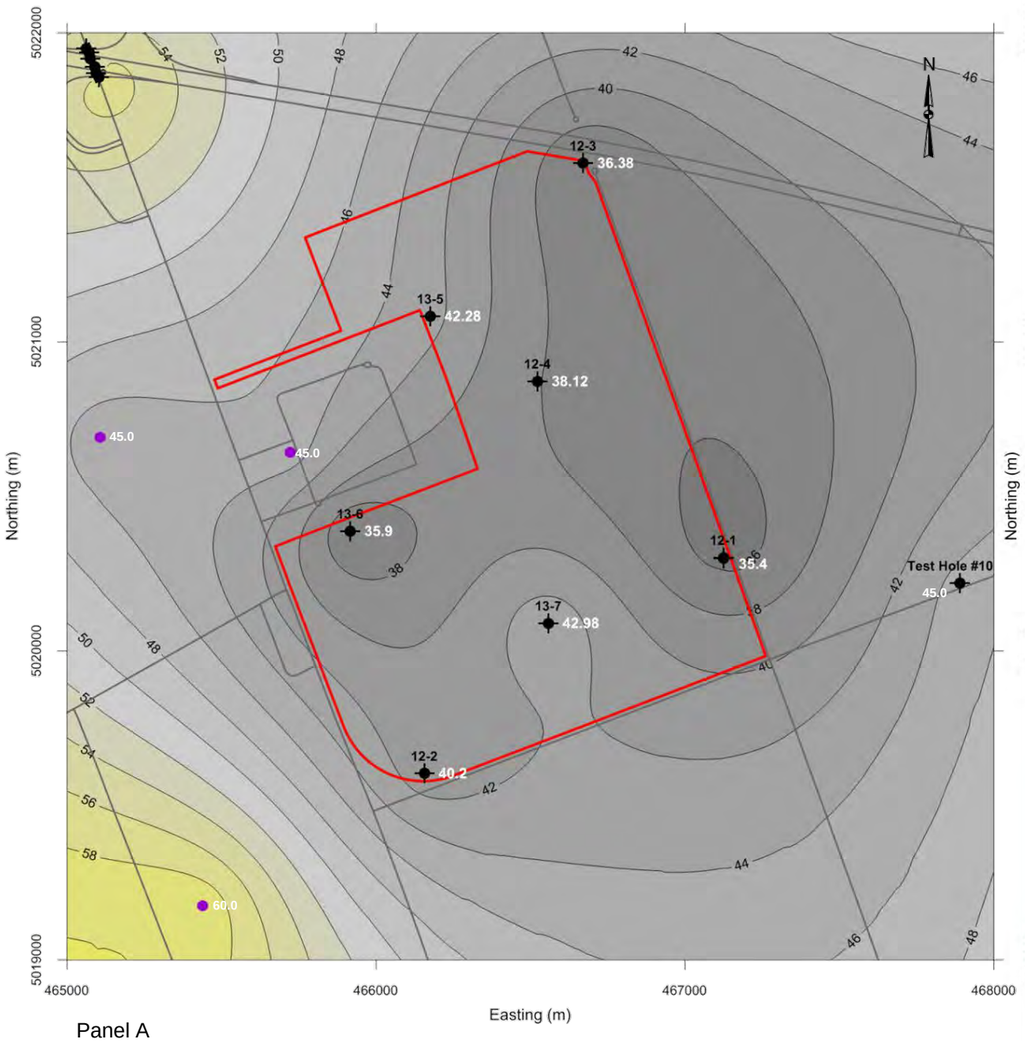
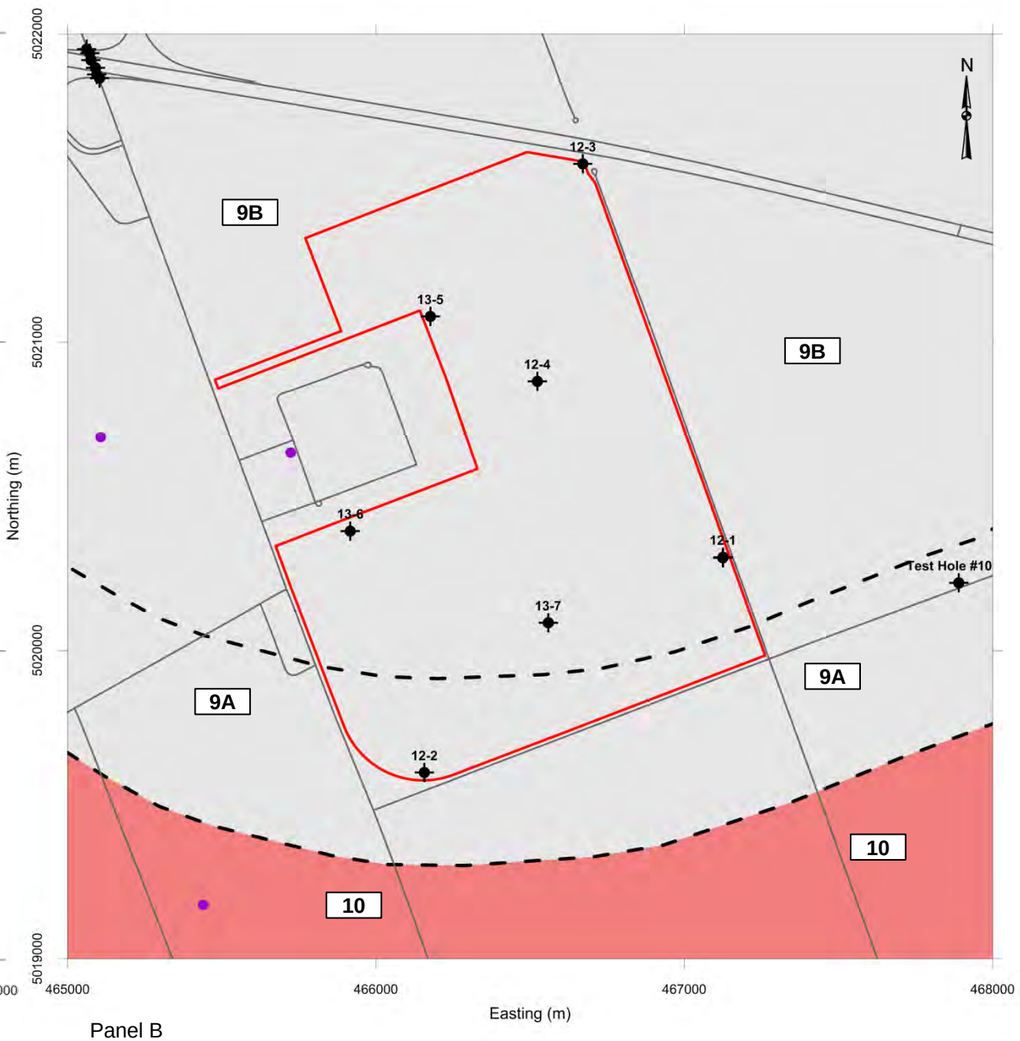
Bedrock Elevation (mASL)



Panel A

Site Bedrock Geology



Panel B

LEGEND

- BOREHOLE LOCATION (LABEL: BOREHOLE ID ELEVATION [mASL])
- WATER WELL LOCATION
- STRATIGRAPHIC CONTACT
- ROADS
- PROPERTY BOUNDARY

BEDROCK GEOLOGY

- 10 QUEENSTON FORMATION RED SHALE AND MUDSTONE
- 9A CARLSBAD FORMATION DARK GREY SHALE, LIMESTONE CAPROCK
- 9B CARLSBAD FORMATION DARK GREY SHALE, MINOR LIMESTONE

BEDROCK ELEVATION (mASL)

70, 68, 66, 64, 62, 60, 58, 56, 54, 52, 50, 48, 46, 44, 42, 40, 38, 36, 34, 32, 30

500 0 500
METRES
SCALE 1:20,000 (APPROX.)

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT
TEST HOLE LOCATIONS FROM WESA (1986) AND WESA (1987)

REFERENCE

PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: UTM ZONE 18
BASE MAPPING FROM ONTARIO MINISTRY OF NATURAL RESOURCES (2010).

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

TITLE

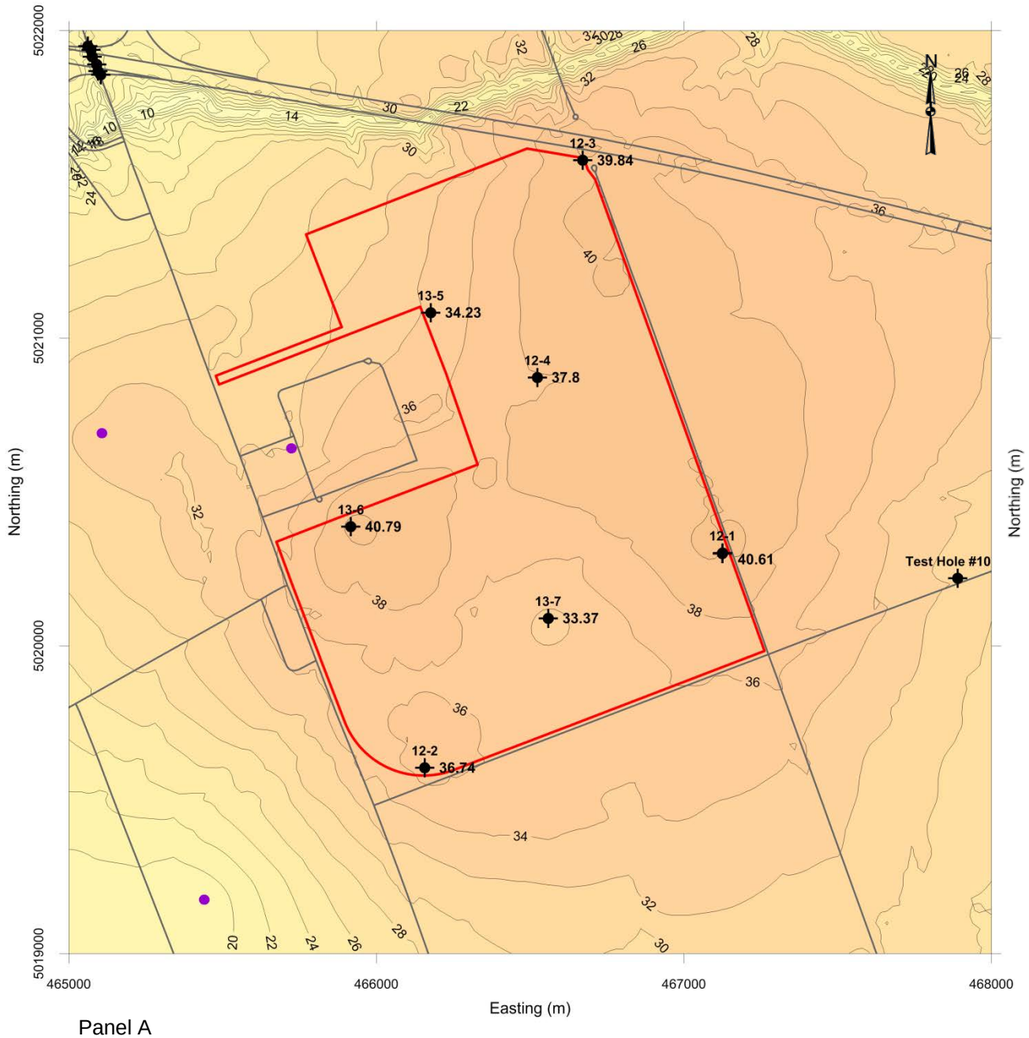
SITE BEDROCK SURFACE ELEVATION AND BEDROCK GEOLOGY MAPS

Golder Associates
Ottawa, Ontario

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV.0
DESIGN	NB	15 NOV. 2013	FIGURE 3-12	
GIS	NB	15 NOV. 2013		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

