PUBLIC COMMENT
and,
REQUEST FOR CORRECTION

IN THE MATTER OF:)
)
The U.S. Environmental Protection)
Agency Report:)
)
Draft Benthic TMDL Development)
Accotink Creek, Virginia)
June 2010)
)

Commenter:[1]

David W. Schnare, Esq. Ph.D.
XXXXXXXXXXXXXXX
XXXXXXXXXXXXXXX
dwschnare@gmail.com

Disclaimer:
These comments reflect my personal professional opinion and are not intended to represent the views of any organization with whom I am associated.

Submitted to:

Gregory Voigt
Office of Standards, Assessment and TMDLs (3WP30)
US EPA Region III
1650 Arch Street
Philadelphia, PA 19103
215-814-5737
voigt.gregory@epa.gov

Information Quality Guidelines Staff (Mail Code 2811R)
U.S. EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460
quality@epa.gov

[1] *NB*, this public comment has been peer-reviewed by a qualified third-party with a Ph.D. in economics and who previously held a senior staff position in the Office of Information and Regulatory Affairs in the White House Office of Management and Budget.

Copies to:

The Hon. Douglas Domenech
Office of the Secretary of Natural Resources
Patrick Henry Building
1111 East Broad Street
Richmond, VA 23219
doug.domenech@governor.virginia.gov

The Hon. David Paylor, Director
Department of Environmental Quality
629 East Main Street
Richmond, Va. 23219
P.O. Box 1105, Richmond, VA 23218
david.paylor@deq.virginia.gov

The Hon. David Johnson, Director
Department of Conservation and Recreation
203 Governor Street
Richmond, VA 23219-2094
david.johnson@dcr.virginia.gov

The Hon. Rick Neel
Deputy Attorney General
Office of the Attorney General
900 East Main Street
Richmond, VA 23219
rickneel@nova.org

Mr. Bryant Thomas
Virginia Department of Environmental Quality
Water Quality Programs Manager – Northern Regional Office
13901 Crown Court
Woodbridge, Virginia 22193
Bryant.Thomas@deq.virginia.gov

Ms. Katie Conaway
Virginia Department of Environmental Quality
Regional TMDL Coordinator – Northern Regional Office
13901 Crown Court
Woodbridge, Virginia 22193
Katie.Conaway@deq.virginia.gov

Mr. Craig Lott
Virginia Department of Environmental Quality
TMCL Modeling Coordinator – Central Office
Craig.Lott@deq.virginia.gov

Executive Summary

The Accotink Creek watershed is located in Northern Virginia within portions of Fairfax County, the City of Fairfax and the Town of Vienna. Bordering it on the west is the Pohick Creek watershed and to the north is the Difficult Run watershed. The U.S. Environmental Protection Agency (EPA or the Agency) has approved Total Maximum Daily Loadings (TMDLs) for both Pohick Creek and Difficult Run.[2] EPA has properly identified portions of Accotink Creek as impaired because sediment in the water has settled onto the bottom of these portions of the creek, destroying the habitat of benthic organisms living there. EPA now proposes a benthic TMDL for Accotink Creek for the same reasons it approved one for Difficult Run. At EPA's invitation, this comment addresses technical, statistical, data quality and related scientific mistakes in its report entitled, "Draft Benthic TMDL Development," (hereinafter "the TMDL Report")

EPA has proposed to cure the benthic impairment in Accotink Creek predominantly through a limitation on the amount of water it will allow to flow into the creek, using the Municipal Separate Storm Sewer System (MS4) permit program as the means to limit flow. In essence, EPA has assumed that too much water flowing into Accotink Creek has caused erosion of the creek wall, creating high levels of total suspended solids which later settle onto the bottom of the creek (sedimentation), thus destroying the benthic habitat and some of those organisms. This comment will examine this assumption and identify various mistakes EPA made in concluding peak annual flow is the actual cause of the sedimentation and harm to the benthic habitat.

While both Accotink Creek and Difficult Run are listed by EPA as benthic impaired waters, Pohick Creek, nearly identical in nature to the others, is not benthic impaired. Further, EPA approved a TMDL for Difficult Run that limits the amount of sediment in the water, rather than limiting the flow of water into Difficult Run. This comment will discuss the significance of the sediment-based approach as compared to a flow-controlled TMDL, demonstrating why EPA should use a sediment loading TMDL in Accotink creek as it did in Difficult Run.

This comment addresses a large number of issues. Following this summary, the comment provides an Index to the issues that will assist comment reviewers. The issues addressed reflect six basic subjects:

- EPA's proposed TMDL is unwarranted by the facts. Among other things, the Agency based its selection of a flow-based TMDL on a mistake about the cause of benthic damages. If also misinterpreted and/or misrepresented historic flow information, resulting in a flawed TMDL proposal, and it failed to incorporate information it had regarding the size of flows associated with non-benthic-impaired streams.

[2] U.S. EPA, "Decision Rationale Total Maximum Daily Loads For Polychlorinated Biphenyls (PCBs) Tidal Potomac & Anacostia River Watershed in the District of Columbia, Maryland and Virginia," 10/31/2007, *see*, http://www.epa.gov/reg3wapd/tmdl/dc_tmdl/PotomacPCB/PotomacPCBTMDLDR.pdf; *and*, "Decision Rationale Total Maximum Daily Loads Aquatic Life Use (Benthic) Impairment Difficult Run Watershed Fairfax County, Virginia", 11/7/2008, *see*, http://www.epa.gov/reg3wapd/tmdl/VA_TMDLs/DifficultRunBenthic/DifficultRunBenthicDR.pdf.

- EPA chose to use a "surrogate" TMDL (flow) criterion without presenting a rational basis as to why the surrogate (flow) is equivalent to or otherwise a reasonable substitute for the criterion (sediment loading) that EPA has routinely used in the past and which is available for use on Accotink Creek.
- EPA's proposed the Accotink TMDL without properly observing procedures required by the President and EPA. EPA failed to examine whether the TMDL constitutes a significant regulatory action that is likely to result in a rule that may adversely affect in a material way State and local governments, or whether the TMDL raises novel legal and policy issues arising out of Clean Water Act (legal) mandates. The proposed TMDL does both and thus is a significant regulatory action that requires presentation of options analysis. EPA did not conduct the options analysis, much less presented it to the public for comment.
- EPA's proposed restrictions on development within the Accotink watershed are in excess of EPA's statutory jurisdiction, authority, and limitations; and are short of EPA's statutory right. EPA seeks to replace local land use controls without authority and against EPA's long-standing policy to preserve "the delicate balance created in the statute between protection of water quality to meet federal water quality goals and the management of water quantity left by Congress in the hands of States and water resource management agencies."[3]
- Without observance of procedure required by law, EPA did not disseminate information in its TMDL Report that adhered to a basic standard of quality, including objectivity, utility, and integrity. EPA requires that each step of EPA's development of information, including creation, collection, maintenance, and dissemination, must integrate these principles of information quality. The TMDL Report does not adhere to the basic standard of quality the Agency requires, as described in its own guidelines. Among other problems, EPA presented a flow duration curve (FDC) that cannot be reproduced using the United States' (U.S. Geological Survey, National Water Information System's) own data. Nor is EPA's FDC analysis sufficiently transparent to allow a competent analysis to understand how EPA produced an FDC in variance with the underlying USGS historic flow data for Accotink Creek. According to EPA's own rules, these and other mistakes require the Agency to fix the errors and reopen public comment on the TMDL Report thereafter.[4]
- The effect of the TMDL, and EPA's intent to incorporate it into MS4 permits is contrary to Virginia's Constitutional rights, powers, and privileges, a fact previously understood by EPA's General Counsel.

Because EPA's analysis cannot be reproduced; because that analysis is at variance with high-quality information, because EPA fails to include in its analysis information it had regarding non-impaired streams with higher flows, because EPA mistakenly assumed peak flow

[3] U.S. EPA, Memorandum from EPA General Counsel Ann Klee to EPA Assistant Administrator for Water Benjamin Grumbles, "Agency Interpretation on Applicability of Section 402 of the CWA to Water Transfers," August 5, 2005 http://www.epa.gov/ogc/documents/water_transfers.pdf.

[4] U.S. EPA "Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency" October 2002, *see*, http://www.epa.gov/QUALITY/informationguidelines/documents/EPA_InfoQualityGuidelines.pdf.

is the predominant cause of the impairment; because EPA failed to meet its duties under the Information Quality Act; because the proposal extends EPA's authority beyond permissible Constitutional bounds, and because EPA has drafted a proposal knowing most of these facts, EPA should address each of the issues raised herein and repropose a TMDL based on allowable sediment limits as it did in the Difficult Run TMDL.

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I. Errors in Determining Causality of Benthic Impairments.

The TMDL Report states: "The TMDL uses the surrogate of stormwater runoff volume to address the needed reductions in sediment. Use of this surrogate is appropriate because the amount of pollutant load discharged is a function of the amount of stormwater runoff generated from a watershed for a given set of conditions. This relationship is especially strong for sediment."[5, 6] Specifically, EPA suggests that the flow in the channel of the stream explains nearly 76 percent of the variation in the total suspended solids (TSS), a pollutant that settles onto the bottom of the creek, destroying the benthic habitat.[7]

EPA makes the common mistake of confusing a statistical association for a causal relationship. For example, the Mars company has decided to mix its M&M® candies so that each package of M&M's will have about the same number of red and yellow candies. A statistical analysis would show a high correlation between the variation in the number of red and yellow candies in a package. This, of course, does not explain the cause of the red/yellow ratio. The "cause" is a management decision made by the company. The statistical correlation does no more than demonstrate that the production process has carried out the wishes of management. Alternatively, a statistical analysis of the clarity and content of management's orders about how to mix colors of candies with the variation in the ratio of red and yellow candies would be an association related to causality because the independent variable "management's implementation plan for mixing candy colors" is the true cause of the red/yellow ratio. The proof that an association does not reveal causality is that as one eats the red candies, the number of yellow ones in the package does not diminish. This is the situation EPA confronts as regards 1 year peak stream flow and benthic impairment.

