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The Pohick Creek Watershed Management Plan is a part of Fairfax County's comprehensive stormwater management program. The Project Team consists of the following County staff and consultants:

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Executive Summary

The *Pohick Creek Watershed Management Plan* illustrates an approach for improving the water resources, natural habitat and overall health of the watershed. The plan was initiated by Fairfax County with participation from local residents and is part of the comprehensive, countywide watershed planning effort. The previous watershed plans were developed in the mid-1970s and intended to span a 25-year period. Since then the practice of stormwater/watershed management has rapidly evolved to include newer technologies and innovative techniques. Also within this time period, there have been many regulatory changes governing water quality at the local, state and federal levels. This plan is intended as a management tool to be used over the next 25 years and fulfills Fairfax County's commitment to the multi-jurisdictional effort of improving water quality in the Chesapeake Bay.

The *Pohick Creek Watershed Management Plan* was developed to meet the following countywide watershed planning goals established by the County through intensive stakeholder and resident input:

1. Improve and maintain watershed functions in Fairfax County, including water quality, habitat and hydrology.
2. Protect human health, safety and property by reducing stormwater impacts.
3. Involve stakeholders in the protection, maintenance and restoration of County watersheds.

Background

The Pohick Creek watershed makes up more than 9 percent of Fairfax County and covers more than 36 square miles, which makes it one of the largest watersheds in the County. Approximately 3.2 square miles lie outside Fairfax County, either in the city of Fairfax or Fort Belvoir. The watershed is located in the central and southern part of the County. It is oriented northwest to southeast and is a tributary to the Potomac River. The watershed falls 460 feet in elevation from the highest point near the city of Fairfax in the northeast section to sea level at the southeast point (Flood Plain report, 1977).

According to the 2001 National Land Cover dataset, less than 40% of the Pohick Creek watershed is forested, with approximately 25 percent of the watershed serving low-density residential uses. Fairfax County's population is expected to grow more than 37 percent over the next 20 years. The Pohick Creek watershed is considered built-out, and future large-scale development is not anticipated outside of the Laurel Hill redevelopment (formerly District of Columbia Department of Corrections Facility, located in Lorton). A separate stormwater management plan for the Laurel Hill property is concurrently being developed by the County. The *Pohick Creek Watershed Management Plan* is a tool used to respond to the effects of past rapid growth and to proactively respond to the future growth within the watershed.

Watershed Management Areas

Pohick Creek watershed is divided into 10 smaller watershed management areas (WMAs). A WMA is a small area, approximately 4 square miles, which drains to a specific stream or tributary. Each WMA is then divided into smaller subwatersheds, typically 100 to 300 acres. The purpose of these areas is to identify specific projects or opportunities to enhance the overall stream conditions, as well as to serve the basic units for watershed modeling and other evaluations. Pohick Creek's 10 watershed management areas are Rabbit Branch, Sideburn Branch, Upper South Run, Middle South Run, Lower South Run, Middle Run, Upper, Middle, Lower, and Potomac.

Watershed Planning Process

In general the watershed management planning process consists of the following steps:

1. Review and synthesize previous studies and compile data.
2. Involve public to gain input, provide education and build community support.
3. Evaluate current watershed conditions and project stormwater runoff from present and ultimate development conditions.
4. Develop candidate non-structural and structural watershed improvement projects.
5. Develop preliminary cost estimates, cost/benefit analysis and prioritization of capital projects.
6. Gain adoption of the final watershed management plan by the Board of Supervisors.

Several indicators were identified to detect changes in the watershed. The main categories of indicators are watershed impact indicators, watershed source indicators and programmatic indicators. These indicators were first used to assess the existing conditions and the future conditions without plan implementation in the watershed. Next they were used to identify management needs and problem areas during subwatershed ranking. Finally, the indicators were used to prioritize projects, along with cost and feasibility.

The subwatersheds were ranked by the following procedure:

1. Using the watershed impact overall composite scores to identify subwatersheds that were potential problem areas under existing and future conditions.
2. Applying individual source indicator scores to identify potential sources of impacts in downstream problem areas.
3. Using the programmatic indicator data inventory to identify subwatersheds where management is most needed.
4. Consulting available field data throughout the previous steps to confirm the results.

Summary of Existing Watershed Conditions

Overall the County stream habitats were rated by the 2001 SPS as "fair." Pohick Creek watershed had an average length-weighted total habitat score of 95 out of 200, which is slightly below the county average of 104. Within the Pohick Creek watershed, 0 percent of stream length was categorized as "excellent," 14.63 percent as "good," 53.88 percent as "fair," 28.08 percent as "poor," and 3.41 percent as "very poor." A complete summary of watershed conditions may be found in Appendix A

The County's Chesapeake Bay Preservation Ordinance establishes Resource Protection Areas (RPA) to improve the quality of streams and water draining to local waterways and, ultimately, the Chesapeake Bay. These RPAs include buffers that protect sensitive areas adjacent to or within proximity to streams, rivers and other waterways. More than 75 percent of the streams within Pohick Creek lie within an RPA. Many of the smaller headwater streams have had natural channels replaced by pipes as the watershed developed over the last several decades.

There are six PL-566 lakes in the watershed, constructed for flood control; these are Woodglen, Royal, Braddock, Barton, Huntsman and Mercer Lakes. To meet the standards of the Clean Water Act, the County and Virginia Department of Environmental Quality regularly monitor water quality at various locations throughout the watershed. Results of this monitoring show that streams in the upper watershed can generally be classified as “fair” while those areas lower in the watershed, downstream of the lakes, are impaired by one or more measures of water quality. This degradation of the water quality is due to compounding of the pollutants as the water flows downstream. These lakes receive large amounts of sediment from upstream sources. Also, due to the silted nature of the lakes, their conditions may negatively impact water quality (e.g. E. coli from water fowl). For these reasons, these facilities were identified as areas for further studies to determine possible management opportunities to improve water quality. These studies would investigate the benefits of dredging these lakes, installing sediment forebays, and other practices.

The 2005 Fairfax County Stream Physical Assessment (2005 SPA) found that nearly 75 percent of the stream channels in Pohick Creek watershed show signs of heavy erosion. This erosion has caused, steep banks, bank failures, channel widening and deepening. The channel evolution model (CEM) (Schumm et al. 1984) classifies streams with these characteristics as Stage III for stream morphology. Stage III streams are the most unstable and typically generate the most issues.

Project Selection

Several types of both structural and non-structural projects were selected for this watershed restoration plan. The structural projects include but may not be limited to stream restorations, pipe daylighting, stormwater pond retrofits, outfall improvements, swale restorations, bioswales, bioretention areas, BMP inlet inserts and pervious pavement. The non-structural projects include but may not be limited to rain barrels/cisterns, street sweeping, obstruction/dumpsite removal and buffer restorations.

Projects were proposed throughout the watershed that would help meet the County’s goals and objectives. Projects to improve watershed functions were proposed in subwatersheds with the worst indicator scores. Additional projects were proposed throughout the watershed that would increase stewardship and maintain important watershed functions. Projects were selected by comparing the lowest scoring impact indicators to the types of proposed projects to ensure projects would provide the most benefit within each subwatershed. The proposed projects were then presented at the watershed advisory group (WAG) meetings for community input. This input was taken into consideration while finalizing project selection and during the score adjustment procedure.

All unconstructed regional ponds from the County’s current Regional Pond Program were evaluated to determine whether alternative projects could be implemented instead of constructing a new pond. Eight regional ponds were proposed for the portion of Pohick Creek that drains to Burke Lake. Of the eight projects, five have alternative projects proposed and two have been constructed. One is an active County project that is partially funded and, therefore, no alternative projects have been proposed.

Following preliminary project selection, field investigations were performed for the candidate project sites. The purpose of the field investigations was to document site conditions, check for feasibility and take photos. The information was then compiled in a database. The information was used for the prioritization and to support ranking modifications.

Cost estimates were generated for all project types except street sweeping, rain barrels and cisterns, because their costs can be widely variable. Smaller projects were grouped together into “suites,” based on cost and location, to allow their costs and benefits to be compared more evenly to other projects.

Project Prioritization

The *Pohick Creek Watershed Management Plan* implementation is broken into two priority phases. The first phase has a 0 – 10-year timeframe and includes the top-ranked 90 structural projects. The second phase has an 11 – 25-year timeframe and includes all other viable structural projects (64 total). The structural projects were prioritized based on five factors: impact indicators, source indicators, priority subwatersheds, sequencing and implementability. These factors were used to create prioritization scores for each project so that they could then be ranked. Once the projects were quantitatively ranked, they were qualitatively reviewed. The qualitative review involved going through every project and considering factors that aren’t quantitatively considered, such as comments provided by the WAG, field observations and the ability for the project to meet the County’s goals. A best professional judgment adjustment is added to the initial score to determine the final score. The non-structural projects were similarly compared when possible.

A simplified cost-benefit analysis was performed on the structural projects in the 0 – 10-year implementation plan based on a project’s overall cost compared to its prioritization score (i.e., benefits). As a result the ranking changed and some projects dropped to the 11 – 25-year implementation plan. A best professional judgment adjustment based on the cost-benefit analysis was used to amend the rankings where necessary. This determined the final overall ranking of structural projects.

The 36 non-structural projects were ranked separately since they will be implemented concurrently with the capital improvement of the structural projects. The non-structural projects were ranked using a different more qualitative method than the structural project ranking scheme. A detailed description of the project selection and prioritization process can be found in Appendix B.

Project Fact Sheets

For all structural projects that fall into the 0 - 10-year plan, a project fact sheet was created to provide basic information about location, existing conditions and proposed improvements. The project fact sheets also discuss the benefits and have itemized, planning-level cost estimates. They are illustrated with site photos as well as location maps. Projects that were grouped together, or put into a “suite,” are combined on one fact sheet.

Public Involvement

A WAG was formed to help provide feedback from residents of the watershed. The group was assembled from a variety of organizations, including members of homeowners associations, affiliates of Fort Belvoir, George Mason University, and other public and private organizations. This group acted as proxy for their respective organizations and helped to disseminate information from the process. The group met with County staff and their consultants five times throughout the different stages of the process to provide feedback, which was an essential part of the planning and prioritization process.

Table ES-1-1 provides a list of all projects proposed within Pohick Creek watershed. This includes the 0 – 10- (10-year) and 11 – 25-year (25-year) structural project groups as well as the non-structural projects.

Plan Costs and Benefits

The total cost of the 10-year plan (includes the 90 structural projects only) is $48 million. If implemented, the benefits to the county are wide-ranging. The yearly total suspended sediment load will be reduced by 1,200 tons. The yearly load of nitrogen will be reduced by 3,000 pounds, and the yearly load of phosphorus will be reduced by 1,000 pounds. This represents a 15.2% reduction in suspended sediment, a 2.4% reduction in nitrogen, and a 4.6% reduction in phosphorus. If the 64 structural projects in the 11-25 year plan are implemented as well, at a cost of $48 million, the suspended sediment load will be reduced by an additional 440 tons. The yearly load of nitrogen will be reduced by an additional 1,000 pounds, and the yearly load of phosphorus will be reduced by an additional 300 pounds. Implementation of the total group of 155 structural projects at a cost of $96 million will yield reductions of 1,700 tons of suspended sediment, 4,000 pounds of nitrogen, and 1,300 pounds of phosphorus yearly. This represents a 20.6% reduction in sediment, a 3.3% reduction in nitrogen, and a 6.2% reduction in phosphorus. Additionally, the 41 non-structural projects will have water quality benefits as well, although the costs and benefits of these projects are less easily quantified. These benefits will help attain the goals set by the County to improve water quality in the Pohick Creek watershed.

The following provisions address the funding and implementation of projects and programs in Fairfax County watershed plans. These provisions as recommended by the Board were developed for the Popes Head Creek Watershed Management Plan in February 2006 and have been applied to the Pohick Creek Watershed Management Plan:

i. Projects and programs (both structural and non-structural) will first undergo appropriate review by County staff and the Board (please see iii below) prior to implementation. Board adoption of the Watershed Management Plan will not set into motion automatic implementation of projects, programs or initiatives that have not first been subject to sufficient scrutiny to ensure that the projects that are funded give the County the greatest environmental benefit for the cost.

ii. Road projects not related to protection of streambeds or banks or water quality will not be funded out of the stormwater and watershed budget.

iii. The Watershed Management Plan provides a conceptual master-list of structural capital projects and a list of potential non-structural projects for the watershed. Staff will, on a fiscal year basis, prepare and submit to the Board a detailed work plan to include a description of proposed projects and an explanation of their ranking, based on specific criteria. Criteria used to assemble this list will include, but are not limited to, cost-effectiveness as compared to alternative projects, a clear public benefit, a need to protect public or private lands from erosion or flooding, a need to meet a specific watershed or water quality goal, and ability to be implemented within the same fiscal year that funding is provided. Staff also intends to track the progress of implementation and report back to the Board periodically.

iv. Each project on the annual list of structural projects will be evaluated using basic value-engineering cost effectiveness principles before implementation and the consideration of alternative structural and non-structural means for accomplishing the purposes of the project will be considered before implementation. This process will ensure the County's commitment to being a fiscally responsible public entity.

v. Obstruction removal projects on private lands will be evaluated on a case-by-case basis for referral to the Zoning Administrator and/or County Attorney for action as public nuisances; and otherwise to determine appropriate cost-sharing by any parties responsible for the obstructions.

vi. Stream restoration projects on private lands will be evaluated to determine means for cost-sharing by land owners directly responsible for degradation due to their land uses.

Table ES-1-1: Project List - Executive Summary

Priority Structural Projects (Ten Year Implementation Plan)[1]				
Project #	**Project Type**	**WMA**	**Location**	**Cost**
PC9003	Regional Pond Alternative/Stormwater Pond Retrofit	Pohick-Upper South Run	Next to 6424 Lake Meadow Dr.	$ 320,000
PC9004	Regional Pond Alternative/Stormwater Pond Retrofit Suite	Pohick-Upper South Run	10125 Lakehaven Ct.	$ 1,330,000
PC9007	Regional Pond Alternative/Stormwater Pond Retrofit	Pohick-Upper South Run	Behind 6416 Lake Meadow Dr.	$ 210,000
PC9008	Regional Pond Alternative/Stormwater Pond Retrofit	Pohick-Upper South Run	Next to 10995 Rice Field Pl.	$ 610,000
PC9100	Stormwater Pond Retrofit	Pohick-Lower	9515 Richmond Hwy., Lorton Athletic Fields	$ 300,000
PC9101	Stormwater Pond Retrofit	Pohick-Lower	9409 Lorton Market St., Lorton Marketplace Shopping Center	$ 270,000
PC9102	Stormwater Pond Retrofit	Pohick-Lower	9399 Richmond Hwy., Norman M. Cole WWTP	$ 180,000
PC9103	Stormwater Pond Retrofit	Pohick-Lower	7665 Lorton Rd., Gunston Shopping Plaza	$ 120,000
PC9104	Stormwater Pond Retrofit	Pohick-Lower	7665 Lorton Rd., Gunston Shopping Plaza	$ 120,000
PC9105	Stormwater Pond Retrofit	Pohick-Lower	Behind 7747 Milford Haven Ct.	$ 310,000
PC9106	Stormwater Pond Retrofit	Pohick-Lower South Run	8501 Silverbrook Rd., South County Secondary School	$ 450,000
PC9107	Stormwater Pond Retrofit	Pohick-Middle	8111 Northumberland Rd., Saratoga Elementary School	$ 180,000
PC9109	Stormwater Pond Retrofit	Pohick-Middle Run	8750 Pohick Rd., St. Raymond's - Penafort Catholic Church	$ 220,000
PC9110	Stormwater Pond Retrofit	Pohick-Middle South Run	9908 South Park Ci.	$ 520,000
PC9114	Stormwater Pond Retrofit	Pohick-Middle Run	7420 Reservation Dr., Sangster Elementary School	$ 120,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]				
Project #	**Project Type**	**WMA**	**Location**	**Cost**
PC9118	Stormwater Pond Retrofit	Pohick-Middle Run	Behind 9500 Shipwright Dr.	$ 390,000
PC9120	Stormwater Pond Retrofit	Pohick-Middle Run	Behind 9505 Southern Cross La.	$ 640,000
PC9121	Stormwater Pond Retrofit	Pohick-Upper South Run	9900 Old Keene Mill Rd. , Burke Community Church	$ 170,000
PC9122	Stormwater Pond Retrofit	Pohick-Middle	Between Field Master Dr. & Huntsman Blvd.	$ 390,000
PC9124	Stormwater Pond Retrofit	Pohick-Upper South Run	6401 Missionary La., Fairfax Baptist Temple Academy	$ 600,000
PC9126	Stormwater Pond Retrofit	Pohick-Upper	16130 Shiplett Blvd., White Oaks Elementary School	$ 170,000
PC9127	Stormwater Pond Retrofit	Pohick-Sideburn Branch	Next to 6000 Burke Centre Pkwy., near Terre Centre Elementary School	$ 550,000
PC9128	Stormwater Pond Retrofit	Pohick-Sideburn Branch	6000 Burke Commons Rd., Wal-Mart Supercenter	$ 240,000
PC9129	Stormwater Pond Retrofit	Pohick-Sideburn Branch	6000 Freds Oak Rd., Fairfax Co. Wastewater Collection	$ 280,000
PC9130	Stormwater Pond Retrofit	Pohick-Sideburn Branch	10301 New Guinea Rd., Target shopping center	$ 230,000
PC9131	Stormwater Pond Retrofit	Pohick-Sideburn Branch	Behind 10268 Colony Park Dr.	$ 210,000
PC9132	Stormwater Pond Retrofit	Pohick-Upper	Behind 9713 Lakepointe Dr.	$ 470,000
PC9133	Stormwater Pond Retrofit	Pohick-Upper	9200 Burke Lake Rd., Lake Braddock Secondary School	$ 120,000
PC9135	Stormwater Pond Retrofit	Pohick-Rabbit Branch	Behind 5220 Nottinghill La., Pond along Roberts Rd.	$ 540,000
PC9136	Stormwater Pond Retrofit	Pohick-Upper	Behind 5120 Dahlgreen Pl., Playground	$ 190,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]				
Project #	**Project Type**	**WMA**	**Location**	**Cost**
PC9138	Stormwater Pond Retrofit	Pohick-Rabbit Branch	Behind 10305 Nantucket Ct.	$ 140,000
PC9139	Stormwater Pond Retrofit	Pohick-Sideburn Branch	10697 Braddock Rd., University Mall Shopping Center	$ 220,000
PC9140	Stormwater Pond Retrofit	Pohick-Rabbit Branch	Intersection of Mason Pond Dr. and Roanoke River La.	$ 260,000
PC9142	New Stormwater Pond	Pohick-Rabbit Branch	Northwest of intersection of Roberts Road and Braddock Road	$ 1,470,000
PC9201	Stream Restoration	Pohick-Middle	Behind 7756 Matisse Way	$ 1,480,000
PC9202	Stream Restoration Suite	Pohick-Lower South Run	Behind 8181 Willowdale Ct., South Run Stream Valley Park	$ 1,120,000
PC9203	Stream Restoration	Pohick-Middle	8100 Lake Pleasant Dr.	$ 680,000
PC9204	Stream Restoration	Pohick-Lower South Run	Next to 8661 Rising Creek Ct.	$ 180,000
PC9205	Stream Restoration	Pohick-Middle	Behind 8106 Kings Point Ct.	$ 160,000
PC9206	Stream Restoration	Pohick-Middle	Next to 8021 Lake Pleasant Dr.	$ 140,000
PC9210	Stream Restoration	Pohick-Middle South Run	Behind 7801 Preakness La.	$ 1,380,000
PC9211	Stream Restoration Suite	Pohick-Middle	Near 8000 Middlewood Pl.	$ 310,000
PC9214	Stream Restoration	Pohick-Middle Run	Behind 7309 Gist Ct.	$ 700,000
PC9222	Stream Restoration	Pohick-Middle	Behind 8817 Bridle Wood Dr.	$ 1,260,000
PC9223	Stream Restoration	Pohick-Upper South Run	Between Waterside Dr. & Burke Woods Dr.	$ 530,000
PC9225	Stream Restoration	Pohick-Middle	Next to 6297 Kerrydale Dr.	$ 940,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]				
Project #	**Project Type**	**WMA**	**Location**	**Cost**
PC9226	Stream Restoration	Pohick-Middle	Behind 6321 Hillside Rd.	$ 1,010,000
PC9227	Stream Restoration	Pohick-Upper	Behind 9500 Orion Ct.	$ 90,000
PC9228	Stream Restoration Suite	Pohick-Upper	Behind 6300 Glenbard Rd.	$ 1,560,000
PC9229	Stream Restoration Suite	Pohick-Middle	Behind 8901 Winding Hollow Way	$ 1,680,000
PC9230	Stream Restoration	Pohick-Upper	Behind 9820 Rand Dr.	$ 610,000
PC9234	Stream Restoration	Pohick-Upper	Behind 9840 Natick Rd.	$ 1,270,000
PC9235	Stream Restoration	Pohick-Upper	Behind 5913 Veranda Dr.	$ 130,000
PC9236	Stream Restoration	Pohick-Sideburn Branch	Across the street from 5901 Fred's Oak Rd.	$ 190,000
PC9237	Stream Restoration	Pohick-Sideburn Branch	Behind 10550 Reeds Landing Ct.	$ 580,000
PC9239	Stream Restoration	Pohick-Sideburn Branch	Next to 5914 Cove Landing Rd.	$ 90,000
PC9240	Stream Restoration	Pohick-Sideburn Branch	Near 5901 Waters Edge Landing La.	$ 860,000
PC9241	Stream Restoration	Pohick-Sideburn Branch	Behind 10734 Burr Oak Way	$ 920,000
PC9242	Stream Restoration	Pohick-Upper	Behind 5753 Burke Towne Ct.	$ 1,160,000
PC9245	Stream Restoration	Pohick-Upper	5621 Herbert’s Crossing Dr.	$ 860,000
PC9246	Stream Restoration	Pohick-Sideburn Branch	Behind 6001 Burke Commons Rd.	$ 750,000
PC9247	Stream Restoration Suite	Pohick-Sideburn Branch	10400 Premier Ct.	$ 540,000
PC9249	Stream Restoration	Pohick-Upper	Behind 5565 Queen Victoria Ct.	$ 1,990,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]				
Project #	**Project Type**	**WMA**	**Location**	**Cost**
PC9250	Stream Restoration	Pohick-Sideburn Branch	Behind 10602 Goldeneye La.	$ 1,000,000
PC9251	Stream Restoration	Pohick-Upper	Behind 9313 Winbourne Rd.	$ 520,000
PC9252	Stream Restoration	Pohick-Upper	Next to 9535 Wallingford Dr.	$ 380,000
PC9254	Stream Restoration	Pohick-Sideburn Branch	Behind 10757 John Turley Pl.	$ 1,050,000
PC9256	Stream Restoration	Pohick-Rabbit Branch	Behind 5351 Brandon Ridge Way	$ 1,100,000
PC9257	Stream Restoration	Pohick-Upper	Next to 9404 Fairleigh Ct.	$ 340,000
PC9258	Stream Restoration	Pohick-Upper	Next to 5101 Dahlgreen Pl.	$ 110,000
PC9259	Stream Restoration	Pohick-Rabbit Branch	Behind 5220 Nottinghill La.	$ 800,000
PC9260	Stream Restoration	Pohick-Rabbit Branch	Near 9800 Commonwealth Blvd.	$ 1,100,000
PC9261	Stream Restoration	Pohick-Sideburn Branch	Behind 5282 Beech Haven Ct.	$ 720,000
PC9262	Stream Restoration	Pohick-Sideburn Branch	Behind 5214 Grinnell St.	$ 1,520,000
PC9263	Stream Restoration	Pohick-Rabbit Branch	Behind 5802 Dequincey Dr.	$ 800,000
PC9269	Stream Restoration	Pohick-Rabbit Branch	Next to 10159 Red Spruce Rd.	$ 680,000
PC9515	BMP/LID Suite	Pohick-Middle Run	6820 Sydenstricker Rd., Orange Hunt Elementary School	$ 260,000
PC9517	BMP/LID Suite	Pohick-Middle Run	9732 Ironmaster Dr., Cherry Run Elementary School	$ 160,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]				
Project #	**Project Type**	**WMA**	**Location**	**Cost**
PC9525	BMP/LID	Pohick-Upper	9230 Old Keene Mill Rd., Rolling Valley Mall	$ 180,000
PC9531	BMP/LID Suite	Pohick-Sideburn Branch	6000 Burke Centre Pkwy., Terra Centre Elementary School	$ 120,000
PC9534	BMP/LID	Pohick-Sideburn Branch	6011 Burke Centre Pkwy., Giant Supermarket	$ 140,000
PC9535	BMP/LID	Pohick-Sideburn Branch	6000 Freds Oak Rd., FFC Wastewater Collection Division Office Bldg.	$ 130,000
PC9539	BMP/LID	Pohick-Sideburn Branch	5727 Burke Center Pkwy., Burke Center Shopping Center	$ 120,000
PC9544	BMP/LID Suite	Pohick-Upper	9450 Lake Braddock Dr., Lake Braddock Park	$ 120,000
PC9548	BMP/LID	Pohick-Rabbit Branch	9525 Braddock Rd., Twinbrooke Shopping Center	$ 140,000
PC9701	Outfall Improvement	Pohick-Lower	7747 Milford Haven Ct.	$ 80,000
PC9702	Outfall Improvement	Pohick-Sideburn Branch	5815 Ox Rd., Fairview Elementary	$ 80,000
PC9703	Outfall Improvement	Pohick-Sideburn Branch	5637 Guinea Rd.	$ 110,000
PC9704	Outfall Improvement	Pohick-Upper	Next to 9199 Lake Braddock Dr.	$ 540,000
PC9705	Outfall Improvement	Pohick-Sideburn Branch	Next to pool at 5601 Snowy Owl Dr.	$ 80,000
			Total Cost	**$48,090,000**

