Contaminated Sediments In-Situ Treatment Technologies Workshop Baltimore, MD – February 18 & 19, 2004

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NORTH MARSH SEDIMENTS
HAGOOD AVE
DISCHER ST
FORMER TREATMENT AREA
MILFORD STREET
MILFORD STREET DRAINAGE DITCH
NORTHWEST MARSH SEDIMENTS
ASHLEY RIVER SEDIMENTS
NORTHWEST CORNER
BRASWELL STREET DRAINAGE DITCH
CENTRAL DRAINAGE DITCH
SITE SOILS
OLD IMPOUNDMENT AREA
LEAD IMPACTED ROAD
SOUTH MARSH SEDIMENTS
BARGE CANAL SEDIMENTS

Ashley River

- Tidally influenced – range 5 to 6 feet
- PAH & creosote contamination with depth
- Area of Potential Ecological Concern (APEC) = 3 acres
  - 1,500 feet of near shore sediment/100 feet wide
  - Former 30 feet deep navigation channel
  - No specific cleanup # issued
  - Defined area & Performance Standards

Plan A – Enhanced Sedimentation

- Short term effectiveness during construction
- Provide cover to mitigate contact/transfer to food chain
- Long term effectiveness/permanence

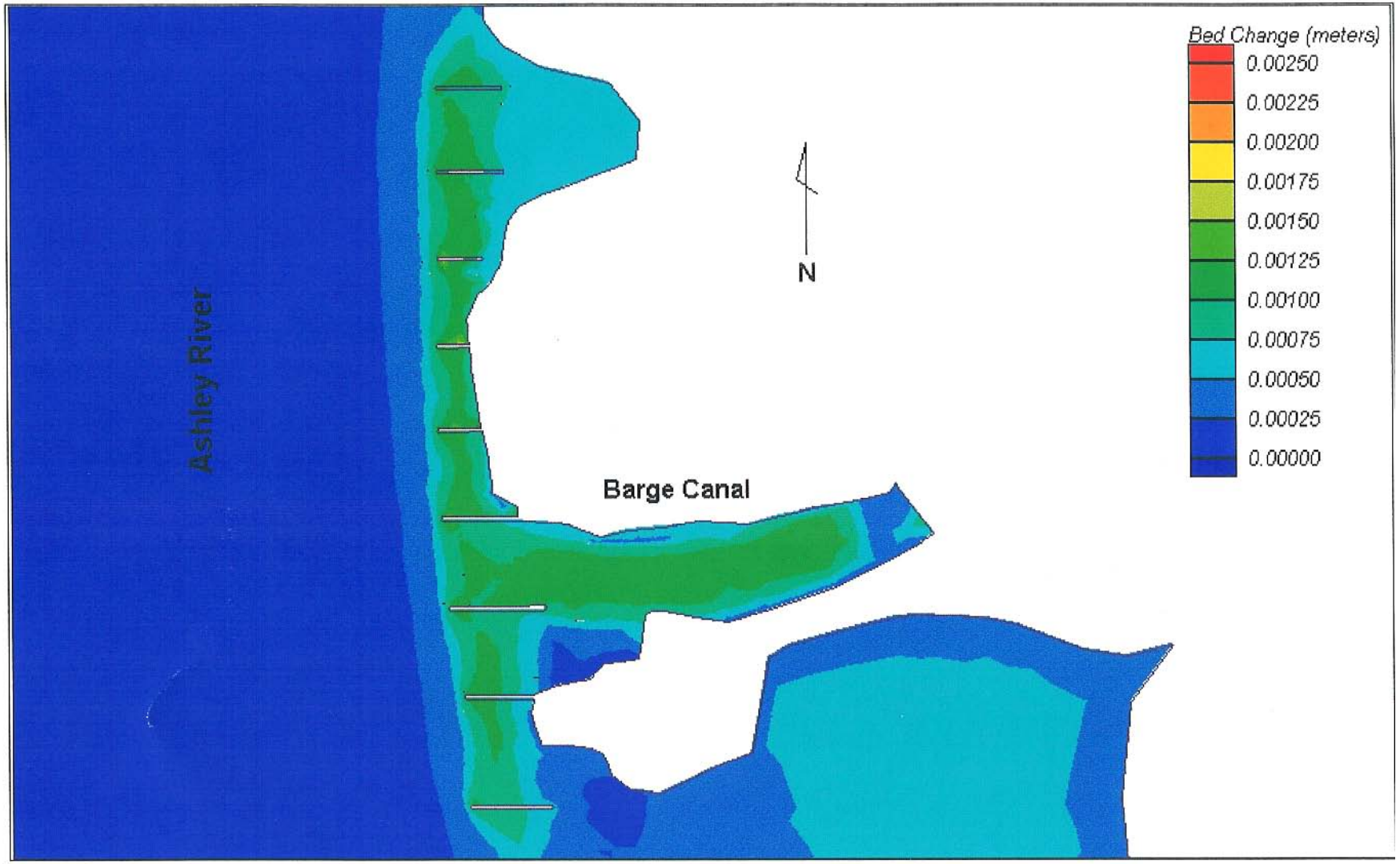


Figure 7: Areas of sediment accumulation after 4 days - Dike Plan

Constructability Concerns

- Geotechnical limitations/steep slopes
- Affected property owner
- Existing structures

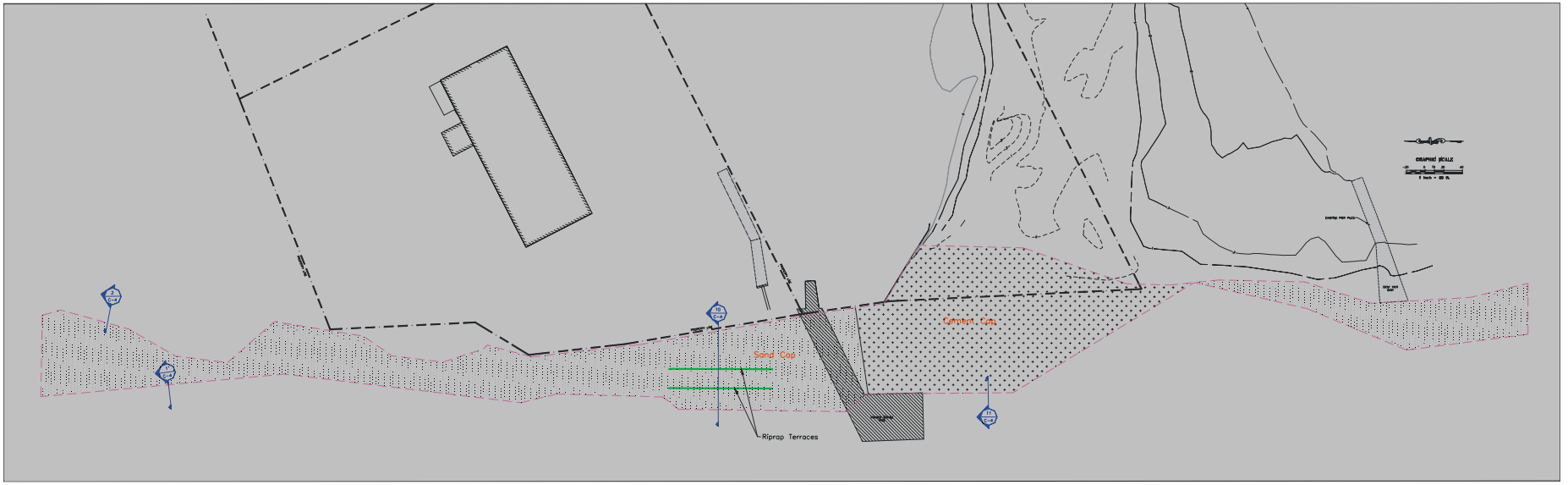
Plan B – Engineered Subaqueous Cap

- Non woven Geotextile
  - Consolidation concerns
  - Thickness monitoring
- 12 inch minimum thickness
  - 18 inches placed
- Property owner objection
  - 2 ft elevation increase would limit access
  - Spud Barge traffic impacts on cover
  - Institutional controls? …no thanks

