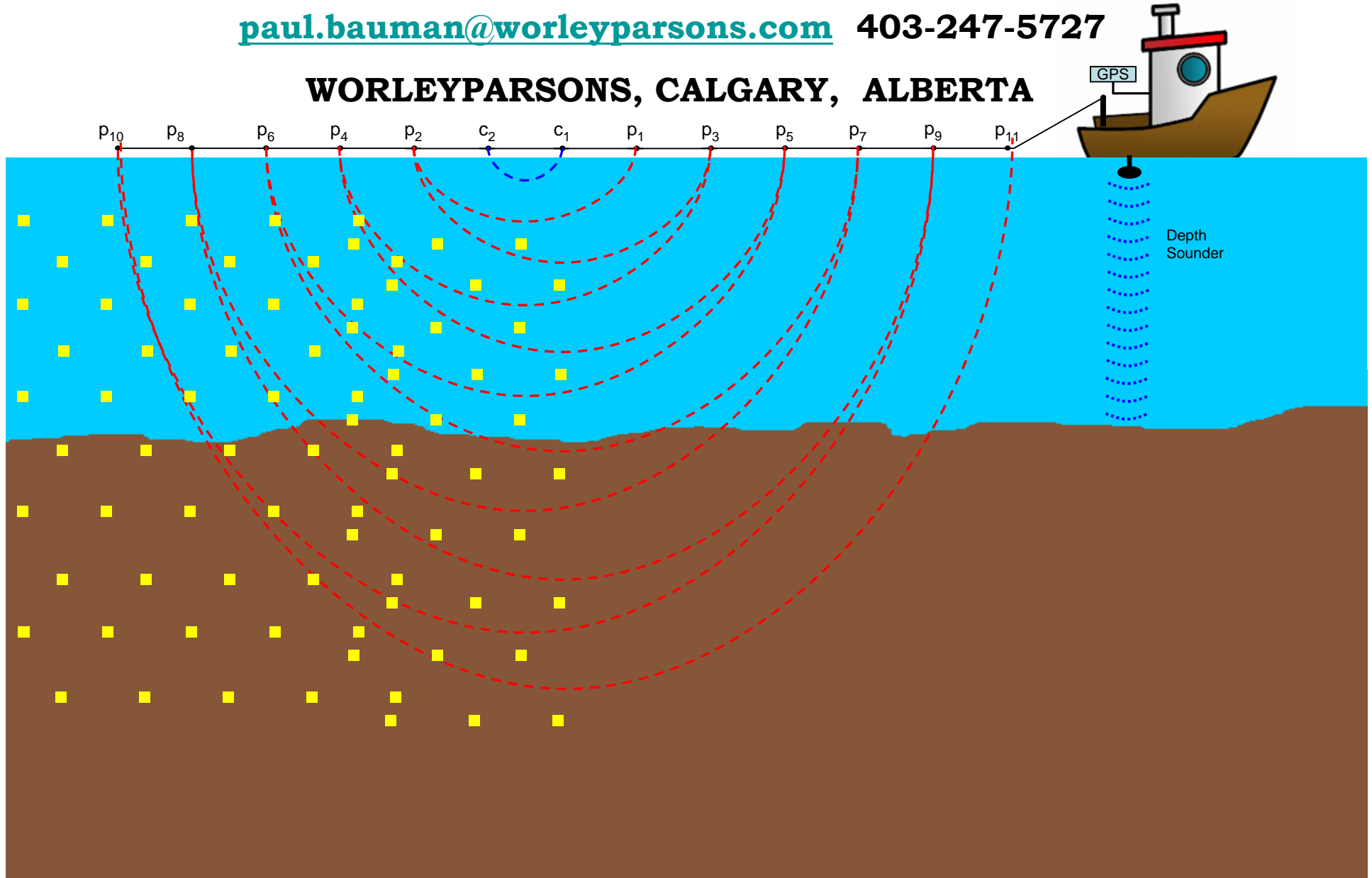


GEOPHYSICAL IMAGING OF CONTAMINANT PLUMES AND SEEPS BENEATH RIVERS AND LAKES

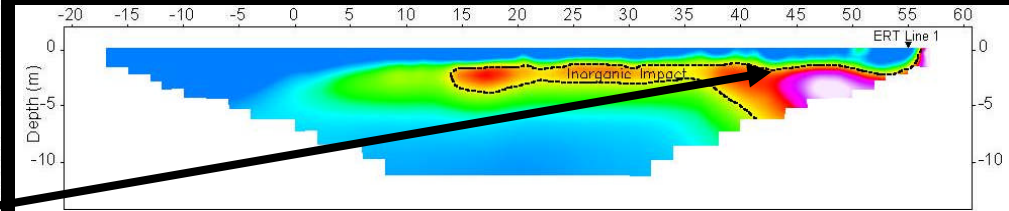
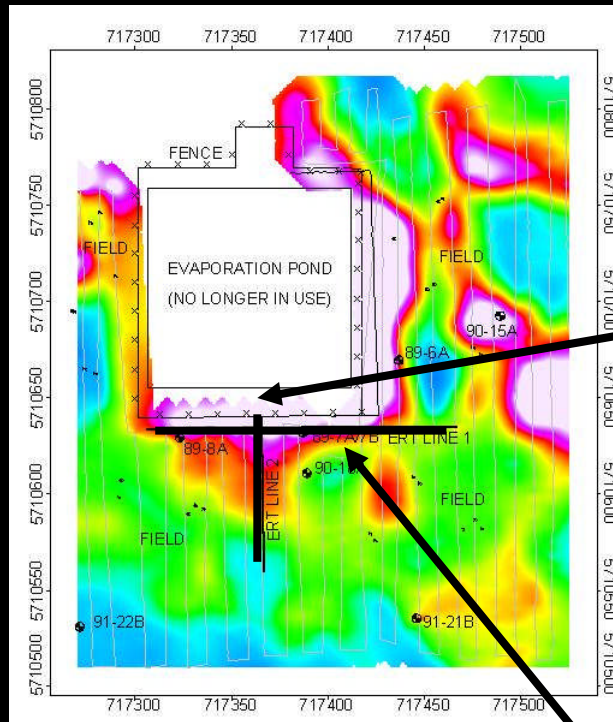
Paul Bauman and Brad Hansen