EPA has failed to offer an explanation as to how the size of the stream flow in the middle of the creek actually causes erosion of the stream bank, and it can't.

The physics of bank erosion indicates factors other than steam flow in the center of the stream channel control the degree of erosion and that total stream flow is related to those factors only in specific situations that do not relate to whether reduction in flows can efficiently and effectively reduce stream bank scouring.

As discussed by Odgaard[8] erosion rates are correlated with watercourse characteristics such as width, depth, curvature, arc angle of the watercourse centerline, watercourse slope, friction factor, and degree of vegetation on the banks. As Brice, Hooke and Hickin[9]

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[5] The TMDL Report at p. C-2 (*emphasis added*).

[6] Section II of this comment documents the errors EPA made in estimating 1 year peak flows in Accotink Creek, and thus any correlation between those flows and total suspended solids is corrupt in the first instance. EPA cannot rely on such a correlation if the underlying data are not valid.

[7] *Ibid*, p. 4-7, Figure 4-1.

[8] Odgaard. A.J., ", Streambank Erosion Along Two Rivers In Iowa ", Water Resources Research, Vol. 23, No.7, Pages 1225-1236, July 1987.

[9] Brice, 1. C" Stream channel stability assessment, Rep. FHWA/RD•82/021, 42 pp., Fed. Highway Admin., U.S. Dep. of Transp., Washington, D.C., 1982; Hooke, J. M., Magnitude and distribution of rates of river bank erosion, Earth Surf Processes Landforms, 5,143-157,1980; Hickin, E., The development of meanders in natural river channels, Am. J. Sci., 174, 414-442, 1974.

independently demonstrated, the rate of bank retreat increases with increasing channel width. In addition, Hickin and Nanson demonstrate that channel curvature also plays an important role in determining the rate of bank retreat.[10]

The Odgaard paper also demonstrates that the degree of stream bank scouring is dependent upon channel characteristics and is proportional to the difference between the near-bank water velocity and the average velocity at the flood stage when water is at or above the stream bank.

The physics of bank erosion are thus a function of the velocity of the water immediately next to the soil and the direction of the flow as it impacts the soil. A lower flow striking the bank at a 70 to 110 degree angle, i.e., hitting it "head on", can have the same capacity to erode the bank as a higher near-bank flow that merely strikes a glancing blow.

Total flow in the stream is related to bank erosion only when the total flow is related to the near-bank flow, and the shape of the bank exacerbates erosion. When comparing a natural stream with one flowing through human development, total flow in the natural stream may be a useful surrogate for the rate of bank erosion in streams flowing through human development, but only if the stream channel characteristics are the same.

EPA did not compare the stream channel characteristics of Buffalo Creek and Catoctin Creek with Accotink Creek and thus any assumption that the total flows in Accotink and the "Composite" Creeks are correlated in the same manner with erosion, sedimentation and impairment is without a scientific basis.

More significantly, where stream banks have been protected, e.g., by rip-rap, erosion is virtually eliminated as the near-bank flow rate (behind the rock protection and next to the soil) is almost quiescent. Thus, total stream flow is uncorrelated with erosion, sedimentation and impairment in a stream that has received significant stream-bank protection.

Consider, for example, the benefits of stream-bank protection in Pohick Creek as compared with Accotink Creek. The 2 year peak flow in Pohick Creek (1,858 cfs) is nearly twice the 2 year peak flow of Accotink Creek (950 cfs), but Pohick Creek has no benthic impairment. In addition, the stream length per straight-line distance from headwaters to terminus is comparable in the two creeks, indicating they have the same channel characteristics (same amount of curviness). And, Pohick Creek has a 2 year peak flow per stream mile (15.34 cfs/mile) nearly double that of Accotink Creek (8.4 cfs/mile). Under EPA's theory that mid-channel stream flow causes 76 percent of erosion, Pohick Creek should have a badly impaired benthic condition. Pohick Creek is not benthic impaired. It has, however, benefited significantly from stream restoration in the form of bank-protection from both rip-rap and bank plantings.

Because EPA did not and cannot demonstrate a physical relationship between mid-channel 1 year peak stream flow and rates of erosion or TSS levels, either in impaired streams or

[10] Hickin, E. Land G. C. Nanson, The character of channel migration on the Beatton River, Northeast British Columbia, Canada, Ceol. Soc. Am. Bul/., 86, 487--494,1975; and, Nanson, G. c., and E. J. Hickin, Channel migration and incision on the Beallon River, J. Hydraul. Eng .. 109(3),327-337,1983.

non-impaired streams; and, because current peer-reviewed scientific evidence demonstrates the cause of bank erosion and resultant TSS levels, as well as actual levels of sedimentation, are related to factors other than mid-channel 1 year peak stream flows, EPA must abandon its argument that "because the amount of pollutant load discharged is a function of the amount of stormwater runoff generated from a watershed."

Under the Information Quality Act, EPA is obligated to show why the peer reviewed papers by Odgaard, Brice et al., and Hickin and Nanson are scientifically incorrect when applied to Accotink Creek before proposing an alternative scientific theory. These papers have a presumption of objectivity that EPA may choose to try to rebut. However, EPA cannot simply ignore or discard these scientific papers or substitute its own unsupported opinions for scientific evidence.

II. Errors in Development and Presentation of Historic Flows and TMDL Allocations

A. Errors in Stream Flow Estimates

EPA relies on estimates of stream flow over a period of 20 years. EPA's analysis is not transparent, as it does not fully report the sources of the information on which it relies. In addition, EPA's analysis is not reproducible because the Agency report has not provided the underlying data. Reproduction of the Agency's results, within a reasonable margin of error, is impossible. Further, EPA's stream flow estimates cannot be reproduced from data supplied by the U.S. Geological Service, indicating EPA predictions are significantly in error.

EPA states that it obtained observations of stream flow for Accotink Creek, specifically USGS Station 01654000.[11] EPA does not state how or from what source it obtained this data, but it does not appear to have been from the U.S. Geological Survey (USGS). EPA does not present Accotink station data in a form that permits direct comparison with USGS station data. The TMDL report does offer a "High Flow Frequency Analysis" in Table 5-5. As the USGS station data accounts only for 15,236 acres, and the watershed consists of 32,682 acres, multiplying the USGS station flow data by 2.145 (32,682/15,236) allows direct comparison of USGS data with EPA's analysis. Table II-1, below, compares the two data sets.

Table II-1

Year	TMDL Report Flow Rate (cfs)	TMDL Report Flow Rank	USGS Station Data (cfs)	USGS Station Data Adjusted for total watershed (cfs)	USGS Flow Rank
2008	2800	1	48.4	103.8	8
2006	1720	2	35.6	76.4	11
1991	1560	3	21.7	46.5	16
1996	1560	4	83.7	179.5	3
1994	1500	5	22.2	47.6	15
2003	1340	6	26.7	57.3	12
1999	1160	7	38.2	81.9	10
2004	1160	8	25.1	53.8	13
1998	985	9	57.6	123.6	4
2005	950	10	17.0	36.5	19
1993	936	11	39.1	83.9	9
2007	900	12	53.1	113.9	6
2000	896	13	145.0	311.0	2
1997	880	14	19.7	42.3	17
2001	816	15	18.8	40.3	18
1990	653	16	24.4	52.3	14
2009	642	17	231.0	495.5	1
1992	570	18	10.3	22.1	20
2002	354	19	54.9	117.8	5
1995	234	20	49.9	107.0	7
Correlation Coefficient of Rankings:				-0.04060	
Correlation Coefficient of Flows:				-0.142302173	

[11] TMDL Report pp. 4-7 & 5-10.

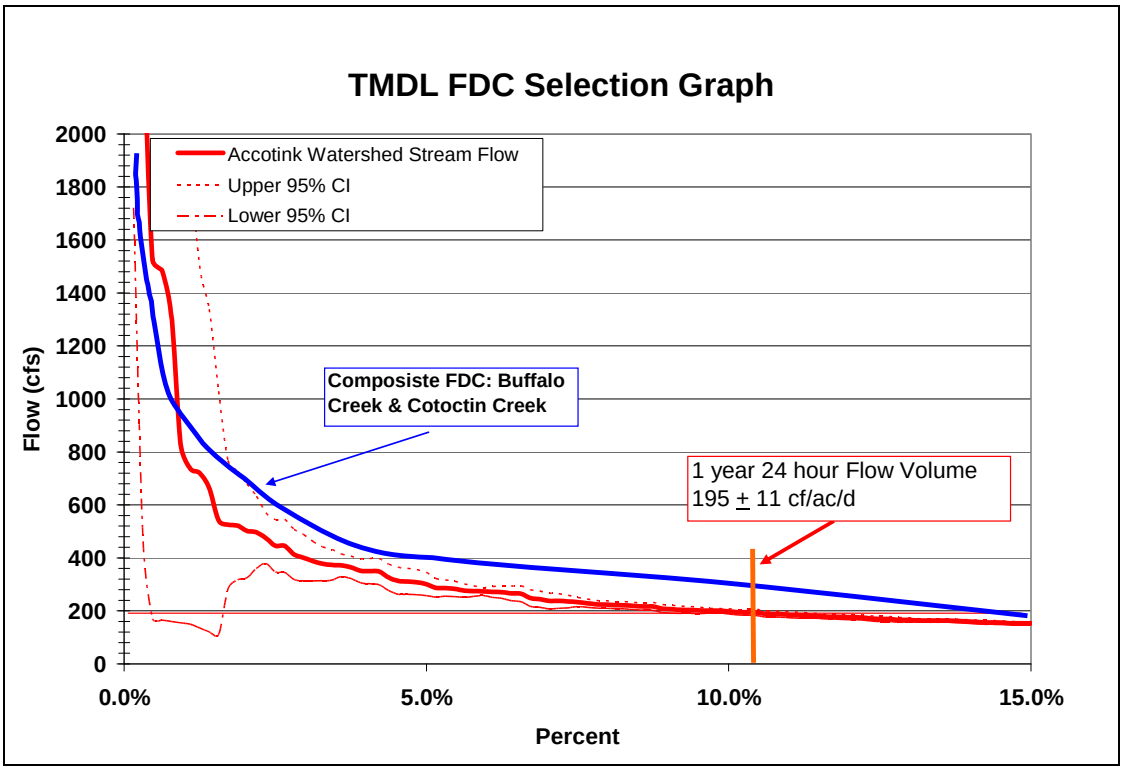
Attached to this Comment and Request for Correction (RFC), and included by reference, is a spreadsheet file containing the USGS download and the calculations used to produce Table II-1.

