

Stevens Point Bathymetric Map

Mason Johnson

MPCA

Watershed Division, Rochester



**Minnesota Pollution
Control Agency**

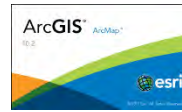
Background

- Stevens Point, Wisconsin
- Impoundment of the Wisconsin River



Software

- ArcGIS 10.2
- Microsoft Excel
- Geospatial Modeling Environment
- Adobe
 - Illustrator
 - Photoshop
 - InDesign



Survey Equipment

6-hp Jon boat

Trimble R6 GPS receiver

Ohmex Sonarmite depth sounder

Trimble TSC2 data collector

Lowrance HDS5 GPS/Sonar

Blackberry Bold with WISCORS
(Wisconsin Continuously
Operating Reference Stations)
instantaneous coordinate
corrections



Project Proposal

- No existing map available
- Stevens Point Flowage is a multi-purpose, key recreational asset to the community
- Document flowage for future planning

Project Proposal

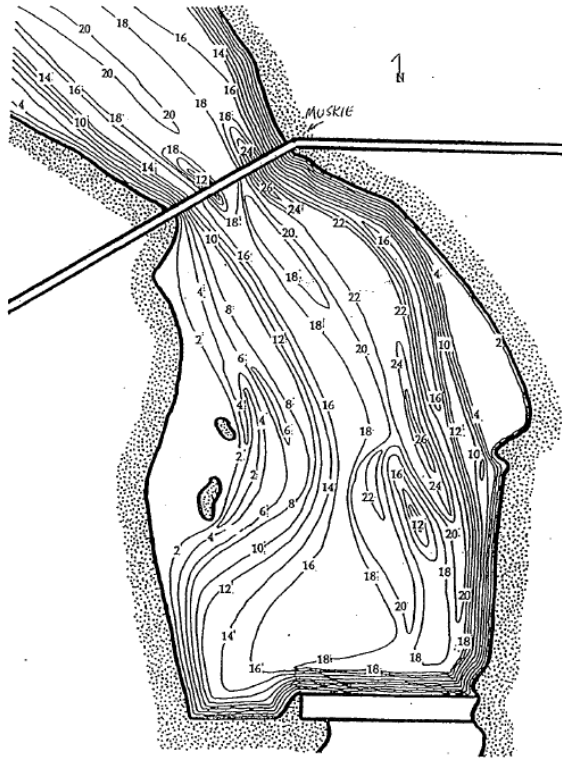


Fig. 50. Area 1 water depth (in feet) at normal pond elevation (1,087 ft). Scale of map - 1:4,800 (1 in. = 400 ft).

