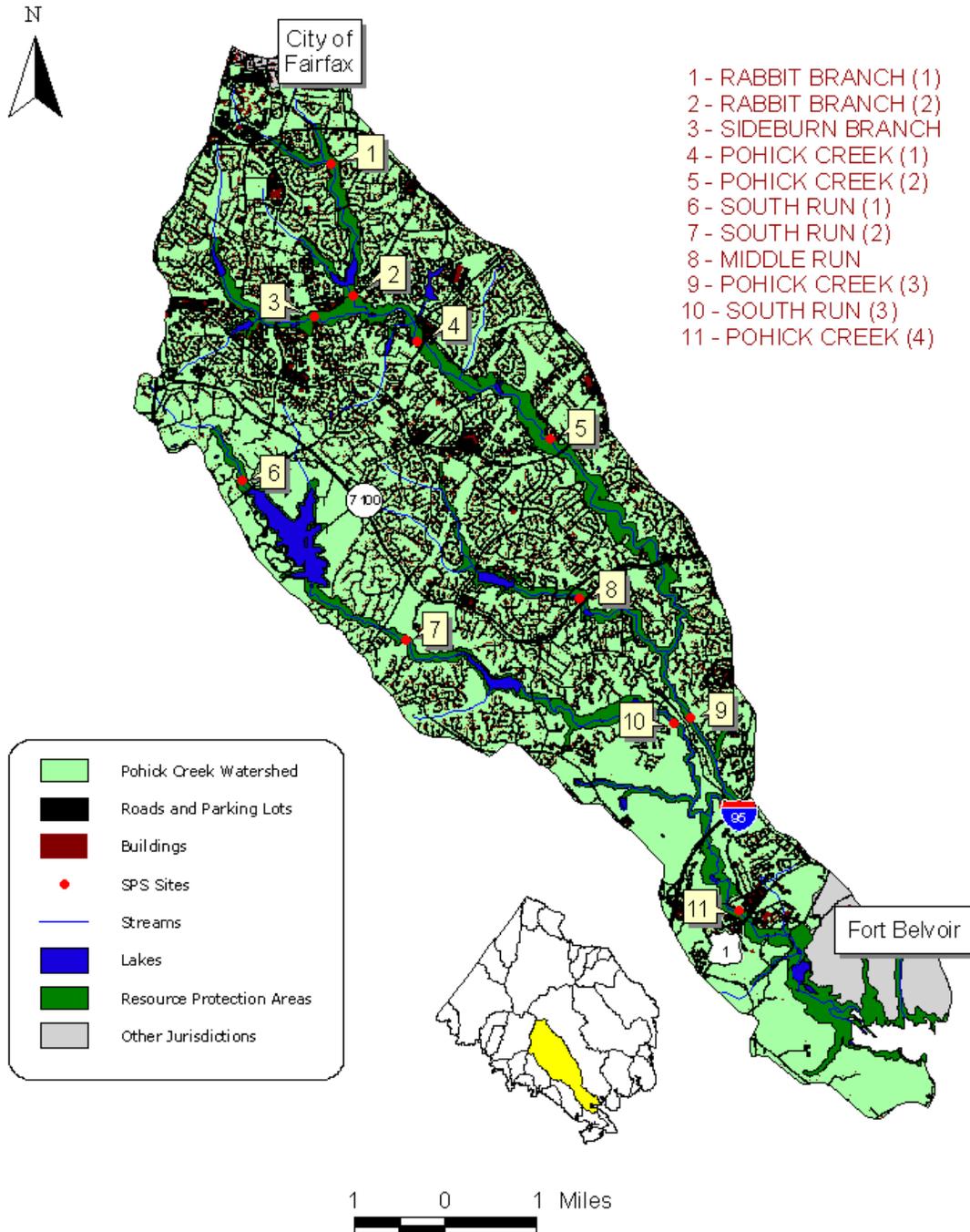


CHAPTER 3

POHICK CREEK WATERSHED SUMMARY

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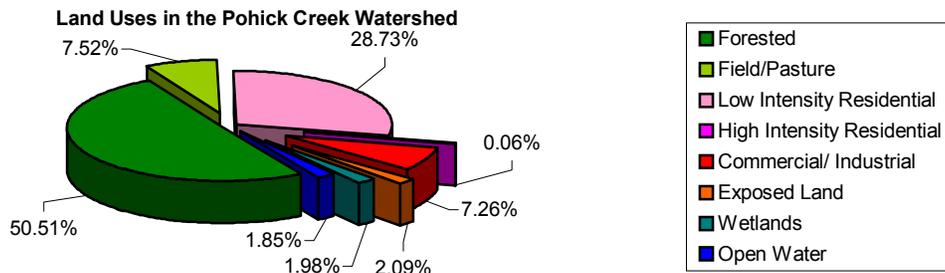
Land Cover



