

Surveys and Sediment: Managing Illinois Lakes and Reservoirs

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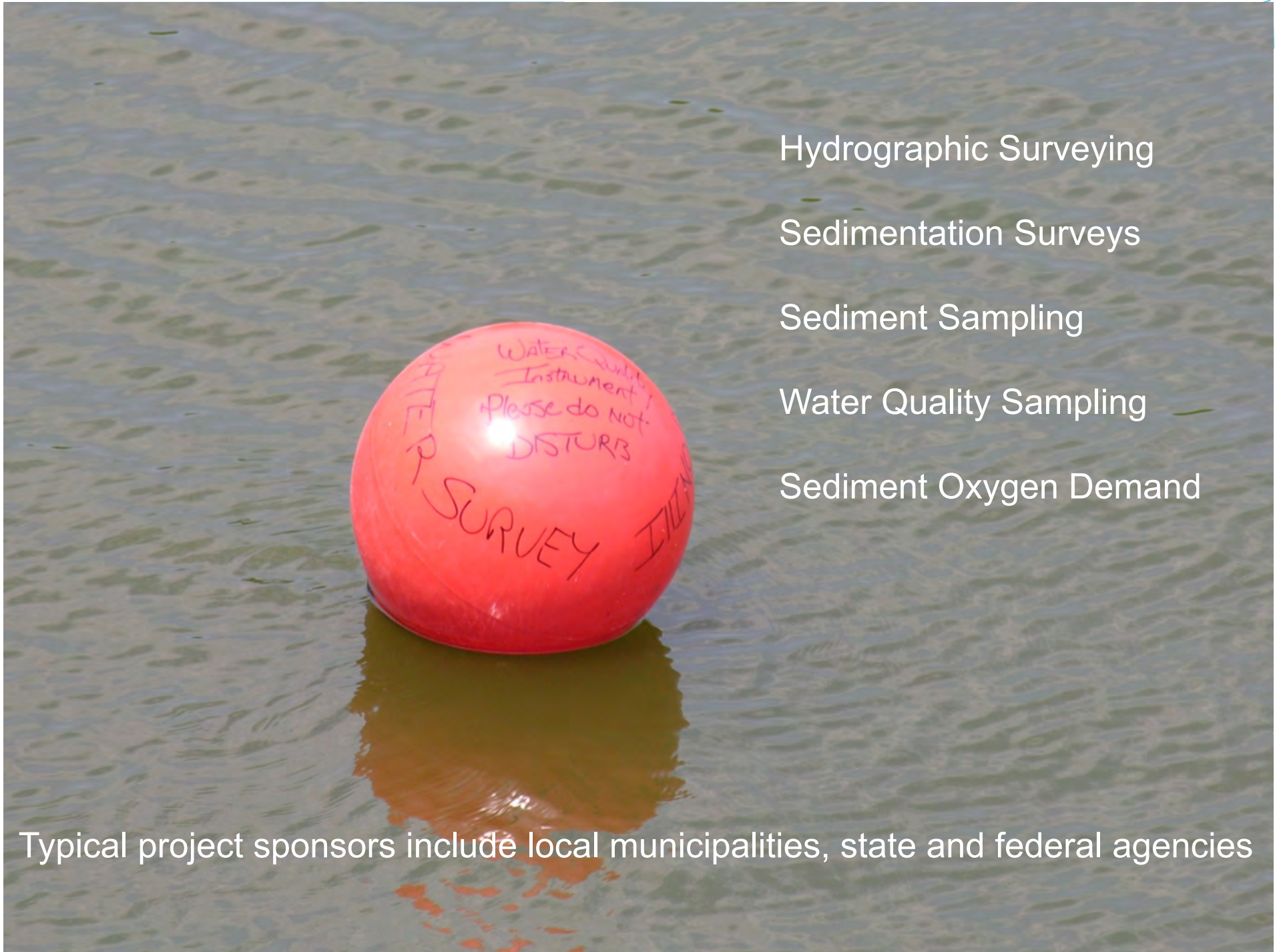




Sediment Issues

- Loss of Capacity/Decrease in Safe Yield
- Diminished use of infrastructure: Intakes, Access ramps
- Impacts on Water Quality: Nutrient cycling, anoxic conditions, greenhouse gases
- Loss of Habitat: Invertebrates, Fish communities, Aquatic vegetation