paul.bauman@worleyparsons.com 403-247-5727

WORLEYPARSONS, CALGARY, ALBERTA

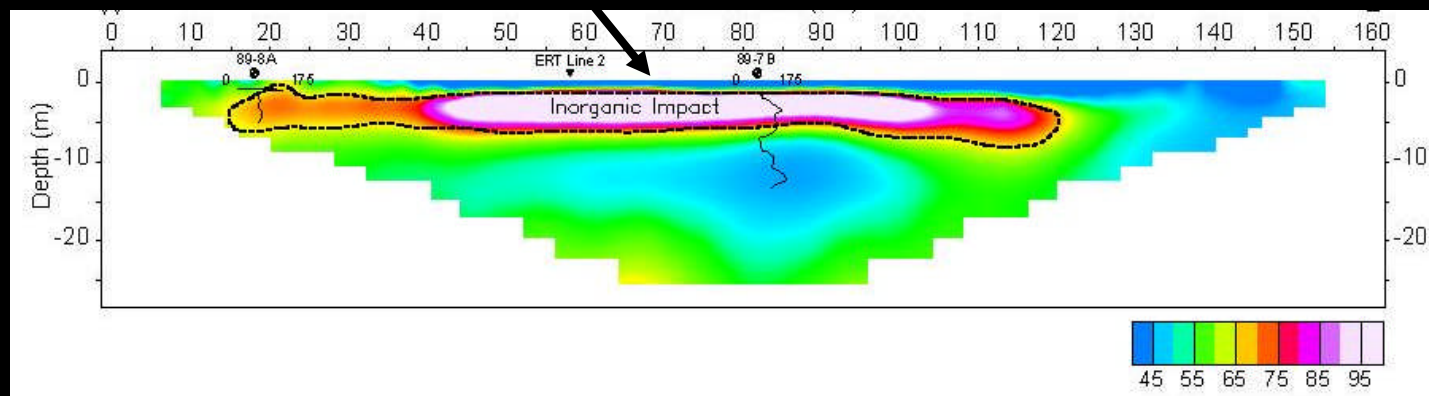


GEOPHYSICAL ASSESSMENT OF CONTAMINATED SITES

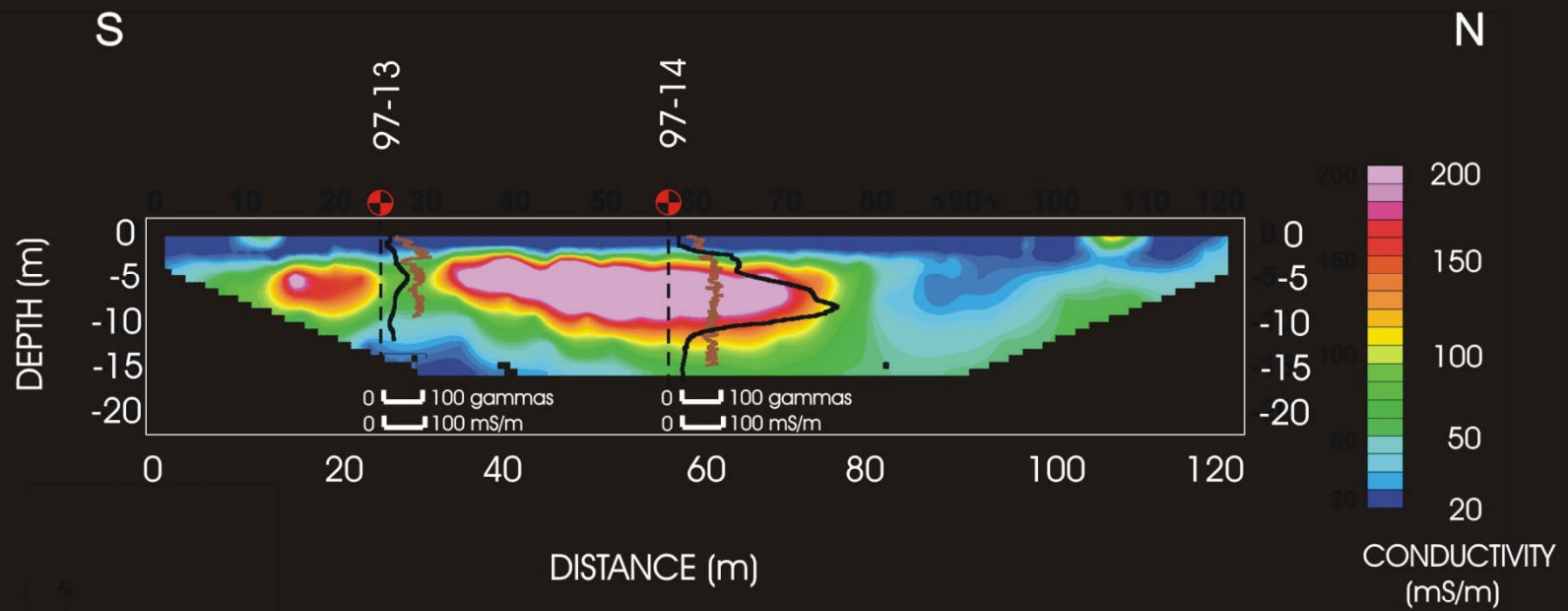


**EM31 Terrain
Conductivity
Mapping**

**Cross-Sectional
Conductivity Plume
Imaging**



SURFACE WATER HOLDING POND



LEGEND:



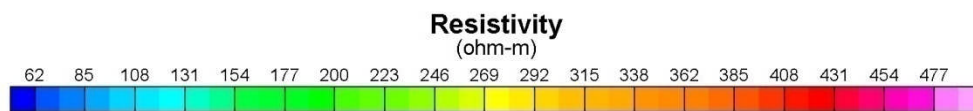
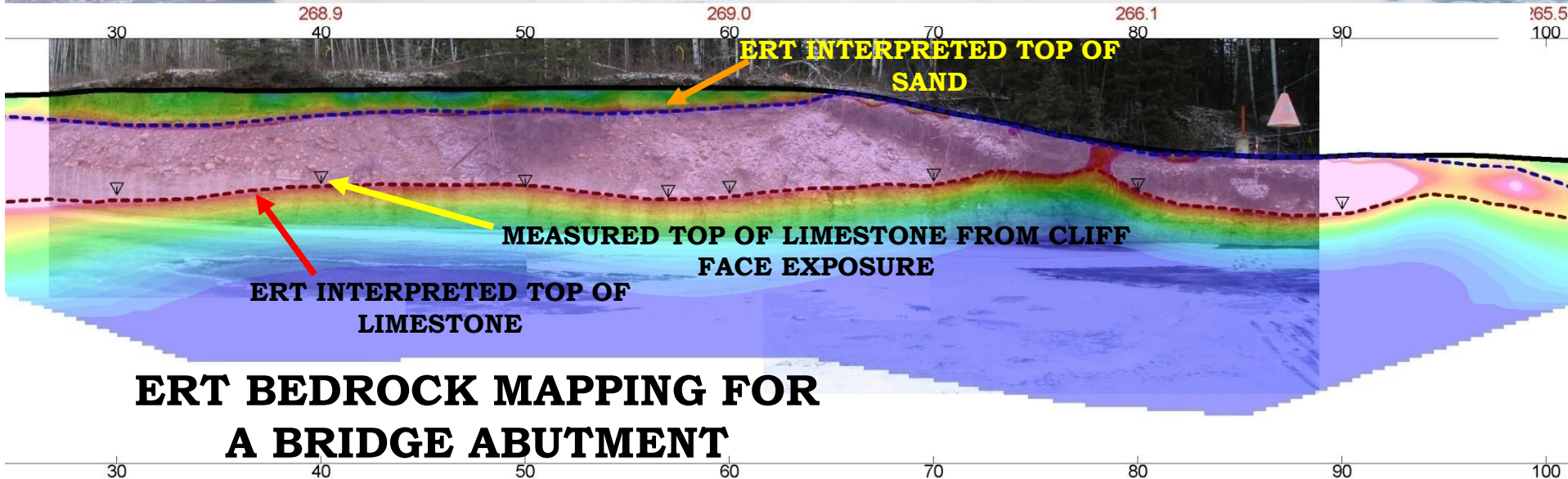
BOREHOLE