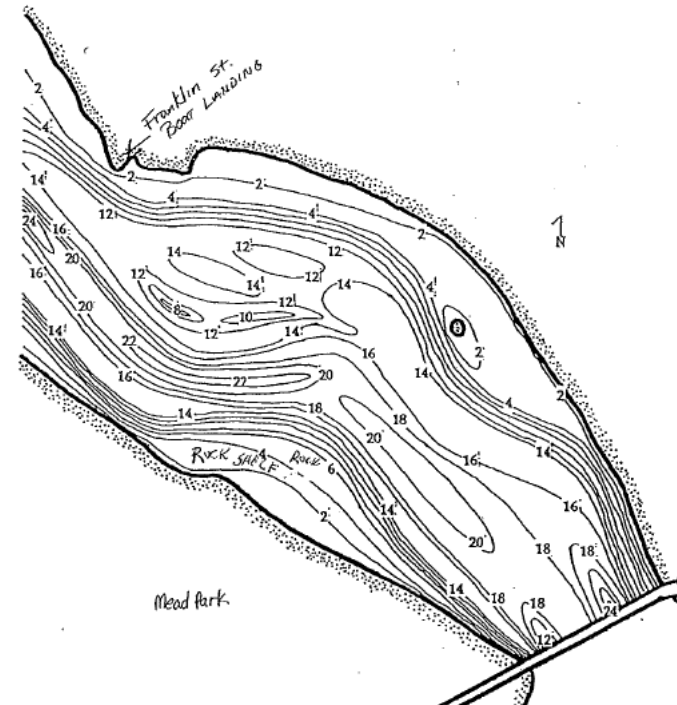
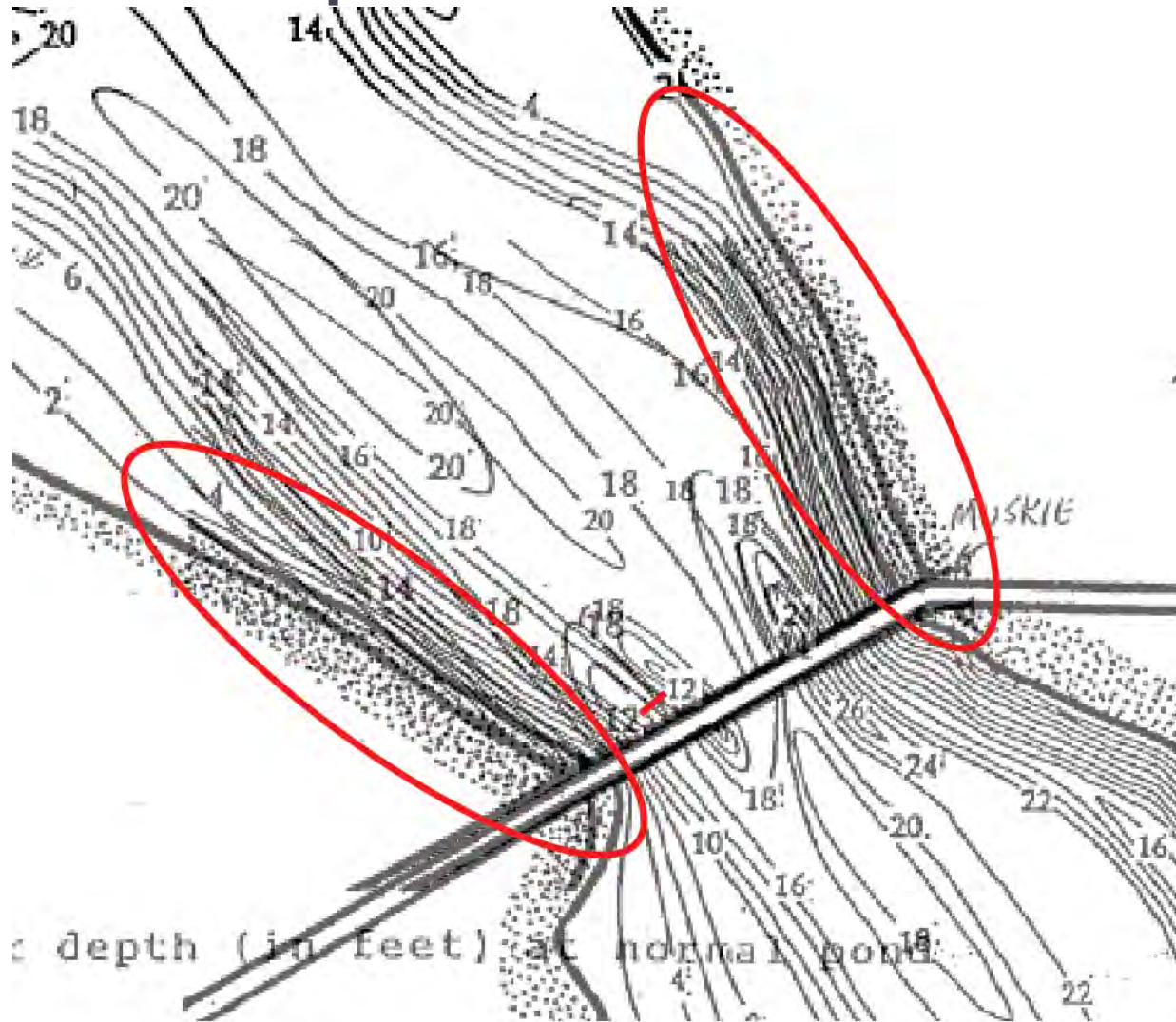


Fig. 51. Area 2 water depth (in feet) at normal pond elevation (1,087 ft). Scale of map - 1:4,800 (1 in. = 400 ft).