Hydrographic Surveying

Sedimentation Surveys

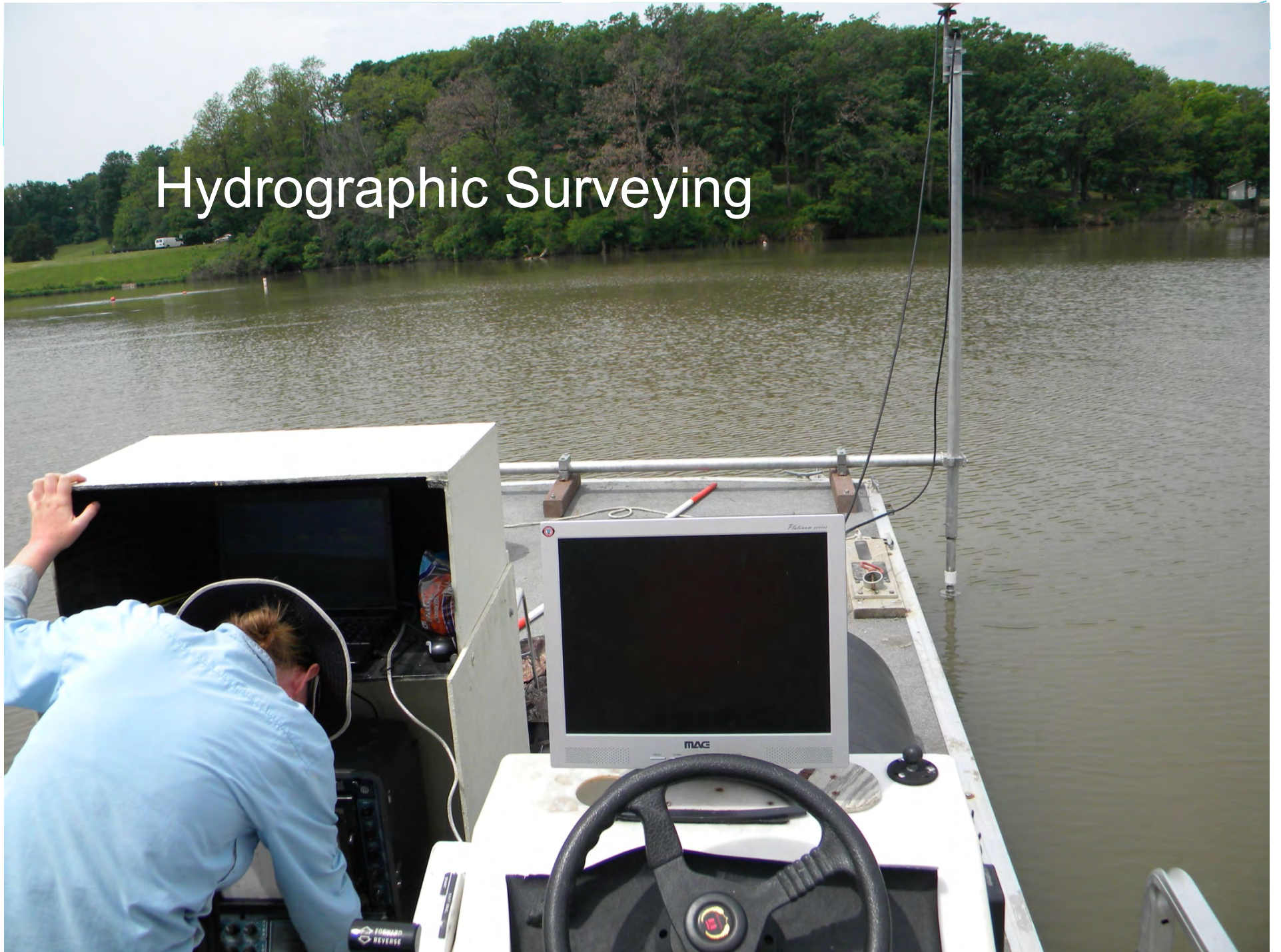
Sediment Sampling

Water Quality Sampling

Sediment Oxygen Demand

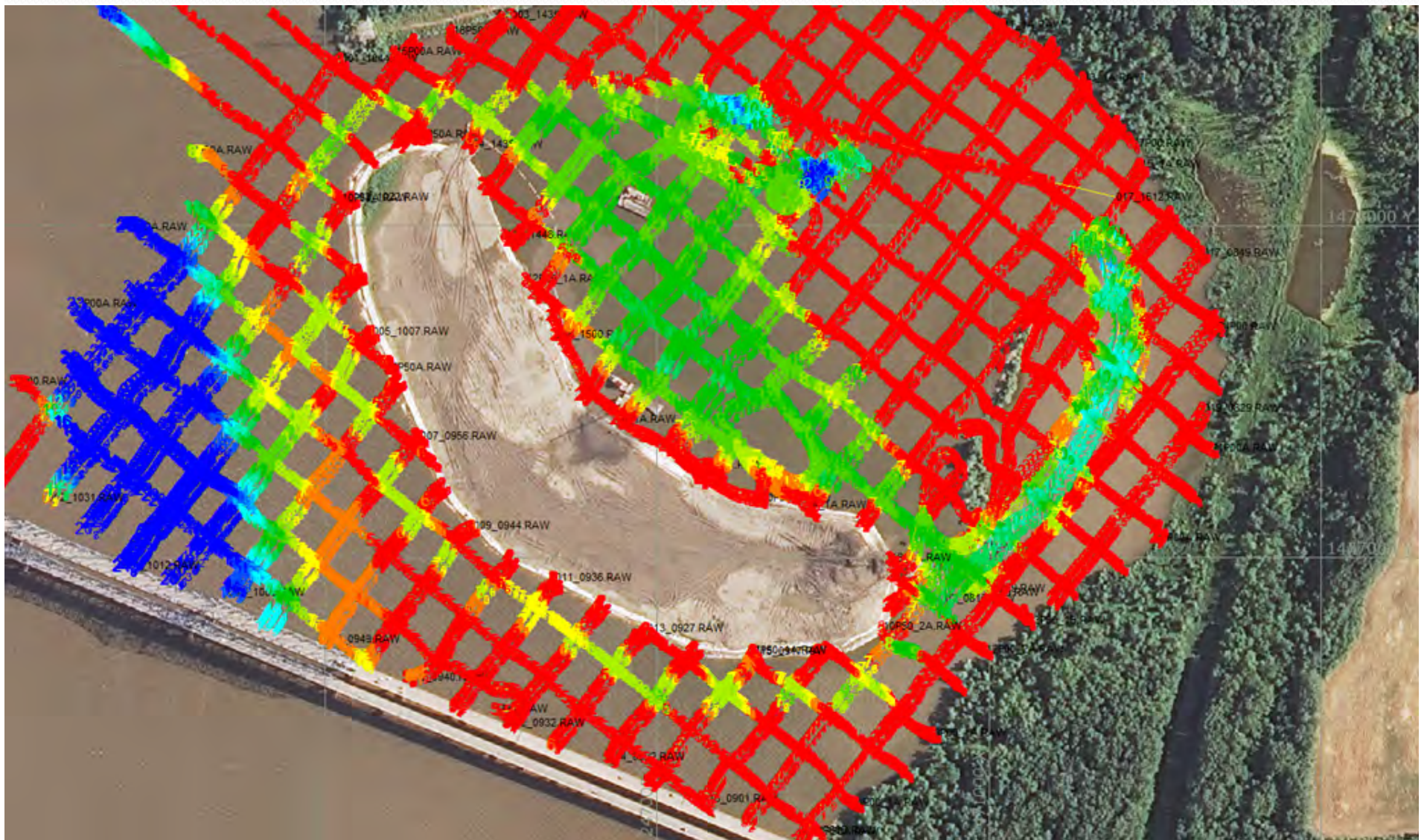
Typical project sponsors include local municipalities, state and federal agencies

