



Monitoring the Response of Estuarine Wetlands to Anthropogenic Disturbance in the St. Jones Reserve

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Delaware Coastal Programs

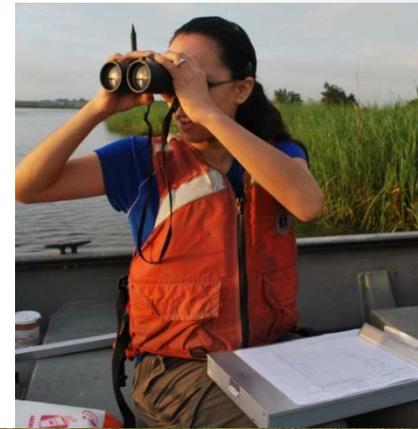


Delaware National Estuarine Research Reserve (DNERR)

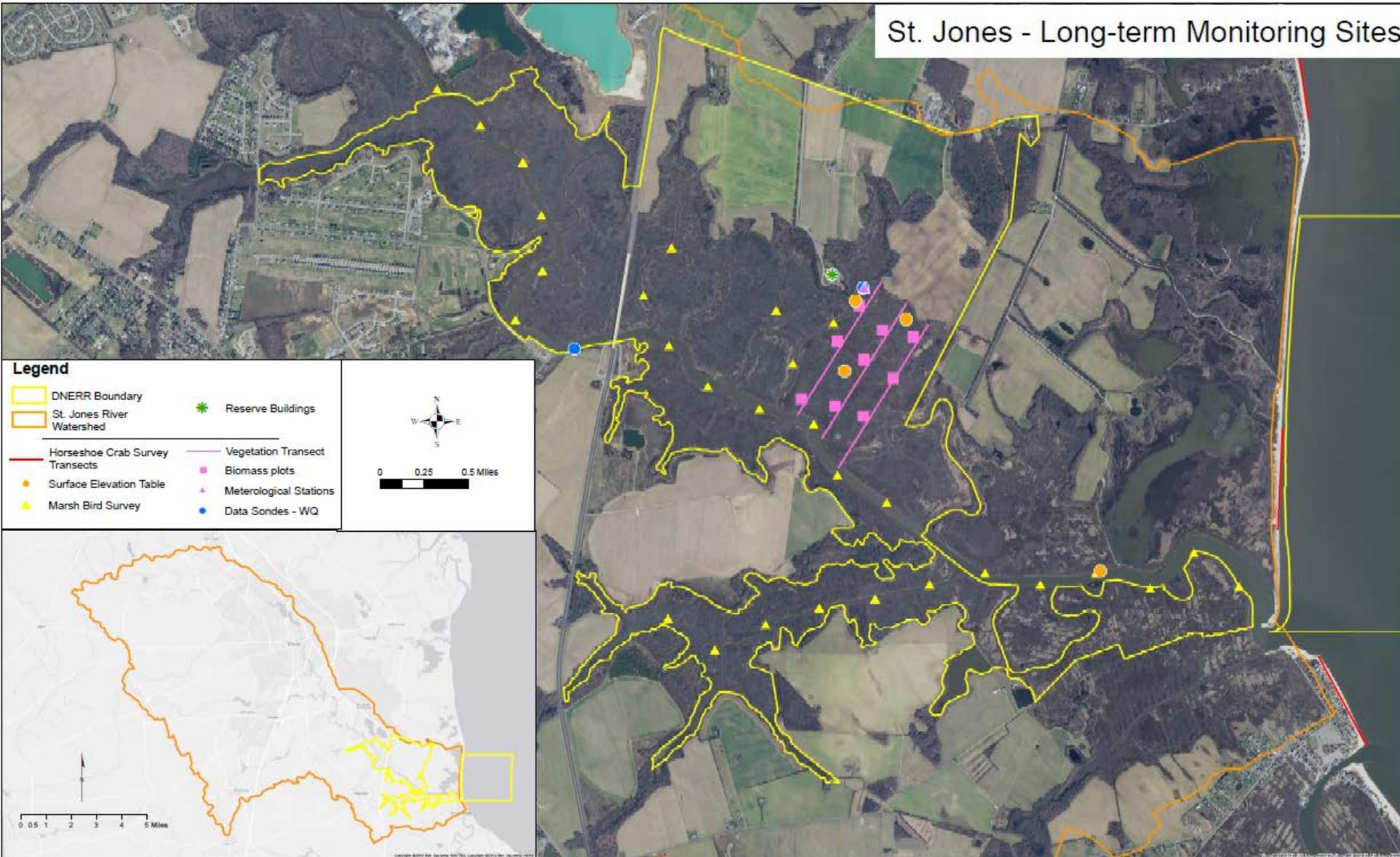
- *“Improve the understanding, stewardship and appreciation of estuarine and coastal resources in Delaware and Mid-Atlantic region”*
- Research and monitoring
 - Improve scientific understanding of estuarine ecosystems
 - Improve management decisions

St. Jones Reserve: Current Monitoring

- Goal: Sentinel site for climate change
- Long term monitoring
 - SETs
 - Bio-monitoring
 - Marsh bird surveys
 - Weather and WQ