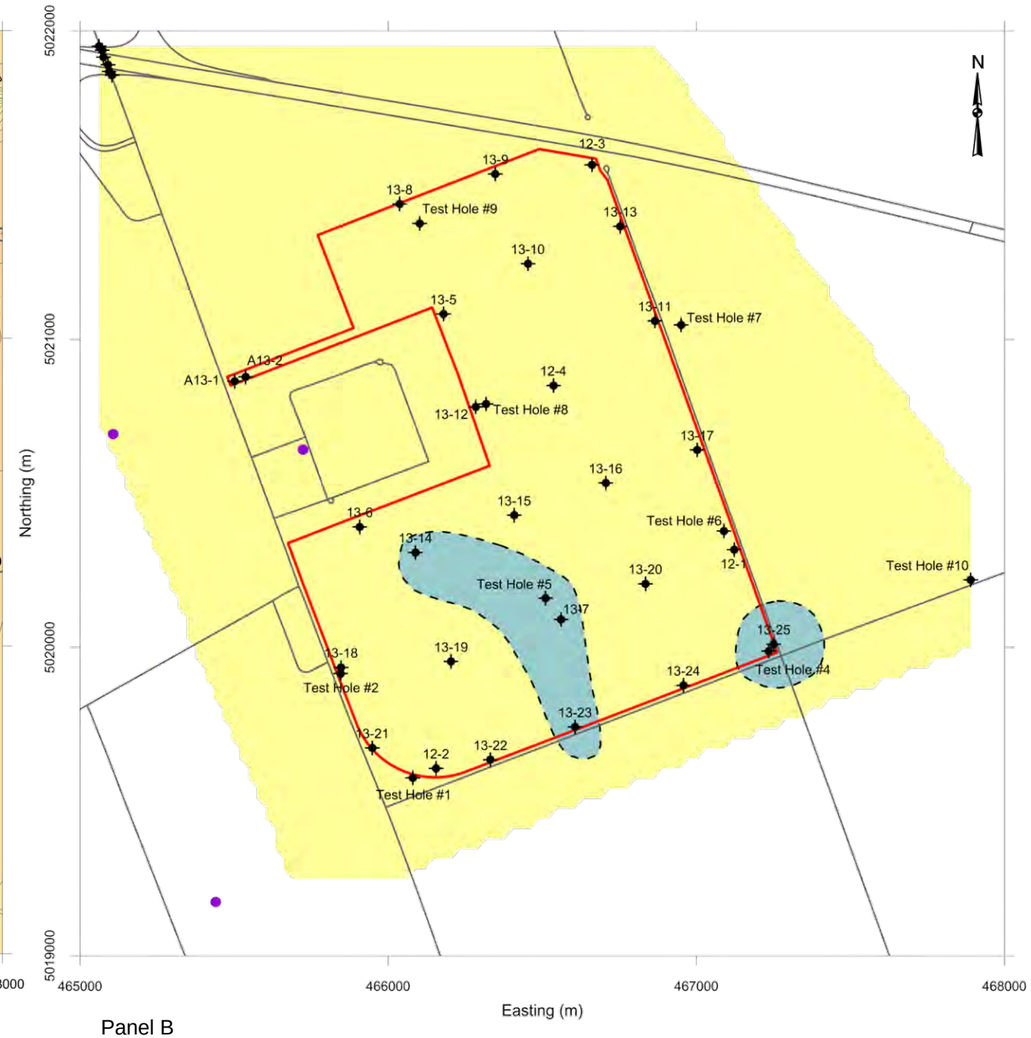
N:\Active\2012\1125 - Environmental and Civil Engineering\12-1125-0045 CRRRC EA Eastern ON\Phase 4000_EA_Documentation\Vol 3 - G H&G\Geology Figures\ppt

Overburden Thickness (m)



Panel A

Site Surficial Geology



Panel B

LEGEND

- BOREHOLE LOCATION (LABEL: BOREHOLE ID AND FORMATION THICKNESS [m])
- WATER WELL LOCATION
- STRATIGRAPHIC CONTACT
- ROADS
- PROPERTY BOUNDARY

SURFICIAL GEOLOGY

- SILTY SAND
- SILTY CLAY

OVERBURDEN THICKNESS (m)

75, 70, 65, 60, 55, 50, 45, 40, 35, 30, 25, 20, 15, 10, 5, 0

500 0 500
METRES
SCALE 1:20,000 (APPROX.)

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT
TEST HOLE LOCATIONS FROM WESA (1986) AND WESA (1987)

REFERENCE

PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: UTM ZONE 18
BASE MAPPING FROM ONTARIO MINISTRY OF NATURAL RESOURCES (2010).

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

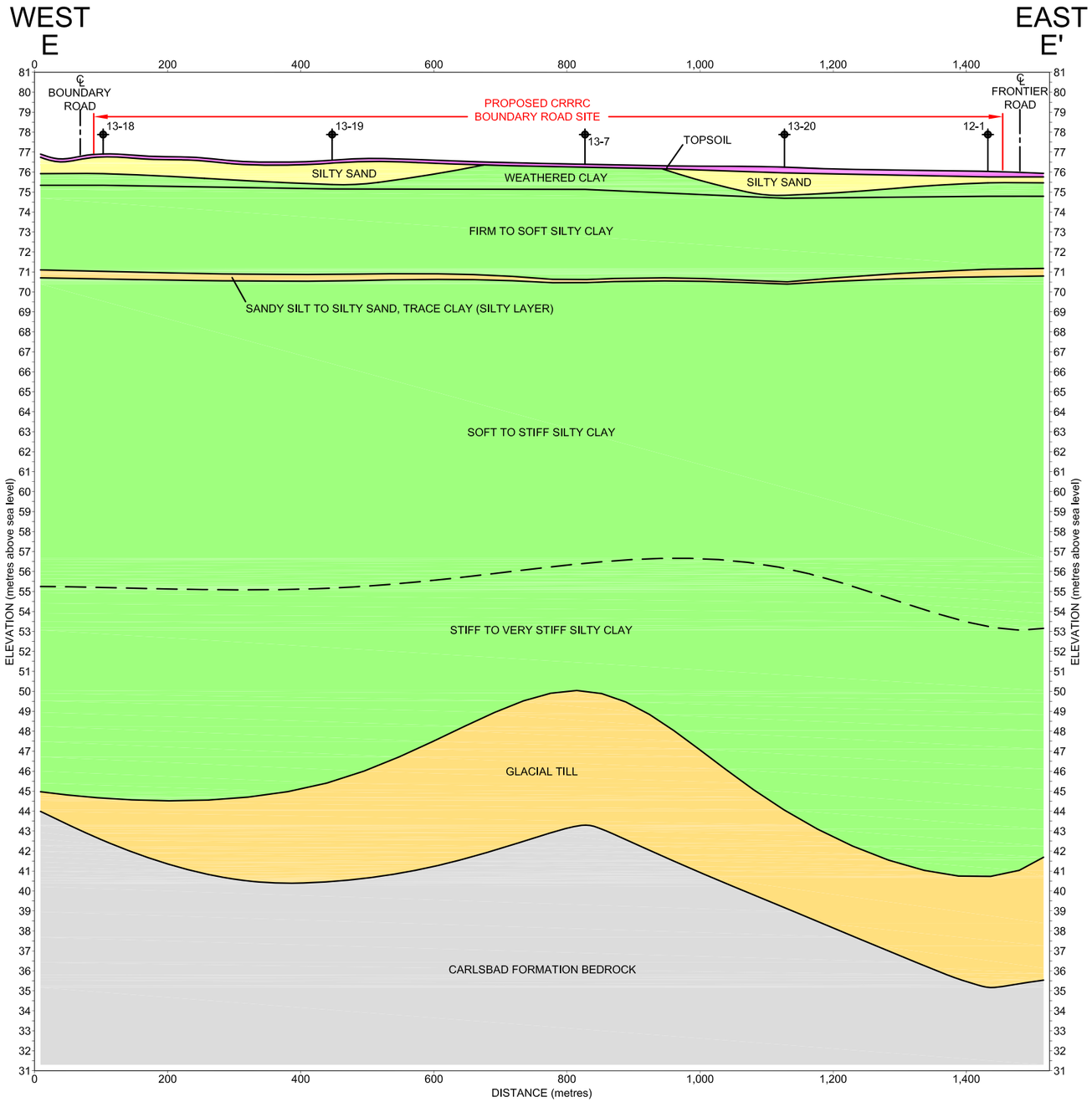
TITLE

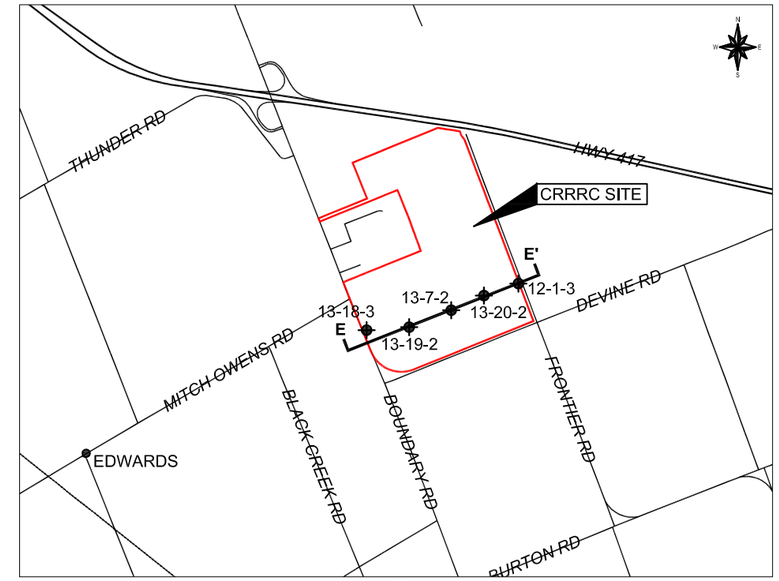
SITE OVERBURDEN THICKNESS AND SURFICIAL GEOLOGY MAPS

Golder Associates
Ottawa, Ontario

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV.0
DESIGN	NB	15 NOV. 2013	FIGURE 3-13	
GIS	NB	15 NOV. 2013		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

N:\Active\2012\1125 - Environmental and Civil Engineering\12-1125-0045 CRRRC EA Eastern ON\Phase 4000_EA_Documentation\Vol 3 - G H&G\Geology\Figures\ppt