Hydrographic Surveying



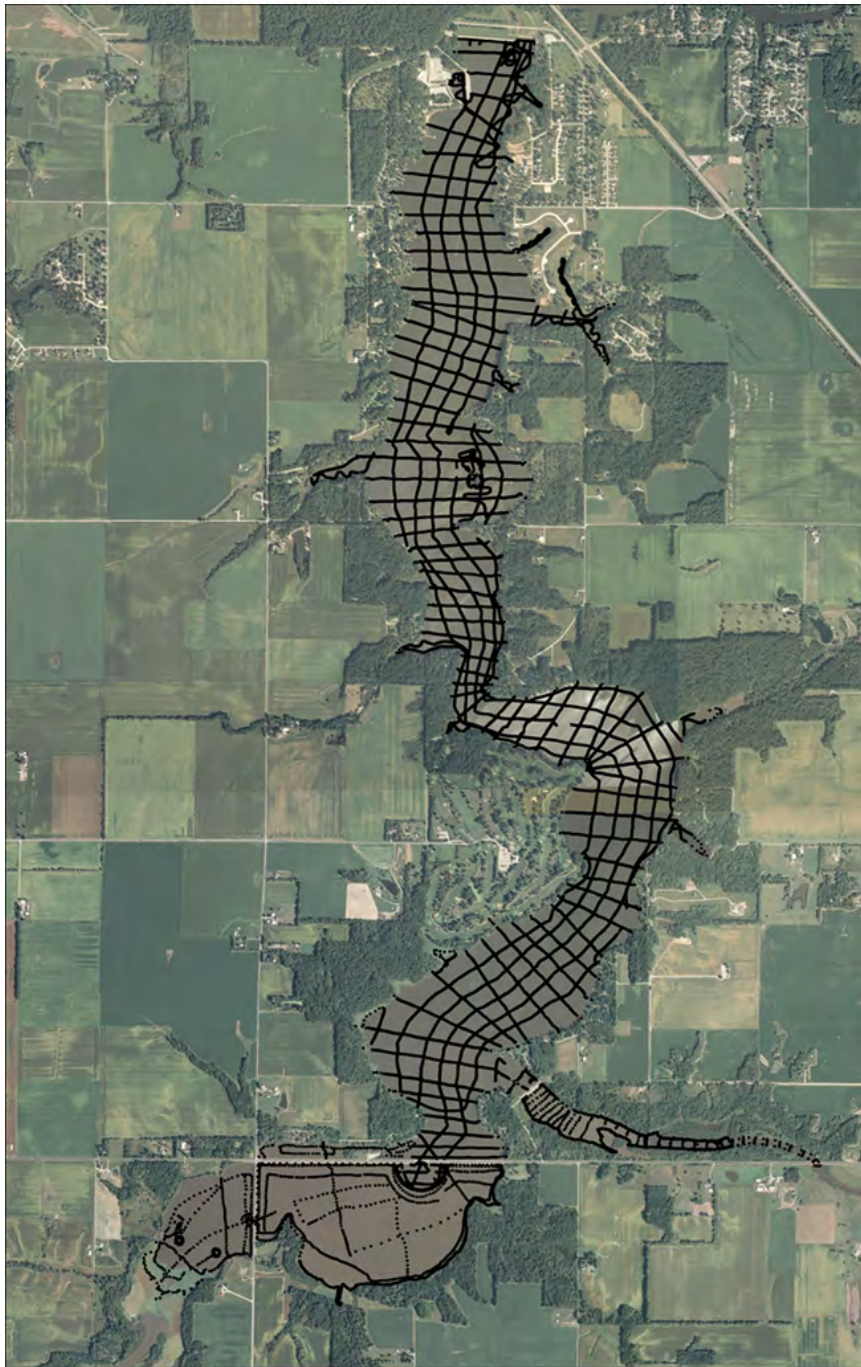
- Odom Echotrac MKII recorder/digitizer/transceiver with high frequency/narrow beam transducer
- AgGPS 132: WAAS enabled with sub-meter accuracy
- HYPACK survey software



