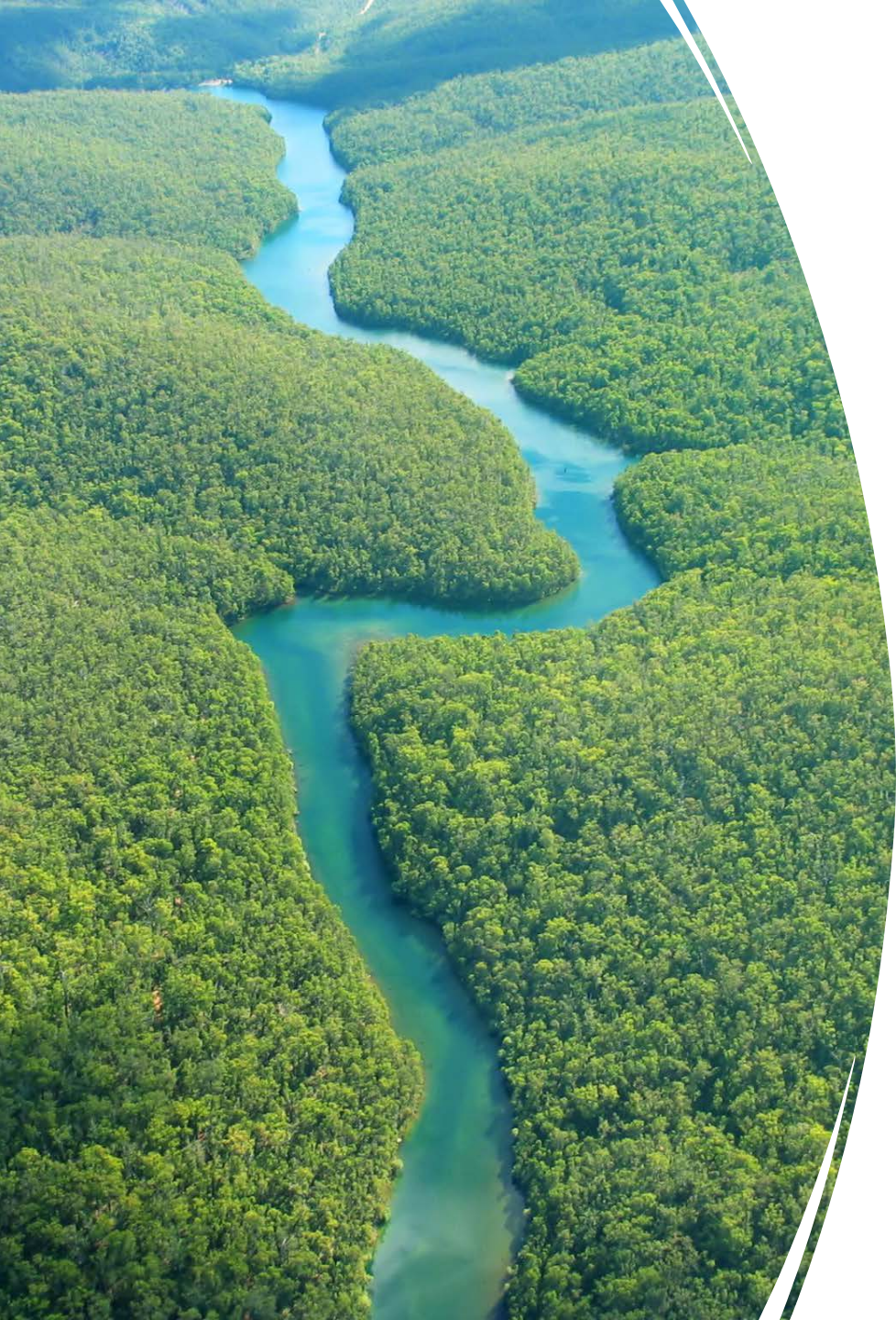


WCCA
2023 Fall Conference
Drone Regulations &
Zoning Applications

October 26, 2023

Terra Vigilis





Drone applications for Zoning regulation and permitting - compliance and violation documentation

