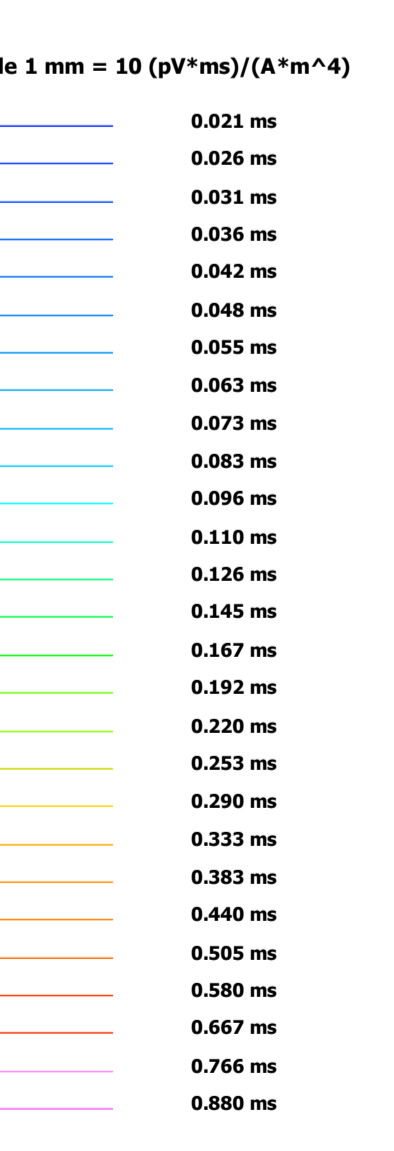
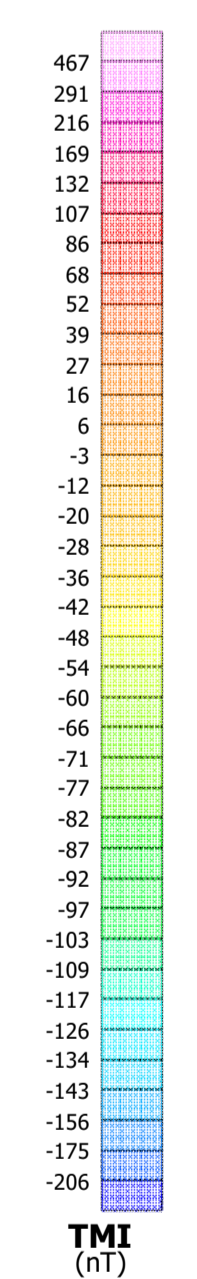
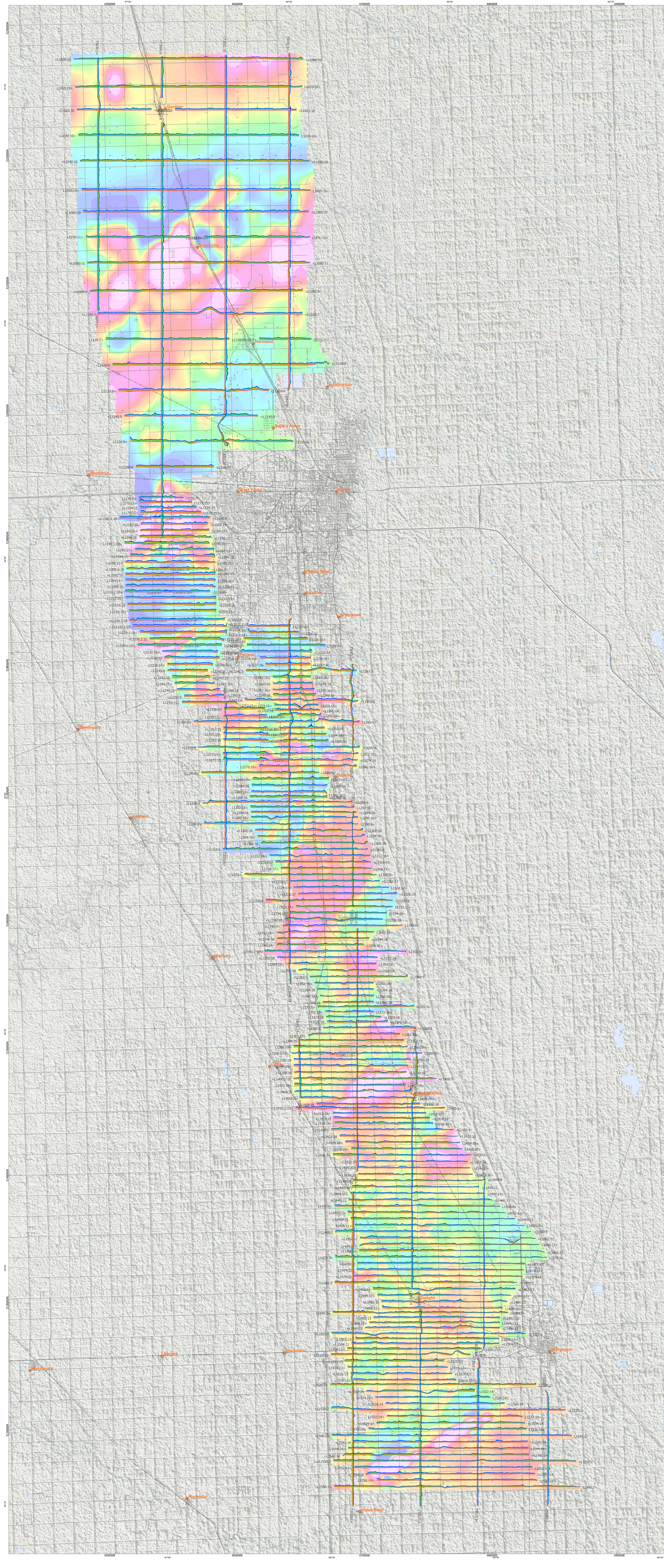