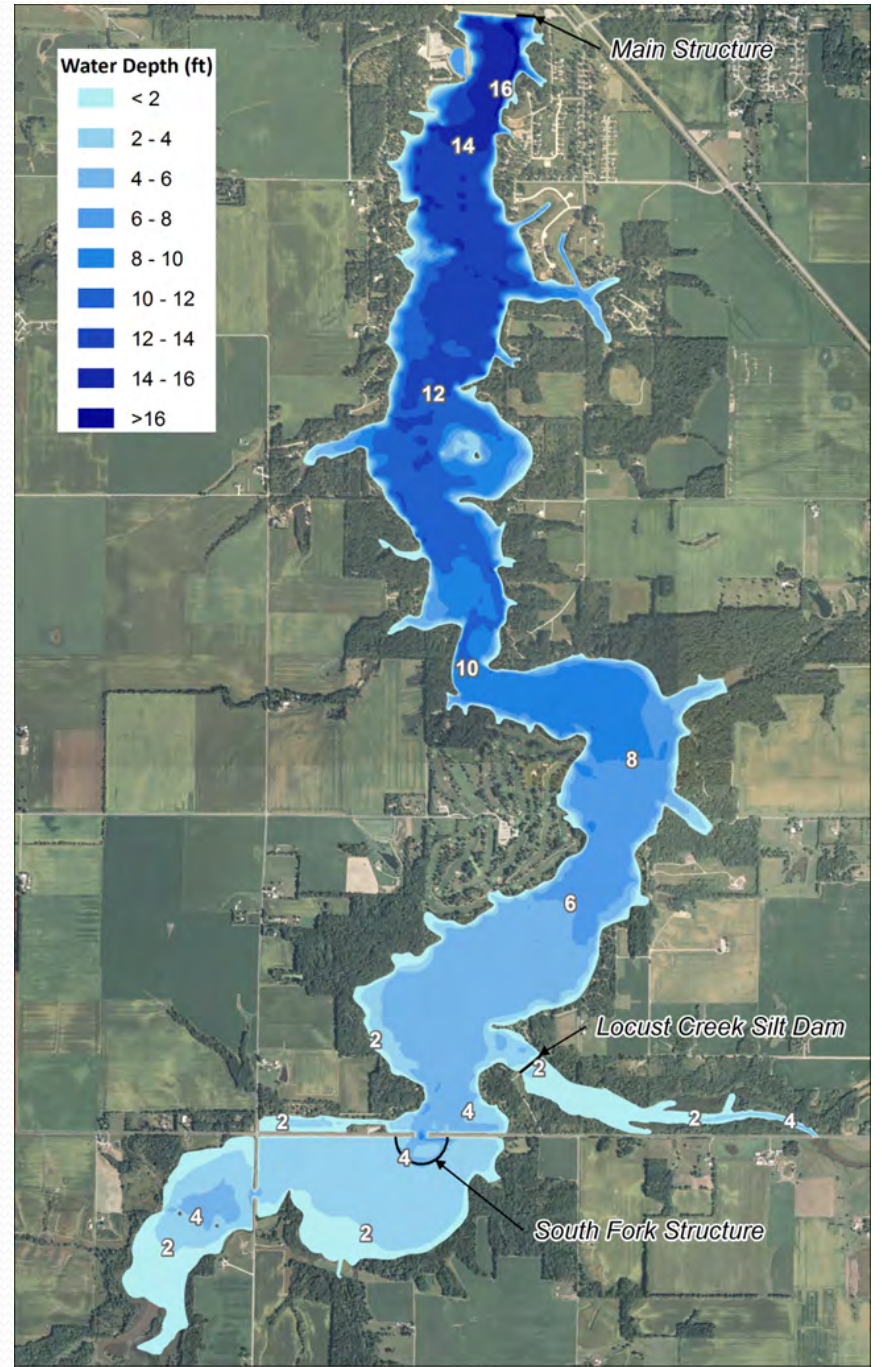


Red < 6ft
Blue > 16ft

River stage during data collection was
approximately 4ft above flat pool



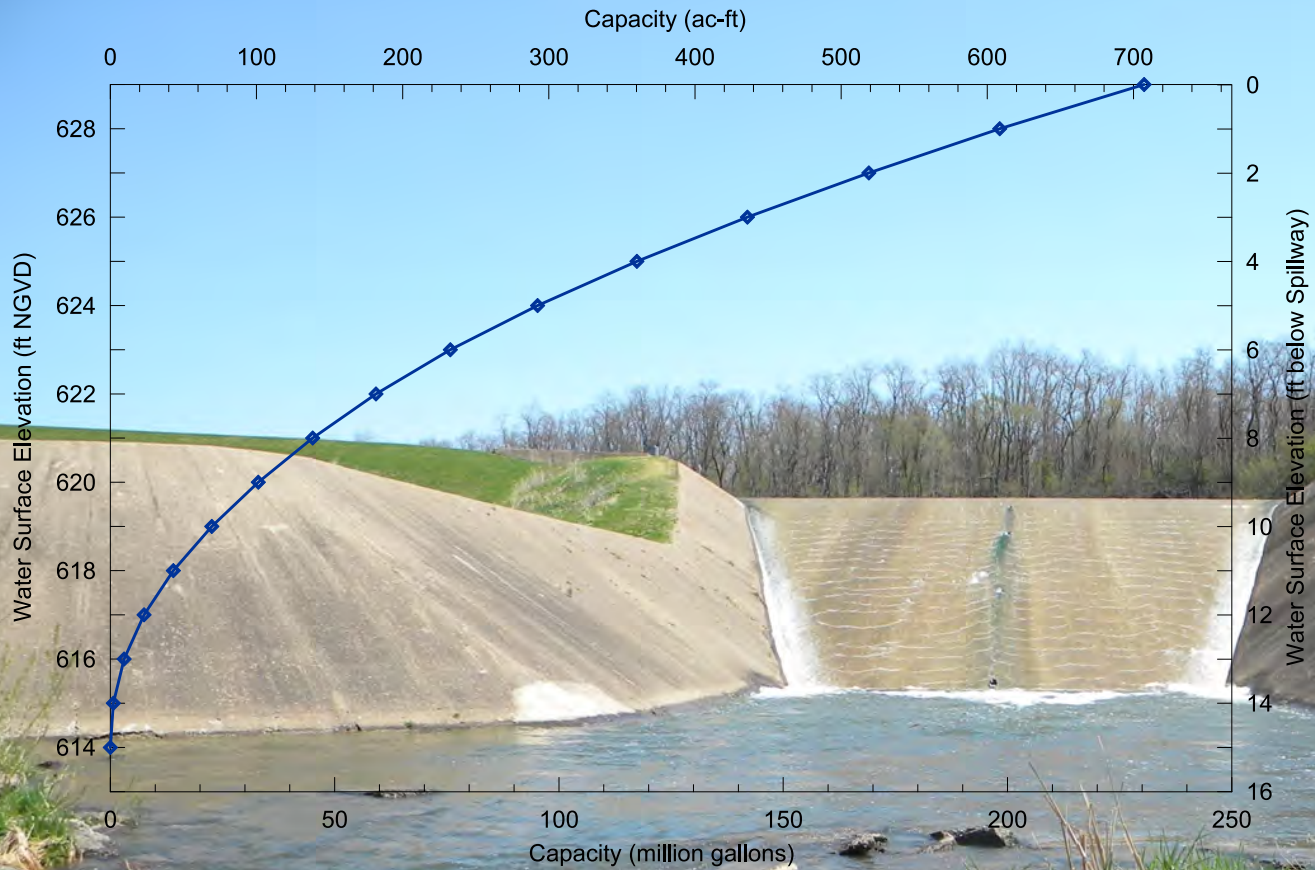
0 500 1,000 2,000 3,000 4,000 5,000 Feet
Basemap: NAIP 2009 Ortho Imagery