St. Jones - Long-term Monitoring Sites



2005 Aerial Image: Monopole Installation

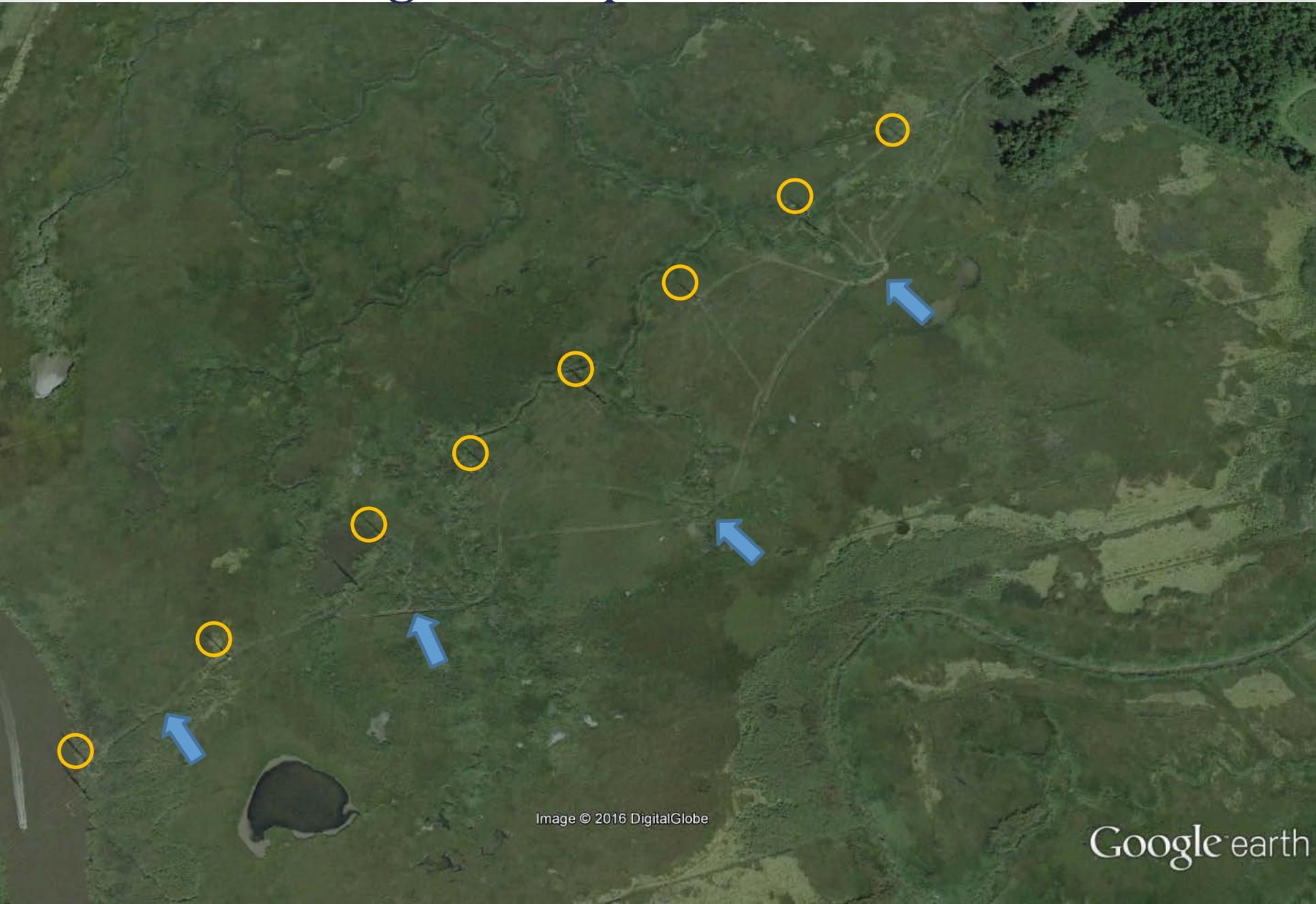


Image © 2016 DigitalGlobe

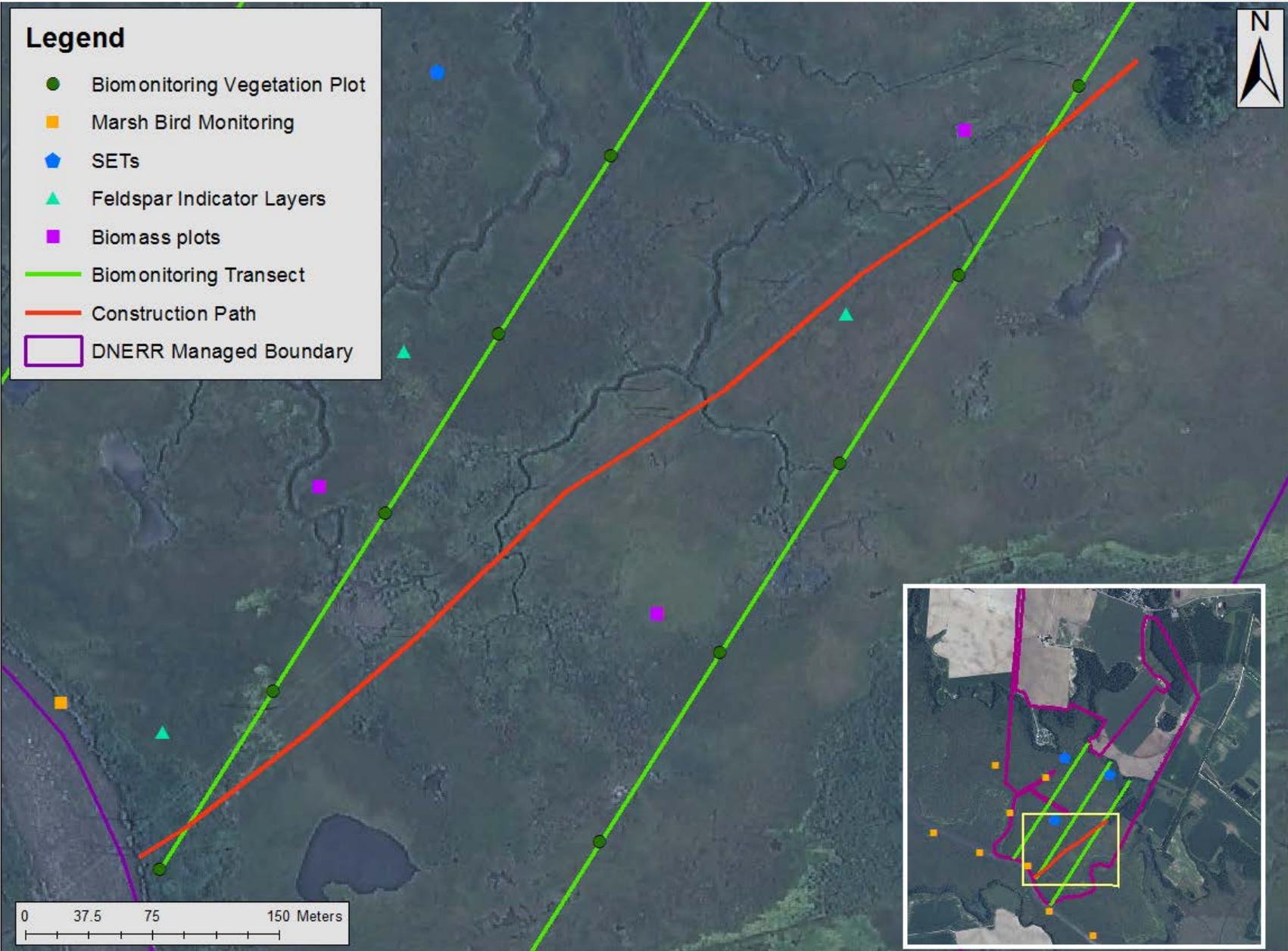
Google earth

Emergency Pole Replacement

- 2013 - Heavily leaning powerline pole
- Anchors installed as a temporary solution
- The entire powerline needed to be replaced