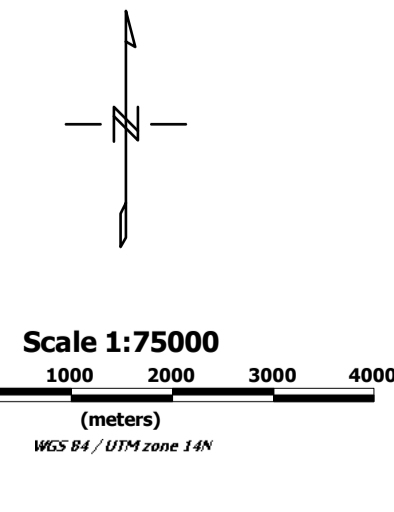
SURVEY SPECIFICATIONS:
 Survey Date: November 6 - 19, 2017
 Survey Area: Fargo, North Dakota
 Aircraft: AS500 B3 C-GEBC
 Survey Line Spacing: 2000 meters, 500 meters (HRT)
 Survey Line Direction: N 92° E / N 270° E
 The Line Spacing: 5000 meters
 Average Aircraft Terrain Clearance: 75 meters
 EM Transmitter Loop: Towed at an average terrain clearance of 35 meters below the helicopter
 Helicopter Sensors: Towed at an average terrain clearance of 25 meters below the helicopter

INSTRUMENTS:
 Geotech Time Domain Electromagnetics System (VTM)
 Coresense K/T4 Geometry
 X Coil Diameter: 0.2m
 Y Coil Diameter: 0.2m
 Coil Spacing: 2000 meters
 Transmitter Loop: Diameter 26 Meters
 Dipole Moment: 399,562 A/m²
 Transmitter Wire Form: Triangular, Pole Width 6.73 m, Base Frequency 30 Hz
 Coresense High Sensitivity Cansense 2 Helix Helix Sensors
 Map Resolution: 0.02 m at 10 samples/sec

MAP PROJECTION:
 Datum: NAD83
 Projection: Universal Transverse Mercator
 Central Meridian: 99°W (Zone 14N)
 Central Scale Factor: 0.9998
 False Easting: 500,000.00 (m)
 False Northing: 0.00 (m)
 Inverse Spheroid: 298.2572



TOPOGRAPHIC LEGEND:
 Roads
 Trails
 Stream / River
 Contour
 Lakes / Ponds



North Dakota State Water Commission
 Wahpeton Project
 Fargo, North Dakota

Geotech VTEM System
 VTEM B-Field Z Component Profiles
 Time Gates 0.021 - 0.880 ms
 over Total Magnetic Intensity

