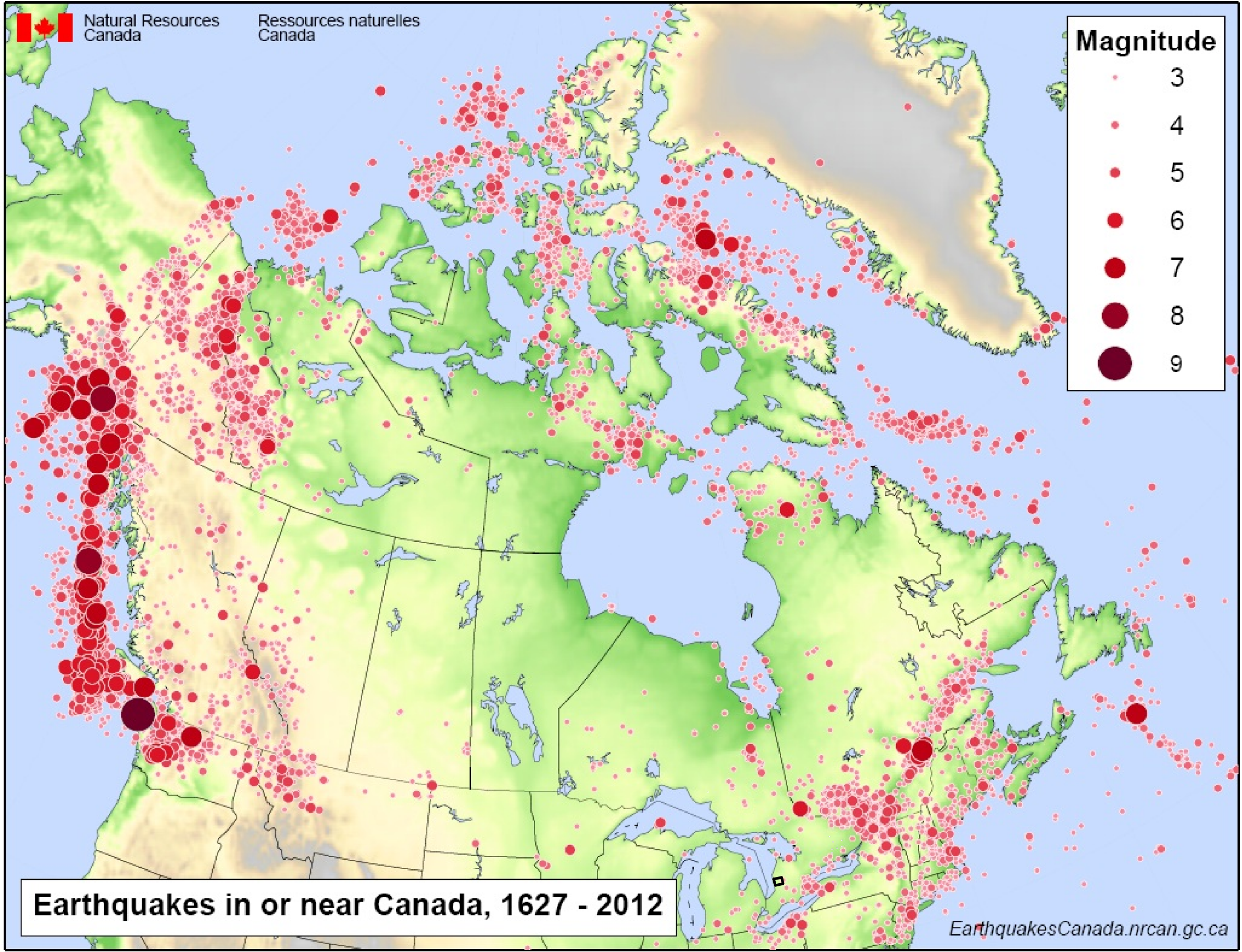
NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

TITLE

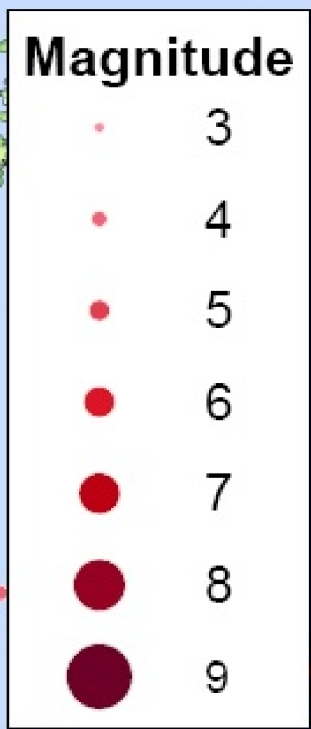
Overburden Thickness in the Central Huron Area

