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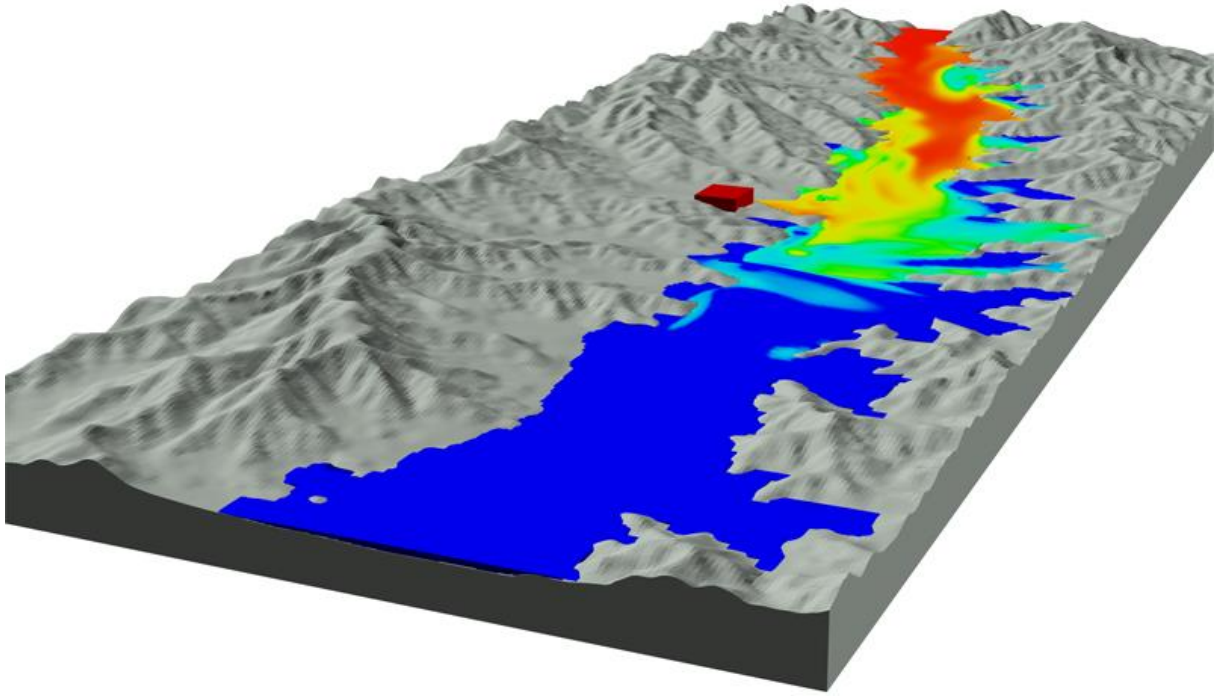
Let's Solve Water

October 23, 2019

Integrated Data Collection Around the U.S.

PROJECTS AND DATA

Today's presentation



- What is Integrated Data Collection?
  - Why does it matter?
  - How do we collect it?
- Who is doing this work?
- Let's look at some data!

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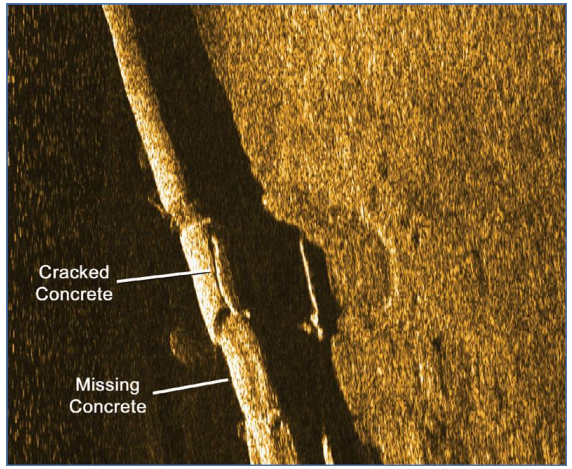
What is Integrated Data Collection?



Collecting two or more of the following at the same time:

- Quality information
- Velocity information
- Bed material information
- Contour information
- Pictures
- Etc.

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Why does it matter?