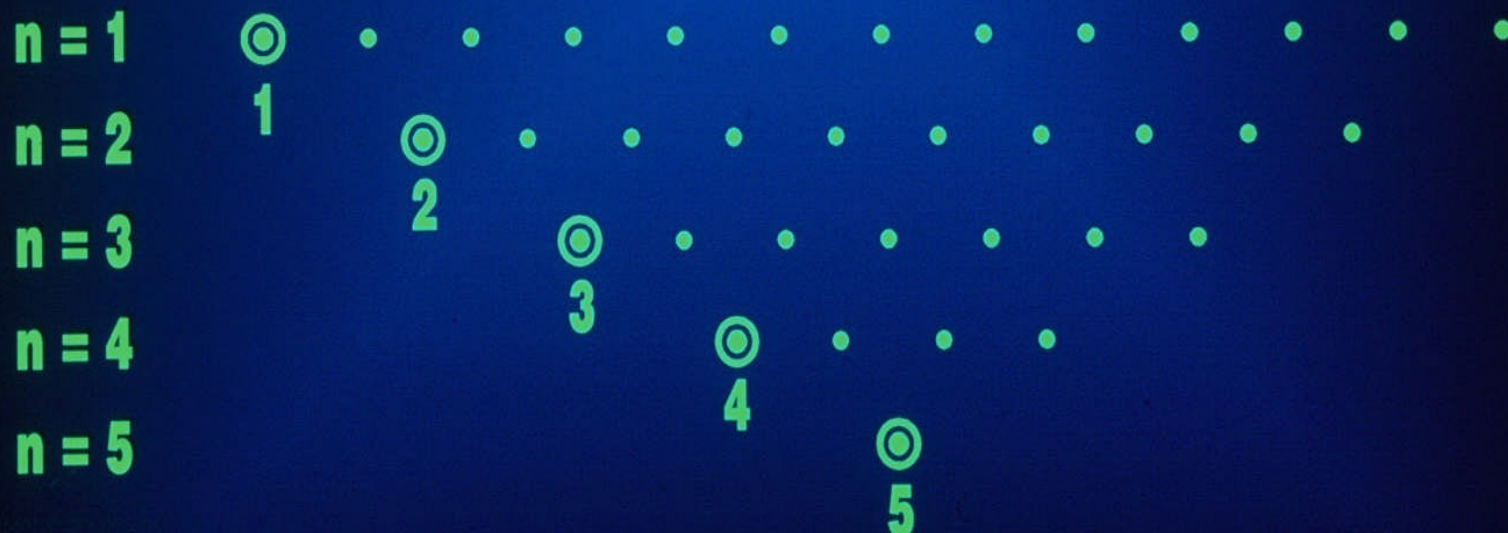
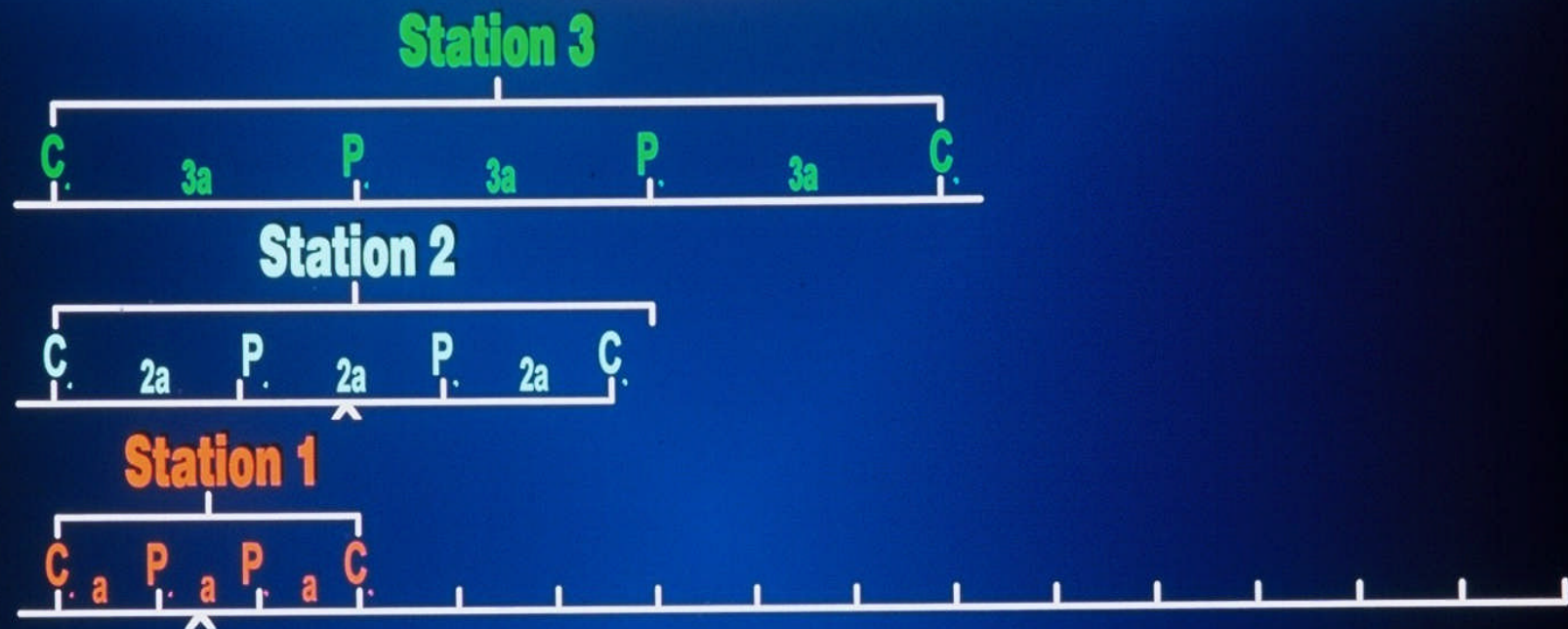
GAMMA



CONDUCTIVITY



PRINCIPLE FOR BUILDING UP A PSEUDOSECTION



ARRANGEMENT OF MODEL BLOCKS AND APPARENT RESISTIVITY DATUM POINTS



MODEL BLOCK



DATUM POINT

(Loke, 1995)

2-D RESISTIVITY INVERSION DETERMINES THE MODEL BLOCKS THAT WILL PRODUCE AN APPARENT RESISTIVITY PSEUDOSECTION THAT AGREES WITH THE MEASUREMENTS FROM THE ACTUAL FIELD SURVEY



