

Anacostia River TSS TMDL

Addressing the Recreation and Aesthetic Uses

Metropolitan Washington Council of Governments
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Background

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Office of Standards, Assessment and
TMDL

EPA Region 3

Technical Analysis

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On Behalf of
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&
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2007 Anacostia TSS TMDL Background

- Focused on aquatic life endpoint as most sensitive use
- Light attenuation model (Secchi Depth) is a component of both sediment and nutrients
- TMDL requires 85% Reduction of TSS from baseline conditions
- More than twice the reduction required as observed in non-tidal systems



Court Decision

- Judgment

- Held EPA's approval did not adequately establish that the final TMDL would achieve all applicable designated uses under DC and MD law

- Challenge

- Review all applicable sediment-related water quality criteria for all applicable designated uses
- Determine if TMDL scenario will support applicable uses

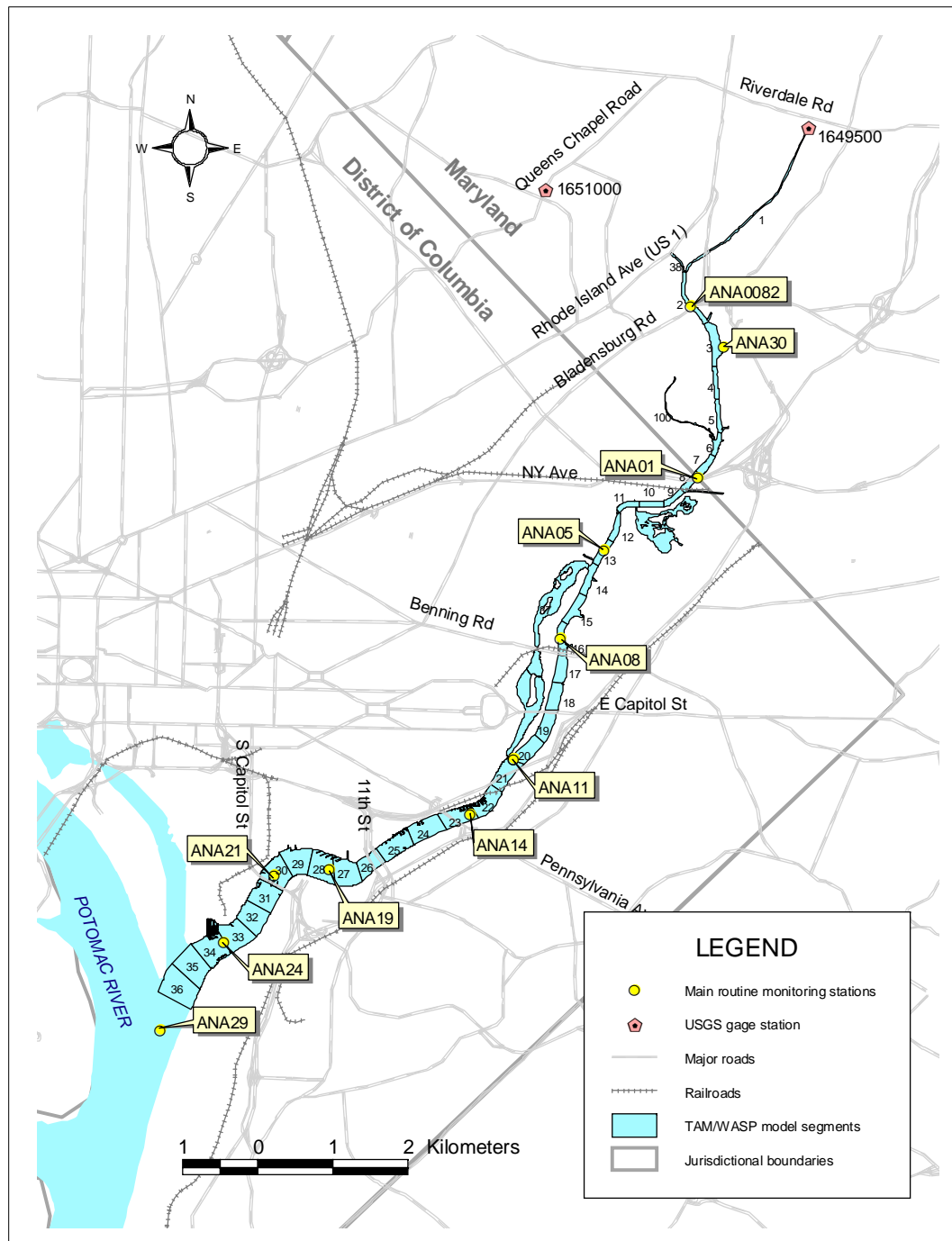
Numeric Turbidity Criteria

- Not explicitly addressed in 2007 TMDL