- Mining and gravel pit areas
- Junkyards
- POWTS
- Sediment runoff and Erosion control measures
- Shoreline and lake regulations
- Shoreline mapping

Chain of Command – Authority to Act

- Recommend creating an “Authority to Act” form that is signed off by appropriate government and department officials
- Provides permission by: County legal counsel, County Sheriff, local jurisdiction police chief, mayor, city administrators, etc. for aerial surveys
- Issue a copy to alert any law enforcement agencies or other departments who might get a call from a citizen expressing concerns about “spying” etc.
- Issue a copy to the Remote PIC so they have it “in-hand and on-site” if operations are questioned by any Law Enforcement personnel



Mining and gravel pit areas

- Confirm location, size, and depth of disturbed areas
- Identify retention ponds and runoff

Dewatering of sediment in settling basins



Junkyard inspections

Polk County, WI

1328 100th St, Amery, WI 54001

Layers View Metadata

General Map Dept Maps Property Search

Click on layer to make it active.

- Zoning Layers
 - Floodplains
 - Lower St Croix Riverway Zone
 - St Croix River Buffer Zone
 - NPS - National Scenic Easement
- Soils Hydro
- Wetlands
 - Wetlands Undelineated
- Zoning Shoreland Protection
- Zoning Districts
- Base Layers
- Transportation Layers
- Property Description Text
- Elevation
- Imagery
 - Aerial Photo 2020 (6 Inch)
 - Aerial Photo 2010 (12 Inch)

Property Search Address Point Search Advanced Print

100th St County Rd H

1335 1328 1329

004007590000
Calculated Ac: 39.45
Survey Ac

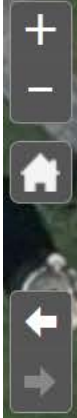
004007780000
Calculated Ac: 32.82

20 m 100 ft

1 : 2000

Parcel Results Text: 1328 100th St, Amery, WI 54001 (0)

Amery Auto Salvage



Misc search



40ft

122,447.374 538,266.124 Feet

Drone Imagery and data collection for: Shoreline, River, and Lake conditions



Capture images remotely
without requiring a boat or
launch access



Reduces time on-site



Eliminates the liability of
personnel on watercraft



Requires ground station for
remote pilot to be accessible
to the public or with
permission, and within Visual
Line Of Sight (VLOS) of the
UAS



Excessive sediment load being transported to North Lake

Sediment and Nutrient Runoff:

- Identification
- Point Source location
- Evidence documentation

Mason Creek Confluence
August 15, 2023 after 1.5
to 2" rainfall 1 day earlier

West Branch washing
sediment into the crystal
clear water coming from
the East Branch