KEY MAP
1:50,000

HORIZONTAL
120 0 120 240
SCALE 1:7500 METRES

VERTICAL
40 0 40 80
SCALE 1:2500 METRES

NOTE:
VERTICAL SCALE EXAGGERATED 100 TIMES THE HORIZONTAL SCALE FOR PRESENTATION PURPOSES

LEGEND

- BOREHOLE LOCATION

NOTES

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT

REV	DATE	DES	REVISION DESCRIPTION	CAD	CHK	RVW

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

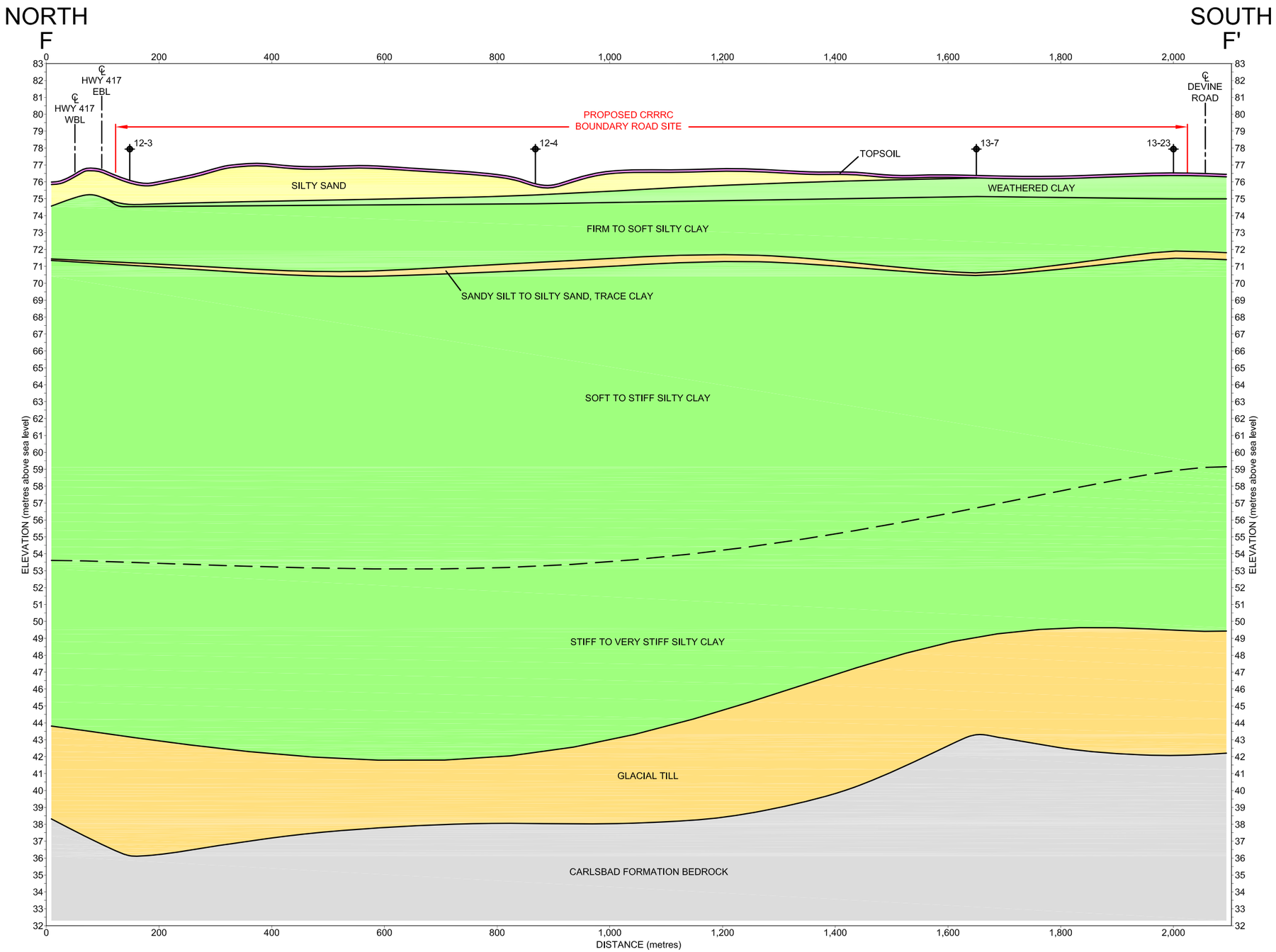
TITLE

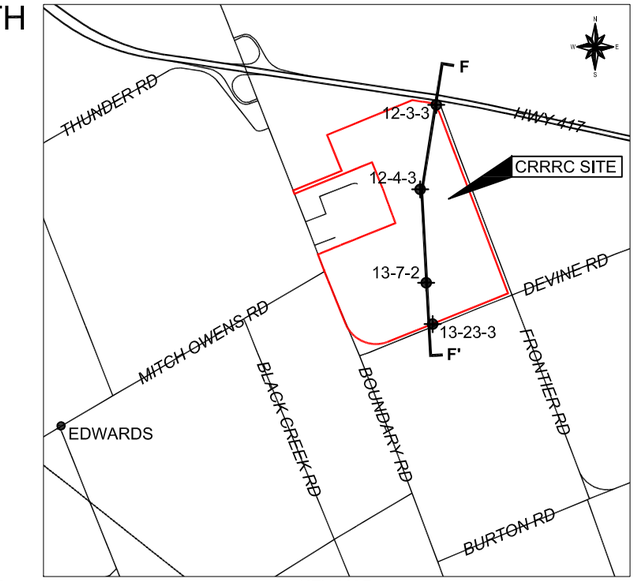
SITE CROSS-SECTION E-E'

Golder Associates
Ottawa, Ontario, Canada

PROJECT No.		12-1125-0045	FILE No. 1211250045-4000-3-14.dwg
DESIGN	SAT	Oct. 2013	SCALE AS SHOWN REV.
CAD	JM	Nov. 2013	
CHECK	PLE	Aug. 2014	**FIGURE 3-14**
REVIEW	PAS	Aug. 2014	

PLOT DATE: June 26, 2014
FILENAME: N:\Active\Spatial_IM\Miller_Paving_Ltd\CRRRC\ACAD\Phase 4000\1211250045-4000-3-14.dwg





KEY MAP
1:50,000

HORIZONTAL
120 0 120 240
SCALE 1:7500 METRES

VERTICAL
40 0 40 80
SCALE 1:2500 METRES

NOTE:
VERTICAL SCALE EXAGGERATED 100 TIMES THE HORIZONTAL SCALE FOR PRESENTATION PURPOSES

LEGEND

◆ BOREHOLE LOCATION

NOTES

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT

REV	DATE	DES	REVISION DESCRIPTION	CAD	CHK	RVW

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

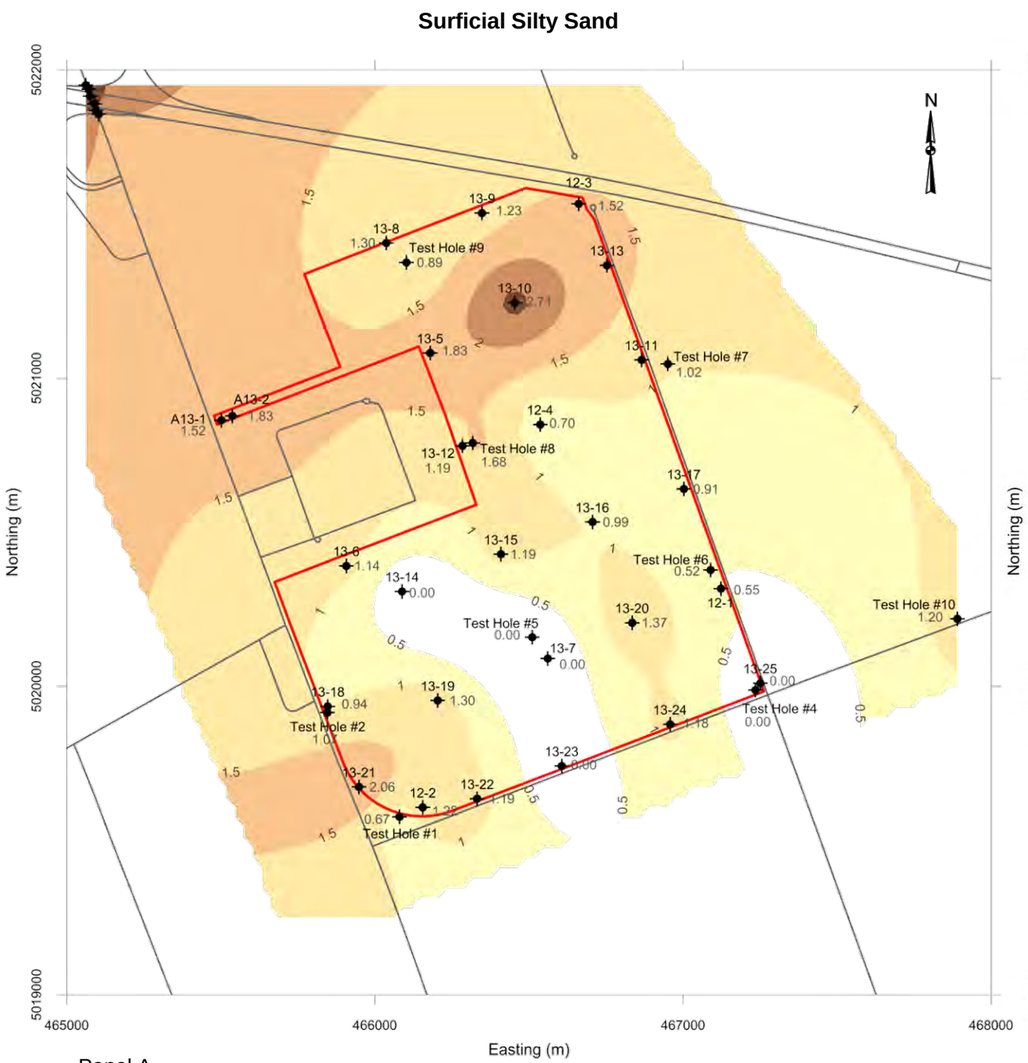
TITLE

SITE CROSS-SECTION F-F'

