Tracking TMDL Implementation and Effectiveness

Implementation Plan Progress Reports

2025 National Training Workshop on Water Quality Data, Assessment and Plans

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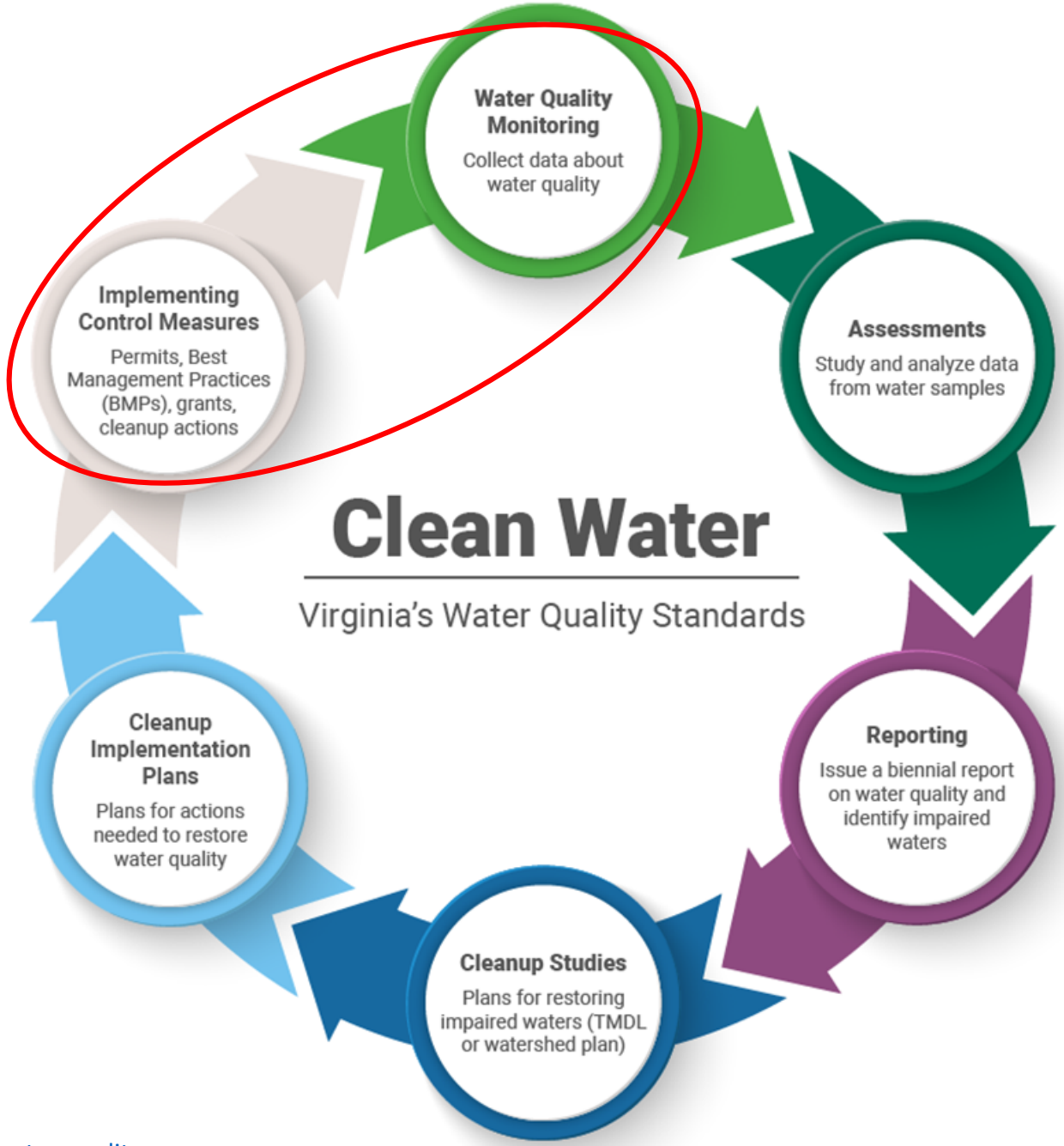
Virginia's Water Wheel