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 www.geotech.ca

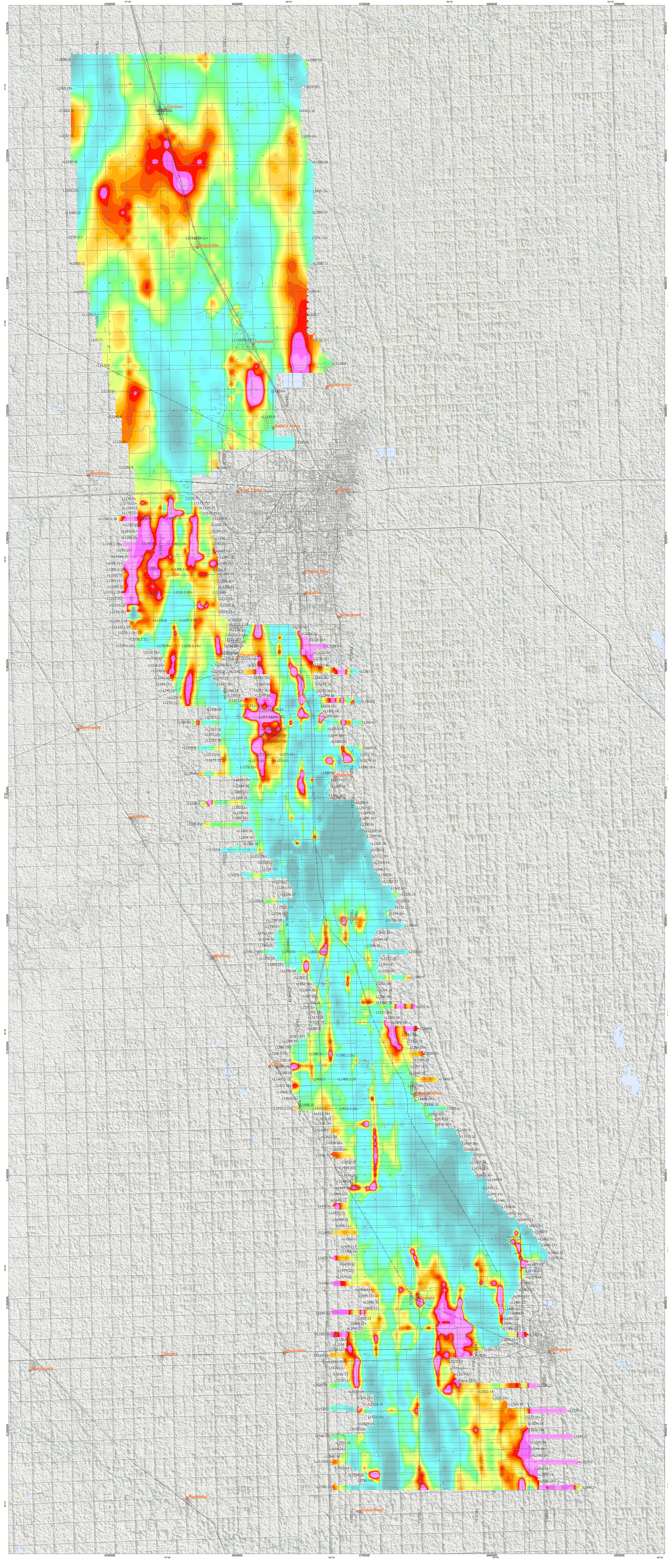
December 2017



SURVEY SPECIFICATIONS:
 Survey Date: November 6 - 19, 2017
 Survey Area: North Dakota
 Aircraft: AS580 B3 C-GEBC
 Survey Line Spacing: 2000 meters, 500 meters (HRT)
 Survey Line Direction: N 92° E / N 270° E
 The Line Spacing: 500 meters
 Average Aircraft Terrain Clearance: 75 meters
 EM Transmitter Loop: Towed at an average terrain clearance of 25 meters below the helicopter
 Helicopter Sensors: Towed at an average terrain clearance of 25 meters below the helicopter

INSTRUMENTS:
 Geotech Time Domain Electromagnetics System (VTM)
 Coresense K-75 Generator
 X Coil Diameter: 0.21m
 Y Coil Diameter: 1.20m
 Coil Current: 100 Amperes
 Transmitter Loop: Diameter 26 Meters
 Dipole Moment: 399,562 A.m
 Transmitter Wave Form: Triposid, Pulse Width 6.73 ms, Rise Frequency 30 Hz
 Coresense High Sensitivity Cancellation 2 Helix Sensors
 Helix Sensor Spacing: 500,000m (500m)
 Helix Sensor Resolution: 0.02 m at 15 samples/sec

MAP PROJECTION:
 Datum: NAD83
 Projection: Universal Transverse Mercator
 Central Meridian: 99°W (Zone 14N)
 Central Scale Factor: 0.9998
 False Easting (meters): 500,000.00m
 False Northing (meters): 0.000000m
 Linear Spheroid: 6378137.0
 Inverse Spheroid: 298.25722



B-Field 2.021 ms
 $(\mu T/mT)(A \cdot m^{-2})$

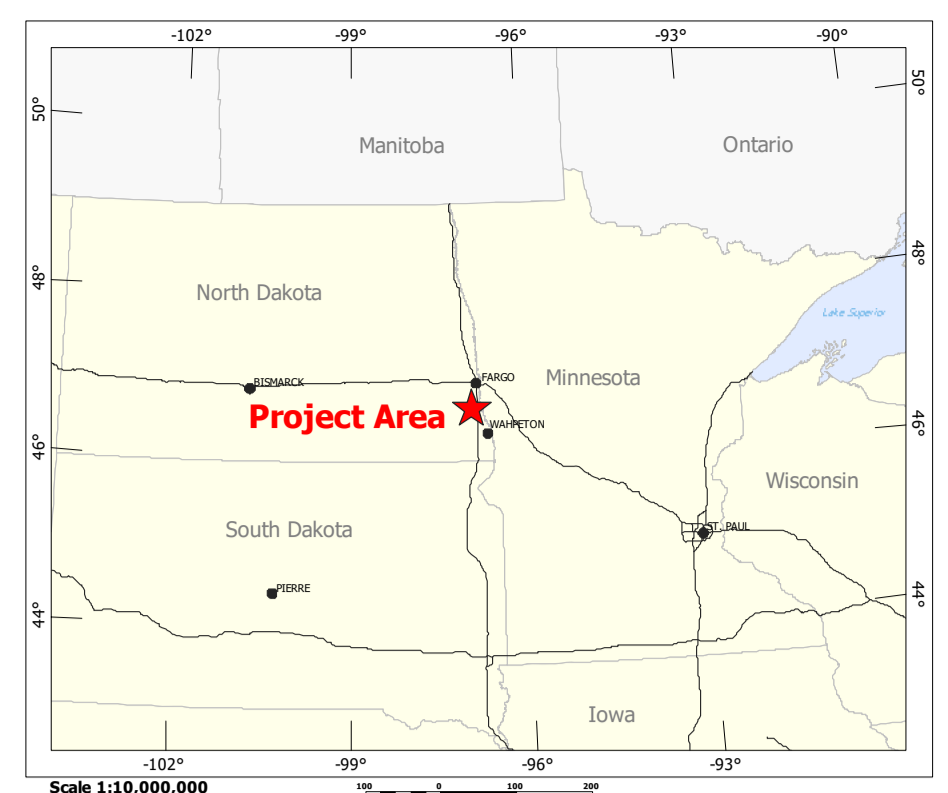
TOPOGRAPHIC LEGEND:
 Roads
 Trails
 Stream / Rivers
 Canals
 Lakes / Ponds