**FORT MCMURRAY,
ALBERTA**

Image © 2009 DigitalGlobe

©2008 Google

56°45'57.17" N 111°24'07.88" W

May 7, 2005

Eye alt 7225 ft

FORT SASKATCHEWAN, ALBERTA



53°44'32.08" N 113°10'55.62" W

Apr 22, 2005

© 2006 Google

Eye alt 2518 ft

ASHBRIDGES BAY WASTEWATER TREATMENT PLANT, ONTARIO



Image © 2009 First Base Solutions

©2008 Google

29.28° N 79°19'11.45" W

2005

Eye alt 3668 ft

SARNIA INDUSTRIAL AREA, ONTARIO

Image © 2009 First Base Solutions

Google

42°56'58.11" N 82°25'31.68" W

May 8, 2006

Eye alt 2532 ft



FRASER RIVER, BC

Image ©2009 IMTCAN

©2008 Google

49°11'23.52" N 122°40'04.63" W

Mar 21, 2004

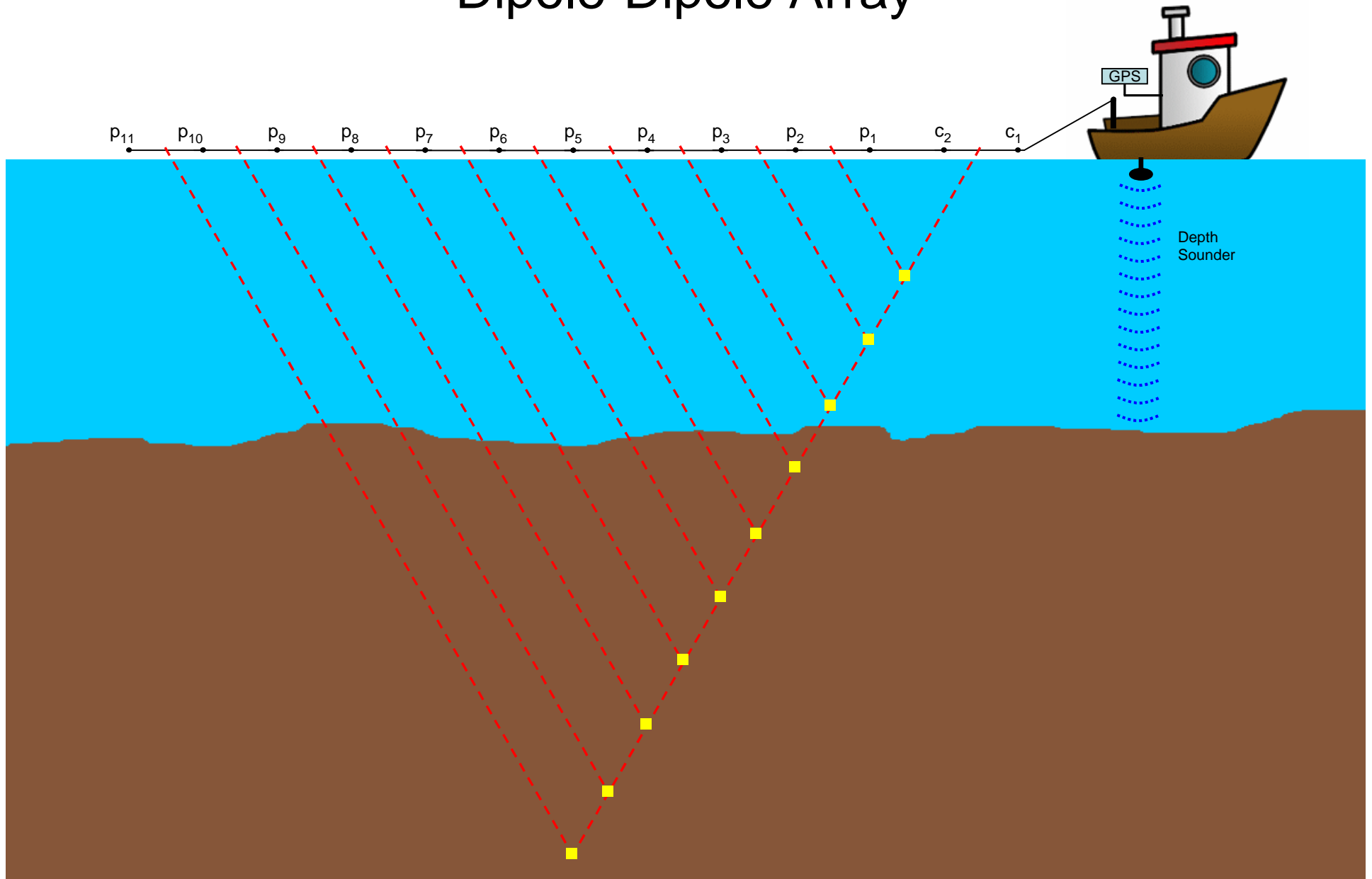
Eye alt 1465'