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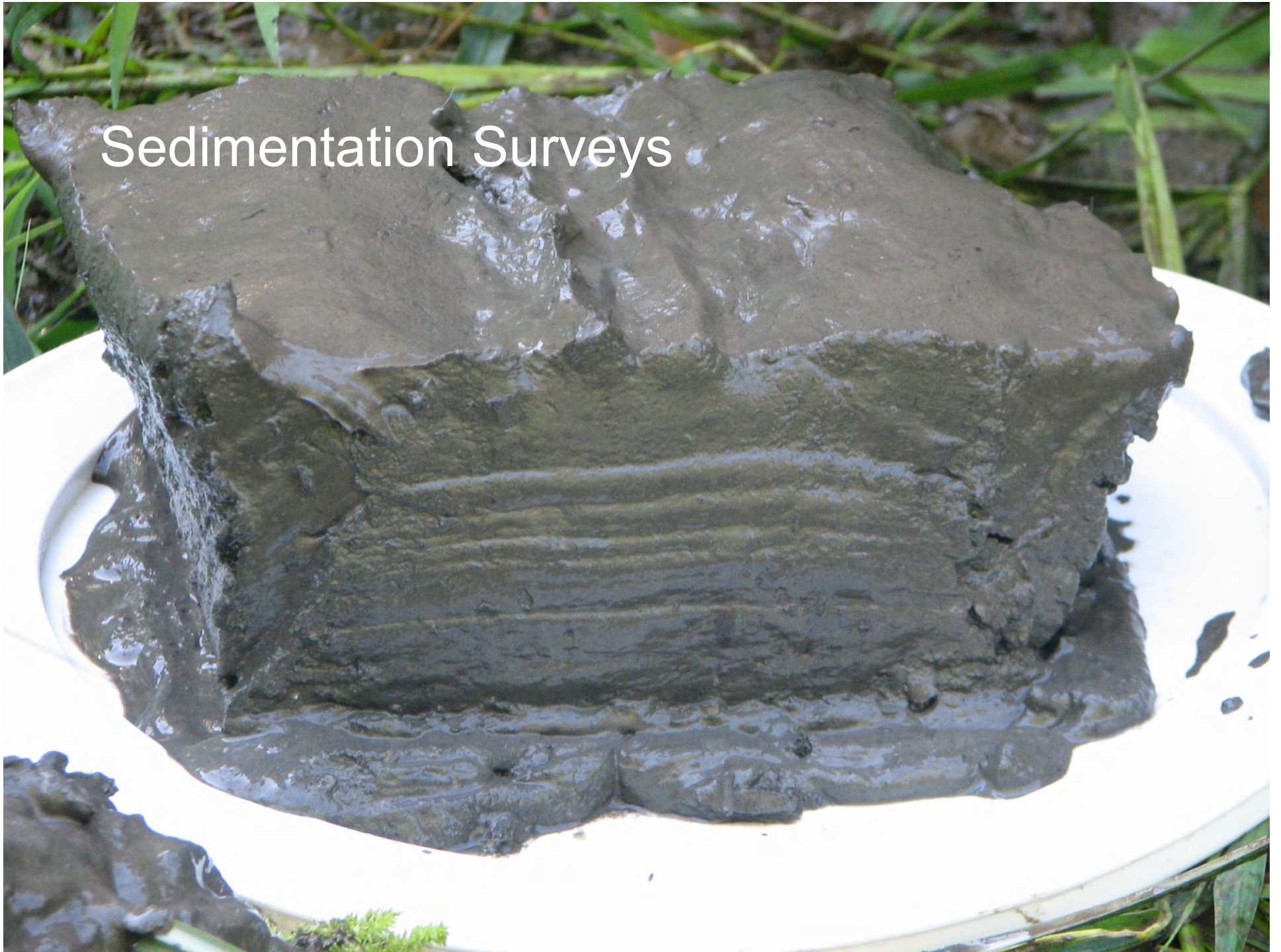




