



# Executive Summary: 2022 Integrated Report

The Draft 2022 Integrated Report (IR) provides the results of Virginia’s water quality assessments for data collected from Jan. 1, 2015, through Dec. 31, 2020, and describes the extensive efforts to monitor, assess and improve water quality in the Commonwealth.

A primary objective of the IR is to determine whether Virginia’s waters support the six designated uses established by Virginia’s Water Quality Standards – namely, aquatic life, fish consumption, shellfishing, recreation, public water supply and wildlife. If a waterbody exceeds the pollutant level allowed by water quality criteria, or is below a specified threshold for aquatic life, it will not support one or more of its designated uses. Such waters are considered “impaired” and placed on the List of Impaired Waters. According to the 2022 IR, bacteria, toxins in fish tissue and low dissolved oxygen (DO) remain the leading causes of impairment in Virginia waters.

When a waterbody is classified as impaired, DEQ initiates a watershed study, also called a Total Maximum Daily Load (TMDL), for the affected area. Waters are removed from the impaired list by providing new data to the U.S. Environmental Protection Agency that shows attainment of water quality criteria, or updating assessment methodologies. In the 2022 IR, DEQ proposes removing 411 waterbodies from the list. To date, the agency has completed nearly 1,000 watershed plans.

2022 IR Assessment Results			
	Rivers (mi)	Lakes (acres)	Estuaries (sq mi)
<b>Totals</b>	100,983*	117,783	2,843
<b>% Non-Impaired</b>	4%	10%	11%
<b>% Impaired</b>	16%	86%	75%

*\* ~65% of VA’s rivers are headwater systems not monitored by DEQ’s ambient network. These waters are routinely monitored via Probabilistic Monitoring.*

Leading Causes of Impairment in Virginia Waters			
	Rivers (mi)	Lakes (acres)	Estuaries (sq mi)
<b>Total Impaired</b>	16,205	101,172	2,138
<b>Bacteria</b>	12,346	4,304	140
<b>Toxics in Fish Tissue</b>	3,702	87,849	2,058
<b>Dissolved Oxygen</b>	704	47,590	1,612

## Differences observed between the 2020 and 2022 IR cycles

- The 2022 IR will be the first cycle in which waterbodies can be listed as impaired as a result of Virginia Department of Health recreational advisories based on the presence of Harmful Algal Blooms (HABs). Seven waterbodies across the state had confirmed HABs in 2019-2020, leading to advisories and subsequent impairments: Portions of Lake Anna, Mint Springs Lake, Aquia Creek, Wilcox Lake, Woodstock Pond, Prince Edward Lake and an unnamed tributary of the Chickahominy River.

- The 2022 IR also reflects changes in recreation designated use assessments, as the Commonwealth began implementing the revised bacteria criteria in 2018. DEQ has updated the monitoring strategy to implement the new criteria and, as a result, many lakes and estuarine segments moved to “unassessed” this cycle.
- Dissolved oxygen impairments increased in the Commonwealth during this assessment cycle. Some of the new impairments include portions of Kerr Reservoir, Lake Chesdin, Flannagan Reservoir, South Holston Reservoir and Leesville Lake.

IR Assessment Results - comparison						
	Rivers (mi)		Lakes (acres)		Estuaries (sq. mi)	
Assessment Cycle	2020 IR	2022 IR	2020 IR	2022 IR	2020 IR	2022 IR
% Non-Impaired	6%	4%	16%	10%	11%	11%
% Impaired	16%	16%	80%	86%	75%	75%

## Visualizing Water Quality Assessment Results

DEQ’s Environmental Data Mapper (EDM) is a premier interactive geospatial mapping tool, and offers the public increased level of access, interaction and visualization into DEQ’s GIS datasets. The public can access the 2022 IR assessment results via the [DEQ data hub](#).

