Defining Waterbodies and the Impact on Restoration: Davidsonville Wildlife Sanctuary

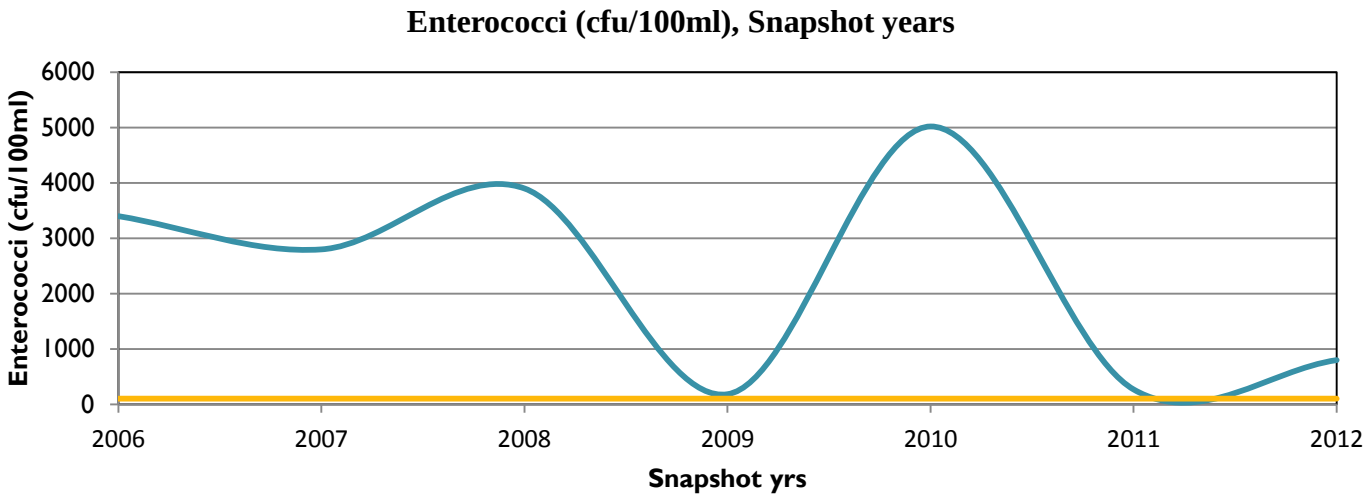
Erik Michelsen
South River Federation

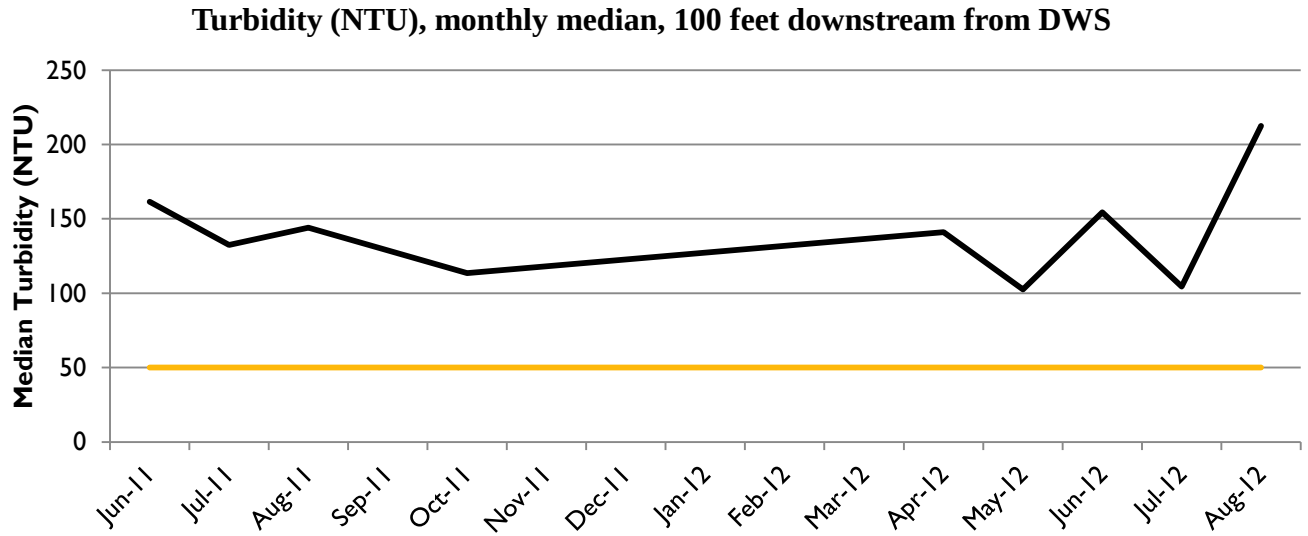
south river federation

Existing Farm Pond

Davidsonville Wildlife Sanctuary

Water Quality Data





A broad range of project partners.