Scale 1:75000
 0 1000 2000 3000 4000
 (meters)

North Dakota State Water Commission
 Wahpeton Project
 Fargo, North Dakota
 Geotech VTEM System
 VTEM B-Field 2 Component
 Channel 36, Time Gate 2.021 ms

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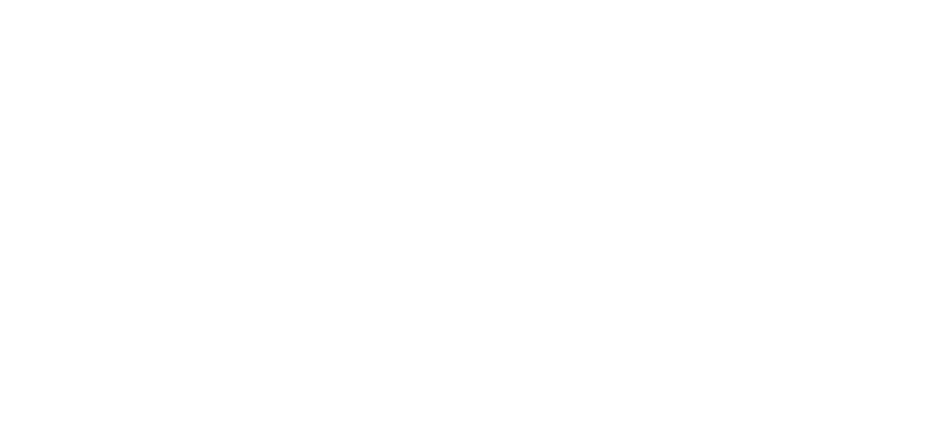
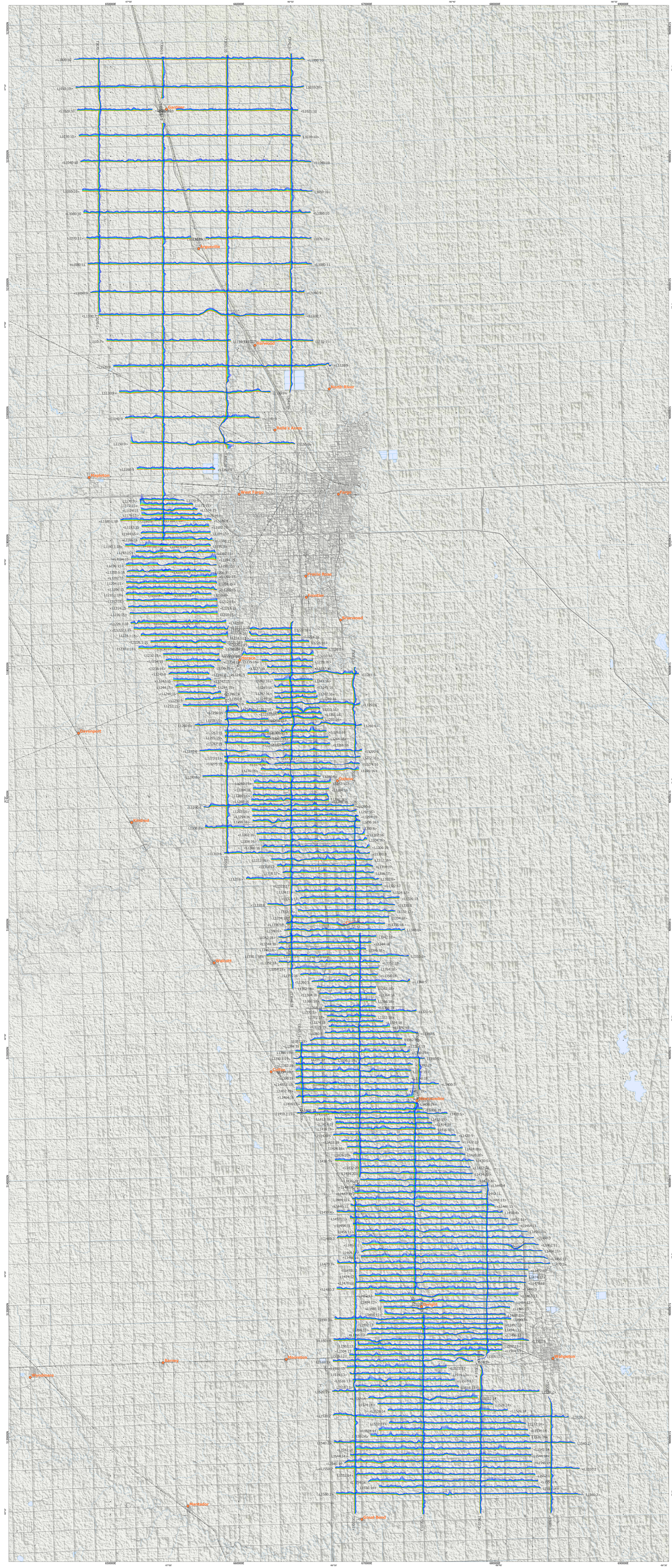
December 2017