For more information on accessing data via the EDM, including training videos, please visit this link:

<https://geohub-vadeq.hub.arcgis.com/pages/environmental-data-mapper-help>

## Chesapeake Bay Assessment Results in Virginia

- Approximately 61% of the total state-wide submerged aquatic vegetation (SAV) acres goal was attained during the 2022 assessment cycle, remaining relatively constant from the 63% reported in 2020 and up from 55% reported in 2018.
- The 2022 dissolved oxygen assessment continues to show improvement in some of the Bay’s most degraded segments. The Elizabeth River and its tributaries show attainment during the non-summer months for the Open Water dissolved oxygen (DO) criteria.
- Once again, all of the James River segments met the open water DO criteria for the 2022 cycle; however, algae growth problems still persist in the oligohaline and tidal fresh portions, as indicated by chlorophyll levels.
- The most recent estuarine benthic assessment results again show full attainment in the main stem segments. Progress in the Chesapeake Bay aquatic life use attainment is expected to continue to improve in accordance with Virginia’s [Watershed Implementation Plan](#).

## Monitoring Water Quality in Virginia

DEQ’s current statewide Water Quality Monitoring Program consists of an integrated network of subprograms. Comprehensive geographic coverage of the state’s surface waters is accomplished primarily by a statewide Ambient Watershed Monitoring Network, in conjunction with DEQ’s Chesapeake Bay Monitoring Program, and by two Probabilistic Monitoring Networks that encompass all free-flowing fresh and estuarine waters. These are

complemented by the agency's Trend Monitoring Network, Lakes Monitoring Program, Biological Monitoring Program, Targeted Fish Tissue and Sediment Monitoring Program, as well as an integrated Citizen's Monitoring Program

DEQ's monitoring strategy integrates both fixed-site (i.e., ambient or trend) and probabilistic monitoring (ProbMon) techniques to improve the understanding of water quality conditions. These programs aim to answer two questions:

**1. "What is the health of my favorite waterbody?"**

Fixed monitoring programs are designed to sample waterbodies on a rotating basis. These data are not collected to determine the health of a waterbody on a given day, but rather they characterize the overall ambient conditions over the course of a longer-term assessment window.

**2. "What is the general health of waters in Virginia?"**

The freshwater ProbMon program represents a smaller network of monitoring stations in rivers and streams that provide an unbiased statewide characterization of water resources with a known degree of statistical confidence. The estuarine ProbMon program uses data from about 50 sites per year to conduct weight of evidence assessments.

## **Additional items of note in the 2022 IR**

### ***Jackson River proposed to be delisted for Dissolved Oxygen***

Approximately 11 miles of the Jackson River – downstream from WestRock's main processing outfall near Covington – is proposed for delisting for Dissolved Oxygen. These waters were initially listed in 1996. The delisting can be credited to technical advancements resulting in pollution reductions from municipal and industrial discharges, and unique solutions forged through public and private sector partnerships to lessen the effects of the artificial hydrology from the upstream dam and mimic a more natural flow regime.

### ***Citizen Monitoring Data***

Data were submitted from 80 citizen monitoring groups at 1,655 monitoring sites across the Commonwealth for the 2022 IR. The data were used to assess 3,887 miles of non-tidal freshwater streams, 64 square miles of tidal estuaries and 33,347 acres of lakes. DEQ accepts water quality data to be reviewed and evaluated for assessment purposes on a continual basis.

In order to be used for the 2022 IR, data had to be submitted by March 5, 2021. DEQ staff held a public webinar for citizen monitoring groups to discuss strategies for submitting their data on February 16, 2021. Data solicitation notices will be issued for subsequent IR cycles at the beginning of the assessment process, which typically falls early in odd-numbered years.

### ***COVID-19 Pandemic Impacts on Water Quality Programs***

The COVID-19 pandemic presented challenges for Virginia's water quality monitoring and assessment programs, especially for DEQ monitoring staff, and citizen and non-agency monitoring partners. DEQ field monitoring activities were initially suspended in March 2020 until May-June 2020, when safety protocols were implemented. This temporary suspension resulted in minimal impacts to water quality assessments. Grant funds to support citizen monitoring efforts were also delayed at the start of the pandemic, as the state grappled with the budget implications of the global pandemic.