Golder Associates
Ottawa, Ontario, Canada

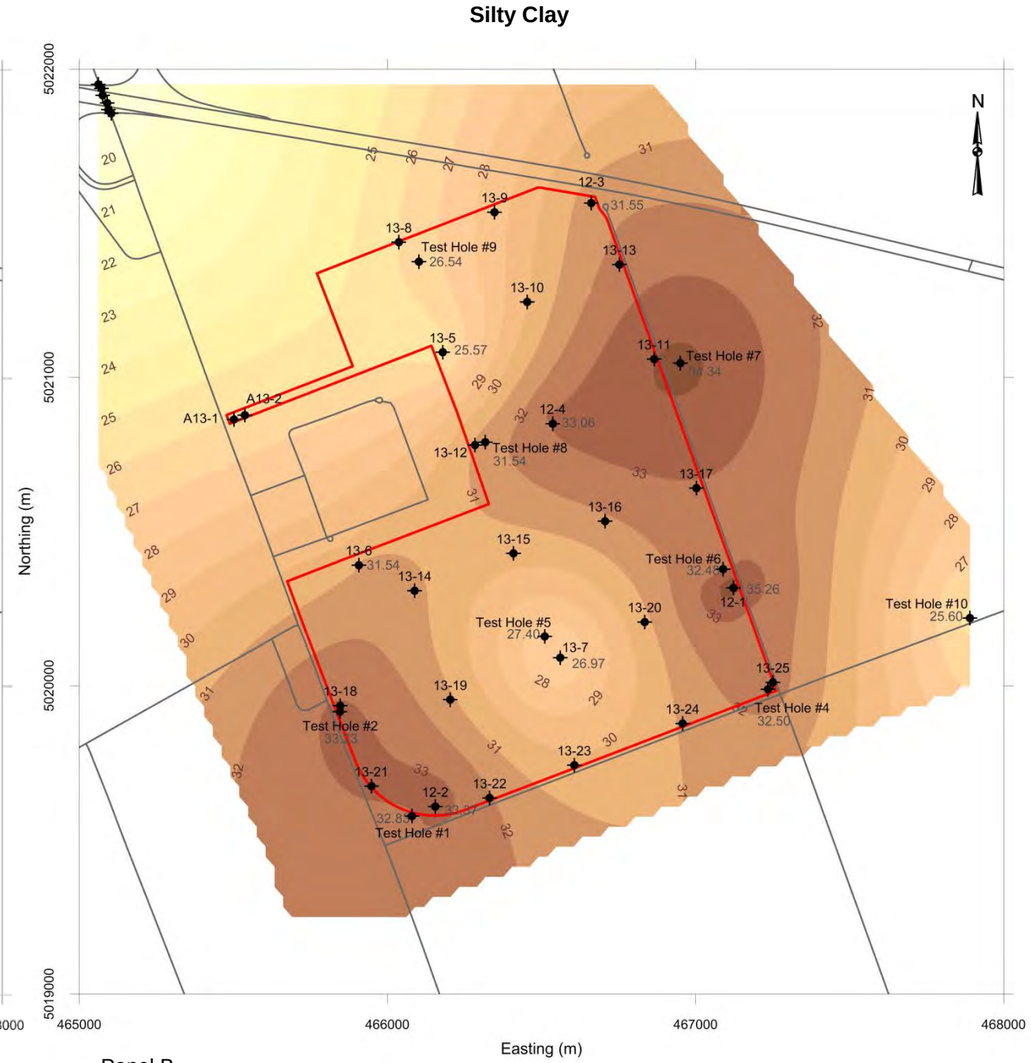
PROJECT No.	12-1125-0045		FILE No. 1211250045-4000-3-15.dwg
DESIGN	SAT	Oct. 2013	SCALE AS SHOWN REV.
CAD	JM	Nov. 2013	
CHECK	PLE	Aug. 2014	**FIGURE 3-15**
REVIEW	PAS	Aug. 2014	

PLOT DATE: June 26, 2014
FILENAME: N:\Active\Spatial_IM\Miller_Paving_Ltd\CRRRC\ACAD\Phase 4000\1211250045-4000-3-15.dwg



Panel A

Silty Sand Thickness (m)



Panel B

Silty Clay Thickness (m)

LEGEND

- BOREHOLE LOCATION (LABEL: BOREHOLE ID AND FORMATION THICKNESS [m])
- ROADS
- PROPERTY BOUNDARY

500 0 500
METRES
SCALE 1:20,000 (APPROX.)

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT
TEST HOLE LOCATIONS FROM WESA (1986) AND WESA (1987)

REFERENCE

PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: UTM ZONE 18
BASE MAPPING FROM ONTARIO MINISTRY OF NATURAL RESOURCES (2010).

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

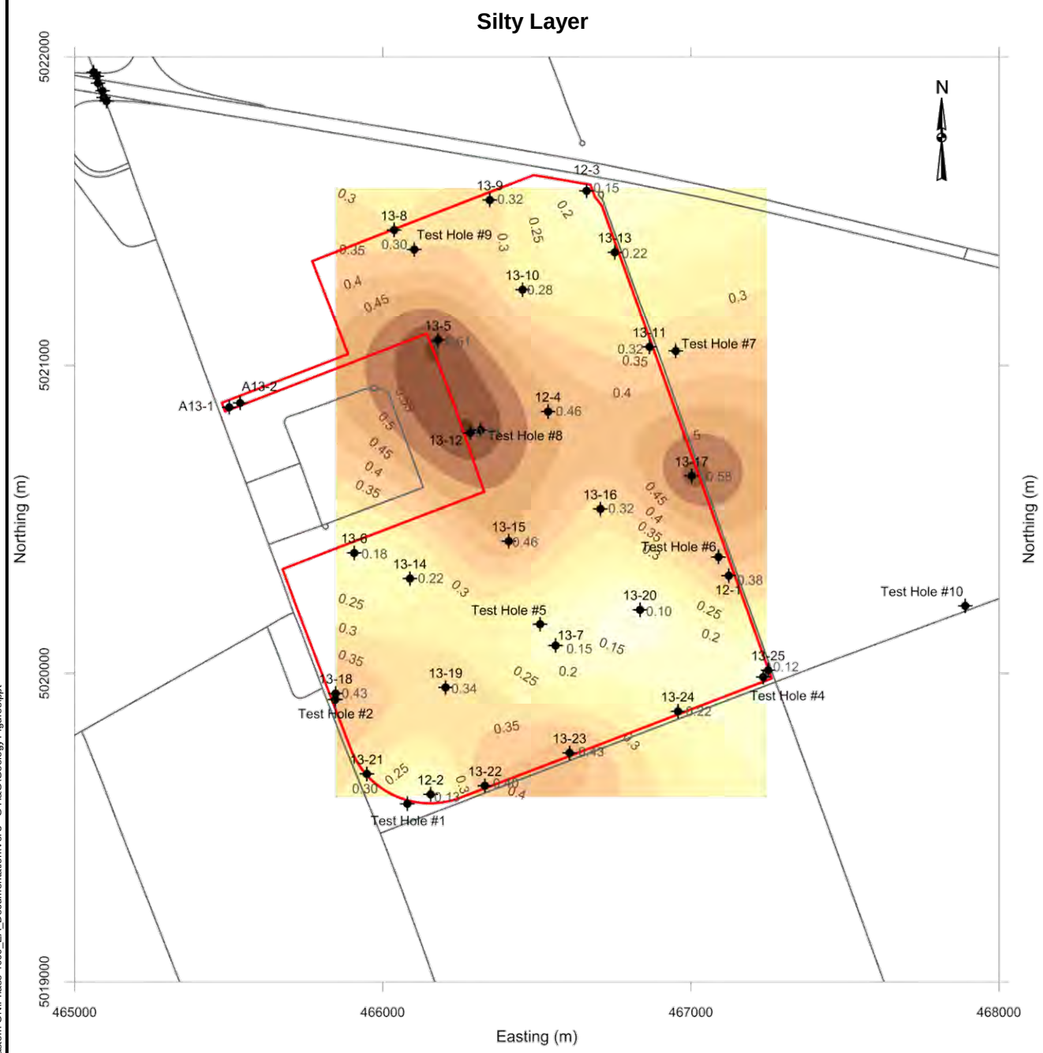
TITLE

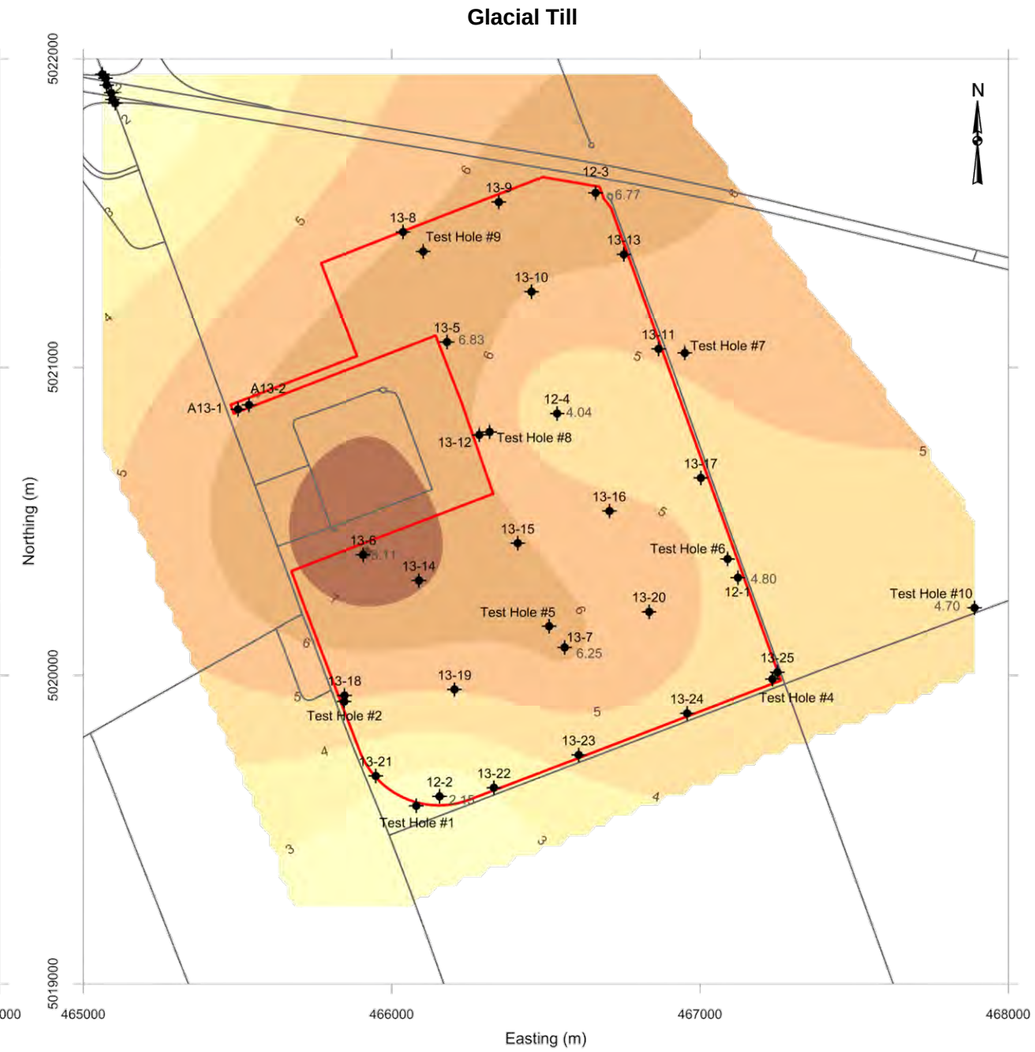
SITE SURFICIAL GEOLOGY ISOPACH MAPS (SURFICIAL SILTY SAND AND SILTY CLAY)

Golder Associates
Ottawa, Ontario

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV.0
DESIGN	NB	15 NOV. 2013	FIGURE 3-16	
GIS	NB	15 NOV. 2013		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

N:\Active\2012\1125 - Environmental and Civil Engineering\12-1125-0045 CRRRC EA Eastern ON\Phase 4000_EA_Documentation\Vol 3 - G H&G\Geology\Figures\ppt





LEGEND

- BOREHOLE LOCATION (LABEL: BOREHOLE ID AND FORMATION THICKNESS [m])
- ROADS
- PROPERTY BOUNDARY

500 0 500
METRES
SCALE 1:20,000 (APPROX.)

