

APPENDIX 9 CURRENT STATUS OF VIRGINIA'S TMDL PROGRAM

In 1997, the Virginia General Assembly enacted the Water Quality Monitoring, Information, and Restoration Act (WQMIRA), §62.1-44.19:4 through 19:8 of the Code of Virginia. This statute directs DEQ to develop a list of impaired waters, a Total Maximum Daily Load (TMDL) for each impairment, and implementation plans for these TMDLs.

DEQ administers the TMDL process for Virginia. Once DEQ completes a TMDL, it formally submits it to EPA for approval. Upon EPA's approval the TMDL is submitted to the Virginia State Water Control Board for their approval.

The Department of Conservation and Recreation (DCR) and the Department of Mines, Minerals, and Energy (DMME) have signed Memoranda of Understanding (MOU) with DEQ agreeing to a cooperative effort in the TMDL and Implementation Plan (IP) processes. DCR has the primary lead for the development of TMDL IPs for nonpoint source TMDLs. DCR also provides assistance pertaining to nonpoint source issues during the TMDL development process. DMME assists with the development and implementation of TMDLs involving pollutants from mineral extraction activities. The Virginia Department of Health also participates in a cooperative effort by assisting in the development of TMDLs and TMDL IPs for impaired shellfish waters.

Fulfillment of 1999 Consent Decree and Post-CD TMDL Development

In 1998, the American Canoe Association and the American Littoral Society filed a complaint against EPA for failure to comply with the provisions of §303(d) of the Clean Water Act in Virginia. As a result of this legal action, EPA signed a Consent Decree (CD) with the plaintiffs in 1999 that contained Virginia's TMDL development schedule through year 2010. Also under the CD, EPA agreed to develop TMDLs on these impaired waters to meet the schedule if Virginia failed to do so.

To meet the Consent Decree, Virginia completed TMDLs covering approximately 225 shellfish and 333 non-shellfish CD impairments, and approximately 185 non-CD impairments. In addition, Virginia completed TMDLs for 28 CD waters and 18 non-CD waters covered under the EPA-lead Chesapeake Bay TMDL. Virginia has also received credit under the CD for an additional 145 delisted or recategorized impairments.

Virginia continues to development TMDLs and estimates that 1100 waters will require TMDL development in the coming years. To accommodate this increase in TMDL development with level funding, Virginia has moved to a large watershed approach for addressing multiple impairments. This approach allows watersheds with similar characteristics to be combined under a single TMDL equation. It also establishes a structure to batch TMDLs and IPs for cost efficiency.

TMDL Implementation

Once the TMDL is developed and approved Virginia state law under WQMIR requires the development of a TMDL IP. The IP describes the measures that must be taken to reduce pollution levels in the stream, and includes a schedule of actions, costs, and monitoring. While there is not a mandated schedule for IP development, local or state agencies, as well as community watershed groups, can take the lead in developing IPs. The following table presents the state's completed IPs (current to 2011).