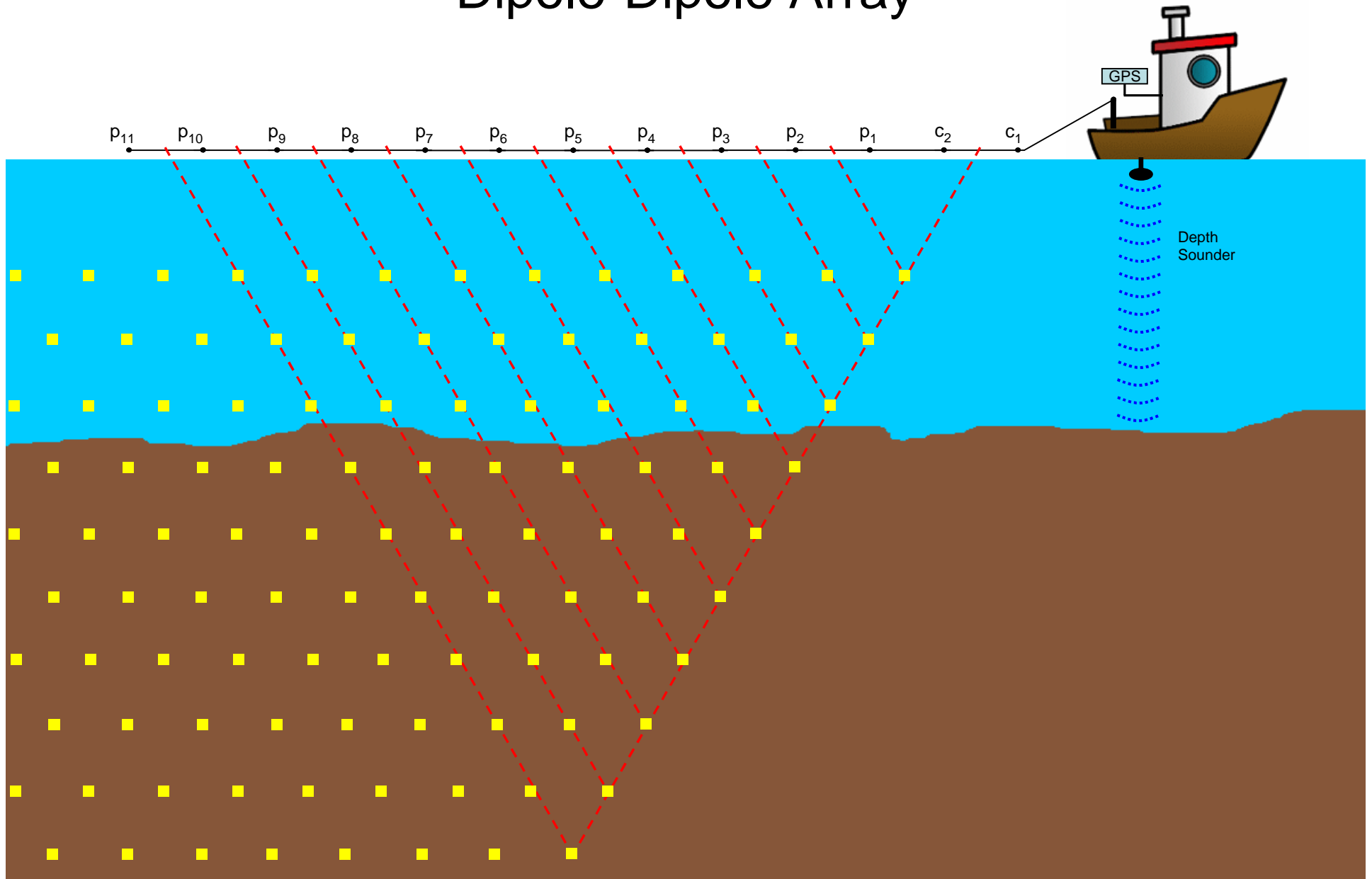




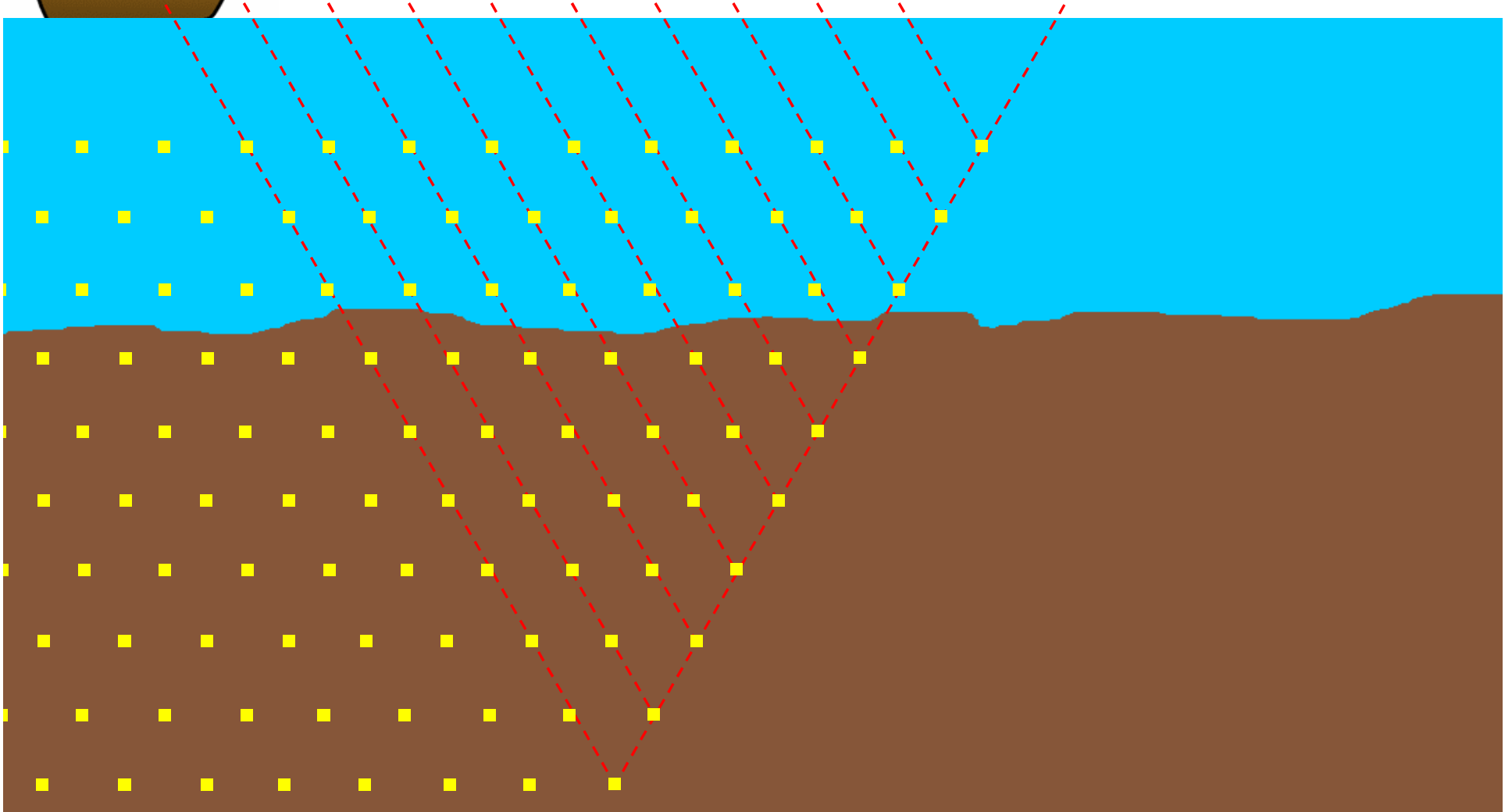
Dipole-Dipole Array



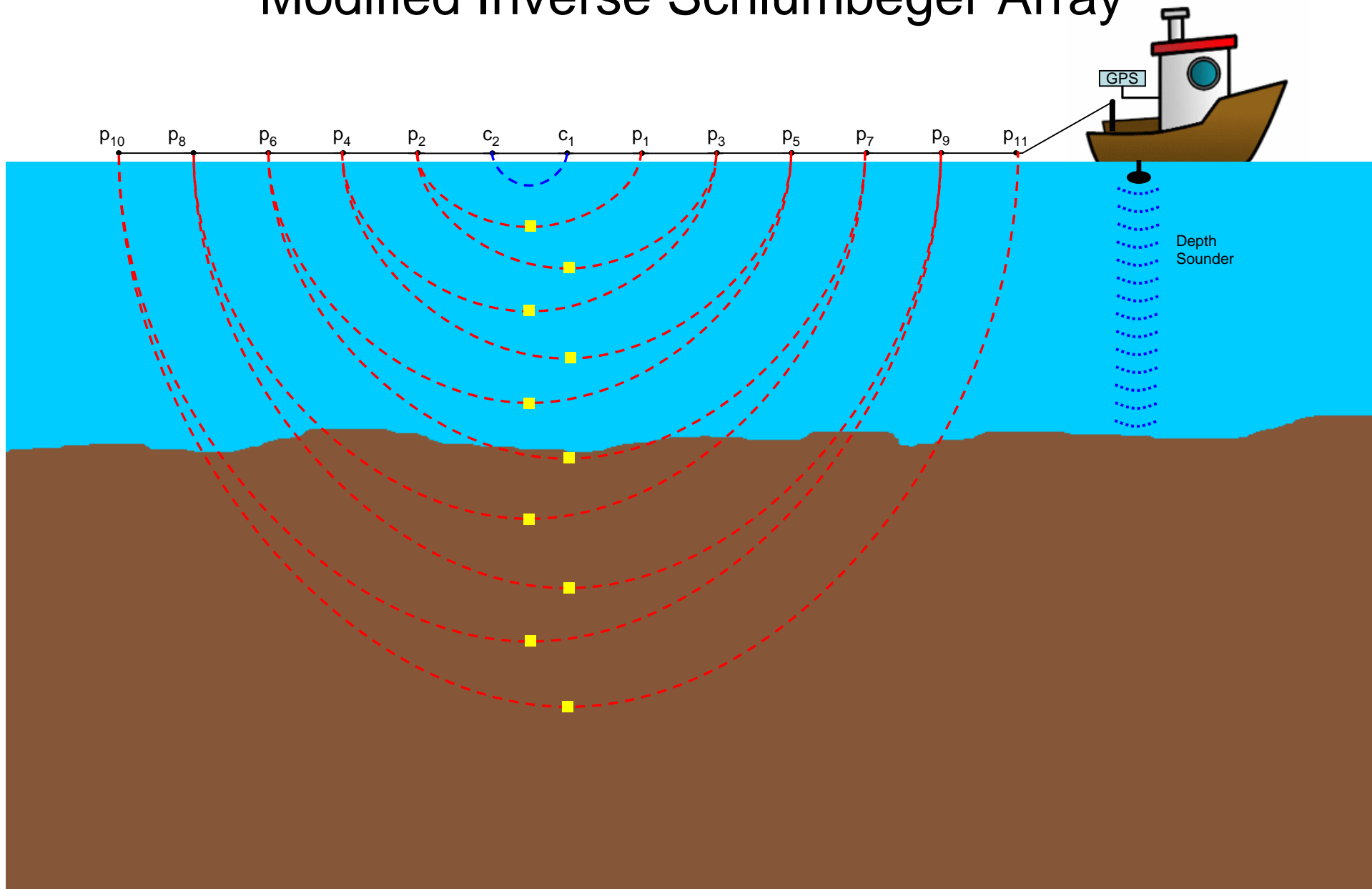
Dipole-Dipole Array



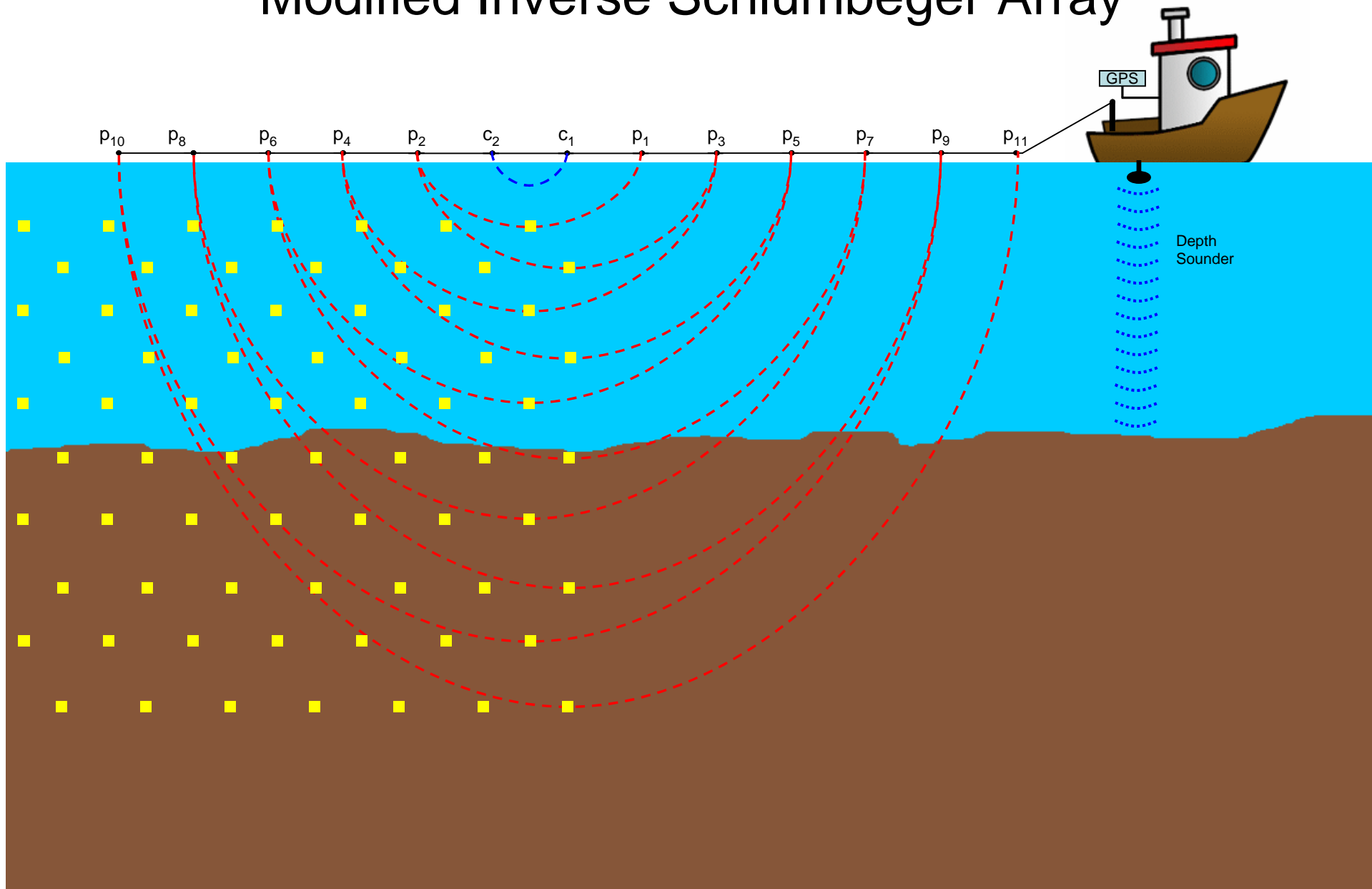
