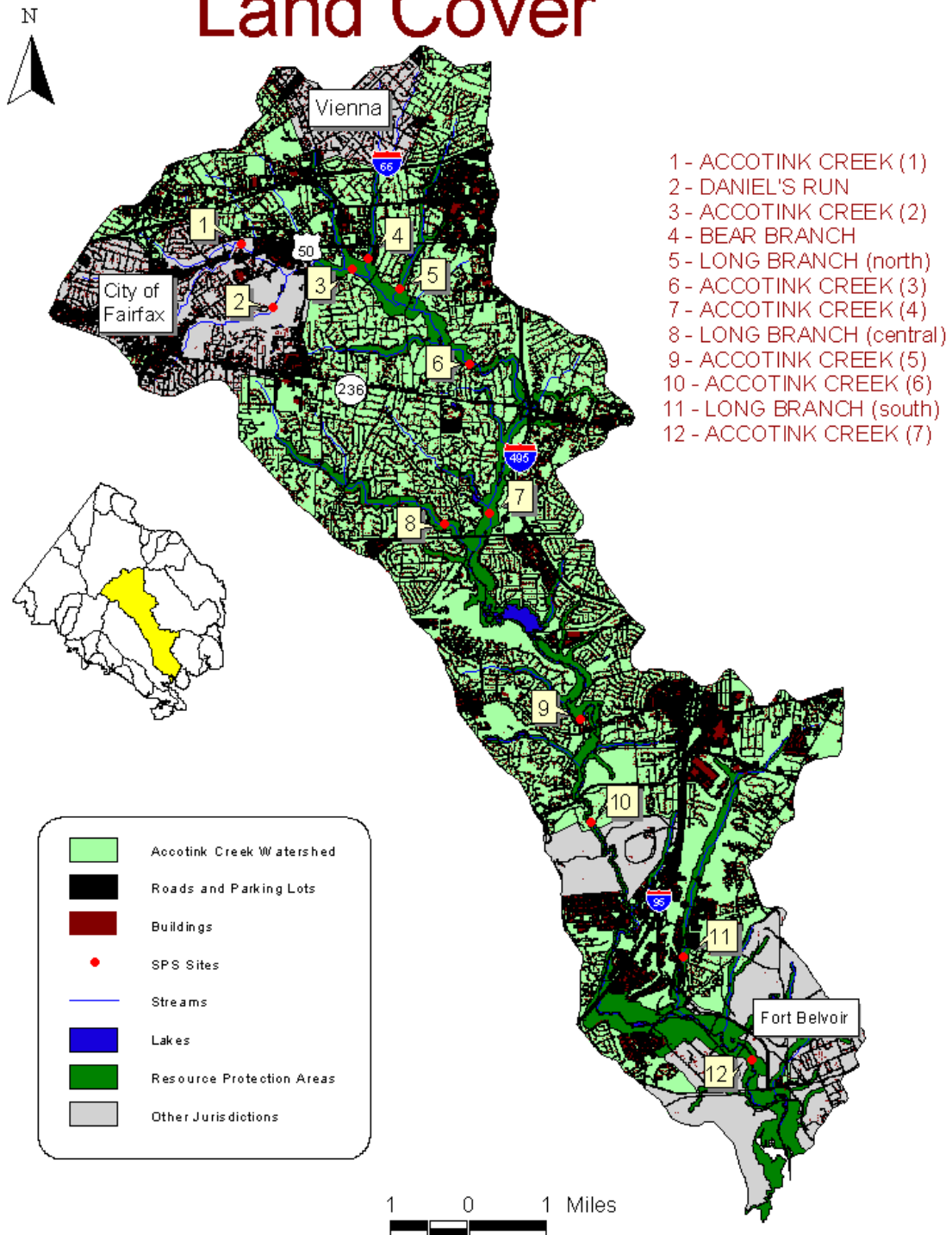


CHAPTER 3

ACCOTINK CREEK WATERSHED SUMMARY

CHAPTER 3

Land Cover

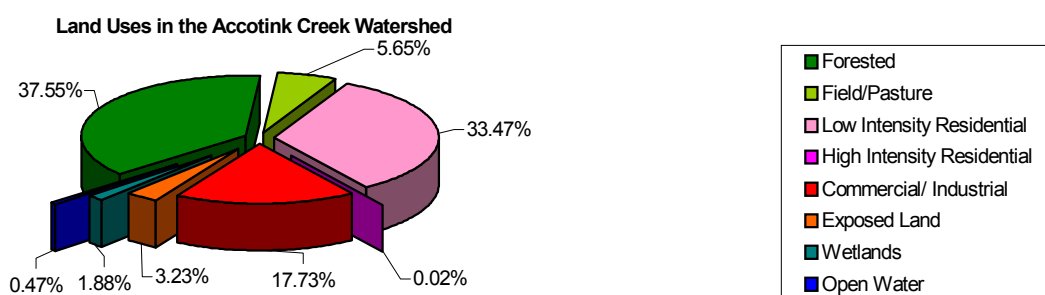


CHAPTER 3

Watershed Description

The Accotink Creek watershed has an area of 51.1 square miles, or 12.4% of the County. Approximately 13.4 square miles of this area are outside of County jurisdiction, located in the Town of Vienna, City of Fairfax, Fort Belvoir Military Reservation and other U.S. Government installations. The watershed includes areas of both Piedmont Uplands and Coastal Plain physiographic provinces. Only one major impoundment, Lake Accotink (68 acres), and six smaller regional ponds occur in the watershed.

Accotink Creek is characterized by heavy development throughout most of the watershed. Over half of the region is either commercial or low-density residential. Of all the major subwatersheds in the basin, only Long Branch (central) had an imperviousness value of less than 25%.



Highly eroded stream banks are common throughout the Accotink watershed.

The headwaters of Accotink Creek begin in the highly urbanized area of Fairfax City where it also joins with its first tributary, Daniels Run. The mainstem soon increases in size with the addition of two large tributaries, Bear Branch and Long Branch (north), each draining the highly developed Vienna suburbs. Heading generally southeastward on a path to the Potomac River, the system runs under several major road corridors as it travels through a series of high-density residential areas. Along the way it receives input from the second Long Branch (central), itself a major system draining moderate density residential communities