A statistical comparison of the EPA and USGS flows and rankings produces a correlation coefficients of -0.142 and -0.041, respectively. The fact that these are negative indicates the two data sets do not represent the same stream flows. In order to meet the Agency's own Information Quality standards, EPA must explain this disparity and provide the data upon which it bases all of its statements associated with stream flow. If it cannot, it must withdraw the TMDL Report, correct its errors and repropose the draft TMDL for public comment.

B. Errors in Calculation of Flow Duration Curves

The TMDL Report bases its Wasteload Allocations (WLAs) and Load Allocations (LAs) on Flow Duration Curves (FDCs).[12] EPA does not provide the underlying flow data used to construct the curves and thus it is not possible for a qualified third part to reproduce them, much less validate their accuracy. It is possible, however, to use *bona fide* USGS Station data to construct an FDC for Accotink Creek. Figure II-1 shows the FDC for Accotink Creek calculated from USGS data. Figure II-2 is a reproduction of the TMDL Report figure identifying the selected 1 year 24 hour flow volume upon which EPA directly based its proposed TMDL.

Figure II - 1



[12] TMDL Report at p. 5-10.

Figure II-2

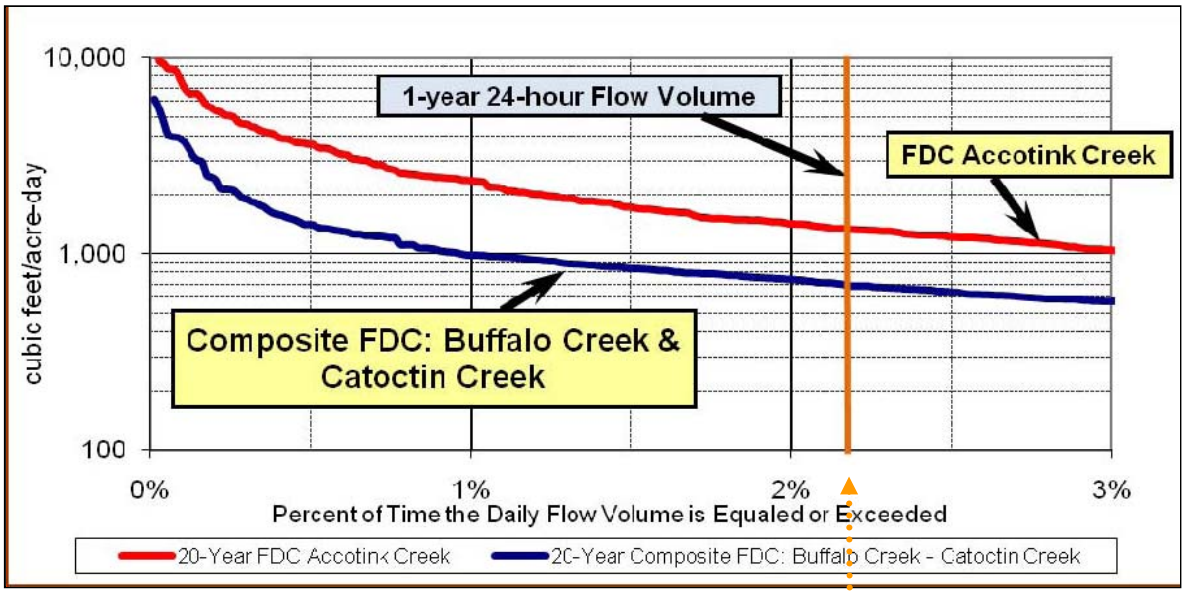
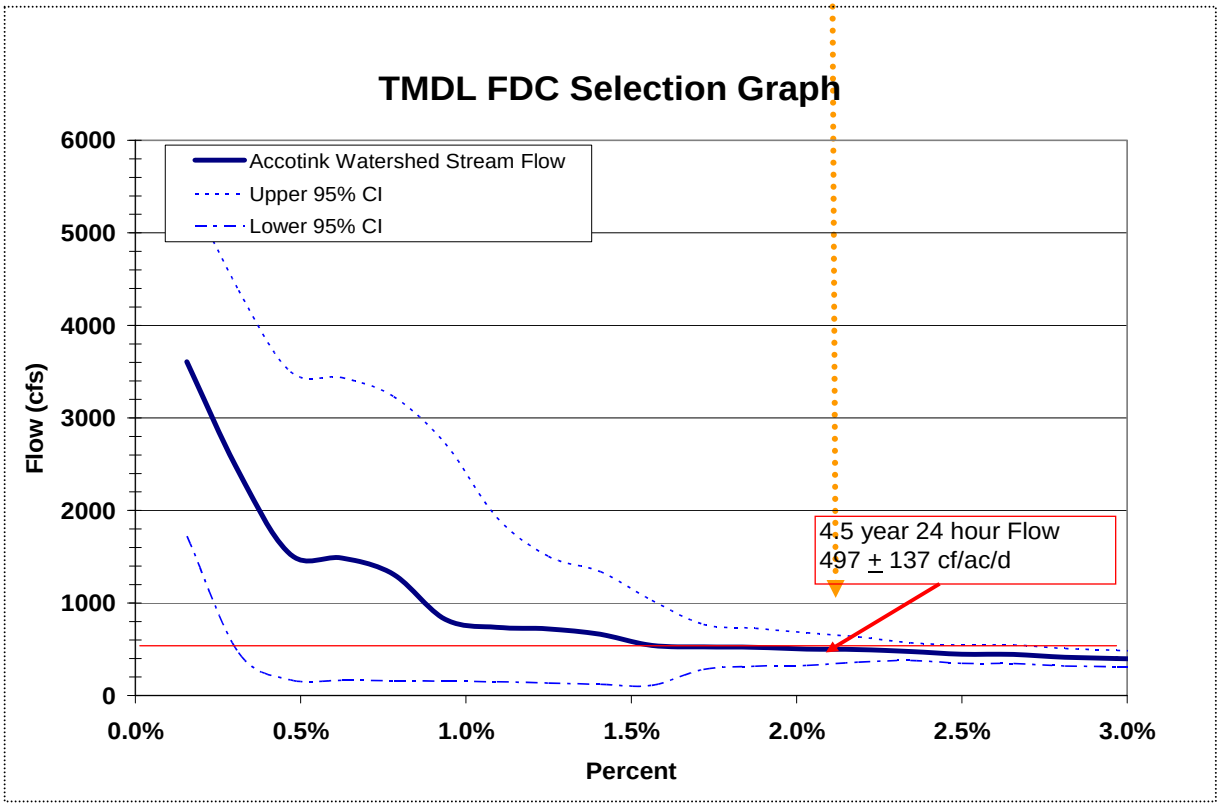


Figure II-3 provides the USGS data on the same (x-axis) scale as EPA's figure.

Figure II-3



Note that what EPA selects as an acceptable flow, a 1 year 24 hour flow is not equal to 665 cf/ac/day, but is equal to 195 cf/ac/day ± 11 cf/ac/day, and amount only 29% of the TMDL. Stated alternatively, if EPA seeks to use a 1 year 24 hour flow, it has over estimated that flow by 340 percent. Alternatively, if EPA seeks to limit flows to those that occur less than 2.2 percent of the time, it's TMDL would be for a 4.5 year 24 hour flow of 497 cf/ac/day ± 137 cf/ac/day. Notably, the proposed TMDL of 665 cf/ac/day is within the 95% confidence interval for a 2.2 percent frequency criterion. Therefore, the 665 cf/ac/day figure is not statistically different from a 1 year 24 hour flow, taking uncertainty into account.

The analysis above uses the 665 cf/ac/day value EPA presented in Table 6-10 of the TMDL Report. In another example of inconsistency, the TMDL Report states: "681.8 ft3/acre-day corresponds to the greatest volume of stormwater runoff that Accotink Creek can receive during the one-year, 24-hour flow without violating the stream's aquatic life criteria."[13] Again, EPA needs to explain the discrepancy and the basis for picking any number.

C. Other Errors relating to the Accotink Watershed or the proposed TMDL

The lack of reproducibility of the flow data is but one of the errors found in the draft TMDL Report. The TMDL Report also applies the conceit that EPA knows facts to as much as five significant digits.[14] As discussed in greater length in Section VII, *supra*, the TMDL report provides no discussion on the uncertainty associated with the flow data, indeed any data in the report.[15]

The TMDL Report is not consistent in describing the acreage of the Accotink Watershed. In some instances, it states the watershed consists of 30,652 acres (e.g., p. E-2, and Tables 2-2 & 2-4). Elsewhere, the TMDL Report states the acreage as 30,307 (e.g., Table 6-10). Although the difference between the two figures is but 1.1 percent, the difference indicates a lack of certainty, a lack of clarity, or an error in EPA's calculations. In addition, EPA assumes a different acreage for Accotink watershed than does Fairfax County. In its highly detailed watershed planning documents for Accotink Creek, Fairfax County reports the watershed to consist of 32,682 acres[16], a number different from both of the numbers EPA used.