- Maryland WQS (COMAR 26.08.02.03-3 (Water Quality Specific to Designated Uses))
 - Turbidity in the surface water resulting from any discharge may not exceed 150 units at any time or 50 units as a monthly average. Units shall be measured in NTU.
 - Applicable to Use I, III and IV waters (Water Contact Recreation and Protection of Nontidal Warmwater Aquatic Life)
- DC's WQS (21 DCMR 1104)
 - To attain and maintain the designated uses, turbidity for Class A, B and C waters shall be no more than 20 Nephelometer Turbidity Units (NTU) above ambient levels.
 - Class A waters are designated for primary contact recreation use, Class B for secondary contact recreation and aesthetic enjoyment, and Class C for protection and propagation of fish, shellfish, and wildlife.

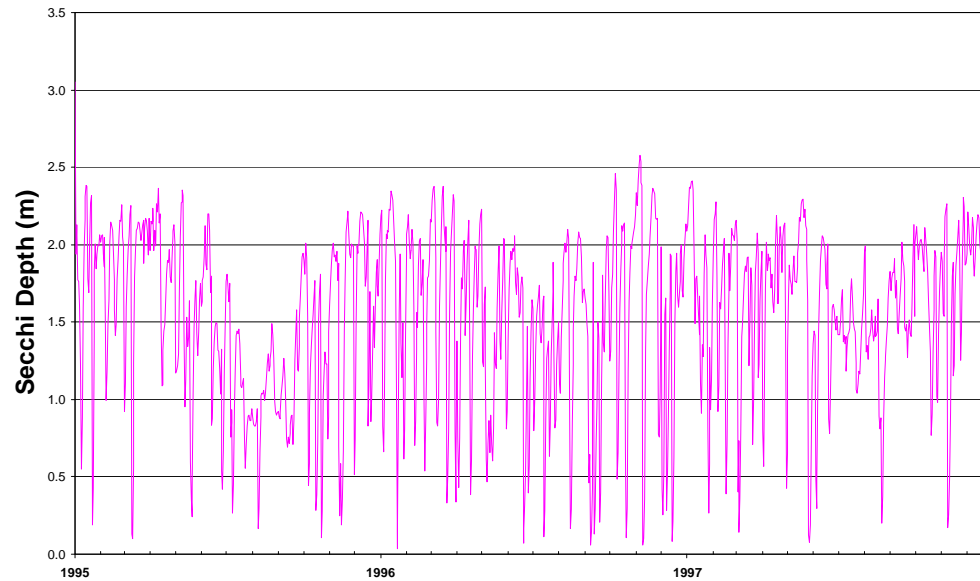
Evaluation of Turbidity Levels under the TMDL Scenario

- Expand Model to Estimate Turbidity
- Use Existing TMDL Scenario
(requires 85% reduction of sediment loads)
- Translate Predicted Daily Secchi Depths for each Model Segment to Turbidity Values (NTU) using empirical relationship provided in 2007 TMDL Comment Response Document
- Calculate daily average and monthly average turbidity values in MD and DC tidal waters under TMDL