FIGURE 3.20	DESIGN: ADG CAD/GIS: ADG/VMS CHECK: KGR REV: 0	
	DATE: 4/14/2015	


G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron\CentralHuron_SuitabilityReport_Maps\10-214-11-10_CentralHuron_Fig3_21_EarthquakesMapofCanada1627-2012.mxd




 Natural Resources Canada
 Ressources naturelles Canada



LEGEND

 Municipality of Central Huron

Earthquakes in or near Canada, 1627 - 2012


EarthquakesCanada.nrcan.gc.ca

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

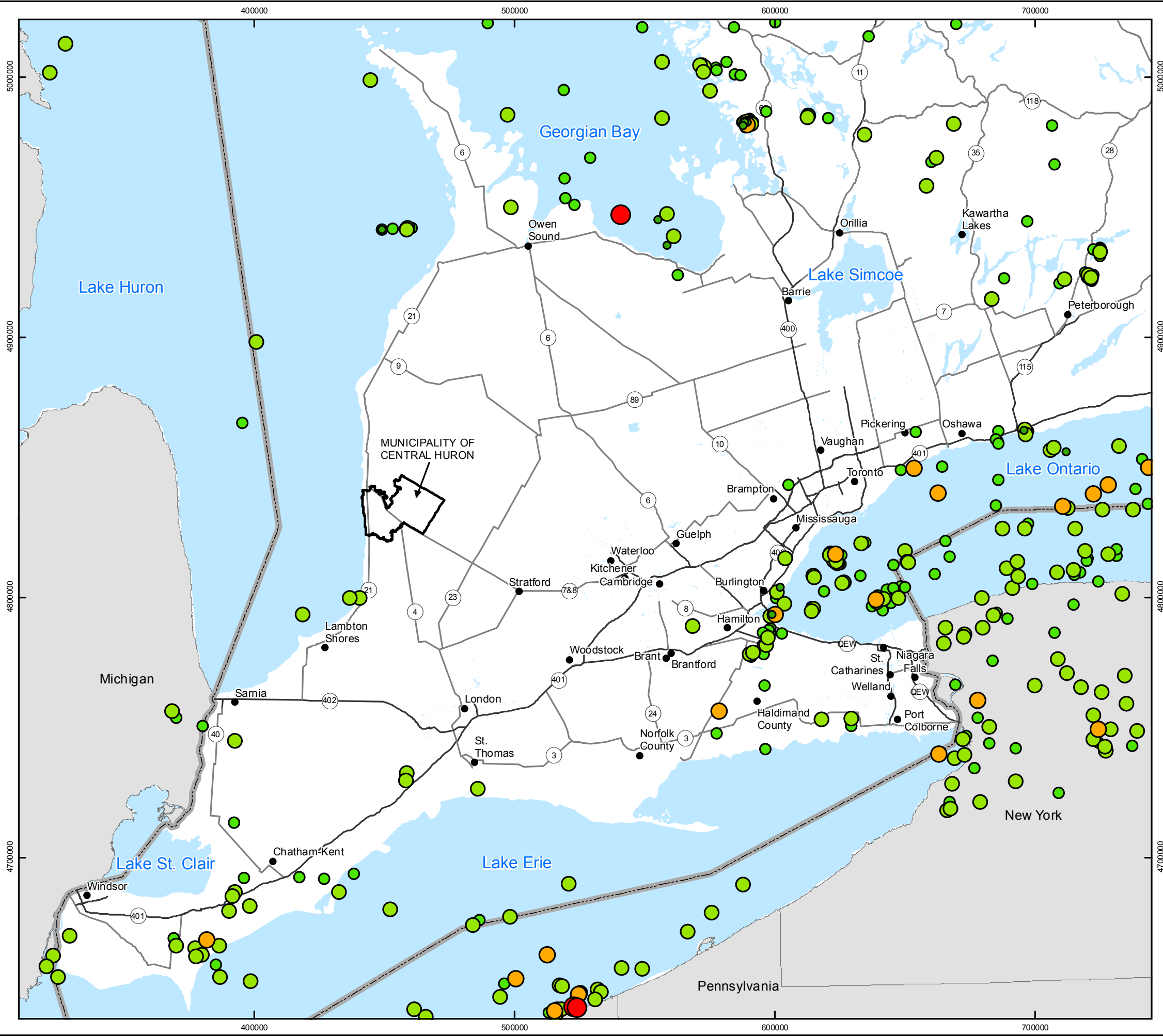


PROJECT No. 10-214-11
 NWMO Phase 1 Geoscientific Desktop Preliminary
 Assessment Study - Central Huron