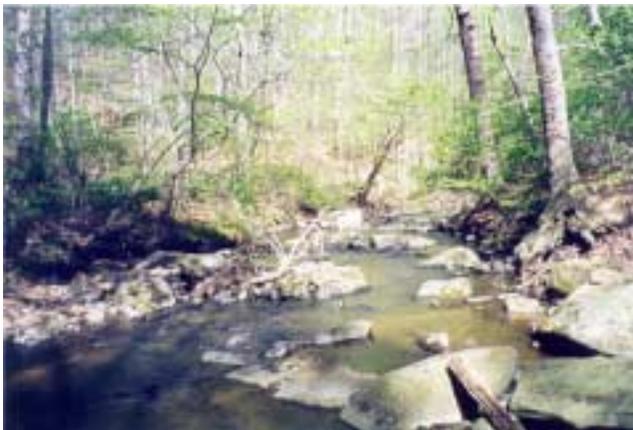
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Watershed Description

The Pohick Creek watershed, with a drainage area of approximately 34 square miles, comprises eight percent of Fairfax County. Approximately 3.2 square miles of this area are outside of County jurisdiction, lying within Fairfax City or Fort Belvoir. Although the watershed is still predominantly forested, levels of impervious cover are generally very high throughout. There are several impoundments within the watershed including the County's largest, Burke Lake (213 acres), a community-owned park area and regional detention facility. Other impoundments include Barton, Braddock, Mercer, Royal, Huntsman and Woodglen Lakes, all of which were constructed in the late 1970's as part of a pilot, watershed-wide water quality management program known as Public Law 566 (PL566). There are also eight smaller regional stormwater facilities in the watershed.



The headwaters of the system consist of two main tributaries. The first of these, Sideburn Branch, had the highest imperviousness value in the entire watershed at 28.3%. The other tributary, Rabbit Branch, begins in the highly developed areas near George Mason University and Fairfax City. The two systems come together to form the Pohick Creek proper.



Some sections of South Run have exceptionally high quality habitat.

The mainstem travels for several miles through residential communities, collecting input from minor tributaries until it passes under the Fairfax County Parkway (Rte. 7100). Two large tributaries then add to its volume. Middle Run drains Huntsman Lake and a moderately developed residential area; South Run, the largest tributary system in the watershed, drains Burke Lake and Lake Mercer, as well as most of the low-density southwestern side of the watershed. Further downstream, below the Rte. 1 crossing, the Lower Potomac Pollution Control Plant discharges its effluent into the mainstem as it flows toward the Fort Belvoir Military Reservation. Toward its mouth, Pohick Creek is tidally influenced and gradually turns into a freshwater wetland before emptying into Pohick Bay.

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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 Rabbit Branch 1 (PCRA01)	Fair	Fair	Fair	Low	24.4	31
2 Rabbit Branch 2 (PCRA02)	Fair	Fair	Poor	High	24.2	28
3 Sideburn Branch (PCSI01)	Very Poor	Very Poor	Poor	High	28.3	40
4 Pohick Creek 1 (PCPC01)	Fair	Fair	Fair	High	25.8	36
5 Pohick Creek 2 (PCPC02)	Poor	Poor	Fair	Low	25.5	36
6 South Run 1 (PCSR03)	Good	Fair	Good	Low	10.5	16
7 South Run 2 (PCSR02)	Fair	Poor	Poor	Moderate	9.0	18
8 Middle Run (PCMI01)	Good	Fair	Good	Moderate	25.5	30
9 Pohick Creek 3 (PCPC03)	Poor	Poor	Poor	Moderate	24.9	34
10 South Run 3 (PCSR01)	Excellent	Fair	Excellent	Moderate	12.1	33
11 Pohick Creek 4 (PCPC04)	Good	Poor	Good	High	20.3	35

Pohick Creek Fish Species List

Common Name	Number of Sites Where Species Occurred	Common Name	Number of Sites Where Species Occurred
	(11 Total Sites)		(11 Total Sites)
Tessellated Darter	11	River Chub	5
Blacknose Dace	11	Margined Madtom	5
White Sucker	10	Creek Chubsucker	4
Swallowtail Shiner	10	Northern Hogsucker	3
Creek Chub	10	Largemouth Bass	3
Satinfin Shiner	8	Brown Bullhead	3
Cutlips Minnow	8	Banded Killifish	2
Common Shiner	8	Pumpkinseed	2
American Eel	8	Rosyside Dace	2
Yellow Bullhead	7	Eastern Mosquitofish	1
Longnose Dace	7	Golden Shiner	1
Redbreast Sunfish	6	Spottail Shiner	1
Green Sunfish	5	Bluntnose Minnow	1
Bluegill	5	Fantail Darter	1

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Watershed Condition Summary

Although heavily developed throughout most of its length, the Pohick Creek watershed holds stream systems ranging in quality from some of the worst to some of the best seen in the County.