Emergency Pole Replacement Construction Area



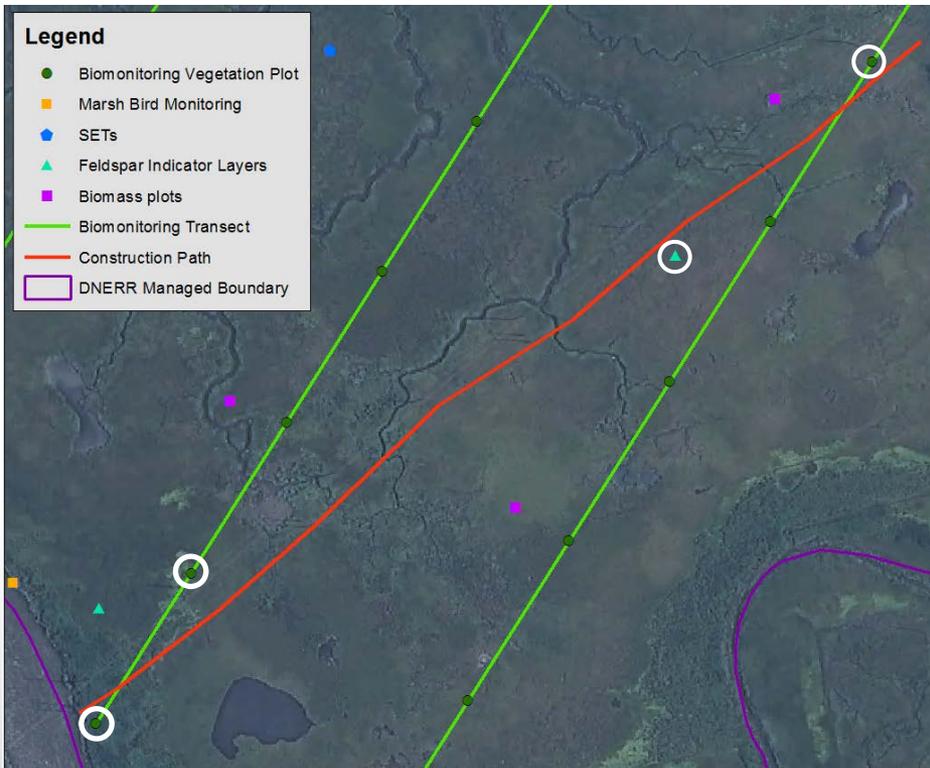
Goal: Minimize Impacts

- Pre-permit planning meetings
 - Pepco Holdings, Inc.
 - DNREC
 - WSLS
 - F&W
- Outcome
 - Low impact replacement via helicopter
 - New opportunity