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT
TEST HOLE LOCATIONS FROM WESA (1986) AND WESA (1987)

REFERENCE

PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: UTM ZONE 18
BASE MAPPING FROM ONTARIO MINISTRY OF NATURAL RESOURCES (2010).

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

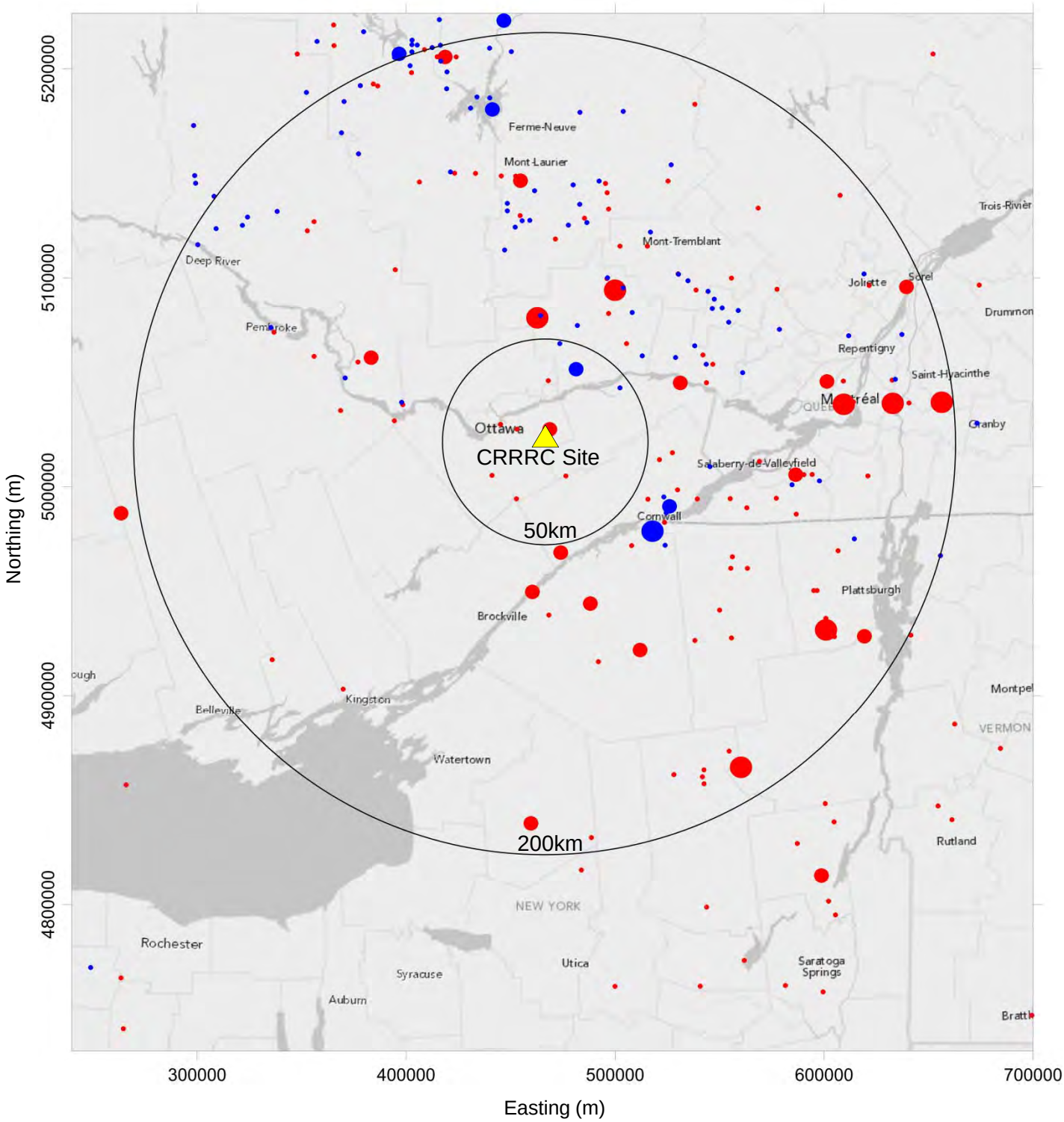
TITLE

SITE SURFICIAL GEOLOGY ISOPACH MAPS (SILTY LAYER AND GLACIAL TILL)

Golder Associates
Ottawa, Ontario

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV.0
DESIGN	NB	15 NOV. 2013	FIGURE 3-17	
GIS	NB	15 NOV. 2013		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

N:\Active\2012\1125 - Environmental and Civil Engineering\12-1125-0045 CRRRC EA Eastern ON\Phase 4000_EA_Documentation\Vol 3 - G H&G\Geology\Figures\ppt



LEGEND

MAGNITUDE

- 5 < Mw < 6
- 4 < Mw < 5
- 3 < Mw < 4

DEPTH

- < = 15 km
- > 15 km

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT

PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

PROJECT

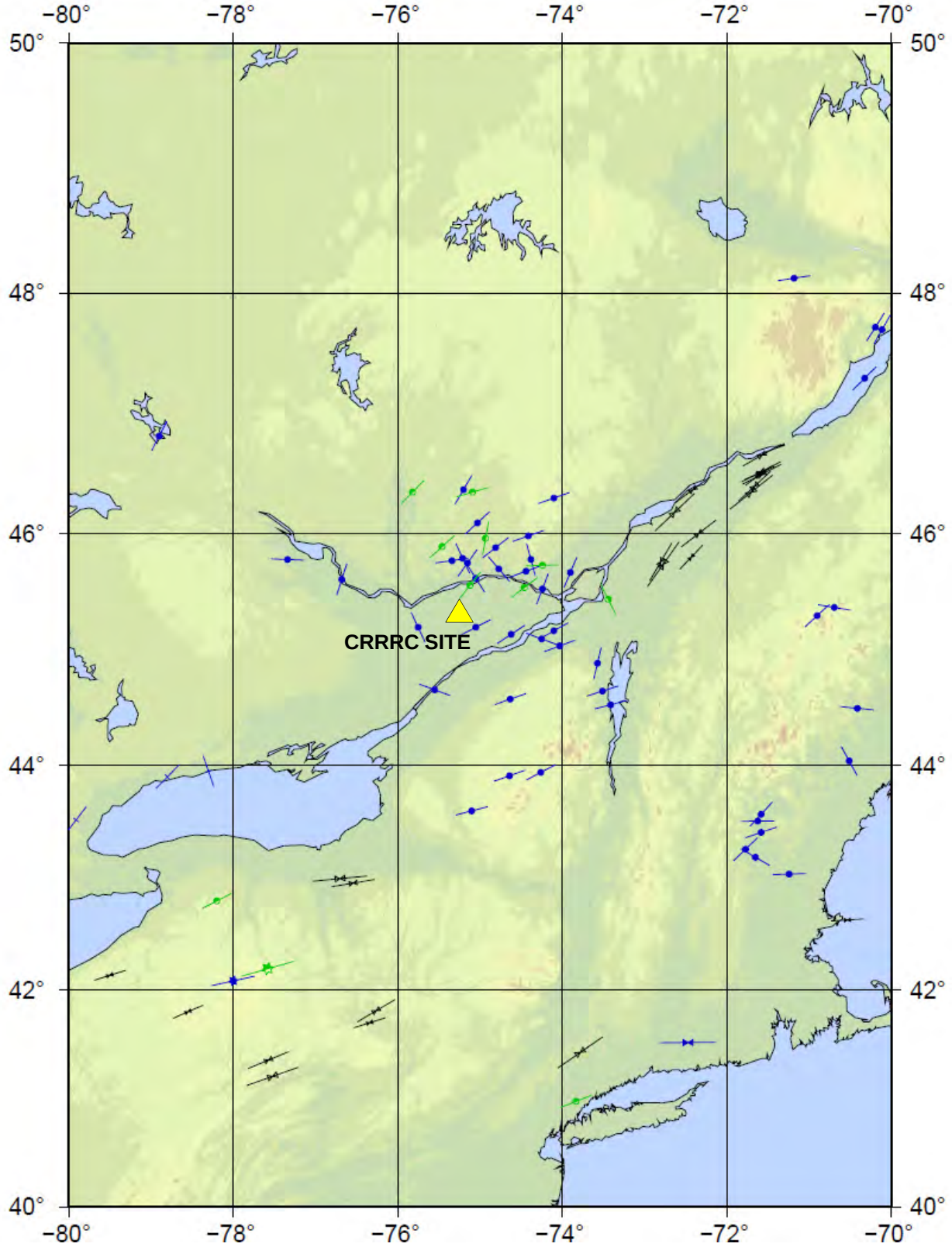
CAPITAL REGION RESOURCE RECOVERY CENTRE

TITLE

SEISMICITY NEAR THE CRRRC SITE

Golder Associates	PROJECT No. 12-1125-0045		PHASE No. 4500	
	DESIGN	CV	27 NOV. 2013	SCALE AS SHOWN	REV.0
	GIS	NB	27 NOV. 2013	FIGURE 4-1
	CHECK	PLE	AUG. 2014	
	REVIEW	PAS	AUG. 2014	

N:\Active\2012\1125 - Environmental and Civil Engineering\12-1125-0045 CRRRC EA Eastern ON\Phase 4000_EA_Documentation\Vol 3 - G H&G\Geology Figures\ppt



LEGEND

focal mechanism
breakouts
hydro. fractures

Regime:

SS TF U

Quality:

A
B
C

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT
SS = STRIKE-SLIP FAULT; TF = THRUST FAULT; U = UNKNOWN REGIME

REFERENCE

SOURCE: WORLD STRESS MAP REL. 2008
HELMHOLTZ CENTRE POTSDAM
GFZ GERMAN RESEARCH CENTRE FOR GEOSCIENCES

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

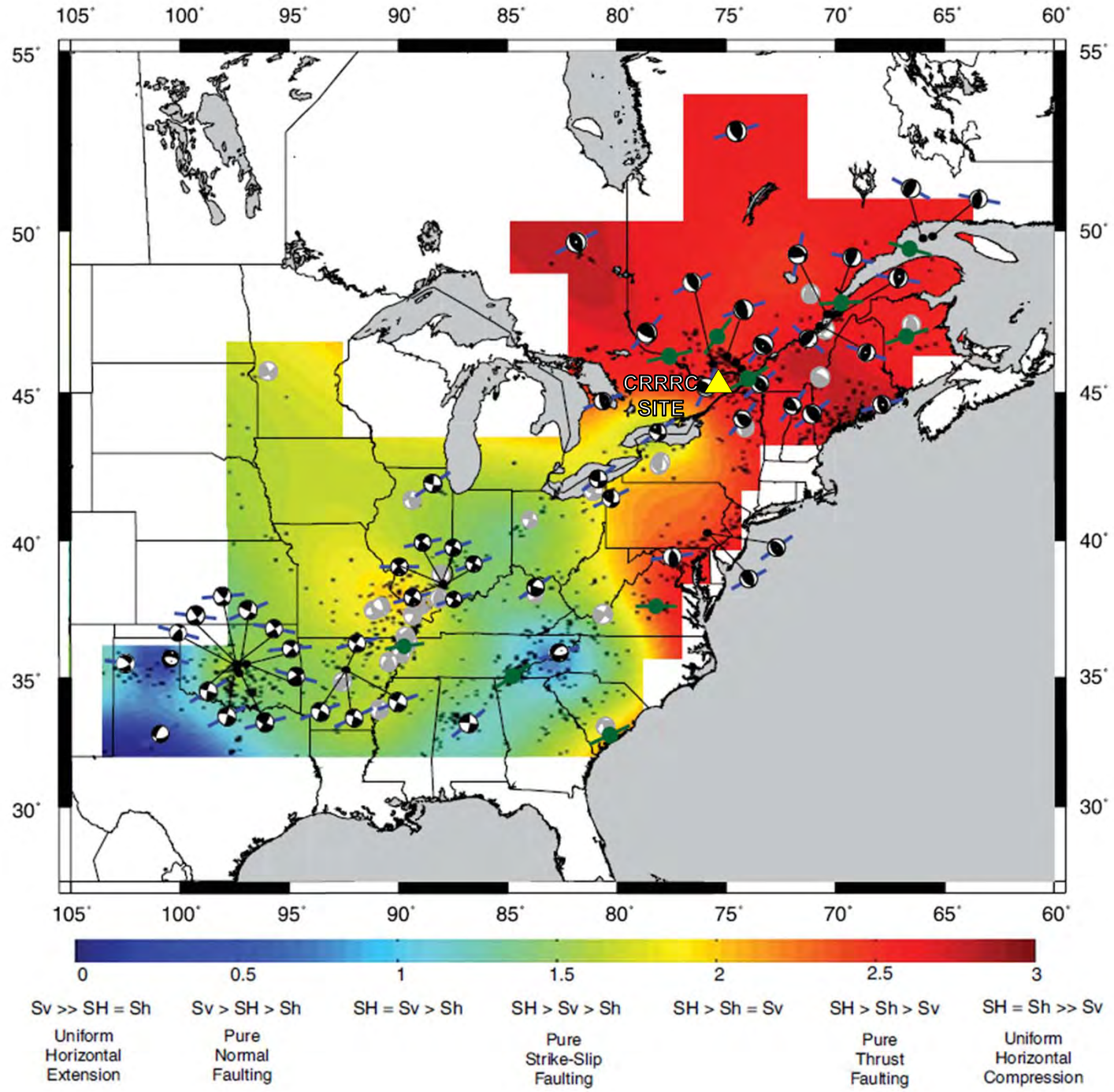
TITLE

ORIENTATION OF THE STRESS FIELD NEAR THE CRRRC SITE

Golder Associates

PROJECT No. 12-1125-0045			PHASE No. 4500	
DESIGN	CV	27 NOV. 2013	SCALE AS SHOWN	REV.0
GIS	NB	27 NOV. 2013	FIGURE 4-2	
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

N:\Active\2012\1125 - Environmental and Civil Engineering\12-1125-0045 CRRRC EA Eastern ON\Phase 4000_EA_Documentation\Vol 3 - G H&G\Geology Figures\ppt



LEGEND

- FOCAL MECHANISM SHOWING S_{HMAX} ORIENTATION (HURD AND ZOBACK STUDY)
- FOCAL MECHANISM SHOWING S_{HMAX} ORIENTATION (EARLIER STUDIES)
- STRESS INVERSIONS
- BACKGROUND SEISMICITY FROM USG/NEIC CATALOG (1973 – 2010)

STRIKE-SLIP
THRUST
NORMAL

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT

REFERENCE

SOURCE: HURD, O., AND ZOBACK, M.D. (2012). INTERPLATE EARTHQUAKES, REGIONAL STRESS AND FAULT MECHANICS IN THE CENTRAL AND EASTERN U.S. AND SOUTHEASTERN CANADA. TECTONOPHYSICS, 581, 182-192.

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

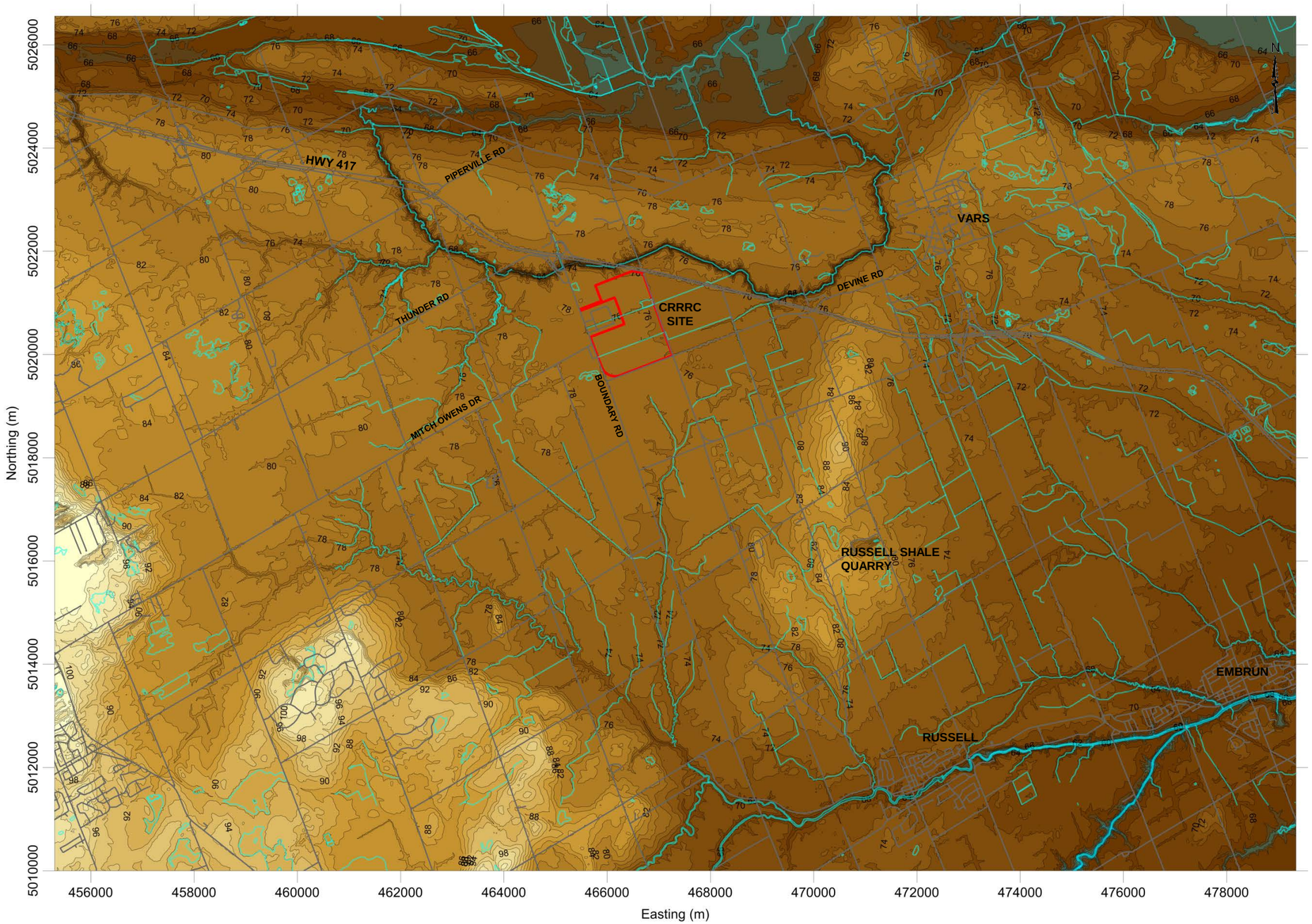
TITLE

REGIONAL STRESS MAP

Golder Associates

PROJECT No. 12-1125-0045			PHASE No. 4500	
DESIGN	CV	27 NOV. 2013	SCALE AS SHOWN	REV.0
GIS	NB	27 NOV. 2013	FIGURE 4-3	
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

N:\Active\2012\1125 - Environmental and Civil Engineering\12-1125-0045 CRRRC EA Eastern ON\Phase 4000_EA_Documentation\Vol 3 - G H&G\Geology Figures\ppt



LEGEND

- WATERBODIES
- ROADS
- PROPERTY BOUNDARY

TOPOGRAPHY COLOUR SCALE (mASL)

106, 104, 102, 100, 98, 96, 94, 92, 90, 88, 86, 84, 82, 80, 78, 76, 74, 72, 70, 68, 66, 64, 62, 60, 58, 56, 54

1000 0 1000

METRES

SCALE 1:85,000 (APPROX.)

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT
ELEVATION CONTOUR INTERVAL = 2m
CONTOUR DATUM IS mASL

REFERENCE

PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18.
BASE MAPPING FROM ONTARIO MINISTRY OF NATURAL RESOURCES (2010).

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

TITLE

TOPOGRAPHY

Golder Associates
Ottawa, Ontario

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV.0
DESIGN	NB	15 NOV. 2013	FIGURE 5-1
GIS	NB	15 NOV. 2013	
CHECK	PLE	AUG. 2014	
REVIEW	PAS	AUG. 2014	