SonTek
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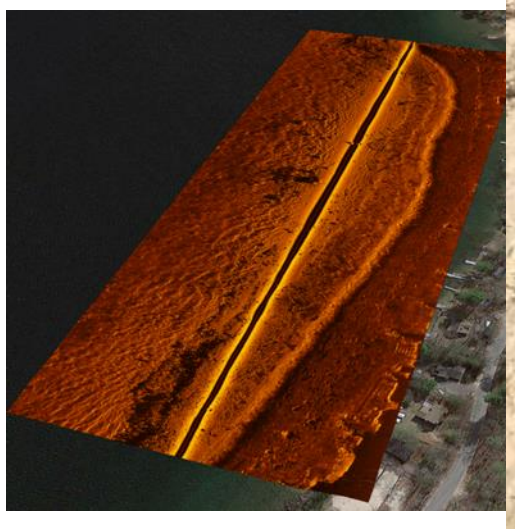
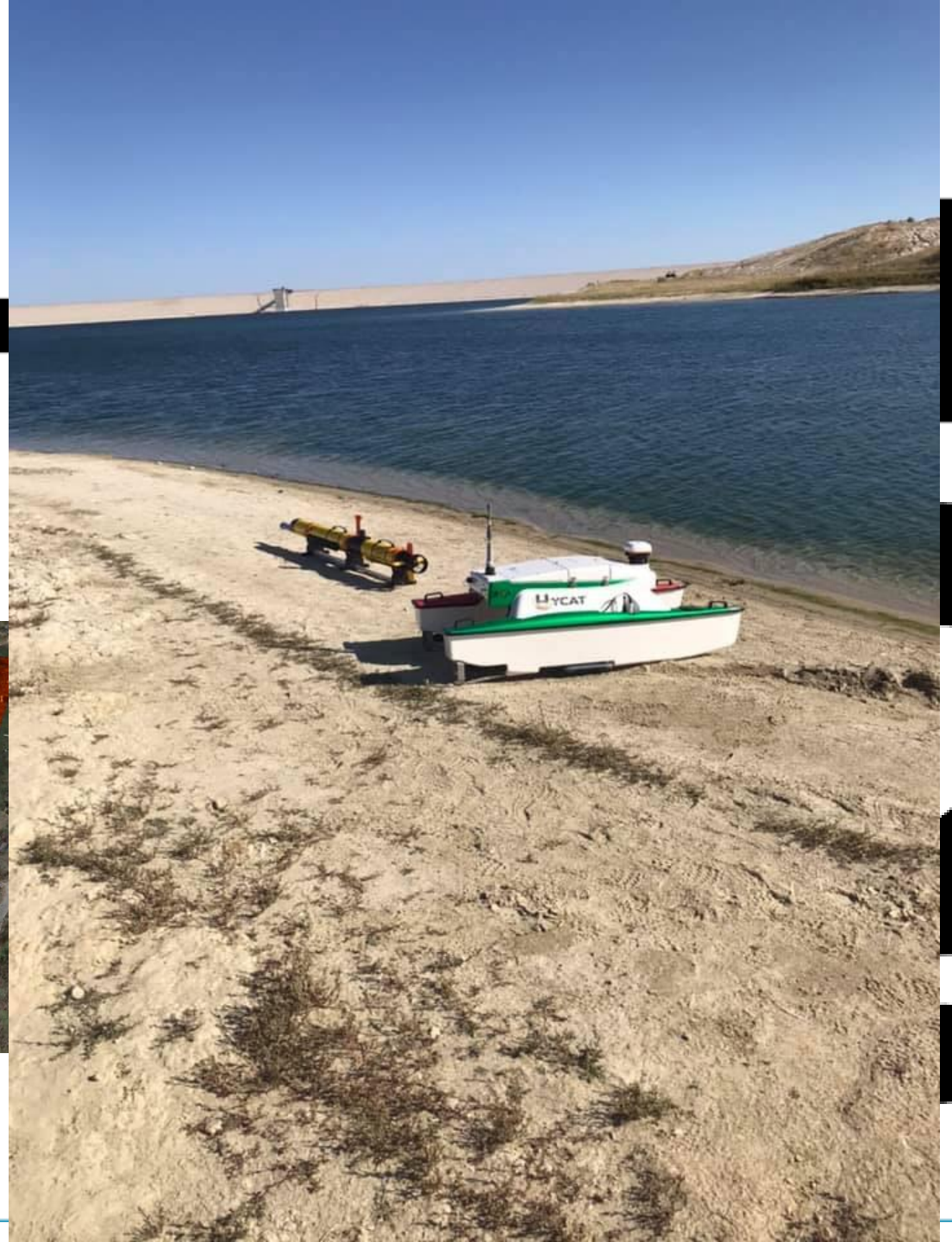
How do we collect it?





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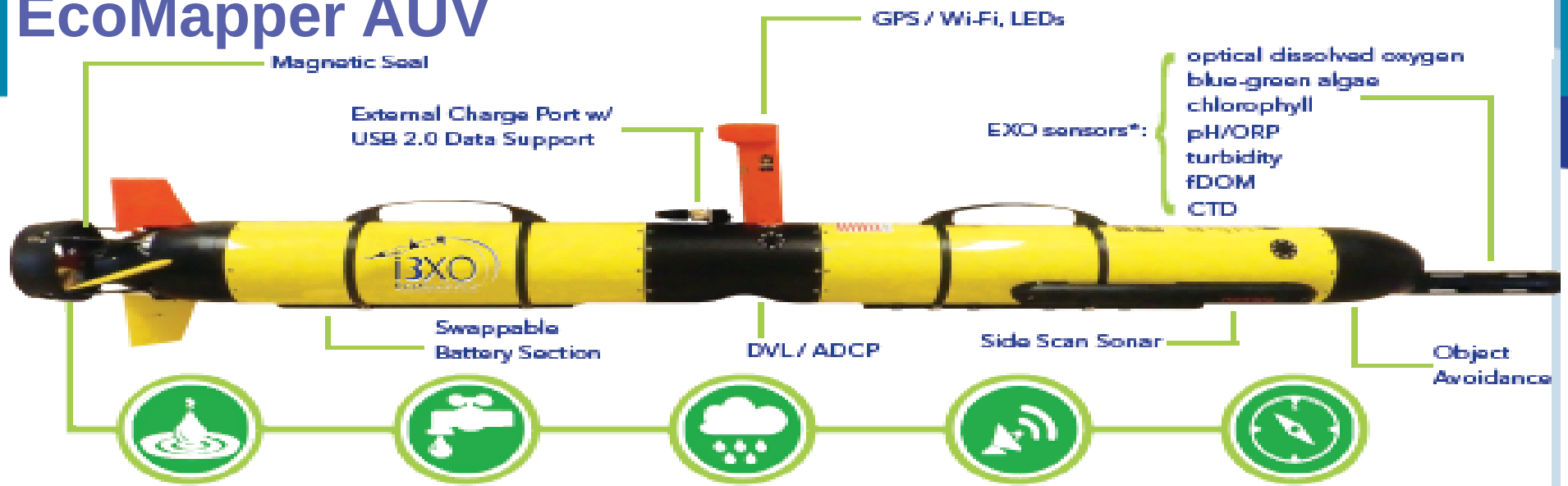
EcoMapper AUV



Baseline Monitoring

- Detailed data on horizontal and vertical planes
- Reduce number of personnel on the water
- Reduce costs to run monitoring program
- Simultaneous bathymetric, water quality and current mapping, sonar imaging

Source Water Mapping

- Improve knowledge of raw water quality
- Early warning of algal blooms and low DO events
- Map sediment level and reservoir volume
- Reduce water treatment operating costs

Coastal & Ocean Research

- Surf-zone turbulence
- Benthic boundary layer studies
- Coral reef ecology
- Tidal inlet studies
- Fisheries research
- Physical-biological interaction

Bottom Mapping

- Depth sensor and acoustic sounder standard
- Side-scan sonar optional
- Requires < 1 m water depth

Point Source and Non-point Source Mapping

- Generate high-resolution map of plume
- Track movement of point source
- Map non-point source impacts to environment
- Monitor impacts by industry or development