Pre-construction

- Marked plots to avoid accidental trampling
- Photo documentation





Pre-construction

Post-construction

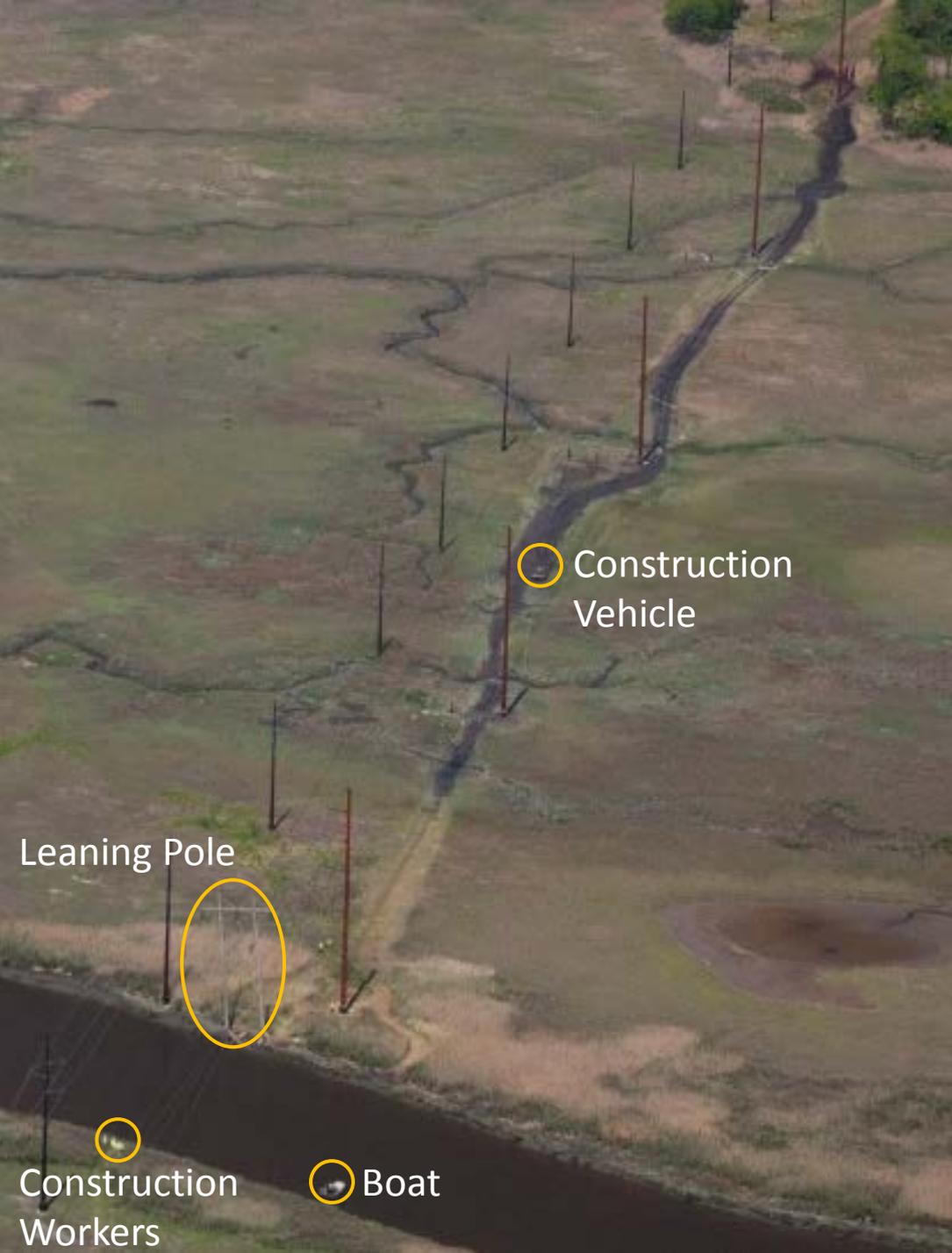


Post-construction: Silted Channels



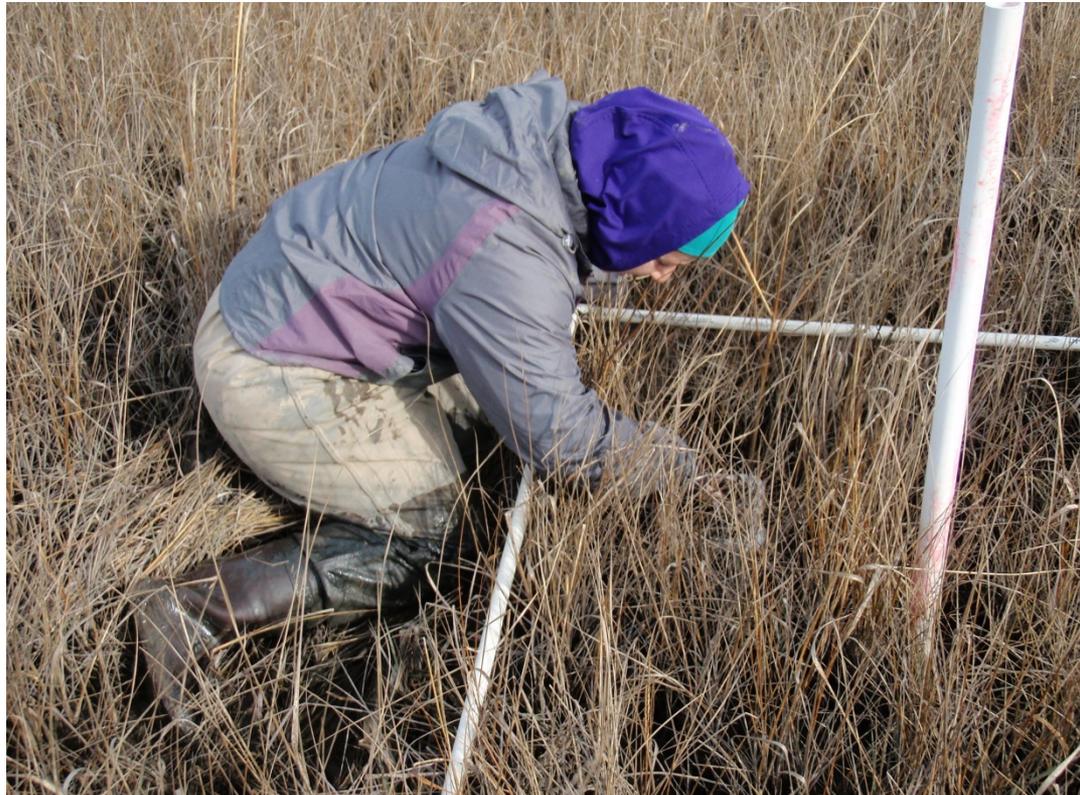
Wider & Flattened Channel Edges





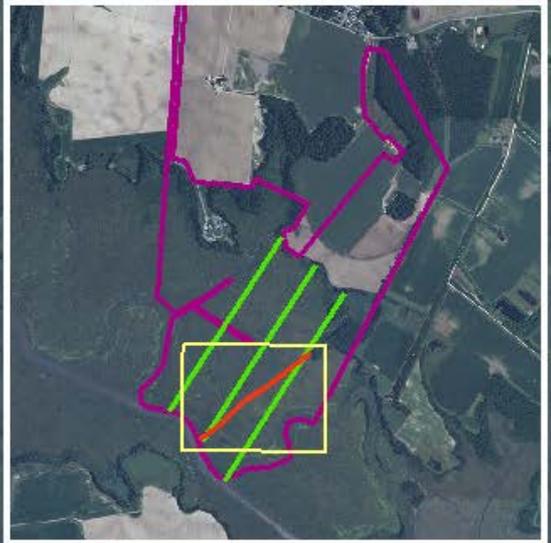
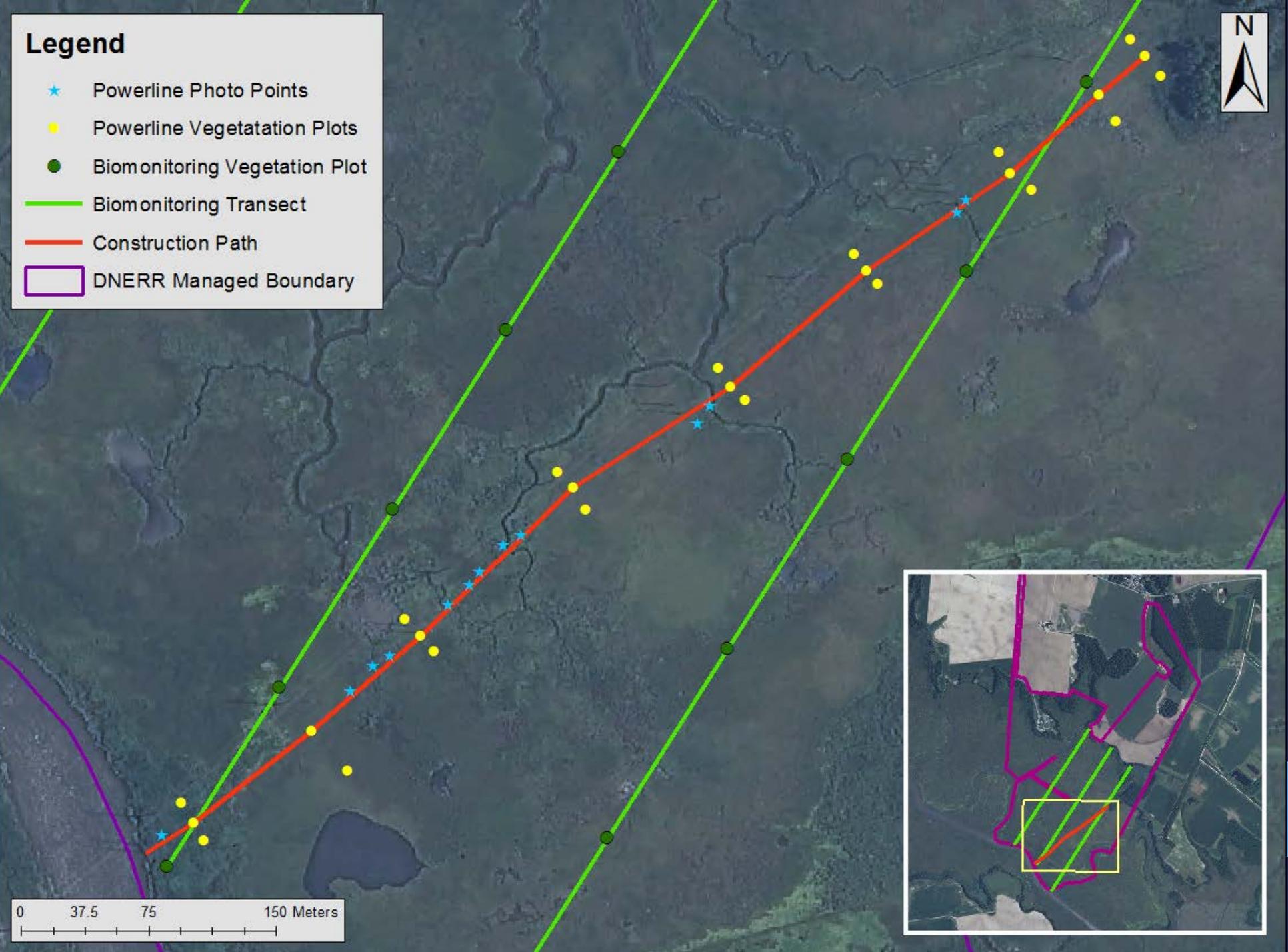
Powerline Monitoring Plan

- Monitoring schedule:
 - 1 month
 - 3 months
 - 6 months