Long-Term Structural Projects (25 Year Implementation Plan)[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9001	Regional Pond Alternative/Stormwater Pond Retrofit Suite	Pohick-Upper South Run	Across from 10503 Pohick Ct., Church of Latter Day Saints
PC9108	Stormwater Pond Retrofit	Pohick-Middle South Run	Behind 7278 Lakeland Valley Dr.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9111	Stormwater Pond Retrofit	Pohick-Middle	8110 Deer Creek Pl.
PC9112	Stormwater Pond Retrofit	Pohick-Middle Run	Behind 8874 Eagle Rock La.
PC9113	Stormwater Pond Retrofit	Pohick-Middle	Behind 7439 Quincy Hall Ct.
PC9115	Stormwater Pond Retrofit	Pohick-Middle	Behind 8032 Bethelen Woods La.
PC9116	Stormwater Pond Retrofit	Pohick-Middle	Behind 73919 Walnut Knoll Dr.
PC9117	Stormwater Pond Retrofit	Pohick-Middle	Across from 7320 Gambrill Rd., Commuter lot
PC9119	Stormwater Pond Retrofit	Pohick-Middle	Behind 7106 Hadlow Ct.
PC9123	Stormwater Pond Retrofit	Pohick-Middle Run	6450 Sydenstricker Rd., near Pohick Regional Library
PC9125	Stormwater Pond Retrofit	Pohick-Upper	Behind 6301 Wilmington Dr.
PC9134	Stormwater Pond Retrofit	Pohick-Sideburn Branch	5222 Sideburn Rd., St. Mary's Church
PC9137	Stormwater Pond Retrofit	Pohick-Rabbit Branch	Behind 9463 Wenzel St.
PC9141	New Stormwater Pond	Pohick-Upper	Behind 5550 Queen Victoria Ct.
PC9200	Stream Restoration	Pohick-Middle	Behind 7800 Creekside View La.
PC9207	Stream Restoration	Pohick-Middle South Run	Along access road next to 7719 Wagon Trail La.
PC9208	Stream Restoration	Pohick-Middle South Run	Next to 9245 Northedge Dr.
PC9209	Stream Restoration	Pohick-Middle	Behind 8154 Ships Curve La.
PC9212	Stream Restoration	Pohick-Middle South Run	Behind 4312 South View Ct.
PC9213	Stream Restoration	Pohick-Middle	Behind 7500 Ridgebrook Dr.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9215	Stream Restoration	Pohick-Middle Run	Behind 9111 Beachway La.
PC9216	Stream Restoration	Pohick-Middle	Behind 8098 Whitlers Creek Ct.
PC9217	Stream Restoration	Pohick-Middle	Behind 8084 Whitlers Creek Rd.
PC9218	Stream Restoration	Pohick-Middle	Behind 7211 Olde Lantern Way
PC9219	Stream Restoration	Pohick-Upper South Run	Northwest of Old Keene Mill Rd. & Fairfax Co. Pkwy.
PC9220	Stream Restoration	Pohick-Upper South Run	Behind 6803 Jeremiah Ct.
PC9221	Stream Restoration	Pohick-Upper South Run	Along Fairfax County Pkwy. behind Deckhand Dr.
PC9224	Stream Restoration	Pohick-Upper South Run	East of Ox Croft Ct.
PC9232	Stream Restoration	Pohick-Upper	Behind 9623 Woodedge Dr.
PC9233	Stream Restoration	Pohick-Upper	Near intersection of Burke Rd. and Heritage Square Rd.
PC9243	Stream Restoration	Pohick-Sideburn Branch	Behind 5832 First Landing Way
PC9248	Stream Restoration	Pohick-Rabbit Branch	Along RR tracks near 5610 Sandy Lewis Dr.
PC9255	Stream Restoration	Pohick-Upper	Behind 5208 Olley La.
PC9265	Stream Restoration	Pohick-Rabbit Branch	Behind 10156 Bessmer La.
PC9266	Stream Restoration	Pohick-Rabbit Branch	Behind 9733 Abington Ct.
PC9267	Stream Restoration	Pohick-Rabbit Branch	9911 Braddock Rd., near Braddock Rd. Hospital

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9268	Stream Restoration	Pohick-Rabbit Branch	Behind 4613 Tapestry Dr.
PC9500	BMP/LID	Pohick-Lower	9515 Richmond Hwy., Lorton Athletic Fields
PC9501	BMP/LID	Pohick-Lower	9399 Richmond Hwy., Norman M. Cole WWTP
PC9502	BMP/LID	Pohick-Lower	8101 Lorton Rd., Lorton Elementary School
PC9503	BMP/LID	Pohick-Lower	9290 Lewis Chapel Rd., Lorton Station Elementary School
PC9505	BMP/LID	Pohick-Lower	9290 Lewis Chapel Rd., Lorton Station Elementary School
PC9508	BMP/LID Suite	Pohick-Lower South Run	8001 Newington Forest Ave., Newington Forest Elementary School
PC9510	BMP/LID Suite	Pohick-Middle South Run	7549 Reservation Dr., South Run Recreation Center
PC9511	BMP/LID	Pohick-Middle Run	7500 Huntsman Blvd., Huntsman Square Shopping Center
PC9519	BMP/LID Suite	Pohick-Middle	6703 Barnack Dr., Rolling Valley Elementary School
PC9521	BMP/LID	Pohick-Middle	6703 Barnack Dr., Rolling Valley Elementary School
PC9522	BMP/LID	Pohick-Middle	8600 Bridle Wood Dr., Orange Hunt Pool
PC9524	BMP/LID	Pohick-Middle Run	6938 Nativity La., School of the Nativity (Church)
PC9526	BMP/LID	Pohick-Upper South Run	6401 Missionary La., Fairfax Baptist Temple Academy
PC9528	BMP/LID	Pohick-Upper	9654 Burke Lake Rd., Burke Center School
PC9529	BMP/LID	Pohick-Middle	6100 Rolling Rd., West Springfield High School
PC9532	BMP/LID	Pohick-Middle	6100 Rolling Rd., West Springfield High School
PC9536	BMP/LID Suite	Pohick-Sideburn Branch	6001 Cove Landing Rd., Landings Community Center

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9537	BMP/LID	Pohick-Upper	9016 Burke Rd., VA Railway Exp. - Rolling Rd. Station
PC9540	BMP/LID Suite	Pohick-Sideburn Branch	5240 Sideburn Rd., Bonnie Brae Elementary School
PC9542	BMP/LID Suite	Pohick-Upper	9200 Burke Lake Rd., Lake Braddock Secondary School
PC9543	BMP/LID	Pohick-Upper	9333 Lake Braddock Rd., Lakeside Pool - Lake Braddock C.A.
PC9546	BMP/LID Suite	Pohick-Rabbit Branch	10110 Commonwealth Blvd., Laurel Ridge Elementary School
PC9547	BMP/LID	Pohick-Rabbit Branch	5035 Sideburn Rd., Robinson Secondary School
PC9549	BMP/LID	Pohick-Rabbit Branch	5035 Sideburn Rd., Robinson Secondary School
PC9550	BMP/LID Suite	Pohick-Sideburn Branch	5004 Sideburn Rd., Oak View Elementary School
PC9553	BMP/LID	Pohick-Rabbit Branch	Intersection of Patriot Ci. and Sandy Creek Way, George Mason University Parking Garage
PC9554	BMP/LID	Pohick-Rabbit Branch	Between Mason Pond Dr. and George Mason Blvd. (Parking Garage)
PC9700	Outfall Improvement	Pohick-Lower	9298 Lewis Chapel Rd., Lorton Station Elementary School

Non-Structural Projects[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9504	BMP/LID	Pohick-Lower	9290 Lewis Chapel Rd., Lorton Station Elementary School
PC9507	BMP/LID	Pohick-Middle	8111 Northumberland Rd., Saratoga Elementary School
PC9509	BMP/LID	Pohick-Lower South Run	8001 Newington Forest Ave., Newington Forest Elementary School
PC9512	BMP/LID	Pohick-Middle Run	7420 Reservation Dr., Sangster Elementary School

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9514	BMP/LID	Pohick-Middle	7107 Sydenstricker Rd., Hunt Valley Elementary School
PC9516	BMP/LID	Pohick-Middle	6820 Sydenstricker Rd., Orange Hunt Elementary School
PC9518	BMP/LID	Pohick-Middle Run	9732 Ironmaster Dr., Cherry Run Elementary School
PC9520	BMP/LID	Pohick-Middle	6703 Barnack Dr., Rolling Valley Elementary School
PC9527	BMP/LID	Pohick-Upper	16130 Shiplett Blvd., White Oaks Elementary School
PC9530	BMP/LID	Pohick-Upper	9645 Burke Lake Rd., Burke Center School
PC9538	BMP/LID	Pohick-Sideburn Branch	5815 Ox Rd., Fairview Elementary School
PC9541	BMP/LID	Pohick-Sideburn Branch	5240 Sideburn Rd., Bonnie Brae Elementary School
PC9551	BMP/LID	Pohick-Sideburn Branch	5004 Sideburn Rd., Oak View Elementary School
PC9800	Street Sweeping Program	Pohick-Lower	Timarand Dr. and Inverary Ct.
PC9801	Street Sweeping Program	Pohick-Lower	Lorton Station Blvd. & Stone Garden Dr.
PC9802	Dumpsite/ Obstruction Removal Suite	Pohick-Lower South Run	Behind 8412 Sego Lilly Ct.
PC9803	Buffer Restoration	Pohick-Middle South Run	Behind 8104 Jeffrey Ct.
PC9804	Dumpsite/ Obstruction Removal	Pohick-Middle	Between Cliffside Ct. & Richfield Rd. (7927 Richfield Rd.)
PC9805	Dumpsite/ Obstruction Removal	Pohick-Middle South Run	Along Lee Chapel Rd., behind Stony Creek Ct.
PC9806	Dumpsite/ Obstruction Removal	Pohick-Middle South Run	Near 7528 Rambling Ridge Dr.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9807	Buffer Restoration	Pohick-Middle Run	Next to 8800 Shadowlake Way
PC9808	Dumpsite/ Obstruction Removal	Pohick-Middle Run	Northeast of intersection of Hooes Rd. & Fairfax County Pkwy.
PC9809	Buffer Restoration	Pohick-Middle Run	Behind 7410 Seabrook La.
PC9809	Buffer Restoration	Pohick-Middle Run	Behind 7410 Seabrook La.
PC9810	Dumpsite/ Obstruction Removal Suite	Pohick-Middle Run	Behind 8903 Gutman Ct. & 7000 Cottontail Ct.
PC9811	Dumpsite/ Obstruction Removal	Pohick-Upper	Near 6223 Rathlin Dr.
PC9813	Buffer Restoration	Pohick-Middle	Behind 8586 Beatrice Ct.
PC9814	Buffer Restoration	Pohick-Upper	Behind 6025 Bonnie Bern Ct.
PC9815	Street Sweeping Program	Pohick-Sideburn Branch	5907 Freds Oak Rd.
PC9816	Buffer Restoration	Pohick-Sideburn Branch	Behind 10708 Freds Oak Ct.
PC9817	Street Sweeping Program	Pohick-Sideburn Branch	Condominiums at Cove Landing Rd.
PC9818	Street Sweeping Program	Pohick-Sideburn Branch	5532 La Cross Ct.
PC9819	Buffer Restoration	Pohick-Sideburn Branch	South of 10125 Zion Dr.
PC9820	Street Sweeping Program	Pohick-Sideburn Branch	10614 John Ayres Rd.
PC9821	Buffer Restoration	Pohick-Rabbit Branch	Behind 5330 Gainsborough Dr.
PC9823	Lake Management for W.Q. Study	Pohick-Middle South Run	7720 Wagon Trail Ln.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]			
Project #	**Project Type**	**WMA**	**Location**
PC9824	Lake Management for W.Q. Study	Pohick-Middle Run	7600 Modisto Ln.
PC9825	Lake Management for W.Q. Study	Pohick-Sideburn Branch	5738 Lakeside Oak Ln.
PC9826	Lake Management for W.Q. Study	Pohick-Upper	9408 Odyssey Ct.
PC9827	Lake Management for W.Q. Study	Pohick-Rabbit Branch	5344 Gainsborough Dr.
PC9828	Lake Management for W.Q. Study	Pohick-Sideburn Branch	Behind 5502 Fireside Ct.

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.

1.0 Introduction

1.1 Introduction to Watersheds

A watershed is an area of land that drains all of its water to a specific lake or river. As rainwater and melting snow run downhill, they carry sediment and other materials into our streams, lakes, wetlands and groundwater.

Figure 1-1: Diagram of a watershed

The boundary of a watershed is defined by the watershed divide, which is the ridge of highest elevation surrounding a given stream or network of streams. A drop of rainwater falling outside of this boundary will enter a different watershed and will flow to a different body of water.

Streams and rivers may flow through many different types of land use in their paths to the ocean. In the above illustration from the U.S. Environmental Protection Agency, water flows from agricultural lands to residential areas to industrial zones as it moves downstream. Each land use presents unique impacts and challenges on water quality.

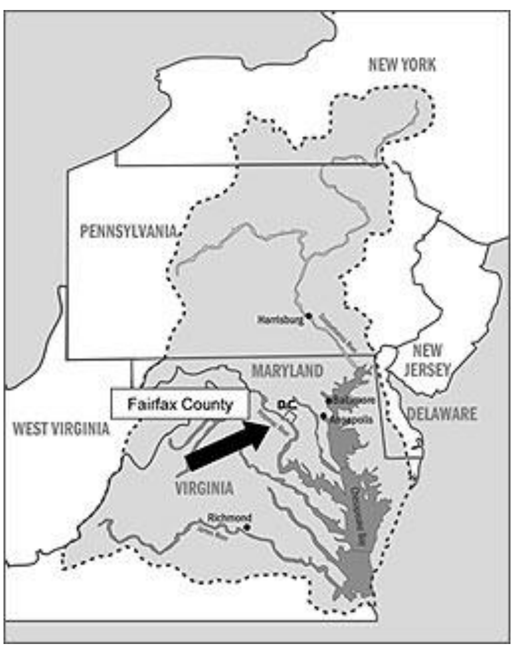

Figure 1-2: The Chesapeake Bay watershed

The size of a watershed can be subjective; it depends on the scale that is being considered.

The image to the left depicts the extent of the Chesapeake Bay watershed, "the big picture" that is linked to our local concerns. This watershed covers 64, 000 square miles and crosses into six states: New York, Pennsylvania, Delaware, West Virginia, Maryland, Virginia and the District of Columbia.

One of the watersheds that comprise the Chesapeake Bay watershed is the Potomac River watershed. Fairfax County, as shown on the map, occupies approximately 400 square miles of the Potomac River watershed. This area contains 30 smaller watersheds. Think of watersheds as being "nested" within each successively larger one.

Each watershed in Fairfax County was subdivided to facilitate data management and to promote local awareness of the streams. Watersheds were divided into Watershed Management Areas (WMAs) approximately four square miles in size. WMAs are usually named for the local major tributary. These areas are further divided into subwatersheds, ranging in size from 100 to 300 acres. Subwatersheds represent the smallest modeling unit for watershed planning.

Beginning in the early 1940's, Fairfax County shifted from an agricultural community to an urbanized one whose population exceeds that of several states. While the County continued to develop, the condition of streams and aquatic life declined. In 1999, a Stream Protection Strategy (SPS) was initiated to monitor stream health and establish a baseline of countywide stream conditions. The results of the baseline monitoring effort indicated that only 25 percent of the County's streams were in good to excellent biological health. Stream condition is determined using an Index of Biological Integrity (IBI) that evaluates ecological health based on the community structure of bottom-dwelling aquatic invertebrates.

The baseline study found that roughly 75 percent of streams within the County had areas negatively impacted by impervious conditions within their watersheds. Due to increasing urbanization prior to implementation of modern stormwater controls, impervious land area rapidly increased, contributing to the degradation of the streams.

1.2 Introduction to Watershed Planning

The County's comprehensive stormwater management program is currently undergoing a transformation that addresses watershed health using a holistic approach. The mission for the stormwater program is dictated by the need to preserve and restore the natural environment and aquatic resources, which is consistent with the Fairfax County Board of Supervisors' Environmental Agenda adopted in June 2004. The County must also comply with all applicable local, state and federal laws and mandates. These include County ordinances and policies, Virginia's Chesapeake Bay Initiatives and the federal Clean Water Act. Under the Virginia Pollutant Discharge Elimination System (VPDES) the County has an individual Municipal Separate Storm Sewer System (MS4) Permit. This permit requires the creation of watershed management plans to facilitate compliance with the Clean Water Act. In addition, the County is doing its part to fulfill Virginia's commitment to the Chesapeake Bay 2000 Agreement to restore the ecological health of the Chesapeake Bay Watershed.

Fairfax County's first set of watershed plans were completed in the 1970s. Land use has changed significantly since that time. Additionally, there have been many advances in technology and development in the field of stormwater management which have resulted in updates to stormwater policies and regulations. New plans were needed to reflect these changes and to plan for a future in which Fairfax County balances the needs of the environment with a high standard of living.

The current watershed plans provide more targeted strategies for addressing stream health given current and future land uses and evolving regulations. These plans are one of several tools that enable the County to address program requirements and to improve and maintain watershed health. Each watershed plan includes a prioritized 25-year list of proposed capital improvement projects in addition to non-structural programs and projects. These projects and programs may lead to new and/or revised ordinances, public facilities manual requirements and policies. The plans promote the use of new and innovative practices in stormwater management such as Low Impact Development (LID) techniques and stream restoration using natural channel design. To maximize the effectiveness of these plans, community engagement and involvement from diverse interests were emphasized during the development process.

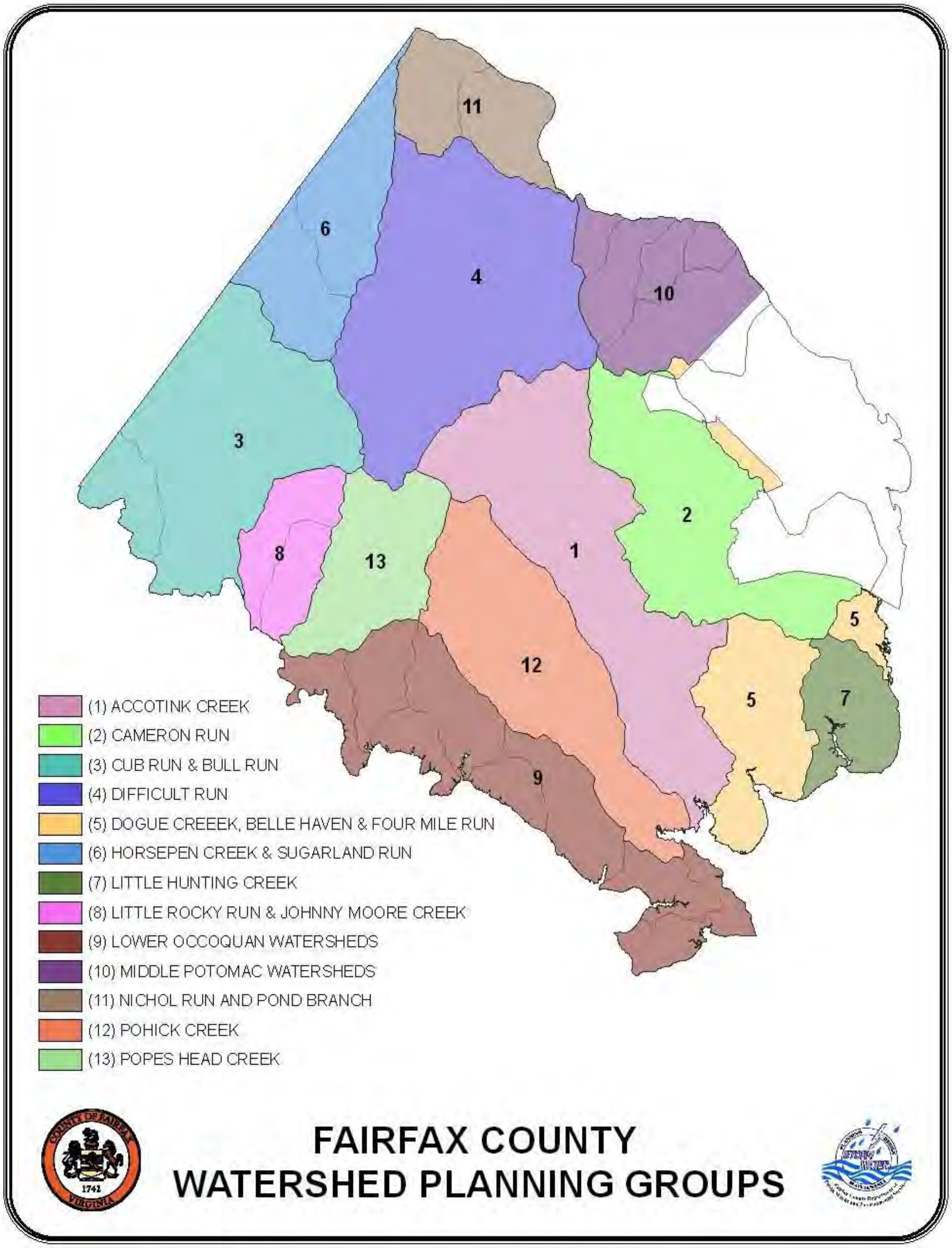

Figure 1-3: Watershed planning groups in Fairfax County

Watershed management plans were developed by grouping the County's 30 watersheds into 13 planning units (**Figure 1-3**). Watershed planning began in 2003. By 2007, roughly 50 percent of the County land area had completed watershed plans. This plan is part of the second group of watershed plans, which was initiated in 2007 for the remaining land area.