Summary of Completed Implementation Plans (IP)				
Watershed (# of impaired segments)	Location	Impairment	Lead	Complete
Middle Fork Holston (3)	Washington Co.	Bc	DCR	2001 (a)
North River (Muddy, Lower Dry, Pleasant, & Mill Creek) (4)	Rockingham Co.	Bc, Be, NI	DCR	2001 (a)
Upper Blackwater River (4)	Franklin Co	Bc	DCR	2001 (a)
Catoctin Creek (4)	Loudoun Co.	Bc	DCR	2004 (a)
Holmans Creek (2)	Shenandoah Co.	Bc, Be	DCR	2004 (a)
Four Mile Run (1) *	Arlington & Alexandria	Bc	DEQ	2004
Willis River (1)	Cumberland & Buckingham	Bc	DCR	2005 (a)
Chowan Study Area (8)*	(Multiple counties)	Bc	DEQ	2005
Moore's Creek (1) *	Charlottesville, Albemarle Co.	Bc	DEQ	2005
Guest River (5) *	Wise, Scott, Dickenson	Be	DEQ	2005
Lower Blackwater, Maggoddee & Gills Creek (3)*	Franklin Co.	Bc	DCR	2005 (a,b)
Lynnhaven (Shellfish) (1)*	VA Beach	Bc, Be	DEQ	2005 (c)
Cooks Creek and Blacks Run (4)	Rockingham Co., City of Harrisonburg	Bc, Be	DCR	2006 (a)
Thumb, Deep, Carter & Great Runs (4)	Fauquier and Stafford Counties	Bc	DCR	2006 (a)
Big Otter (5)	Bedford & Campbell Co.	Bc	DCR	2006 (a,b,c)
Dodd Creek and Mill Creek (2)	Floyd & Montgomery Co.	Bc	DCR	2006 (a)
Little Creek and Beaver Creek (3)	Bristol, Washington Co.	Bc, Be	DCR	2006 (a,b,c)
Stroubles Creek (1) *	Montgomery Co	Be	DEQ	2006 (c)
Back Creek (2) *	Pulaski Co.	Bc, Be	DEQ	2006/07
Abrams & Opequon Creek (5)*	Frederick Co. & Winchester	Bc, Be	DEQ	2006 (b)
Knox & PawPaw Creek (2) *	Buchanan Co.	Bc, Be	DEQ	2007
Hawksbill & Mill Creek (2)	Page Co.	Bc	DCR	2007 (a)
Looney Creek (1)	Botetourt Co.	Bc	DCR	2007(a)
Upper Clinch River (1)	Tazewell Co	Be	DCR	2008 (b)
Occahannock Creek (Shellfish) (1)	Accomack	BC	DCR	2008 CNP
Falling River (1)	Campbell and Appomattox	Bc	DCR	2008 (b)
Dumps Creek (1)*	Russell Co.	TSS, TDS	DEQ	2008
Bluestone River (1)	Tazewell Co. & Bluefield	Bc, Be (Sed)	DCR	2008
Smith Creek (1)*	Rockingham & Shenandoah Co.	Bc, Be (Sed)	DEQ	2008 (a,b)
Appomattox River - Spring Creek, Briery Creek, Bush River, Little Sandy River and Sayers Creek (5)	Prince Edward and Amelia Co.	Bc	DCR	2008 (b)
Appomattox River - Flat, Nibbs, Deep and West Creeks (4)	Amelia and Nottoway Co.	Bc	DCR	2008 (b)
Straight Creek and Tributaries (3)	Russell Co.	Bc, Be (sed)	DEQ	2009
Long Glade Run, Mossy Creek, and Naked Creek (3)	Augusta and Rockingham Co.	Bc Be (sed),	DCR	2009 (b)
Greenvale Creek, Paynes Creek (2), and Beach Creek, (shellfish)*	Lancaster Co.	Bc	DCR	2010
Ash Camp Creek, Twitty's Creek (2)*	Charlotte Co.	Be	DCR	2010 (b)
Upper Middle Rr., Lower Middle Rr., Maffett Cr, Polecat Cr (4).	Augusta Co.	Bc, Be (sed)	DCR	2010 (b)
Back Bay Watershed (1)*	Virginia Beach	Bc	DEQ	2009
North Landing Watershed (2)*	Virginia Beach	Bc	DEQ	2009
Pigg River and Old Womans Creek (8)	Franklin, Henry and Pittsylvania Counties	Bc	DEQ	2009 (b)
Cub, Turnip, Buffalo and UT Buffalo Creeks (4)	Appomattox and Charlotte Counties	Bc	DCR	2009 (b)
Hazel River Watershed (4)	Culpepper, Madison and Rappahannock	Bc	DCR	2009 (a,b)
Mill Creek and Powhatan Creek (2)*	James City County	Bc	DEQ	2010
Nansemond River, Shingle Creek (3)*	Suffolk County	Bc	DEQ	2010
Lewis Creek (1)	Russell County.	Be	DCR	2010