In addition, the USGS reports the watershed acreage associated with USGS station 01654000 is 23.9 square miles[17], or 15,296 ± 32acres. The TMDL Report never states the acreage associated with the USGS Station. In the absence of this assumption it is not possible to reproduce or test the validity of the Agency's estimates of total watershed flow. An error on calculation of flow will cause an error in the WLAs and LAs proposed by the Agency.

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[13] TMDL Report p. E-4.

[14] Excess precision is a common information quality defect, specifically of presentational objectivity. Quantitative estimates must be reported with uncertainty bounds, not reported with as many apparently significant figures as are set as the default in a spreadsheet program.

[15] Failure to report uncertainty is a common information quality defect, specifically of presentational. When uncertainty is not reported, the public is misled to believe that quantities or estimates are certain when in fact they are not. The degree (and type) of uncertainty is crucial for evaluating the quality of information.

[16] Fairfax County, "Accotink Creek Watershed Management Plan DRAFT", Table 1-2, *see*, http://www.fairfaxcounty.gov/dpwes/watersheds/publications/ac/ac_chapter1.pdf,

[17] USGS *see*, http://nwis.waterdata.usgs.gov/va/nwis/measurements/?site_no=01654000&agency_cd=USGS.

EPA needs to explain why it used two different values of the watershed acreage for its calculations and why those are different from those prepared by Fairfax County and the USGS.

The TMDL Report stated:

> "A Consent Decree between EPA, the American Canoe Association, Inc., and the American Littoral Society requires the development of TMDLs for all impaired waters identified on Virginia's 1998 Section 303(d) list. The Commonwealth must complete these consent decree TMDLs by May 1, 2010. If the Commonwealth fails to meet this deadline, EPA must complete the consent decree TMDLs by May 1, 2011."

Parts of this statement are not true. Although Virginia and EPA attempted to prevent entry of an order from the District Court by making an unenforceable agreement between the two parties, the Court rejected that as sufficient to resolve the dispute. In fact, Virginia was not a party to the dispute that resulted in the Consent Decree. Any statement that links Virginia's voluntary agreement with the Consent Decree is simply inaccurate. The only requirement in the Consent Decree applies to what EPA must do. Virginia has completed the vast majority of TMDLs on EPA's behalf (over 90%). It should be noted, EPA refused to accept the TMDL Virginia prepared for Accotink Creek, one sensibly based on sediment reductions.

EPA's representations (above) suggest it is compelled to do what Virginia should have done under court order. This is disingenuous and untrue. EPA, alone, is liable under the Consent Decree. Notably, EPA is not likely to suffer by failure to prepare an adequate TMDL for Accotink Creek by May 1, 2011, in that the parties opposing EPA in the original matter no longer have a legal presence and thus, unless the court chooses to discipline EPA *sua sponte*, EPA confronts an extremely small liability by taking the time to prepare a TMDL that meets all its legal responsibilities, including those under the Information Quality Act and the Administrative Procedures Act.

III. Improper Use of the "Attainment" Streams

The TMDL Report uses two creeks without benthic impairments to develop the TMDL maximum allowable stream flow in Accotink Creek. EPA based its selection of these creeks on four criteria: (i) availability of biological monitoring data; (ii) USGS Gage Station data; (iii) stream location in a similar eco-region; and (iv) similar stream complexity and drainage area.[18]

As an initial matter, the TMDL Report does not explain why these criteria matter. The only apparent reason for the second criterion is to support use of flow as the basis for a TMDL. Further, USGS Gage Station data are not the only means to assess similarity in flows, or to estimate actual flows, which is more or less the technical reason EPA appears to have included this criterion. Indeed, EPA has developed two tools to serve in place of USGS Gage Station data. Specifically, The Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) provides a dynamic rainfall-runoff simulation model. It is used to track the quantity and quality of runoff generated within watersheds, and the flow rate, flow depth and quality of water in each pipe and channel during a simulation period comprised of multiple time steps. In addition, The Spreadsheet Tool for Estimating Pollutant Load (STEPL) can be used to determine pollutant loads for the Accotink Creek watershed, and Fairfax County has done so.[19] Also developed by the EPA, the STEPL worksheet calculates nutrient and sediment loads from various land uses and also calculates the load reductions that would result from the implementation of various Best Management Practices (BMPs).

The TMDL Report uses Buffalo Creek and Catoctin Creek as "attainment" creeks. Actually, EPA does not use them directly, but instead creates a "composite" of flow and sediment data for the two. EPA never discloses why it selected these creeks as "attainment" streams or how it created the "composite" data. Instead of science, EPA relied on the unsupported and undocumented "beliefs" of unnamed Agency personnel.

The TMDL Report states: "EPA believes that Accotink Creek was paired with the most similar attainment streams available in the Commonwealth of Virginia."[20] EPA may "believe" this, but if so its belief is not grounded in science. Pohick Creek is the most similar attainment stream available. EPA could have and should used Pohick Creek as its attainment model. Pohick Creek meets all the criteria EPA used to select attainment creeks: (i) Fairfax County has available and offered biological monitoring data to EPA; (ii) in place of USGS Gage Station data, Fairfax County used the EPA's own SWMM and STEPL tools in preparing the EPA-approved Pohick Creek TMDL, something EPA itself could have done; (iii) Pohick Creek is located in the identical eco-regions; and (iv) Pohick Creek's stream complexity and drainage area are closer to that of Accotink Creek than either Buffalo or Catoctin Creeks.

Most important, Pohick Creek is in attainment for benthic water quality.

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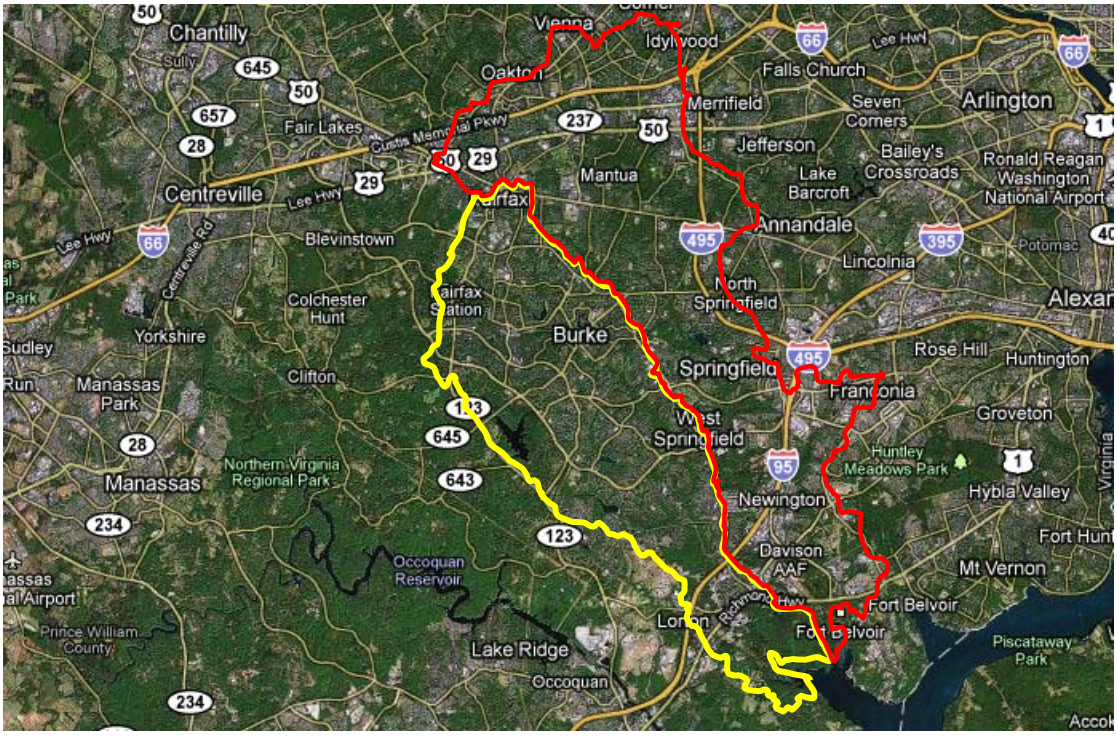
[18] TMDL Report p. 5-4.
[19] *See*, Accotink Creek Watershed Notebook, http://www.fairfaxcounty.gov/dpwes/watersheds/accotinkcreek_docs.htm.
[20] TMDL Report at E-7.

Figure III-1 shows the physical location of the Pohick and Accotink watersheds.

Figure III-1



The soil hydrology of Pohick Creek also makes it a better attainment model. Table III-1 compares the soils in the four creeks at issue.[21]

Table III-1

Soil Hydrologic Groups (% of B-D)				
Rating	**Accotink**	**Pohick**	**Buffalo**	**Catoctin**
B	86%	42%	67%	87%
C	14%	16%	9%	13%
C/D	<1%	0%	0%	0%
D	<1%	42%	23%	0%

[21] Source of soils data: US Dept. of Agriculture, Natural Resources Conservation Service Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm.

Pohick Creek has a higher percentage of impervious type D soils which have very slow infiltration rates. Because Pohick Creek has a larger percentage of D soils, the runoff should be significantly greater, causing higher flows per acre than in Accotink watershed and thus, if one relies on EPA's flawed assumptions, is at greater risk of bank erosion, sediment pollution and ultimately benthic impairment than Accotink Creek. But, Pohick Creek is not benthic impaired. As discussed in the first section, stream flow and benthic impairment are not causally related and this data confirms the academic work cited there.

Pohick Creek is a better attainment model in other ways. Land uses in the Pohick Creek watershed are much more similar to those in Accotink Creek watershed than in Buffalo or Catoctin Creeks, as shown in Table III-2.

Table III-2

Land Use (%)	Accotink	Pohick	Buffalo	Catoctin
Water/Wetlands	5	4	3	1
Urban	66	38	2	7
Agriculture	0	8	25	61
Green Space	29	50	70	31

Pictures of these watersheds shows how dramatically similar Pohick and Accotink Creeks are as compared with either Buffalo or Catoctin Creeks. Recall, as Figure II-4 shows, Pohick and Accotink Creeks are next door neighbors and they look like it.