In general, the watershed management planning process consists of the following steps:

1. Review and synthesis of previous studies and data compilation
2. Public involvement to gain input, provide education and build community support
3. Evaluation of current watershed conditions and projection of stormwater runoff from present and ultimate development conditions
4. Development of non-structural and structural watershed improvement projects
5. Development of preliminary cost estimates, cost/benefit analysis and prioritization of capital projects
6. Adoption of the final watershed management plan by the Board of Supervisors

The watershed management planning process has been supported by the Board of Supervisors since its inception in 2003. In fiscal year 2006, the Board of Supervisors dedicated $0.01 per $100 of assessed value from the County's real estate tax revenue towards the overall stormwater management program. This supported the ongoing development and implementation of watershed plans and eventually evolved into the adoption of a stormwater service district starting in fiscal year 2010. The Board recently approved increasing the dedicated amount to a penny and a half for fiscal year 2011.

The following provisions address the funding and implementation of projects and programs in Fairfax County watershed plans. These provisions as recommended by the Board were developed for the Popes Head Creek Watershed Management Plan in February 2006 and have been applied to the Pohick Creek Watershed Management Plan:

i. Projects and programs (both structural and non-structural) will first undergo appropriate review by County staff and the Board (please see iii below) prior to implementation. Board adoption of the Watershed Management Plan will not set into motion automatic implementation of projects, programs or initiatives that have not first been subject to sufficient scrutiny to ensure that the projects that are funded give the County the greatest environmental benefit for the cost.

ii. Road projects not related to protection of streambeds or banks or water quality will not be funded out of the stormwater and watershed budget.

iii. The Watershed Management Plan provides a conceptual master-list of structural capital projects and a list of potential non-structural projects for the watershed. Staff will, on a fiscal year basis, prepare and submit to the Board a detailed work plan to include a description of proposed projects and an explanation of their ranking, based on specific criteria. Criteria used to assemble this list will include, but are not limited to, cost-effectiveness as compared to alternative projects, a clear public benefit, a need to protect public or private lands from erosion or flooding, a need to meet a specific watershed or water quality goal, and ability to be implemented within the same fiscal year that funding is provided. Staff also intends to track the progress of implementation and report back to the Board periodically.

iv. Each project on the annual list of structural projects will be evaluated using basic value-engineering cost effectiveness principles before implementation and the consideration of alternative structural and non-structural means for accomplishing the purposes of the project will be considered before implementation. This process will ensure the County's commitment to being a fiscally responsible public entity.

v. Obstruction removal projects on private lands will be evaluated on a case-by-case basis for referral to the Zoning Administrator and/or County Attorney for action as public nuisances; and otherwise to determine appropriate cost-sharing by any parties responsible for the obstructions.

vi. Stream restoration projects on private lands will be evaluated to determine means for cost-sharing by land owners directly responsible for degradation due to their land uses.

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2.0 Watershed Planning Process

2.1 Watershed Goals and Objectives

The County's first six comprehensive watershed management plans outlined intentions for protecting, maintaining or improving streams and the measures that could be taken to meet them. Although the plans conveyed similar aims overall, there were some differences in the way goals and objectives were developed. As a result of these differences, the initial six plans were analyzed to identify common themes in order to create standardized goals and objectives for the remaining watershed management plans. Standardization improved efficiency in the planning process and achieved greater consistency among the plans.

As part of the standardization process, the County selected three overarching goals, or intended outcomes of the watershed management plans:

1. Improve and maintain watershed functions in Fairfax County, including water quality, habitat and hydrology
2. Protect human health, safety and property by reducing stormwater impacts
3. Involve stakeholders in the protection, maintenance and restoration of County watersheds

Ten objectives were developed related to the three goals. Each objective may achieve one or more goals, and each goal may be achieved by one or more objectives. These ten objectives were grouped into five categories based on certain aspects of watershed management the objectives could influence:

1. **Hydrology** - healthy movement and distribution of water through the environment in a way that is protective of streams and human dwellings
2. **Habitat** - suitable environment for sustaining plants and animals
3. **Stream water quality** - general chemical and physical properties of surface waters
4. **Drinking water quality** - quality of water used for human consumption
5. **Stewardship** - the roles the County, other jurisdictions and members of the general public can play in caring for the environment

Under the new approach, County staff and the public had the flexibility to add objectives that were unique and important to a particular watershed, but all plans included the standard goals and objectives as a baseline (**Table 2-1**).

Table 2-1: Countywide Objectives

Objective	Linked to Goal(s)
CATEGORY 1. HYDROLOGY	
1A. Minimize impacts of stormwater runoff on stream hydrology to promote stable stream morphology, protect habitat, and support biota.	1
1B. Minimize flooding to protect property and human health and safety.	2
CATEGORY 2. HABITAT	
2A. Provide for healthy habitat through protecting, restoring, and maintaining riparian buffers, wetlands, and instream habitat.	1
2B. Improve and maintain diversity of native plants and animals in the County.	1

Objective	Linked to Goal(s)
CATEGORY 3. STREAM WATER QUALITY	
3A. Minimize impacts to stream water quality from pollutants in stormwater runoff.	1, 2
CATEGORY 4. DRINKING WATER QUALITY	
4A. Minimize impacts to drinking water sources from pathogens, nutrients, and toxics in stormwater runoff.	2
4B. Minimize impacts to drinking water storage capacity from sediment in stormwater runoff.	2
CATEGORY 5 STEWARDSHIP	
5A. Encourage the public to participate in watershed stewardship.	3
5B. Coordinate with regional jurisdictions on watershed management and restoration efforts such as Chesapeake Bay initiatives.	3
5C. Improve watershed aesthetics in Fairfax County.	1, 3

Standardizing the goals and objectives will make it easier to integrate plan recommendations into a countywide data management system for prioritizing projects, tracking implementation and evaluating the long-term influence of the plans on the health of County streams.

2.2 Indicators

Since accomplishment of objectives cannot be directly measured, indicators that are able to detect changes in the watershed were developed. Indicators are used to assess the condition of the environment, as early-warning signals of changes in the environment, and to diagnose causes of ecological problems. *Observed* indicators are based upon data and observations collected in the field/area of interest, and are useful in assessing existing watershed conditions. *Predictive* indicators respond in a predictable manner to ecosystem stressors, and can be used in models of hydrologic and ecosystem processes (such as soil erosion, pollutant loading, etc.) to compare existing and future conditions.

Each indicator was measured by one or more metrics. A metric is an analytical benchmark that responds in a predictable way to increasing human, climatic or other environmental stress. Metrics may be actual numeric values (such as pH or Dissolved Oxygen values) or parameters that have been scored to a numeric scale (such as 1 – 10).

The indicators used by Fairfax County may be grouped into the following categories:

- **Watershed Impact Indicators** – Measure the extent that reversal or prevention of a particular watershed impact, sought by the goals and objectives, has been achieved ("What's there now, and how is it doing?").
- **Source Indicators** – Quantify the presence of a potential stressor or pollutant source ("Is there a problem, and what's causing it?").
- **Programmatic Indicators** –After the plans are adopted, these will assess outcomes of resource protection and restoration activities ("What's the County doing about the problem, and how is it doing?").

2.2.1 Watershed Impact Indicators

One or more watershed impact indicators for each objective were identified, including predictive and observed indicators. These indicators and the objectives to which they are linked are shown in Table 2-2.

Table 2-2: Watershed Impact Indicators

Objective	Indicators
1A Stormwater Runoff	Observed: Benthic Communities, Fish Communities, Aquatic Habitat Predictive: Channel Morphology, Instream Sediment, Hydrology
1B Flooding Hazards	Observed: Flood Complaints Predictive: Number of Road Hazards, Magnitude of Road Hazards, Residential Building Hazards, Non-residential Building Hazards
2A Habitat Health	Observed: Aquatic Habitat Predictive: RPA Riparian Habitat, Headwater Riparian Habitat, Protected Wetland Habitat
2B Habitat Diversity	Observed: Benthic Communities, Fish Communities Predictive: None
3A Stream Water Quality	Observed: *E. coli*, Benthic Communities, Fish Communities Predictive: Upland Sediment, Instream Sediment, Nitrogen, Phosphorus
4A Drinking Water Quality	Observed: *E. coli* Predictive: Nitrogen, Phosphorus, Upland Sediment
4B Storage Capacity	Observed: None Predictive: Upland Sediment, Instream Sediment
5A Public Participation	Programmatic Indicators to be tracked by the County
5B Regional Coordination	Programmatic Indicators to be tracked by the County
5C Aesthetics	Programmatic Indicators to be tracked by the County

For predictive indicators, three scenarios were considered. Metrics and scores were calculated for:

- Existing Conditions
- Future without project implementation
- Future with project implementation

The future condition metrics and scores reflect the simulated conditions at ultimate build-out based on the County's Comprehensive Plan.

The watershed impact indicator scores were used at multiple stages of watershed planning. First, they were used to assess current and future conditions without project implementation in the watershed. Indicator scores were then used to identify management needs and problem areas during subwatershed ranking (see Section 2.3). Once candidate projects were identified, the indicators were used to prioritize projects alongside cost and feasibility.

2.2.2 Source Indicators

Source indicators were used to evaluate the sources and stressors that impact watershed processes. Examples include:

- Numeric Source Indicators
    - Amount of Channelized/Piped Streams
    - Amount of Directly Connected Impervious Area (DCIA) (predictive)
    - Amount of Impervious Surface (predictive)
    - Number of Stormwater Outfalls
    - Number of Sanitary Sewer Crossings
    - Streambank Buffer Deficiency
    - Total amount of Nitrogen (predictive)
    - Total amount of Phosphorus (predictive)
    - Total Suspended Solids (predictive)
- Field Reconnaissance Observations
    - Hot Spot Investigations
    - Neighborhood Source Assessments
    - All other field reconnaissance observations

The contributions of these indicators to existing and future watershed impacts were evaluated. Metrics and scores were developed for all source indicators under existing conditions. In addition, three scenarios were considered for the predictive indicators, as noted in the list above. Metrics and scores were calculated for these scenarios:

- Existing Conditions
- Future without project implementation
- Future with project implementation

The future condition metrics and scores reflect the simulated conditions at ultimate build-out based on the County's Comprehensive Plan.

Like the watershed impact indicators, source indicator scores were used to rank subwatersheds according to their problems and needs and to assist with candidate project identification.

2.2.3 Programmatic Indicators

Once the plan is adopted, programmatic indicators will be used by the County to help evaluate watershed management needs. These indicators illustrate the extent and location of existing and past management efforts. The following types of management in the watershed were inventoried during plan development:

- Detention Facilities
- Stream Restoration
- Riparian Buffer Restoration
- BMP Facilities
- Low Impact Development
- Inspection and Maintenance of Stormwater Management Facilities
- Inspection and Repair of Stormwater Infrastructure and Outfalls
- Dumpsite Removal
- Regional Ponds

- Volunteer Monitoring
- Subarea Treatment (used in watershed modeling studies)

Information for these indicators will be considered to identify and evaluate watershed management needs for individual watersheds and for the County as a whole.

2.2.4 Composite Scores

After metric values are translated into scores, objective, composite and overall composite scores are calculated for use in subwatershed ranking. Weighting factors are used when calculating composite scores to give more importance to certain indicators and objectives. First, watershed impact indicators are grouped by objective. Each metric score is multiplied by a predetermined weighting factor specific to that indicator, and the products are summed within objectives to generate an objective composite score for each objective. Each objective composite score is then multiplied by a predetermined weighting factor specific to that objective, and the products are summed to generate an overall composite score. A similar process is used for source indicators, but without an objective composite score (since source indicators are not directly linked to objectives).

2.3 Subwatershed Ranking

The composite scores calculated under the methods previously described were used to identify problem areas in the watershed and rank subwatersheds for management priority. Subwatersheds were further categorized based on which management opportunities were most likely to restore functions to the problem areas identified. The resulting data were then utilized to identify key issues and select projects that would achieve the watershed planning goals and objectives.

The subwatershed ranking procedure involved reviewing watershed impact objective, composite, overall composite and source indicator scores. Since some of the indicators are predictive, i.e. based on modeling, it was possible to pose “what if?” questions and test future scenarios with and without management actions. Existing management facilities and programs which were inventoried for programmatic indicators and data collected during field reconnaissance were also considered. The ranking process consisted of the following steps:

1. Used the watershed impact overall composite scores and identified subwatersheds that were potential problem areas under existing and future conditions.
2. Used the watershed impact objective composite scores and identified subwatersheds that were potential problem areas under existing and future conditions for each objective.
3. Reviewed source indicator composite scores and identified additional problem areas.
4. Used individual source indicator scores to identify potential sources of impacts in downstream problem areas.
5. In combination with the above data, used the programmatic indicator data inventory to identify subwatersheds where management was most needed.
6. Consulted available field reconnaissance data throughout the above steps to confirm that results reflected conditions in the field.

All this information was combined to rank subwatersheds in order from the most problematic (higher priority for management actions) to the least problematic (lower priority for management actions). Subwatershed ranking can provide guidance as to where management is most needed and can be applied successfully, but the final determination is ultimately based on best professional judgment.

2.4 Stormwater Modeling

Storm events are classified by the amount of rainfall, in inches, that occurs over the duration of a storm. The amount of rainfall depends on how frequently the storm will statistically occur and how long the storm lasts. Based on many years of rainfall data collected, storms of varying strength have been established based on the duration and probability of that event occurring within any given year. In general, smaller storms occur more frequently than larger storms of equal duration. Hence, a 2-year, 24hr storm (having a 50 percent chance of happening in a given year) has less rainfall than a 10-year, 24hr storm (having a 10 percent chance of happening in a given year). Stormwater runoff (which is related to the strength of the storm) is surplus rainfall that does not soak into the ground. This surplus rainfall flows (or ‘runs off’) from roof tops, parking lots and other impervious surfaces and is ultimately received by storm drainage systems, culverts and streams.

Modeling is a way to mathematically predict and spatially represent what will occur with a given rainfall event. There are two primary types of models that are used to achieve this goal; hydrologic and hydraulic:

- *Hydrologic models* take into account several factors; the particular rainfall event of interest, the physical nature of the land area where the rainfall occurs and how quickly the resulting stormwater runoff drains this given land area. Hydrologic models can describe both the quantity of stormwater runoff and resulting pollution, such as nutrients (nitrogen and phosphorus) and sediment that are transported by the runoff.

- *Hydraulic models* represent the effect the stormwater runoff from a particular rainfall event has on both man-made and natural systems. These models can both predict the ability man-made culverts/channels have in conveying stormwater runoff and the spatial extent of potential flooding.

Table 2-3 shows three storm events and the rationale for being modeling:

Table 2-3: Modeling Rationale

Storm Event	Modeling Rationale
2-year, 24hr	Represents the amount of runoff that defines the shape of the receiving streams.
10-year, 24hr	Used to determine which road culverts will have adequate capacity to convey this storm without overtopping the road.
100-year, 24hr	Used to define the limits of flood inundation zones

2.4.1 Hydrologic Model (SWMM)

The Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) was first developed in the early 1970s. Over the past 30 years, the model has been updated and refined and is now used throughout the country as a design and planning tool for stormwater runoff. Specifically, SWMM is a dynamic rainfall-runoff simulation model used for single event or long-term (continuous) simulation of runoff quantity and quality from primarily urban areas.

The runoff component of SWMM operates on a collection of subwatershed areas where rain falls and runoff is generated. The routing (or hydraulic) portion of SWMM transports this runoff through a conveyance system of pipes, channels and storage/treatment devices. SWMM tracks the quantity and quality of runoff generated within each subwatershed, and the flow rate and depth of water in the conveyance system during a simulation period.

2.4.2 Pollution Model (STEPL)

While the SWMM model can calculate pollutant loads, the Spreadsheet Tool for Estimating Pollutant Load (STEPL) was used to determine pollutant loads for the watershed planning effort. Also developed by EPA, STEPL employs simple algorithms to calculate surface runoff. This includes nutrient loads, such as nitrogen and phosphorus, and sediment loads from various land uses. STEPL also calculates load reductions that would result from the implementation of various Best Management Practices (BMPs). The nutrient loading is calculated based on the runoff volume and the pollutant concentrations in the runoff as influenced by factors such as land use distribution and management practices. Sediment loads are calculated based on the Universal Soil Loss Equation (USLE) and the sediment delivery ratio. The sediment and pollutant load reductions that result from the implementation of BMPs are computed using known BMP efficiencies.

2.4.3 Hydraulic Model (HEC-RAS)

The Hydrologic Engineering Centers River Analysis System (HEC-RAS) hydraulic model was initially developed by the U.S. Army Corps of Engineers (USACE) in the early 1990s as a tool to manage the rivers and harbors in their jurisdiction. HEC-RAS has found wide acceptance as the standard for simulating the hydraulics of water flow through natural and/or manmade channels and rivers. HEC-RAS is commonly used for modeling water flowing through a system of open channels with the objective of computing water surface elevations.

The geographic input data for the HEC-RAS model was extracted using HEC-GeoRAS. HEC-GeoRAS is a tool that processes the geospatial data within the County’s Geographic Information System, specifically as it pertains to physical features such as stream geometry and flow path so that these features can be represented in the model.

Using available County or Virginia Department of Transportation (VDOT) engineering data, bridge and culvert crossings were coded into the model to simulate the effect these facilities have on the water surface elevations or profile. Where data were not available, field reconnaissance was performed to obtain the crossing elevation data. This crossing data was determined relative to a point where the elevation could be estimated accurately from the County’s topographic data. Manning’s ‘n’ values, which represent surface roughness, were assigned to the channel and overbank portions of the studied streams based on field visits and aerial photographs.

The hydrologic flow input data and the locations where the flows change were extracted from SWMM. The 2-yr, 10-yr and 100-yr storm flow outputs were determined at several locations in order to provide a detailed flow profile for input into the HEC-RAS hydraulic model.

As stated previously, the 2-year storm discharge is regarded as the channel-forming or dominant discharge that transports the majority of a stream’s sediment load and therefore actively forms and maintains the channel. A comparison of stream dynamics and channel geometry for the 2-year discharge provides insight regarding the relative stability of the system and helps to identify areas in need of restoration.

The 10-year storm discharge is being included to analyze the level of service of bridge and culvert stream crossings. Occurring less frequently than the 2-year storm, the flood stage associated with this storm can result in more significant safety hazards to residents. All stream crossings (bridges and culverts) will be analyzed against this storm to see if they are performing at safe levels.

The 100-year storm discharge is used by the Federal Emergency Management Agency (FEMA) to delineate floodplain inundation zones in order to establish a Flood Insurance Rate Map (FIRM) for a given area. The 100-yr HEC-RAS models have been built in compliance with FEMA standards and are being included to map the limits of these floodplain inundation zones. This mapping provides a means to assess which properties are at risk to flooding by the 100-yr storm event.

2.5 Public Involvement Plan

A consistent approach for public involvement was important to enable comparisons among planning processes and final watershed management plans. Conversely, as each watershed has unique characteristics, the strategies employed must also address the diverse needs, interests and conditions of the watershed and its community. The principal goals for public involvement were:

- Increase community awareness and understanding of stormwater management
- Provide meaningful participation options for a diversity of stakeholders
- Incorporate community ideas into the scope of the watershed plans
- Strive for community support for the final plans

Recognizing the need for public acceptance of the final plans, County staff created a public involvement process with multiple feedback loops to facilitate informed participation by the public and key stakeholder groups at all development stages. The first step of the public involvement process was to host an Introductory and Issues Scoping forum that was open to all residents. The primary purpose of this forum was to solicit informed input on the development of the watershed management plan. Other objectives were to explain the planning process to the community and develop an initial list of watershed issues and concerns.

After the forum, stakeholder groups were invited to be part of a Watershed Advisory Group (WAG) for each plan. These were comprised of local stakeholders who represented various interests (HOA representatives, environmental groups, etc) and advised County staff about community outreach opportunities and key issues affecting their watershed and potential projects. They also were invited to comment on draft and final versions of the watershed management plan. Each WAG met with County staff five to six times throughout the plan development in order to provide guidance and comments at critical junctures of the process.

The WAG also provided support at the second public forum, the Draft Plan Review Workshop. The workshop provided the extended community with an opportunity to review the first draft of the watershed plan and provide input. Comments were collected at the end of a 30-day period and addressed as appropriate. The final plan was then adopted by the Board of Supervisors.

More information on the public involvement process including WAG meeting minutes, public forum meeting minutes and public comments and responses can be found in the Technical Appendices.

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3.0 Summary of Watershed Conditions

This section summarizes the *Pohick Creek Draft Watershed Workbook* (September 2008). The full Pohick Creek Draft Watershed Workbook can be found in the *Technical Appendices to Pohick Creek Watershed Management Plan* (see Appendix A).

3.1 Introduction

Consisting of more than 36 square miles, the Pohick Creek watershed is one of the larger watersheds in the County. Based on the terrain, the watershed is naturally divided into the 10 smaller watershed management areas (WMAs) identified in Table 3-1. Refer to **Map 3.1-1** for the locations of each WMA within Pohick Creek. For Fairfax County planning and management purposes, WMAs are further subdivided into smaller subwatersheds. Refer to **Map 3.1-2** for the locations of each of the subwatersheds within Pohick Creek.