SURVEY SPECIFICATIONS:
Survey Date: November 6 - 19, 2017
Survey Area: Fargo, North Dakota
Acworth: AS500 B3 C-GE03
Survey Line Spacing: 2000 meters, 500 meters (W/E)
The Line Spacing: 5000 meters
The Line Direction: N 0° E / N 270° E
Average Elevations: 500 meters
EM Transmitter Loop: Towed at an average terrain clearance of 35 meters below the helicopter
2 Helicopters: Towed at an average terrain clearance of 25 meters below the helicopter

INSTRUMENTS:
Geotech Time Domain Electromagnetic System (VTM)
Concrete: Kva Tri Geometry
X-Cal Diameter: 0.2m
Y-Cal Diameter: 1.2m
Loop Diameter: 2m
Transmitter Loop: Diameter 26 Meters
Dipole Moment: 399,562 A·m
Transmitter Wave Form: Triangular, Pulse Width 6.73 ms, Rise Frequency 30 Hz
Geometric Unit: Smithcraft Canada 2 Helicopters
Map Resolution: 0.02 ft at 15 samples/sec

MAP PROJECTION:
Datum: NAD83
Projection: Universal Transverse Mercator
Central Meridian: 99°W (Zone 14N)
Central Scale Factor: 0.9998
False Easting/Offset: 500,000m (m)
Major Axis: 6708133
Inverse Spheroid: 298.25722



North Dakota State Water Commission
Wahpeton Project
Fargo, North Dakota
Geotech VTM System
VTM dB/dt Z Component Profiles
Time Gates 0.021 - 0.880 ms

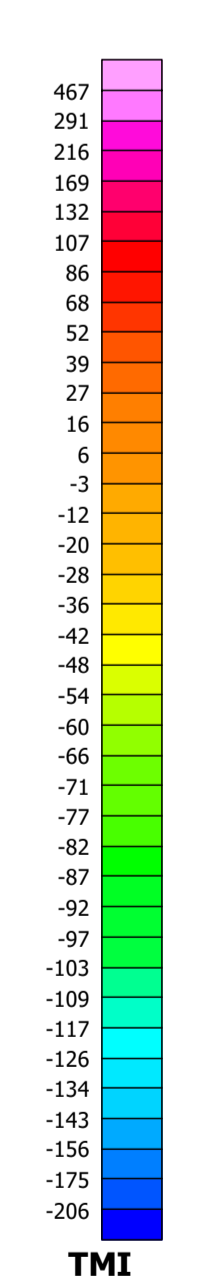
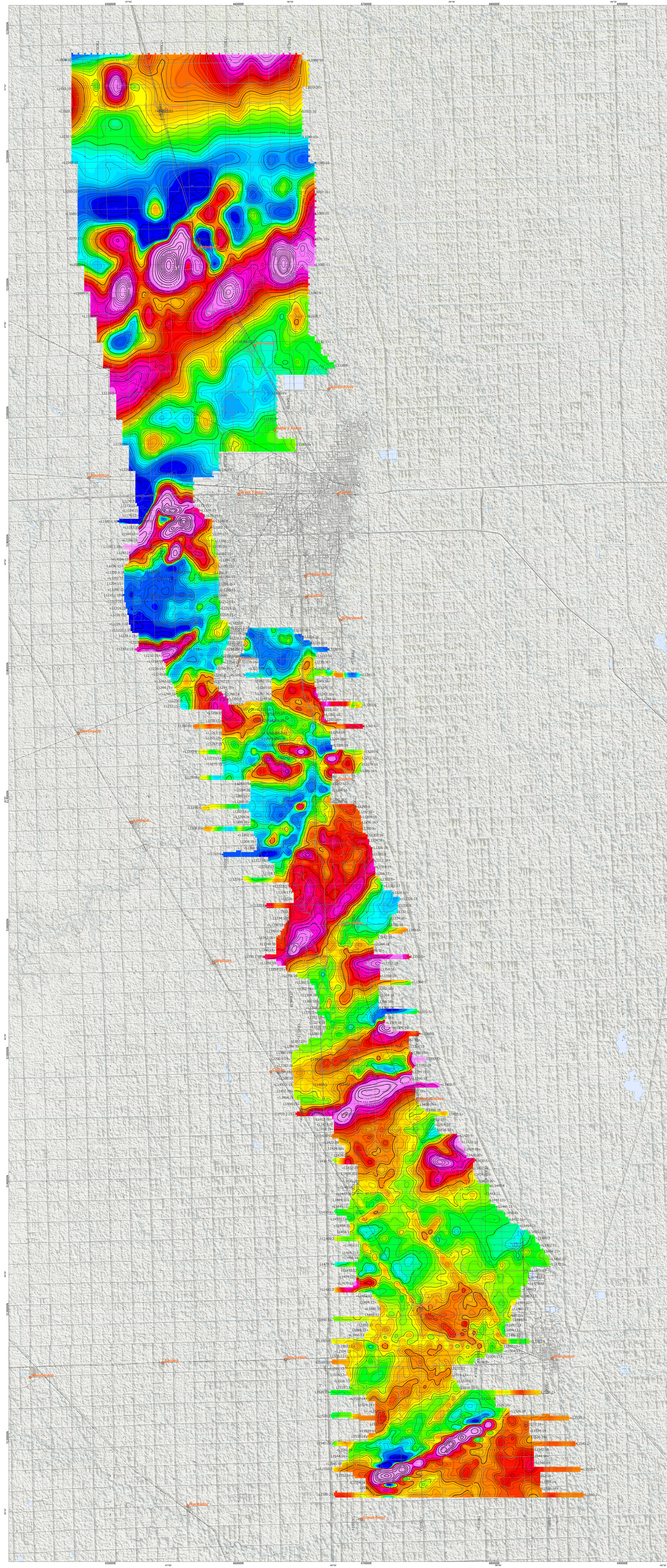
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December 2017