BGE
A Constellation Energy Company

Davidsonville Wildlife Sanctuary

MARYLAND
OUR BAY
Treasure the Chesapeake

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

south river
federation

Anne Arundel Soil
Conservation District

Anne Arundel Soil Conservation District
2662 Riva Road Suite 150
Annapolis, Maryland 21401
410-571-6757 www.aaconservation.org

Advancing the Wise Use of Our Natural Resources

April 21, 2011

Environmental Specialist
Maryland Department of the Environment
Southern Region
1800 Washington Blvd.
Baltimore, MD 21230

Subject: Wildlife Sanctuary; Sandy Carr Property, 3156 Beards Point Rd, Davidsonville, MD 21035

I would like to endorse Mr. Michelsen's project for a step pool storm conveyance (SPSC) system for the subject property. I have met with him and feel it is a good start in coming up with a comprehensive plan to control the nutrients leaving this property and running into Beards Creek. The District has offered to help Ms. Carr previously, but we were unable to provide a service to meet her needs with the standards we have available. I have been endeavoring to get an NRCS standard for a SPSC system, but need demonstration sites; this would be a good visible location that is already funded. I would greatly appreciate anything you can do to facilitate this project. Thanks for your time Judy.

Jim Stein
District Manager
AASCD

MDE Definition of an "Intermittent Stream"

- A stream or portion of stream whose flow includes a seasonal or temporary groundwater component (i.e. the base level of the stream is at or below the local water table). Such streams flow for days, weeks, or months following the most recent rainfall event. These streams may be shown as dotted/dashed lines on United States Geological Survey 7.5 Minute Series (Topographic) maps.

USGS Map (7.5 minute series), 1993

Is this a stream channel?

MDE Permit Timeline:

- Applied June 2011.
  - MDE determines jurisdiction over the "intermittent stream" between the dual pipes and Beard's Point Road.

Above the “stream.”

Hyper-eutrophic pond

Over the pond. Previously perennial system.

Definition of an "Ephemeral Channel"

- A ground surface configuration (such as a swale) that contains flowing water only during and shortly after a rainfall event. The duration of flow in this kind of system is too limited to establish an aquatic ecosystem.

MDE Permit Timeline:

- Applied June 2011.
  - MDE determines jurisdiction over the "intermittent stream" between the dual pipes and Beard's Point Road.
- Second comments: (Nov, 2011)
  - Add stream diversion details
  - Run HEC-RAS
- Third comments: (Jan, 2012)
  - Refine HEC-RAS
- Fourth comments: (Apr, 2012)
  - Further refine HEC-RAS
- Still no permit (Nov, 2012)
  - Grant funding at risk.

Existing condition under Beard's Point Road.

Exercising Discretion

Option 1: Regulators Facilitate

County reviewers determine property is an agricultural use, only requires a sediment and erosion control plan

State reviewers determine existing condition is a serious pollution source and non-jurisdictional.