With few exceptions, fish richness was relatively high throughout the drainage. Only three out of the 11 monitoring sites ranked below the Moderate level. At two separate sites on the Pohick Creek mainstem, a total of 20 or more distinct taxa were identified (a total of 28 were found throughout the entire watershed). Of special note are the two tributary sites in this watershed with the lowest fish taxa counts. Each of these, one on the upper sections of South Run and one on upper Rabbit Branch, was upstream of major impoundments which had the potential to influence the measure by acting as barriers to fish movement.

Measures of benthic macroinvertebrate community integrity were consistently low throughout the watershed, with no sites ranking above the Fair category. Assemblages at each monitoring site were generally dominated by midges and aquatic worms, organisms that are highly tolerant of disturbance. Representatives of the two respective groups accounted for 90% of all the individuals identified in the watershed.

Ratings of habitat integrity ranged widely throughout the drainage. Many of the tributaries and a major portion of the mainstem are experiencing moderate to severe erosion. Active channel widening and significant sediment deposition were common. Several sites on South Run exhibited good habitat condition, a situation that may have been influenced by the two major impoundments on the system. This is especially true of the lowermost site, immediately below Lake Mercer, which received the highest habitat score seen inside Fairfax County and showed signs of near full recovery. The lowermost reaches on Pohick Creek itself were found to be generally more stable.

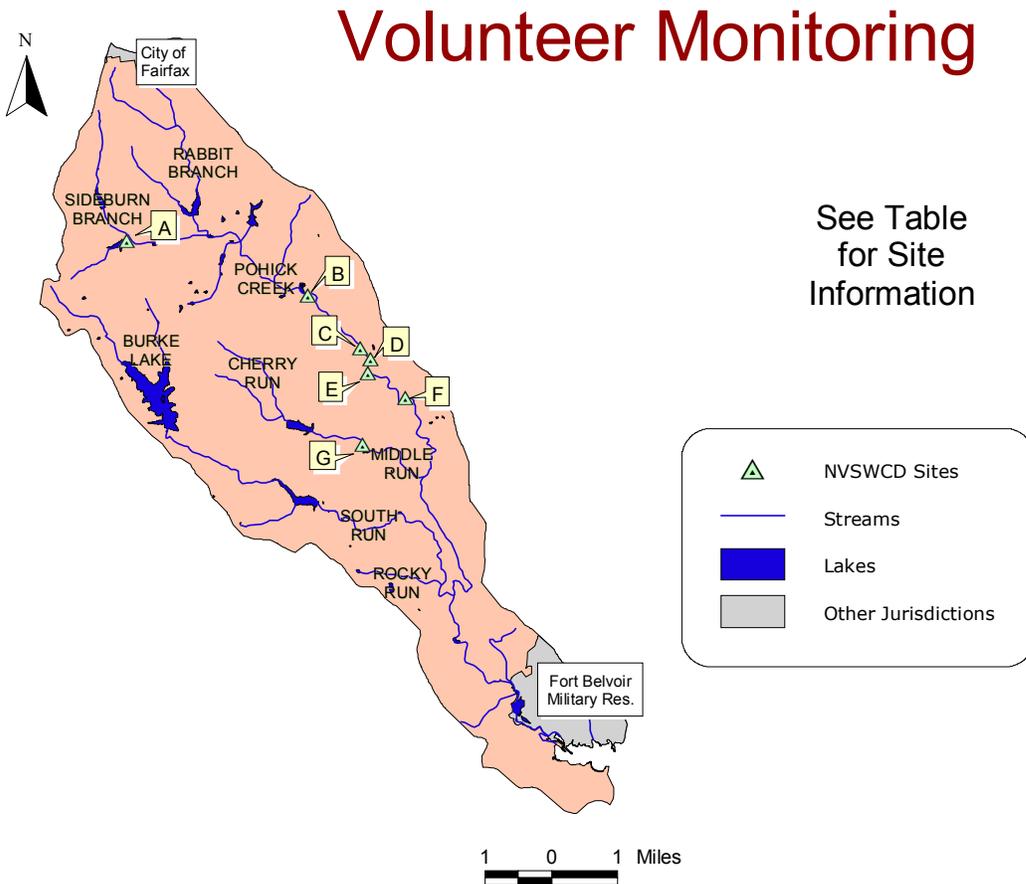
With the exception of the South Run subwatershed (9 to 12% impervious cover), all drainages exhibited levels of imperviousness in excess of 20%. While the sites with lower levels of development intensity were generally the highest in overall composite rating, not all sites fit this trend; several heavily developed areas scored well while other drainages received only modest ratings despite low land use. Middle Run was particularly anomalous in that it scored exceptionally well overall, yet it drained a region with more than 25% impervious cover.