Table 3-1: Pohick Creek Watershed Management Areas (WMAs)

WMA		Sq. Miles	Acres
1.	Pohick - Rabbit Branch	3.95	2,524.9
2.	Pohick - Sideburn Branch	3.61	2,307.9
3.	Pohick - Upper South Run	3.19	2,040.7
4.	Pohick - Middle South Run	2.95	1,889.1
5.	Pohick - Lower South Run	3.04	1,947.7
6.	Pohick - Middle Run	3.97	2,540.2
7.	Pohick - Upper	4.85	3,104.7
8.	Pohick - Middle	4.71	3,014.6
9.	Pohick - Lower	3.67	2,346.5
10.	Pohick - Potomac	2.39	1,532.4
	Total	**36.33**	**23,248.7**

The Pohick Creek watershed contains more than 180 miles of stream within the 10 WMAs, and included in the 10 WMAs are 13 named and numerous unnamed tributaries.

3.2 Current Conditions

Generally, Pohick Creek watershed is characterized by residential land uses, the most prevalent of which is single family detached housing units. Commercial and limited industrial uses are also found in the watershed, primarily centered on the service industries that support residential development, such as shopping centers, transit facilities and schools. Although the watershed was primarily developed between the early 1960s and the mid 1980s, limited development in the watershed is on-going. Several areas within the watershed demonstrate significant redevelopment efforts. These areas include portions of George Mason University in the northern headwaters, to parts of Fort Belvoir and other federally managed lands, as well as a large redevelopment project at Laurel Hill in the watershed's southern region. Refer to **Map 3.2-1** for the existing land uses in the Pohick Creek watershed and **Map 3.2-2** for the future land uses in the Pohick Creek watershed.

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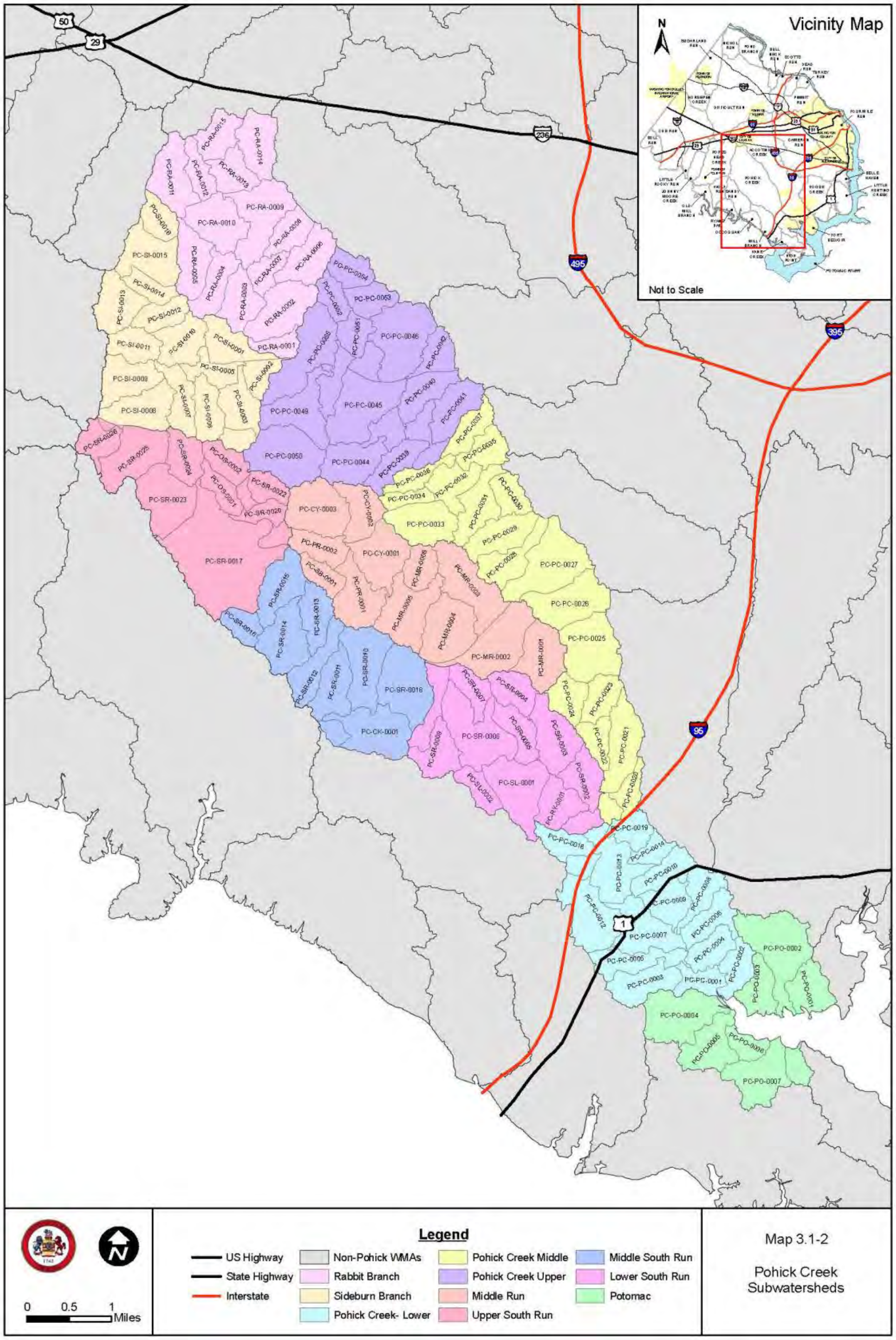
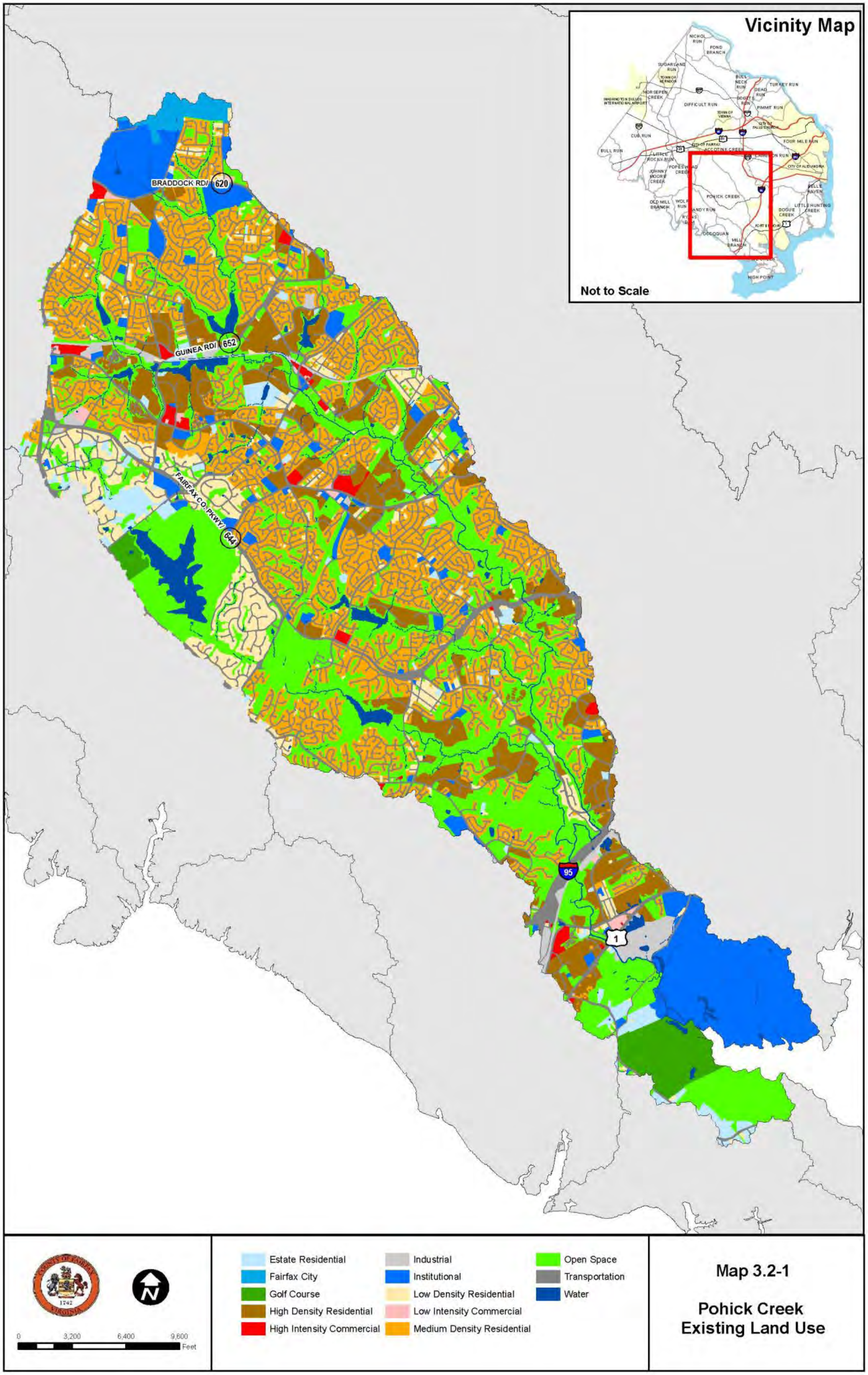
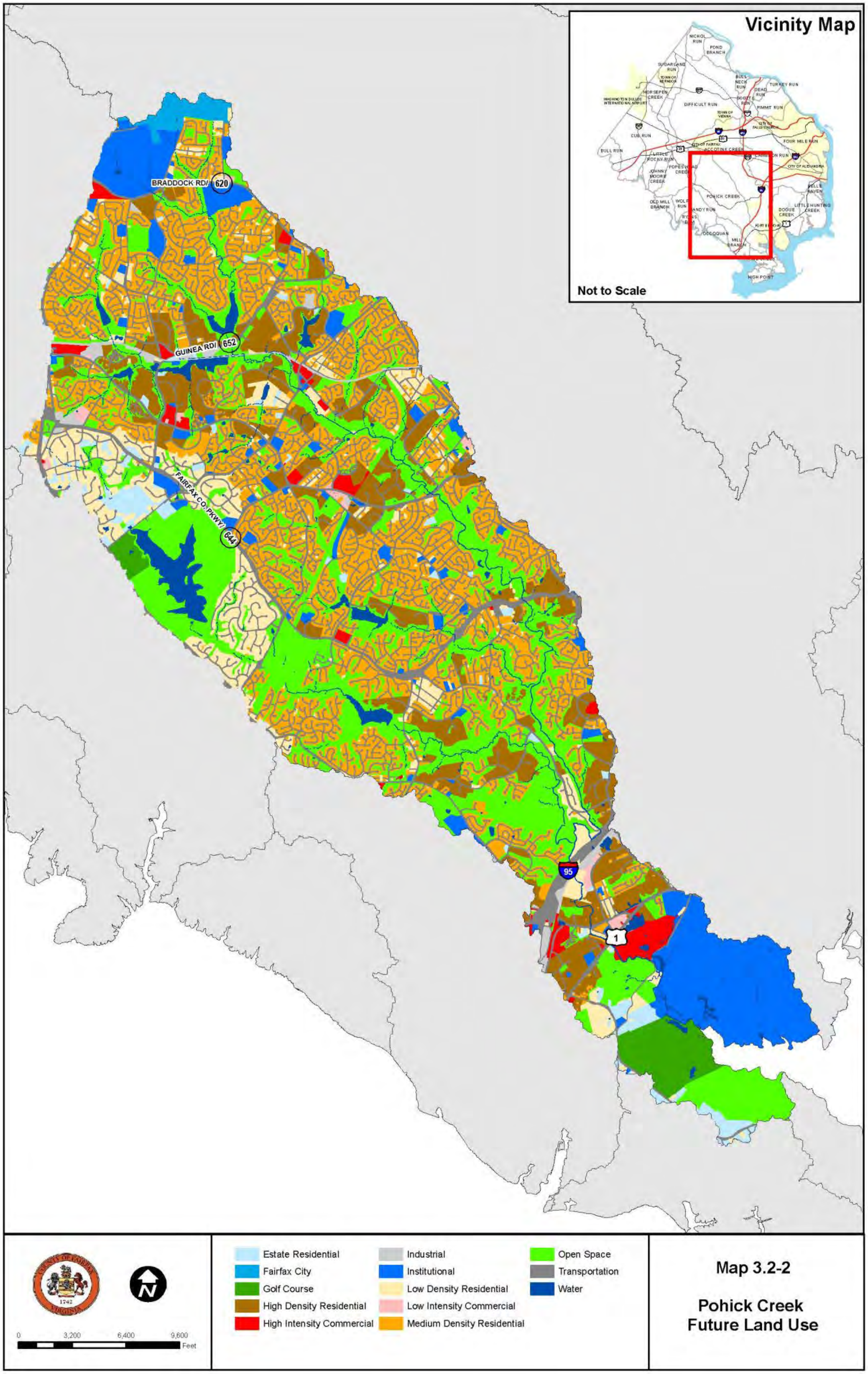
Map 3.1-1
Pohick Watershed


Vicinity Map
Not to Scale
Legend
US Highway
State Highway
Interstate
Non-Pohick WMAs
Rabbit Branch
Sideburn Branch
Pohick Creek- Lower
Pohick Creek Middle
Pohick Creek Upper
Middle Run
Upper South Run
Middle South Run
Lower South Run
Potomac
0 0.5 1 Miles
Map 3.1-2
Pohick Creek Subwatersheds



Map 3.2-1

Pohick Creek
Existing Land Use



Map 3.2-2

Pohick Creek Future Land Use

The Pohick Creek watershed contains six flood control lakes (Woodglen, Royal, Braddock, Barton, Huntsman and Mercer). These lakes were built by the United States Department of Agriculture, Natural Resources Conservation Service, under the authority of Public Law 83-566 (PL-566) as part of the Pohick Creek Watershed Protection and Flood Prevention Project. Substantial residential property development has occurred around these lakes. The western portion of the watershed contains Burke Lake Park, an 888-acre park built around Burke Lake, a 218-acre recreational lake. Additional infrastructure serving the Pohick Creek watershed includes a number of major transportation arteries in Fairfax County. Fairfax County Parkway bisects the watershed, Route 123 traverses the western border of the watershed and Interstate 95 runs across the southern, downstream portion of the watershed.

In addition to the flood-control capacity of these lakes, the watershed also contains a wide variety of additional stormwater infrastructure and best management practices (BMPs) that track with the watershed's development history. Some older developments contain stormwater management (SWM) facilities, consisting primarily of dry detention basins designed to curb peak storm flows (quantity management). For areas developed more recently, SWM facility types are more varied and are more likely to include a water quality component. Facilities found in these areas include wet detention facilities, underground chambers, infiltration devices and wetlands. See http://www.fairfaxcounty.gov/dpwes/utilities/swm_facility_maint.htm for more information.

As one of many measures used to protect stream water quality, the County adopted the Chesapeake Bay Preservation Ordinance, which limits development on land that lies within a Resource Protection Area (RPA). RPAs are buffers adjacent to or near the shorelines of streams, rivers and other waterways that protect sensitive areas from the excessive influx of pollutants. The sensitive areas include tidal and nontidal wetlands, tidal shorelines, certain floodplains and perennial streams (waters flowing year-round). As **Map 3.2-3** indicates, almost 75 percent (134 of the 180 miles) of the streams within the Pohick Creek watershed lie within an RPA. (County GIS, 2008) See http://www.fairfaxcounty.gov/dpwes/environmental/cbay/ for more information.

The *Pohick Creek Draft Watershed Workbook,* in Appendix A, includes a description of the findings in each WMA, including field reconnaissance findings, existing and future land use, stream conditions and stormwater infrastructure. Each WMA was examined at the subwatershed level.

3.3 Hydrology and Water Quantity and Quality Modeling

Modeling is a way to mathematically predict and spatially represent what will occur with a given rainfall event. The following modeling software was used in the watershed management plan:

1. The Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) is a dynamic rainfall-runoff simulation model. It is used to track the quantity and quality of runoff generated within each subwatershed, and the flow rate, flow depth and quality of water in each pipe and channel during a simulation period comprised of multiple time steps.
2. The Spreadsheet Tool for Estimating Pollutant Load (STEPL) was used to determine pollutant loads for Pohick Creek watershed. Also developed by the EPA, the STEPL worksheet calculates nutrient and sediment loads from various land uses and also calculates the load reductions that would result from the implementation of various BMPs.

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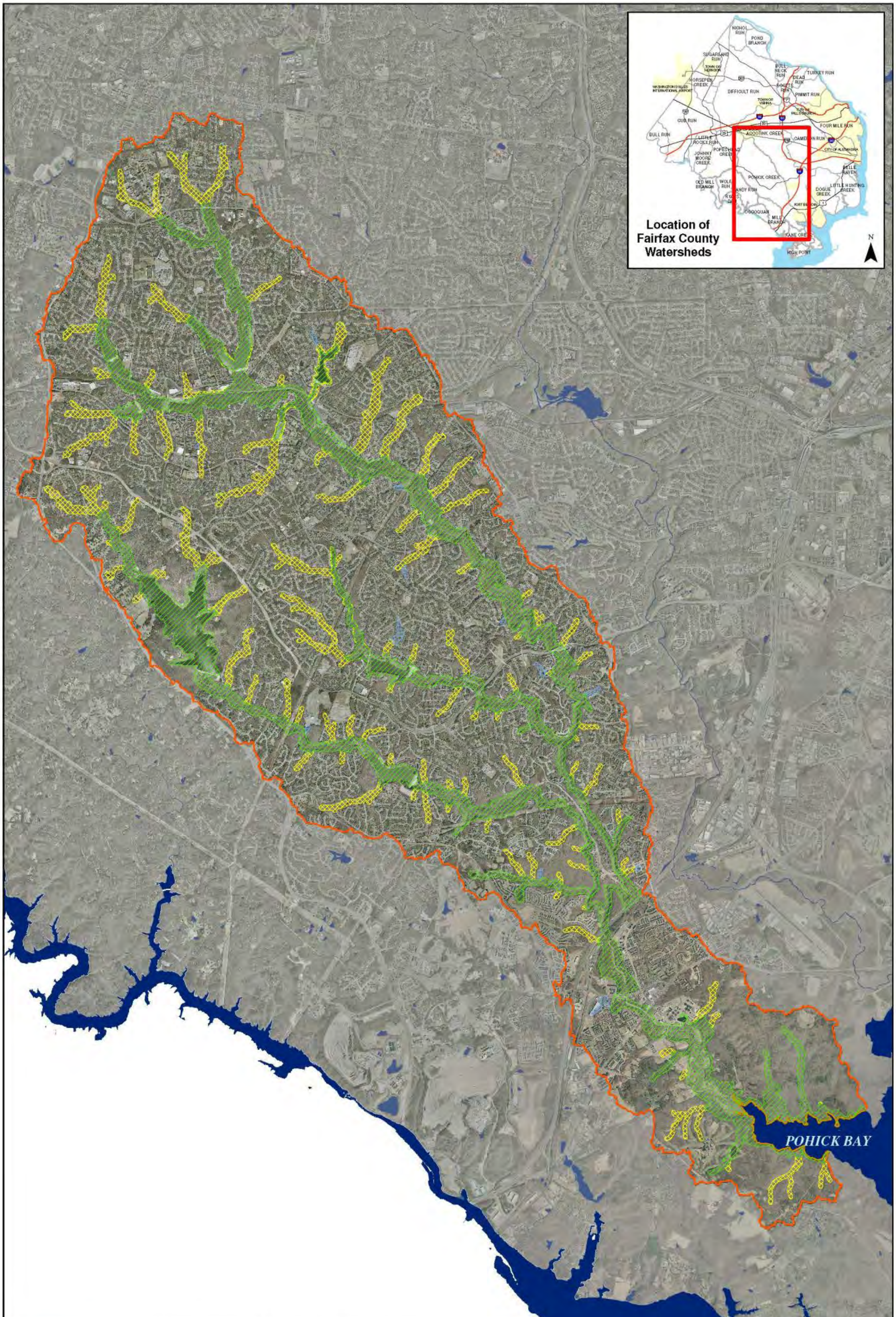


0 2,500 5,000 7,500 Feet

Resource Protection Areas

RPA 1993

RPA 2003

RPA 2005

Watersheds

Water

Map 3.2-3
Pohick Watershed
Resource Protection Areas

3. The U.S. Army Corps of Engineers' Hydrologic Engineering Centers River Analysis System (HEC-RAS) hydraulic model simulates the hydraulics of water flow through natural and/or manmade channels and rivers, with the objective of computing water surface profiles.

3.3.1 SWMM Results

Table 3-2 shows the peak flows from the WMAs. The two-year storm event is defined as the storm which has a 50 percent chance of occurring in any one year. The 10-year storm event has a 10 percent chance of occurring in any one year.

Table 3-2: SWMM Results

WMA Outlet Point	Stormwater Runoff Peak Flow Values	
	2-Year Storm (cubic ft/sec)	10-Year Storm (cubic ft/sec)
Pohick - Lower	613	1,560
Pohick - Lower South Run	360	1,075
Pohick - Middle	659	1,534
Pohick - Middle Run	430	907
Pohick - Middle South Run	36	78
Pohick - Potomac	205	659
Pohick - Rabbit Branch	147	205
Pohick - Sideburn Branch	271	554
Pohick - Upper	679	1,385
Pohick - Upper South Run	0	0
Pohick Watershed Totals	1,858	1,999

3.3.2 STEPL Results

A major indicator of many streams' poor water quality is increased levels of two particular nutrients, nitrogen and phosphorus (TN & TP), as well as high levels of suspended sediments (TSS). While nitrogen and phosphorus occur naturally in soil, animal waste, plant material and even the atmosphere, the increase of nitrogen and phosphorus from manmade sources can be detrimental to the overall health of receiving waters. Increased phosphorus and nitrogen pollutants in urbanized areas primarily come from chemical lawn fertilizers, vehicle emissions and discharges from municipal wastewater treatment plants. High levels of suspended sediments are due to land and streambank erosion.

The data provided in Table 3-3 represents the results by WMA from the existing conditions STEPL model (land-based loads) as well as pollutant loads from stream erosion. The STEPL pollutant loads are heavily dependent on land-use distribution within the WMAs. The stream erosion loads were calculated separately and were estimated from available stream survey and soils information.

Table 3-3: Pollutant Loads – STEPL and Streambank Erosion

WMA	Area	Pollutant Loading STEPL Results			Streambank Erosion Pollutant Loading		
		TSS (tons/ ac/yr)	TN (lb/ ac/yr)	TP (lb/ ac/yr)	TSS (tons/ ac/yr)	TN (lb/ ac/yr)	TP (lb/ ac/yr)
Lower	2,346	0.158	5.563	0.842	0.083	0.129	0.050
Lower South Run	1,948	0.120	4.202	0.668	0.078	0.122	0.047
Middle	3,015	0.138	5.561	0.864	0.480	0.758	0.294
Middle Run	2,540	0.138	5.711	0.894	0.038	0.058	0.022
Middle South Run	1,889	0.112	4.055	0.647	0.153	0.242	0.094
Potomac	1,532	0.082	1.273	0.284	0.064	0.090	0.035
Rabbit Branch	2,525	0.122	5.226	0.819	0.299	0.479	0.186
Sideburn Branch	2,308	0.148	6.262	0.945	0.417	0.668	0.259
Upper	3,105	0.137	5.777	0.886	0.365	0.580	0.225
Upper South Run	2,041	0.092	3.286	0.537	0.072	0.115	0.045

3.3.3 HEC-RAS Results

Hydraulic models were created for the major channels in the watershed. These major channels extend from the basin outlet to the most upstream sub-basins in the watershed. Cross sections were aligned based on representative channel sections, and upstream and downstream of bridges. Structures along these streams were identified based on county GIS road shapefiles and the most recent aerial photos provided by the county, and surveyed using GIS equipment. Flow data was entered from the SWMM model.