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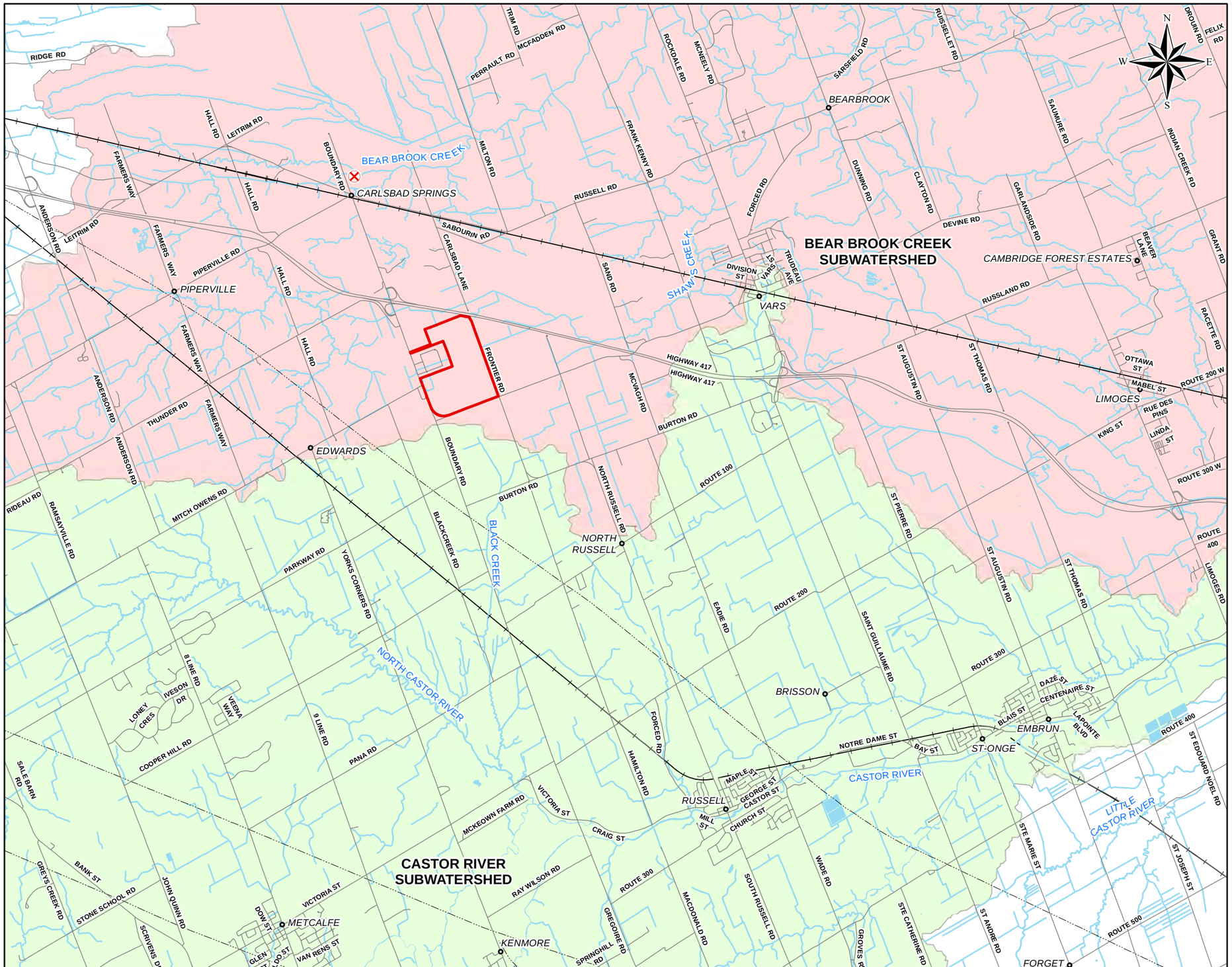


LEGEND

- CITY OF OTTAWA WEPP SAMPLING STATION
- POPULATED PLACE NAME
- ROAD
- RAILWAY
- UTILITY LINE
- SURFACE WATER FEATURE
- WATER AREA
- PROPERTY BOUNDARY
- BEAR BROOK CREEK SUBWATERSHED
- CASTOR RIVER SUBWATERSHED

1,600 800 0 1,600

SCALE 1:80,000 METRES

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT.

REFERENCE

LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, ©QUEENS PRINTER 2012.
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

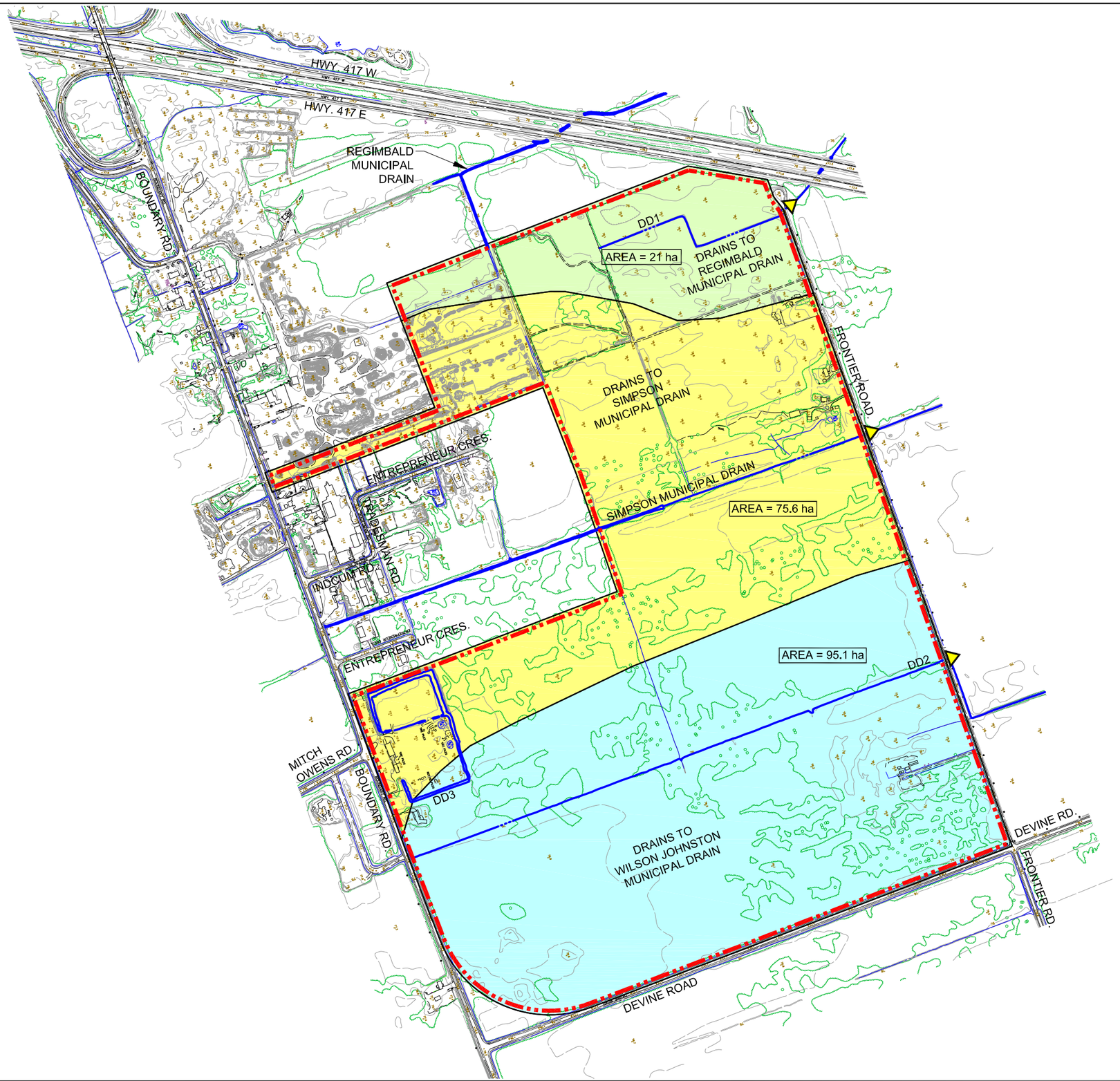
TITLE

SURFACE WATER SUBWATERSHEDS

Golder Associates

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV. 0.0
DESIGN	JPAO	DEC. 2013	FIGURE 5-2	
GIS	BR	DEC. 2013		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

N:\Active\Spatial_IM\Miller_Paving_Ltd\CRRRC\GIS\MXDs\12-1125-0045\Reporting\Phase4000\Vol.3\1211250045-V3-4000-0120-5-2-SurfWaterSubwatersheds.mxd



N
W E
S

LEGEND:

- PROPERTY BOUNDARY
- SURFACE WATER FEATURE
- OUTLET

NOTE

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT.

REFERENCES:

1. BASE DRAWING PROVIDED IN A DIGITAL FORMAT BY BASE MAPPING CO. LTD., CONTRACT No. 2517-12, PHOTO DATE: NOVEMBER 7, 2012, DATE RECEIVED: JANUARY 9, 2013.
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

200 0 200 400
SCALE 1:10,000 METRES

REV	DATE	DES	REVISION DESCRIPTION	CAD	CHK	RVW

PROJECT

ENVIRONMENTAL ASSESSMENT OF THE CAPITAL REGION RESOURCE RECOVERY CENTRE

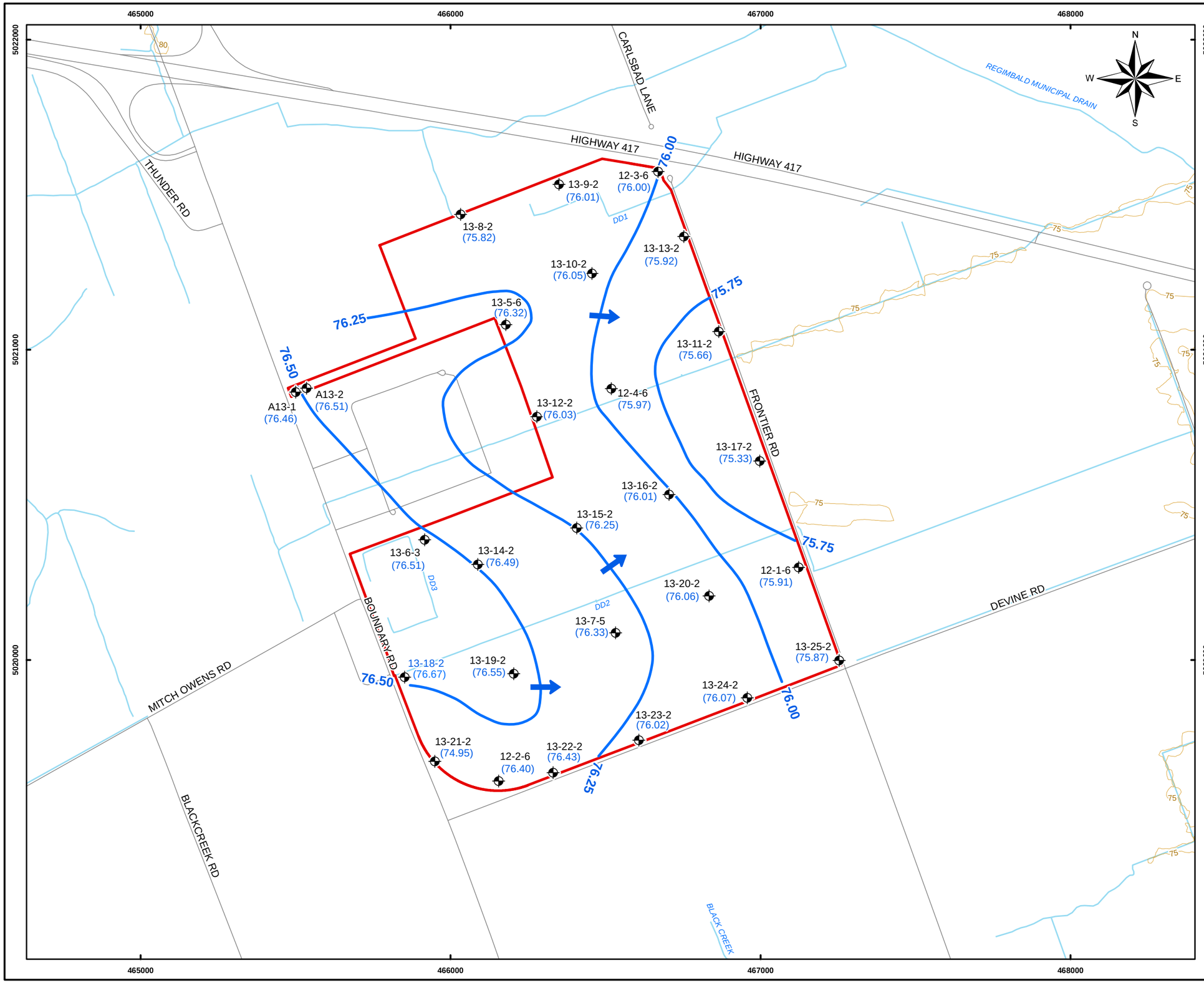
TITLE

EXISTING SITE DRAINAGE

Golder Associates
Ottawa, Ontario, Canada

PROJECT No.		12-1125-0045	FILE No.1211250045-V3-5-3.dwg	
DESIGN	D.H.	22 Jan. 2013	SCALE AS SHOWN	REV. 0
CAD	M.L.F.	23 Jan. 2013	FIGURE 5-3	
CHECK	P.L.E.	Aug. 2014		
REVIEW	P.A.S.	Aug. 2014		

PLOT DATE: June 26, 2014
FILENAME: N:\Active\Spatial_IM\Miller_Paving_Ltd\CRRRC\ACAD\Vol 3 (Report Figures)\1211250045-V3-5-3.dwg



LEGEND

- (75.61) GROUNDWATER ELEVATION ON OCTOBER 16, 2013 (METRES ABOVE SEA LEVEL)
- GROUNDWATER ELEVATION CONTOUR (METRES ABOVE SEA LEVEL)
- INTERPRETED GROUNDWATER FLOW DIRECTION
- MONITORING WELL LOCATION
- ROAD
- CONTOUR LINE, (5m)
- SURFACE WATER FEATURE
- WATER AREA
- PROPERTY BOUNDARY

200 100 0 200

SCALE 1:12,000 METRES

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT.