Project Proposal



Project Planning



Solution

- 1) Build community partnerships
- 2) Establish community support for map distribution

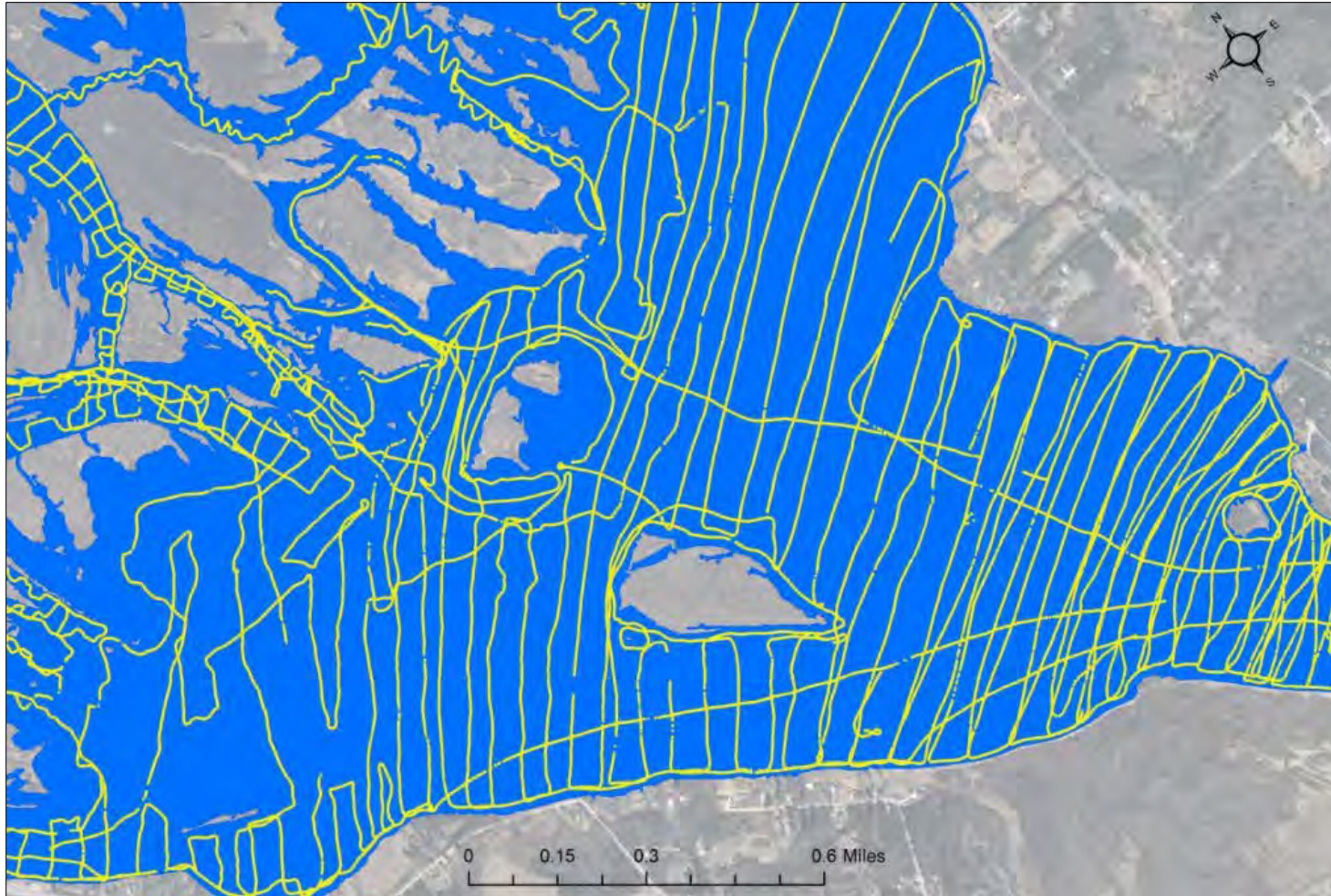
Mission Planning

Pre-Survey Planning

- 300 foot transect spacing
- 12 days on water
- 75 miles of surveying over 2860 acres