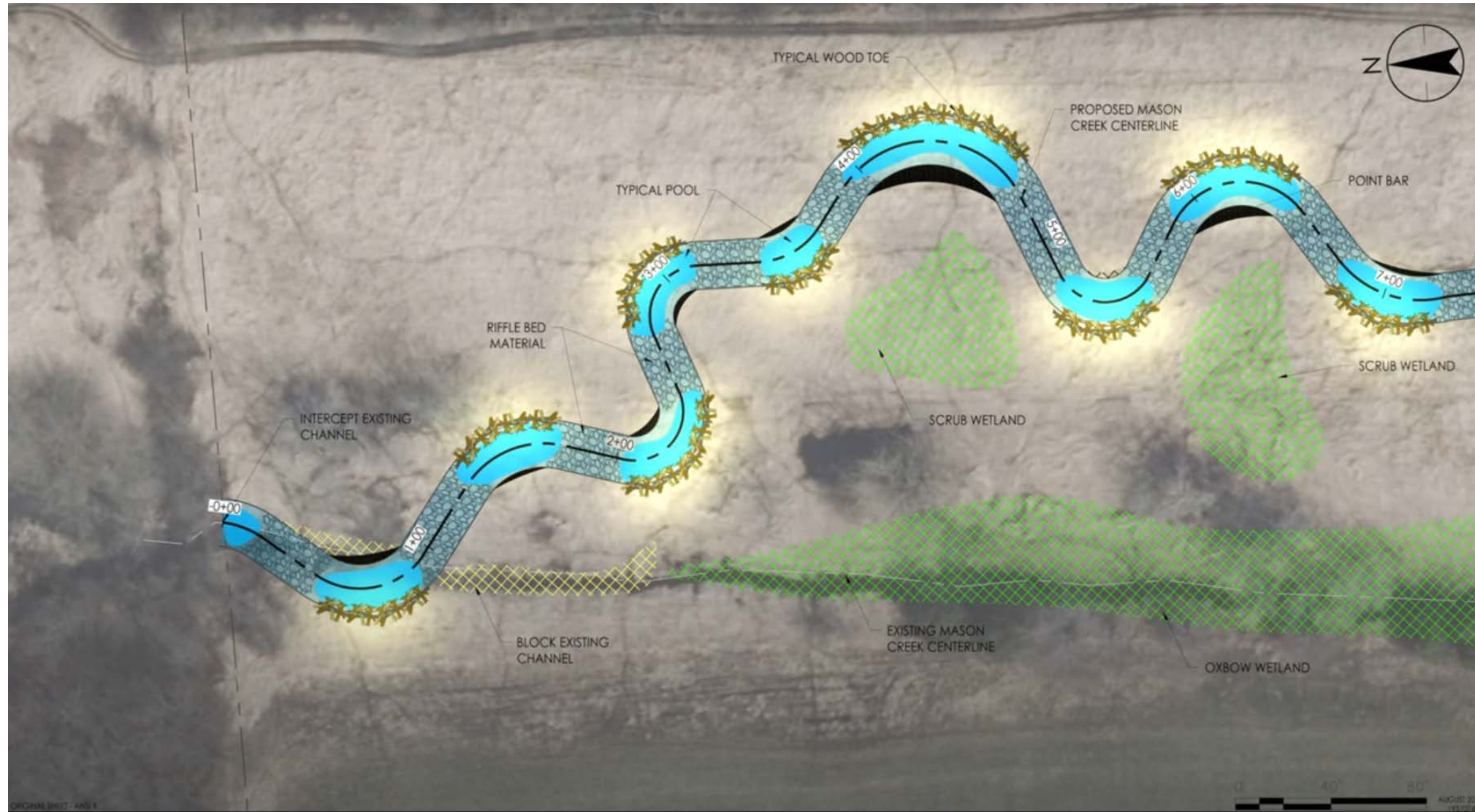
Phosphorus WB = 0.123

Phosphorus EB = 0.025

5 x more P in WB



Mason Creek Re-meandering Plan



Mason Creek Re-meandering Project

Tall Pines Conservancy partnered with NLMD & OWPP to convert a historically channelized section of the creek to a natural, meandering course to handle periods of high water flow and reduce the movement of phosphorous-laden sediment to downstream properties and North Lake. The project was completed late in 2022.