Three flood events were modeled in HEC-RAS: the 100-year, 10-year and 2-year events. These are the events that have, respectively, a 1 percent, 10 percent or 50 percent chance of occurring in any given year. The 100- and 10-year floodplains were mapped to determine the extent of the flooding. The impact of the flooding on the watershed was determined by examining roads that are overtopped or buildings that are located within the floodplain.

3.4 Ranking of Subwatershed Areas

The County has developed goals and objectives to be applied to all watersheds during the workbook development process. The countywide goals and objectives allow recommendations to be linked to the countywide watershed assessment. The goals are:

1. Improve and maintain watershed functions in Fairfax County, including water quality, habitat and hydrology.
2. Protect human health, safety and property by reducing stormwater impacts.
3. Involve stakeholders in the protection, maintenance and restoration of county watersheds.

In Table 3.4 a list of objectives allows for a countywide evaluation that addresses stakeholder concerns while providing an efficient and effective means of assessment.

Table 3-4: Fairfax County Watershed Planning Final Objectives

Objective	Linked to Goal(s)
CATEGORY 1. HYDROLOGY	
1A. Minimize impacts of stormwater runoff on stream hydrology to promote stable stream morphology, protect habitat and support biota.	1
1B. Minimize flooding to protect property and human health and safety.	2
CATEGORY 2. HABITAT	
2A. Provide for healthy habitat through protecting, restoring and maintaining riparian buffers, wetlands and instream habitat.	1
2B. Improve and maintain diversity of native plants and animals in the County.	1
CATEGORY 3. STREAM WATER QUALITY	
3A. Minimize impacts to stream water quality from pollutants in stormwater runoff.	1, 2
CATEGORY 4. DRINKING WATER QUALITY	
4A. Minimize impacts to drinking water sources from pathogens, nutrients and toxics in stormwater runoff.	2
4B. Minimize impacts to drinking water storage capacity from sediment in stormwater runoff.	2
CATEGORY 5 STEWARDSHIP	
5A. Encourage the public to participate in watershed stewardship.	3
5B. Coordinate with regional jurisdictions on watershed management and restoration efforts such as Chesapeake Bay initiatives.	3
5C. Improve watershed aesthetics in Fairfax County.	1, 3

The purpose of the subwatershed ranking approach is to provide a systematic means of compiling available water quality and natural resources information. Ranking subwatersheds based on watershed characterization and modeling results provides a tool for planners and managers to aid in the project selection, types of projects and prioritization processes. The ranking was updated based on issues and problem areas identified during the introductory and issues scoping forum and advisory group meetings. The resultant data is then used to identify key issues and proceed with projects that will achieve the County’s watershed management goals and objectives.

Three basic indicator categories were used to rank subwatershed conditions, as identified in Table 3-5.

Table 3-5: Subwatershed Ranking Indicators

Indicator Type	Description
Watershed Impact	Diagnostic measures of environmental conditions (e.g., water quality, habitat health biotic integrity) that are linked to the county's goals and objectives
Programmatic	Reports the existence, location or benefits of stormwater management facilities or programs
Source	Quantifies the presence of stressors and/or pollutant sources

These scores were weighted and combined into composite scores that are used in the subwatershed ranking and project prioritization process.

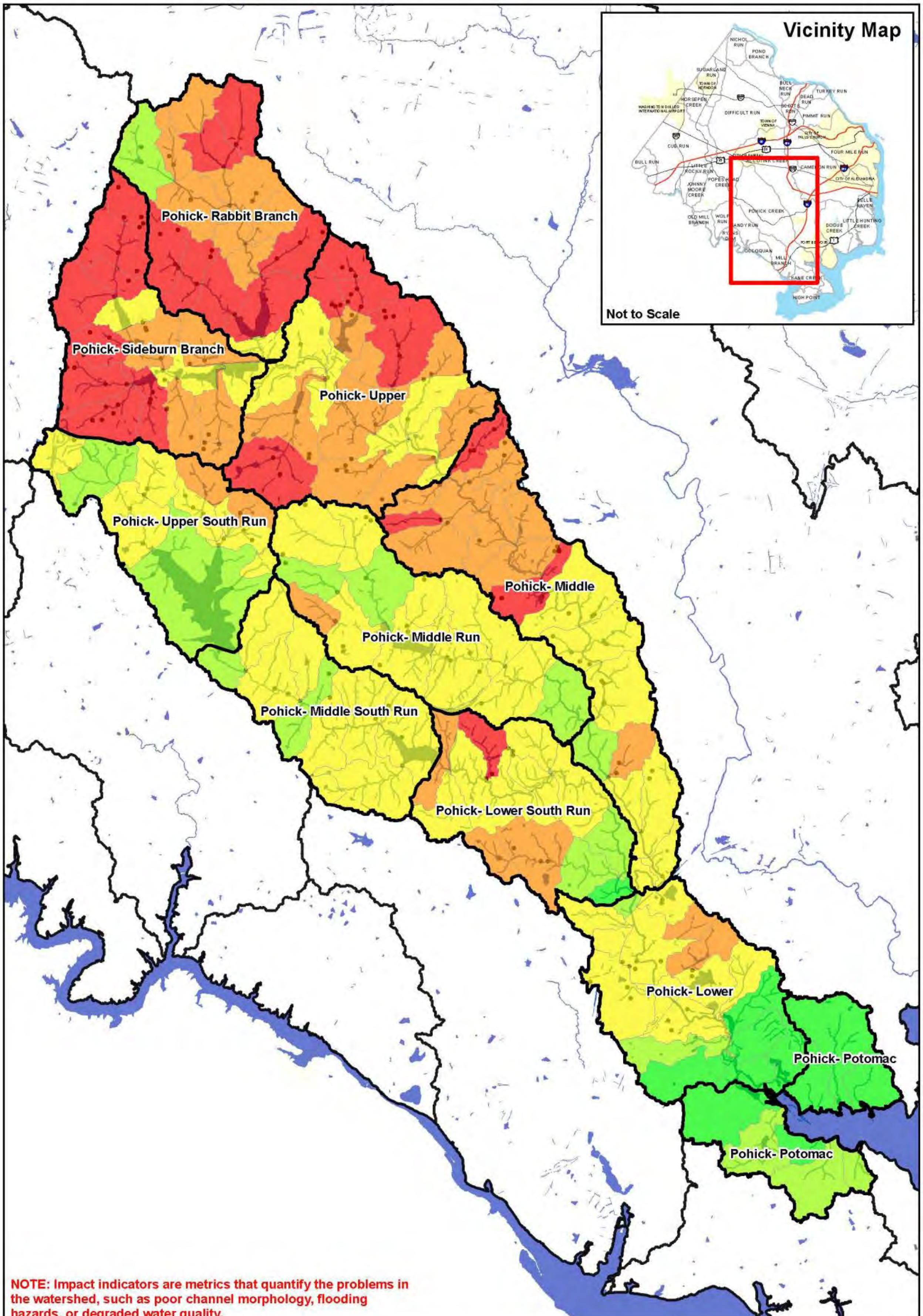
3.5 Pohick Creek Results

The Pohick Watershed Impact Composite Score is shown in **Map 3.5-1**. This map displays an overall composite score that itself is a weighted average of composite scores of the individual impact indicators for each subwatershed. The scale on the map ranks the subwatersheds from high (green) to low (red) quality.

In the Pohick Creek watershed, various portions differ considerably in quality as measured by the overall watershed impact indicator composite score. Generally, the watershed's southern portion (Potomac and Lower WMAs) has above-average watershed quality as compared to the rest of the watershed. A few of the subwatersheds in the I-95 corridor of this southern section are poorer quality. The entire southwestern edge of the watershed (Upper South Run, Middle South Run and Lower South Run WMAs) also generally has good watershed quality. Areas in the vicinity of Burke Lake in the Upper South Run WMA are very high quality, but the Lower South Run has some areas of lower quality. The more developed eastern portion of the watershed (Middle Run and Middle WMAs) has a generally average watershed quality, but also a great deal of variation between individual subwatersheds. The heavily developed headwaters of the Pohick Creek watershed (Rabbit Branch, Sideburn Branch and Upper Pohick WMAs) show the poorest watershed quality in general. Some pockets of green and light-green subwatersheds still exist where there are suburban parks and undeveloped portions of institutional land.

The source composite score rankings are shown in **Map 3.5-2**. Unlike the watershed impact score, the source composite score was computed as a simple average of approximately a dozen individual source indicator scores. The scale establishes the bounds on the gradation from generally good quality (green) to comparatively poor quality (red) on the map. Since the source composite score was computed with a distinct set of indicators from the overall watershed impact score, the subwatersheds with good quality or poor quality may be significantly different than for the overall watershed impact map.

The sparsely developed area near the Pohick watershed's discharge generally has the best source quality in the watershed. The subwatersheds just to the east of I-95 in Pohick-Lower WMA, however, have generally low source quality. The western portion of the middle reaches of the watershed (along South Run) is characterized by above-average to good source quality, with significant zones of average source quality. The more developed eastern portion of the middle of the watershed (Middle Run and Middle WMAs) is dominated by subwatersheds with below-average watershed quality. The northern headwaters of the watershed have generally poor source quality, as shown by the large regions of red and orange on the map.



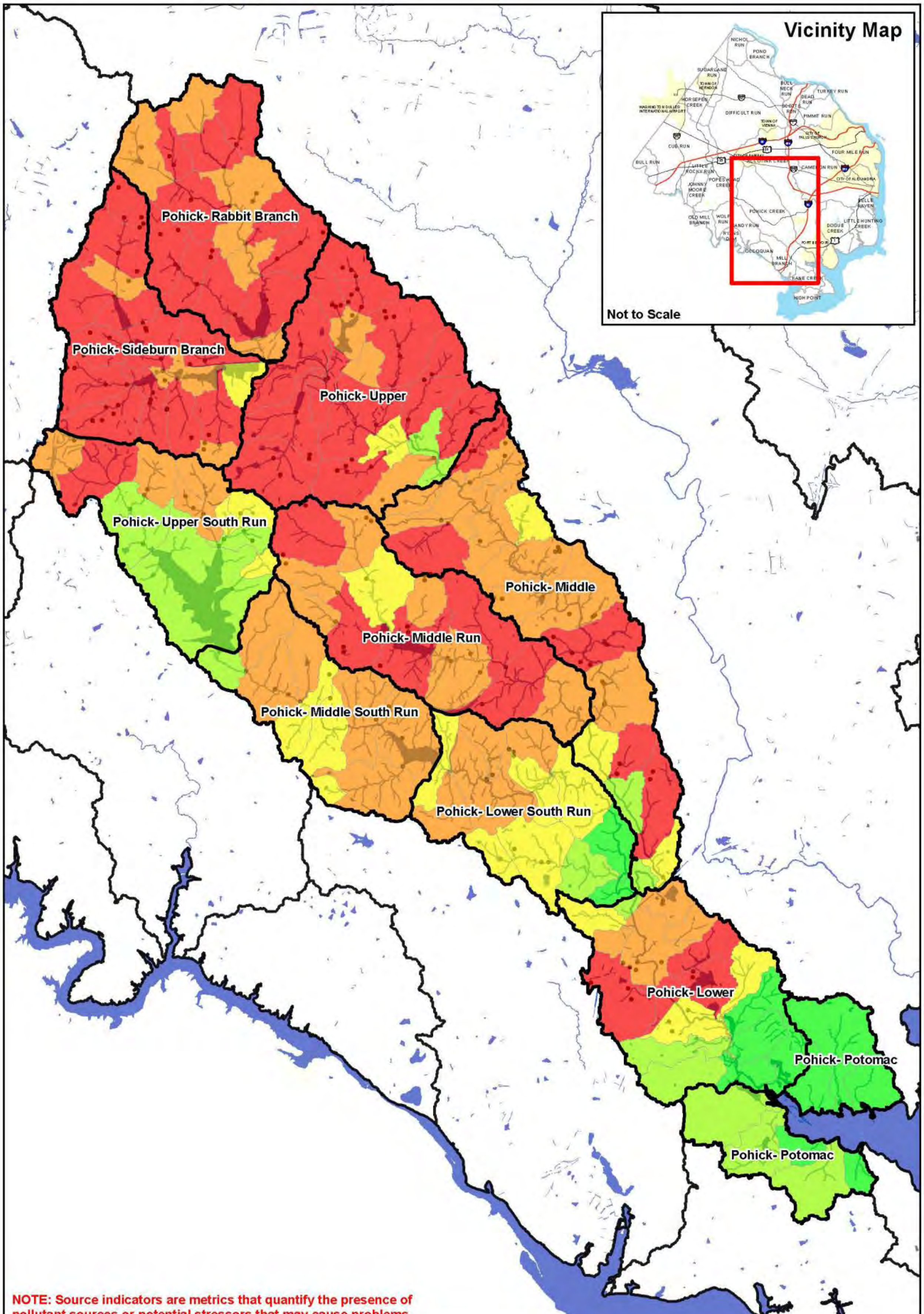
0 2,800 5,600 8,400 Feet

Streams & Rivers
Watershed Boundaries
Lakes & Ponds

High Quality
Low Quality

Map 3.5-1

Pohick Watershed Impact Composite Score



Streams & Rivers
Watershed Boundaries
Lakes & Ponds

High Quality

Low Quality

Map 3.5-2

Pohick Watershed Source Composite Score

4.0 Summary of Watershed Restoration Strategies

Watershed impact indicators, source indicators and field reconnaissance were used to determine areas of impairment or degraded conditions in the Pohick Creek watershed. Maps were created of these areas using the subwatershed ranking procedure. These maps were then used to create restoration strategies to address and mitigate areas of impairment or degraded conditions. Within Pohick Creek, all 10 of the watershed management areas (WMAs) experienced some level of impairment, ranging from severe stream bank erosion to minor raised nutrient loading. The restoration strategies considered for Pohick Creek were stream restoration and habitat quality improvement, addressing flooding issues, improving water quality and identifying regional pond alternatives.

The process for candidate site selection was based on the broad restoration strategies. Color-coded watershed maps and spreadsheets were created using the scoring thresholds developed for the watershed metrics. This gave a visual representation of potential problem trends or issues throughout the overall watershed. The scoring worksheets from the Subwatershed Ranking Spreadsheets were reviewed, and some basic statistical calculations were performed to identify some of the more prevalent issues affecting each watershed as a whole. After identifying some basic trends, individual WMAs were selected for analysis.

Each subwatershed has a composite score for its source indicators and impact indicators. The individual metrics comprising the watershed's composite score were reviewed for each subwatershed and any potential project areas were identified. See map 4.1, which includes BOS magisterial districts, for locations of all proposed projects in the Pohick Creek watershed. Subwatersheds with both severe source and impact indicators were deemed most critical for restoration. The final step of the strategy involved looking at GIS orthographic maps, field site visit forms, site photos and other pertinent information, such as community input, related to the given subwatershed. The objective was to select projects and sites that fit the overall condition of the watershed and aligned with County goals and objectives. During site selection and prioritization, stormwater system improvement, system repair, prevention and site-specific conditions were all considered. Multiple remedy options were available. For areas of extreme degradation or severe conditions, improvements were made. For areas with moderate conditions, repairs were proposed. And for areas in good condition, but facing potential future degradation, prevention projects were selected. Most of which were targeted to open areas on public land.

See Table 4-2 for a list of all proposed projects. A detailed description of the Pohick Creek watershed restoration strategies and candidate project selection methodology can be found in Appendix B.

Each proposed project was labeled using a standard 6-digit convention, XX9YZZL, where:

XX 2-digit watershed code

Y Project Type Code as follows:

- 0 – Regional pond projects/alternatives
- 1 – New SWM pond/SWM pond retrofit
- 2 – Stream restoration projects
- 3 – Area-wide drainage improvement
- 4 – Culvert retrofit
- 5 – New BMP/LID and BMP/LID retrofit
- 6 – Flood protection/mitigation
- 7 – Outfall improvement
- 8 & 9 – All other project types

ZZ Remaining digits in ascending order throughout the watershed starting with 00 at the lowest point in the watershed

L A, B, C, etc. (if needed), used if a given project consists of several large components.

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4.1 Restoration Strategies

4.1.1 Structural Projects

The structural projects will be part of the County's capital improvement plans and were prioritized as being in either the 0-10 year plan or the 11-25 year plan. The structural projects are funded separately from the non-structural projects. Cost estimates for the structural projects were created per the County's guidance. The structural project types proposed were approved by the County and discussed in the WAG.

Structural Project Types include:

- Stormwater pond retrofits / New Stormwater Ponds
- Stream restorations
- BMP/LID Projects
- Dumpsite and obstruction removals
- Regional Pond Alternatives

These projects, when possible, were proposed on County owned land to allow for easy implementation. These projects will help improve the County's existing stormwater infrastructure and help ensure full utilization of the County's existing resources.

4.1.2 Types of Structural Projects

<u>Stormwater Pond Retrofits/New Stormwater Ponds</u>

A new stormwater pond project involves the creation of an extended detention dry pond that will improve water quality and quantity treatment for the surrounding area. Wet pond retrofits will modify the existing pond to increase pollutant removal and to provide adequate channel protection above the permanent pool. The retrofit will create a better-functioning environment for gravitational settling, biological uptake, and microbial activity with a permanent pool of standing water, providing for high and reliable pollutant removal performance. The pool prevents re-suspension of sediments and other pollutants and allows for numerous pollutant removal mechanisms to operate. Dry pond retrofits will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out, providing fair to good removal for particulate pollutants.

Figure 4-1: Dry stormwater pond

Figure 4-2: Wet stormwater pond with forebay

Best Management Practice (BMP)/Low Impact Development (LID) Projects

A BMP/Low Impact Development (LID) project is designed to minimize the impact of changes in land use on surface and groundwater systems, with the primary goal of mimicking predevelopment site hydrology. Structural BMP/LID projects include: bioswales, pervious pavement, and bioretention filters. Bioswales will capture sheet flow from impervious areas and reduce runoff volume and increase groundwater recharge. Pervious pavement will treat and/or reduce parking lot runoff using a (semi-)porous material that allows runoff to infiltrate and then trap pollutants in the soil. The pavement will also allow for surface storage, reducing runoff volumes. Bioretention will capture sheet flow from impervious areas and create an ideal environment for filtration, biological uptake and microbial activity, providing moderate to high pollutant removal. It will also reduce the outflow to the storm sewer system.

Figure 4-3: Parking lot pervious pavement

Figure 4-4: Parking lot bioretention filter

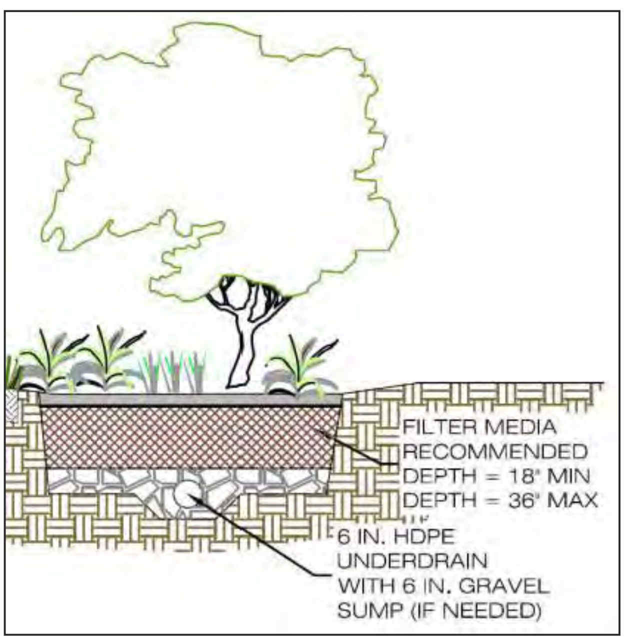


Figure 4-5: Bioretention section

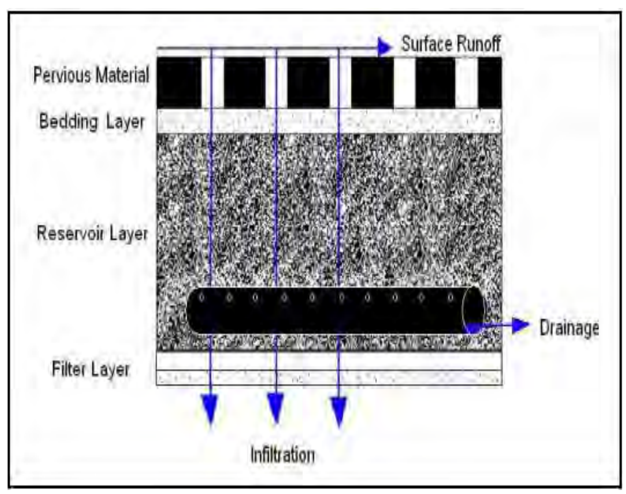


Figure 4-6: Pervious pavement section

Stream Restoration

Stream restoration is the re-establishment of the general structure, function and self-sustaining behavior of a stream. Restoration can include numerous methods such as installation of structures and planting of vegetation to stabilize and protect stream banks, reshaping or re-aligning stream banks, and repairing stream bed erosion in order to restore the natural morphology of the stream. A stream restoration project can consist of reopening to daylight, sections of a stream that had previously been piped. This is also known as daylighting. Other stream restorations include improving conditions around a stream's inflow pipes by providing outfall protection with energy dissipation devices. This will also help to minimize erosion.

Figure 4-7: Cross vane added to stream

Figure 4-8: Stabilized stream banks

Outfall Improvements

Outfall improvement projects consist of several different measures designed to reduce erosive velocities and sediment loads at the stormwater outfalls. Outfall improvement projects can include reconstruction of the outfall to provide an energy dissipation device and erosion protection, reconstruction of roadside swales or concrete channels with vegetated plantings, and construction of a new storage and treatment area below an outfall.

Figure 4-9: An eroded outfall

Figure 4-10: An improved outfall

Regional Pond Alternative Projects

Using the WMP Standards 3. 2, all unconstructed regional ponds from the County's current Regional Pond Program were evaluated for inclusion into one of the following disposition categories (see Table 4-1 Category column). These categories were previously developed with the Cub Run and Difficult Run watershed plans:

1. Recommend deletion of the proposed regional pond and implementation of a group of alternative projects.
2. Recommend deletion of the proposed regional pond and no alternative projects are necessary.
3. Recommend deferral of the proposed regional pond and implementation of a group of alternative projects. If the alternative projects cannot be implemented, then a modified scope regional pond may be considered at a future date.
4. Recommend implementation of a reduced-size or modified regional pond. If the pond still cannot be implemented, then pursue implementation of a group of alternative projects.