Field Work



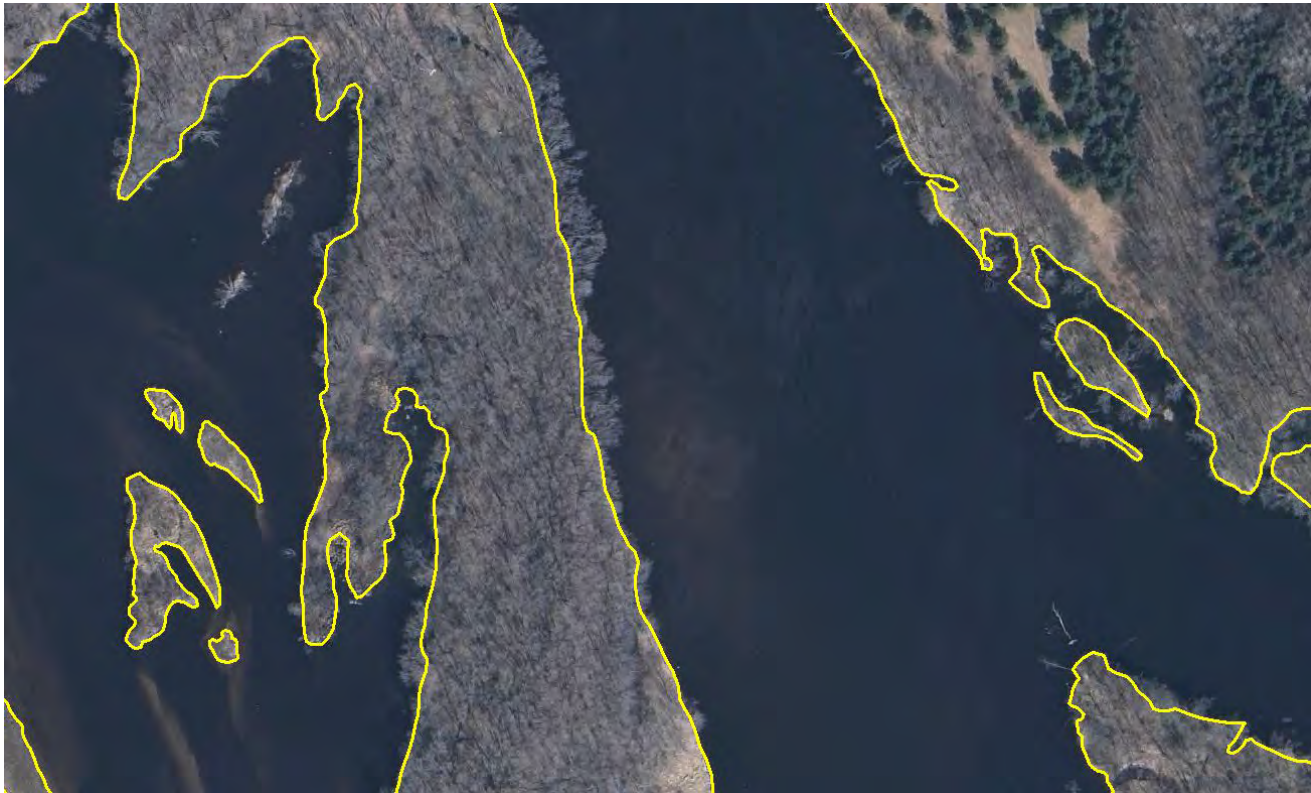
Grid-like transects spaced 300 feet apart

Lab Work

Data collected by Trimble TSC2 data collector brought into excel for post processing