TITLE
Earthquakes Map of Canada 1627-2012

FIGURE 3.21	DESIGN: VMS 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\10-214-11-110_CentralHuron_Fig3_22_HistoricalEarthquake1985_2014.mxd



LEGEND

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

Seismic Event (Nuttli Magnitude)

- < 1.0
- 1.0 - 2.0
- 2.0 - 3.0
- 3.0 - 4.0
- 4.0 - 5.0

Note: Lower detection limit of seismic events for the Central Huron area is variable over time.
 pre 2002 = Magnitude 3
 2002 - 2007 = Magnitude 2
 post 2007 = < Magnitude 1

INDEX MAP

SCALE 1:1,500,000

0 15 30 60 90 120
Kilometres

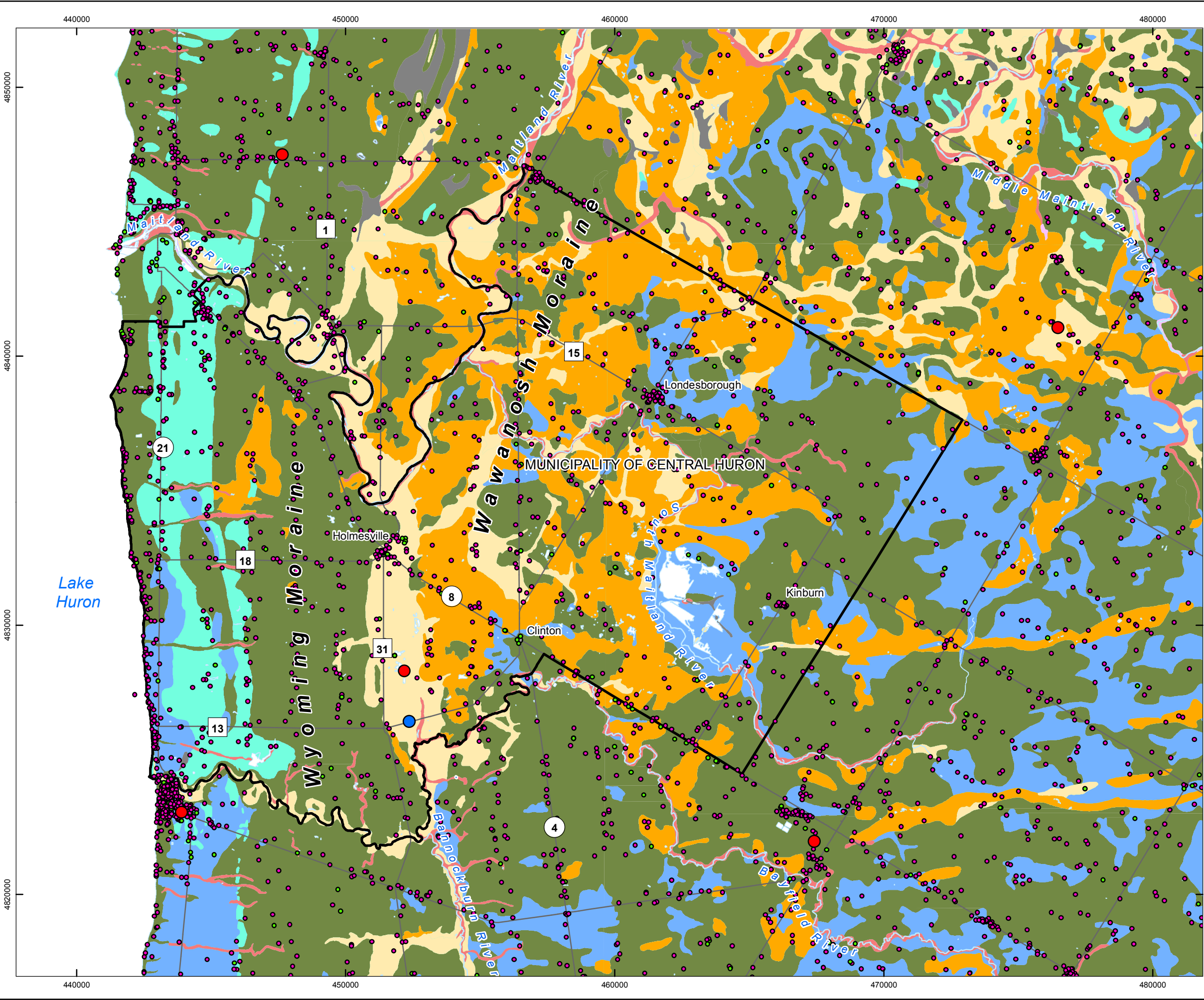
COORDINATE SYSTEM: UTM NAD83 Zone 17N
 SOURCE:
 Basemap Layers: LIO, MNR, ESRI
 Seismic: Earthquakes Canada, GSC, Earthquake Search (On-line Bulletin) January 30, 2015
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PROJECT No. 10-214-11
 NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study -Central Huron