Dipole-Dipole Marine Resistivity



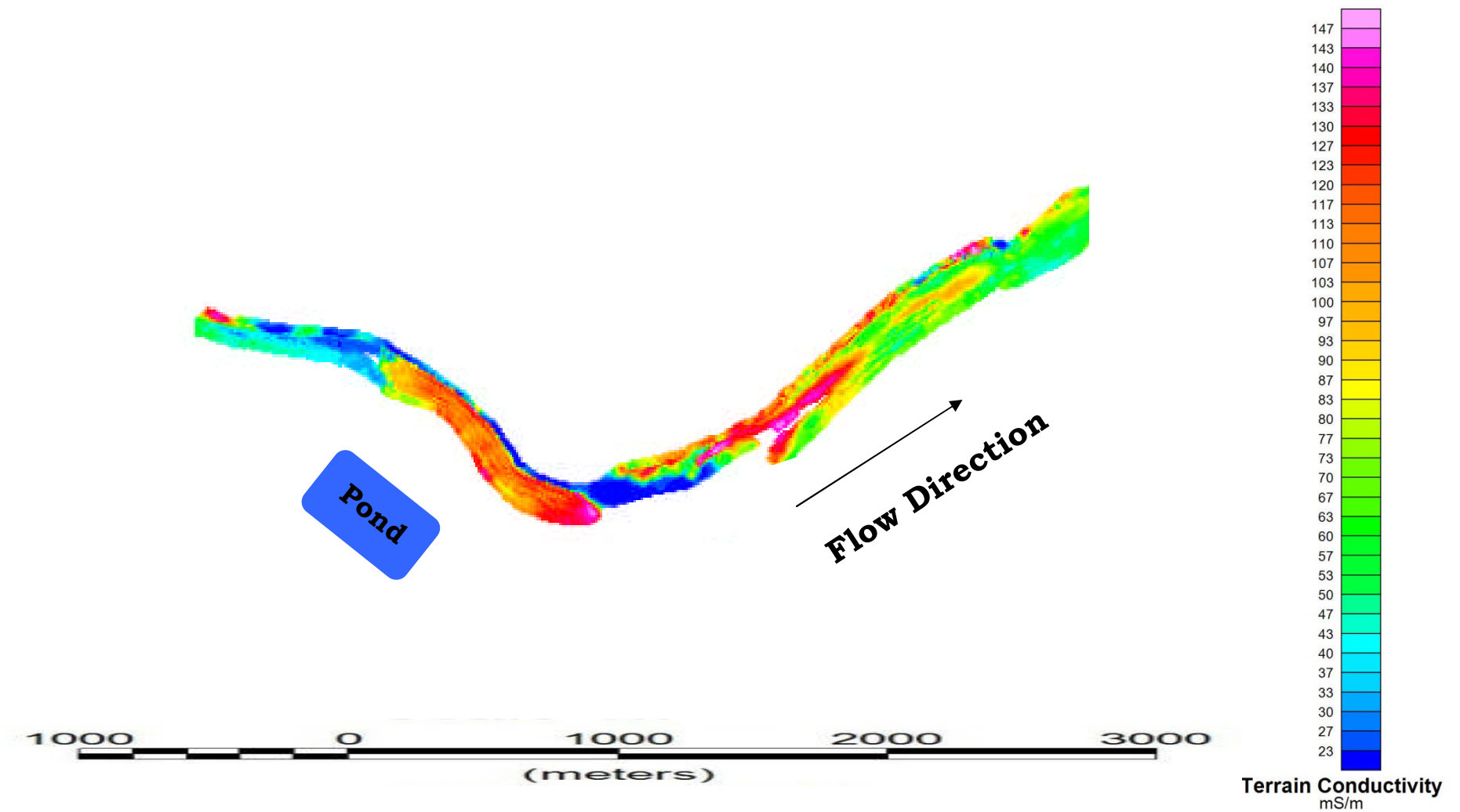
Modified Inverse Schlumberger Array



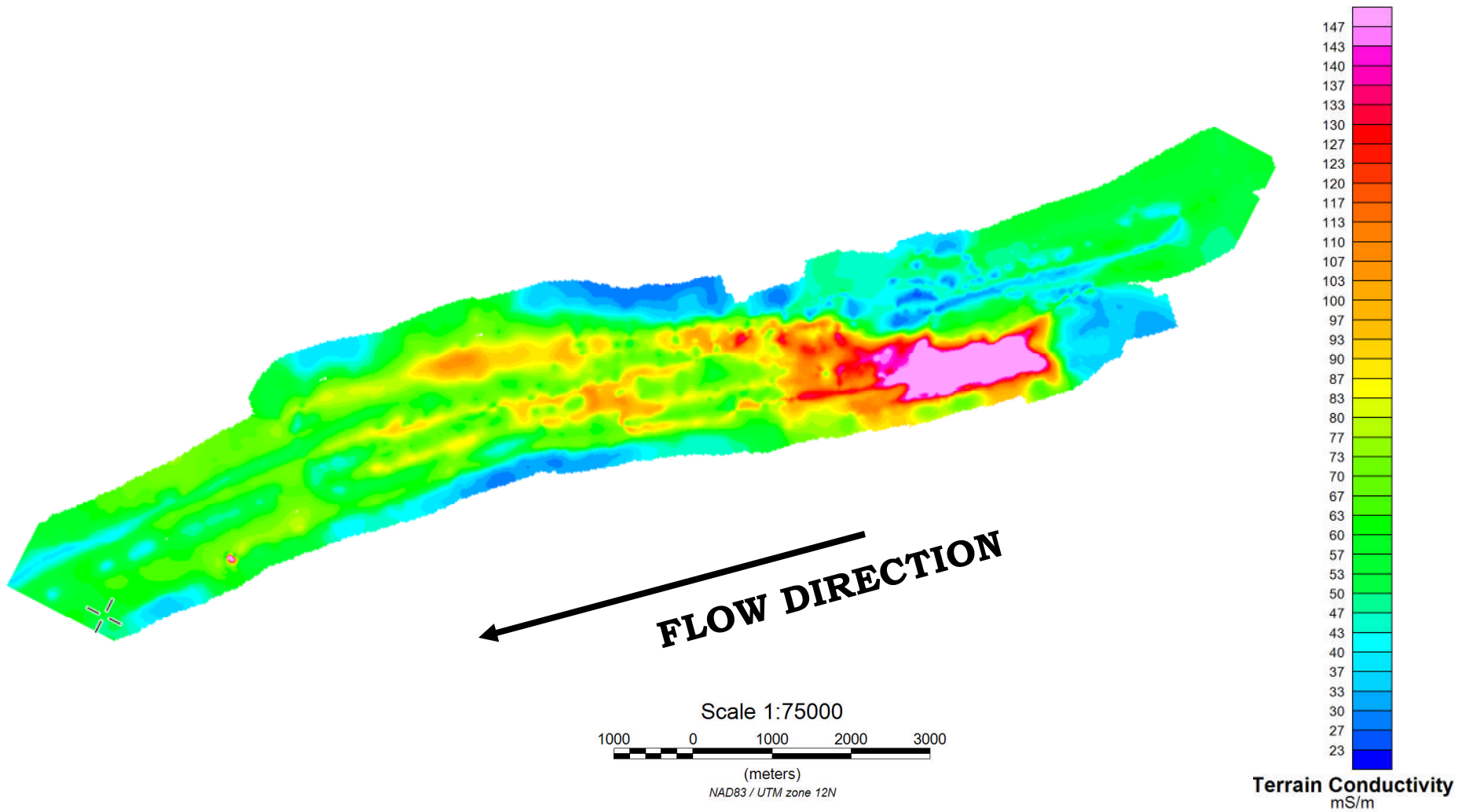
Modified Inverse Schlumberger Array



