Mason Creek Water Quality and Storm Water Improvements

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Norfolk City-wide Coastal Flooding Study

- Prioritize Public Works expenditures, increase ability to communicate risks and decisions to public, & develop long-term adaptation approach

- Four initial focus study areas (2010 – 2012):
  - Mason Creek – land use options, development requirements, buyout, pumping, floodwalls
  - The Hague
  - Pretty Lake
  - Ohio Creek

  - Conceptual evaluation of other areas around City

Mason Creek

N
W
E
S
Legend
Existing Navy Culvert
0 500 1,000 2,000 3,000 4,000 Feet

Dredging: Introduction

- Objective is to plan, permit, and conduct dredging in Mason Creek to improve:
  - Water quality / nutrient management
  - Storm water management capacity
  - Recreational access

- Considerations include permit acquisition, funding, material disposal / reuse, mitigation

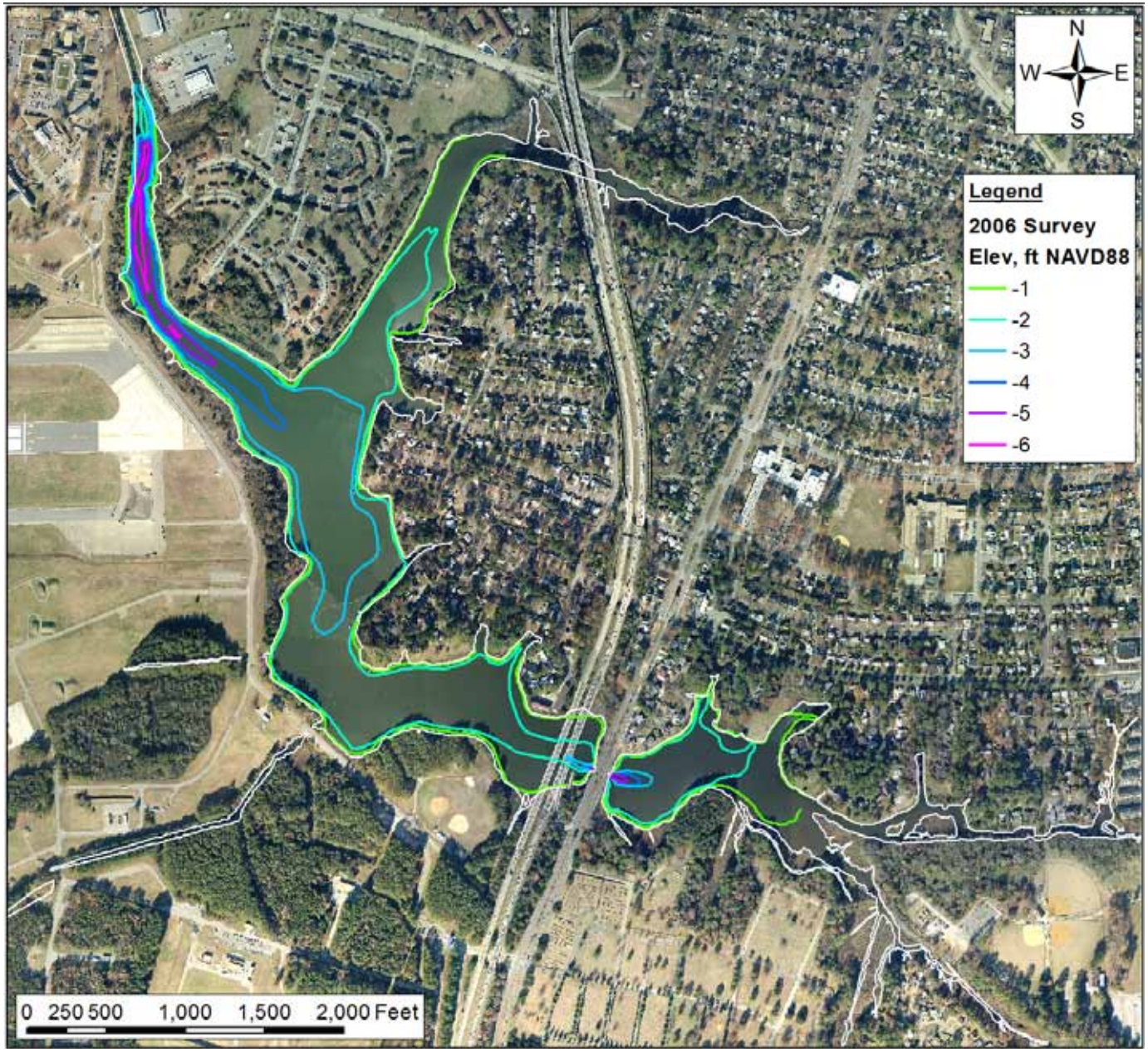
Dredging: Approach

- Any dredging would have to be approved by state and federal agencies (DEQ, VMRC, U.S. Army Corps of Engineers, others), under guidelines for tidal water bodies

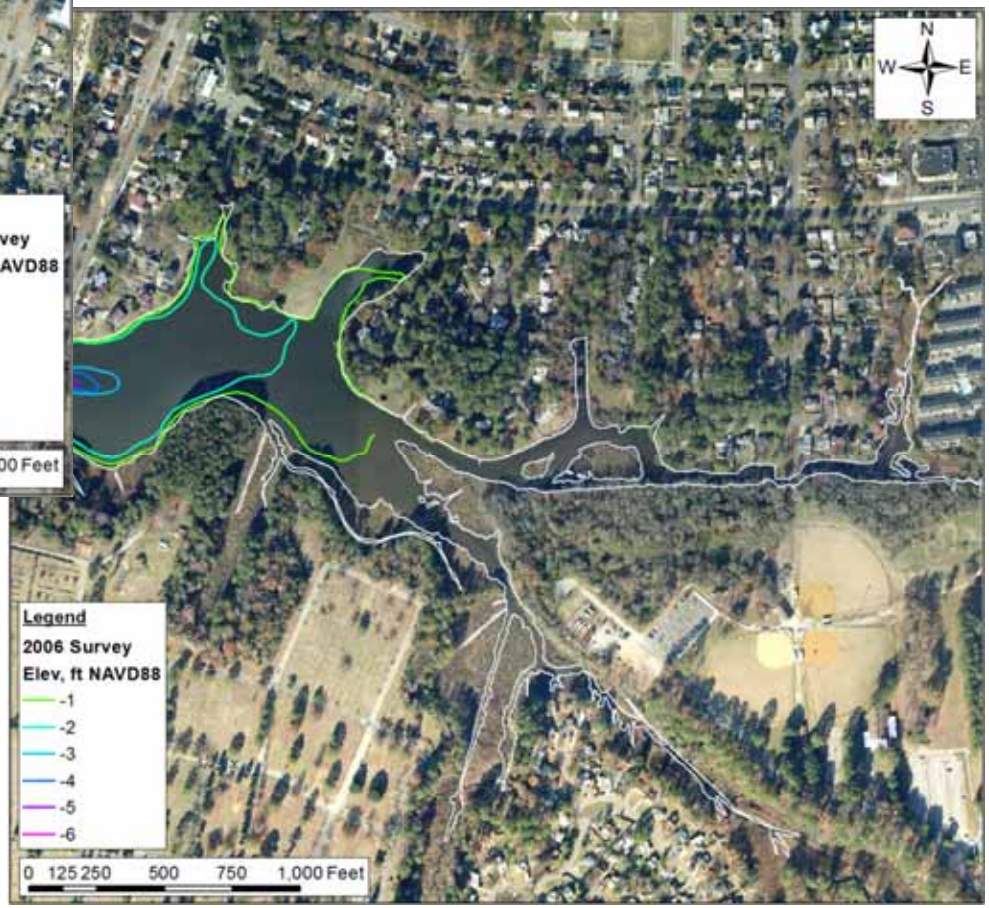
- Initial discussions with agencies indicate that a strong case will be needed to demonstrate that benefits justify impacts

- Approach is to show that dredging can bring benefits to all three aspects (water quality, storm water, recreation), jointly providing enough benefit to outweigh environmental impacts