Figure III-2
Pohick and Accotink Watersheds

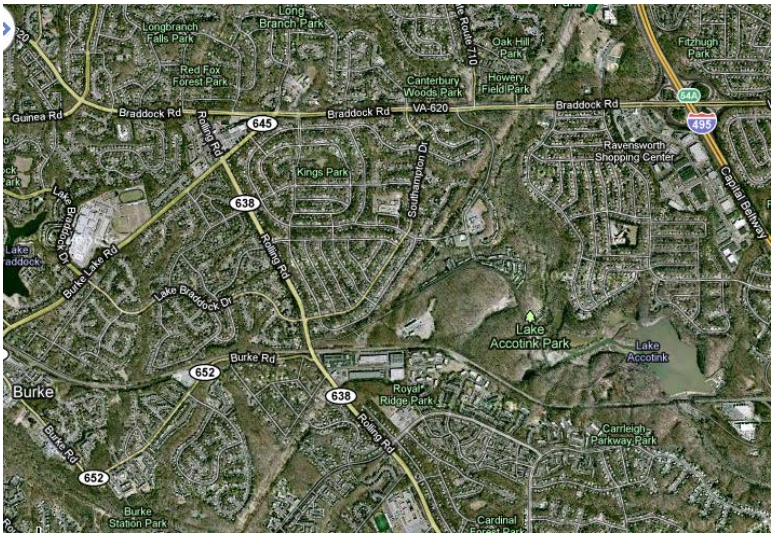


Figure III-3
Catoctin Creek

Figure III-4
Buffalo Creek

There are differences between Pohick Creek and Accotink Creek, but in each case, because Pohick Creek has no benthic impairment, these differences only demonstrate the use of a flow-based TMDL and the "attainment" creeks outside Fairfax County are inappropriate.

Table III-3

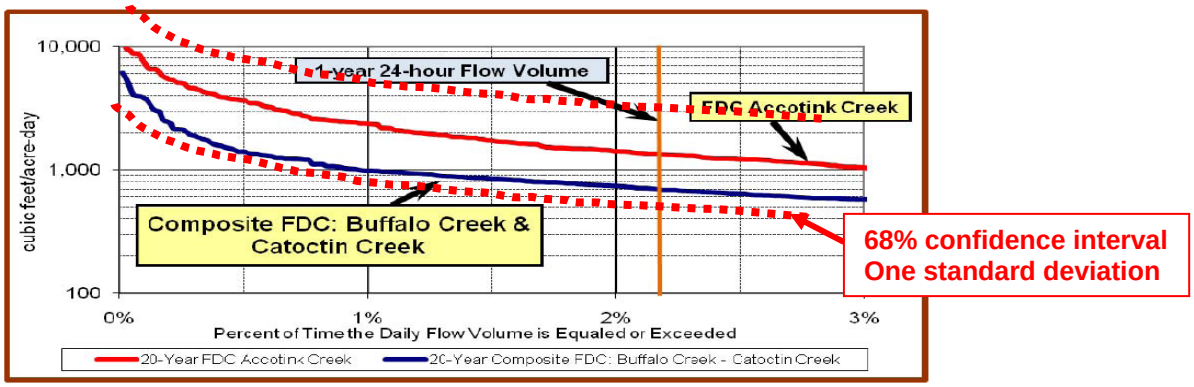
Unit	Pohick[22]	Accotink
Watershed Area	23,248 acres 36.3 mi^2	32,682 acres 51.1 mi^2
Stream length	121.5 mi	111.3 mi
Drainage acres / stream mile	191	294
2yr flow/mile	15.35	8.4
Impervious area	23 %	27 %
2 yr peak flow 10 yr peak flow	1,858 ft^3/sec 1,999 ft^3/sec	950 ft^3/sec 1,720 ft^3/sec

As mentioned previously, the TMDL Report fails to provide information on the uncertainty in the data. When included (see Figure III-5), it shows that the composite FDC for Buffalo Creek & Catoctin Creek is within the 68% confidence interval[23] surrounding the Accotink Creek FDC, and thus well within the 95% confidence interval that EPA uses in its normal business. Because the "Composite" stream curve is within the one standard deviation range, the Accotink and "Composite" FDCs are not statistically different from each other. Thus, the presumption that the Accotink 1 year peak flow is different from that of the Composite stream is not valid. It is equally valid to argue that the two are the same and that the flow per acre per day is not a useful way to compare attainment and non-attainment streams. For this reason, the use of the "attainment" comparison approach used by EPA, and its proposed TMDL is fatally flawed.

[22] Pohick Creek data source: Fairfax County Watershed Planning Documents http://www.fairfaxcounty.gov/dpwes/watersheds/pohickcreek_docs.htm. Accotink Creek data are presented in the TMDL Report, but flow data may be significantly in error as discussed in Section II – A, above.

[23] The variation in the Accotink PDC is the rolling 10 year variation in USGS reported flows for Accotink Creek for the 63 year period from 1948-2010. An alternative to calculating the standard deviation of FDC for the high 3% flow is to calculate the standard deviation of the July-Aug-Sept quarter that reflects the majority of high flow events over the 1996-2006 period. The standard deviation of the FDC from 0 to 3% is 1819 cf/ac/day and the standard deviation of the high flow quarters is 1752 cf/ac/day, essentially the same. Thus, the variation shown in the figure is a robust measure of the uncertainty in the FDC and demonstrates the difference in the FDCs for the Accotink, Pohick and "Composite" streams is not statistically significant.

Figure III-5

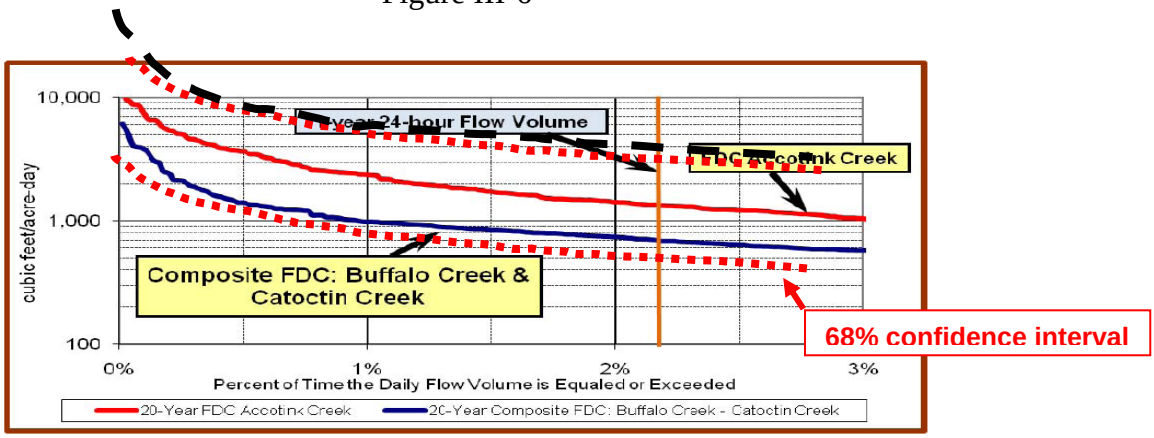


Note carefully, Figure III-5 does not use the true Accotink FDC, but instead replicates the TMDL Report's Figure 5-5, thus this analysis is grounded on an error. Nevertheless, it demonstrates an additional error in the TMDL Report.

Figure III-6 adds an FDC for Pohick Creek. Although the Pohick FDC lies just outside the 68% confidence interval for Accotink Creek, the Creek's 95% confidence interval would overlay the Pohick Creek FDC. Further, the 95% confidence intervals for the two creeks (not shown) would heavily overlap each other, indicating that the two FDCs are not statistically significantly different.

Further, the FDC 95% confidence intervals for Pohick Creek and the composite Buffalo and Catoctin Creek would also likely overlap (assuming they are similar in size to that of Accotink Creek), and thus these two "attainment" models would not be significantly different. Once again, this impeaches the use of flows as well, a point made more directly in Section IV.

Figure III-6



IV. Improper Use of a "Surrogate" Criterion

A. EPA Provides No Reasonable Basis For Use Of A Surrogate And A Surrogate TMDL Cannot Guarantee Correction of the Impairment

1. The TMDL cannot guarantee correction of the Impairment

EPA uses a "surrogate" approach for the Accotink Creek TMDL in place of the traditional pollutant of concern" approach to TMDL development.[24] The Agency argues "use of this surrogate approach is appropriate because the pollutant (i.e., sediment) load in Accotink Creek is a function of the amount of stormwater runoff generated from the Accotink Creek watershed."[25]

Section I, above, impeaches this argument, documenting through peer-reviewed literature the lack of a scientific basis for using flow as a surrogate for the "pollutant" (sediment) that is the actual cause of the benthic impairment. That Section concludes: Because EPA did not and cannot demonstrate a ***causal*** physical relationship between mid-channel 1 year peak stream flow and rates of erosion or TSS levels, either in impaired streams or non-impaired streams; and, because current peer-reviewed scientific evidence demonstrates the cause of bank erosion and resultant TSS levels, as well as actual levels of sedimentation, are related to factors other than mid-channel 1 year peak stream flows, EPA must abandon its argument that "because the amount of pollutant load discharged is a function of the amount of stormwater runoff generated from a watershed." This section reiterates that conclusion.

Equally problematic with the lack of a demonstrated causal relationship between flow and sediment loadings is the error in estimates of stream flow. EPA bases its flow-turbidity association on stream flows that cannot be replicated, whose source is unclear, and that differ significantly from the USGS flows in Accotink Creek. Because when an input variable is in error, any conclusions made about an association between flow and TSS can not be considered valid, regardless of the fact that any such association does not constitute a documentation of causality.