 - 1 year



Legend

- ★ Powerline Photo Points
- Powerline Vegetation Plots
- Biomonitoring Vegetation Plot
- Biomonitoring Transect
- Construction Path
- DNERR Managed Boundary



Vegetation Plot Placement



Vegetation Plot Placement

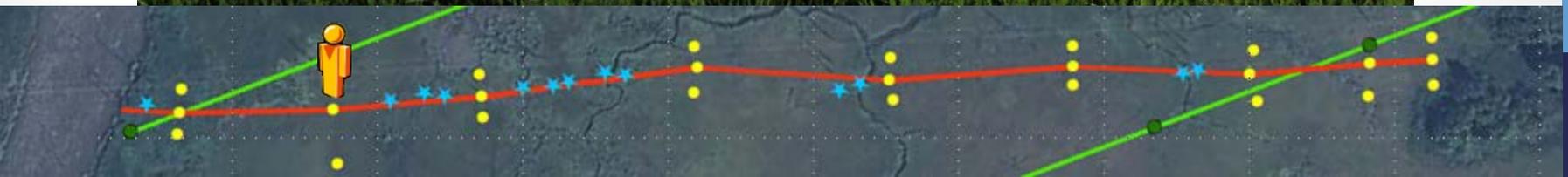


Powerline Monitoring Plan

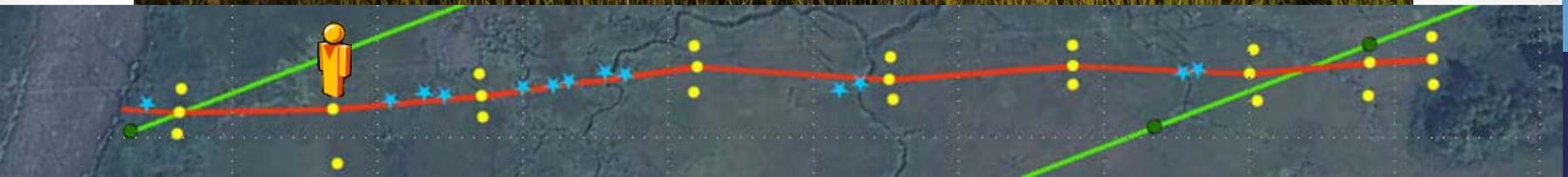
- Slide hammer
 - Soil bearing capacity
- Photo points
 - Using a GPS
 - Photos at each vegetation plot