Depths in Mason Creek



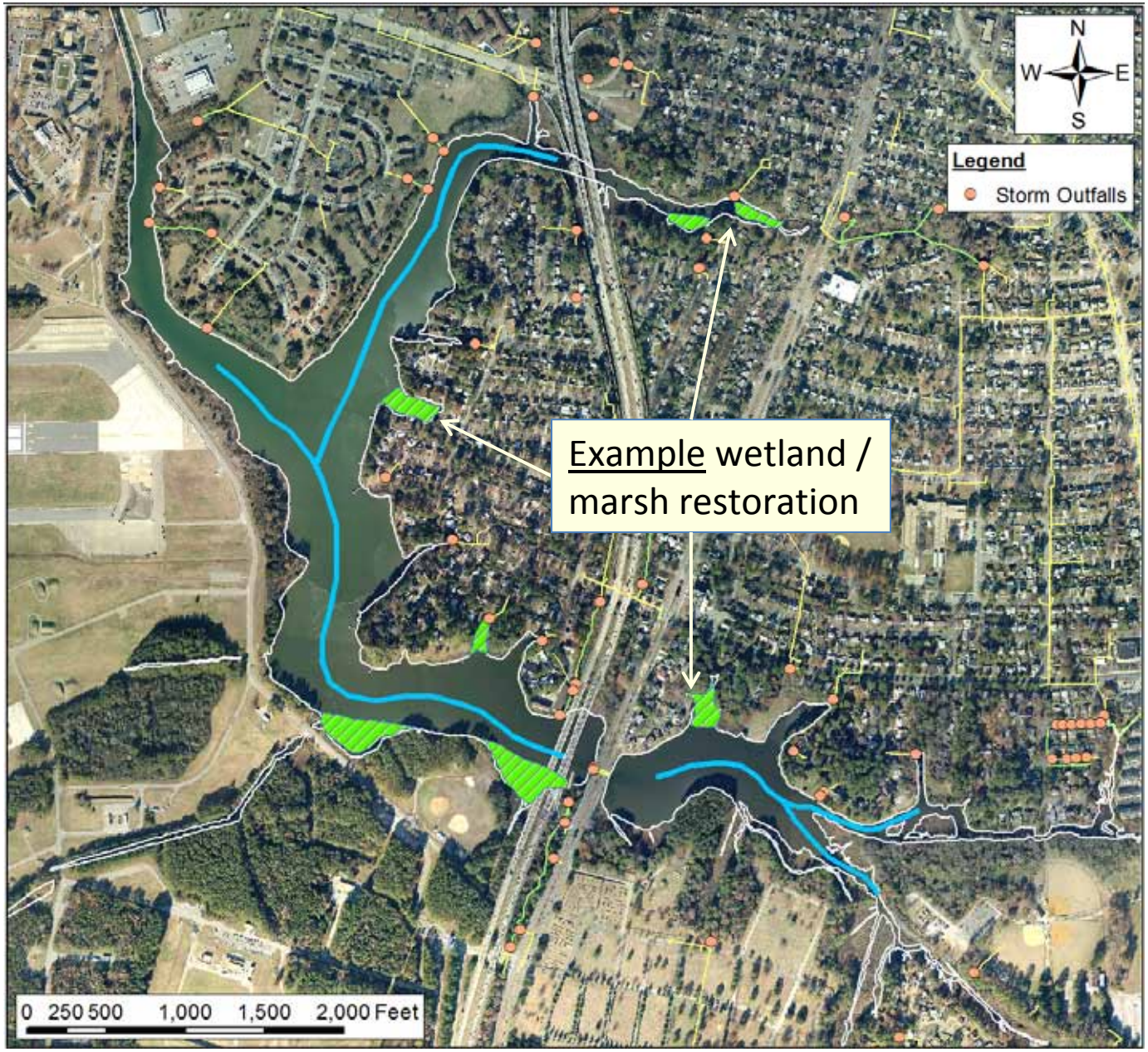
Depths in Mason Creek



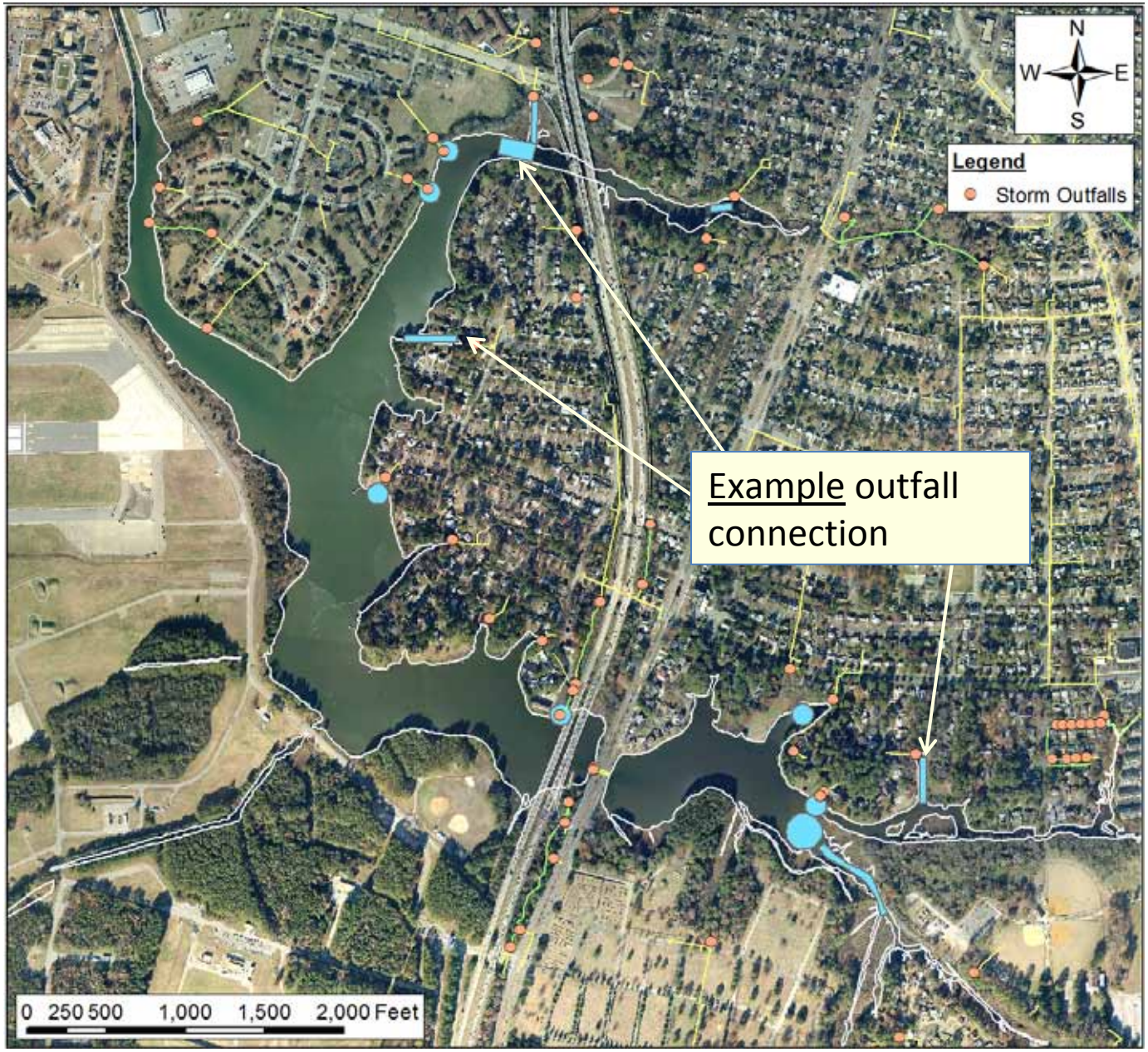
Water Quality Improvement

- Create high-quality vegetated and non-vegetated tidal wetlands while dredging “low quality” shoals