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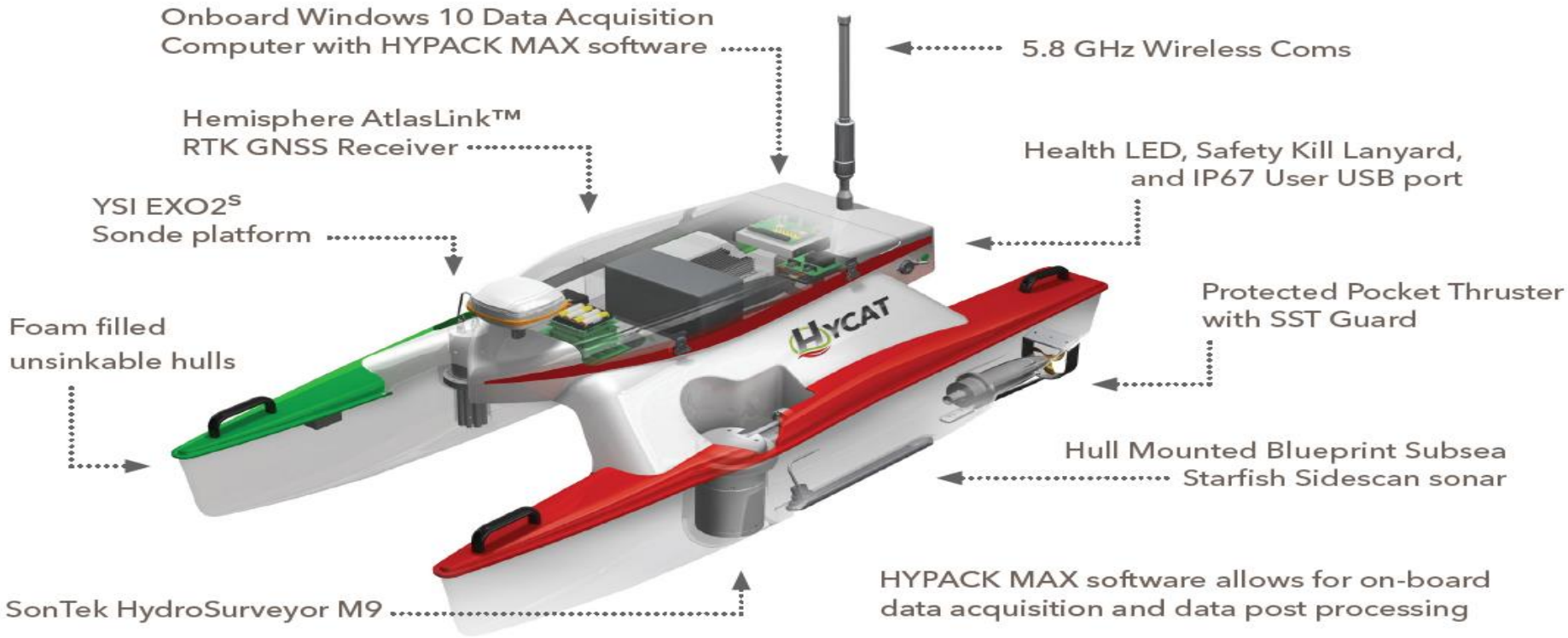
HYCAT – Autonomous Surface Vehicle (ASV)

Overview



Xylem Brands:

YSI

SonTek

HYPACK®

HYCAT

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HYCAT – Autonomous Surface Vehicle (ASV)

Performance

Specifications	
LOA (in)	71
Beam (in)	24
Draft (in)	6
Weight	120
Max Speed (kts)	ASV 8 knots (Surveying 4 knots)
Endurance (hrs)	
@ 2 knots	8
@ 3 knots	6
@ 4 knots	2.7

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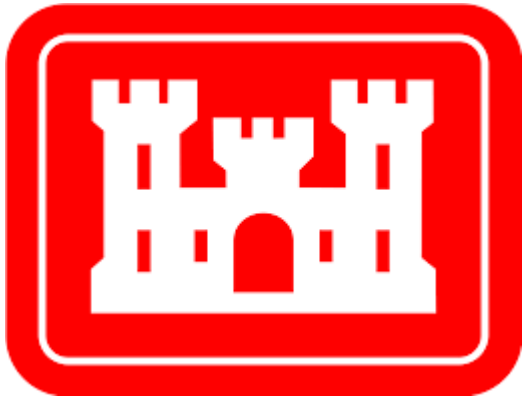
Who is doing this work?



You!

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USGS

Let’s look at some projects/data!

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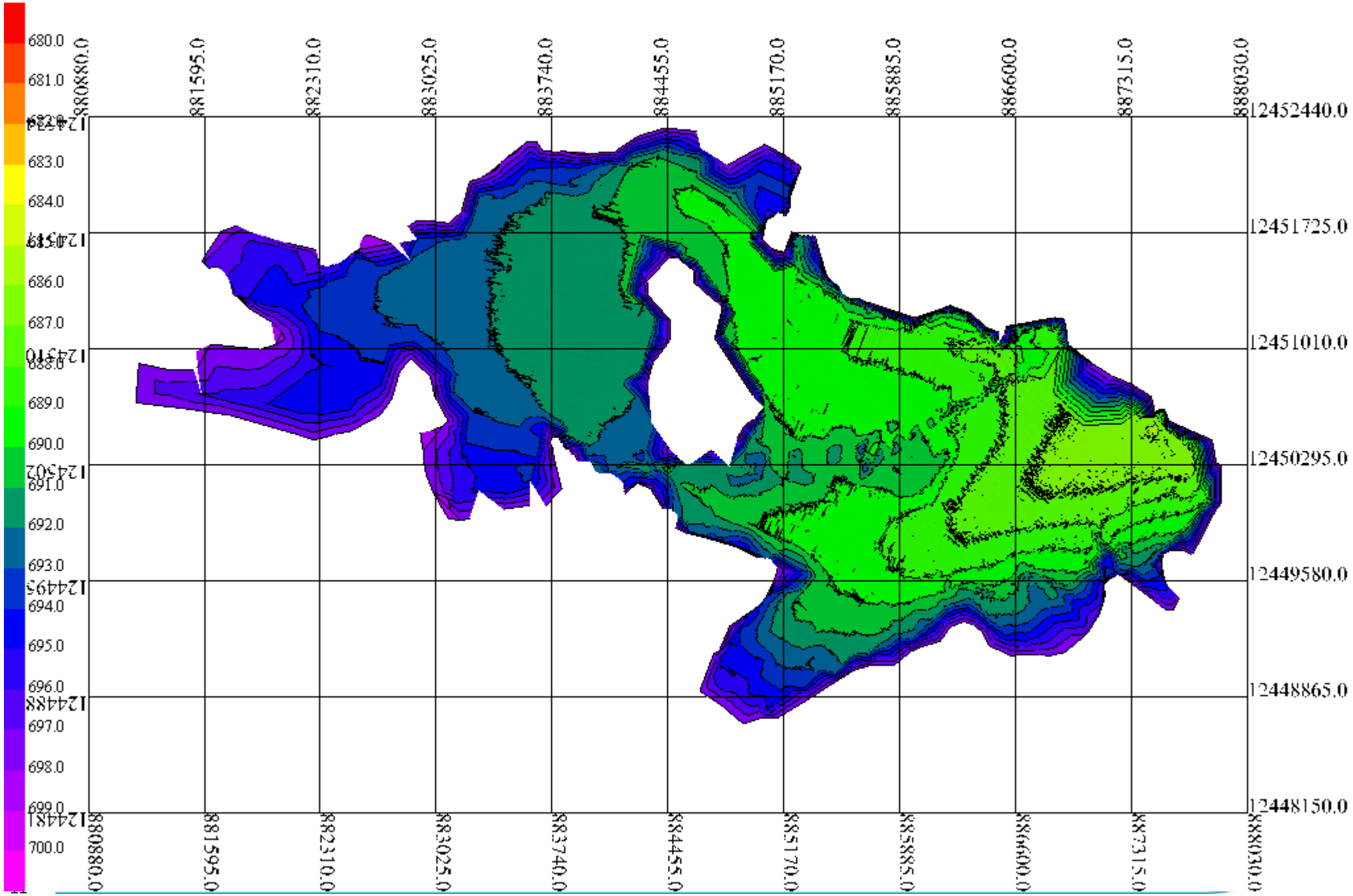