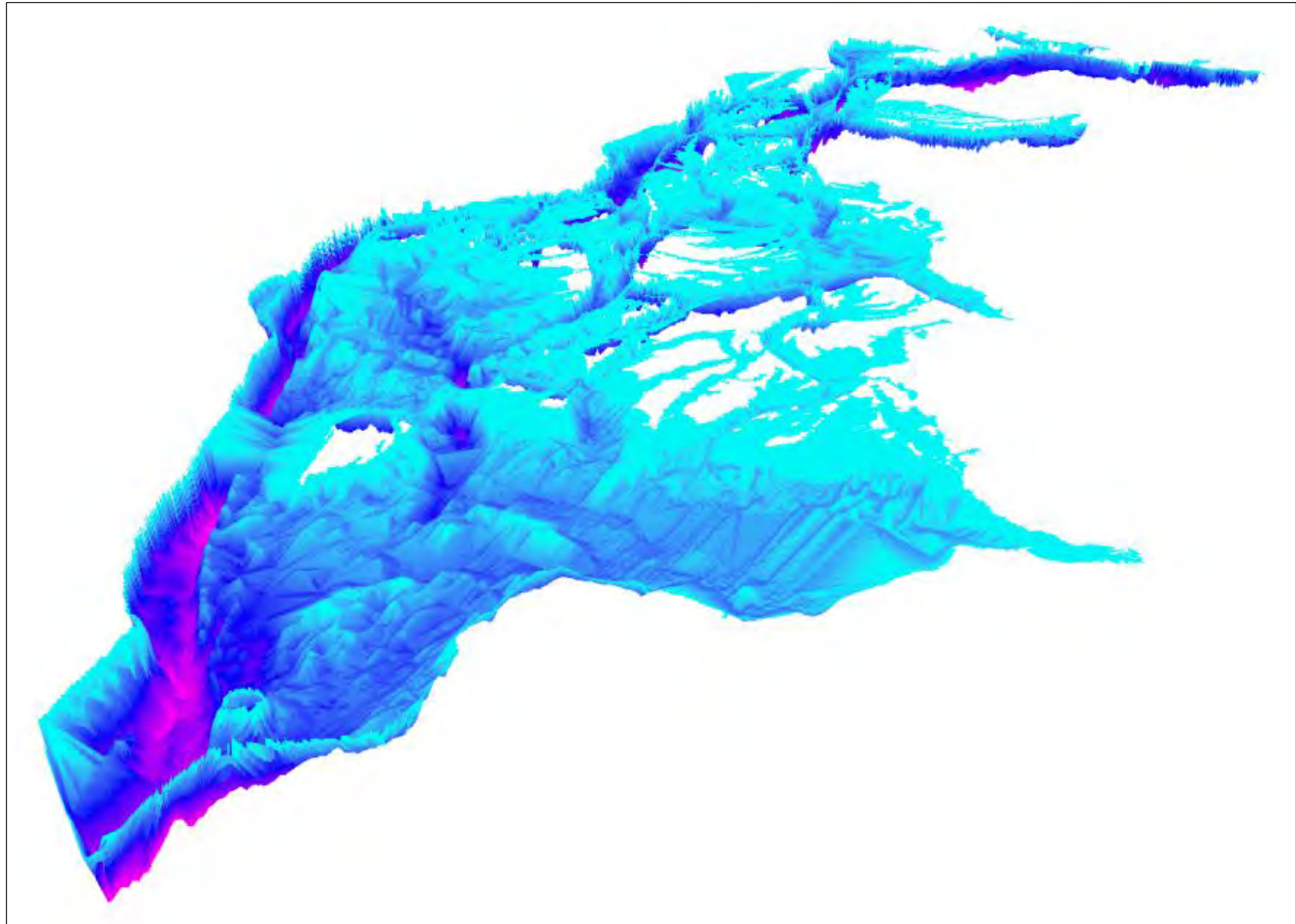
Shoreline and islands were digitized from WROC 2010 aerial imagery using ArcMap 10.2 software.

Vertices from digitized shoreline and islands were set to a depth of zero and combined with surveyed data.



Lab Work

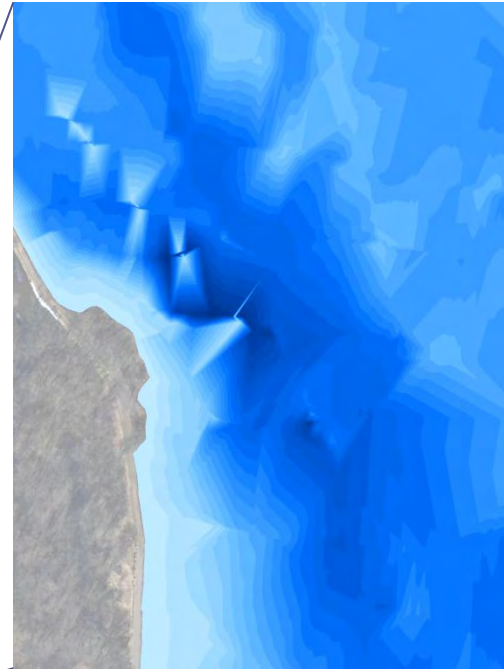
Triangulated Irregular Network (TIN)
model created