Table 4-1: Regional Pond Data (from Pond_on_Grid_UPDATED_020409.shp)

Status*	Project Name*	Stat Jan08*	Storm-net ID*	Built?	Category	Alter. Projects Proposed ?	PRJ_ID _LEG	PRJ_TYPE
Inactive	Pond P-01	C	0791D P	Y	N/A	Y	PC9001 A PC9001 B	Stormwater Pond Retrofit Stream Restoration
Inactive	Pond P-02	Non-exist	--	N	2	N	N/A	N/A
Inactive	Pond P-03	Non-exist	0922D P	N	1	Y	PC9003	Stormwater Pond Retrofit
Inactive	Pond P-04	Non-exist	--	N	1	Y	PC9004 A PC9004 B	Stream Restoration Dumpsite/obstruction removal
Active	Pond P-05	Non-exist	--	N	2	N	N/A	N/A
Inactive	Pond P-06	Non-exist	--	N	2	N	N/A	N/A
Inactive	Pond P-07	Non-exist	--	N	1	Y	PC9007	Stormwater Pond Retrofit
Complete d	Pond P-08	C	0525D P	Y	N/A	Y	PC9008	Stormwater Pond Retrofit

In the 1989 Regional Stormwater Management Plan Final Report, a total of eight regional ponds were proposed for the portion of Pohick Creek that drains to Burke Lake. Of these eight recommended regional ponds, two (P-01 and P-08) have a status of "C" (completed), one (P-05) has a status of "A" (active County project, partially funded), and five (P-02, P-03, P-04, P-06 and P-07) have a status of "I" (not an active funded County project).

Alternative regional pond projects were proposed for P-03, P-04 and P-07, which included stormwater pond retrofits to existing stormwater ponds, stream restorations, and dumpsite/obstruction removal projects. Although P-01 and P-08 were completed, alternative regional pond projects were proposed to provide supplemental benefits, which included stormwater pond retrofits to the existing stormwater ponds, and stream restorations. No alternative regional pond projects were proposed for P-02 and P-06, as the proposed areas for these regional ponds were largely undeveloped, natural and densely forested areas and no existing stormwater ponds were available to retrofit. No alternative regional pond projects were proposed for P-01, since this is an active County project.

4.1.3 Non-Structural Projects

Non-structural projects are a group of projects that do not require traditional construction measures to be implemented and may be programmatic in nature. These projects include:

Figure 4-11: Community members restoring and replanting stream buffer area

- Buffer restorations
- Rain-barrel programs
- Dumpsite and obstruction removals
- Community outreach and public education
- Land conservation coordination projects
- Inspection and enforcement projects
- Street-sweeping programs
- Recommendation of additional studies, surveys and assessments

These projects, in concert with the structural projects, represent a holistic approach to watershed management. Since much of the land area in Fairfax County is privately owned, there is a strong need to work with local communities to promote environmental awareness and recommend projects that can be implemented by residents and other groups.

The fundamental difference between structural and non-structural projects is the ability to predict the result of the project implementation through models. For example, the nitrogen removal of a wet pond may be calculated; however, there is no way to predict the reduction in nitrogen from an outreach campaign on proper fertilizer use. Additionally, these projects and programs should not be confined to any single watershed but could be implemented throughout the County as opportunities occur. Because of these differences, non-structural projects were evaluated and will be implemented using a different process than the structural projects.

There are many advantages of non-structural projects. Some of the key advantages to these projects type are:

- Less cost
- Less disruption
- More public and community awareness

In general, non-structural projects represent opportunities to proactively pursue stormwater issues that more traditional structural practices cannot address. The use of non-structural practices fulfills Fairfax County's MS4 permit requirements and environmental initiatives. The full potential of these projects will be realized through partnerships with County agencies, residents and other interested parties.

4.1.4 Types of Non-Structural Projects

Buffer Restorations

Buffer restoration projects consist of practices such as the re-planting of upland buffer areas and providing riparian reforestation, (re-establishing additional streamside buffers) which helps filtration of pollutants, while reducing runoff by intercepting the water and increasing surface storage and infiltration.

Figure 4-12: Tires and debris removed near or from stream

Dumpsite/Obstruction Removals

Dumpsite/obstruction removals are the removal of obstructions in or near stream channels, which help restore stream channels to their natural conditions and improve the function of the streams. Examples of proposed projects include the cleanup of trash in or near the stream channel to help reduce the amount of pollutants from entering adjacent streams and storm systems, or the removal of a blockage within the stream channel, thereby relieving flooding and/or erosion.

Street-Sweeping Programs

Street sweeping helps reduce the amount of potential pollutants entering nearby streams and storm systems. In addition, these programs add the aesthetic benefits of having clean streets and the safety benefits of removing debris that can block storm systems and stormwater facilities. Areas where these projects were proposed are primarily comprised of dense residential development, many of which have their streets piped directly into the nearby streams with little or no stormwater controls.

Figure 4-13: Street-sweeping truck

<u>Lake Management for Water Quality Study</u>

This project is a study to determine the water quality benefits of dredging the six lakes that were created by the PL-566 Dams. These lakes include; Lake Mercer, Huntsman Lake, Royal Lake, Lake Braddock, Lake Barton, and Woodglen Lake. These lakes are currently trapping sediment. One possible benefit of dredging includes an increased permanent pool volume (which will in turn trap more sediment). Other benefits include extending the lifespan of the lakes, and enhancing recreation. Other water quality benefits include removing shallow foraging areas which may decrease the number of waterfowl and associated fecal contamination. Increased depth benefits thermal stratification which in turn benefits fisheries. If the lake is eutrophic, dredging may increase dissolved oxygen by decreasing biological oxygen demand (BOD) by removing organic sediment. Dredging may also remove phosphorus bound to these sediments, although this phosphorus is currently locked in place within the lake.

Figure 4-14: Sediment build-up at Huntsman Lake

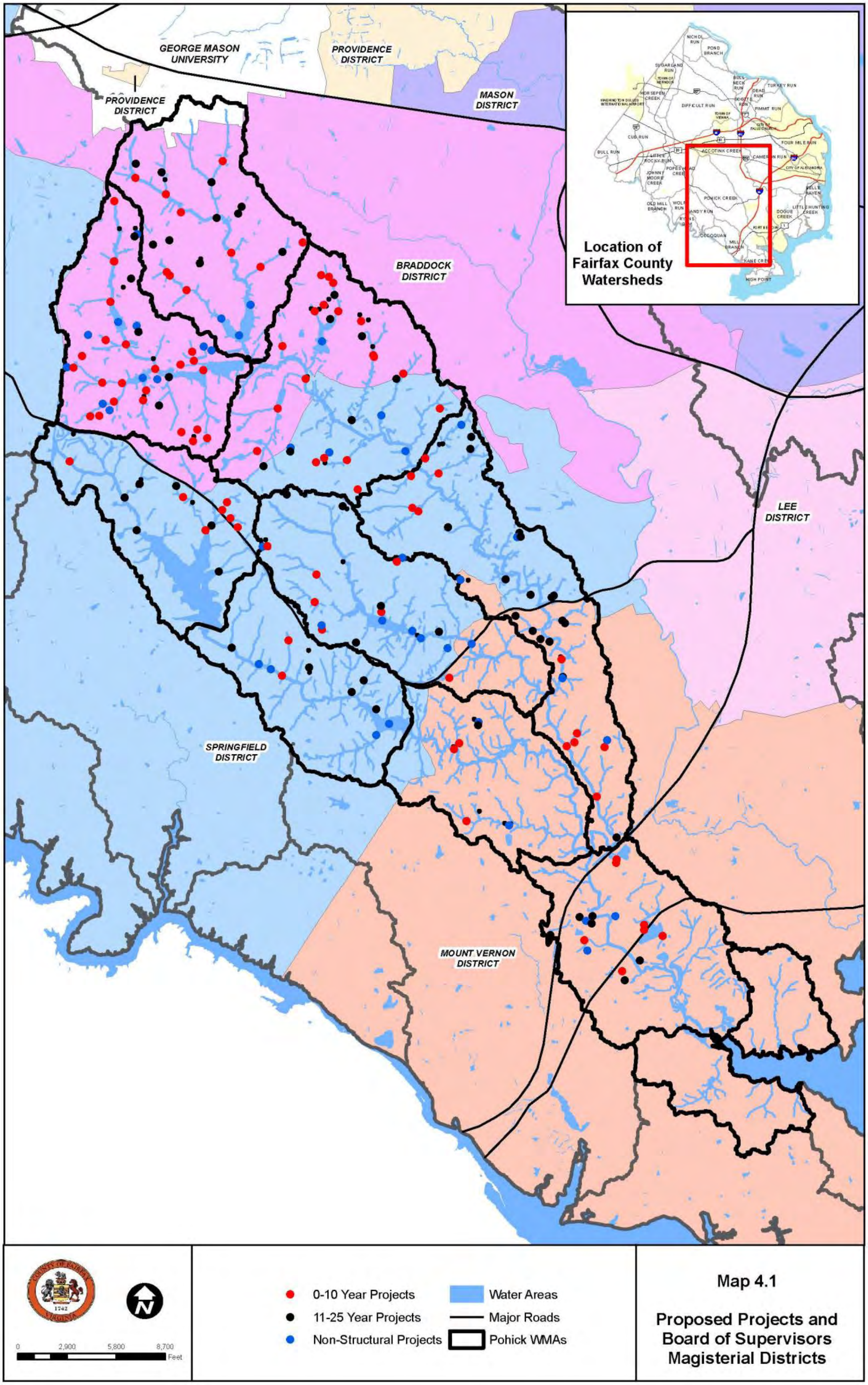
4.2 Project Prioritization Process

The structural project prioritization was completed using a spreadsheet based on the prioritization scheme that is summarized in Appendix B. The spreadsheet uses five factors to provide a basis to compare each project's ability to improve the watershed and rank the most beneficial projects. The five factors were weighted as follows: impact indicators (30 percent), source indicators (30 percent), priority subwatersheds (10 percent), sequencing (20 percent), and implementability (10 percent).

The final composite scores for projects were based on the five factors and their corresponding weights. This score was used to obtain an initial ranking. The higher the overall composite scores the lower the preliminary rank (higher priority). Once the initial rankings were completed using the prioritization scheme's quantitative method, the projects were qualitatively reviewed. This review involved going through every project starting at the highest ranked projects and reviewing the project descriptions, GIS information, field observations, WAG comments, and the ability for a project to achieve the County's objectives. From this review best professional judgment (BPJ) was used to adjust the scores to ensure the projects were ranked correctly. Additionally, candidate projects that cost less than $80,000 and could not be grouped with another project were eliminated from the WMP.

Once the initial priority ranking determined the highest priority projects that would be implemented in the 10-year plan, a simplified cost benefit analysis was completed. The cost benefit analysis divided a project's composite score (i.e., benefit) by its cost, to allow a cross comparison of 10-year plan projects. This cost analysis created a project ranking that was substantially different from the initial ranking. Some projects had costs that were much higher than the costs of other projects with similar benefit scores. These projects were moved from the 10-year plan and placed in the 25-year plan. Other projects were given minor score adjustments to adjust their ranks in the 10-year plan to better reflect their cost benefits. Lastly, the projects in the 10-year plan were further evaluated on factors such as hydrologic and hydraulic modeling results and estimated costs vs. projected benefits and adjusted as part of the final project sequencing.

Non-structural projects were ranked using either a quantitative analysis or a qualitative analysis, depending on the project type. Rain barrels and buffer restorations were scored per the method described above. Project ranks for street sweeping and reforestation projects were determined by comparing the existing conditions suspended solids, phosphorus, and nitrogen ranking indicator scores and assigning a score of 1 through 5 based on their potential for improvement. The average of these scores was used to obtain an initial ranking. Finally, a BPJ score modification was used to account for any project-specific issues. The score modification also considers the number of flood complaints. Due to the high implementability and immediate results of the non-structural projects, these projects were evaluated separately from the 0 – 25-year plan. Additional information on the project prioritization process can be found in Technical Memo 3.4/3.5 in Appendix B.



Map 4.1

Proposed Projects and Board of Supervisors Magisterial Districts

Table 4-2: Project List – Master

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9003	Stormwater Pond Retrofit	Pohick-Upper South Run	Next to 6424 Lake Meadow Dr.	Water quality and quantity control	Private - HOA	$ 320,000
PC9004	Stream Restoration Suite	Pohick-Upper South Run	10125 Lakehaven Ct.	Water quality control	Public/Local - FCPA	$ 1,330,000
PC9007	Stormwater Pond Retrofit	Pohick-Upper South Run	Behind 6416 Lake Meadow Dr.	Water quality and quantity control	Private - HOA	$ 210,000
PC9008	Stormwater Pond Retrofit	Pohick-Upper South Run	Next to 10995 Rice Field Pl.	Water quality and quantity control	Private - Residential	$ 610,000
PC9100	Stormwater Pond Retrofit	Pohick-Lower	9515 Richmond Hwy., Lorton Athletic Fields	Water quality and quantity control	Public/Local - Fairfax County	$ 300,000
PC9101	Stormwater Pond Retrofit	Pohick-Lower	9409 Lorton Market St., Lorton Marketplace Shopping Center	Water quality and quantity control	Private - Commercial	$ 270,000
PC9102	Stormwater Pond Retrofit	Pohick-Lower	9399 Richmond Hwy., Norman M. Cole WWTP	Water quality and quantity control	Public/Local - Fairfax County	$ 180,000
PC9103	Stormwater Pond Retrofit	Pohick-Lower	7665 Lorton Rd., Gunston Shopping Plaza	Water quality and quantity control	Private - Commercial	$ 120,000
PC9104	Stormwater Pond Retrofit	Pohick-Lower	7665 Lorton Rd., Gunston Shopping Plaza	Water quality and quantity control	Private - Commercial	$ 120,000
PC9105	Stormwater Pond Retrofit	Pohick-Lower	Behind 7747 Milford Haven Ct.	Water quality and quantity control	Private - HOA	$ 310,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9106	Stormwater Pond Retrofit	Pohick-Lower South Run	8501 Silverbrook Rd., South County Secondary School	Water quality and quantity control	Public/Local - FCPA	$ 450,000
PC9107	Stormwater Pond Retrofit	Pohick-Middle	8111 Northumberland Rd., Saratoga Elementary School	Water quality and quantity control	Public/Local - FCPS, FCPA	$ 180,000
PC9109	Stormwater Pond Retrofit	Pohick-Middle Run	8750 Pohick Rd., St. Raymond's - Penafort Catholic Church	Water quality and quantity control	Private - Church	$ 220,000
PC9110	Stormwater Pond Retrofit	Pohick-Middle South Run	9908 South Park Ci.	Water quality and quantity control	Private - Residential	$ 520,000
PC9114	Stormwater Pond Retrofit	Pohick-Middle Run	7420 Reservation Dr., Sangster Elementary School	Water quality and quantity control	Public/Local - FCPS	$ 120,000
PC9118	Stormwater Pond Retrofit	Pohick-Middle Run	Behind 9500 Shipwright Dr.	Water quality and quantity control	Private - HOA	$ 390,000
PC9120	Stormwater Pond Retrofit	Pohick-Middle Run	Behind 9505 Southern Cross La.	Water quality and quantity control	Private - HOA	$ 640,000
PC9121	Stormwater Pond Retrofit	Pohick-Upper South Run	9900 Old Keene Mill Rd. , Burke Community Church	Water quality and quantity control	Private - Church	$ 170,000
PC9122	Stormwater Pond Retrofit	Pohick-Middle	Between Field Master Dr. & Huntsman Blvd.	Water quality and quantity control	Private - HOA	$ 390,000
PC9124	Stormwater Pond Retrofit	Pohick-Upper South Run	6401 Missionary La., Fairfax Baptist Temple Academy	Water quality and quantity control	Private - Church	$ 600,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9126	Stormwater Pond Retrofit	Pohick-Upper	16130 Shiplett Blvd., White Oaks Elementary School	Water quality and quantity control	Public/Local - FCPS	$ 170,000
PC9127	Stormwater Pond Retrofit	Pohick-Sideburn Branch	Next to 6000 Burke Centre Pkwy., near Terre Centre Elementary School	Water quality and quantity control	Private - Residential	$ 550,000
PC9128	Stormwater Pond Retrofit	Pohick-Sideburn Branch	6000 Burke Commons Rd., Wal-Mart Supercenter	Water quality and quantity control	Private - Residential	$ 240,000
PC9129	Stormwater Pond Retrofit	Pohick-Sideburn Branch	6000 Freds Oak Rd., Fairfax Co. Wastewater Collection	Water quality and quantity control	Public/Local - Fairfax County	$ 280,000
PC9130	Stormwater Pond Retrofit	Pohick-Sideburn Branch	10301 New Guinea Rd., Target shopping center	Water quality and quantity control	Private - Commercial	$ 230,000
PC9131	Stormwater Pond Retrofit	Pohick-Sideburn Branch	Behind 10268 Colony Park Dr.	Water quality and quantity control	Private - HOA	$ 210,000
PC9132	Stormwater Pond Retrofit	Pohick-Upper	Behind 9713 Lakepointe Dr.	Water quality and quantity control	Private - HOA	$ 470,000
PC9133	Stormwater Pond Retrofit	Pohick-Upper	9200 Burke Lake Rd., Lake Braddock Secondary School	Water quality and quantity control	Public/Local - FCPS	$ 120,000
PC9135	Stormwater Pond Retrofit	Pohick-Rabbit Branch	Behind 5220 Nottinghill La., Pond along Roberts Rd.	Water quality and quantity control	Private - HOA	$ 540,000
PC9136	Stormwater Pond Retrofit	Pohick-Upper	Behind 5120 Dahlgreen Pl., Playground	Water quality and quantity control	Private - HOA	$ 190,000

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9138	Stormwater Pond Retrofit	Pohick-Rabbit Branch	Behind 10305 Nantucket Ct.	Water quality and quantity control	Private - HOA	$ 140,000
PC9139	Stormwater Pond Retrofit	Pohick-Sideburn Branch	10697 Braddock Rd., University Mall Shopping Center	Water quality and quantity control	Private - Commercial	$ 220,000
PC9140	Stormwater Pond Retrofit	Pohick-Rabbit Branch	Intersection of Mason Pond Dr. and Roanoke River La.	Water quality and quantity control	Public/State - GMU	$ 260,000
PC9142	New Stormwater Pond	Pohick-Rabbit Branch	Northwest of intersection of Roberts Road and Braddock Road	Water quality and quantity control	Public/State - GMU	$ 1,470,000
PC9201	Stream Restoration	Pohick-Middle	Behind 7756 Matisse Way	Water quality control	Public/Local - FCPA	$ 1,480,000
PC9202	Stream Restoration Suite	Pohick-Lower South Run	Behind 8181 Willowdale Ct., South Run Stream Valley Park	Water quality control	Private - Residential, Public/Local - FCPA, Private - HOA	$ 1,120,000
PC9203	Stream Restoration	Pohick-Middle	8100 Lake Pleasant Dr.	Water quality control	Public/Local - FCPA	$ 680,000
PC9204	Stream Restoration	Pohick-Lower South Run	Next to 8661 Rising Creek Ct.	Water quality and quantity control	Private - HOA	$ 180,000
PC9205	Stream Restoration	Pohick-Middle	Behind 8106 Kings Point Ct.	Water quality and quantity control	Public/Local - FCPA	$ 160,000
PC9206	Stream Restoration	Pohick-Middle	Next to 8021 Lake Pleasant Dr.	Water quality control	Private - HOA	$ 140,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9210	Stream Restoration	Pohick-Middle South Run	Behind 7801 Preakness La.	Water quality control	Public/Local - FCPA	$ 1,380,000
PC9211	Stream Restoration Suite	Pohick-Middle	Near 8000 Middlewood Pl.	Water quality and quantity control	Public/Local - FCPA	$ 310,000
PC9214	Stream Restoration	Pohick-Middle Run	Behind 7309 Gist Ct.	Water quality control	Public/Local - FCPA	$ 700,000
PC9222	Stream Restoration	Pohick-Middle	Behind 8817 Bridle Wood Dr.	Water quality control	Public/State - VDOT, Public/Local - FCPA, Private - Residential	$ 1,260,000
PC9223	Stream Restoration	Pohick-Upper South Run	Between Waterside Dr. & Burke Woods Dr.	Water quality control	Private - HOA	$ 530,000
PC9225	Stream Restoration	Pohick-Middle	Next to 6297 Kerrydale Dr.	Water quality control	Private - HOA	$ 940,000
PC9226	Stream Restoration	Pohick-Middle	Behind 6321 Hillside Rd.	Water quality control	Private - Residential, Private - HOA	$ 1,010,000
PC9227	Stream Restoration	Pohick-Upper	Behind 9500 Orion Ct.	Water quality and quantity control	Public/Local - FCPS	$ 90,000
PC9228	Stream Restoration Suite	Pohick-Upper	Behind 6300 Glenbard Rd.	Water quality control	Public/Local - FCPA, FCPS, Private - HOA	$ 1,560,000
PC9229	Stream Restoration Suite	Pohick-Middle	Behind 8901 Winding Hollow Way	Water quality control	Private - Residential	$ 1,680,000
PC9230	Stream Restoration	Pohick-Upper	Behind 9820 Rand Dr.	Water quality control	Private - Residential	$ 610,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9234	Stream Restoration	Pohick-Upper	Behind 9840 Natick Rd.	Water quality control	Private - Residential	$ 1,270,000
PC9235	Stream Restoration	Pohick-Upper	Behind 5913 Veranda Dr.	Water quality and quantity control	Private - HOA	$ 130,000
PC9236	Stream Restoration	Pohick-Sideburn Branch	Across the street from 5901 Fred's Oak Rd.	Water quality control	Private - Residential	$ 190,000
PC9237	Stream Restoration	Pohick-Sideburn Branch	Behind 10550 Reeds Landing Ct.	Water quality control	Private - Residential	$ 580,000
PC9239	Stream Restoration	Pohick-Sideburn Branch	Next to 5914 Cove Landing Rd.	Water quality and quantity control	Private - Residential	$ 90,000
PC9240	Stream Restoration	Pohick-Sideburn Branch	Near 5901 Waters Edge Landing La.	Water quality control	Private - Residential	$ 860,000
PC9241	Stream Restoration	Pohick-Sideburn Branch	Behind 10734 Burr Oak Way	Water quality control	Private - Residential	$ 920,000
PC9242	Stream Restoration	Pohick-Upper	Behind 5753 Burke Towne Ct.	Water quality control	Public/Local - FCPA	$ 1,160,000
PC9245	Stream Restoration	Pohick-Upper	5621 Herbert's Crossing Dr.	Water quality control	Private - HOA, Public/State - VDOT	$ 860,000
PC9246	Stream Restoration	Pohick-Sideburn Branch	Behind 6001 Burke Commons Rd.	Water quality control	Private - Residential	$ 750,000
PC9247	Stream Restoration Suite	Pohick-Sideburn Branch	10400 Premier Ct.	Water quality control	Private - Residential	$ 540,000
PC9249	Stream Restoration	Pohick-Upper	Behind 5565 Queen Victoria Ct.	Water quality control	Private - HOA	$ 1,990,000