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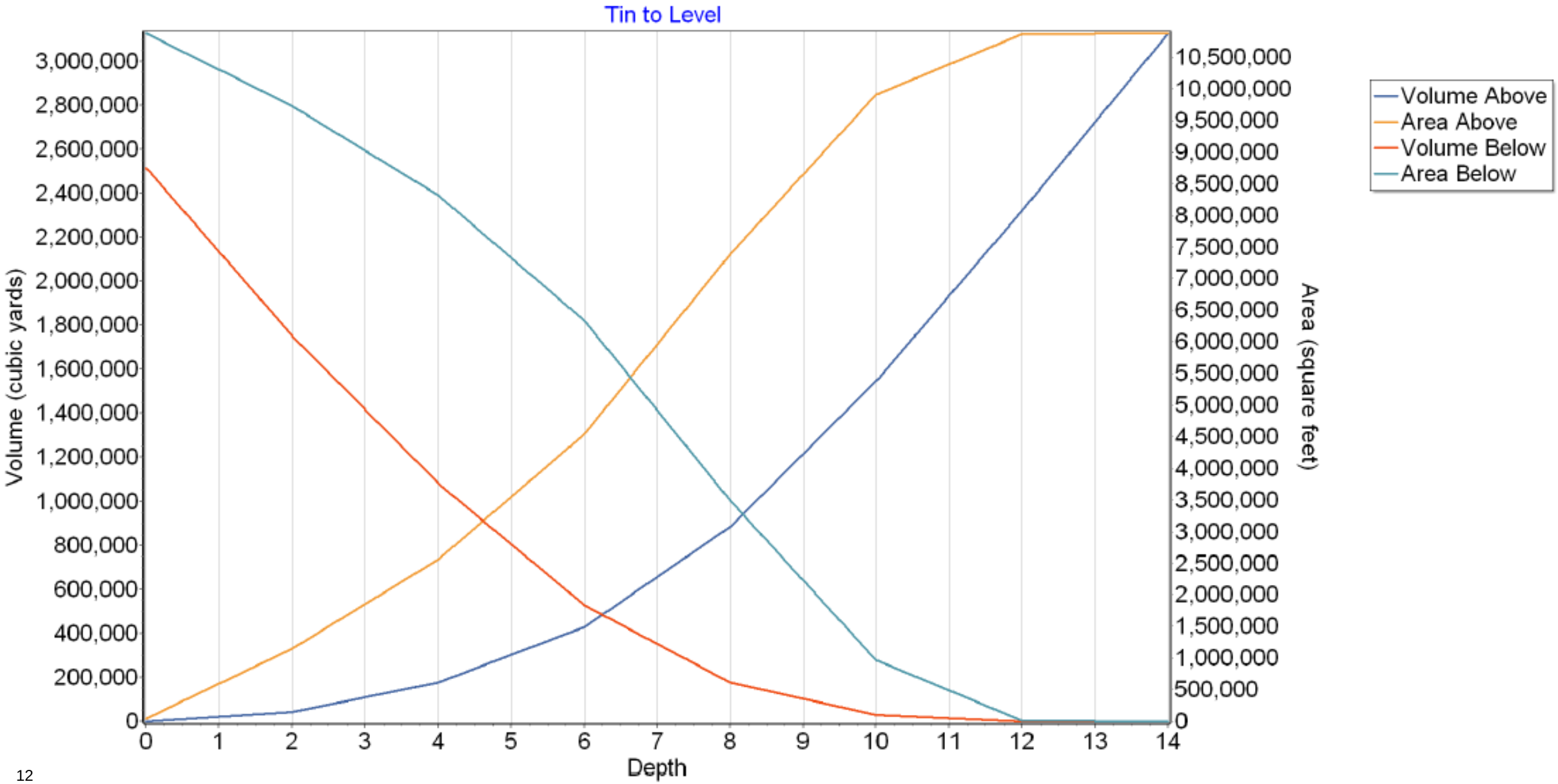
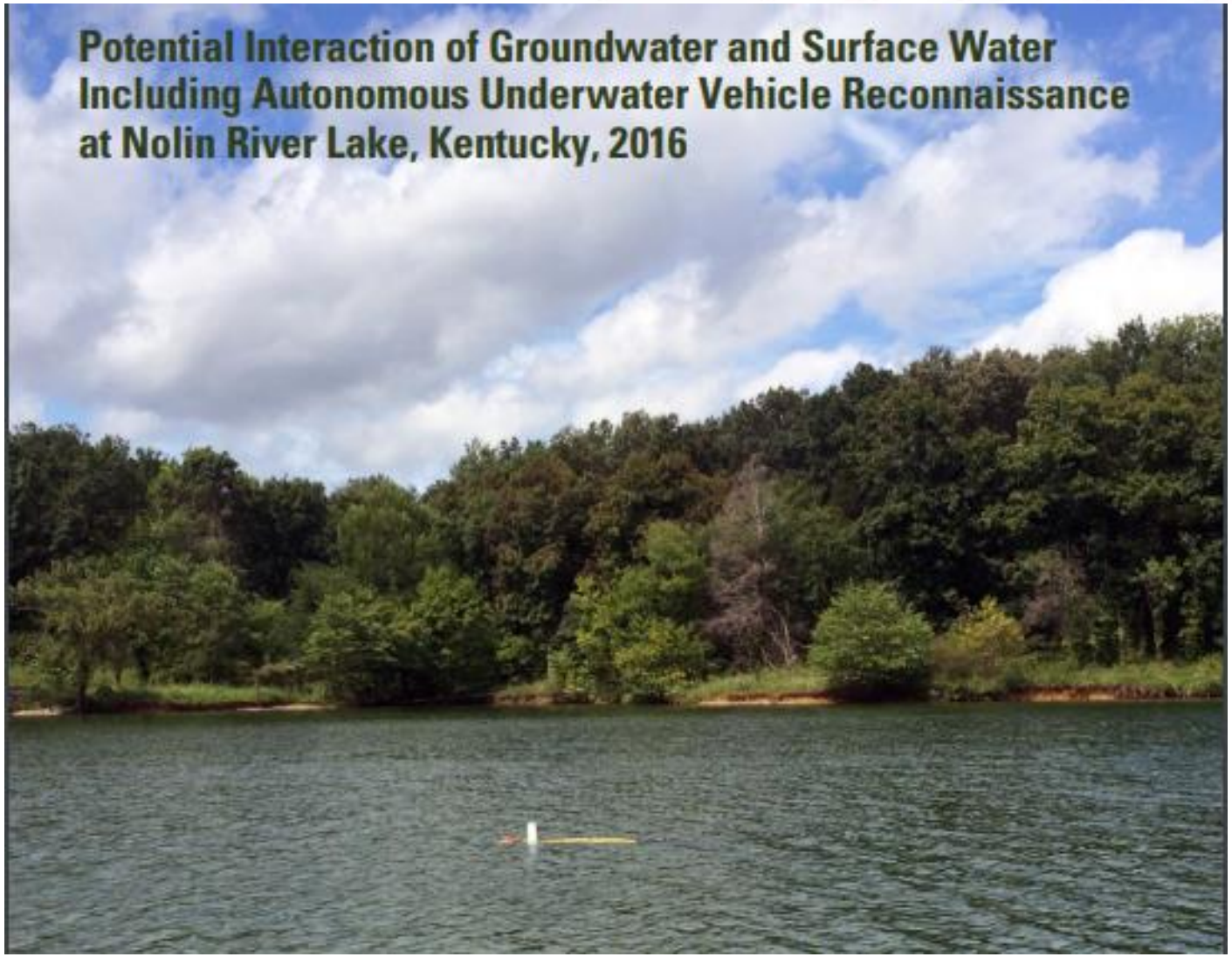
Reservoir 51 Continued