- Centered around water quality standards
- Begin and end with water quality monitoring
- Clean Up Studies: Total Maximum Daily Loads (TMDLs)
- Clean Up Plans: Implementation Plans (IPs)
  - Advance Restoration Plans (ARPs) and Watershed-Based Plans (WBPs) combine a study and plan
- Implementation: permitting, best management practices, grants



https://www.deq.virginia.gov/our-programs/water/water-quality

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Background on TMDLs and Implementation in Virginia

- Consent Decree (1999)- TMDL Schedule through 2010
- Water Quality Monitoring, Information and Restoration Act (WQMIRA; §62.1-44.19:7) (1997)
  - Directs DEQ to develop a list of impaired waters
  - Requires expeditious development and implementation of TMDLs
  - Goal is to “achieve fully supporting status for impaired waters”
- TMDL Implementation Plan (TMDL IP) Program began in 2000
  - As of 2024, 86 IPs accepted covering 318 TMDL equations

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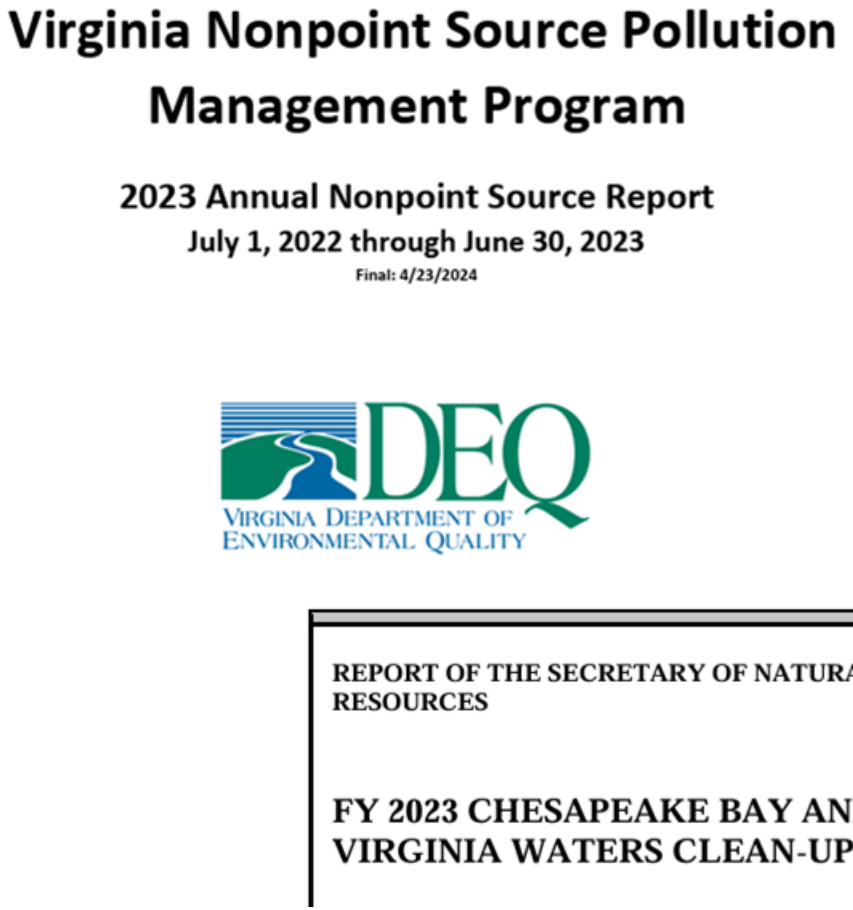
Tracking NPS Implementation

- NPS Management Program implements and tracks the actions established in IPs
- Reporting Mechanisms:
  - VA NPS Annual Report
  - IP Progress Reports
  - Chesapeake Bay and VA Clean Waters Clean-Up Plan
- Data Tracking Mechanisms:
  - BMP Warehouse
  - IP CEDS