Vegetation Plots: Month 1



Vegetation Plots: Month 3



Vegetation Plots: Month 6



GPS: Comparative Photos

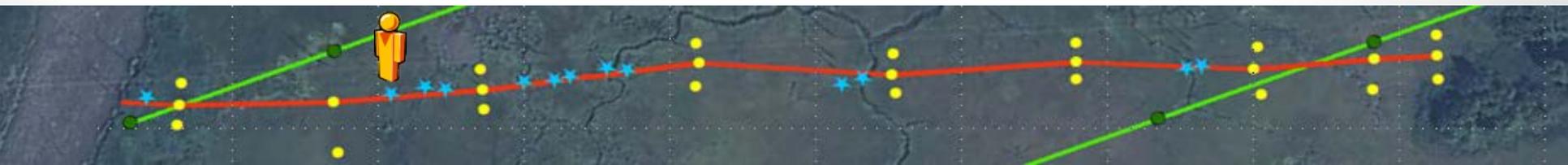
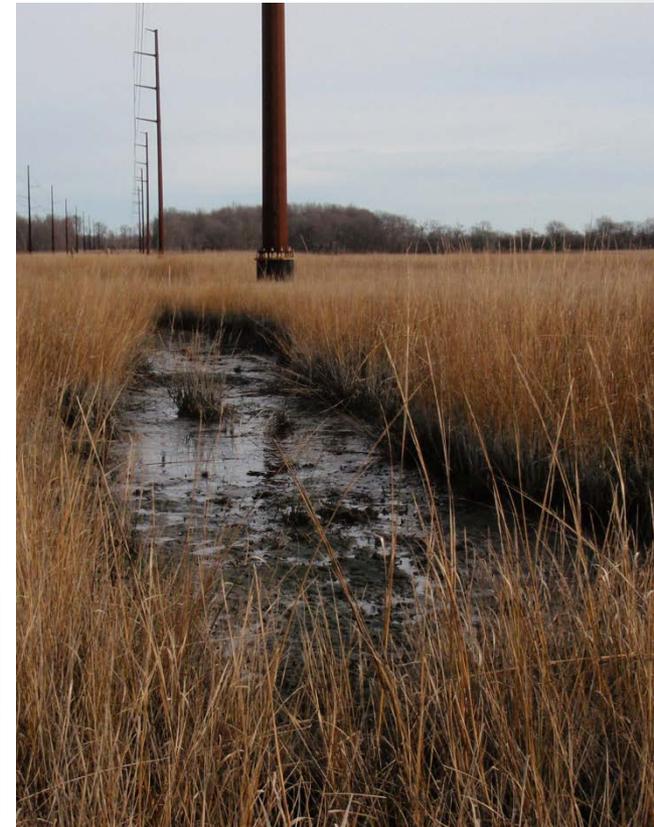
Month 1: June



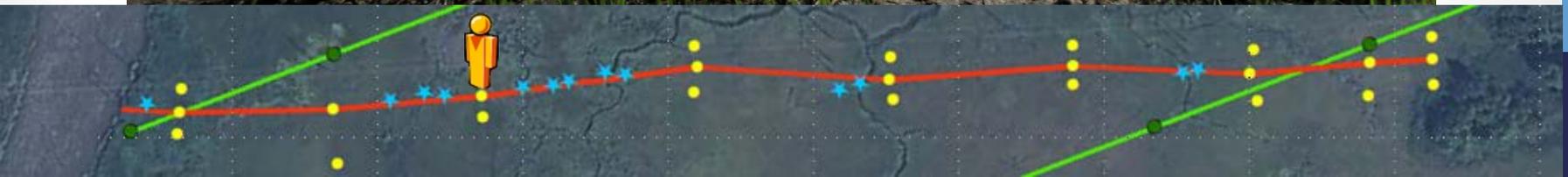
Month 3: August



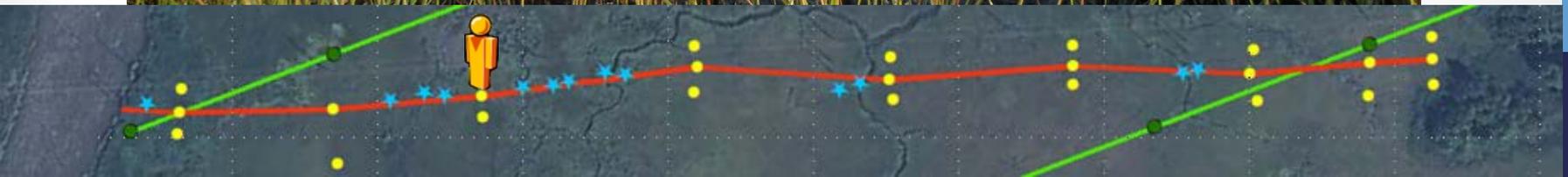
Month 6: Nov.



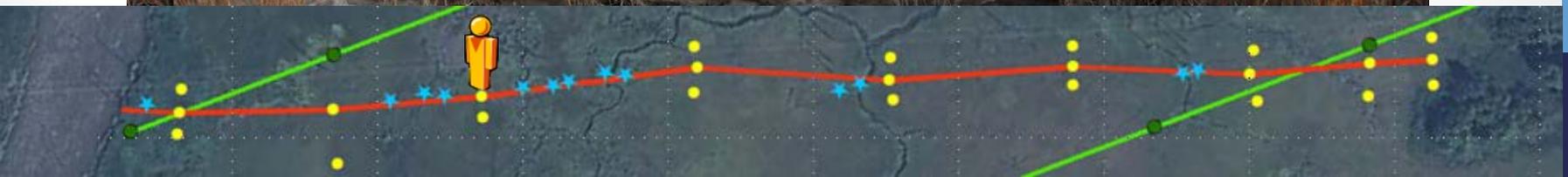
Vegetation Plots: Month 1



Vegetation Plots: Month 3



Vegetation Plots: Month 6



GPS: Comparative Photos

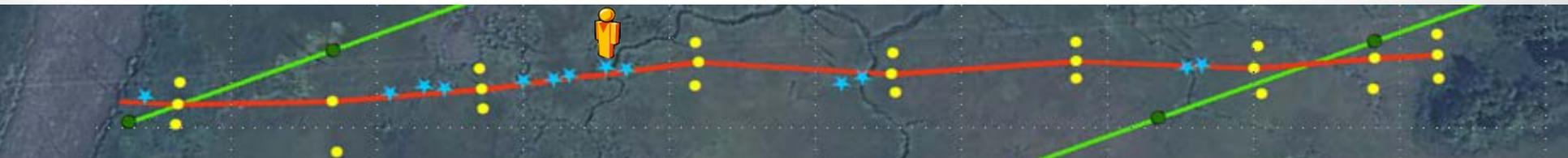
Month 1: June



Month 3: August



Month 6: Nov.