TOTAL IPs Completed = Plans (33), Segments (90), impairments (106). In addition 3 IPs are in draft form that cover 9 impaired segments. [Bc=Bacteria, Be = Benthic, NI= Nitrogen], TSS=Total Suspended Solids, TDS=Total Dissolved Solids, Sed=Sediment
Note: All IPs were funded by §319(h), except those done in-house by either DCR or DEQ, indicated by a (*). For all completed IPs, implementation is funded by either 319 (a), state WQIE/VNRCF cost-share (b), or received limited one-time funding from WQIE RFP (c). Otherwise the project is not being funded by DCR.

Source: [The Chesapeake Bay and Virginia Waters Clean-Up Plan-Progress Report, April 2011](#)

TMDL Progress

As reported in the January 2011 Watershed Cleanup Plan Report, progress in TMDL clean-up plan development and implementation has been made in the following areas:

- Bluestone River: West Virginia plans to join Virginia in the development of an interstate PCB TMDL for the Bluestone River. The Virginia portion of the watershed has impairments for PCBs in fish and water. High PCB concentrations in the water column found during Virginia's TMDL data acquisition phase triggered an EPA concern and a clean-up effort. A former Super Fund site, Lin Electric facility located one mile upstream in West Virginia, was targeted for additional remediation. This effort resulted in the discovery of 38 barrels, some containing hazardous materials, three transformers, contaminated groundwater, and extremely high levels of PCBs in sediment/sludge. The EPA Super Fund effort is conducting additional PCB monitoring in both states.
- Elizabeth/Tidal James River: PCB source investigation work is on-going in these waterbodies. As part of TMDL development, PCB point source monitoring was requested from those VPDES permits identified as possible contributors to fish impairments. Efforts are also underway to more accurately account for regulated storm water inputs as well as contaminated site loadings. The TMDL is scheduled to be completed in 2013.
- Roanoke (Staunton): This TMDL was approved by EPA in early 2010. The Roanoke TMDL monitoring identified three significant PCB sources. TMDL implementation has been initiated and includes monitoring requirements for an extensive list of VPDES permits. Pollutant Minimization Plans have been submitted to DEQ from the known active point sources and will be required for newly identified facilities that discharge elevated levels of PCBs.
- Levisa Fork: This TMDL was completed in April 2010. Since TMDL monitoring has not revealed a viable source(s) of the contaminant, this particular TMDL was submitted to EPA as a phased TMDL. As a phased TMDL, a monitoring plan to collect additional data and a commitment date to reopen the TMDL was included.
- New River: PCB source identification has been initiated. Ambient river water PCB monitoring has been completed while monitoring requirements for VPDES permits is on-going. The TMDL is targeted for completion in 2014.
- North Fork Holston River: This TMDL was completed in 2011. A fish consumption advisory for mercury extends approximately 81 miles from Saltville, Virginia to the Tennessee state line. While most of the river mercury originated from the Olin plant site, this contaminant has been distributed throughout the floodplain downstream. The TMDL identified that most of the current mercury loadings come from the watershed and floodplain with lesser amounts from the former plant site. In order to meet the TMDL loadings, mercury reductions will be needed from all contributors.
- South and Shenandoah River: This TMDL was completed in 2010. The South River has a fish consumption advisory that extends about 150 miles from Waynesboro to the confluence of the Shenandoah and Craig Run. The primary source of mercury deposited in the floodplain occurred during the 21 years of DuPont facility operations. Atmospheric deposition was not identified as a significant mercury source. Fish tissue from a reference site above a dam contained elevated amounts of mercury. Unfortunately, mercury levels in fish tissue from this portion of the river have not shown a decline since the use of mercury was eliminated by DuPont in 1958.