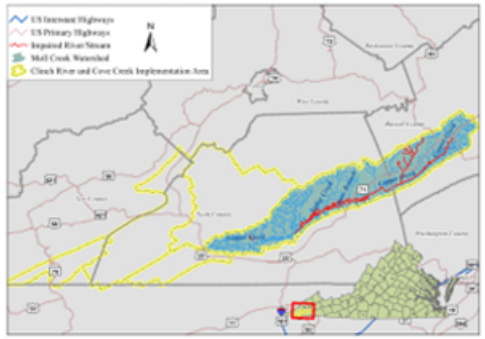
Implementation Plan Progress Reports

- IP Progress Reports detail:
  - Basic watershed, TMDL and IP information including a map
  - Best management practice (BMP) implementation versus IP goals
  - Load reductions achieved
  - Water quality monitoring results
  - Project highlights

https://www.deq.virginia.gov/our-programs/water/water-quality/implementation/implementation-projects

319H TMDL Implementation Project Report
CLINCH RIVER AND COVE CREEK WATERSHED

Virginia Nonpoint Source MANAGEMENT PROGRAM



Project Location and Background

The Clinch River and Cove Creek watershed is located in the Clinch River Basin in Scott, Russell, and Lee Counties, Virginia. The watershed is approximately 235,880 acres in size, and land use is predominantly forested (67%) and pasture (22%). Eleven (11) segments of the Clinch River and Cove Creek watershed are listed on the *Section 303(d) Total Maximum Daily Load (TMDL) Priority List and Reports* due to violations of the state's water quality standards for *E. coli* bacteria. The Clinch River and Cove Creek TMDL was approved in April 2014, and a TMDL implementation plan was completed in January 2017 and approved in December 2017. There is one implementation project underway in Russell County in the Moll Creek subwatershed (started in November 2018). Additional agricultural BMPs funded by the Department of Conservation and Recreation (DCR) since January 2018 are also reported herein.

Implementation Highlights

The Clinch River and Cove Creek implementation project, administered by the Clinch Valley Soil and Water Conservation District (CVSWCD), focuses on the Moll Creek subwatershed in Russell County. Table 1 shows all BMPs implemented since the project began in 2018 as well as agricultural BMPs installed by the Virginia Agriculture Cost-Share Program and overall implementation goals for the IP area.

Cumulatively, these projects have resulted in the implementation of over 2.6 miles of stream exclusion and 176 acres of grazing land management in the watershed. No residential septic or urban BMPs have been installed to date.

(*continued on Page 2*)

Table 1: Clinch River and Cove Creek BMP Summary : January 2018—June 2019

Control Measure	Units	Goal	Installed	%
Agricultural				
Stream Exclusion Fencing	F	1,678,333	13,693	1
Stream Exclusion Fencing	S	1,495	16	1
Stream Protection	S	13	0	0
Improved Pasture Mgnt	A	50	176	352
Residential Septic				
Septic Tank Pump-out	S	5,718	0	0
Connection to Public Sewer	S	3	0	0
Septic System Repair	S	134	0	0
Septic System Installation	S	547	0	0
Alternative Waste Treatment System	S	172	0	0
Residential/Urban				
Rain Garden	A	220	0	0
Infiltration Trench	A	220	0	0
Bioretention Basin	A	220	0	0
Pet Waste Education Program	P	4	0	0

A = Acres, F = Linear Feet, S = System, P=Program; Note: BMP counts only include 319-funded and state VACS. NRCS EQIP funded practices are not included.

*2019

Upper Clinch River
IP Progress Report

Virginia Nonpoint Source
MANAGEMENT PROGRAM

IP Location and Background

The Upper Clinch River watershed is located in the Tennessee/Big Sandy River Basins in Tazewell County, Virginia. The watershed is approximately 31,600 acres in size, and land use is predominantly forested (52%) and agricultural (44%). The Upper Clinch River was listed as impaired on Virginia's 1998 *Section 303(d) Total Maximum Daily Load (TMDL) Priority List and Reports* due to violations of the state's General Standard (benthic). The Upper Clinch River TMDL was completed in March 2004; a stressor analysis performed during TMDL development identified sediment as the primary stressor causing the aquatic life use impairment. An implementation plan was completed in January 2008. Multiple Clean Water Act (CWA) Section 319(h)-funded implementation projects