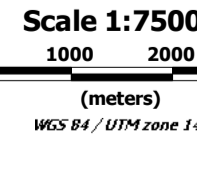
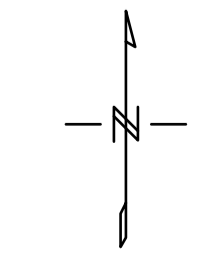
SURVEY SPECIFICATIONS:
 Survey Date: November 6 - 19, 2017
 Survey Area: Fargo, North Dakota
 Aircraft: AS350 B3 C-GEBC
 Survey Line Spacing: 2000 meters, 500 meters (Hill)
 Survey Line Direction: N 92° E / N 270° E
 The Line Spacing: 5000 meters
 The Line Direction: N 0° E / N 180° E
 Average Aircraft Terrain Clearance: 75 meters
 EM Transmitter Loop: Towed at an average terrain clearance of 35 meters below the helicopter
 Magnetometers: Towed at an average terrain clearance of 25 meters below the helicopter

INSTRUMENTS:
 Geotech Time Domain Electromagnetic System (VTM)
 Coresense Kva Tri Geometry
 X Coil Diameter: 0.2m
 Y Coil Diameter: 1.2m
 Coil Spacing: 1.2m
 Transmitter Loop: Diameter 26 Meters
 Dipole Moment: 209,562 A/m²
 Transmitter Wave Form: Triangular, Pulse Width 6.73 ms, Base Frequency 20 Hz
 Coresense High Sensitivity Cesium 2 Magnetometers
 Magnetometer Resolution: 0.02 nT at 10 samples/sec
 Map Projection: UTM
 Datum: WGS84
 Projection: Universal Transverse Mercator
 Central Meridian: 99°W (Zone 14N)
 Central Scale Factor: 0.9996
 False Easting/Heighting: 500,000m (0m)
 Major Axis: 6378137 m
 Inverse Flattening: 298.25722



TMI CONTOUR INTERVALS:
 10 nT
 50 nT
 250 nT

TOPOGRAPHIC LEGEND:
 Roads
 Trails
 Stream / Rivers
 Contours
 Lakes / Ponds



North Dakota State Water Commission
 Wahpeton Project
 Fargo, North Dakota
 Geotech VTEM System
 Total Magnetic Intensity (TMI)
 IGRF Removed