Nolin River Lake, KY



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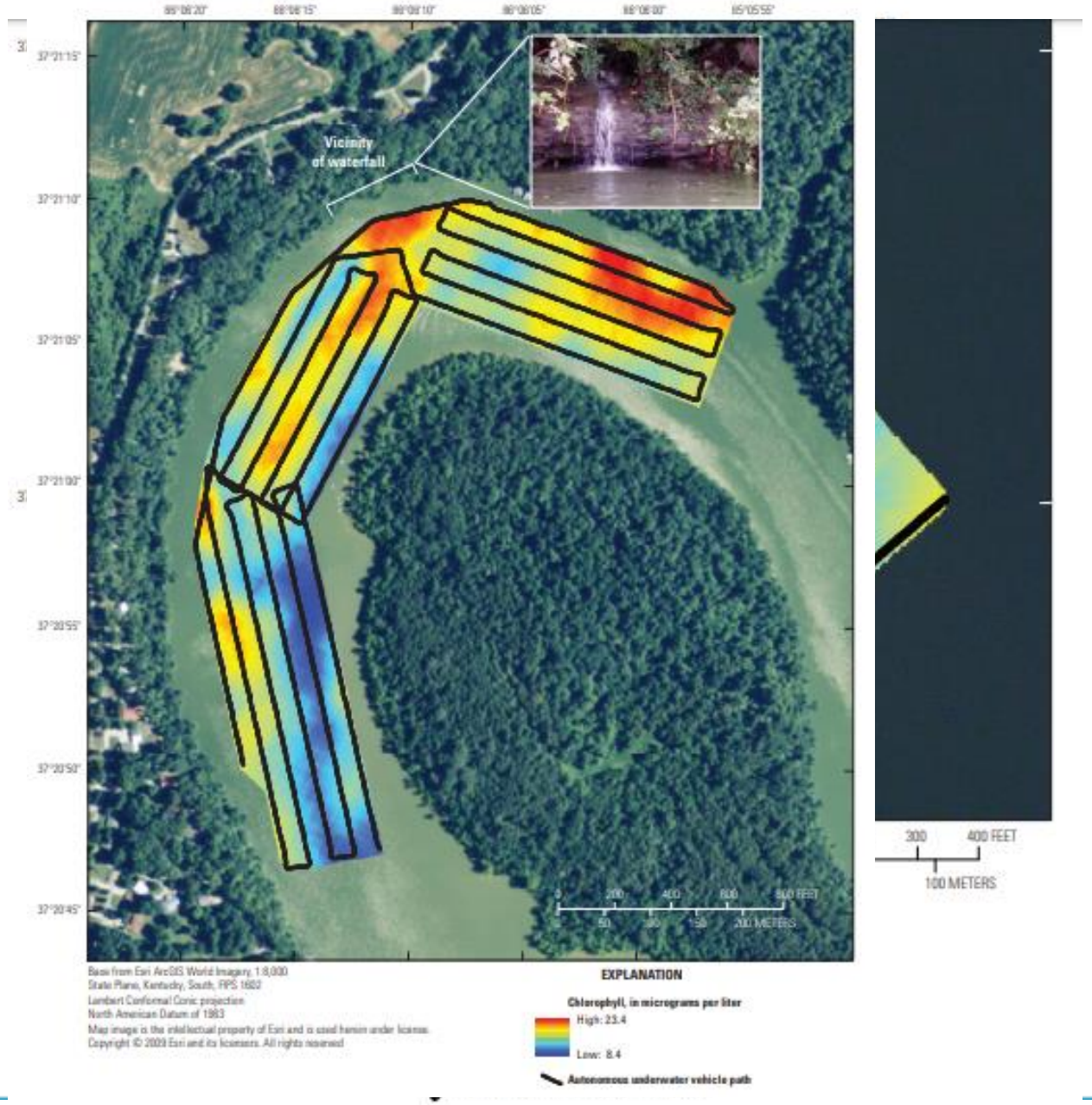