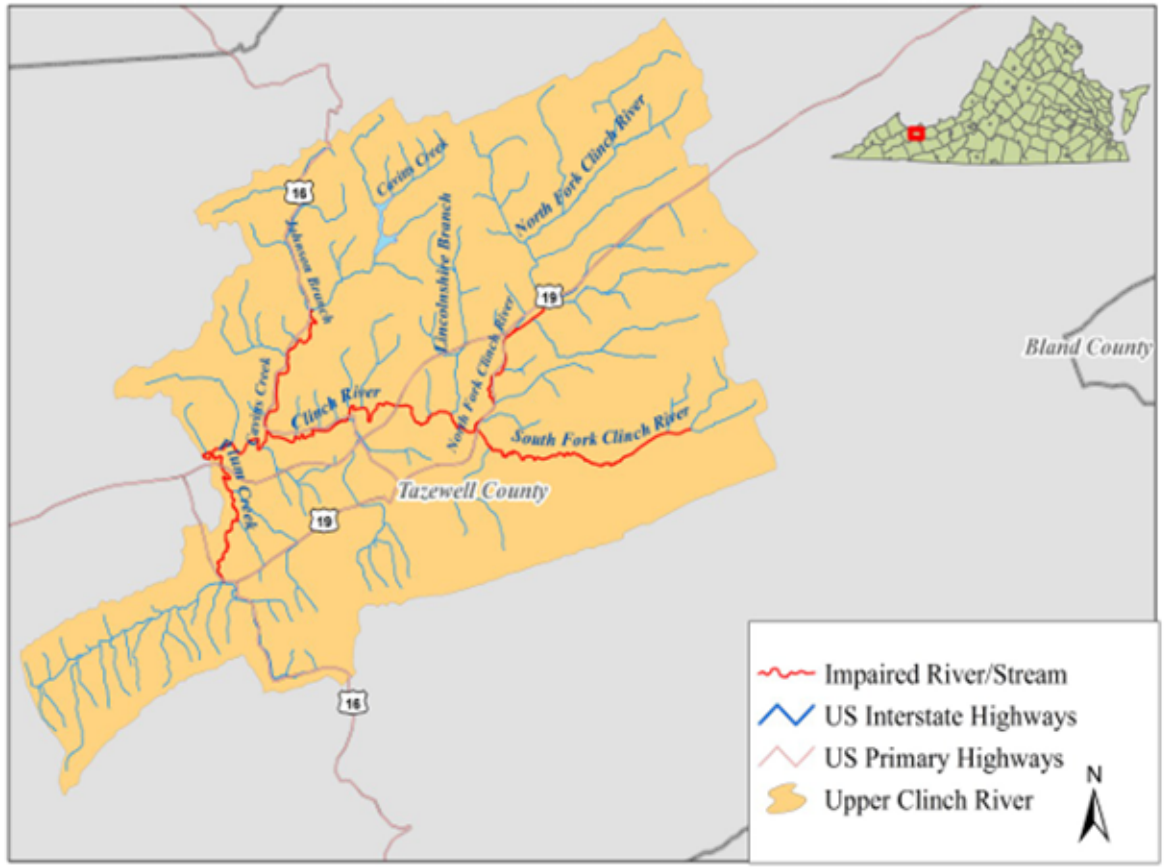


Figure 1. Map of Upper Clinch River IP watershed.

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have transpired since IP completion, and state funding for implementation started as early as July 2014. A CWA Section 319(h)-funded project is ongoing and expected to conclude in September 2025.

Implementation Highlights

Table 1 on the right shows best management practices (BMPs) implemented from November 2007 (completion of the IP) through June 2024 in comparison to implementation goals for the Upper Clinch River IP.

Cumulatively through CWA Section 319(h) grants and the Virginia Agricultural Cost Share Program, implementation of 100 acres of cover crop, 81 acres of riparian forest buffers, and 56 stream exclusion with grazing land management systems has occurred. The Virginia Conservation Assistance Program has helped implement a variety of practices including 2,700 linear feet of stream channel restoration and 900 linear feet of vegetative buffer.