to the east. After passing through the protected area of the Lake Accotink reservoir system, it travels under the Franconia-Springfield Parkway and enters the Coastal Plain physiographic province. The mainstem then picks up additional input from Long Branch (south), which drains the eastern side of Springfield. On its final leg, Accotink Creek meanders slowly through the property of Fort Belvoir Military Reservation — the only large expanse of relatively undeveloped land in the entire watershed — and finally enters a freshwater tidal marsh at Accotink Bay, itself on the edge of the larger Gunston Cove.

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CHAPTER 3

DATA SUMMARY

Stream Name and Site Code	Composite	Environmental Variables				Projected Percent Impervious Surfaces
	Site Condition Rating	Index of Biotic Integrity	Habitat Score	Fish Taxa Richness	Current Percent Impervious Surfaces	
1 Accotink Creek 1 (ACAC01)	Very Poor	Poor	Very Poor	Low	35.2	35
2 Daniel's Run (ACDR01)	Very Poor	Very Poor	Poor	Very Low	25.5	25
3 Accotink Creek 2 (ACAC02)	Very Poor	Fair	Very Poor	Moderate	31.3	37
4 Bear Branch (ACBB01)	Very Poor	Very Poor	Poor	Low	25.1	43
5 Long Branch North (ACLC01)	Very Poor	Very Poor	Poor	Low	37.6	44
6 Accotink Creek 3 (ACAC03)	Very Poor	Poor	Poor	Moderate	29.7	36
7 Accotink Creek 4 (ACAC04)	Poor	Poor	Poor	Moderate	28.6	35
8 Long Branch Central (ACLB01)	Poor	Poor	Fair	Moderate	23.6	24
9 Accotink Creek 5 (ACAC05)	Poor	Very Poor	Good	Moderate	27.4	34
10 Accotink Creek 6 (ACAC06)	Poor	Poor	Good	Moderate	27.1	35
11 Long Branch South (ACLA01)	Poor	Poor	Good	Low	30.3	49
12 Accotink Creek 7 (ACAC07)	Poor	Poor	Poor	Moderate	26.3	36