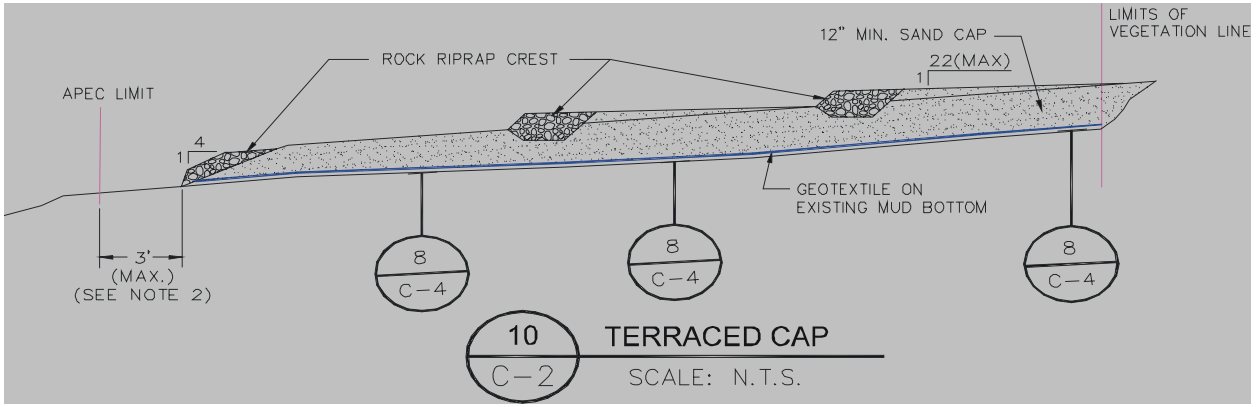
Plan C

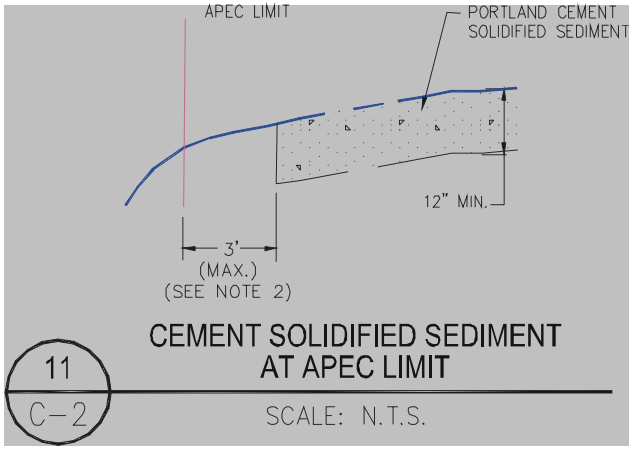
- 2 acre subaqueous sand/geotextile cap
- 1 acre solidified/stabilized by Williams Environmental

Sand Cap/Solidification Plan View



Cap Cross Sections





Solidification/Stabilization Benefits

- Solidified sediment less permeable than sand
- Minimal elevation increase (+ 4 to 6 inches)
- Forms more cohesive layer to withstand erosion
- Allowed spud barge operation

In-Situ S/S Methodology

- Upper 2 feet mixed with cement-based grout + proprietary chemical
- Wide tracked excavator with floatation hull
- Tubular injector with four mixing tines and manifold
- Quick cure time created a “work” platform
- Reagents fed through hoses from upland batch plant
- Work hours two hrs. each side of low tide(s)

Work Summary

- 181,303 gallons of reagent
  - 632 tons cement
  - 3,971 gallons of proprietary chemical
  - 160,000 gallons of water
- 33,000 square feet x 2 feet depth = 2,450 CY
- 35 work days
- Total Cost = $561,154 ($230/CY)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Acknowledgements

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