Project completed within 90 days of submittal

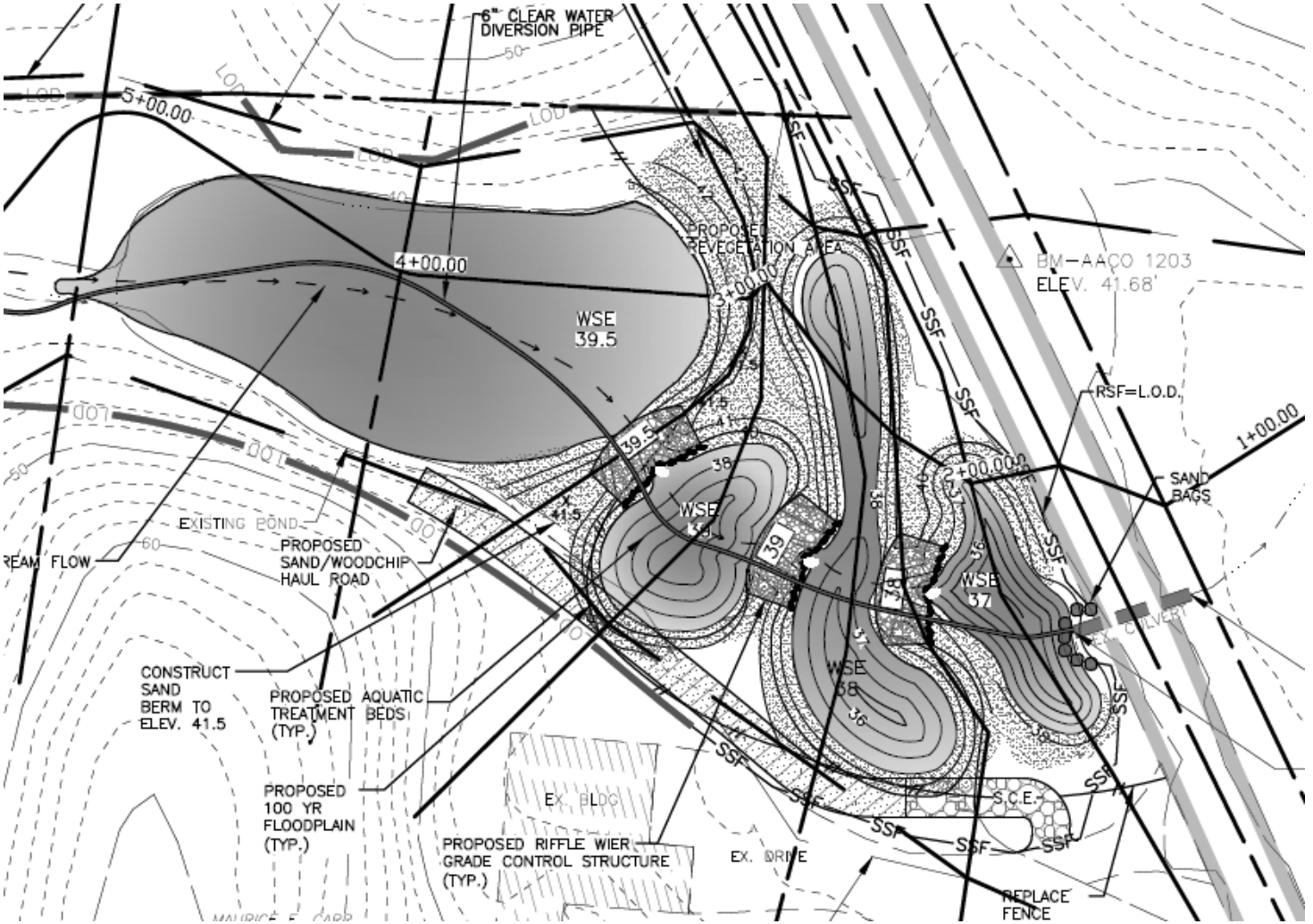
Option 2: Regulators Take Strict Interpretation

County reviewers determine site needs full grading permit: Add $10,000 and 6-9 months.

State reviewers determine existing condition is jurisdictional. Add $15,000 in additional engineering and 1.5 years.

Project perhaps completed within 2 years of submittal

Restoration Design



Assessing stream restoration effectiveness at reducing nitrogen export to downstream waters

SOLANGE FILOSO[1,3] AND MARGARET A. PALMER[1,2]

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[2]*Department of Entomology, 4112 Plant Sciences Building, University of Maryland, College Park, Maryland 20472 USA*

We assessed the effectiveness of restored streams positioned in the upland vs. lowland regions of Coastal Plain watershed during both average and stormflow conditions. We found that, during periods of low discharge, lowland streams that receive minor N inputs from groundwater or bank seepage reduced in-stream N fluxes. Furthermore, lowland streams with the highest N concentrations and lowest discharge were the most effective. During periods of high flow, only those restoration projects that converted lowland streams to stream–wetland complexes seemed to be effective at reducing N fluxes, presumably because the design promoted the spillover of stream flow onto adjacent floodplains and wetlands. The observed N-removal rates were relatively high for stream ecosystems, and on the order of 5% of the inputs to the watershed. The dominant forms of N entering restored reaches varied during low and high flows, indicating that N uptake and retention were controlled by distinctive processes during different hydrological conditions.

Post-restoration target

Post-restoration target

Final South River TMDLs

Impairment	Existing Load (2009)	Target Load
Nitrogen	219,201 lbs	185,591 lbs
Phosphorus	19,690 lbs	11,852 lbs
Sediment	3,022,869 lbs	2,161,947 lbs

The existing regulatory process has to adapt and accelerate, if we are going to have any chance to meet our clean water goals.

Thank You

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south river
federation

Definition of a "Watercourse."

- A definite channel with bed and banks within which concentrated water flows continuously or intermittently.