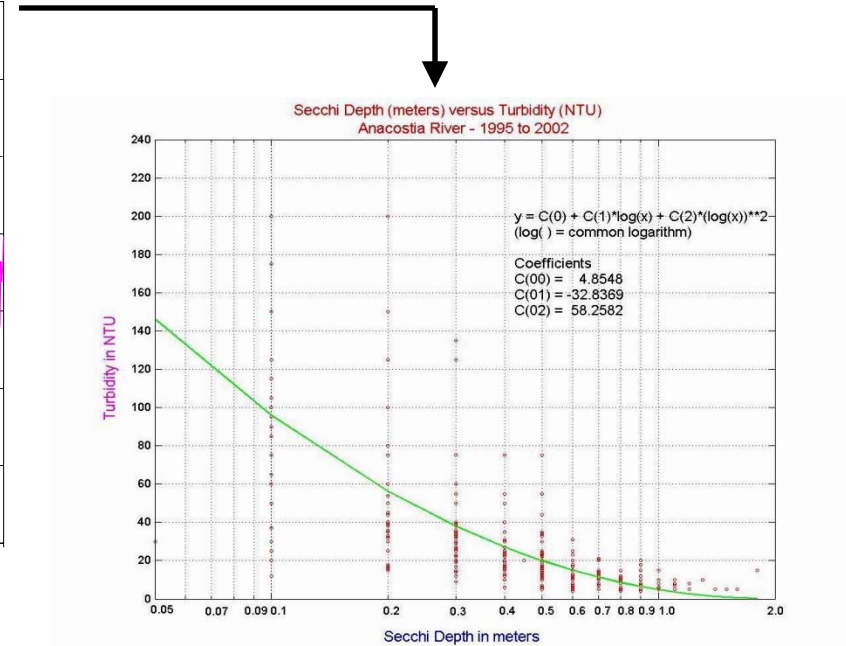
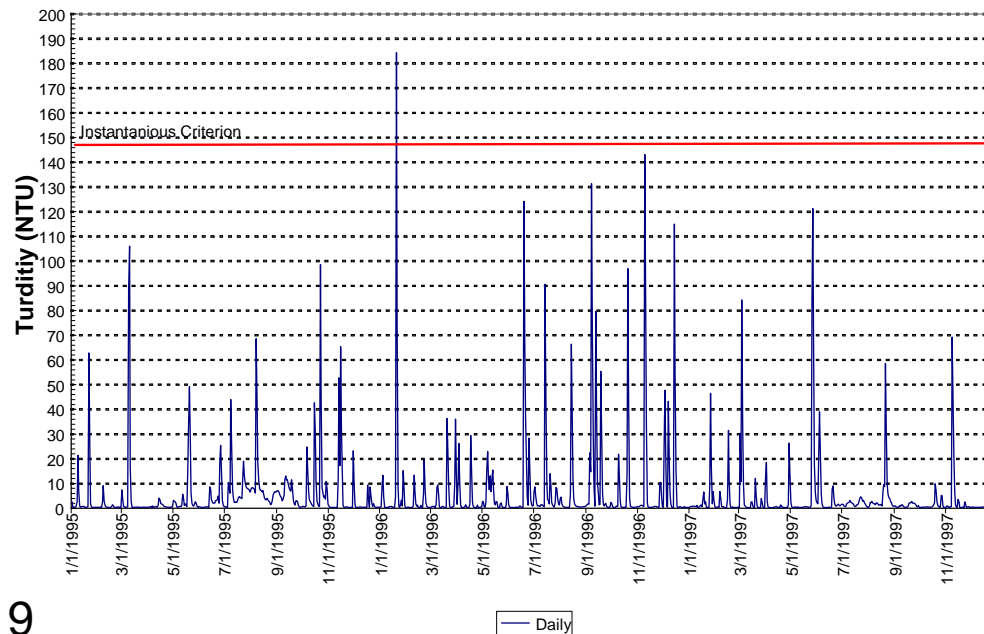
Anacostia Model Segments and Monitoring Stations