Lab Work



TIN model converted to 1m raster



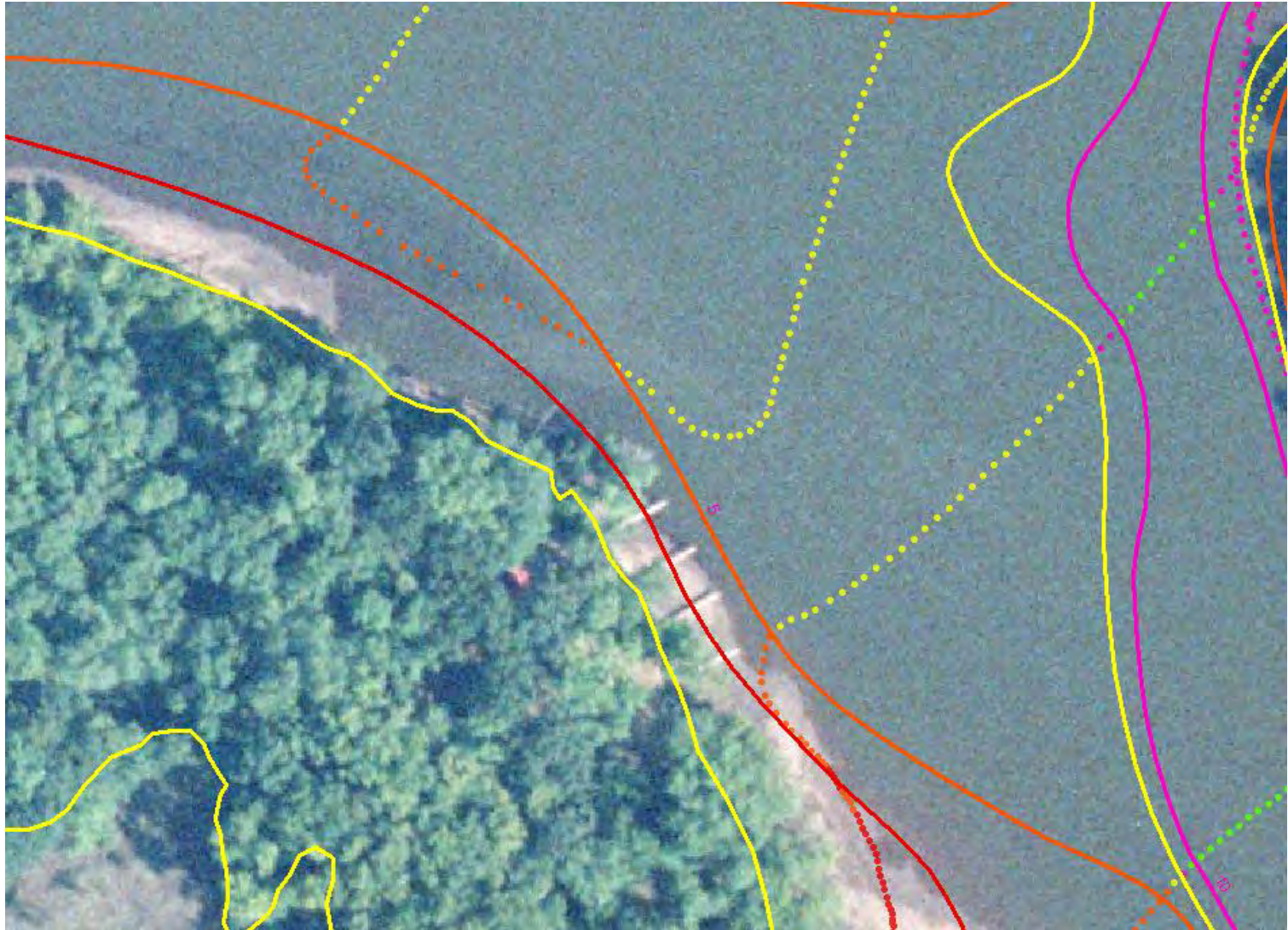
Survey Results

Post-Survey

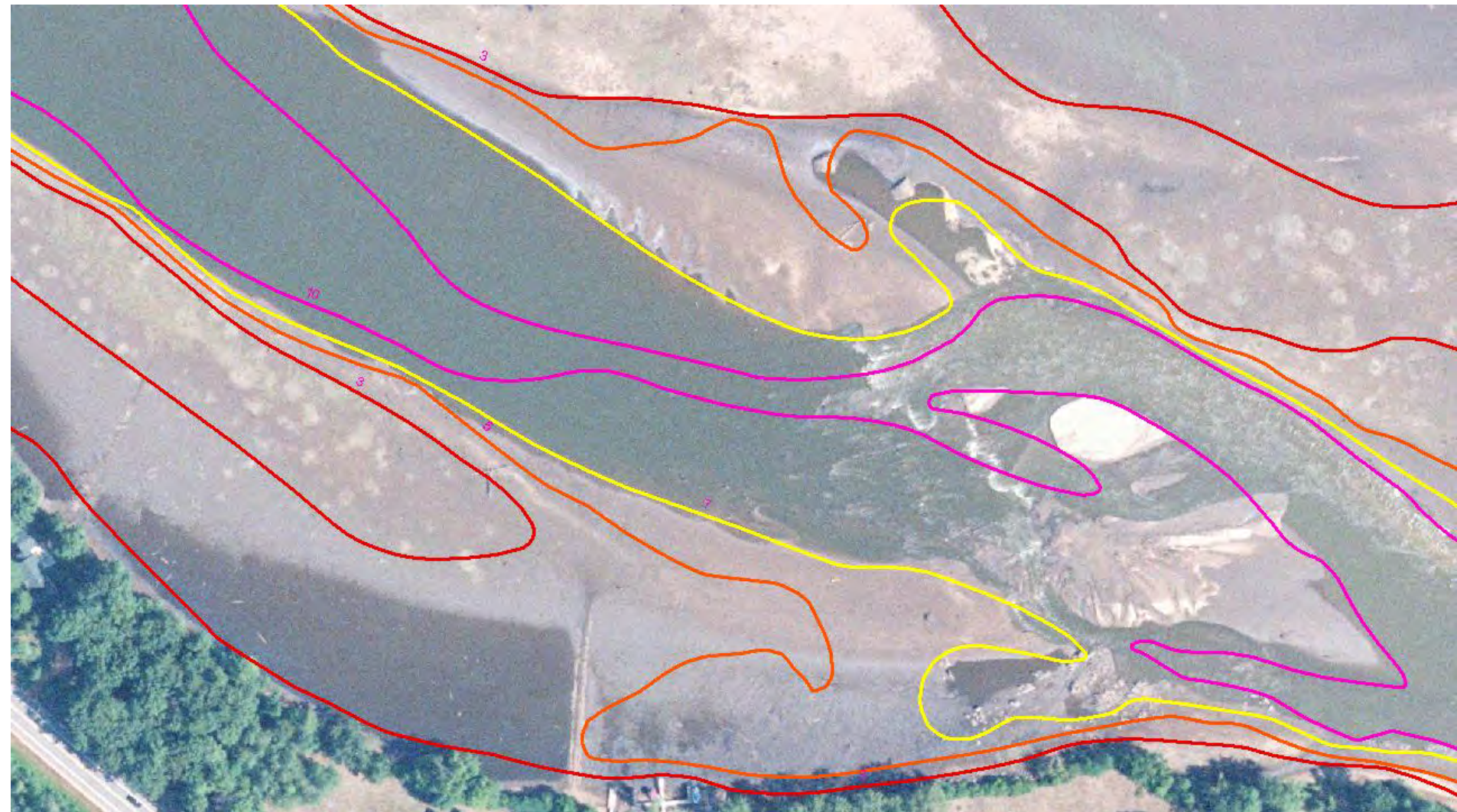
- 13 days on water
- Over 120,000 data points collected

LAKE AREA WITHOUT ISLANDS	3215	Acres
LAKE AREA WITH ISLANDS	2776	Acres
Under 3 Feet	38.4	Percent
Over 20 Feet	0.5	Percent
VOLUME	13028	Acre-Feet
SHORELINE	108	Miles
MAXIMUM DEPTH	27.6	Feet
AVERAGE DEPTH	4.7	Feet
Full Pool Elevation	1087	Feet