The overall ratings suggest that while the watershed has been degraded throughout most of its length, it maintains relatively healthy aquatic communities in some localized areas, most especially portions of South and Middle Runs. In some other areas, factors independent of land use may be influencing stream quality. This includes the impact of in-line impoundments, which hold the potential to influence both biological and physical characteristics in both the upstream and downstream environments.

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Volunteer Data Summary

There are currently seven active volunteer monitoring stations in the Pohick Creek watershed, all of which are coordinated by the Northern Virginia Soil & Water Conservation District (NVSWCD). One is located immediately downstream of Lake Barton on the tributary of Sideburn Branch that drains the lake and another is on Sangster Branch, near the Fairfax County Parkway. The remaining five are clustered on the mainstem within approximately 2 ½ miles of each other. Given the scale of the watershed, expansion of the volunteer effort would be beneficial.



Data from the volunteer monitoring generally supports that of the SPS study, with five mainstem volunteer sites highlighting benthic communities that were generally of low integrity. With one exception, all of the volunteer sampling events have resulted in “Fair” or “Poor” ratings. Results from the site downstream of Lake Barton suggest a lesser degree of impairment, possibly due to the stabilizing influence of the impoundment itself. Further assessments are warranted in this area.

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Letter Code	Site Code	# times sampled	Last sampled	WQR (SOS only)	Trends noted
A	POH1	11	11/28/99	Fair	Varies from Poor - Good
B	POH5	8	9/8/99	Poor	Usually Poor
C	POH8	2	8/22/00	Poor	Varies from Poor - Fair
D	POH7	1	9/14/99	Excellent	Too few samples
E	POH6	5	8/26/00	Poor	Varies from Poor - Fair
F	POH3	14	8/22/00	Fair	Varies from Poor - Fair
G	POH4	11	12/30/99	Fair	Varies from Poor - Fair



Satinfish Shiner
Cyprinella analostana
Size: to 3 inches
Habitat: runs and pools in warm streams
Feeding Group: insectivore, some algae eaten
Tolerance: intolerant
 The male satinfish shiner develops an iridescent, greenish-purple colors and hard, white tubercles during the breeding season. Members of this species are also known to be very vocal, using their gas bladders to produce sounds.