Water Quality Improvement Concepts



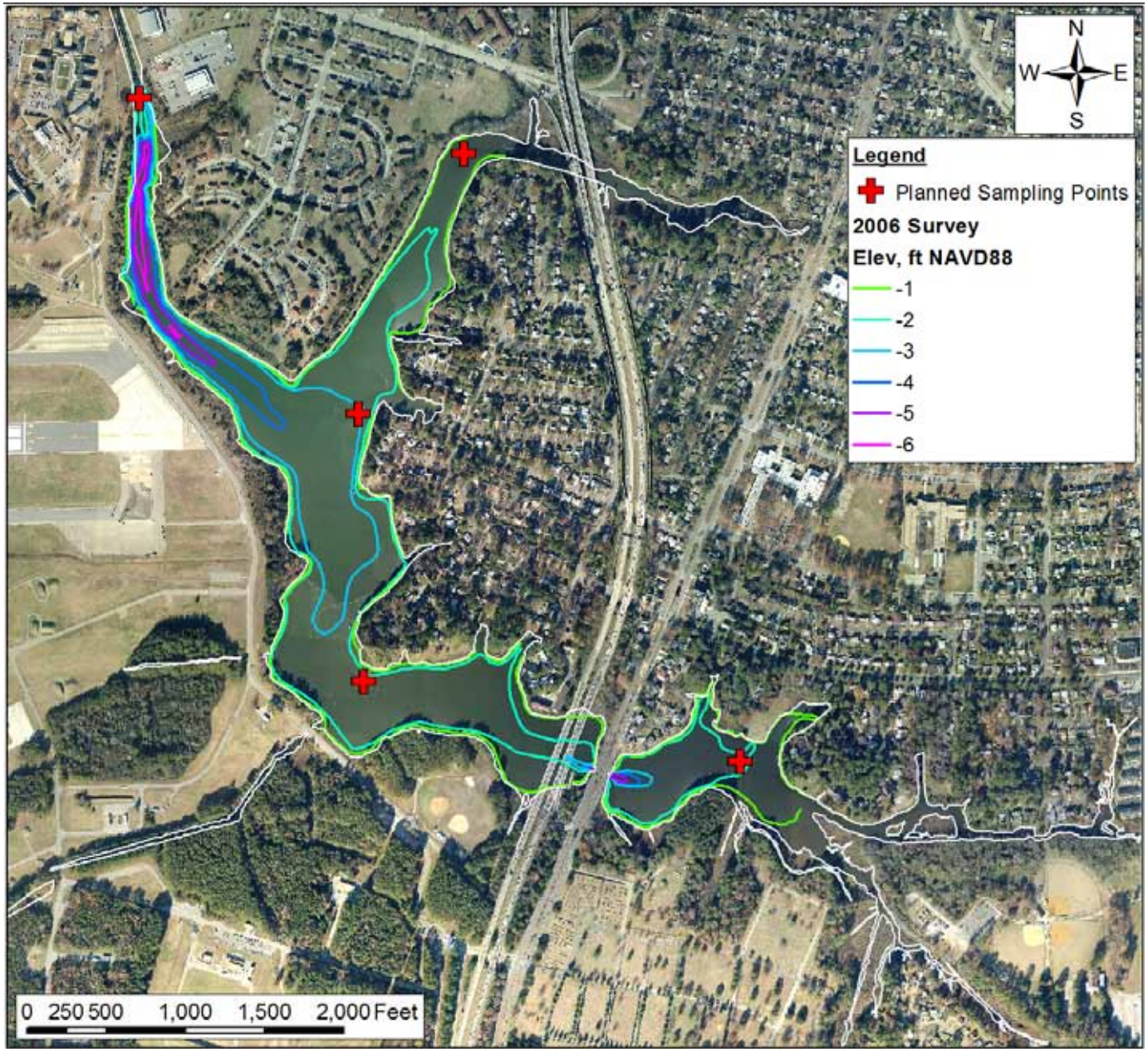
Water Quality Improvement Concepts



Water Quality Improvement

- Increased depths may improve summer water temperatures, dissolved oxygen (DO) & nutrients, lessen potential for eutrophication (if it exists)
  - Eutrophication is a process related to algae blooms
  - Would need to first show, with field measurements, that temperature, DO, and nutrient / algae levels are deficient

Water Quality Improvement Concepts



Storm Water Management

- Storm water / flooding studies from past several years indicate yard, street, and building flooding around Mason Creek due primarily to precipitation

- Navy culvert gate's role is to prevent coastal surge from entering Mason Creek, also limits rainfall-runoff from exiting Mason Creek