Vegetation Plots: Month 1



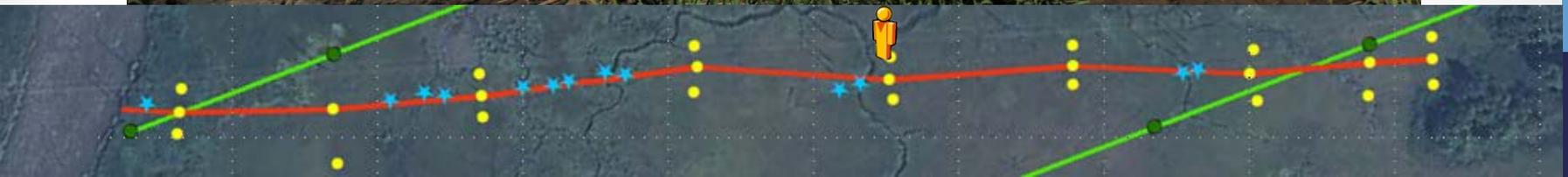
Vegetation Plots: Month 3



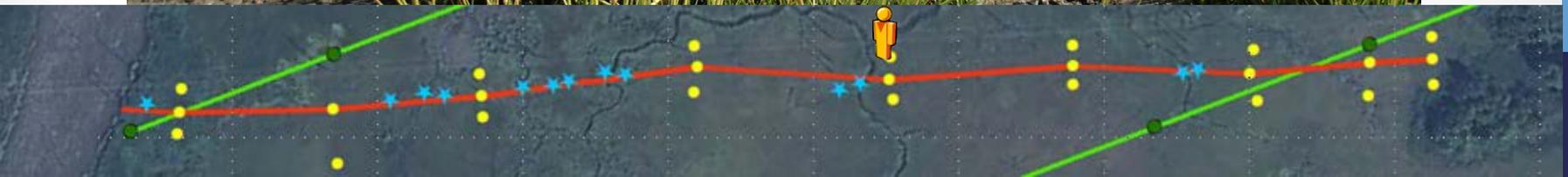
Vegetation Plots: Month 6



Vegetation Plots: Month 1



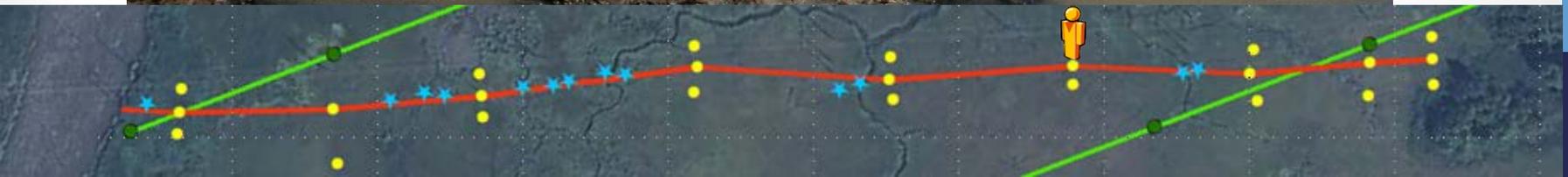
Vegetation Plots: Month 3



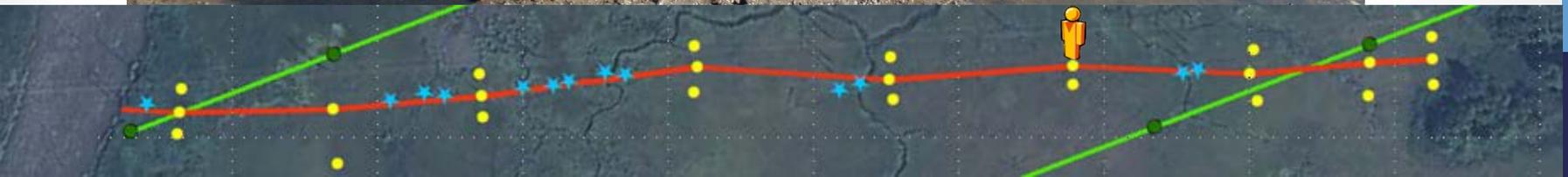
Vegetation Plots: Month 6



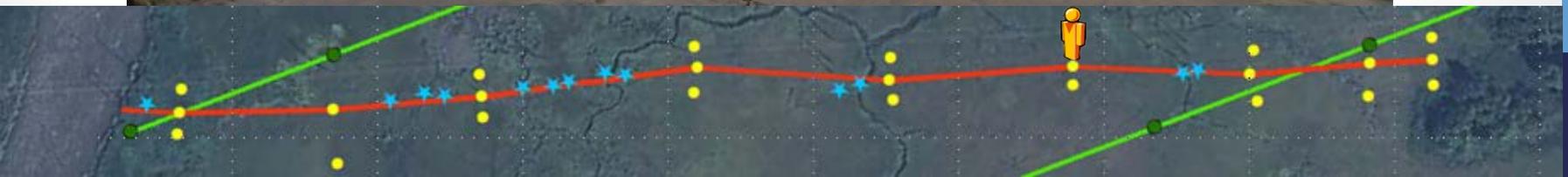
Vegetation Plots: Month 1



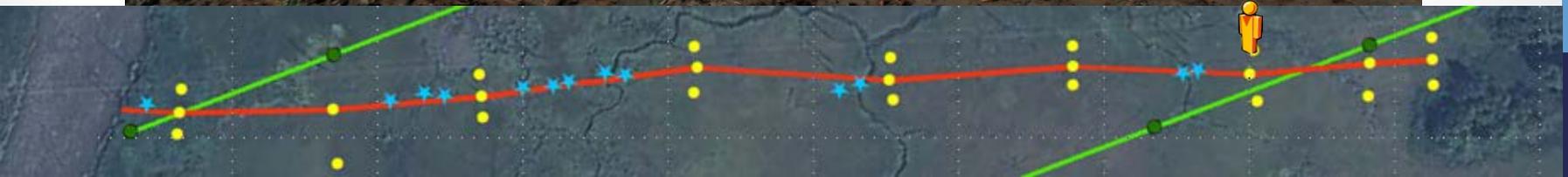
Vegetation Plots: Month 3



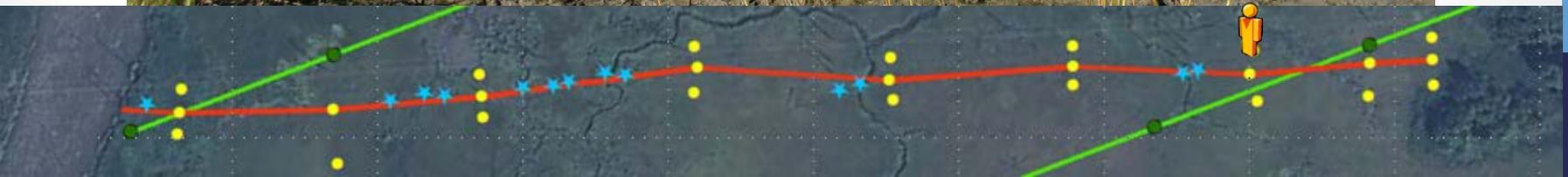
Vegetation Plots: Month 6



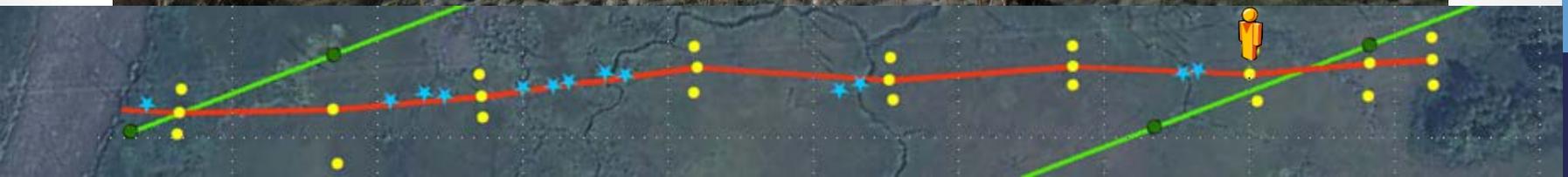
Vegetation Plots: Month 1



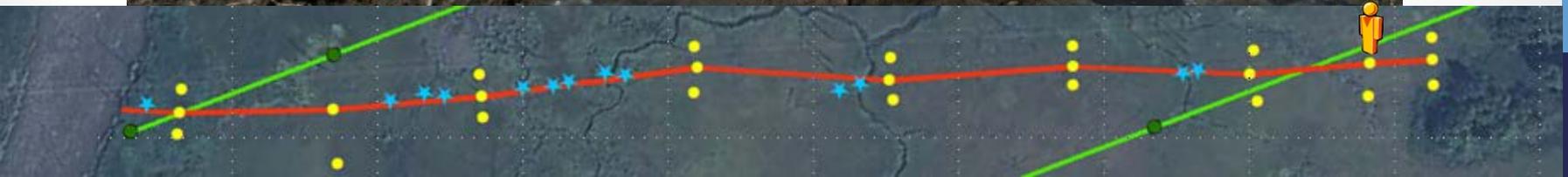
Vegetation Plots: Month 3



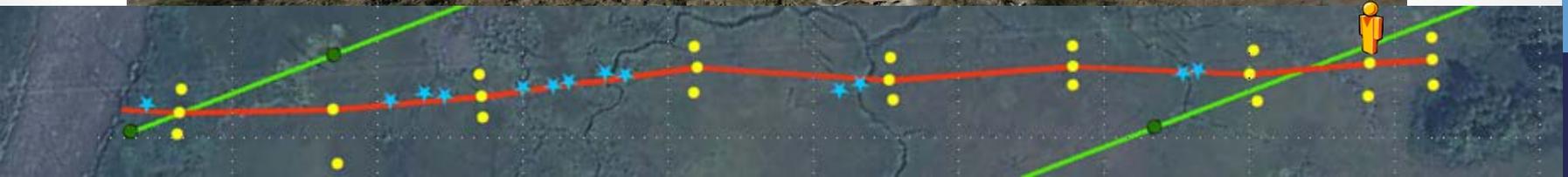
Vegetation Plots: Month 6



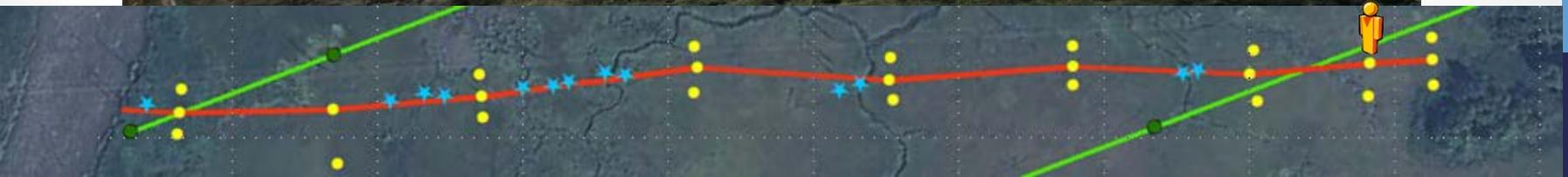
Vegetation Plots: Month 1