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9250	Stream Restoration	Pohick-Sideburn Branch	Behind 10602 Goldeneye La.	Water quality control	Public/Local - FCPA, FCPS	$ 1,000,000
PC9251	Stream Restoration	Pohick-Upper	Behind 9313 Winbourne Rd.	Water quality control	Private - HOA	$ 520,000
PC9252	Stream Restoration	Pohick-Upper	Next to 9535 Wallingford Dr.	Water quality control	Private - HOA	$ 380,000
PC9254	Stream Restoration	Pohick-Sideburn Branch	Behind 10757 John Turley Pl.	Water quality control	Public/Local - FCPA	$ 1,050,000
PC9256	Stream Restoration	Pohick-Rabbit Branch	Behind 5351 Brandon Ridge Way	Water quality control	Public/Local - FCPA	$ 1,100,000
PC9257	Stream Restoration	Pohick-Upper	Next to 9404 Fairleigh Ct.	Water quality control	Private - HOA	$ 340,000
PC9258	Stream Restoration	Pohick-Upper	Next to 5101 Dahlgreen Pl.	Water quality and quantity control	Private - HOA	$ 110,000
PC9259	Stream Restoration	Pohick-Rabbit Branch	Behind 5220 Nottinghill La.	Water quality control	Private - HOA	$ 800,000
PC9260	Stream Restoration	Pohick-Rabbit Branch	Near 9800 Commonwealth Blvd.	Water quality control	Private - HOA	$ 1,100,000
PC9261	Stream Restoration	Pohick-Sideburn Branch	Behind 5282 Beech Haven Ct.	Water quality control	Public/Local - FCPA	$ 720,000
PC9262	Stream Restoration	Pohick-Sideburn Branch	Behind 5214 Grinnell St.	Water quality control	Public/Local - FCPA	$ 1,520,000
PC9263	Stream Restoration	Pohick-Rabbit Branch	Behind 5802 Dequincey Dr.	Water quality control	Public/Local - FCPA	$ 800,000
PC9269	Stream Restoration	Pohick-Rabbit Branch	Next to 10159 Red Spruce Rd.	Water quality control	Private - HOA, Private - Residential	$ 680,000

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9515	BMP/LID Suite	Pohick-Middle Run	6820 Sydenstricker Rd., Orange Hunt Elementary School	Water quality and quantity control	Public/Local - FCPS	$ 260,000
PC9517	BMP/LID Suite	Pohick-Middle Run	9732 Ironmaster Dr., Cherry Run Elementary School	Water quality and quantity control	Public/Local - FCPS	$ 160,000
PC9525	BMP/LID	Pohick-Upper	9230 Old Keene Mill Rd., Rolling Valley Mall	Water quality control	Private - Commercial	$ 180,000
PC9531	BMP/LID Suite	Pohick-Sideburn Branch	6000 Burke Centre Pkwy., Terra Centre Elementary School	Water quality and quantity control	Public/Local - FCPS	$ 120,000
PC9534	BMP/LID	Pohick-Sideburn Branch	6011 Burke Centre Pkwy., Giant Supermarket	Water quality control	Private - Commercial	$ 140,000
PC9535	BMP/LID	Pohick-Sideburn Branch	6000 Freds Oak Rd., FFC Wastewater Collection Division Office Bldg.	Water quality and quantity control	Public/Local - Fairfax County	$ 130,000
PC9539	BMP/LID	Pohick-Sideburn Branch	5727 Burke Center Pkwy., Burke Center Shopping Center	Water quality control	Private - Commercial	$ 120,000
PC9544	BMP/LID Suite	Pohick-Upper	9450 Lake Braddock Dr., Lake Braddock Park	Water quality and quantity control	Public/Local - FCPA	$ 120,000
PC9548	BMP/LID	Pohick-Rabbit Branch	9525 Braddock Rd., Twinbrooke Shopping Center	Water quality control	Private - Commercial	$ 140,000
PC9701	Outfall Improvement	Pohick-Lower	7747 Milford Haven Ct.	Water quality control	Private - HOA	$ 80,000

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.

Priority Structural Projects (Ten Year Implementation Plan)[1]						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
PC9702	Outfall Improvement	Pohick-Sideburn Branch	5815 Ox Rd., Fairview Elementary	Water quality and quantity control	Public/Local - FCPS	$ 80,000
PC9703	Outfall Improvement	Pohick-Sideburn Branch	5637 Guinea Rd.	Water quality and quantity control	Private - Industrial	$ 110,000
PC9704	Outfall Improvement	Pohick-Upper	Next to 9199 Lake Braddock Dr.	Water quality and quantity control	Private - HOA	$ 540,000
PC9705	Outfall Improvement	Pohick-Sideburn Branch	Next to pool at 5601 Snowy Owl Dr.	Water quality and quantity control	Private - HOA	$ 80,000
					Total Cost	**$48,090,000**

Long-Term Structural Projects (25 Year Implementation Plan)[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9001	Regional Pond Alternative/ Stormwater Pond Retrofit Suite	Pohick-Upper South Run	Across from 10503 Pohick Ct., Church of Latter Day Saints	Water quality and quantity control	Public/Local - FCPA, Private - Residential, Private - HOA
PC9108	Stormwater Pond Retrofit	Pohick-Middle South Run	Behind 7278 Lakeland Valley Dr.	Water quality and quantity control	Public/Local - FCPA
PC9111	Stormwater Pond Retrofit	Pohick-Middle	8110 Deer Creek Pl.	Water quality and quantity control	Private - HOA
PC9112	Stormwater Pond Retrofit	Pohick-Middle Run	Behind 8874 Eagle Rock La.	Water quality and quantity control	Private - HOA
PC9113	Stormwater Pond Retrofit	Pohick-Middle	Behind 7439 Quincy Hall Ct.	Water quality and quantity control	Private - HOA, Private - Residential

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9115	Stormwater Pond Retrofit	Pohick-Middle	Behind 8032 Bethelen Woods La.	Water quality and quantity control	Private - Residential, Public/Local - FCPA
PC9116	Stormwater Pond Retrofit	Pohick-Middle	Behind 73919 Walnut Knoll Dr.	Water quality and quantity control	Public/Local - FCPA, Private - Residential
PC9117	Stormwater Pond Retrofit	Pohick-Middle	Across from 7320 Gambrill Rd., Commuter lot	Water quality and quantity control	Public/State - VDOT
PC9119	Stormwater Pond Retrofit	Pohick-Middle	Behind 7106 Hadlow Ct.	Water quality and quantity control	Public/Local - FCPA
PC9123	Stormwater Pond Retrofit	Pohick-Middle Run	6450 Sydenstricker Rd., near Pohick Regional Library	Water quality and quantity control	Public/Local - FCPS
PC9125	Stormwater Pond Retrofit	Pohick-Upper	Behind 6301 Wilmington Dr.	Water quality and quantity control	Private - HOA
PC9134	Stormwater Pond Retrofit	Pohick-Sideburn Branch	5222 Sideburn Rd., St. Mary's Church	Water quality and quantity control	Private - Church
PC9137	Stormwater Pond Retrofit	Pohick-Rabbit Branch	Behind 9463 Wenzel St.	Water quality and quantity control	Private - HOA
PC9141	New Stormwater Pond	Pohick-Upper	Behind 5550 Queen Victoria Ct.	Water quality and quantity control	Public/State - VDOT
PC9200	Stream Restoration	Pohick-Middle	Behind 7800 Creekside View La.	Water quality control	Public/State - VDOT
PC9207	Stream Restoration	Pohick-Middle South Run	Along access road next to 7719 Wagon Trail La.	Water quality control	Public/Local - FCPA
PC9208	Stream Restoration	Pohick-Middle South Run	Next to 9245 Northedge Dr.	Water quality and quantity control	Private - HOA
PC9209	Stream Restoration	Pohick-Middle	Behind 8154 Ships Curve La.	Water quality control	Public/Local - FCPA, Private - HOA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9212	Stream Restoration	Pohick-Middle South Run	Behind 4312 South View Ct.	Water quality control	Private - HOA, Public/Local - FCPA
PC9213	Stream Restoration	Pohick-Middle	Behind 7500 Ridgebrook Dr.	Water quality and quantity control	Public/Local - FCPA
PC9215	Stream Restoration	Pohick-Middle Run	Behind 9111 Beachway La.	Water quality and quantity control	Public/Local - FCPA
PC9216	Stream Restoration	Pohick-Middle	Behind 8098 Whitlers Creek Ct.	Water quality control	Private - HOA, Private - Residential
PC9217	Stream Restoration	Pohick-Middle	Behind 8084 Whitlers Creek Rd.	Water quality and quantity control	Private - HOA
PC9218	Stream Restoration	Pohick-Middle	Behind 7211 Olde Lantern Way	Water quality and quantity control	Public/Local - FCPA
PC9219	Stream Restoration	Pohick-Upper South Run	Northwest of Old Keene Mill Rd. & Fairfax Co. Pkwy.	Water quality control	Public/State - Game and Inland Fisheries Commission
PC9220	Stream Restoration	Pohick-Upper South Run	Behind 6803 Jeremiah Ct.	Water quality control	Public/Local - FCPA, Private - Residential
PC9221	Stream Restoration	Pohick-Upper South Run	Along Fairfax County Pkwy. behind Deckhand Dr.	Water quality control	Private - Residential Conservation
PC9224	Stream Restoration	Pohick-Upper South Run	East of Ox Croft Ct.	Water quality control	Public/Local - FCPA, Private - Residential
PC9232	Stream Restoration	Pohick-Upper	Behind 9623 Woodedge Dr.	Water quality control	Private - Residential
PC9233	Stream Restoration	Pohick-Upper	Near intersection of Burke Rd. and Heritage Square Rd.	Water quality control	Private - HOA, Public/State - VDOT

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9243	Stream Restoration	Pohick-Sideburn Branch	Behind 5832 First Landing Way	Water quality control	Private - Residential
PC9248	Stream Restoration	Pohick-Rabbit Branch	Along RR tracks near 5610 Sandy Lewis Dr.	Water quality control	Private - Residential
PC9255	Stream Restoration	Pohick-Upper	Behind 5208 Olley La.	Water quality and quantity control	Private - HOA
PC9265	Stream Restoration	Pohick-Rabbit Branch	Behind 10156 Bessmer La.	Water quality control	Private - HOA
PC9266	Stream Restoration	Pohick-Rabbit Branch	Behind 9733 Abington Ct.	Water quality control	Public/State - Commonwealth of VA, State Hospital Board
PC9267	Stream Restoration	Pohick-Rabbit Branch	9911 Braddock Rd., near Braddock Rd. Hospital	Water quality and quantity control	Public/State - Commonwealth of VA, State Hospital Board
PC9268	Stream Restoration	Pohick-Rabbit Branch	Behind 4613 Tapestry Dr.	Water quality control	Private - HOA
PC9500	BMP/LID	Pohick-Lower	9515 Richmond Hwy., Lorton Athletic Fields	Water quality and quantity control	Public/Local - FCPS
PC9501	BMP/LID	Pohick-Lower	9399 Richmond Hwy., Norman M. Cole WWTP	Water quality and quantity control	Public/Local - FCPS
PC9502	BMP/LID	Pohick-Lower	8101 Lorton Rd., Lorton Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9503	BMP/LID	Pohick-Lower	9290 Lewis Chapel Rd., Lorton Station Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9505	BMP/LID	Pohick-Lower	9290 Lewis Chapel Rd., Lorton Station Elementary School	Water quality and quantity control	Public/Local - FCPS

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9508	BMP/LID Suite	Pohick-Lower South Run	8001 Newington Forest Ave., Newington Forest Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9510	BMP/LID Suite	Pohick-Middle South Run	7549 Reservation Dr., South Run Recreation Center	Water quality and quantity control	Public/Local - FCPS
PC9511	BMP/LID	Pohick-Middle Run	7500 Huntsman Blvd., Huntsman Square Shopping Center	Water quality control	Private - Commercial
PC9519	BMP/LID Suite	Pohick-Middle	6703 Barnack Dr., Rolling Valley Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9521	BMP/LID	Pohick-Middle	6703 Barnack Dr., Rolling Valley Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9522	BMP/LID	Pohick-Middle	8600 Bridle Wood Dr., Orange Hunt Pool	Water quality and quantity control	Private - Residential
PC9524	BMP/LID	Pohick-Middle Run	6938 Nativity La., School of the Nativity (Church)	Water quality and quantity control	Private - Church
PC9526	BMP/LID	Pohick-Upper South Run	6401 Missionary La., Fairfax Baptist Temple Academy	Water quality and quantity control	Private - Church
PC9528	BMP/LID	Pohick-Upper	9654 Burke Lake Rd., Burke Center School	Water quality and quantity control	Public/Local - FCPS
PC9529	BMP/LID	Pohick-Middle	6100 Rolling Rd., West Springfield High School	Water quality and quantity control	Public/Local - FCPS
PC9532	BMP/LID	Pohick-Middle	6100 Rolling Rd., West Springfield High School	Water quality and quantity control	Public/Local - FCPS
PC9536	BMP/LID Suite	Pohick-Sideburn Branch	6001 Cove Landing Rd., Landings Community Center	Water quality and quantity control	Private - Residential

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Long-Term Structural Projects (25 Year Implementation Plan)[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9537	BMP/LID	Pohick-Upper	9016 Burke Rd., VA Railway Exp. - Rolling Rd. Station	Water quality and quantity control	Public/Local - FCPS
PC9540	BMP/LID Suite	Pohick-Sideburn Branch	5240 Sideburn Rd., Bonnie Brae Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9542	BMP/LID Suite	Pohick-Upper	9200 Burke Lake Rd., Lake Braddock Secondary School	Water quality and quantity control	Public/Local - FCPS
PC9543	BMP/LID	Pohick-Upper	9333 Lake Braddock Rd., Lakeside Pool - Lake Braddock C.A.	Water quality and quantity control	Private - HOA
PC9546	BMP/LID Suite	Pohick-Rabbit Branch	10110 Commonwealth Blvd., Laurel Ridge Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9547	BMP/LID	Pohick-Rabbit Branch	5035 Sideburn Rd., Robinson Secondary School	Water quality and quantity control	Public/Local - FCPS
PC9549	BMP/LID	Pohick-Rabbit Branch	5035 Sideburn Rd., Robinson Secondary School	Water quality and quantity control	Public/Local - FCPS
PC9550	BMP/LID Suite	Pohick-Sideburn Branch	5004 Sideburn Rd., Oak View Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9553	BMP/LID	Pohick-Rabbit Branch	Intersection of Patriot Ci. and Sandy Creek Way, George Mason University Parking Garage	Water quality and quantity control	Public/State - GMU
PC9554	BMP/LID	Pohick-Rabbit Branch	Between Mason Pond Dr. and George Mason Blvd. (Parking Garage)	Water quality and quantity control	Public/State - GMU
PC9700	Outfall Improvement	Pohick-Lower	9298 Lewis Chapel Rd., Lorton Station Elementary School	Water quality and quantity control	Public/Local - FCPS

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9504	BMP/LID	Pohick-Lower	9290 Lewis Chapel Rd., Lorton Station Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9507	BMP/LID	Pohick-Middle	8111 Northumberland Rd., Saratoga Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9509	BMP/LID	Pohick-Lower South Run	8001 Newington Forest Ave., Newington Forest Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9512	BMP/LID	Pohick-Middle Run	7420 Reservation Dr., Sangster Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9514	BMP/LID	Pohick-Middle	7107 Sydenstricker Rd., Hunt Valley Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9516	BMP/LID	Pohick-Middle	6820 Sydenstricker Rd., Orange Hunt Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9518	BMP/LID	Pohick-Middle Run	9732 Ironmaster Dr., Cherry Run Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9520	BMP/LID	Pohick-Middle	6703 Barnack Dr., Rolling Valley Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9527	BMP/LID	Pohick-Upper	16130 Shiplett Blvd., White Oaks Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9530	BMP/LID	Pohick-Upper	9645 Burke Lake Rd., Burke Center School	Water quality and quantity control	Public/Local - FCPS
PC9538	BMP/LID	Pohick-Sideburn Branch	5815 Ox Rd., Fairview Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9541	BMP/LID	Pohick-Sideburn Branch	5240 Sideburn Rd., Bonnie Brae Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9551	BMP/LID	Pohick-Sideburn Branch	5004 Sideburn Rd., Oak View Elementary School	Water quality and quantity control	Public/Local - FCPS

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9800	Street Sweeping Program	Pohick-Lower	Timarand Dr. and Inverary Ct.	Water quality control	Private - HOA
PC9801	Street Sweeping Program	Pohick-Lower	Lorton Station Blvd. & Stone Garden Dr.	Water quality control	Private - HOA
PC9802	Dumpsite/ Obstruction Removal Suite	Pohick-Lower South Run	Behind 8412 Sego Lilly Ct.	Water quality control	Public/Local - FCPA, Private - HOA
PC9803	Buffer Restoration	Pohick-Middle South Run	Behind 8104 Jeffrey Ct.	Water quality control	Public/Local - FCPA
PC9804	Dumpsite/ Obstruction Removal	Pohick-Middle	Between Cliffside Ct. & Richfield Rd. (7927 Richfield Rd.)	Water quality control	Public/Local - FCPA
PC9805	Dumpsite/ Obstruction Removal	Pohick-Middle South Run	Along Lee Chapel Rd., behind Stony Creek Ct.	Water quality control	Public/Local - FCPA
PC9806	Dumpsite/ Obstruction Removal	Pohick-Middle South Run	Near 7528 Rambling Ridge Dr.	Water quality control	Public/Local - FCPA
PC9807	Buffer Restoration	Pohick-Middle Run	Next to 8800 Shadowlake Way	Water quality control	Private - HOA
PC9808	Dumpsite/ Obstruction Removal	Pohick-Middle Run	Northeast of intersection of Hooes Rd. & Fairfax County Pkwy.	Water quality control	Public/State - VDOT
PC9809	Buffer Restoration	Pohick-Middle Run	Behind 7410 Seabrook La.	Water quality control	Public/Local - FCPA
PC9809	Buffer Restoration	Pohick-Middle Run	Behind 7410 Seabrook La.	Water quality control	Public/Local - FCPA
PC9810	Dumpsite/ Obstruction Removal Suite	Pohick-Middle Run	Behind 8903 Gutman Ct. & 7000 Cottontail Ct.	Water quality control	Public/Local - FCPA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9811	Dumpsite/ Obstruction Removal	Pohick-Upper	Near 6223 Rathlin Dr.	Water quality control	Public/Local - FCPA
PC9813	Buffer Restoration	Pohick-Middle	Behind 8586 Beatrice Ct.	Water quality control	Private - HOA
PC9814	Buffer Restoration	Pohick-Upper	Behind 6025 Bonnie Bern Ct.	Water quality control	Private - HOA
PC9815	Street Sweeping Program	Pohick-Sideburn Branch	5907 Freds Oak Rd.	Water quality control	Public/State - VDOT
PC9816	Buffer Restoration	Pohick-Sideburn Branch	Behind 10708 Freds Oak Ct.	Water quality control	Private - Residential
PC9817	Street Sweeping Program	Pohick-Sideburn Branch	Condominiums at Cove Landing Rd.	Water quality control	Public/State - VDOT
PC9818	Street Sweeping Program	Pohick-Sideburn Branch	5532 La Cross Ct.	Water quality control	Private - HOA
PC9819	Buffer Restoration	Pohick-Sideburn Branch	South of 10125 Zion Dr.	Water quality control	Public/State - VDOT
PC9820	Street Sweeping Program	Pohick-Sideburn Branch	10614 John Ayres Rd.	Water quality control	Public/State - VDOT
PC9821	Buffer Restoration	Pohick-Rabbit Branch	Behind 5330 Gainsborough Dr.	Water quality control	Public/Local - FCPA
PC9823	Lake Management for W.Q. Study	Pohick-Middle South Run	Lake Mercer, Near 7720 Wagon Trail Ln.	Water quality and quantity control	Public/Local - FCPA
PC9824	Lake Management for W.Q. Study	Pohick-Middle Run	Huntsman Lake, Near 7600 Modisto Ln.	Water quality and quantity control	Public/Local - FCPA
PC9825	Lake Management for W.Q. Study	Pohick-Sideburn Branch	Lake Barton, Near 5738 Lakeside Oak Ln.	Water quality and quantity control	Public/Local - FCPA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
PC9826	Lake Management for W.Q. Study	Pohick-Upper	Lake Braddock, Near 9408 Odyssey Ct.	Water quality and quantity control	Private - HOA
PC9827	Lake Management for W.Q. Study	Pohick-Rabbit Branch	Royal Lake, Near 5344 Gainsborough Dr.	Water quality and quantity control	Public/Local - FCPA
PC9828	Lake Management for W.Q. Study	Pohick-Sideburn Branch	Woodglen Lake, Behind 5502 Fireside Ct.	Water quality and quantity control	Public/Local - FCPA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

5.0 Watershed Management Area Restoration Strategies

The Pohick Creek Watershed is divided into ten smaller watershed management areas (WMAs) based on terrain. Summaries of Pohick Creek's ten WMAs are listed in the following WMA sections, including field reconnaissance findings, existing and future land use, stream conditions and stormwater infrastructure. For Fairfax County planning and management purposes the WMAs have been further subdivided into smaller subwatersheds. These areas, typically 100 – 300 acres, were used as the basic units for modeling and other evaluations. Each WMA was examined at the subwatershed level in order to capture as much data as possible. The subwatershed conditions were reviewed and problem areas were highlighted. Projects were proposed in problematic subwatersheds. The full *Pohick Creek Draft Watershed Workbook*, which contains detailed watershed characterizations, can be found in the Technical Appendices.

Pohick Creek has four major named tributaries (see **Map 3-1.1** in Chapter 3). In the northern portions of the watershed two main tributaries converge into Pohick Creek stream. The Rabbit Branch tributary begins in the highly developed areas of George Mason University and Fairfax City, while Sideburn Branch tributary begins in the highly developed area southwest of George Mason University. The confluence of these two headwater tributaries forms the Pohick Creek main stem. The Middle Run tributary drains Huntsman Lake and moderately-developed residential areas. The South Run tributary drains Burke Lake and Lake Mercer, as well as the low-density southwestern portion of the watershed.

The restoration strategies proposed to be implemented within the next ten years (0 – 10-year plan) consist of 90 structural projects. Project descriptions for these 90 structural projects and non-structural projects are included in each WMA Section. Additionally fact sheets for the 0 – 10-year projects are provided at the end of section five. Additionally, detailed project fact sheets for the restoration projects proposed in this watershed management plan are distributed to the subwatersheds with poor conditions and/or greatest need, not necessarily evenly throughout the entire WMA. The Table 5-1 shows the number of structural (0 – 25-year projects) and non-structural projects proposed in each WMA.