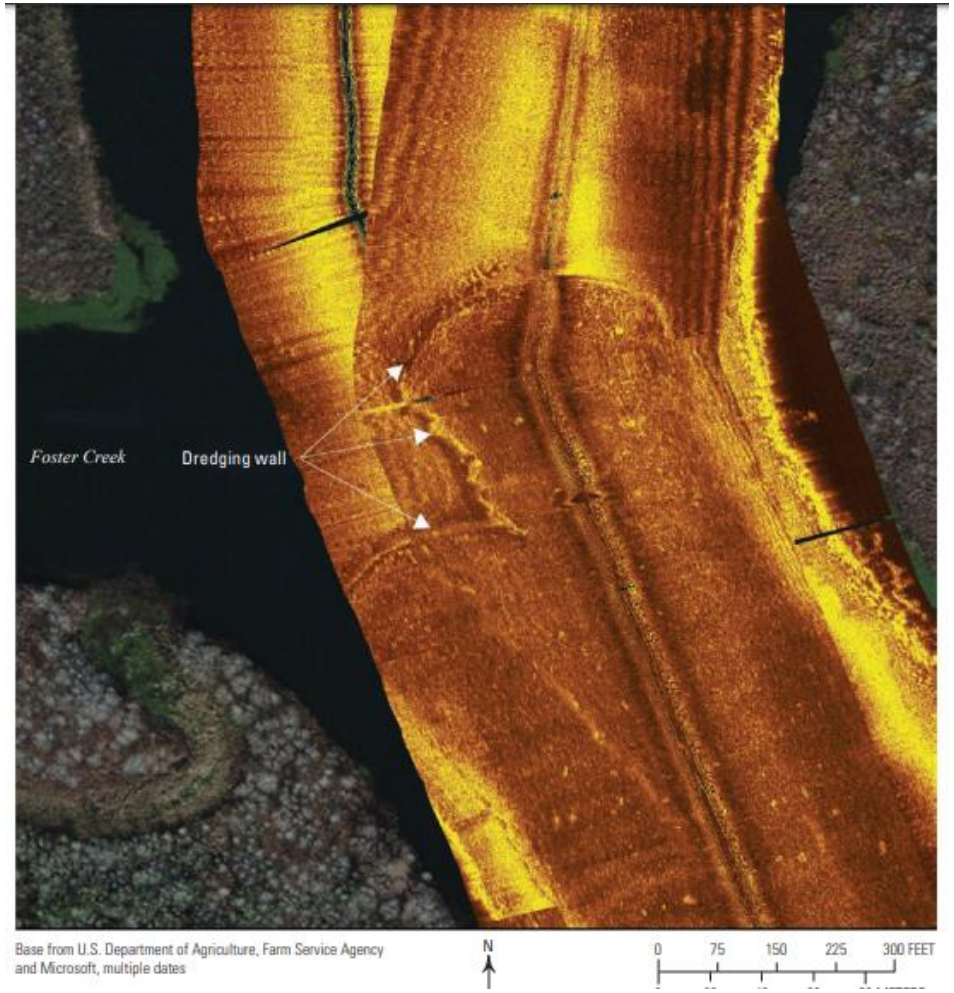
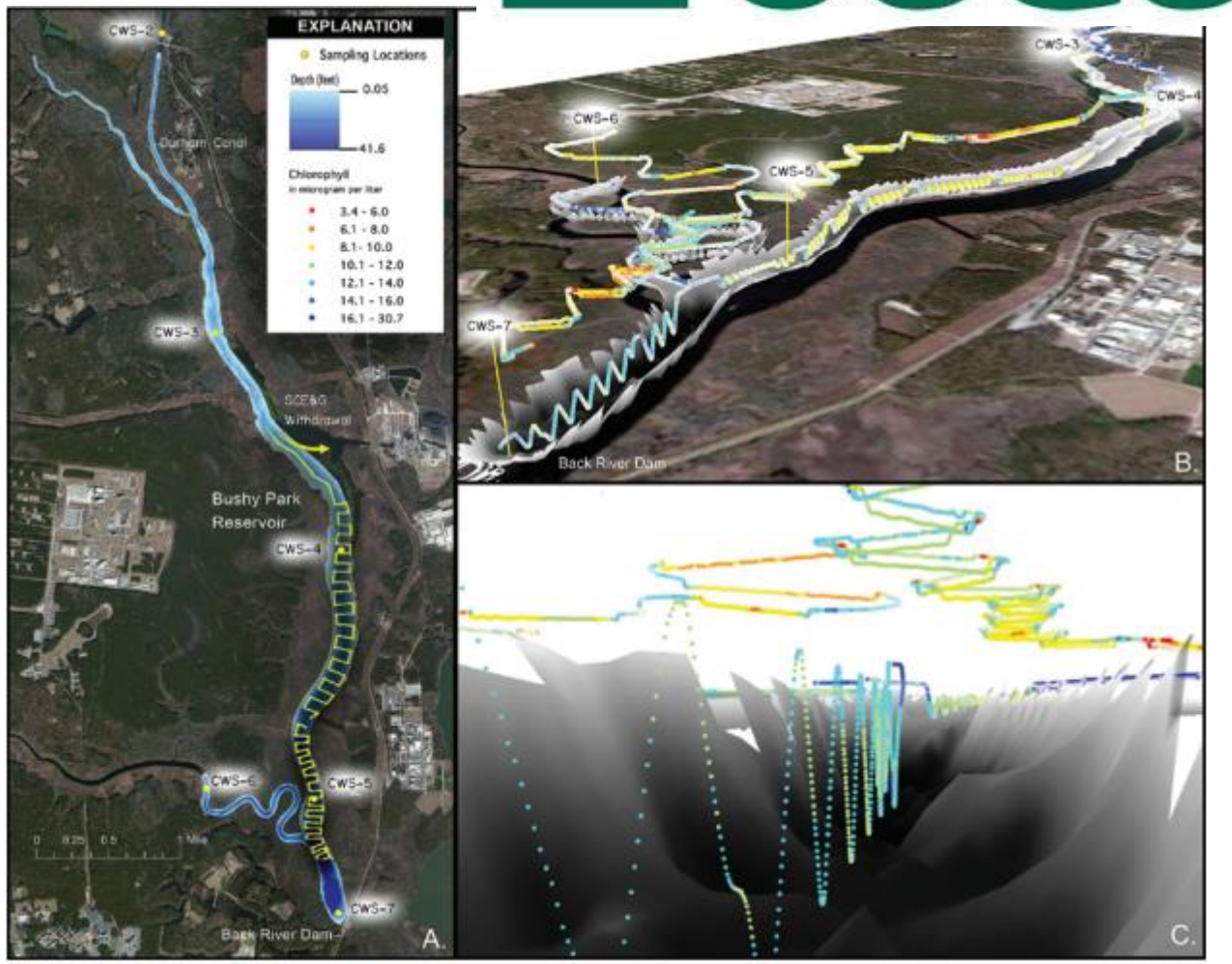