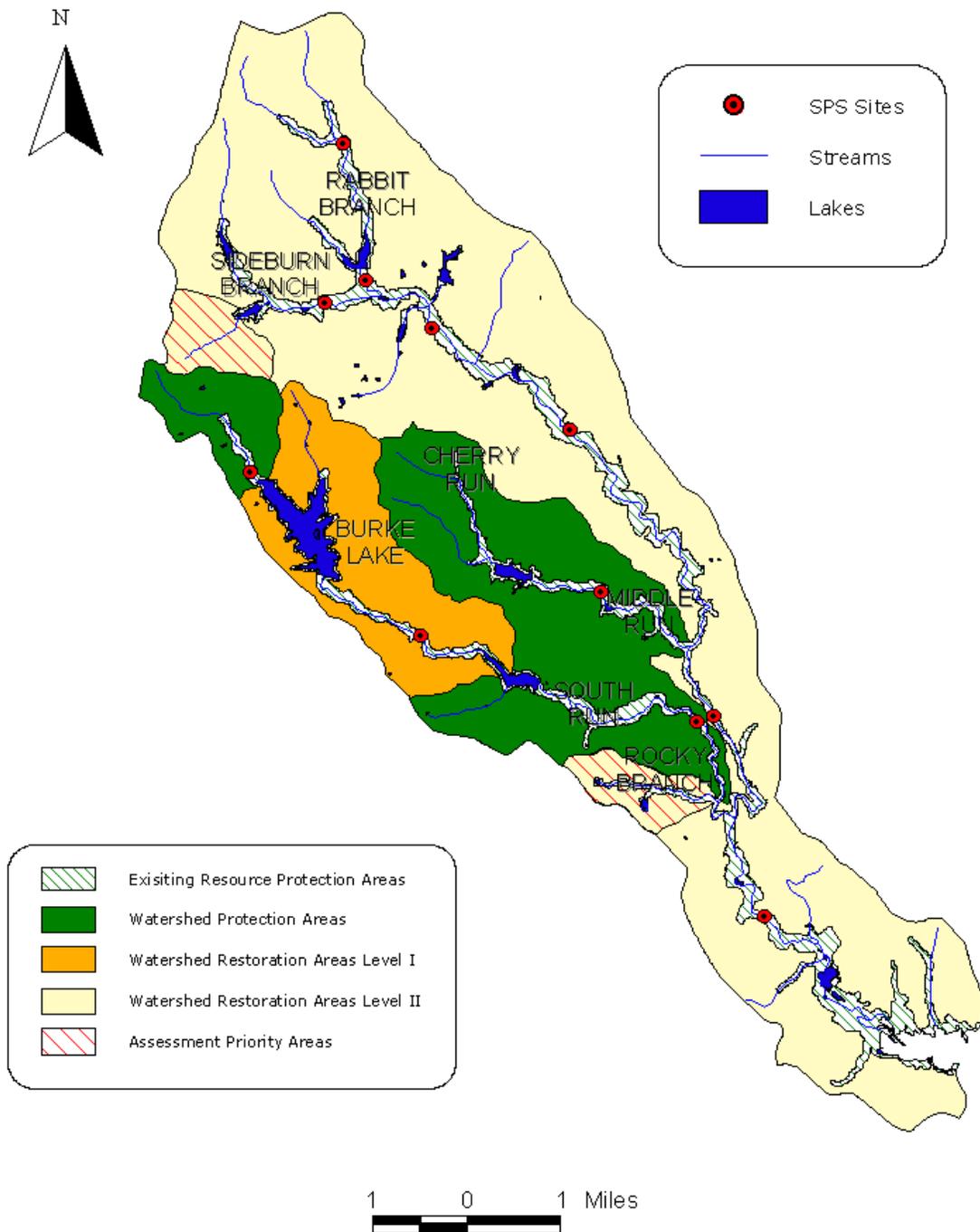
Common Shiner
Luxilus cornutus
Size: to 5 inches
Habitat: clear streams of moderate gradient, often in pools
Feeding Group: insectivore
Tolerance: moderate
 This widespread minnow can be recognized by its tall, crescent-shaped scales. It is primarily a pool dweller but is occasionally found in fast water. Few live beyond 5 years.



Northern Hogsucker
Hypentelium nigricans
Size: to 15 inches
Habitat: riffles and runs of cool, clear rocky streams
Feeding Group: invertivore
Tolerance: intolerant
 The hogsucker is adapted to rapidly flowing waters. It has characteristic, saddle-shaped marks on its back and a concavity on the top of its head, which distinguishes it from other suckers. It feeds by actively disturbing the substrate with its snout and lips.

CHAPTER 3

Management



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Management Category Description

The Pohick watershed represents a range of biological and habitat conditions from high to low levels of degradation. The higher quality ratings at the lowermost site along Pohick Creek mainstem elevate the priority of the watershed as a whole. To preserve the quality of this site, each of the tributaries should be examined closely for restoration potential. The former D.C Department of Corrections facility in Lorton is currently being developed, and any future activities in the area should be monitored closely to assess their potential influence on stream quality.

Middle Run and South Run represent the highest scoring areas in the watershed and are classified as Watershed Protection or Watershed Restoration Level I Areas. Every effort should be made to protect the high habitat quality in these tributaries, and further research is needed to determine causes of benthic impairment, especially in the stream reaches between the two major impoundments.

Efforts in the remainder of the watershed, all of which is currently classified as Watershed Restoration Level II Areas, should focus on mitigating erosion problems that are generating the excessive sediment deposition that is so widespread within the drainage. Inter-jurisdictional cooperation between the County, Fairfax City and Fort Belvoir will be needed.



Dobsonflies and Fishflies

Family *Corydalidae*

Habitat Classification: clingers

Feeding Group: predators

Tolerance: intolerant to moderate

The dobsonfly (Hellgrammite) has a very low tolerance to disturbance. They require very clean, high-oxygenated water to live. The Corydalids have been nicknamed "toe-biters" for their large jaws.