Table 1. Upper Clinch River IP - BMPs (November 2007—June 2024)

Best Management Practices	Units	Goal	Installed	% Implemented
Agricultural				
Agro-Forestry Planting	Acres	387	0	0%
Cover Crop	Acres	-	100	-
Critical Area Planting	Acres	288	0	0%
Riparian Forest Buffer	Acres	-	81	-
Streambank & Shoreline Protection	System	12	1	8%
Stream Exclusion with Grazing Land Management	System	118	56	47%
Urban/Stormwater				
Ext Detention Pond	Acres	-	12	-
Infiltration Basin	Acres	67	0	0%
Porous Pavement	Acres	11	1	9%
Raingarden/Bioretention Basin	Acres	202	4	2%
Stormwater Runoff Control	Acres	200	0	0%
Stream Channel Restoration	Lin. Feet	5,000	2,700	54%
Street Sweeping	Miles	34	0	0%
Vegetative Buffer	Buffer Length	5,000	900	18%

Note: BMP counts come from the VA BMP Warehouse and do not include those installed by NRCS.

Pollutant Reductions

Bacteria, nutrient and sediment reductions resulting from BMP installations through CWA Section 319(h), Virginia Conservation Assistance Program (VCAP) and Virginia Agricultural Cost Share (VACS) funding in the Upper Clinch IP watershed are summarized in Table 2 below.

Table 2: Upper Clinch River IP- Pollution Reduction from November 2007—June 2024.

Upper Clinch River IP—Pollution Reductions	
Pollutant	**Load Reduction Achieved**
Pathogens (CFU)	3.88E+15
Nitrogen (lbs/yr)	12,064
Phosphorus (lbs/yr)	1,457
Sediment-Siltation (tons/yr)	4,680

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Figure 2 & 3. Before (top) and after (bottom) of the streambank stabilization project and riparian buffer plantings in Dunford Park Tazewell, Virginia.

Figure 4. A more recent picture of Dunford Park. The stabilized area has become beautifully vegetated.

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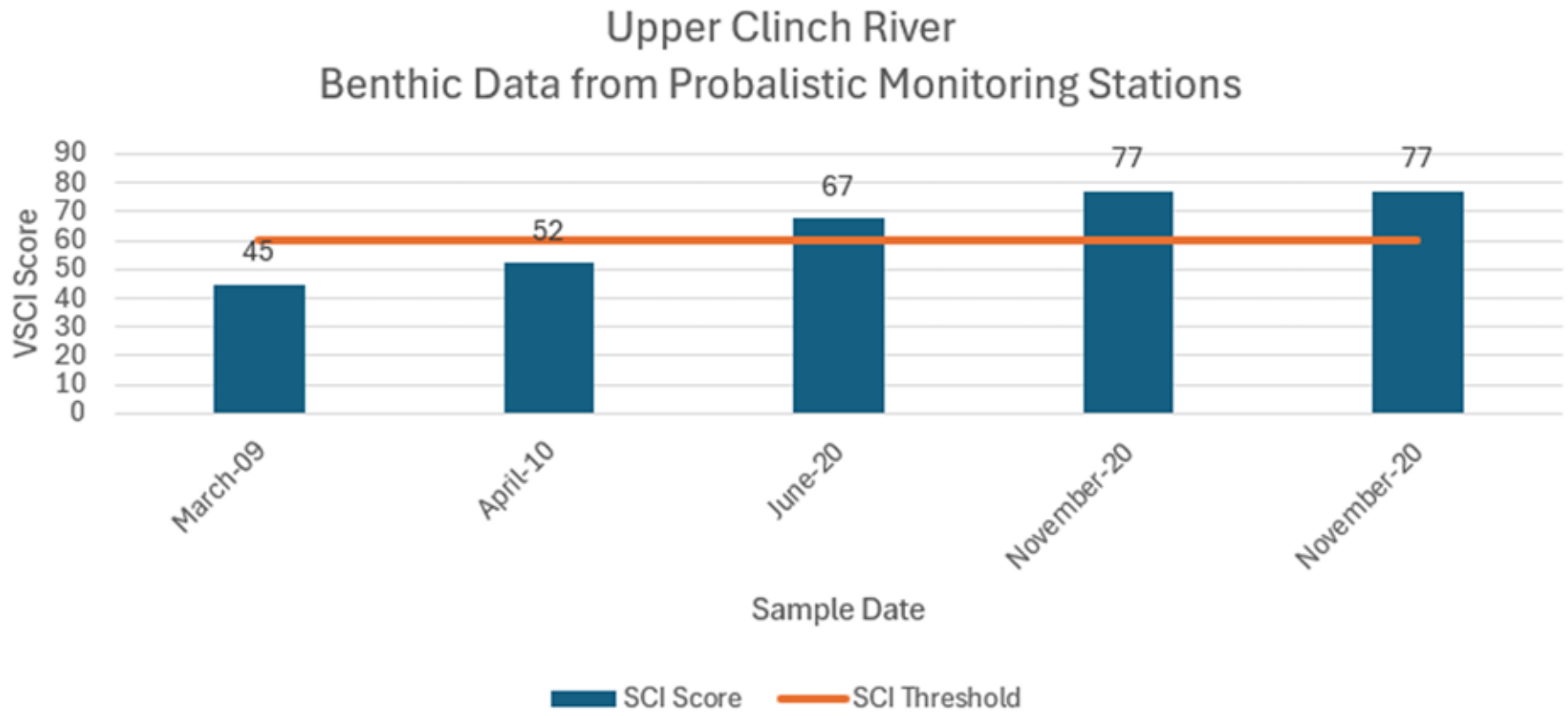
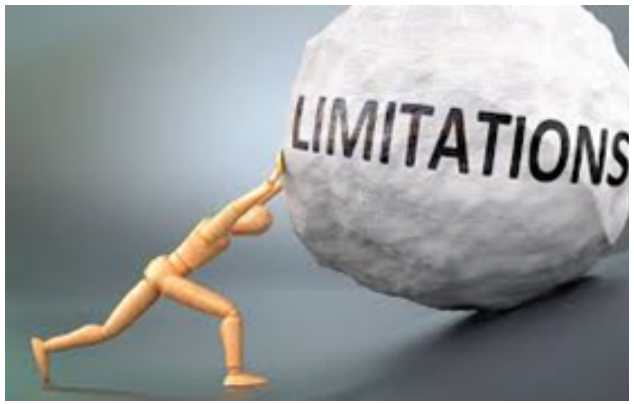
Water Quality Monitoring Results: Benthic