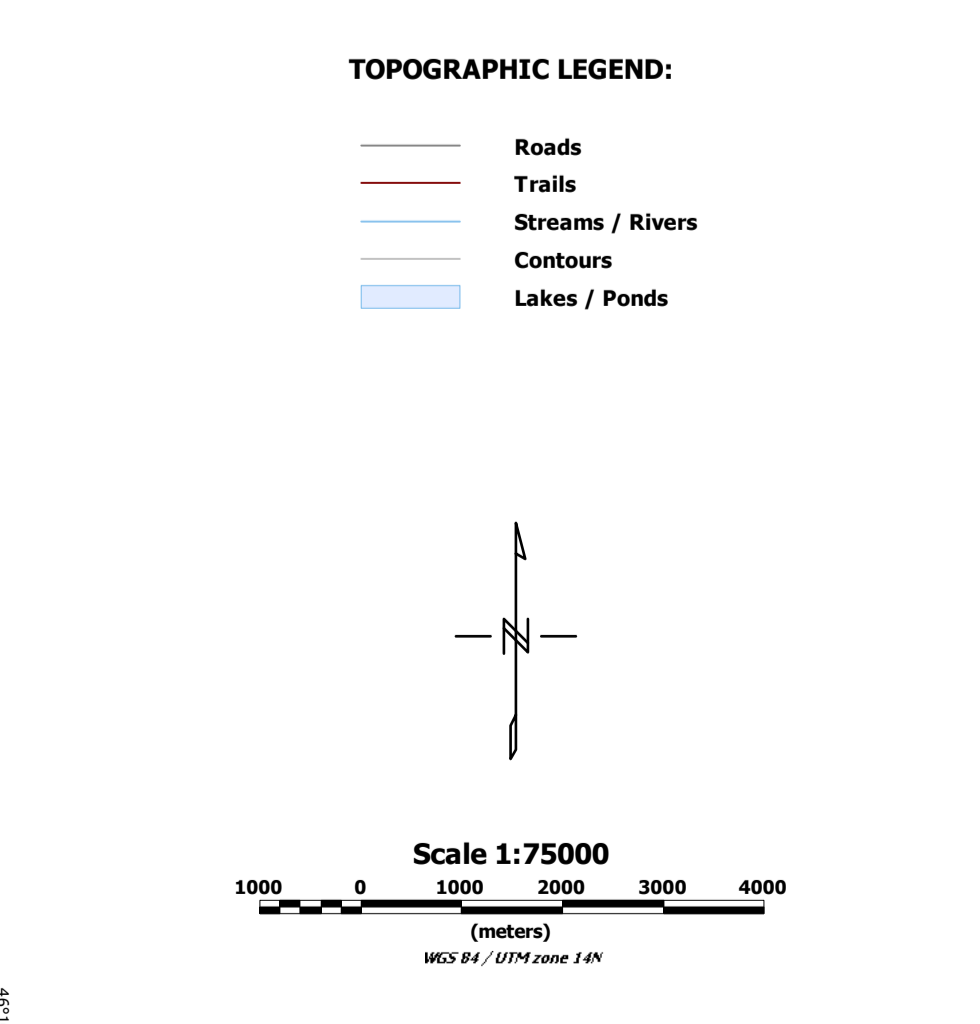
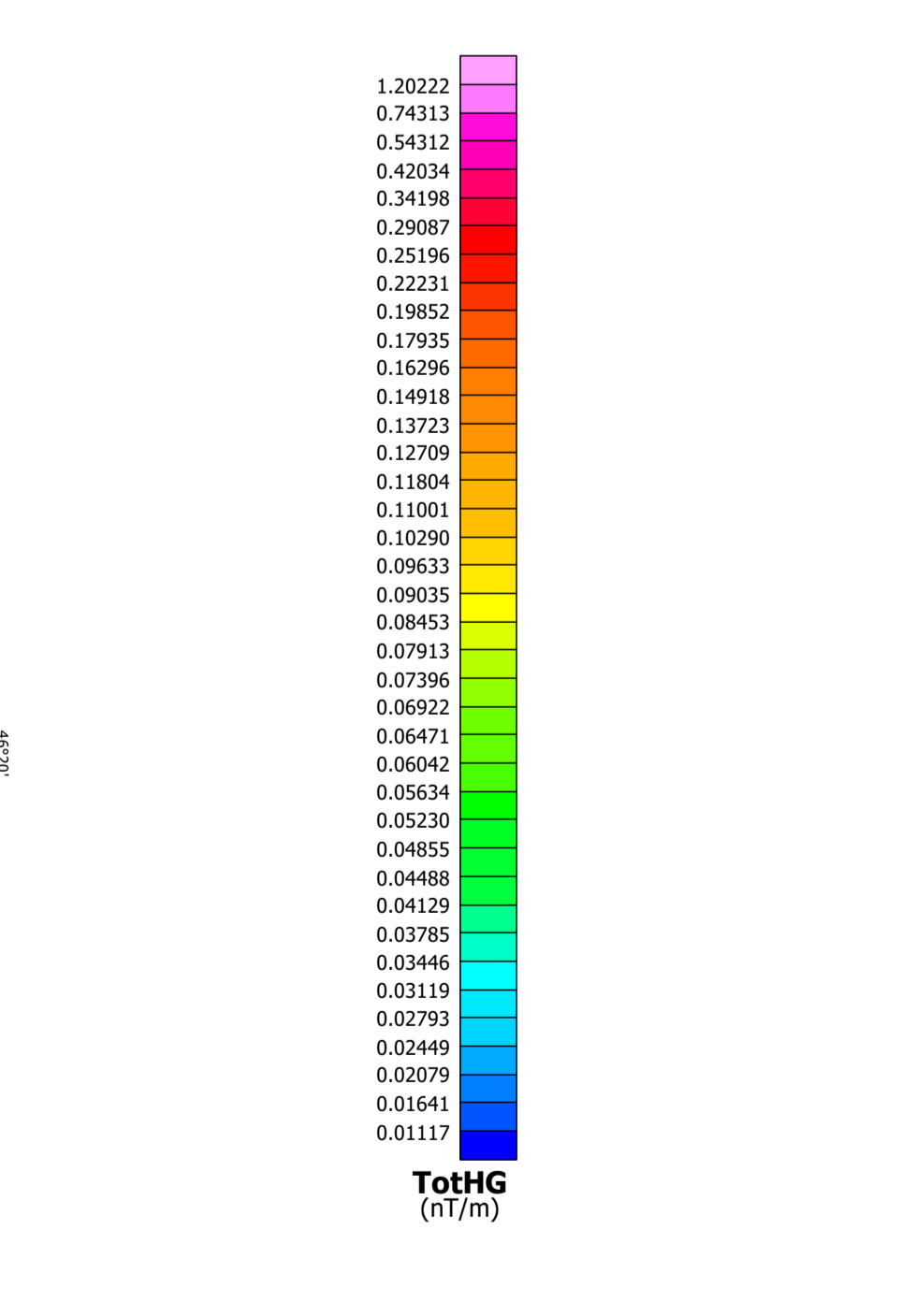
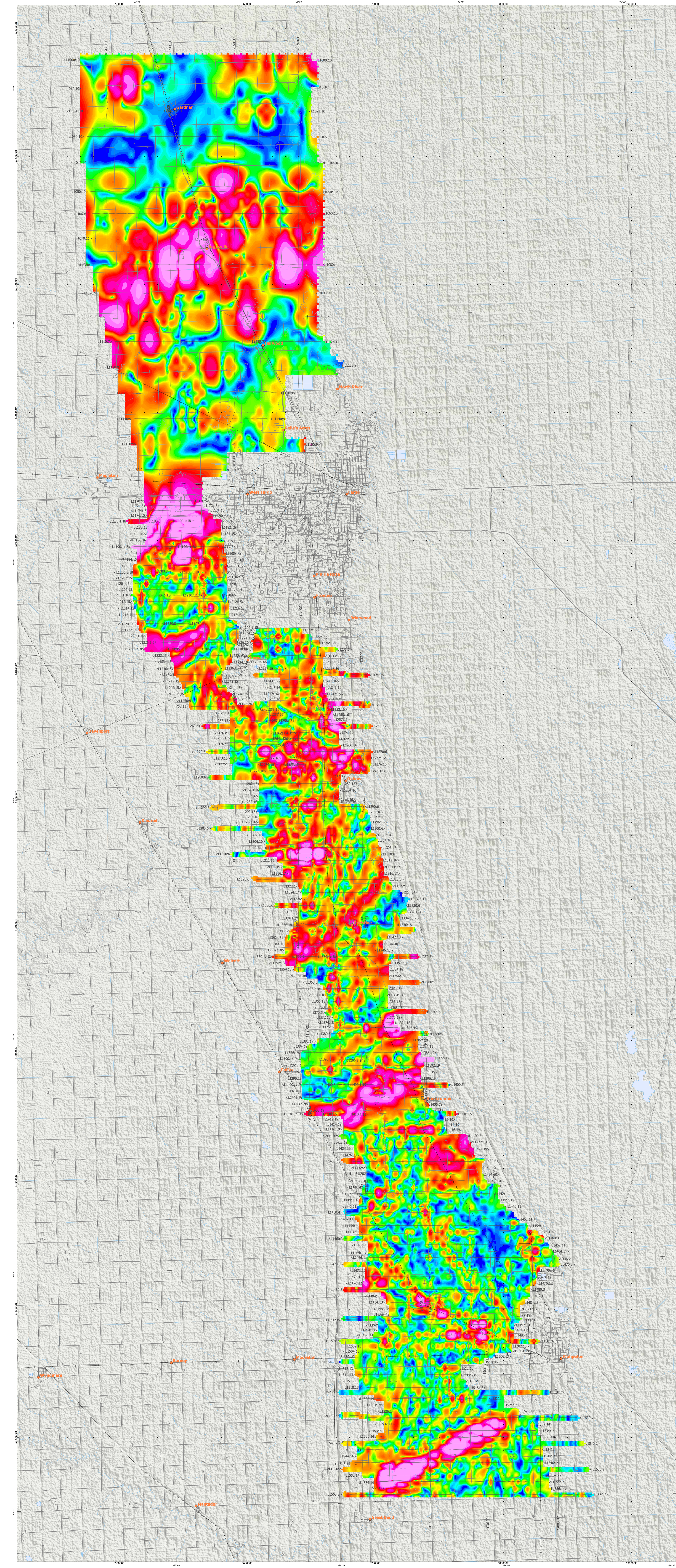
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 December 2017