Statistical analysis can often seem confusing. To make the point of the previous two paragraphs, consider the M&M example used in Section I. In that example, the ratio between red and yellow candies is caused by a management decision about how many of each color of candy should end up in each package. Thus, the decision, if implemented, ensures a very clear and certainly very high correlation between the number of red and yellow candies in M&M packages. However, the proof that an association does not reveal causality is that as a child picks out and eats the red candies, the number of yellow ones in the package does not diminish. If the number of red candies in the package "causes" the number of yellow candies in the package, as a child eats a red candy, a yellow candy would disappear from the package.

Granted, it is hard to understand how this could happen. Perhaps if the M&Ms came from Honeydukes Sweetshop in Hogsmeade (near Hogwarts School of Witchcraft and

[24] TMDL Report p. 5-1.
[25] *Ibid.*

Wizardry), then eating a red candy might result in a yellow one disappearing from the package. I suppose that if Sibyll Trelawney, Hogwart's Professor of Divination, was responsible for preparing the TMDL Report, she might be comfortable with the assumption that the size of the stream flow, as measured by a mid-stream gage, causes benthic impairment. Certainly, the Agency's theory is worthy of having been developed by Professor Trelawney and is just as likely to be correct as the day-to-day divinations of the celebrated Professor.[26]

Beyond the wizardry of EPA's flow-impairment divination, the TMDL Report makes a clear error with regard to correcting the upper portion of Accotink Creek, located in Fairfax City, Virginia. EPA states: "Since this target flow volume [the TMDL] was developed in terms of unit-area flow rate (ft3/acre-day) it will be applicable to the entire Accotink Creek drainage area." However, the Agency calculates this unit-area flow rate based on the USGS gage data and the TSS at that point. One might argue that this approach would be useful with regard to the impairment in the far southern reaches of Accotink Creek, but EPA has no basis for arguing this would apply to the upper portion of Accotink Creek.

The local government MS4, VPDES, Concrete Facility, Industrial Stormwater and transportation MS4 WLAs will have no effect on the upper reach impairment as the assumed flow reductions are over the entire watershed and those reflecting the MS4 and State permit WLAs are concentrated in areas that have no hydrological impact on the upper impaired segment. Thus, the WLAs will fail to restore the stream to acceptable levels. The TMDL Report offers no evidence on the amount of flow reduction the WLAs and LAs would have in the upper portion of the creek, much less that any such flow reduction would result in less erosion, TSS levels or benthic impairment.

2. **The TMDL Report lacks a reasonable basis for failing to consider alternatives to a flow-based TMDL and for failing to examine and discuss the implications of its proposal.**

The TMDL Report lacks a reasonable basis for proposing a flow-related TMDL for another reason. The Agency failed to consider alternatives to a flow-related TMDL, failed to assess the implications of their proposal and failed to obtain Office of Management and Budget (OMB) review of the proposal.

The Agency offered no alternatives to a flow-based TMDL. The Administrative Procedures Act (5 U.S.C. §551 *et seq.*) proscribes EPA from being arbitrary, capricious, or engaging in an abuse of discretion. The courts have held that an agency that, openly and without explanation, disregards its own established and published practices and policies is an agency that has engaged in arbitrary and capricious acts, or otherwise abused its discretion. The TMDL Report is an example of that behavior.

In addition, under Executive Order 12866 and EPA's own implementing guidances, the President has directed the Agency, and the Agency has ordered itself, to prepare a Regulatory

[26] Notably, Trelawney did make two correct divinations. *See*, http://www.hp-lexicon.org/wizards/trelawney.html. Her success rate, however, was so small as not to be statistically significant, much like EPA's TMDL flow – benthic impairment causality argument.

Impact Analysis (RIA) for every "economically significant regulatory action". "A 'Significant regulatory action' is defined in § 3(f) as any regulatory action that is likely to result in a rule that [among other things] may: . . . adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities."[27] Without question, the proposed TMDL will adversely affect public safety and both state and local governments and communities. Moreover, as discussed below, the proposed TMDL is likely to have effects exceeding $100 million in any one year, making the proposed rule "economically significant" as defined by § 3(f)(1). However, the TMDL Report does not include an RIA and during a public hearing on the draft TMDL, the EPA representatives stated categorically that the Agency did not examine the costs the TMDL would impose and that the Agency did not have to do so. Unless EPA intends to ignore Executive Order 12,866, it does have to consider costs and benefits and perform an RIA.

3. EPA did not examine or estimate many predictable implications of the proposal.

EPA failed to provide any indication of the implications of its proposal, but such implications are not unknowable and the remainder of this section examines several predictable impacts and their implications.

The TMDL Report (at Table 6-10) indicates that EPA expects 90.4% of the reduction in flow into the stream to be from storm sewers. In discussing how to accomplish this, the Agency states:

> "[EPA]emphasizes that reduction of stormwater run off volumes and associated pollutants of concern should be addressed in the watershed through source control and stormwater retrofits to achieve desired biological outcomes. [EPA] recommends that wet weather flow controls (i.e. stormwater BMPs [retention ponds]) be strategically located in the watershed to reduce and delay stormwater runoff discharges to the stream."[28]

Virginia, local governments and private establishments will need to build enough retention ponds to reduce approximately half of the flow into Accotink Creek. The local jurisdictions will also need to redirect storm sewer outfalls to the new retention ponds through replacement of storm sewer lines and using pump stations. These are expensive actions.

In documents not referenced in the TMDL Report, EPA has provided estimates of the cost of building retention ponds in a developed area.[29] At EPA's assumed $10 per cubic foot, retention ponds needed to eliminate 596 cf/acre/day flows from the 27,427.8 acres subject to WLAs will cost State and local governments and private parties more than $150 million.

Recent costs of storm sewer line replacements are approximately $725 per foot. As the storm sewer lines follow the rough contours of the stream itself, the cost of sewer line replacement needed to feed the retention ponds of about half the length of the stream (56 miles)

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[27] William J. Clinton, Executive Order 12866, Regulatory Planning and Review. 58 Fed. Reg. 51735-51744 September 30, 1993. http://www.whitehouse.gov/sites/default/files/omb/inforeg/eo12866.pdf (emphasis added).
[28] TMDL Report, p. 3-40.
[29] United States Environmental Protection Agency, Office of Water, Storm Water Technology Fact Sheet - Wet Detention Ponds, EPA 832-F-99-048 September 1999, *see*, http://www.epa.gov/owmitnet/mtb/wetdtnpn.pdf

resulting in approximately a 50 percent reduction in the 90.5 percent of WLA controlled flows would cost about $200 million.

Because storm sewers are gravity fed and terminate at the lowest points available before entering the floodplain, and because local and state ordinances do not permit destruction of riparian ecosystems in those floodplains, the terminus of the sewers feeding the retention ponds will be hydraulically below the retention ponds they will feed, necessitating not only pump stations, but emergency pump stations. EPA estimates normal pump stations at $112,000 per station and emergency pump stations at $190,000 per station.[30]

In total, State and local governments will have to expend about $400 million in capital construction and some maintenance (but not all maintenance costs) to meet the proposed draft TMDL, even if it is assumed that EPA's cost estimates are correct. There is good reason to believe that EPA's estimates are low. Typical costs for wet detention ponds in undeveloped areas range from $0.50-$1.00 per cubic foot of storage area, because wet detention ponds are less costly to construct in undeveloped areas than to retrofit into developed areas. In developed areas, however, suitable sites are difficult to locate in developed areas and much more expensive. The cost of relocating pre-existing utilities or structures is also a major concern in developed areas. Several studies have shown the construction cost of retrofitting a wet detention pond into a developed area may be 5 to 10 times the cost of constructing the same size pond in an undeveloped area.[31]

At present, Fairfax County is completing 13 watershed plans covering all 30 watersheds within the county. As an example, one single watershed plan (Pohick) contains 90 structural projects and 124 non-structural projects. The 10 year project plan, covering only structural projects will cost $46 million, while the non-structural projects for this single plan will cost an additional $48 million, to be completed over 25 years, a total of $94 million. With regard to the Accotink watershed, its plan will require structural projects costing $80 million and will reduce flows into the creek by no more than 8-10 percent. The plan will have additional non-structural costs. The total cost of the 13 watershed plans is expected to exceed about three-quarters of a billion dollars.

Fairfax County has dedicated a portion of its revenue stream to watershed protection. At present, it is able to budget no more than $5 million per year for these activities. In order to implement the proposed Accotink TMDL over five years, either Fairfax County would need increase its watershed budget by 1,500 percent and dedicate all such funds to Accotink Creek, or take about 75 years to complete TMDL project implementation, again dedicating all such funds to Accotink Creek.

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[30] Heaney, J.P., Sample, D. and Wright, L, National Risk Management Research Laboratory, Office Of Research And Development, U.S. Environmental Protection Agency, "Costs of Urban Stormwater Control", EPA-600/R-02/021 January 2002, http://www.epa.gov/nrmrl/pubs/600r02021/600R02021.pdf.

[31] United States Environmental Protection Agency, Office of Water, Storm Water Technology Fact Sheet - Wet Detention Ponds, EPA 832-F-99-048 September 1999, *see*, http://www.epa.gov/owmitnet/mtb/wetdtnpn.pdf.

The implications of such a regulatory mandate are quite clear. Fairfax County cannot afford to implement the proposed TMDL. If it dedicated all its watershed protection funding to Accotink Creek (regardless of level), the County would be unable to fund essential protections not planned to prevent flooding of an entire community in the southeaster portion of the county. These homes were inundated by storm water flooding in the past decade and are routinely threatened by such flooding. An analysis of the benefits and costs of protecting that community indicate a greater than 1.5 ratio between benefits and costs.[32] This flooding directly threatens public safety in that community.