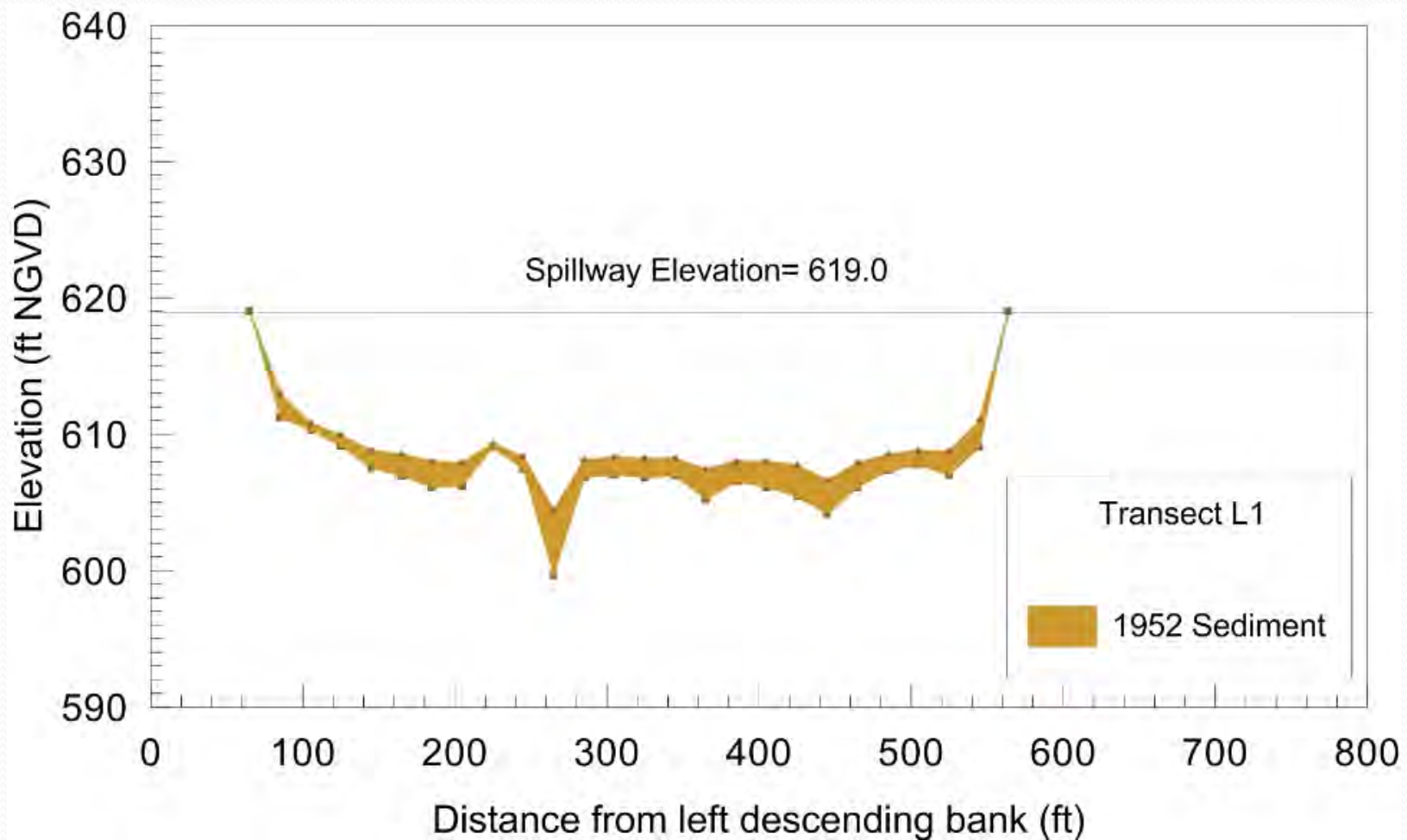


Stage-Storage Curve

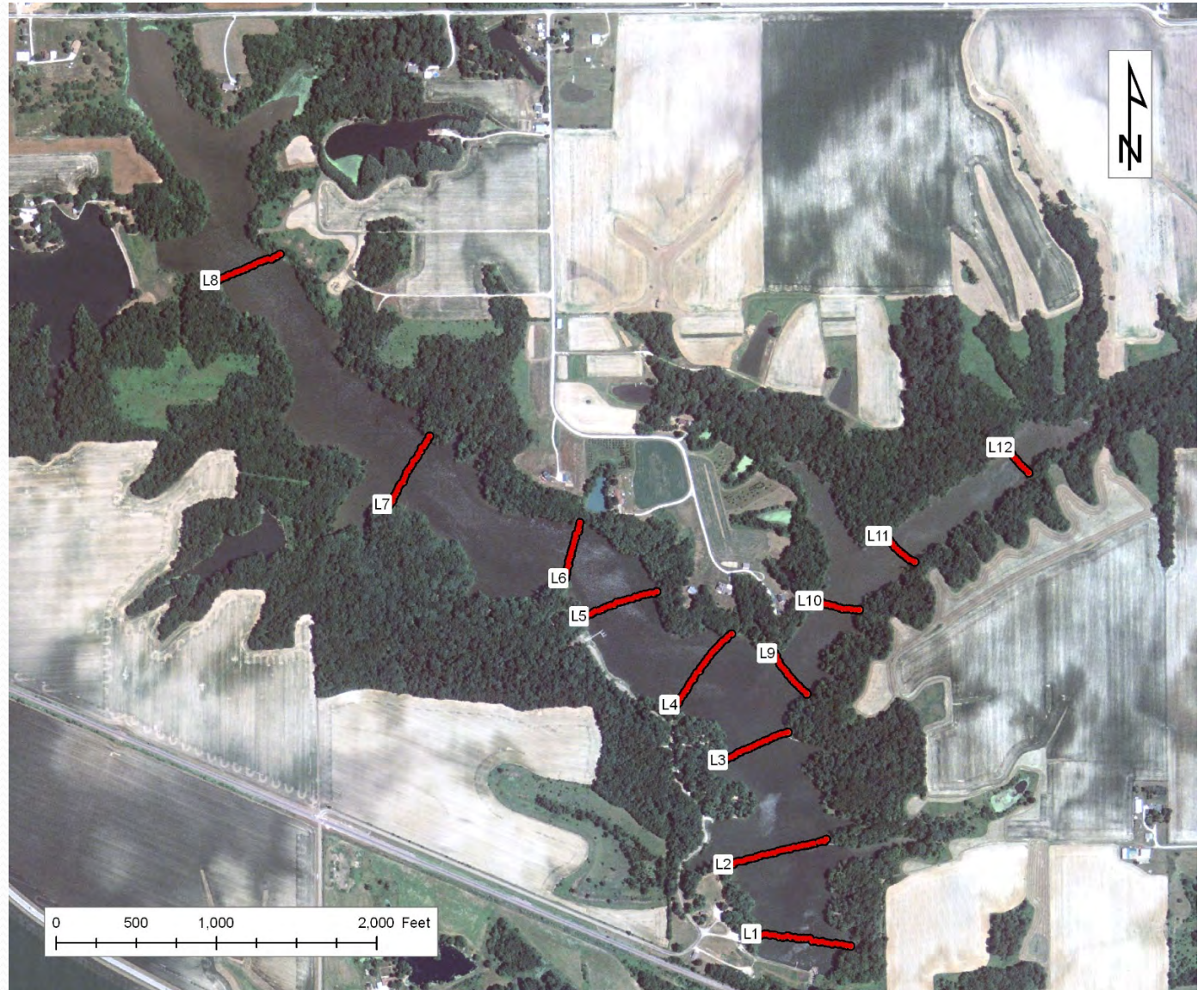
Sedimentation Surveys



- Sediment poling
- Water Survey has numerous historical sediment surveys from locations throughout the state