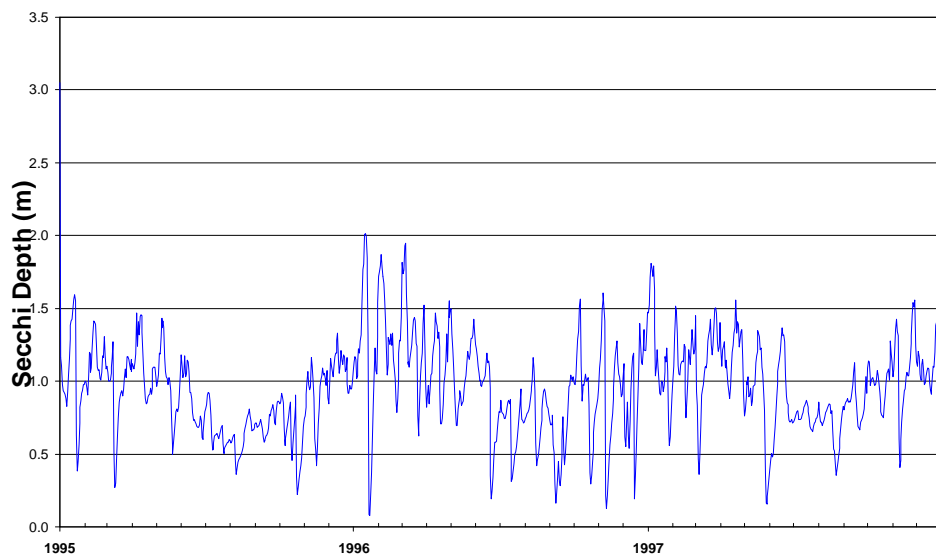
Converting Predicted Secchi Depths under TMDL to Turbidity Levels (MD Tidal Anacostia)



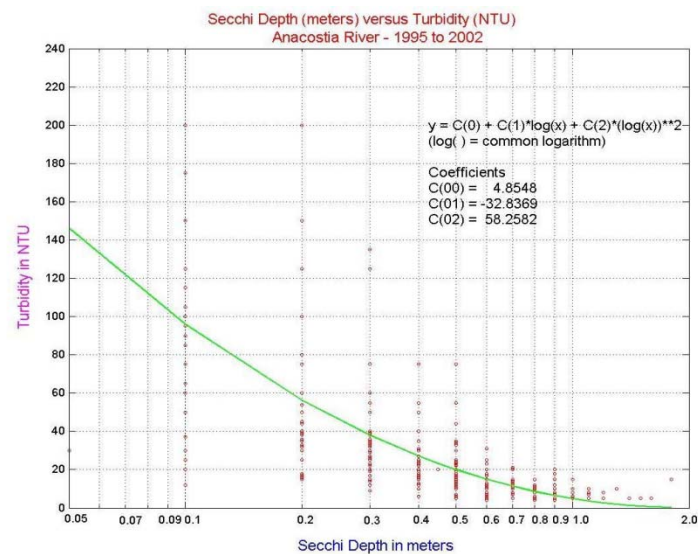
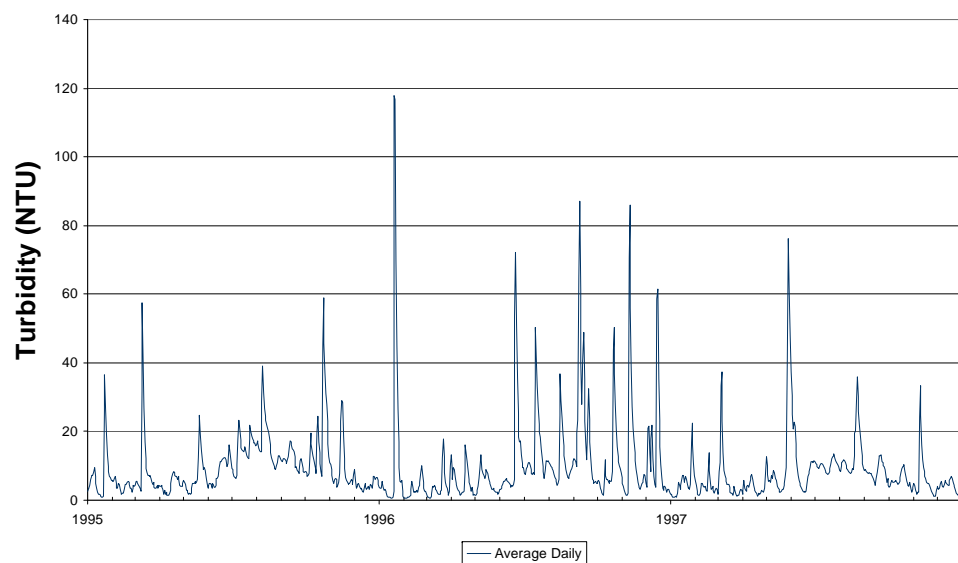
TMDL Scenario Results (MD Tidal Waters)