DEQ's biological monitoring program is used to evaluate compliance with the benthic Virginia water quality standard. This program monitors the assemblage of benthic (bottom-dwelling) macroinvertebrates (insects, mollusks, crustaceans, and annelid worms) in streams to determine its biological health. Currently, DEQ assesses the health of the benthic macroinvertebrate community using the Virginia Stream Condition Index (VSCI). The VSCI is a multi-metric index based on 8 biomonitoring metrics. The index provides a score from 0-100, and streams with VSCI scores greater than 60 are generally considered unimpaired, whereas streams scoring less than 60 are generally considered impaired.



IP Progress Report Process Improvement

Prior to 2024	2026 and Beyond
5 to 10 reports developed annually	1/3 of total # of IPs reports developed annually; ~30 per year
Generally same IPs reported on year to year; no rotational schedule	ALL IPs have a Progress Report every 3 years
IP Report selection based on active CWA 319(h) projects	No limitations on IP report selection
Variable report layouts	Standard template
Load Reductions only reported for IP impairment(s)	Load reductions reported for Nitrogen, Phosphorus, Sediment and Bacteria for all reports
Manual data retrieval, manipulation and analysis	Database tools thoroughly developed and utilized



*2024 to 2026- transitional years

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Additional Benefits

- IP Progress Reports better aligned with EPA nine elements
  - Demonstrates achievements towards measurable interim milestones and goals (both water quality and implementation) of an IP
- Enhances Adaptive Management Approach
- Standardized approach/template allow workload to be shared amongst regional NPS staff
- IP Progress Reports more holistic, comprehensive
- Demonstrate watershed health from multiple angles
- IP Progress Reports become more than a required report
  - Used by stakeholders/subrecipients

Additional Benefits

- Better collaboration with other state agencies in terms of data sharing
  - Implementation Monitoring Tool
- Utilizing new data tools
  - R Tools – water quality monitoring data queries, script for creating water quality graphs

All of this was only possible with a fully staffed NPS Program at DEQ!

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Thank You!

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