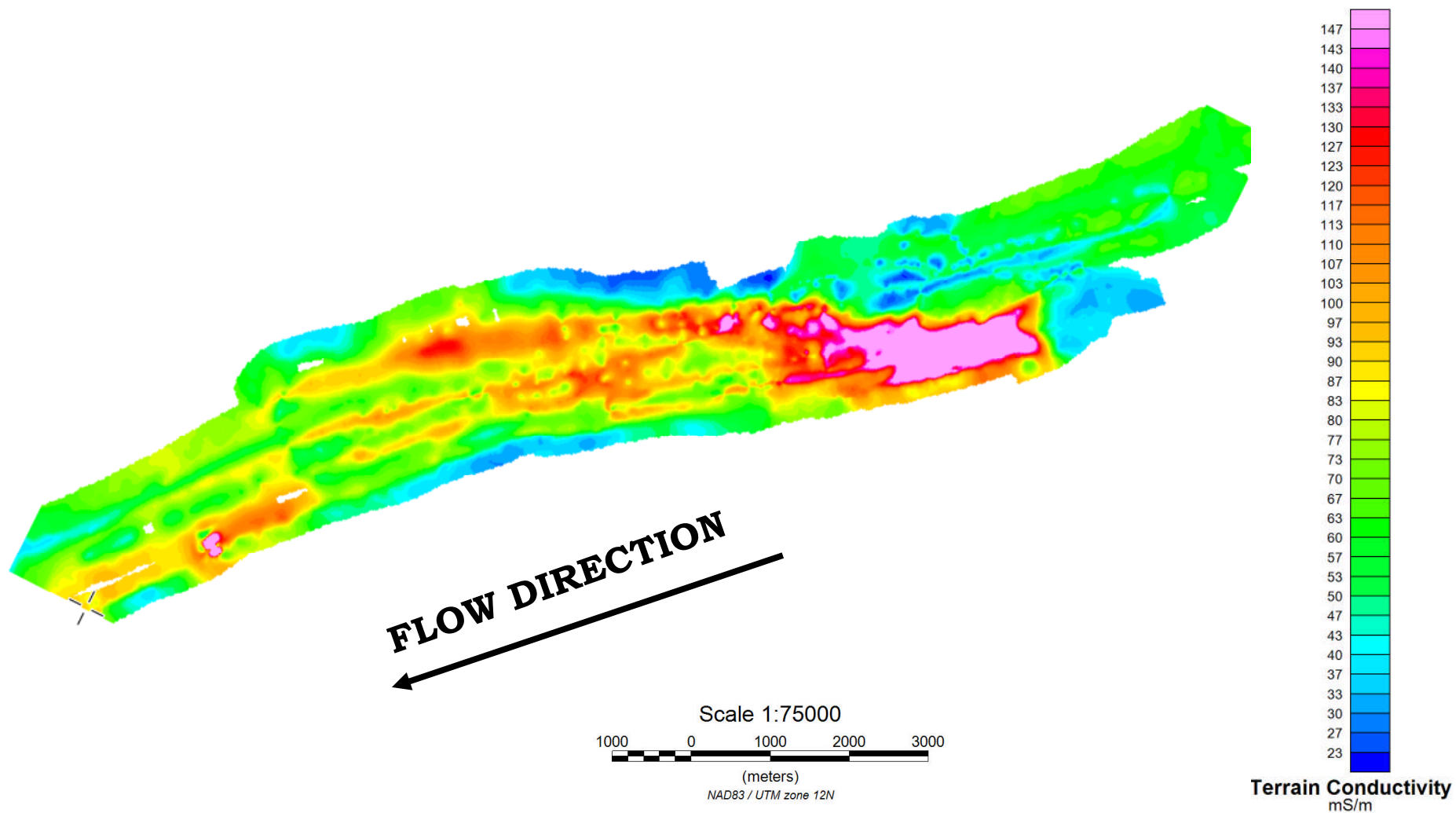
INDUSTRIAL WASTEWATER POND, ONTARIO



BATHYMETRY CORRECTION - BEFORE



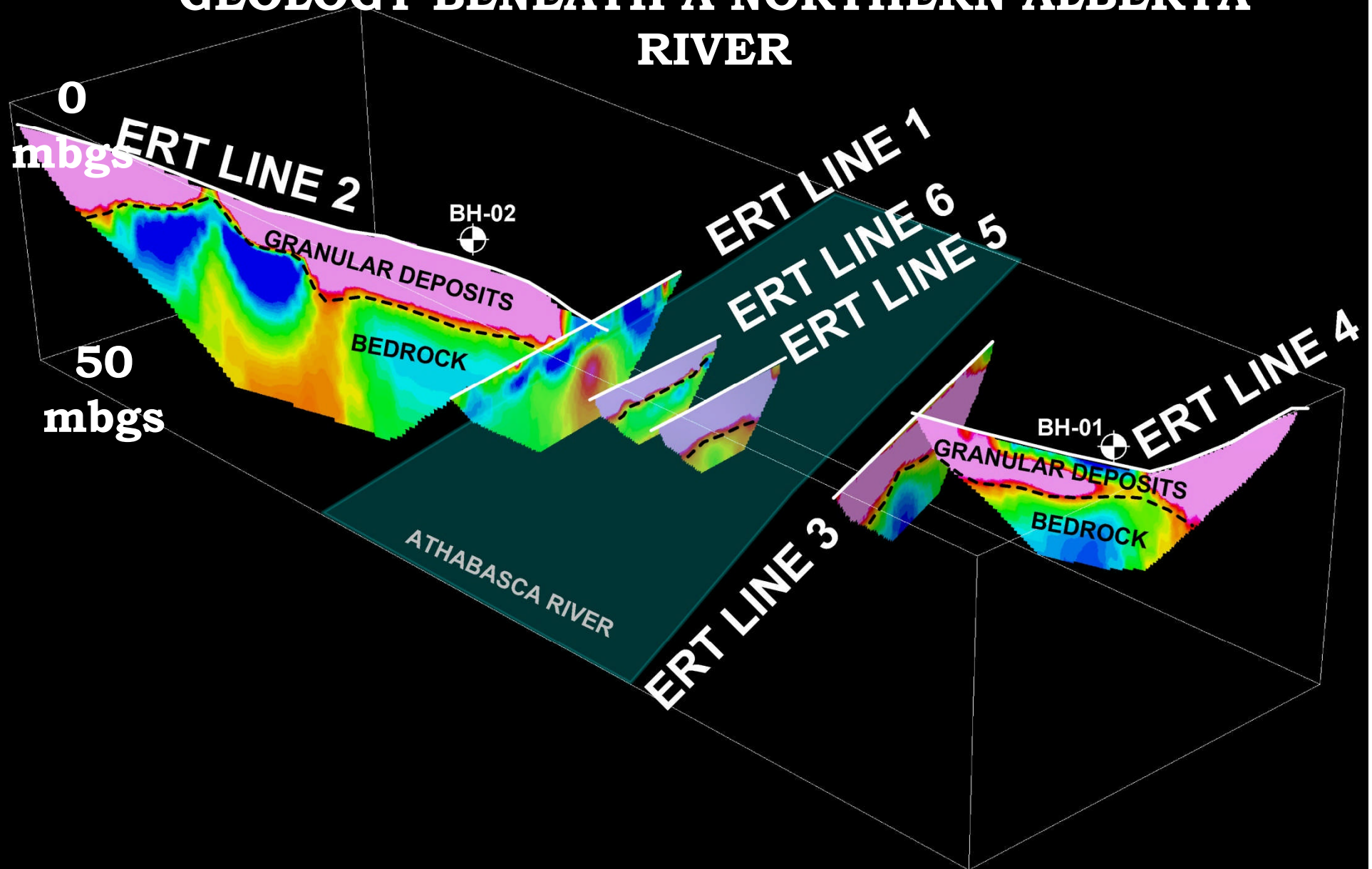
BATHYMETRY CORRECTION - AFTER