SURVEY SPECIFICATIONS:
Survey Date: November 6 - 19, 2017
Survey Area: North Dakota
Acronym: AS550 B3 C-GEOT
Survey Line Spacing: 2000 meters, 500 meters (H/W)
Survey Line Direction: N 90° E / N 270° E
The Line Spacing: 500 meters
The Line Direction: N 90° E / N 270° E
Average Ground Terrain Clearance: 75 meters
EM Transmitter Loop: Towed at an average terrain clearance of 35 meters below the helicopter
2 Helicopters: Towed at an average terrain clearance of 25 meters below the helicopter

INSTRUMENTS:
Geotech Time Domain Electromagnetic System (VTM)
Concrete: Kva Tri Geometry
X-Cal Diameter: 0.25m
Y-Cal Diameter: 1.25m
Loop Diameter: 3.0m
Transmitter Loop: Diameter 26 Meters
Dipole Moment: 399,562 A/m²
Transmitter Wire Form: Triangular, Pole Width 6.73 m, Base Frequency 30 Hz
Geometric Half-Space: Canadian 2 Helicopters
Map Resolution: 0.02 m at 15 samples/sec

MAP PROJECTION:
Datum: WGS84
Projection: Universal Transverse Mercator
Central Meridian: 99°W (Zone 14N)
Central Scale Factor: 0.9998
False Easting (meters): 500,000.00
False Northing: 0.00
Inverse Spheroid: 298.25722



North Dakota State Water Commission
Wahpeton Project
Fargo, North Dakota
Geotech VTM System
Magnetic Total Horizontal Gradient