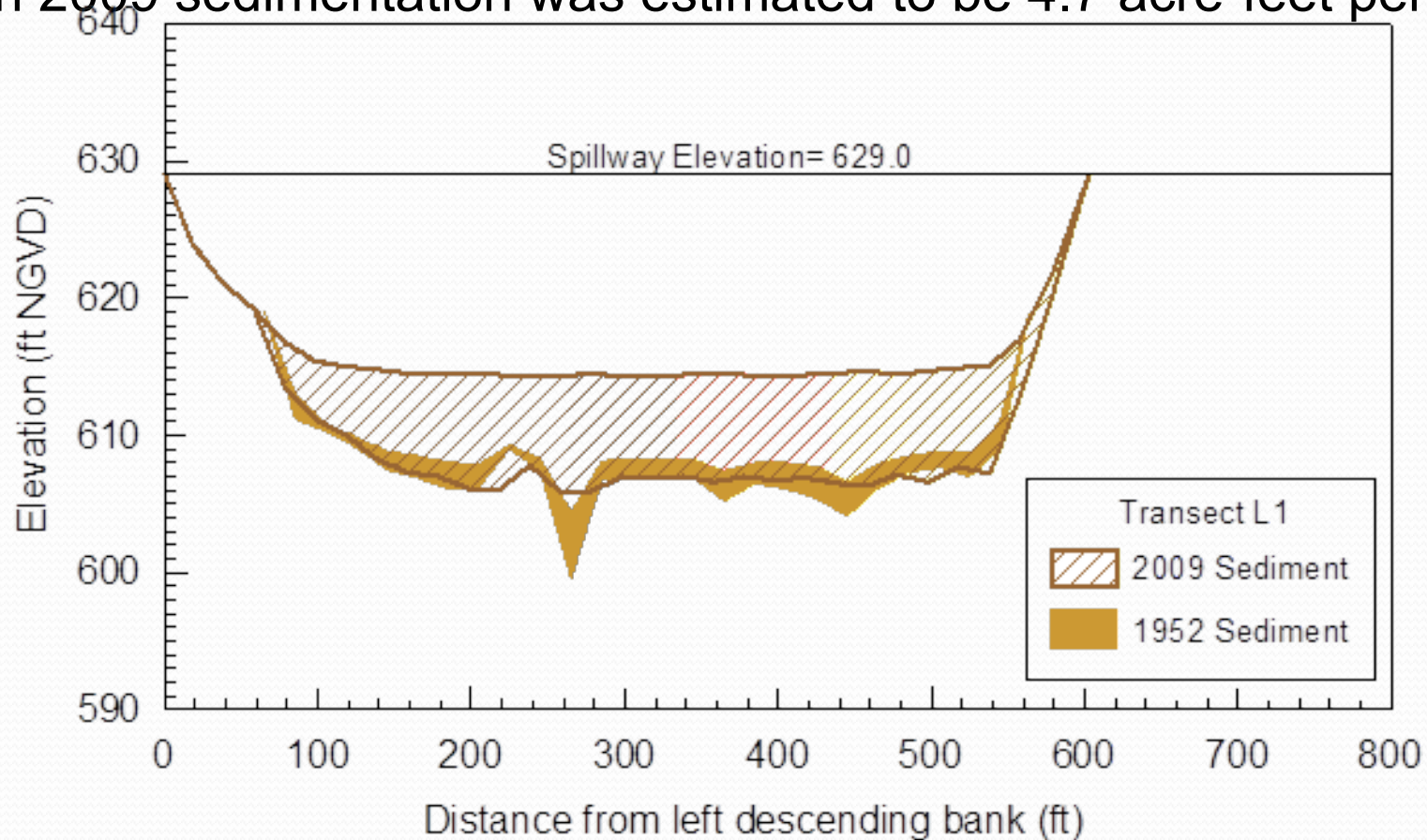


- Historical Transects



• Waverly Lake Sedimentation Rates

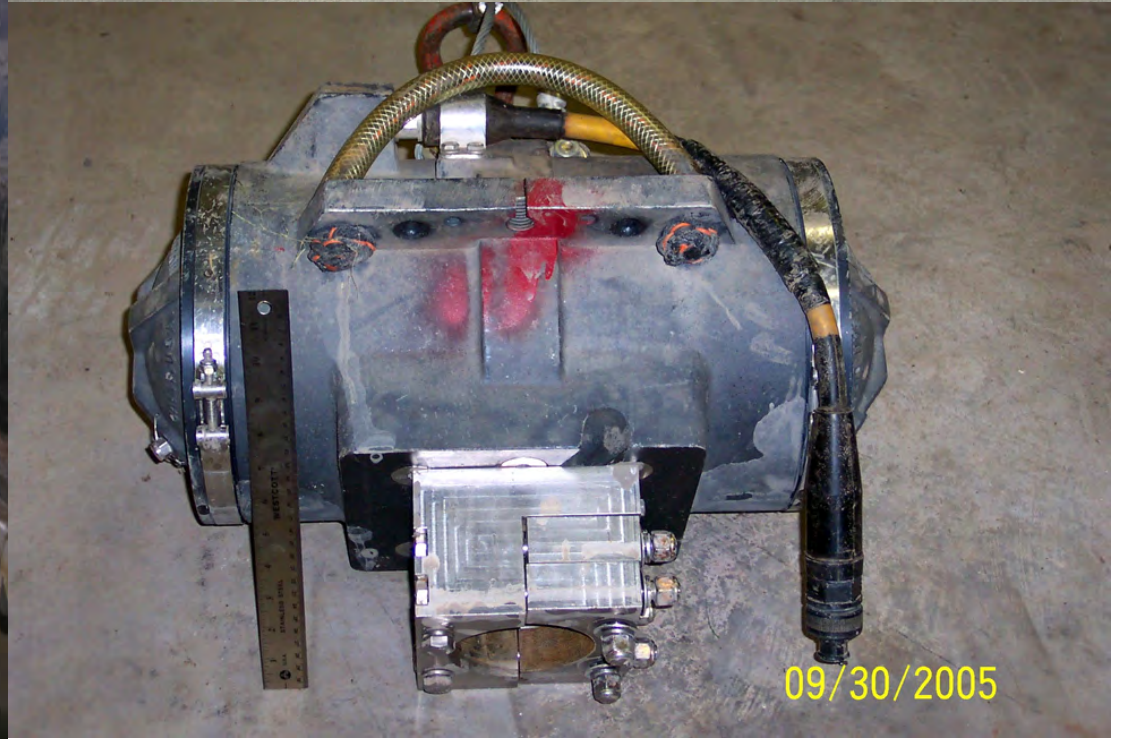
- 1938 -1952 The lake accumulated 5.0 acre-feet of sediment per year
- In 2009 sedimentation was estimated to be 4.7 acre-feet per year



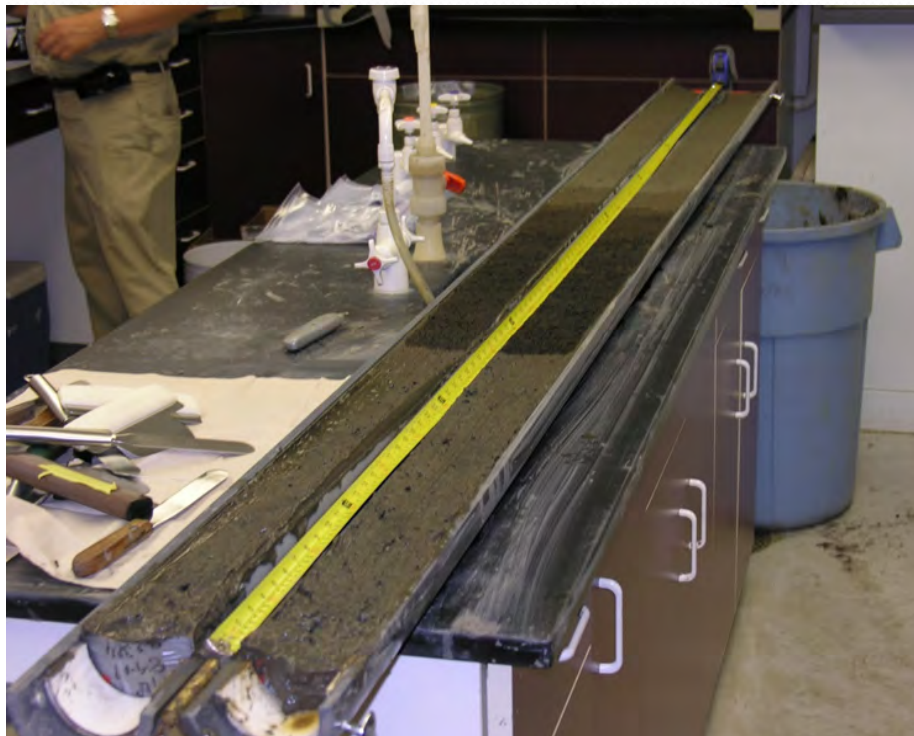
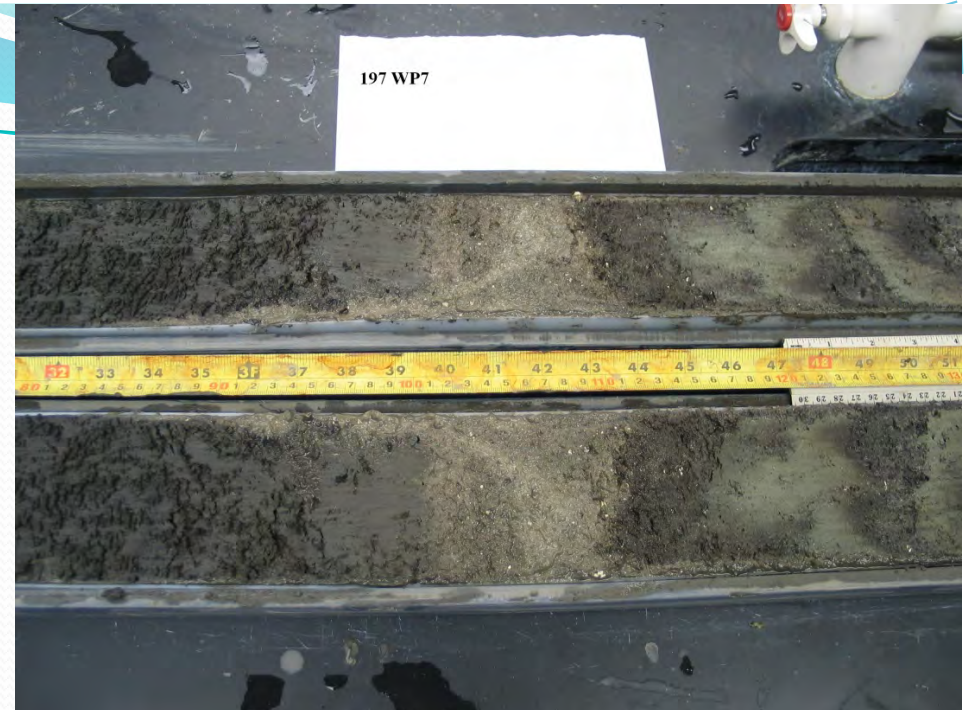
Sediment Sampling