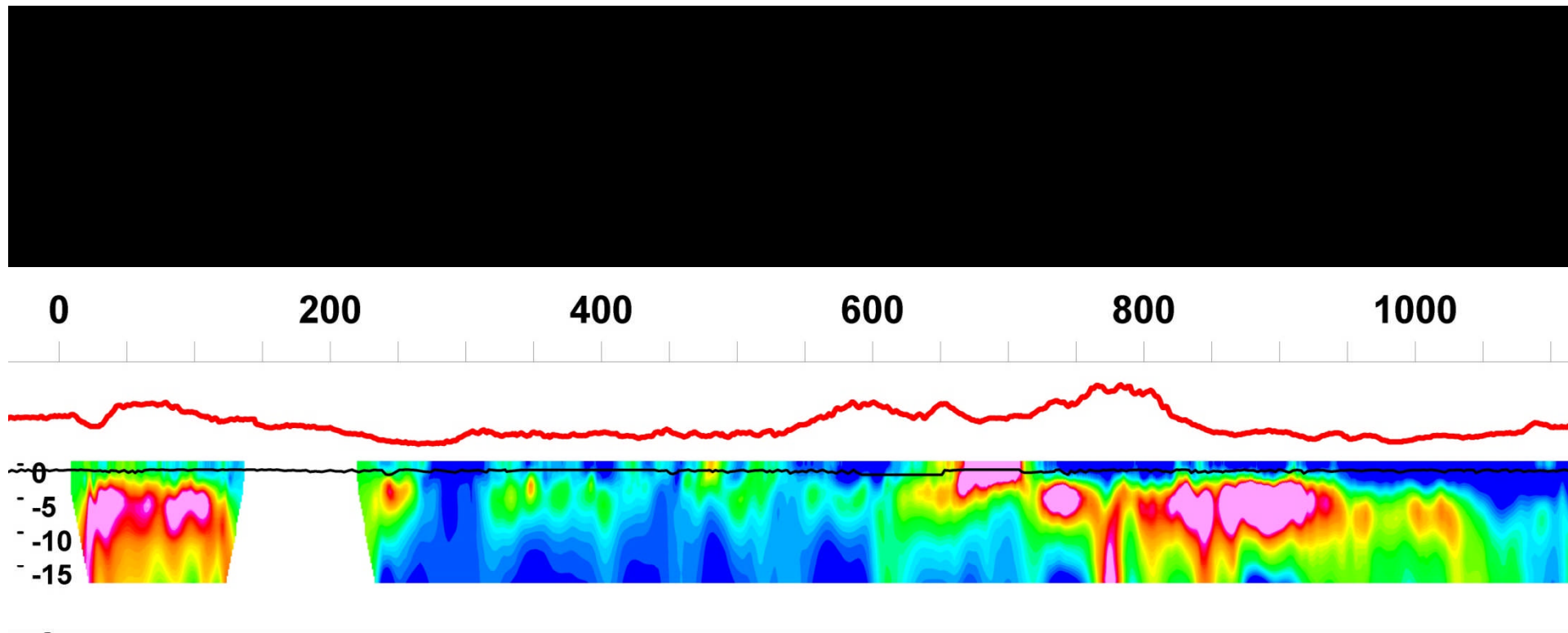


MARINE STREAMER ON THE ATHABASCA RIVER



ELECTRICAL IMAGING OF SURFICIAL GEOLOGY BENEATH A NORTHERN ALBERTA RIVER





Terrain Conductivity
(mS/m)



VERTICAL EXAGGERATION : 5X