Accotink Creek Fish Species List

Common Name	Number of Sites Where Species Occurred (12 Total Sites)	Common Name	Number of Sites Where Species Occurred (12 Total Sites)
White Sucker	12	Northern Hogsucker	3
Creek Chub	12	Common Shiner	3
Tessellated Darter	11	Largemouth Bass	3
Green Sunfish	10	Brown Bullhead	2
Swallowtail Shiner	10	Common Carp	2
Blacknose Dace	10	River Chub	2
Creek Chubsucker	9	Banded Killifish	1
Yellow Bullhead	8	Eastern Mosquitofish	1
American Eel	8	Eastern Silvery Minnow	1
Satinfin Shiner	7	Longear Sunfish	1
Bluegill	7	Spottail Shiner	1
Rosyside Dace	6	Yellow Perch	1
Pumpkinseed	6	Longnose Dace	1
Redbreast Sunfish	4	Fallfish	1
Golden Shiner	4	Eastern Mudminnow	1

CHAPTER 3

Watershed Condition Summary

Streams in the Accotink Creek watershed are substantially degraded, with the majority of tributary systems exhibiting poor habitat and biological conditions.

Thirty different fish taxa were collected from the 12 SPS sampling sites in the watershed. While reasonably high species taxa counts were obtained from many locations along the length of the mainstem, most tributary systems generally lacked such diversity, even accounting for their smaller size.

Measures of benthic macroinvertebrate community health were consistently low throughout the entire watershed. In fact, samples from three sites in the drainage, Daniel's Run in Fairfax City, Long Branch North and one site on the mainstem, yielded the lowest IBI scores seen in the entire county. For all watershed samples combined, nearly 100% of the 2,400 individual insects collected are categorized as being tolerant of degraded conditions.

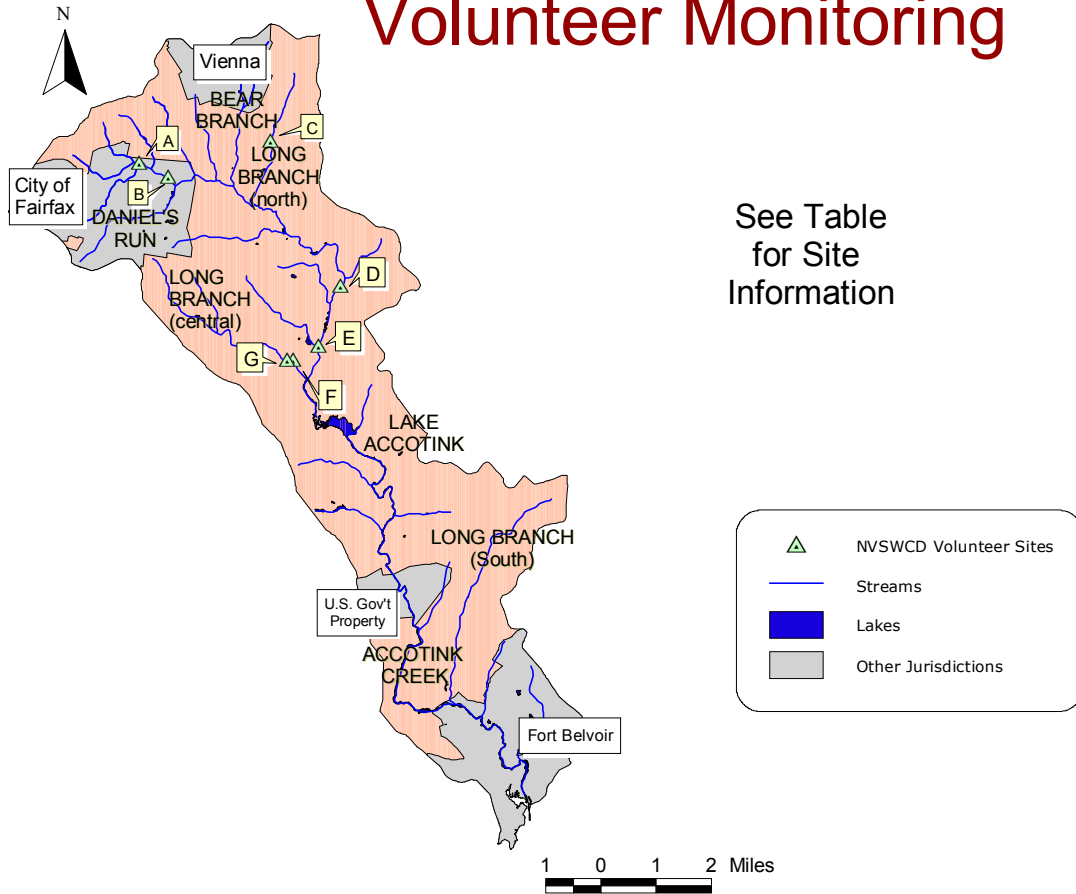
With the exception of Long Branch Central and the lower mainstem of Accotink Creek itself, habitat conditions throughout the watershed were poor. Most of the small tributary systems were severely incised (entrenched), and an overall pattern of active stream widening was evident. The watershed contains extensive areas of unstable habitat, with sloughed and eroded banks, large unstable sediment bars and numerous tree falls and logjams.