TITLE
Historical Earthquake Records of Southern Ontario, 1985-2014

FIGURE 3.22	DESIGN: NMP CAD/GIS: VMS/ADG CHECK: KGR REV: 0	
	DATE: 02/09/2015	

G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron_Maps\CentralHuron_SuitabilityReport_Maps\10-214-11-10_CentralHuron_Fig4.1_GroundwaterWells_Community.mxd



LEGEND

- Municipality of Central Huron
- Highway/Major Road
- Waterbody
- Watercourse
- PGMN Wells**
 - Bedrock
 - Overburden
- MOE Water Wells**
 - Bedrock
 - Overburden
- Surficial Geology**
 - Wetland
 - Lacustrine
 - Fluvial
 - Glaciolacustrine (coarse)
 - Glaciolacustrine (fine)
 - Glaciofluvial (ice-contact)
 - Glaciofluvial (outwash)
 - Glacial (morainal)

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
 Geology: OGS 2010, MRD128-REV Surficial Geology of Southern Ontario, 1:50,000
 Groundwater Wells: Water Wells Information System, MOECC, 2014a
 PGMN Wells: MOECC, 2014b
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NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

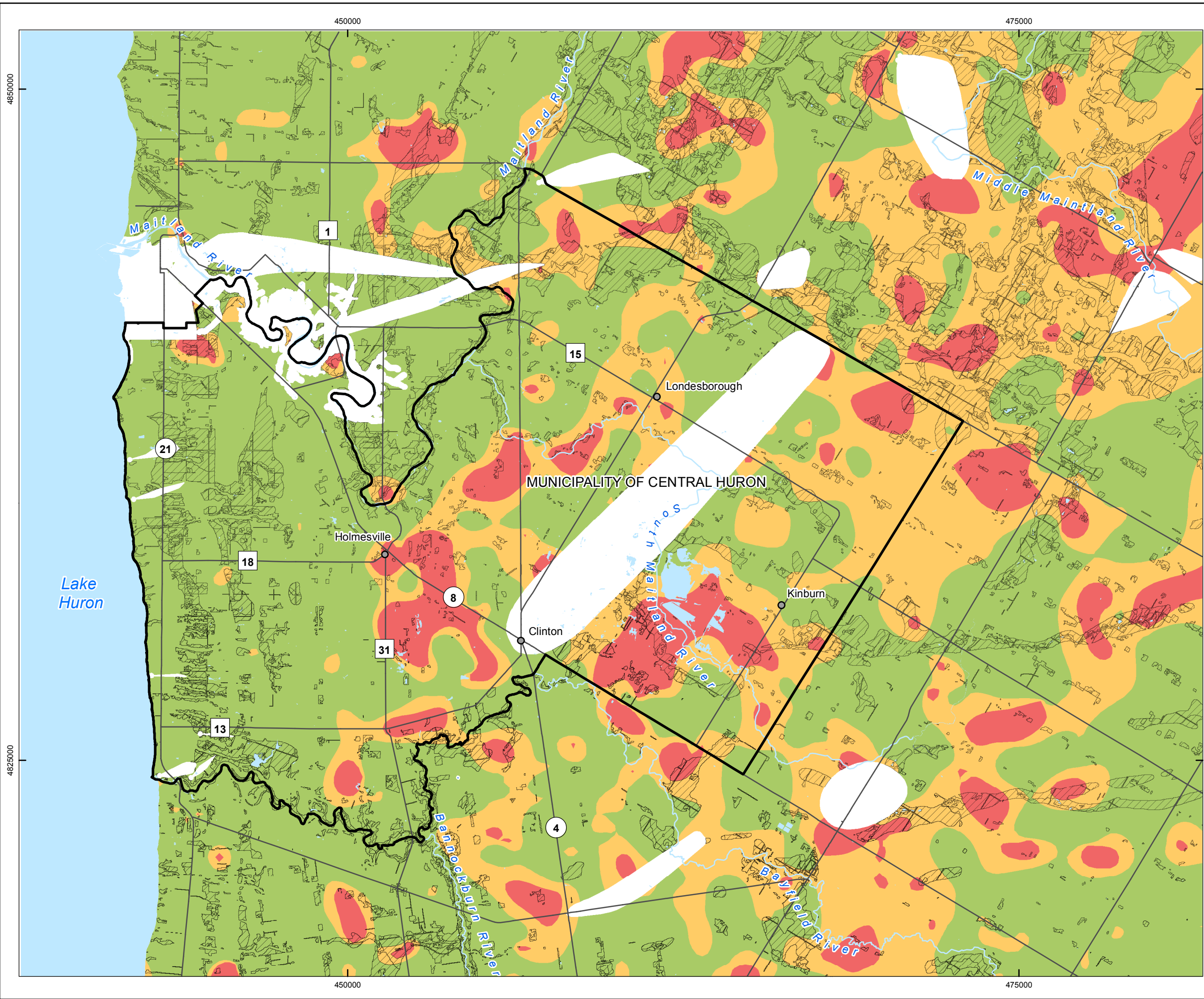
TITLE
Groundwater Wells within the Central Huron Area