Bushy Park Reservoir, Charleston, SC





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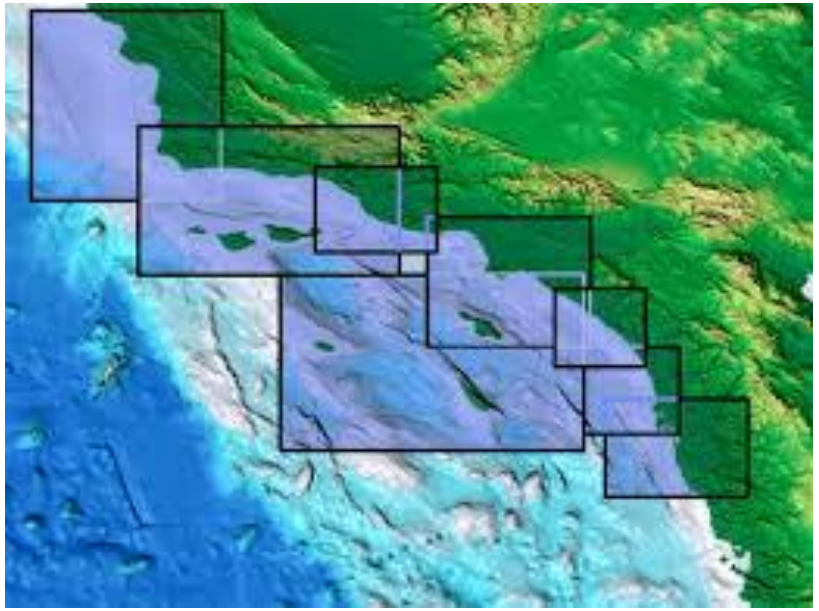
CSU, LB Continued



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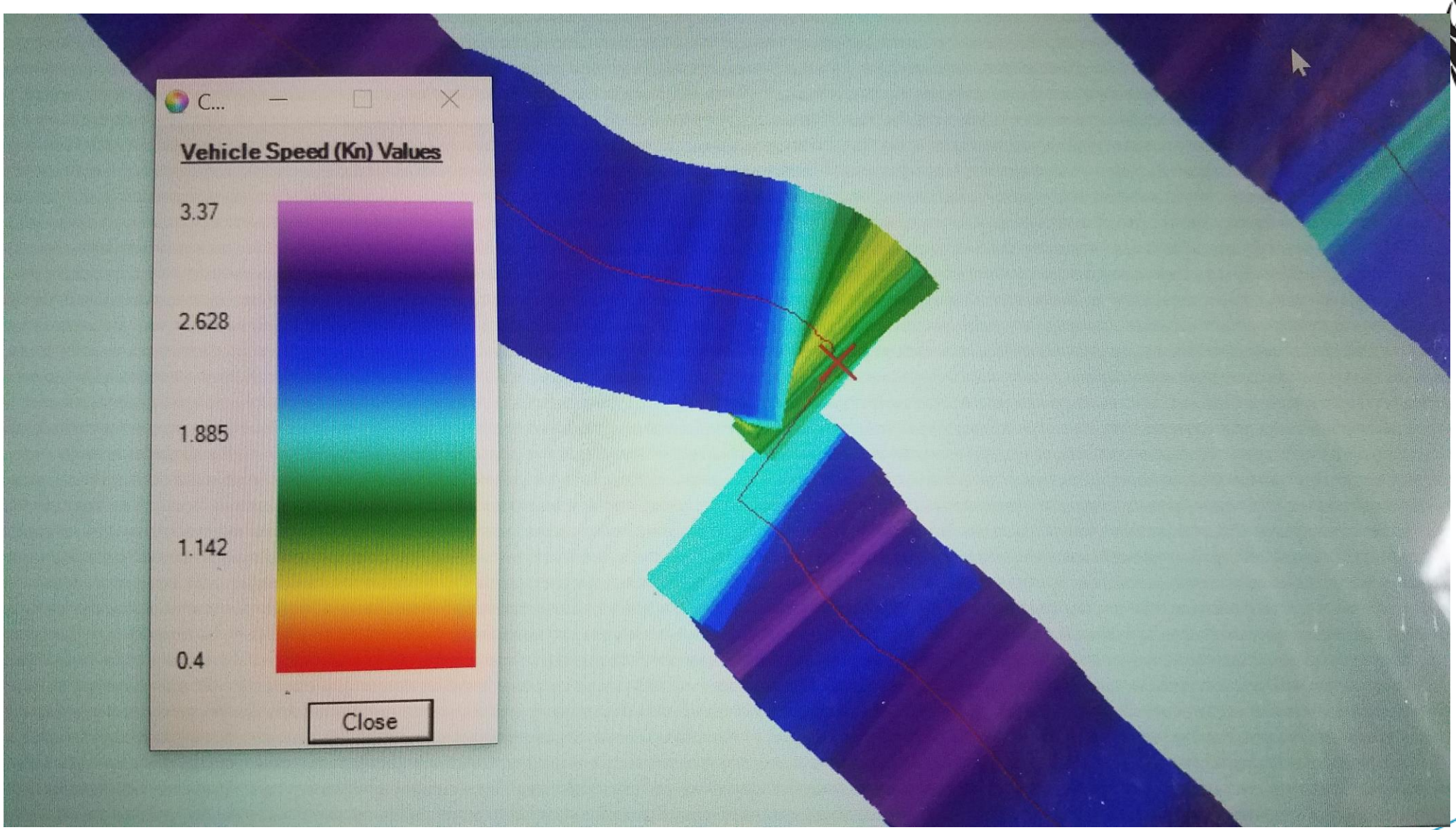