- No Discharge Zone Designation: DEQ is currently focusing on tidal creeks fringing Virginia's Northern Neck (the peninsula separating the tidal Potomac and Rappahannock Rivers). This area was selected based on need (22 bacteria TMDLs, covering over 90 individual shellfish impairments, completed since 2000), locally high density of recreational boat traffic, and stakeholder support expressed at TMDL public meetings. Working in collaboration with the Northern Neck Planning District Commission, DEQ completed boat-based shore reconnaissance and boat traffic estimates for the area's shoreline in fall 2010. The four applications scheduled in this project have been drafted, presented to stakeholders during four public meetings, and advertised using a public notice and public comment process. DEQ anticipates submitting the applications to EPA by fall of 2012, with the project scheduled to be complete by spring of 2013.

TMDL Success Stories

The impact of nonpoint sources of pollution on water quality is a major focus of TMDLs. DCR coordinates the implementation of best management practices (BMPs) designed to curb nonpoint sources, and DEQ tracks the progress of these efforts through monitoring and assessment. Promising results have been observed throughout the state:

- Elevated fecal coliform levels in Virginia Beach's Lynnhaven Bay, Broad Bay and Linkhorn Bay violated Virginia's bacteria water quality standard in shellfish-supporting waters and prompted the Virginia Department of Health (VDH) to condemn these waters for shellfish harvest in 1998. As a result, DEQ listed these three waterbodies on Virginia's 1998 303(d) List of Impaired Waters for fecal coliform. Virginia Beach and its partners implemented numerous best management practices that reduced fecal coliform bacteria and allowed the impaired waters to achieve the standards for shellfish waters.
- Agricultural and residential activities in the Middle Fork Holston River watershed in southwestern Virginia have caused the river to become impaired by sediment and fecal coliform bacteria. Urban and agricultural activities—including targeting failing septic systems and excluding livestock from streams—have helped reduce fecal coliform values to creeks draining into the river, resulting in a 50 percent reduction of bacteria water quality violations in one of those creeks.
- Runoff from agricultural and residential activities and livestock stream access have contributed to water quality impairments to Virginia's Muddy Creek and Lower Dry River of the Shenandoah River Valley. Both waterbodies violate the state water quality standard for bacteria, and excess sediment and phosphorus loads have further degraded aquatic life in Muddy Creek. These water quality problems placed Muddy Creek and the Lower Dry River on Virginia's 303(d) List of Impaired Waters. Over four years, project partners installed a number of agricultural and residential best management practices (BMPs) that helped mitigate many of the causes of water quality degradation. Bacteria counts have significantly declined in both streams since 2001. The Lower Dry River is close to meeting bacteria standards. Improvement in the integrity of benthic communities has also been observed in associated creeks.
- Batie Creek was listed on Virginia's 303(d) List of Impaired Waters in 1998. The creek was listed because of low dissolved oxygen levels, caused by inflows of anoxic leachate due to a lumber company's improper disposal of sawdust. The low dissolved oxygen levels negatively affected a population of endangered cave isopods (a type of crustacean) in Batie Creek's headwaters. With help from an array of partners, led by the Karst Program of the Virginia Department of Conservation and Recreation's Division of Natural Heritage, the company removed and reused most of the decomposing sawdust. Dissolved oxygen levels have rebounded, prompting the removal of Batie Creek from the Impaired Waters List in 2006.

- Numerous implementation actions have occurred to address the Willis River impairment, including: (1) 18 miles of livestock exclusion stream fencing installed, resulting in removal of 2,577 livestock from having direct stream access, (2) one loafing lot management system for a dairy was installed, (3) ten septic tanks have been pumped out, an additional three are contracted, (4) one septic system has been repaired and three repairs are contracted, (5) one septic system has been replaced and two more are contracted, and (6) an alternative waste treatment system is contracted. As a result of these actions, the bacteria standard violation rate has been reduced to 10% or less for portions of the Willis River, resulting in a partial delist from the Impaired Waters List.