FIGURE 4.1

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

Geofirma Engineering Ltd

G:\Data\Project\Sedimentary_Site_NWMO\10-214-11_CentralHuron_Maps\CentralHuron_SuitabilityReport_Maps\10-214-11-10-CentralHuron_Fig4_2_AquiferVulnerability_SGRA_Community.mxd



LEGEND

- Municipality of Central Huron
- Highway/Major Road
- Waterbody
- Watercourse
- Significant Groundwater Recharge Area

Intrinsic Susceptibility Index

- High
- Medium
- Low

Note: Areas without Intrinsic Susceptibility Index results are Well Head Protection Areas. Aquifer Vulnerability for these areas was calculated separately by Ausable Bayfield Maitland Valley Source Water Protection Region.

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
 ISI & SGRA: Ausable Bayfield Maitland Valley Protection Region, 2011a,b
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NORTH

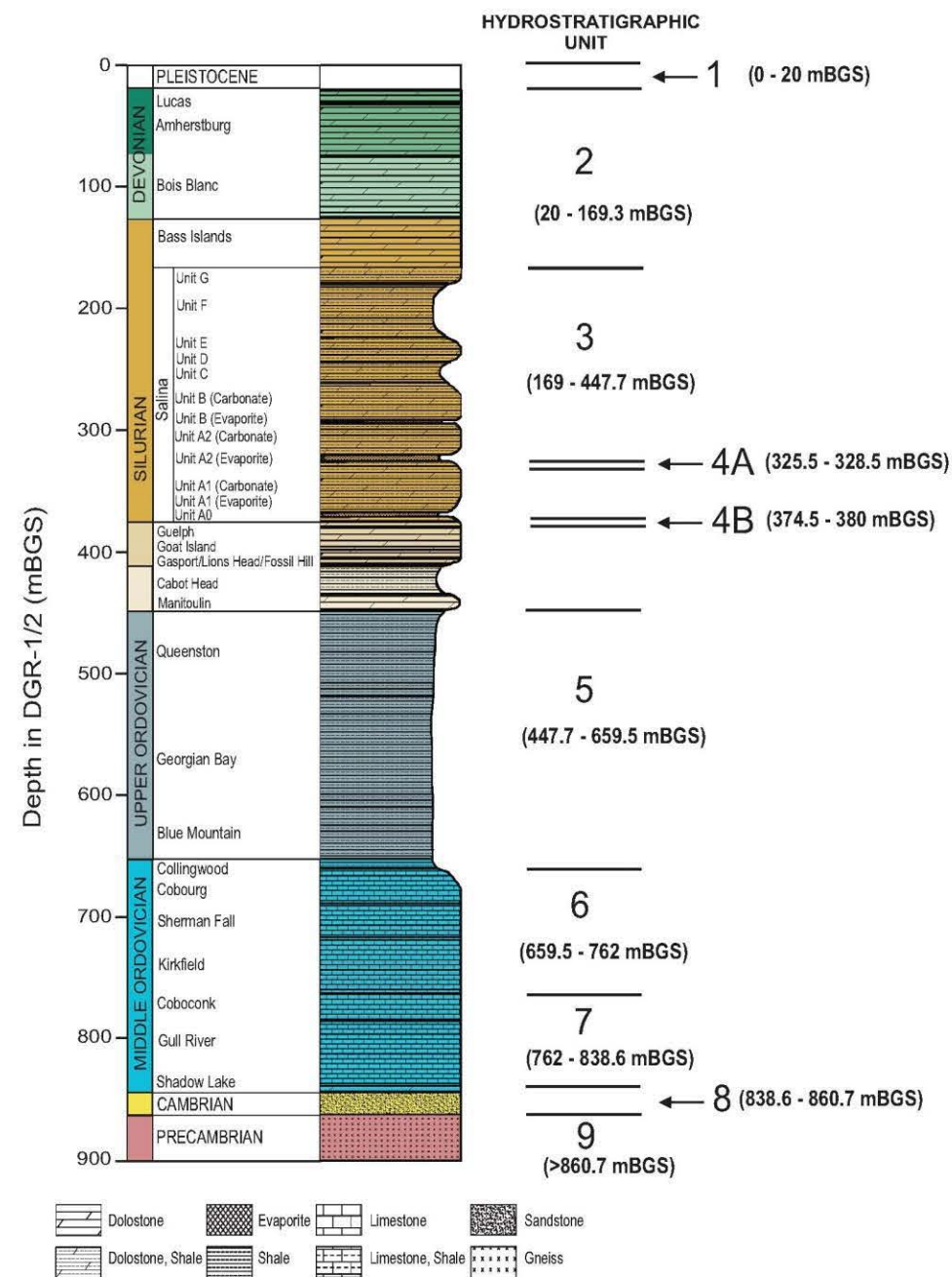
PROJECT No. 10-214-11

Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

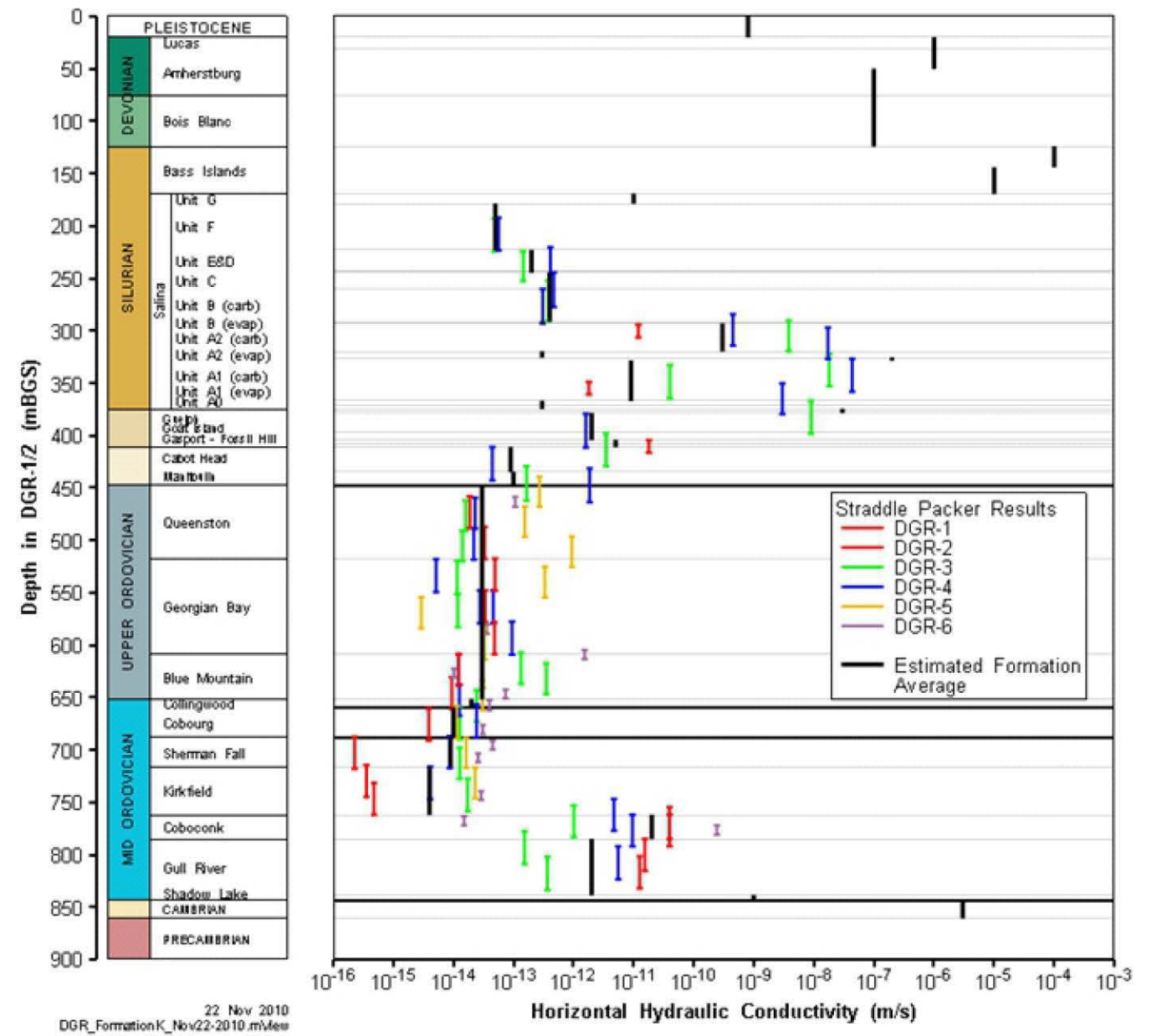
TITLE

Aquifer Vulnerability and Significant Groundwater Recharge Areas in the Central Huron Area