Planned watershed protection projects in both Pohick and Accotink Creeks would improve the safety and environmental quality. Pohick Creek flows a mere 500 feet from my front door. Accotink Creek is only five blocks east of my home. Both are places I routinely visit, both walking my dog and for exercise and recreation. I see young children playing in and near these streams, and the failure to complete planned Pohick Creek watershed protection projects puts those children at risk from bacterial pollution as well as unsafe stream banks. The loss of 100 percent of stream restoration funds for planned stream repairs in both Pohick and Accotink Creeks, as necessitated by EPA's proposed flow-based TMDL would threaten my safety and that of my community.

If Fairfax County could not delay achievement of the Accotink TMDL by several decades, compliance would require massive reductions in other county services as well. The County's Board of Supervisors has addressed necessary expenditure cuts by both across-the-board cuts and targeted cuts. The recent economic downturn in real estate revenues (the dominant source of County funding) has caused the Board to reduce housing funds for the homeless (targeted cuts) as well as to the budgets of the police, fire and emergency services departments (across-the-board cuts). These budget cuts will threaten my safety and the safety of my community and harm most the neediest members of our community.

In addition to ignoring costs, EPA failed to examine any alternatives to a flow-based TMDL and gave no explanation as to why it did not. The most the Agency suggested was that stream bank restoration does not significantly prevent erosion, pointing to a study of a "biological" restoration in Fairfax City. As discussed in Section I above, Odgaard found that bank plantings have little effect on bank erosion unless they were trees, and even in those cases only delayed bank erosion. However, Odgaard and others clearly identified the utility of hardening stream banks – a routine watershed protection strategy used not only on Fairfax County streams, but promoted by EPA itself. As EPA itself admits, "When properly designed and installed, riprap can prevent erosion from the protected area."[33]

In the TMDL Report, EPA attempts to impeach stream bank protection by referring to biological restoration as though it comprised the totality of useful techniques, apparently because if they concluded in the TMDL Report, as they have in past reports and TMDLs, that it is possible to achieve acceptable benthic water quality through use of a non-flow (sediment)

[32] Minutes, Fairfax County Environmental Quality Advisory Council, circa 2008.
[33] US EPA Office of Water at http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=39.

TMDL that can be achieved through, among other things, stream bank protection, then they could not justify imposing an unscientific flow-based TMDL.

The sediment-based TMDL offers another important feature not available under the flow-based approach. It sets a target that allows the State and local governments to select from an array of means to reduce sediment, rather than requiring exclusive use of the most expensive and least effective approach (flow controls). Among the tools available to local governments are a wide variety of stream restoration techniques and land use controls, some of which protect the stream bank, some which alter stream channels and some which reduce flows, but which, together, would reduce sedimentation and more certainly address the core problem of benthic impairment.

Beyond a sediment-based TMDL, a "do nothing" alternative should not be dismissed out of hand. The TMDL Report makes no mention of the natural physical processes that alter watercourses over time. One of the purposes of Odgaard's work was to examine the speed of "movement" of watercourses he studied. The meanders – the curves within a streambed – move. This is true in Buffalo and Catoctin Creeks just as it is true in Accotink Creek. Normal floods erode soils from the leading edge of a meander and deposit it on the farther side. Over time, this natural sediment deposition "moves" the meander downstream. In other cases, the normal erosion can cut through a meander thereby straightening the stream and leaving the meander without a meaningful flow, allowing it to become a quiescent water that serves as a reservoir for sediment, eventually to fill in and become an altered ecosystem that is part of the stream bank.

In addition, streams shift their mid-current beds with every flood, whether a frequent or rare event. One of the appealing elements of the Mark Twain stories revolved around the riverboat pilots who had the ability to determine the ever-shifting shallows in the Mississippi River. Accotink Creek, and all other creeks, exhibit the same phenomena. And when the creek bottom shifts, it temporarily destroys benthic populations. This has happened in Accotink Creek.

The benthic impaired Accotink Creek segment in Fairfax City (the upper impaired segment) has shifted over the years without any meaningful address by humankind. The current impaired segment is above the segment found impaired in earlier studies. The recovery of that portion of the upper impairment occurred over a period of a few years. Close analysis of the impairments in the lower portions of Accotink Creek demonstrate a different mechanism at work.

The impaired portions of the lowest reaches of Accotink Creek reflect a "delta" phenomena where the main stem of the creek disappears and many "fingers" disperse the water into Pohick Bay, a portion of the Potomac River. The benthic community in these deltas shift continually as sediment settles out in the calm waters and at other times when flood flows carve new channels. The TMDL Report fails to discuss this phenomena and fails to differentiate those "impaired" sections of the lower Accotink reaches that are impaired due to human activities rather than natural processes.

A "do nothing" strategy would be appropriate with regard to some "impaired" portions of the creek that reflect the normal shifting of soils and creek bottoms. This approach is not without

some cost, but the cost is that associated with determining what shifting watercourse events are unpreventable normal evolutions in the creek and which are preventable through cost-effective stream restoration techniques.

The RIA that EPA did not prepare would have been required to include an analysis of reasonable alternatives. Absent such an analysis, promulgation of the draft TMDL would constitute a facial violation of the Administrative Procedures Act, necessitating reproposal of the TMDL Report. EPA should examine alternatives to a flow-based TMDL at this point in the process and, as the next section explains, it should replace the flow-based TMDL with a sediment TMDL similar to the one it approved in the Difficult Run TMDL, the northern neighbor of Accotink Creek.

B. EPA does not need to use a surrogate

In remarkably defensive language, EPA asserts that it is allowed to use a surrogate approach to establish a TMDL without ever discussing the actual need to use a surrogate. EPA does not need to use a surrogate that is intended to (but does not) mimic a sediment-based TMDL. It can use a sediment-based TMDL and forego the tortured efforts to develop an equivalent flow-based limit.

In fact, in 2008 EPA approved a sediment-based TMDL for Difficult Run, the watershed immediately north of the Accotink Creek watershed.[34] Further, the Commonwealth of Virginia proposed a sediment-based TMDL for Accotink Creek. EPA can meet its May 2011 court-ordered deadline by offering the Virginia-recommended TMDL for public comment and following its own precedent as found in countless other TMDLs across the nation.

It is not as though water engineers can't measure sedimentation rates in streams as would be necessary for a sediment-based TMDL.[35] Indeed, the TMDL Report admits there are tools for rapidly quantifying sedimentation impacts on streams that go beyond simply measuring the size of the sediment particles as the means to differentiate natural and human-influenced sediment load.[36] Unfortunately, EPA did not reference those "recent" advances in sediment measurement. To correct this error, EPA must amend its TMDL Report and seek new public comment.

Considering the implications of a flow-based TMDL and the problems addressed in the following sections, EPA should abandon its proposal and opt for the sensible alternative of a sediment-based TMDL.

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[34] USEPA, Decision Rationale, Total Maximum Daily Loads, Primary Contact Recreational Use (Bacteriological) Impairments in Difficult Run Watershed, Fairfax County, Virginia, November 7, 2008. *See*, http://www.epa.gov/reg3wapd/tmdl/VA_TMDLs/DifficultRunBac/DifficultRunBacDR.pdf.

[35] *See, e.g.*, Standard Operating Procedure for Measuring Sediment Size and Channel Dimensions, 2009, http://www.ecy.wa.gov/programs/eap/qa/docs/ECY_EAP_SOP_063MeasureSedimenSizeandChannelDimensions_11countmethod_v1_0.pdf.

[36] TMDL Report at p. 3-5.

V. Improper Crossing of Jurisdictional Boundaries and Statutory Authorities

The TMDL Report claims that it acts under the direct authority of the Clean Water Act (CWA). Nothing in the Act, however, authorizes EPA to interfere in quintessentially local decisions. The federal authority is associated with interstate commerce which the Agency has stretched to include protection of a few bugs that live at the bottom of a swampy creek in southern Fairfax County. The federal jurisdiction is bounded by concerns about interstate commerce. Even though the concept of interstate commerce has been stretched to unbelievable proportions, it has still not been stretched far enough to reach allowing federal jurisdiction over local land use controls. As the TMDL would limit the amount of development in the Accotink watershed, EPA seeks to reach beyond its federal jurisdiction. Nothing in the TMDL Report discusses this overreaching or authorities allowing for it.

Further, Congress and EPA have never interpreted the Clean Water Act to involve control of high flow conditions. In fact, EPA has always taken the opposite position – that "Congress was aware that there might be pollution associated with water management activities, but chose to defer to comprehensive solutions developed by State and local agencies for controlling such pollution."[37] The proposed TMDL steps clearly beyond the Agency's Clean Water Act authority.

Case law, statutory law and EPA's binding General Counsel opinions bear on this matter.[38] The U.S. Congress has never contemplated use of the Clean Water Act as a means to deal with excessive storm water. Nor is there any official EPA policy statement that suggests otherwise.

In a memorandum covered by a note from EPA employee Greg Voigt and prepared by staff in EPA's Office of Water and Office of General Counsel, the Agency lays out the law related to water quality and water in quantity.[39] The memorandum identifies thirteen sections of the Clean Water Act, four cases at law and six EPA policy statements as the basis for regulating high water flow under a TMDL and resultant implementation plan. In not one of these citations does the law, a court of law or the EPA provide reference to high water flow conditions. Rather, in every case, law, the courts and EPA refer exclusively to the low flow situation where pollutant discharges could concentrate and become harmful to fish, shellfish, wildlife and their food chain.

The U.S. Supreme Court provides an example of the treatment of water quality and quantity issues:

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[37] U.S. EPA, Memorandum from EPA General Counsel Ann Klee to EPA Assistant Administrator for Water Benjamin Grumbles, "Agency Interpretation on Applicability of Section 402 of the CWA to Water Transfers," August 5, 2005 http://www.epa.gov/ogc/documents/water_transfers.pdf.

[38] I have previously submitted a comment on this subject, entitled: Public Comment Regarding Regulating Stormwater Flow Through The TMDL Process and NOIRA To Broaden TMDL Definitions To Include Flow and dated in October, 2009. I include that comment by reference herein and attached a copy to the electronic transmission of this public comment.