Vegetation Plots: Month 3



Vegetation Plots: Month 6



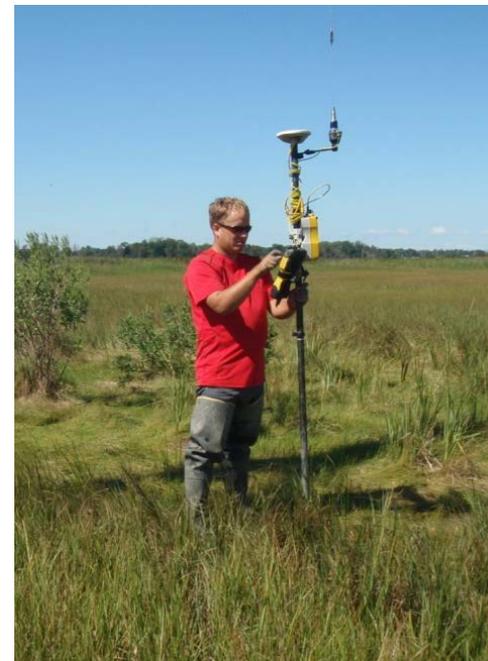
Results: TBD

- Photo documentation
- May 2016 : 1 year assessment
- Data will be evaluated after monitoring period completed



Future Monitoring

- Taking aerial photos
- Using a Helikite and GoPro
 - Weather limitations
- Elevation data using RTK
- Monitor annually



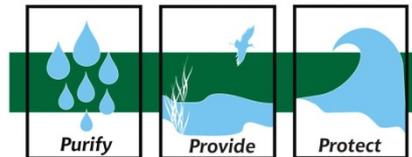
What's next?

- Example questions to answer:
 1. How much will vegetation change after growing seasons without disturbance?
 2. Will the channels naturally clear themselves OR will the tides create new channels?
 3. How will this area compare to current vegetation monitoring?
- We don't know and that's what is making this project interesting!

Acknowledgements



Delaware Wetlands



www.dnrec.delaware.gov/admin/delawarewetlands