Storm Water Management

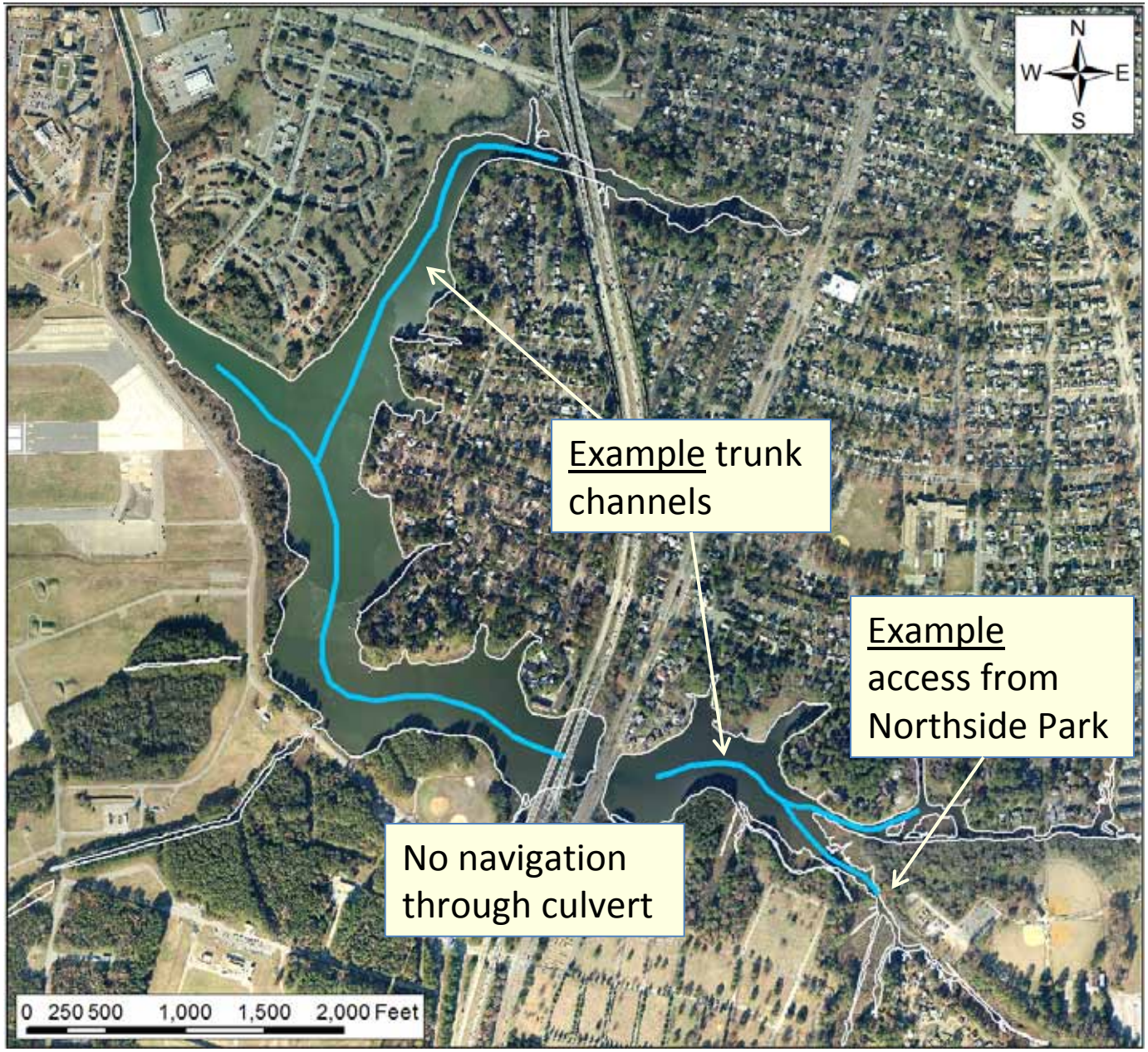
- Meaningful reduction of water levels in Mason Creek (for a given severity of rainfall) would require construction of significant new pumping capacity
  - Expensive addition, on order of $10 million to $25 million

- In combination with pumping, selective dredging in Mason Creek could enhance the benefits provided by the pumps
  - Through pre-storm draw-down to provide additional storage at lower water levels

Recreational Navigation

- Collaboration between the City and Residents
  - From past experience: dredging for small-craft navigation will require commitment to dredge & maintain “trunk” channel(s) and enough residential & community boating access points
- Example access points
  - Northside Park
  - Other City-managed parcels
  - Individual homeowners’ boat ramps, docks, channels

Recreational Navigation Concepts



Recreational Navigation Concepts

– Pretty Lake example

Next Steps and Approximate Timeframes

- Water quality sampling / monitoring
  - through Fall 2013
- Community interest in recreational access dredging
  - through Summer 2013
- Develop comprehensive permit package
  - Spring 2014
- Pump station: seek funding
  - ongoing from Fall 2012

Questions?