[39] U.S. EPA (undated) "Flow: Relevant Statutory and Regulatory Provisions, Caselaw, and Previous EPA Statements", included in this comment by reference here..

> Petitioners also assert more generally that the CWA is only concerned with water 'quality,' and does not allow the regulation of water 'quantity.' This is an artificial distinction. In many cases, water quantity is closely related to water quality; *a sufficient lowering of the water quantity* in a body of water could destroy all of its designated uses, be it for drinking water, recreation, navigation or, as here, as a fishery. In any event, there is recognition in the CWA itself that *reduced stream flow*, i.e., diminishment of water quantity, can constitute water pollution. First, the Act's definition of pollution as 'the man-made or man induced alteration of the chemical, physical, biological, and radiological integrity of water' encompasses the effects of reduced water quantity. [CWA 502(19)] This broad conception of pollution – one which expressly evinces Congress' concern with the physical and biological integrity of water – refutes petitioners' assertion that the Act draws a sharp distinction between the regulation of water 'quantity' and water 'quality.' Moreover, § 304 of the Act expressly recognizes that water 'pollution' may result from 'changes in the movement, flow, or circulation of any navigable waters . . ., including changes caused by the construction of dams.' [CWA 304(f)] *This concern with the flowage effects of dams and other diversions* is also embodied in the EPA regulations, which expressly require existing dams to be operated to attain designated uses. 40 CFR 131.10(g)(4) (1992).

PUD No. 1 of Jefferson County, et al. v. Washington Department of Ecology, 511 U.S. 700, 719-21 (1994) (emphasis added).

Note carefully, that the Supreme Court specifically explains that the Clean Water Act's Section 502(19), cited in the EPA memo, and Section 302(f) of the act address ***reduced*** water quantity. Not a single citation provided in the EPA memorandum addresses anything other than reduced water quantity.

EPA does, however, address how the Agency is to address water quantity issues in general. In the August 5, 2005, "Agency Interpretation on Applicability of Section 402 of the CWA to Water Transfers" memorandum from EPA's General Counsel to EPA's Assistant Administrator for Water[40], the memo creates an official EPA policy, stating: "The question touches on the delicate balance created in the statute between protection of water quality to meet federal water quality goals, and the ***management of water quantity left by Congress in the hands of States and water resource management agencies***." (Emphasis added.)

The memorandum continues: "While section 304(f) does not exclusively address nonpoint sources of pollution, it nonetheless 'concerns nonpoint sources' (Miccosukee, 541 U.S. at 106) and reflects an understanding by Congress that water movement could result in pollution, and that such pollution would be managed by States under their nonpoint source program authorities, *rather than the NPDES program*." (Emphasis added.)

And the official EPA policy concludes with the following statement: "Thus, these sections of the Act together demonstrate that Congress was aware that there might be pollution associated with water management activities, ***but chose to defer to comprehensive solutions developed by State and local agencies for controlling such pollution***" (*emphasis added*).

[40] *See*, note 37, above.

This is an unequivocal statement containing no ambiguity whatever. The law office within EPA responsible for providing the rest of the Agency interpretations of controlling law states that pollution, including sediment caused by high water flow, associated with water management activities, including retention ponds required by TMDLs, are beyond EPA's authority and must, by Congressional intent, be left to "comprehensive solutions developed by State and local agencies."

At the risk of being pedantic, THE PROPOSED TMDL IS NOT LAWFUL ACCORDING TO EPA'S OWN GENERAL COUNSEL.

Without belaboring, and reserving legal arguments for a different forum, it must also be noted that the law does not permit an agency to require the impossible. The proposed TMDL does so and thus is outside the law.

VI. Constitutional Bars to EPA's Proposal

The proposed TMDL raises a constitutional question that will eventually have to be addressed and which should have been acknowledged by EPA. The proposed TMDL stands on the shoulders of the "Commerce Clause" of the federal Constitution.[41] In essence, Congress has concluded that streams, even ones solely within a state, are mechanisms of interstate commerce and that mandates that require such streams to be "fishable" are within the ambit of the commerce clause. Since the benthic layer in Accotink Creek is the bottom of the food chain for the fish in the creek, EPA will argue that the quality of that benthic community is equivalent to a fishable stream which equivalent to interstate commerce and thus subject to Congressional mandates and EPA regulations.

As a matter of fact, it should be noted, Accotink Creek is not and never has been an interstate fishing destination. In fact, the stream is too shallow to support a resident trout population, the only fish taken in the non-reservoir portions of the creek. Any trout taken are those put into the stream each year in what appears to be a never-ending, by pyrrhic effort to turn a drainage ditch into a sylvan paradise. Nor is the creek a means of transportation. In most of the creek it isn't possible to float a canoe, much less any form of commercial barge. Nor is it possible to swim in the creek proper. It is "wade-able" but that's about it. It's a place where little boys like to go to scratch through the muck and look for frogs and tadpoles. It's function is to channel storm water away from homes and into the Potomac River. It's as far from interstate commerce as a rain filed pothole on an abandoned airport runway.

Nevertheless, some will argue it is subject to federal regulation under the Commerce clause.

The proposed TMDL stormwater flow and land development conditions intrude on rights reserved to the States through the 10th Amendment to the federal Constitution. Land use controls are part of the local governments police powers – used to protect public safety.

Thus, the proposed TMDL creates a tension between Constitutionally enumerated federal interstate commerce authorities and Constitutionally protected authorities reserved to the States.

The TMDL Report fails to address this issue in any manner. Because the TMDL goes far beyond what EPA itself has determined are the boundaries of its federal commerce clause authority, as discussed in the previous section, EPA has a duty to explain its basis for taking the commerce clause further than it has ever before been taken.

Further legal argument on this matter is reserved for a judicial forum. Nevertheless, in order to correct the errors in the TMDL Report (omissions), it is necessary to note that because the Clean Water Act authorizes criminal sanctions for failure to meet an MS4 permit, the Agency has gone beyond the bounds of its Constitutional authority under the commerce clause, as the Supreme Court in *Lopez* limited federal action only to those criminal "activities that substantially affect interstate commerce". EPA cannot meet that standard and if it thinks it can, it has a duty to explain how in its TMDL Report.

[41] U.S. Const. Art. I, Sec. 8, clause 3.

VII. Request for Correction under EPA's Information Quality Guidelines

Consistent with government-wide guidelines issued by the Office of Management and Budget (OMB),[42] EPA's agency-specific guidelines permit any affected person to file a Request for Correction ("RFC") of any information disseminated by the Agency that the affected person believes to violate one or more of information quality standards.[43] I am directly affected by the TMDL Report because it concerns Accotink Creek, which is located about five blocks from my home. Corrected information benefits me, my neighbors, and all Fairfax County and Virginia taxpayers, by improving the likelihood that EPA water quality regulations are based on science, not make-believe wizardry and by reducing the threats to public safety that would arise if the TMDL Report, as written, served as the basis for regulatory and permitting requirements imposed on Fairfax County.

The information that is the subject of this RFC was disseminated by EPA via the TMDL Report. This information is "influential," and thus subject to a higher quality standard, because EPA intends to issue a legally binding regulation on the Commonwealth of Virginia and Fairfax County, its subordinate jurisdiction. Finally, the information is likely to be "highly influential," as defined by OMB in its government-wide peer review directive,[44] because it "[c]ould have a potential impact of more than $500 million in any year" and is "novel, controversial, or precedent-setting" because it would compel the expenditure of hundreds of millions of scarce taxpayer dollars based on information that is neither transparent nor reproducible by qualified third parties, and it is scientific and technically incoherent and incorrect. OMB's directive calls for an independent and external peer review of such information, which EPA has not done.

Errors in EPA's TMDL Report are clearly described in the previous sections, to the extent errors can be identified given the lack of transparency and reproducibility. The Report does not comply with EPA's Information Quality Guidelines because, in addition to lacking transparency and reproducibility, it fundamentally misrepresents the actual stream flow and water quality characteristics of Accotink Creek and grossly exaggerates the likely benefits of a flow-based TMDL The Report gives every impression of having been reverse-engineered in an attempt to support the predetermined policy objective of indirectly restricting land use in Fairfax County for nonscientific, ideological reasons (e.g., preventing suburban "sprawl").

The Report violates EPA's Guidelines two ways. First, the scientific and technical information in the TMDL Report is not objective:

1. The Report severely exaggerate actual stream flows, as recorded by the U.S. Geological Survey.

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[42] Office of Management and Budget. 2002. Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies; Notice; Republication. Federal Register 67(36): 8452-8460.

[43] U.S. Environmental Protection Agency. 2002. Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency (EPA/260R-02-008).

[44] Office of Management and Budget. 2005. Final Information Quality Bulletin for Peer Review. Federal Register 70(10): 2664-2667.

2. The Report ignores the best available peer reviewed scientific information concerning the causes of benthic impairment, supplanting it with the scientifically unsupported assertion that high mid-stream flow rate is the true cause.
3. The Report exaggerates the benefits of a flow-control TMDL.
4. The Report ignores the best available peer reviewed scientific information concerning the beneficial effects of various technical remedies.

Second, the TMDL Report lacks utility for decision-making. EPA's authority to regulate water quality does not permit it to do so without regard for scientific evidence, or to make up imaginary evidence out of whole cloth. Only objective scientific evidence can be relied upon for statutorily permissible regulation, and EPA cannot rely upon the TMDL Report because it is not objective.

The remedy requested in this RFC consists of three elements:

1. Correct the scientific and technical errors identified below, revising the Report accordingly.
2. Revise the TMDL Report to ensure that it is transparent (i.e., fully identify all assumptions, data, and models) and reproducible (i.e., ensure that a qualified third party can reproduce EPA's result using only the information in the Report).
3. Republish a corrected TMDL Report for public comment.

In accordance with EPA's Information quality Guidelines, I am submitting this RFC simultaneously as a public comment on the TMDL Report.