REFERENCE

LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2012.
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

TITLE

SURFICIAL SILTY SAND GROUNDWATER FLOW

Golder Associates

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV. 0
DESIGN	DH	DEC. 2013	FIGURE 7-1	
GIS	BR/PM	DEC. 2013		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

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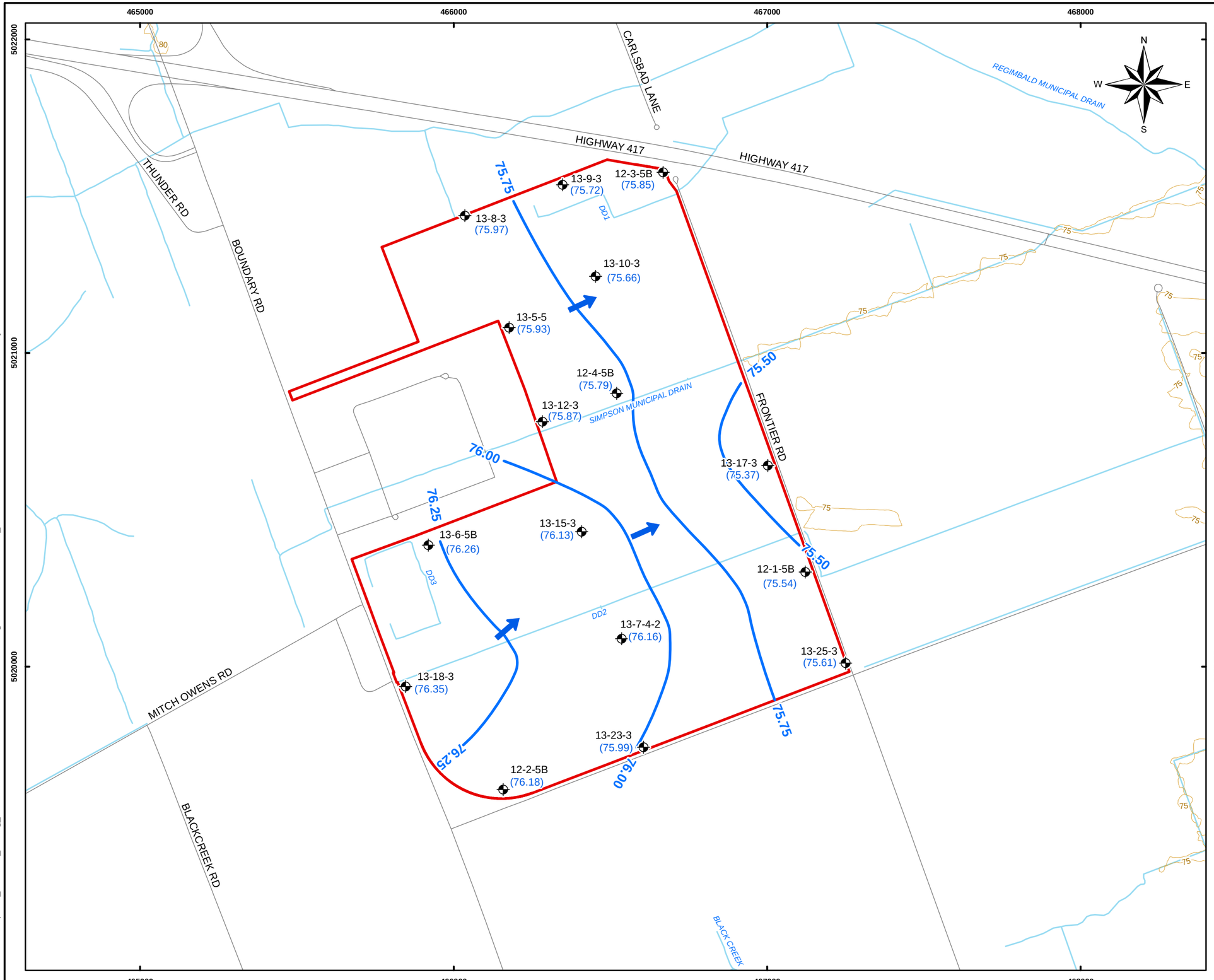

LEGEND

- (75.61) GROUNDWATER ELEVATION ON OCTOBER 16, 2013 (METRES ABOVE SEA LEVEL)
- GROUNDWATER ELEVATION CONTOUR (METRES ABOVE SEA LEVEL)
- INTERPRETED GROUNWATER FLOW DIRECTION
- MONITORING WELL LOCATION
- CONTOUR LINE, (5m)
- SURFACE WATER FEATURE
- WATER AREA
- PROPERTY BOUNDARY

200 100 0 200

SCALE 1:12,000 METRES

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT.

REFERENCE

LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2012.
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

TITLE

SILTY LAYER GROUNDWATER FLOW

Golder Associates

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV. 0
DESIGN	DH	NOV. 2013	FIGURE 7-2	
GIS	BR/PM	DEC. 2014		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

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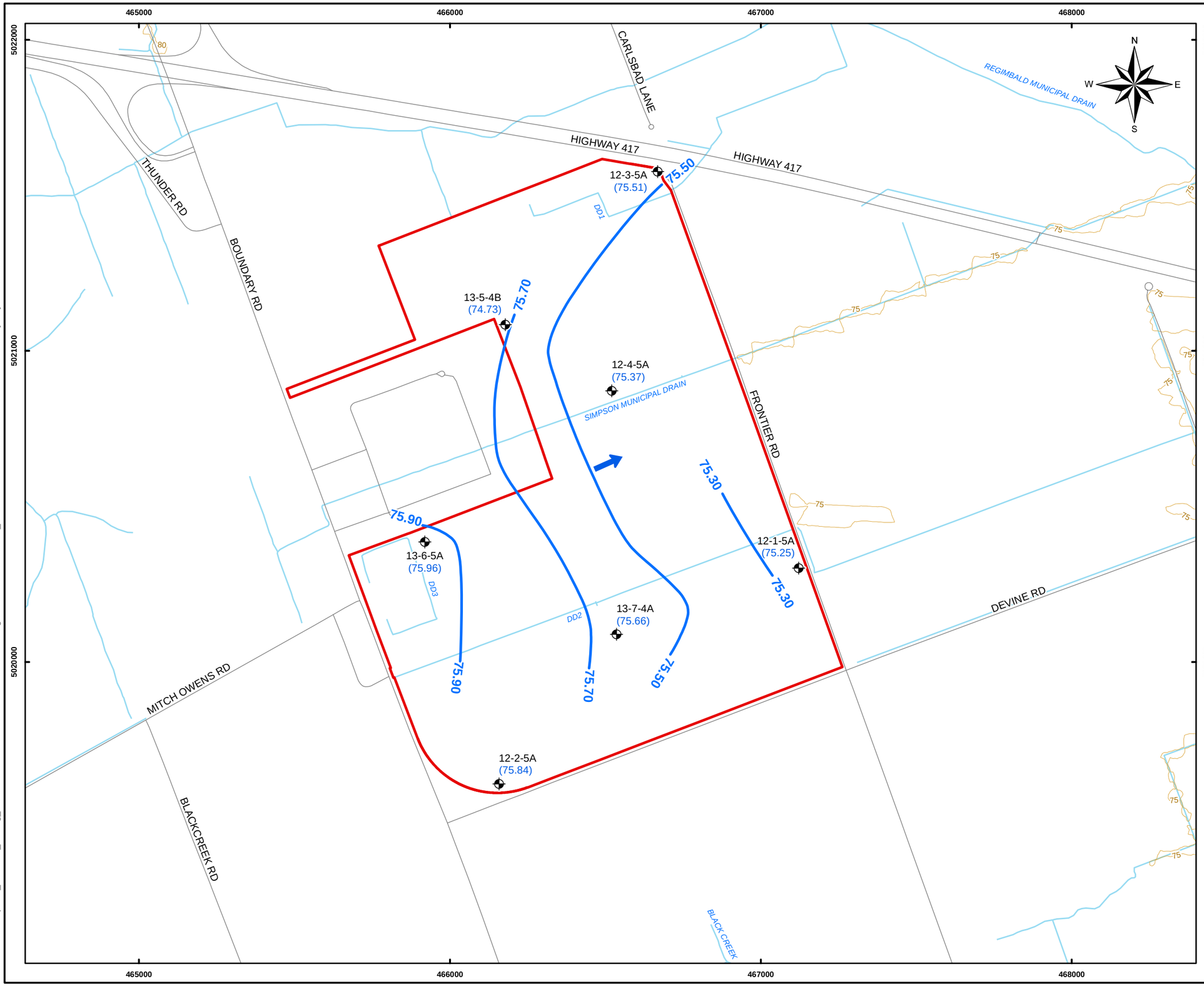

LEGEND

- (75.61) GROUNDWATER ELEVATION ON OCTOBER 16, 2013 (METRES ABOVE SEA LEVEL)
- GROUNDWATER ELEVATION CONTOUR (METRES ABOVE SEA LEVEL)
- INTERPRETED GROUNDWATER FLOW DIRECTION
- MONITORING WELL LOCATION
- CONTOUR LINE, (5m)
- SURFACE WATER FEATURE
- WATER AREA
- PROPERTY BOUNDARY

200 100 0 200

SCALE 1:12,000 METRES

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT.

REFERENCE

LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2012.
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

PROJECT

CAPITAL REGION RESOURCE RECOVERY CENTRE

TITLE

MIDDLE SILTY CLAY GROUNDWATER FLOW

Golder Associates

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV. 0
DESIGN	DH	NOV. 2013	FIGURE 7-3	
GIS	BR/PM	DEC. 2013		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

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