The headwaters of Accotink Creek originate in the urbanized areas of Fairfax City and the Town of Vienna, and with the exception of the large parcel of Ft. Belvoir near its mouth, the system flows through areas with levels of imperviousness in excess of 25%. Rankings across the watershed are similarly consistent, with all sites being rated as poor or very poor overall.

The relatively good habitat ratings of the lowermost mainstem sites are the only contrast to the low ecological integrity seen in streams systemwide. While these results may simply reflect the ability of larger-order systems to better absorb and buffer the effects of high flow volumes (at least relative to smaller, lower-order tributaries), the impact may also be indicative of the influence of the upstream dam at Lake Accotink. Reservoir systems have been shown to trap sediments and reduce the intensity and erosive energy of storm flows, and such hydrologic control may be a component responsible for the increased stability in the downstream environment. However, these systems can limit the migration of aquatic species.

CHAPTER 3

Volunteer Monitoring



See Table for Site Information

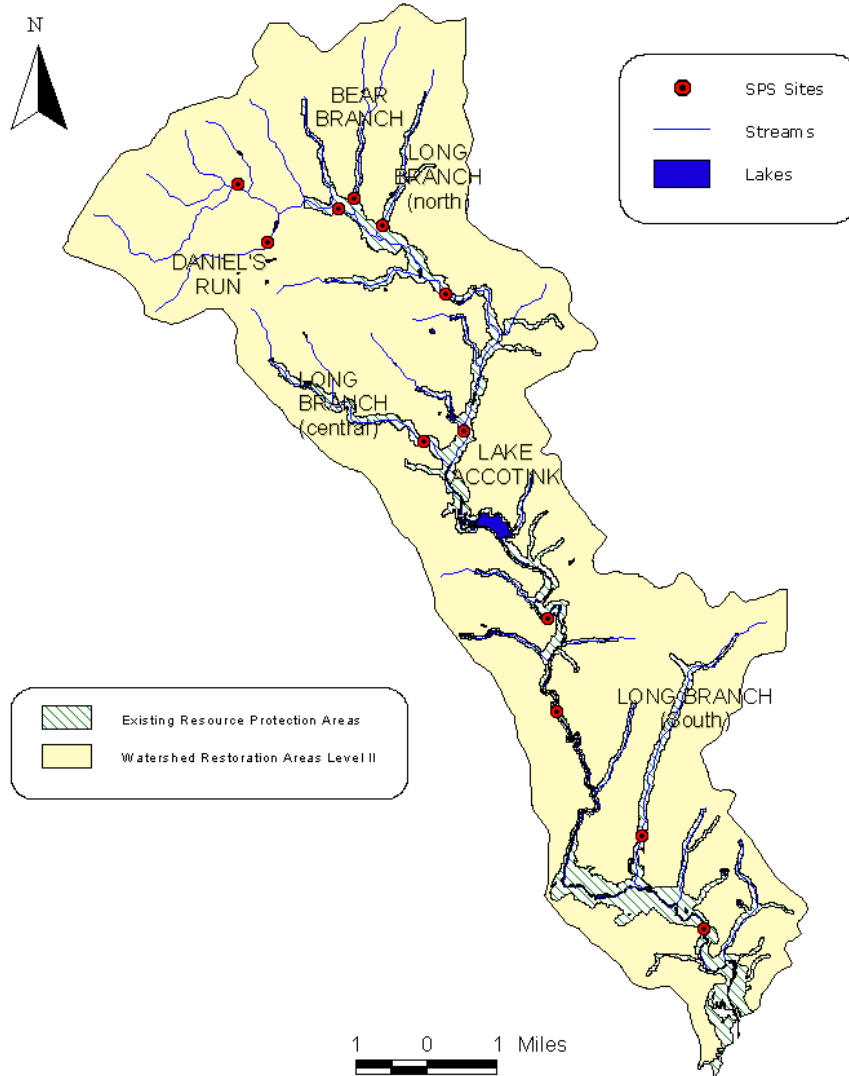
Volunteer Data Summary

There are seven active volunteer monitoring sites within the Accotink Creek Watershed, each of which is coordinated by the Northern Virginia Soil and Water Conservation District (NVSWCD). All but one of these sites are recent additions to the volunteer monitoring inventory. New volunteer monitoring efforts would be useful in many of the tributary environments, as well as locations on the mainstem downstream of Lake Accotink. To date, the volunteer data collected is consistent with the results of SPS monitoring; most of the sites sampled exhibited “Poor” water quality ratings, and none received a ranking higher than “Fair”.

Letter Code	Site Code	# times sampled	Last sampled	WQR (SOS only)	Trends noted
A	ACC10	1	8/29/00	Fair	too few samples
B	ACC5	2	8/12/00	Poor	too few samples, although they were both Poor
C	ACC4	2	5/19/00	Poor	too few samples, although they were both Poor
D	ACC2	30	8/17/00	Poor	varies from Fair - Poor
E	ACC6	2	8/26/00	Fair	too few samples, although the previous one was Poor
F	ACC7	2	8/21/00	Fair	too few samples, although the previous one was Poor
G	ACC8	1	8/17/00	Fair	too few samples

CHAPTER 3

Management