Converting Predicted Secchi Depths under TMDL to Turbidity Levels (DC Tidal Anacostia)



TMDL Scenario Results (DC Tidal Waters)



Comparing the results to MD turbidity standards

- Under the TMDL scenario, the 30-day average turbidity values never exceed 50 NTU and less than 0.1% of the daily values exceed a level of 150 NTU.
- Complete attainment of MD's numeric criterion of 50 NTU monthly average and 99.9% attainment of the criterion of 150 NTU at any time is demonstrated under the TMDL scenario.

NOTE:

EPA guidance recommends making non-attainment decisions regarding conventional pollutants, including TSS, when more than 10% of measurements exceed the water quality criterion.

Percent (%) Exceedance	Daily Turbidity Values (NTU)		30-day Average Turbidity Values (NTU)
	MD	DC	MD
0.1	142.1	114.0	17.8
1.0	88.8	61.2	17.7
2.0	64.9	47.8	16.1
3.0	44.4	39.2	14.9
4.0	36.0	34.7	14.0
5.0	29.0	29.1	13.3
6.0	23.0	26.7	13.3
7.0	19.0	24.3	12.8
8.0	16.0	22.9	12.4
9.0	13.4	21.3	11.5
10.0	11.8	19.6	11.4

Comparing the results to DC turbidity standards

- DC's turbidity water quality criterion is defined as no more than 20 NTU above ambient levels.
- What is ambient in DC?
 - If we assume background is zero, under the TMDL scenario less than 10% of the daily NTU values are greater than 20 NTU.
 - If we assume that background is 20 NTU, under the TMDL scenario then less than 3% of the daily NTU values are greater than 40 NTU.
- These conservative assumptions (background = 0 and background = 20) provide a margin of safety

NOTE:

EPA guidance recommends making non-attainment decisions regarding conventional pollutants, including TSS, when more than 10% of measurements exceed the water quality criterion.

Percent (%) Exceedance	Daily Turbidity Values (NTU)	
	MD	DC
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2.0	64.9	47.8
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4.0	36.0	34.7
5.0	29.0	29.1
6.0	23.0	26.7
7.0	19.0	24.3
8.0	16.0	22.9
9.0	13.4	21.3
10.0	11.8	19.6

20 NTU over
20 Ambient = 40

20 NTU over
0 Ambient = 20

Conclusion

- Using existing Model output and 85% reduction TMDL Scenario demonstrates attainment of all numeric sediment criteria in MD and DC to protect all designated uses

TMDL - MD	
> Secchi Depth USE II: Aquatic Life	<input checked="" type="checkbox"/>
> Turbidity – All Uses	<input checked="" type="checkbox"/>

TMDL - DC	
> Secchi Depth Class C (Tidal): Aquatic Life	<input checked="" type="checkbox"/>
> Turbidity – All Classes (Class A, B – Recreation, aesthetic enjoyment)	<input checked="" type="checkbox"/>

Public Comment Process

- Public Comment Period for the Draft Appendix E document ends May 7
- Written comments should be submitted on or by May 7 to Tom Thornton at MDE

tthornton@mde.state.md.us

Or to George Onyullo at DCDOE

George.onyullo@dc.gov

Next Steps

- Review and Respond to Public Comments
> May 2012
- State Submittal to EPA for review and approval
> June/July 2012

Questions