- Vibrocoring: Rossfelder P-3C Vibrocore



- Geotechnical Analysis
- Chemical Analysis



- Box Corer: Sediment pore water
- Piston Corer
- Ponar Dredge



Water Quality Sampling



- Multi-parameter DataSondes
- Spot sampling: Cross Sections
- Continuous Water Quality sampling
- Discrete Water Quality sampling: Analytical





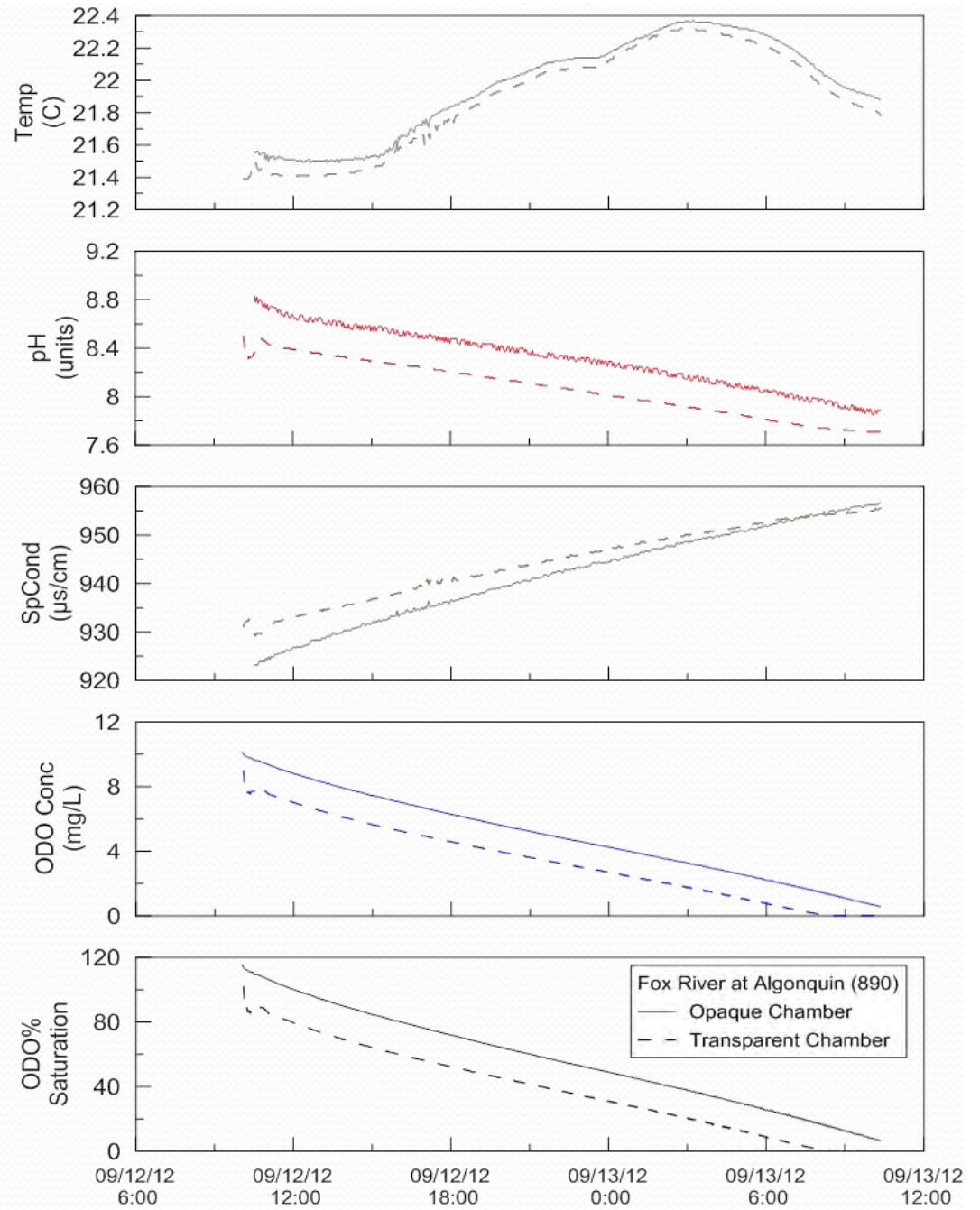
Sediment
Oxygen
Demand

- Light and Dark Chambers
- Multi-parameter sondes
- Discrete Water Quality sampling from inside chamber





SOD rate was 1.72 grams (dark) and 1.65 grams (light) of oxygen per square meter



Thanks to....

ISWS Staff

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