Management Category Description

Accotink Creek presents a challenge in management. The entire watershed is classified as Watershed Restoration Level II Area, and many opportunities for localized improvements exist. In areas outside of County jurisdiction such as Fairfax City and Fort Belvoir, inter-agency cooperation will be required. The SPS Study shows that stream conditions improve slightly upstream and downstream of Lake Accotink, and more research is warranted to assess the impact of the reservoir system on the mainstem environment.

CHAPTER 3

OTHER INITIATIVES

USGS Fecal Source Tracking

A 4.5 mile segment of Accotink Creek in Fairfax County, beginning at the confluence of Crook Branch and Accotink Creek to the start of Lake Accotink, was placed on the 1998 Virginia 303(d) Total Maximum Daily Load (TMDL) priority list for fecal coliform impairment. In December 1998, the United States Geological Survey (USGS), the Virginia Department of Conservation and Recreation (DCR), Virginia Department of Environmental Quality (DEQ) and Fairfax County entered into a partnership to pursue a bacteria source tracking study for Accotink Creek as part of a statewide study. Bacteria source tracking is a relatively new technique employed nationwide to positively identify the sources (e.g. human, waterfowl, deer, pets, and other warm-blooded animals) of fecal coliform in streams using genetic fingerprinting. Along with bacteria source tracking the USGS will also develop a fecal coliform TMDL for the Accotink Creek watershed. A TMDL is the loading capacity or greatest load a waterbody can receive without violating water quality standards. The TMDL calculation includes estimates of point source (e.g. municipal and industrial discharges) and nonpoint source (e.g. runoff from urban areas) loads. There are no permitted point source dischargers of fecal coliform bacteria in the Accotink Creek watershed study area. Therefore, the primary sources of fecal coliform bacteria are from nonpoint sources and may include direct runoff, stormwater outfalls, or failing septic systems. The TMDL development process will involve determining the primary sources of fecal pollution, evaluating load allocation scenarios to determine whether water quality standards in the impaired water body will be met, and implementing a plan to reverse the impairment over a certain timeframe.