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Bonne Carre Spillway, LA (USACE Vicksburg)

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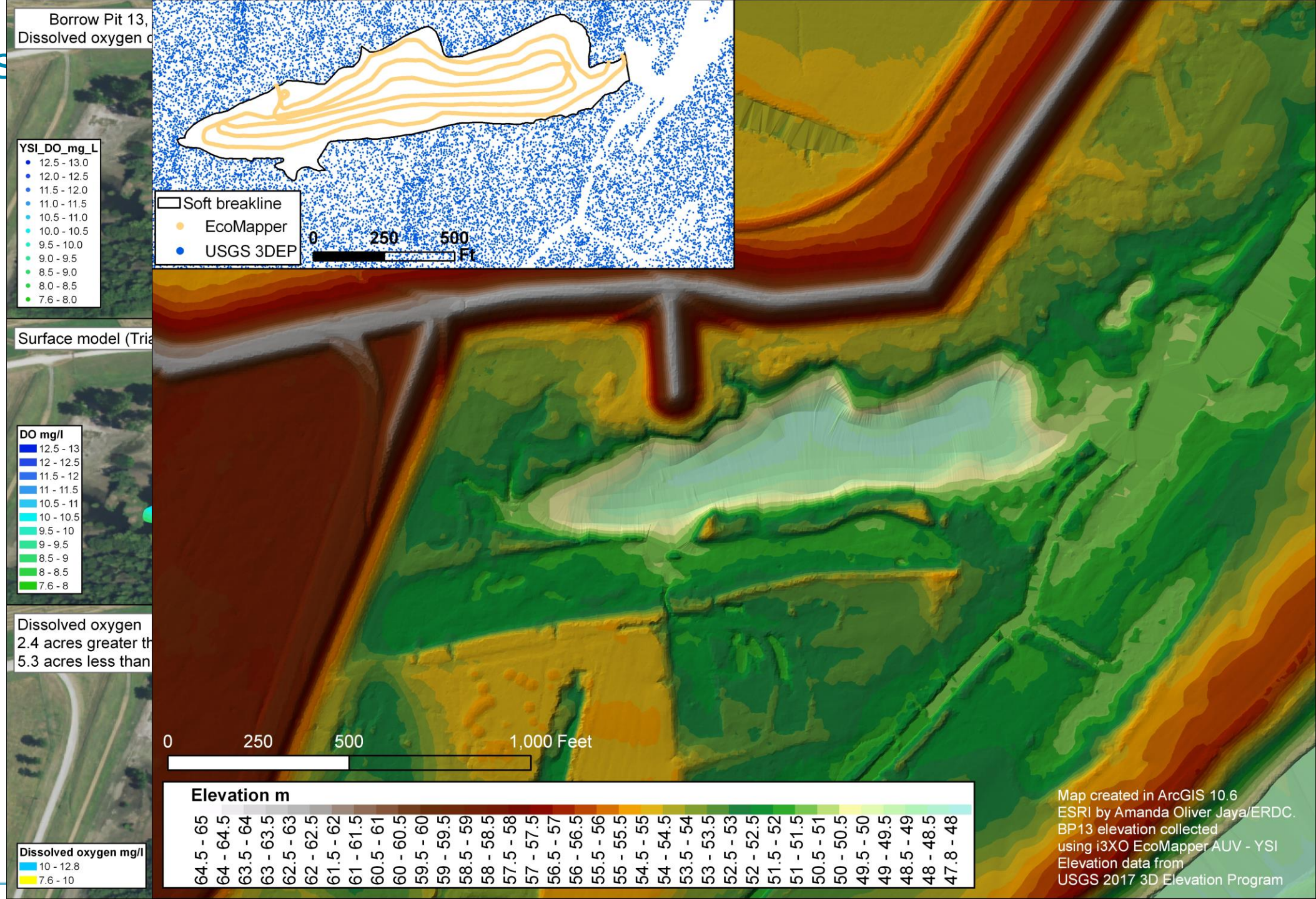
Borrow Pits


Borrow Pit 13,
Dissolved oxygen
YSI_DO_mg_L
12.5 - 13.0
12.0 - 12.5
11.5 - 12.0
11.0 - 11.5
10.5 - 11.0
10.0 - 10.5
9.5 - 10.0
9.0 - 9.5
8.5 - 9.0
8.0 - 8.5
7.6 - 8.0
Soft breakline
EcoMapper
USGS 3DEP
0
250
500
Ft
Surface model (Tria
DO mg/l
12.5 - 13
12 - 12.5
11.5 - 12
11 - 11.5
10.5 - 11
10 - 10.5
9.5 - 10
9 - 9.5
8.5 - 9
8 - 8.5
7.6 - 8
Dissolved oxygen
2.4 acres greater th
5.3 acres less than
Dissolved oxygen mg/l
10 - 12.8
7.6 - 10
0
250
500
1,000 Feet
Elevation m
64.5 - 65
64 - 64.5
63.5 - 64
63 - 63.5
62.5 - 63
62 - 62.5
61.5 - 62
61 - 61.5
60.5 - 61
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51 - 51.5
50.5 - 51
50 - 50.5
49.5 - 50
49 - 49.5
48.5 - 49
48 - 48.5
47.8 - 48
Map created in ArcGIS 10.6
ESRI by Amanda Oliver Jaya/ERDC.
BP13 elevation collected
using i3XO EcoMapper AUV - YSI
Elevation data from
USGS 2017 3D Elevation Program

Questions?

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