FIGURE 4.2	DESIGN: ADG CAD/GIS: VMS/ADG CHECK: KGR REV: 0	
	DATE: 4/14/2015	



a. Reference Stratigraphic Column and Hydrostratigraphic Units (after Intera Engineering Ltd., 2011)



b. Results of Straddle-Packer Hydraulic Testing (after Walsh, 2011)

FIGURE 4.3 - Hydrostratigraphic Units and Results of Hydraulic Testing at the Bruce Nuclear Site

NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

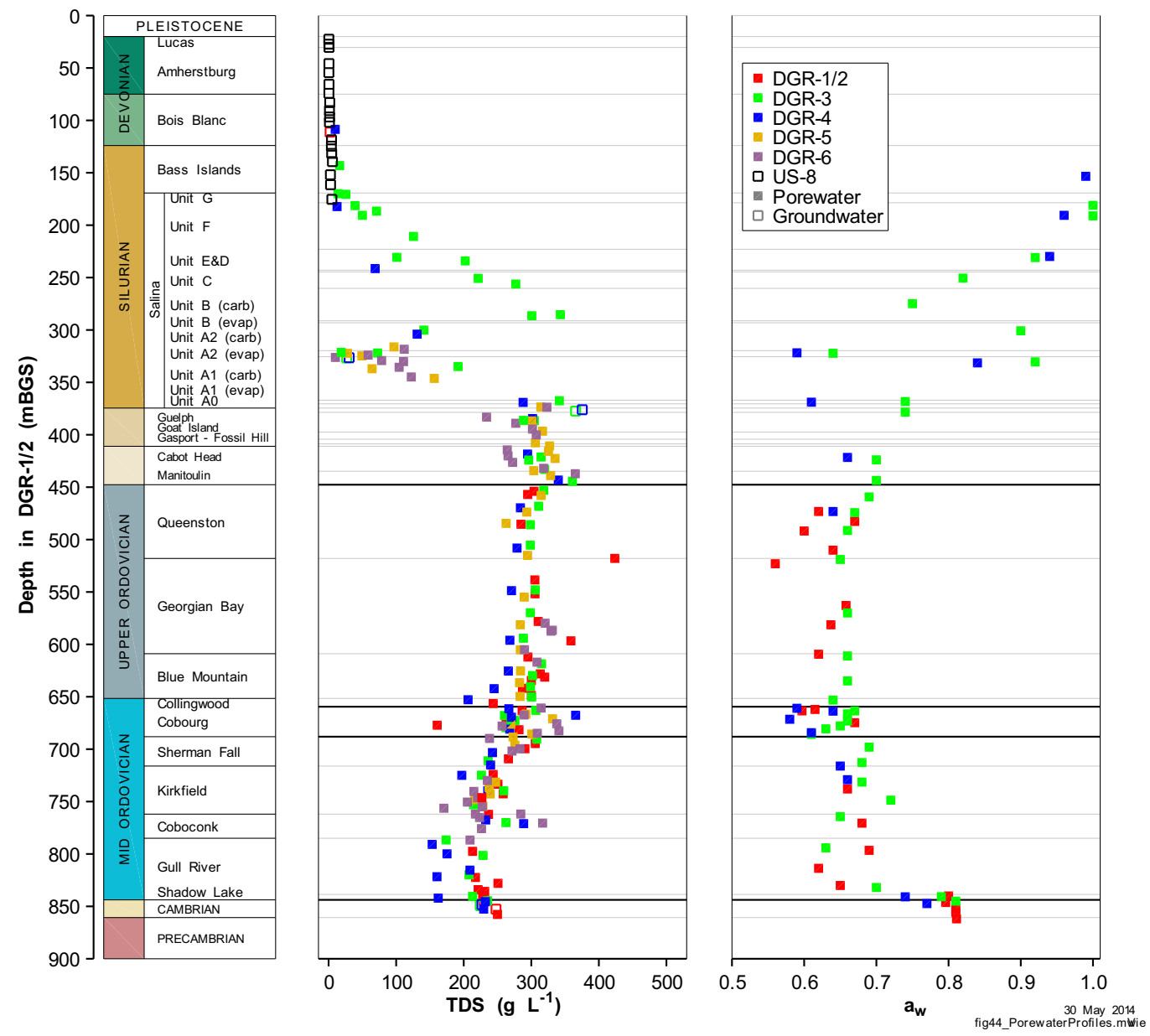
Prepared by: VMS/ECK

Reviewed by: KGR

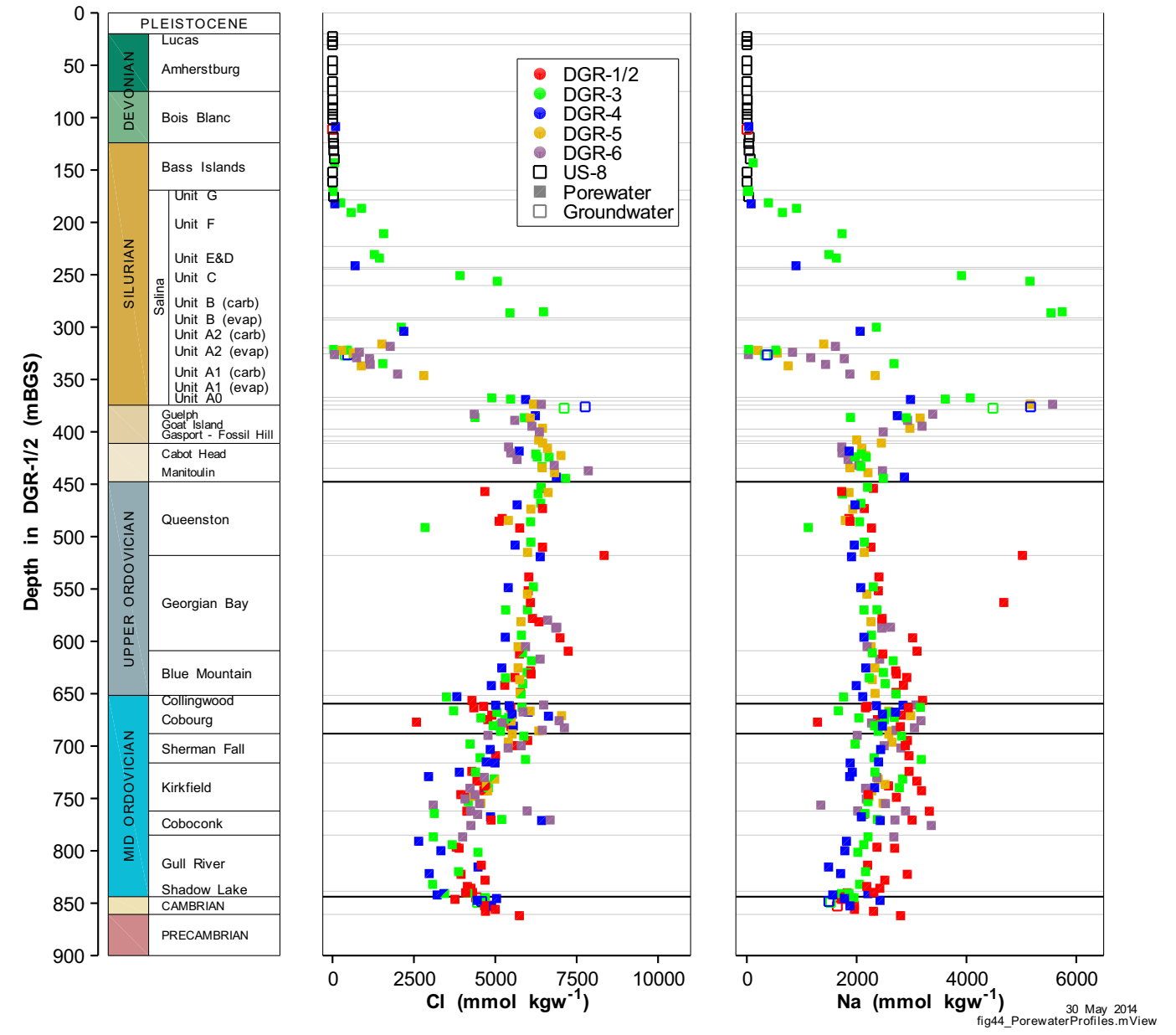
Date: 20/01/2015

Note: Stratigraphic nomenclature shown on figures predates Armstrong and Carter (2010), see Table 3.1 for current nomenclature





a. Total Dissolved Solids and Water Activity
(after Intera Engineering Ltd., 2011)



b. Chloride and Sodium
(after Intera Engineering Ltd., 2011)

FIGURE 4.4 - Profiles of Major Ion Chemistry of Porewater and Groundwater at the Bruce Nuclear Site

NWMO Phase 1 Geoscientific Desktop Preliminary Assessment Study - Central Huron

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

Note: Stratigraphic nomenclature shown on figures predates Armstrong and Carter (2010), see Table 3.1 for current nomenclature



"P:\Projects\2010\10-214 NWMO APM Site Screening\10-214-11 Central Huron\50 Reporting and Deliverables\Figures\Working Files\10-214-11-110_CentralHuron_Fig4_4_ProfilesMajorIonChem.cdr"