Water Quality Watch

The Streams of Chesterfield County

Chesterfield County is committed to protecting our streams because they are an important part of our quality of life. The water quality in our streams directly affects the water quality in our rivers and reservoirs. Streams also are recreational and visual resources for county residents.

> *"Water, like air, is a resource required by every living creature. Because it is so common, it is easy to take it for granted."*
>
> *– Luna Leopold*

How Streams Work

A stream begins at its ***headwaters***. It can be fed by an underground spring or by stormwater (runoff from rain and melting snow). A stream or river system is a pattern of smaller streams, or ***tributaries***, joining one another and flowing together to form the main stream or river. The smaller streams deliver most of the water and food to the bigger ones. Without feeder streams, our rivers would not exist.

There are two basic types of streams: ***Perennial streams*** flow all year long, except in periods of extreme drought. Most streams that have been given names, like Swift Creek or Proctors Creek, are perennial streams. ***Intermittent streams*** flow only part of the year, during the wet seasons, and are not usually given names. Still, they feed larger streams. Natural streams often have both deep and shallow areas, which are called ***pools*** and ***riffles***.

Streams are constantly changing. Anyone who has watched a stream in different seasons, or at different places along its course, has seen this happen. Streams are affected by changes in the weather, the seasons, the ground they flow over and man-made changes in the land around them. In response, a stream may scour away vegetation, flood, erode or carry and deposit soil. Where the stream is restricted, it speeds up to compensate, eroding downstream banks or spreading out to flood the land around it.

Watersheds

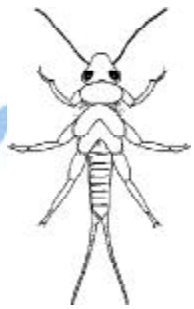
The land area that drains into a stream, river or other water body is called a ***watershed***. The watershed may cover many square miles, stretching far beyond the bounds of a creek or the smell of damp earth at the water's edge. The water quality and other characteristics of a stream that winds through the woods will be different from a stream that flows through industrial areas or farmland.

Streams are affected, both chemically and physically, by changes in the watershed surrounding them. Stormwater washes pollutants, such as motor oil, pesticides and soil from construction sites, into nearby streams. As forested or open land is paved or covered with buildings, not as much stormwater can soak into the ground through natural, porous surfaces. So, more of the stormwater flows into nearby streams. This increased flow will cause a stream to adjust its shape, widening or downcutting the stream bed, eroding streambanks and degrading habitat for the animals and plants that live there.

> *"There's more to a stream than the rushing or meandering water. A stream corridor, or stream valley, is a complex and valuable ecosystem which includes the land, plants, animals, and network of streams within it."*
>
> *From: Stream Corridor Restoration, Principles, Processes, and Practices*

Life in a Stream

A stream is made up of more than its flowing water. It is home to many different plants and animals, such as fish, frogs, crayfish and the small insects, called ***benthic macroinvertebrates***, that live on the stream bottom. Fish in the stream eat these insects, so they are an important part of the food chain. Some are quite sensitive to pollution.

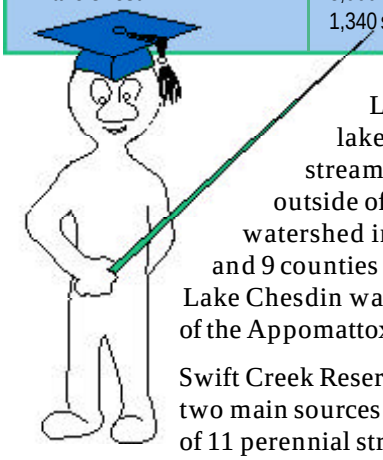


The aquatic plants and animals living in a stream change from the upper reaches to the broader stretches downstream. Still, the headwaters supply water and food for whatever lives in the entire stream system.

Chesterfield County's Waters

Chesterfield County is fortunate to have about 1,300 miles of streams across the entire county. Many subdivisions have a stream running through them. The largest stream is Swift Creek, which runs in a southeasterly direction, bisecting the county.

Rivers	124 miles of riverfront along the Appomattox and James Rivers
Streams	469 miles of perennial streams 873 miles of intermittent streams
Swift Creek Reservoir	1,700 acres of water 65 square miles in watershed
Falling Creek Reservoir	110 acres of water 53 square miles in watershed
Lake Chesdin	3,060 acres of water 1,340 square miles in watershed



Lake Chesdin is a regional lake that is fed by 16 tributary streams, most of which are outside of Chesterfield County. Its watershed includes land in 5 towns and 9 counties (including Chesterfield). Lake Chesdin was created by damming part of the Appomattox River.

Swift Creek Reservoir and Lake Chesdin are two main sources of drinking water. A total of 11 perennial streams feed the Falling Creek and Swift Creek reservoirs. Falling Creek Reservoir is no longer used for drinking water. Like so many of our streams and lakes, however, it provides a source of natural beauty and a refuge from the stresses of everyday urban living.

Protecting Our Streams

Perennial streams are protected by the *Chesapeake Bay Preservation Ordinance*, which requires a vegetated buffer between perennial streams and any new development.

The county also enforces *Flood Plain* and *Erosion and Sediment Control Ordinances*, which reduce the impact of new development on county streams, and a new *Illicit Discharge Ordinance*, which protects our waters from pollutants that could be released into storm sewers or streams.

To gain a better understanding of the overall health of Chesterfield's streams, the Water Quality Section uses professional consultants, who monitor both the aquatic plants and animals and the chemical water quality parameters in a representative sampling of streams throughout the county.

In 1996, Chesterfield County began a volunteer stream monitoring program. A group of dedicated county citizens have been trained in stream sampling techniques. Four times a year, these volunteers collect ***benthic macroinvertebrates*** in the streams of their choice. The number and types of aquatic insects living in a stream provide information about water quality. Volunteer sampling data is included in the county's annual report to the Virginia Department of Environmental Quality.

Volunteer stream monitoring is an important part of the county's comprehensive program to reduce stormwater pollution. Chesterfield County recently received a **National Association of Counties Achievement Award** for this citizen program. **To become a volunteer Stream Watcher, call (804) 748-1035.**

This is one of a series of fact sheets about surface water quality issues in Chesterfield County. Copies are available in the Department of Environmental Engineering offices at 6806 West Krause Road. The series includes:

- *Chesterfield County's Stormwater Management Program* (August 1997)
- *Household Guide to Chesterfield County's Illicit Discharge Ordinance* (October 1997)
- *Business and Industry Guide to Chesterfield County's Illicit Discharge Ordinance* (October 1997)
- *Chesapeake Bay Resource Protection Areas and Flood Plains* (December 1997)

These fact sheets are produced by the Water Quality Section of the Department of Environmental Engineering. Our mission is to protect, maintain and restore the chemical, physical and biological integrity of Chesterfield County's waters. This mission furthers one of the county's Strategic Goals: to maintain an extraordinary quality of life in the county by protecting and preserving our natural and historical resources. For more information, call 804-748-1035.

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