Before Dredging
August 24, 2021

After Dredging
August 18, 2023

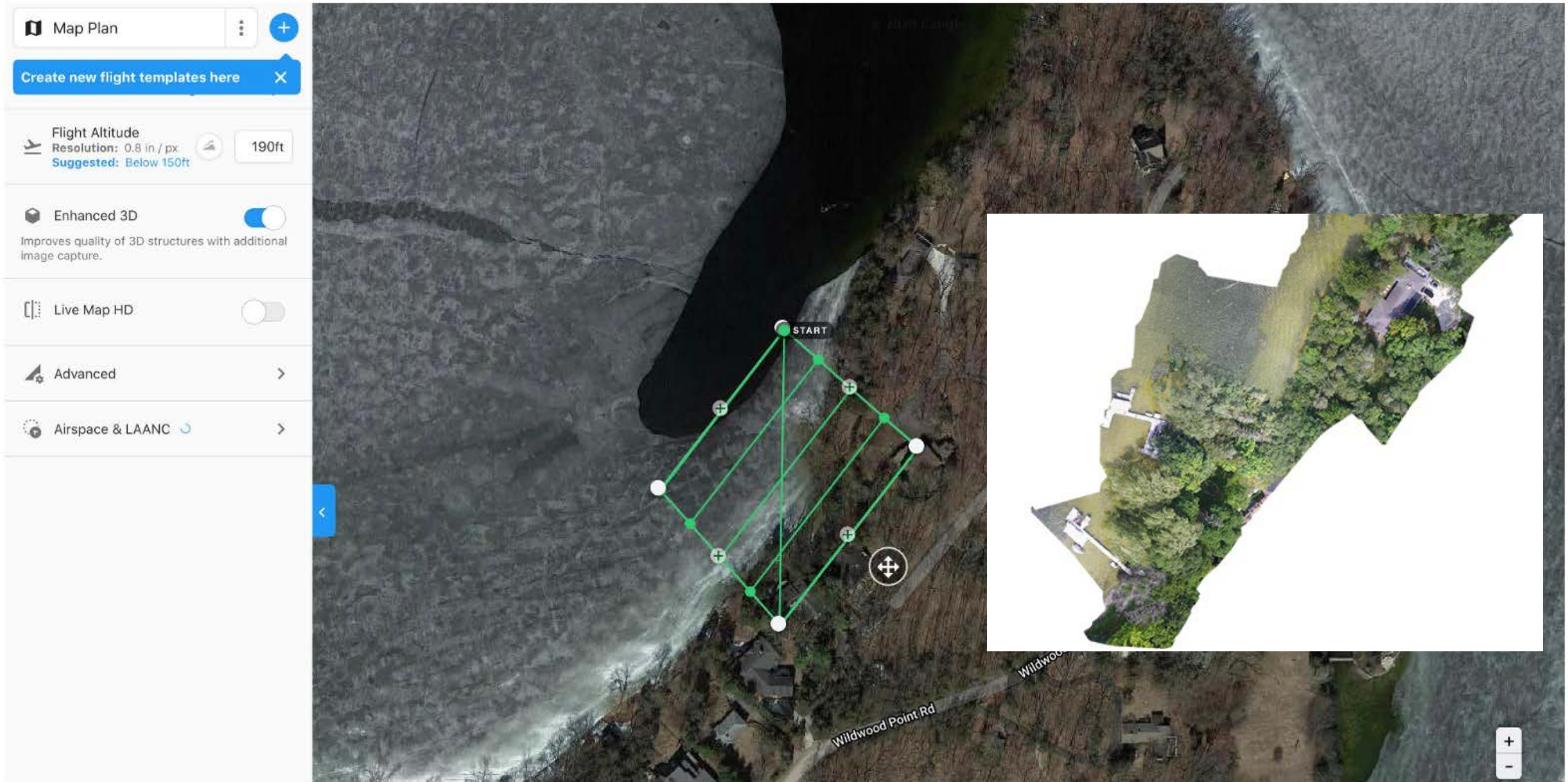


Icehouse Bay,
North Lake,
WI

Shoreline Mapping

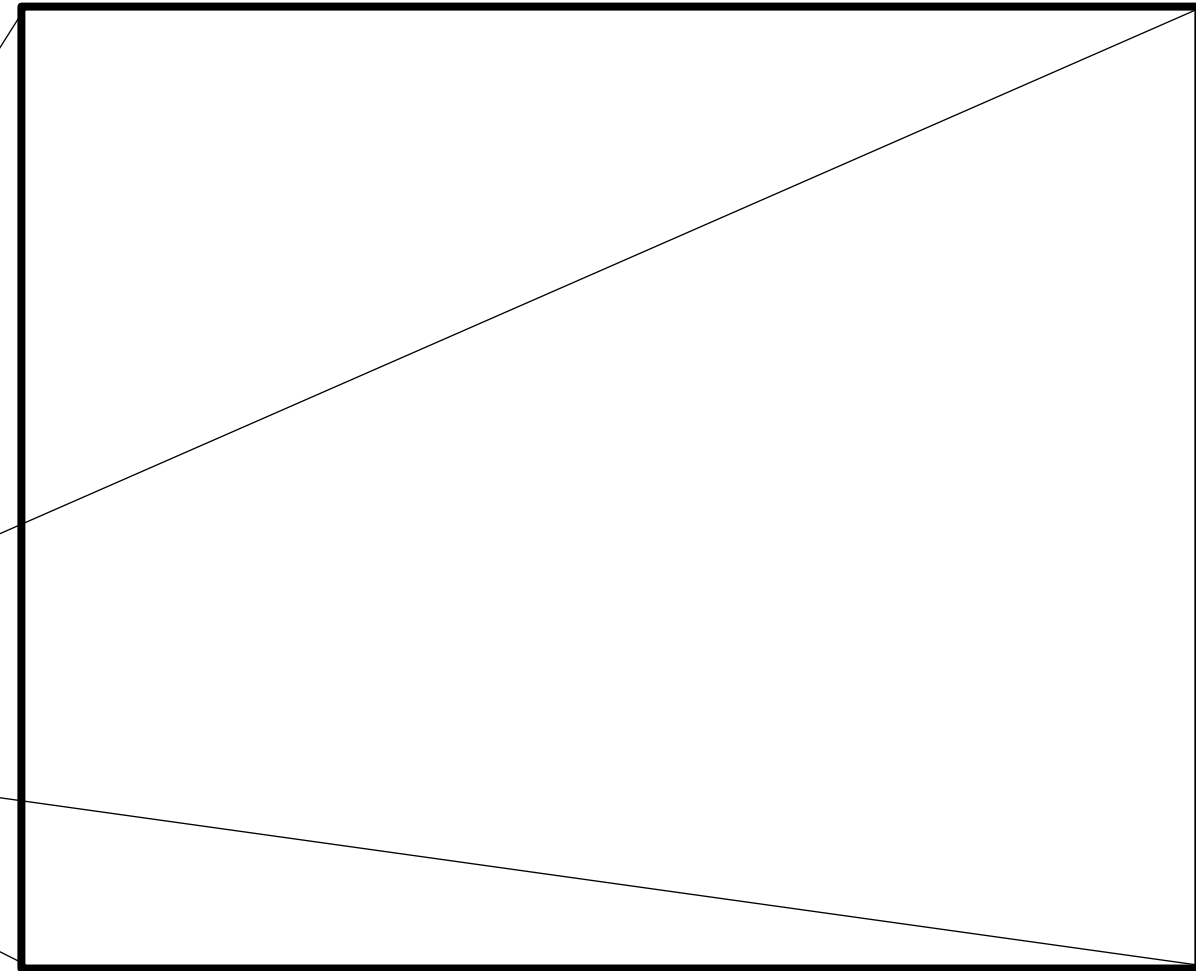
- Shoreline restoration/protection (riprap, vegetation)
- Zoning compliance
- Verifying navigation lanes
- Boating activity (counts, distance to other objects)

3D Mapping Plan with 0.8"/pix resolution at 190ft AGL



Site Mapping Location 1

Hi-Res imagery



4' wide pier

Boat Activity and Wave Propagation (video)



▶ 0:10 / 4:23



Q & A Panel:

Terra Vigilis principals:

- **Tim Tyre – Founder and Chairman**
- **Mike Mortenson – Director of Technology**
- **Charles Luebke – Director of Field Operations**
- **Steve Betzler – VP of Business Development**



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