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

Diagram of cap cross sections with labels and dimensions:
- APEC Unit
- Rock Riprap Crest
- 12" Min. Sand Cap
- Geotextile on Existing Mud Bottom
- Terraced Cap (10 C-2)
- Cement Solidified Sediment at APEC Limit (11 C-2)

Scale: N.T.S.
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)
Acknowledgements

Mark Fleri, P.E.
Williams Environmental Services, Inc.
2075 West Park Place
Stone Mountain, GA 30087
770.879.4831
mfleri@wmsgrpintl.com

Mike Slenska, P.E.
Beazer East, Inc.
One Oxford Centre, Suite 3000
Pittsburg, PA 15219
412.208.8867
slenskam@hansonle.com

Tom deGrood
Remedius, LLC
2810 Duniven Circle, Suite 102
Amarillo, TX 79109
806.457.0800
tjdegrood@remedius.com