Contouring



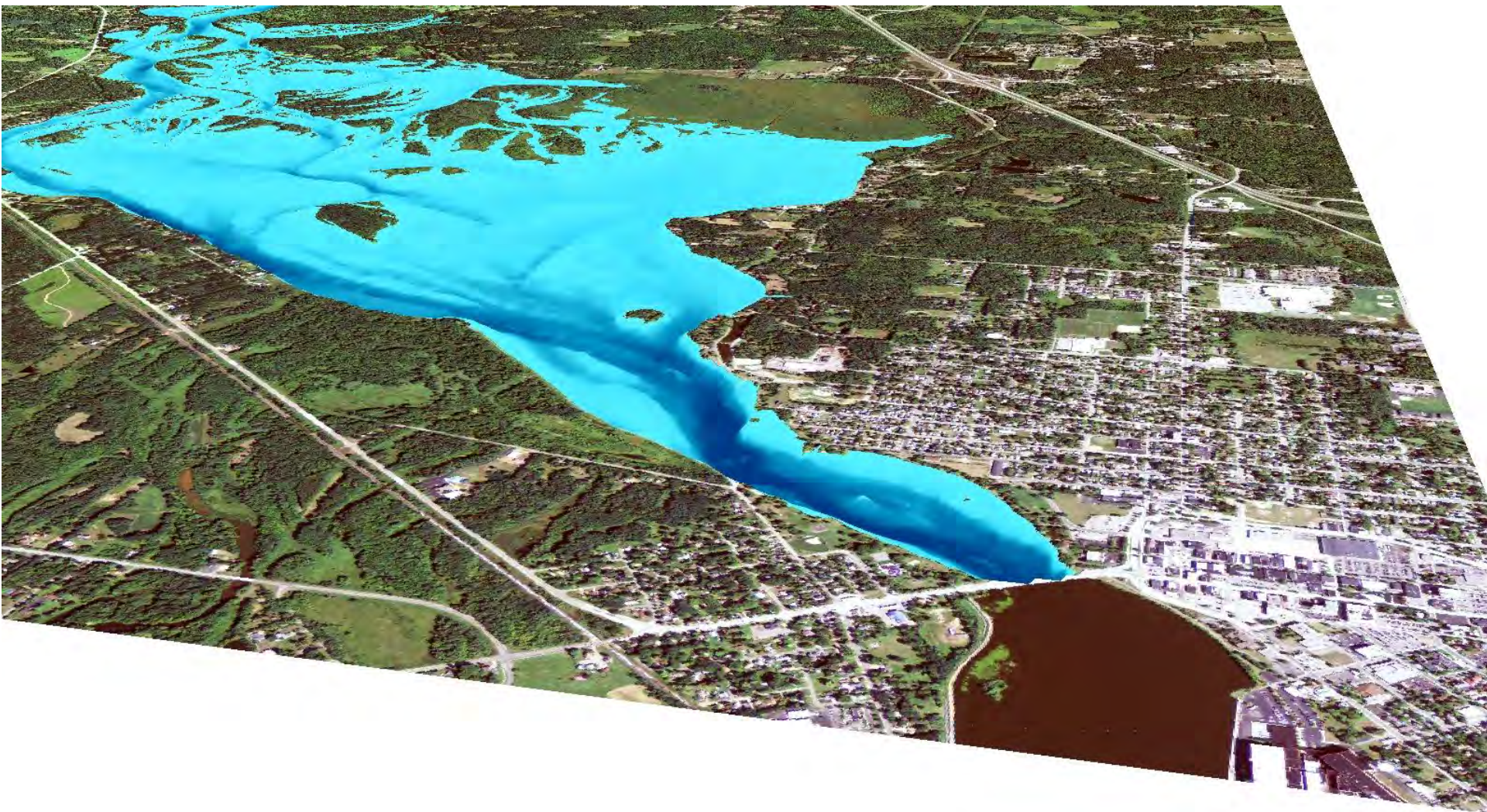
Contouring



Flowage Model



Flowage Model



Flowage Model



Flowage Model



Map Distribution

- \$5,625 raised between 20 community partners
to cover printing costs
- 6000 maps printed
- Maps distributed to public

Final Map

Front

Back