Figure 5-1: Pohick Creek Watershed Management Areas

WMA:		Acres	10-Year Plan	25-Year Plan	Non-Structural
1.	Pohick - Lower	2,346.5	7	6	3
2.	Pohick - Lower South Run	1,947.7	3	1	2
3.	Pohick - Middle	3,014.6	12	17	7
4.	Pohick - Middle Run	2,540.2	7	5	6
5.	Pohick - Middle South Run	1,889.1	2	5	3
6.	Pohick - Potomac	1,532.4	0	0	0
7.	Pohick - Rabbit Branch	2,524.9	9	11	2
8.	Pohick - Sideburn Branch	2,307.9	24	5	9
9.	Pohick - Upper	3,104.7	19	9	4
10.	Pohick - Upper South Run	2,040.7	7	6	0
Totals		**23,248.7**	**90**	**65**	**36**

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5.1 Pohick – Lower Watershed Management Area

The Pohick - Lower WMA has a total area of approximately 3.67 square miles and is comprised of 18 subwatersheds. It is bound to the north by Pohick Road and to the east by Fort Belvoir and Pohick Bay. Richmond Highway and Lorton Road both bisect the WMA. The upstream boundary is the Laurel Hill redevelopment area west of Interstate 95.

The WMA has approximately 16.28 miles of stream that flow from north to south, until ultimately discharging into Pohick Bay. The area has diverse uses, including many institutional, commercial and industrial properties. Residential development consists of single-family detached and multi-family. The WMA is mostly undeveloped east of Richmond Highway, primarily consisting of public institutional lands. Land cover west of Richmond Highway consists primarily of impervious surfaces associated with dense residential development (i.e., rooftops, sidewalks and roadways. Notable features include Pohick Bay Regional Park, Norman M. Cole Jr. Pollution Control Plant, an Amtrak train station, and a Virginia Railway Express station.

The Lower WMA contains approximately 17 dry detention facilities that provide stormwater quantity control only. The most prevalent stream condition problems included disturbed stream buffers and stream channel widening, primarily in the mainstem of Pohick Creek upstream of Richmond Highway and immediately downstream of the Norman M. Cole Jr. Wastewater Treatment Plant. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.1.1 0-10 Year Structural Projects

<u>PC9100 Stormwater Pond Retrofit</u>

This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebays at the Lorton Athletic Fields near Richmond Highway in Lorton. Two forebays will be created around the inlet areas and the pond can be expanded on all sides, especially to the northeast. The pond's detention time will be increased by modifiying the existing discharge structure and increasing the pond's storage. The primary indicators are pollutants including phosphorus, nitrogen and total suspended solids. The pond collects runoff through a closed system from on-site fields and tennis courts, Richmond Highway, and from dense residential developments south of the site.

<u>PC9101 Stormwater Pond Retrofit</u>

This project proposes the retrofitting of an existing pond to create an extended detention dry pond with a sediment forebay at 9409 Lorton Market St. (Lorton Marketplace Shopping Center). The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The existing discharge structure will be modified to increase the amount of time water is detained in the pond. The existing concrete pilot channels will be removed to promote infiltration of low flows which can have high concentrations of pollutants.

PC9102 Stormwater Pond Retrofit

This project proposes the retrofit of an existing dry pond to create an extended detention basin with a sediment forebay at the Norman M. Cole Jr. Wastewater Treatment Plant. The retrofit will increase the detention time of stormwater runoff and will improve stormwater quality. The existing dry pond is located in the parking lot of the plant. The indicators were pollutants, including nitrogen, phosphorus and total suspended solids.

PC9103 Stormwater Pond Retrofit

This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebays at Gunston Plaza Shopping Center, northwest of Richmond Highway. The pond receives runoff from the shopping center and outfalls across Richmond Highway into a wooded area. The indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The sediment forebays will provide pretreatment of stormwater runoff.

PC9104 Stormwater Pond Retrofit

This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebays at Gunston Plaza Shopping Center south of Lorton Road and northwest of Richmond Highway. The pond receives runoff from the shopping center and Lorton Road. The indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection. This will allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out before entering the system.

PC9105 Stormwater Pond Retrofit

This project proposes the retrofit of an existing dry pond northwest of Lorton Station Boulevard to create an extended detention dry pond with a sediment forebay. The pond’s existing discharge structure will be modified to increase the pond’s detention time, and the pond’s size will be enlarged to handle the longer detention time. Primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The pond collects runoff from dense residential development and highly impervious commerical areas. The pond outfalls to the north and is conveyed in a concrete swale under a railroad track before discharging into a wooded area. A large majority of the drainage area is impervious.

PC9701 Outfall Improvement

This project proposes the reconstruction of an outfall west of Milford Haven Drive to remove the concrete channel and replace it with a naturalized stream with an energy dissipation device. Currently, the concrete channel conveys runoff from pond 1158DP. This pond has a proposed stormwater pond retrofit project PC9105. This area consists of mostly open wooded area, highway and railroad tracks.

5.1.2 11-25 Year Structural Projects

PC9500 BMP/LID

This project proposes replacement of existing pavement in parking stalls with pervious pavement or pavers at Lorton Athletic Field. If necessary, additional underground detention may be provided. The indicator is the total impervious area. Pervious pavement will treat and/or reducing parking lot runoff using semi-porous material that will promote infiltration and will trap pollutants in the soil. Will also allow for surface storage, thereby reducing runoff volumes.

PC9501 BMP/LID

This project proposes the creation of a bioretention landscaping feature to receive runoff from impervious areas at Norman M. Cole Jr. Wastewater Treatment Plant off Richmond Highway. The indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioretention will capture sheet flow from impervious area and create an ideal environment for filtration, biological uptake and microbial activity, providing moderate to high pollutant removal, and reduce runoff rates.

PC9503 BMP/LID

Bioretention area proposed at Lorton Station Elementary School north of Lewis Chapel Road. Indicators are pollutants including nitrogen, phosphorus and total suspended solids. Bioretention will capture sheet flow from impervious areas and create an ideal environment for filtration, biological update and microbial activity, providing moderate to high pollutant removal. It will also reduce the outflow to the storm system. The location selected is a low spot of the edge of large recreation field. Consideration would need to be given to minimize disturbance.

PC9505 BMP/LID

This project proposes the replacement of existing pavement in parking stalls with pervious pavement or pavers at the Lorton Station Center School. The primary indicator is total impervious cover. Additional underground detention may be provided as site condition require. Pervious pavement will treat and reduce parking lot runoff using a semi-porous material that allows runoff to infiltrate then trap pollutants in the soil. It will also allow for surface storage and reduced runoff.

PC9700 Outfall Improvement

This project proposes construction of a new storage and treatment area below the outfall at the Lorton Station Elementary School. The improvement will include an energy dissipation device and wetland plantings. The indicators were instream sediment and condition of the wetland habitat. Outfall storage will reduce erosive velocities and sediment loads at the outfalls, improving downstream habitats.

5.1.3 Non-Structural Projects

PC9504 BMP/LID

This project proposes the collection of runoff from downspouts in rain barrels or roof drains in underground cisterns for reuse in irrigation at the Lorton Station Elementary School, north of Lewis Chapel Road. The primary indicator is the total impervious area. The rain barrel program will capture, store and reuse rooftop runoff from downspouts. The rain barrels can be used by students as a hands-on educational program.

PC9800 Street-Sweeping Program

This project proposes a street-sweeping program west of Lorton Marketplace Shopping Center to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is approximately 10 acres and is comprised of dense residential development. There is no existing stormwater quality treatment.

PC9801 Street-Sweeping Program

This project proposes a street-sweeping program in the Lorton Station development west of Lorton Station Boulevard to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is approximately 25 acres and is comprised of dense residential development. There is no existing stormwater quality treatment.

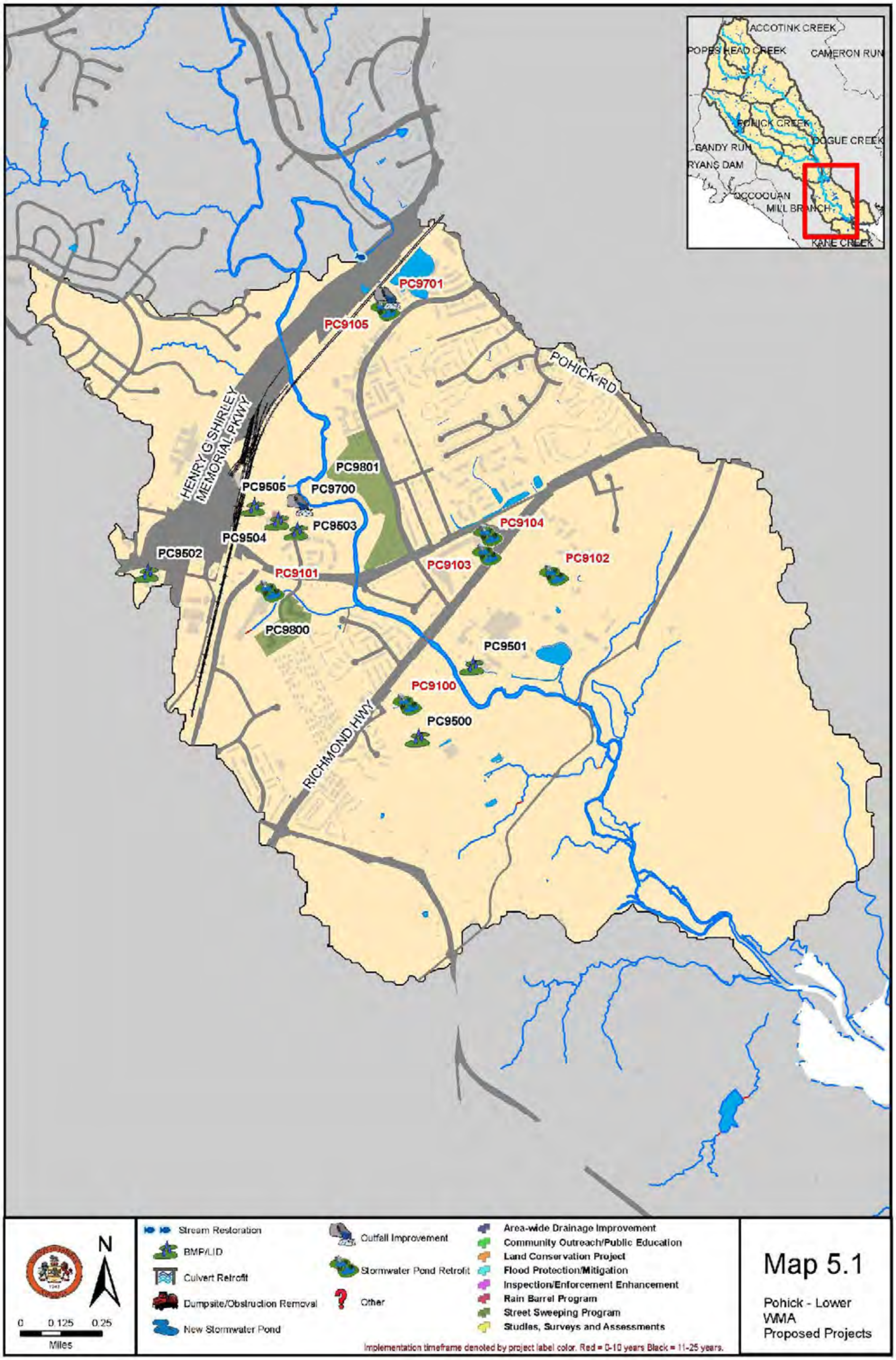
Table 5-1: Project List - WMA (Pohick - Lower Pohick)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9100	Stormwater Pond Retrofit	PC-PC-0007	9515 Richmond Hwy., Lorton Athletic Fields	Water quality and quantity control	Public/Local - Fairfax County	0-10
PC9101	Stormwater Pond Retrofit	PC-PC-0012	9409 Lorton Market St., Lorton Marketplace Shopping Center	Water quality and quantity control	Private - Commercial	0-10
PC9102	Stormwater Pond Retrofit	PC-PC-0009	9399 Richmond Hwy., Norman M. Cole WWTP	Water quality and quantity control	Public/Local - Fairfax County	0-10
PC9104	Stormwater Pond Retrofit	PC-PC-0009	7665 Lorton Rd., Gunston Shopping Plaza	Water quality and quantity control	Private - Commercial	0-10
PC9105	Stormwater Pond Retrofit	PC-PC-0019	Behind 7747 Milford Haven Ct.	Water quality and quantity control	Private - HOA	0-10
PC9701	Outfall Improvement	PC-PC-0019	7747 Milford Haven Ct.	Water quality control	Private - HOA	0-10
PC9103	Stormwater Pond Retrofit	PC-PC-0009	7665 Lorton Rd., Gunston Shopping Plaza	Water quality and quantity control	Private - Commercial	0-10
PC9500	BMP/LID	PC-PC-0007	9515 Richmond Hwy., Lorton Athletic Fields	Water quality and quantity control	Public/Local - FCPS	11-25
PC9501	BMP/LID	PC-PC-0007	9399 Richmond Hwy., Norman M. Cole WWTP	Water quality and quantity control	Public/Local - FCPS	11-25
PC9502	BMP/LID	PC-PC-0012	8101 Lorton Rd., Lorton Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9503	BMP/LID	PC-PC-0013	9290 Lewis Chapel Rd., Lorton Station Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9505	BMP/LID	PC-PC-0013	9290 Lewis Chapel Rd., Lorton Station Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9700	Outfall Improvement	PC-PC-0013	9298 Lewis Chapel Rd., Lorton Station Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
PC9504	BMP/LID	PC-PC-0012	9290 Lewis Chapel Rd., Lorton Station Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9800	Street Sweeping Program	PC-PC-0012	Timarand Dr. and Inverary Ct.	Water quality control	Private - HOA
PC9801	Street Sweeping Program	PC-PC-0013	Lorton Station Blvd. & Stone Garden Dr.	Water quality control	Private - HOA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**



Map 5.1

Pohick - Lower WMA Proposed Projects

5.2 Pohick – Lower South Run Watershed Management Area

Lower South Run Watershed Management Area has a total area of approximately 3.04 square miles and is comprised of 12 subwatersheds. It is located in the southern portion of the Pohick Creek watershed. It is bound to the north by Pohick Road/Fairfax County Parkway. The south is bound by Silverbrook Road and to the east by Pohick Road.

The WMA has approximately 23.81 miles of stream, which flow from west to southeast. The area consists mainly of single-family attached and detached residential homes. Land cover is primarily impervious surface associated with residential development (i.e., rooftops, sidewalks and roadways) and landscaping, including managed turf. The area is approximately 16.18 percent impervious. Notable features of the WMA are Newington Forest Elementary School and a large Virginia Power/Plantation pipeline easement.

In the Lower South Run WMA the most prevalent stream condition problems noted include disturbed stream buffers and stream channel erosion and/or widening. It should be noted, however, that with the Lower South Run WMA's wider stream valleys, the main stem of South Run and some of its tributaries have avoided the extreme widening and erosion/incision conditions plaguing other portions of the watershed. Channel widening and incision conditions are noted in the headwaters of the South Run main stem and Rocky Branch, a tributary, but the downstream main stem of South Run appears more stable. Stormwater pipe discharge into the WMA's streams have a demonstrated impact as well, as these pipes discharge runoff directly into the streams in many instances, contributing to the upstream widening and erosive conditions. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.2.1 0-10 Year Structural Projects

<u>PC9106 Stormwater Pond Retrofit</u>

This wet pond retrofit is planned near South County Secondary School. The pond is set back from the main road. This project proposes creating a wetland system with the construction of a sediment forebay and the addition of bench planting. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids.

<u>PC9202 Stream Restoration Suite</u>

Subproject A is a stream restoration that will repair bank and bed erosion in the stream west of Spring Creek Court and southeast of Willowdale Court. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment. Subproject B is a buffer repair near the downstream end of the stream restoration. This buffer will provide additonal treatment for runoff from the adjacent townhouses. The indicators are stream bank buffer deficiencies in headwater riparian habitat.

<u>PC9204 Stream Restoration</u>

This project proposes daylighting a pipe from Rising Creek Court farther upstream with an energy dissipation device and construction of an open channel. The energy dissipation device consists of a series of step pools reinforced with either rocks or logs. The daylighting will help reduce the velocity of the water entering the stream. The primary problem indicator is poor channel morphology.

5.2.2 11-25 Year Structural Projects

PC9506 BMP/LID Suite

This project proposes the installation of a bioswale at Newington Heights Park. The bioswale will receive runoff from tennis courts and basketball courts. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioswale will capture sheet flow from impervious areas and create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce runoff volume and promote groundwater recharge. The location is ideal because it is already a functioning swale.

PC9508 BMP/LID Suite

This suite of projects proposes the creation of a bioretention landscaping features at Newington Forest Elementary School. The location is ideal because it will receive runoff from large impervious areas. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioretention will capture sheet flow and create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm sewer system and recharge groundwater.

5.2.3 Non-Structural Projects

PC9509 BMP/LID

The project proposes a rain barrel/cistern at Newington Forest Elementary School southeast of Newington Forest Avenue. This will capture, store and reuse runoff from the rooftop. This project was proposed due to the large amount of high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9802 Dumpsite/Obstruction Removal Suite

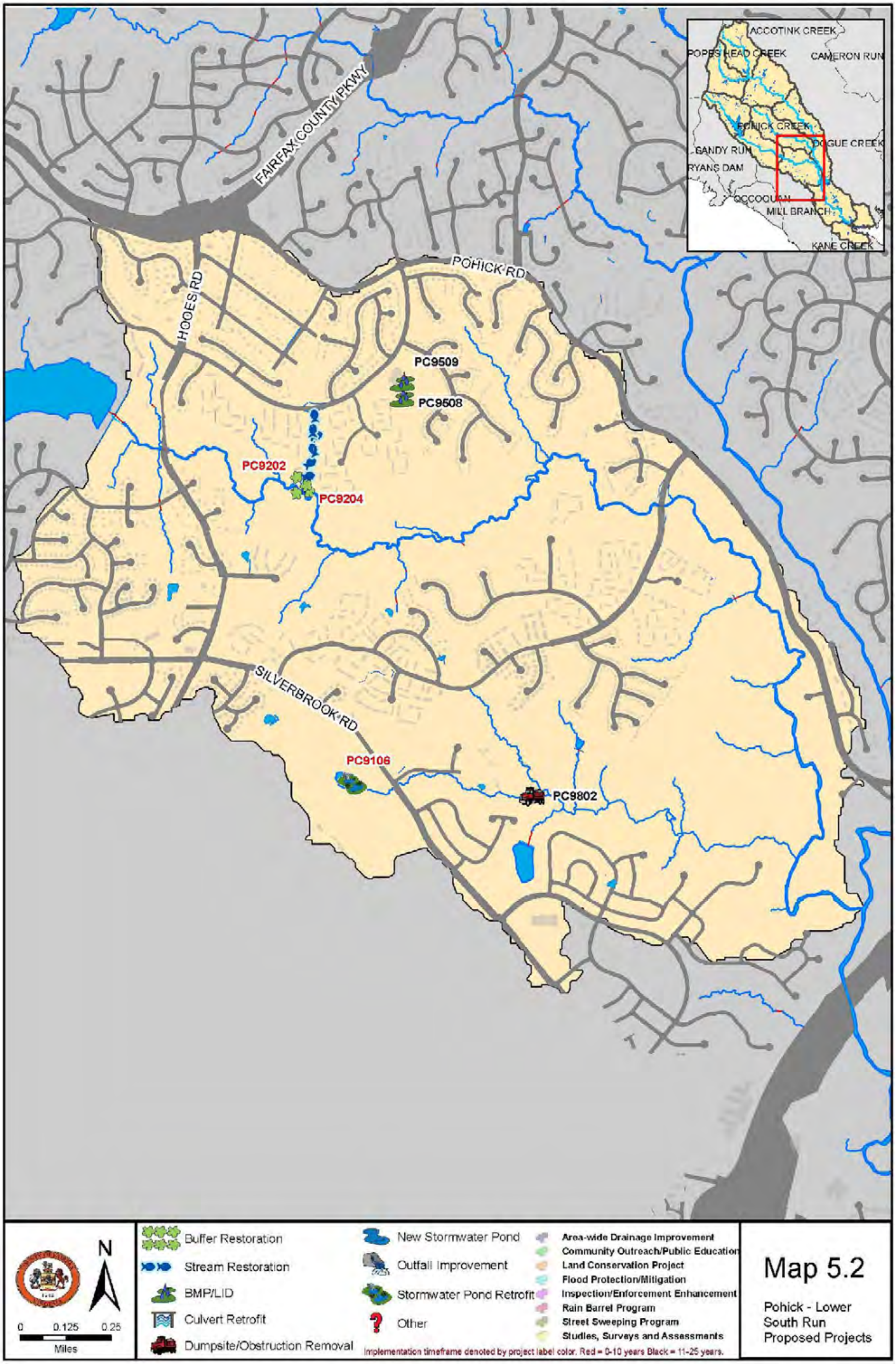
This suite of projects involves the removal of two dumpsites from a stream north of Sego Lily Court. The indicators are flood complaints and field verification. These dumpsite removals will help restore the functions of the stream and alleviate flooding issues.

Table 5-2: Project List - WMA (Pohick - Lower South Run)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9106	Stormwater Pond Retrofit	PC-SL-0002	8501 Silverbrook Rd., South County Secondary School	Water quality and quantity control	Public/Local - FCPA	0-10
PC9202	Stream Restoration Suite	PC-SR-0007	Behind 8181 Willowdale Ct., South Run Stream Valley Park	Water quality control	Private - Residential, Public/Local - FCPA, Private - HOA	0-10
PC9204	Stream Restoration	PC-SR-0007	Next to 8661 Rising Creek Ct.	Water quality and quantity control	Private - HOA	0-10
PC9508	BMP/LID Suite	PC-SR-0005	8001 Newington Forest Ave., Newington Forest Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
PC9509	BMP/LID	PC-SR-0004	8001 Newington Forest Ave., Newington Forest Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9802	Dumpsite/ Obstruction Removal Suite	PC-SL-0001	Behind 8412 Sego Lilly Ct.	Water quality control	Public/Local - FCPA, Private - HOA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**



FAIRFAX COUNTY PKWY
POHICK RD
HOOES RD
SILVERBROOK RD
PC9509
PC9508
PC9202
PC9204
PC9106
PC9802
ACCOTINK CREEK
POPES HEAD CREEK
CAMERON RUN
POHICK CREEK
SANDY RUN
DOGUE CREEK
RYANS DAM
OCCOQUAN
MILL BRANCH
KANE CREEK
N
0 0.125 0.25
Miles
Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal
New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other
Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments
Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.
Map 5.2
Pohick - Lower South Run Proposed Projects

5.3 Pohick – Middle Watershed Management Area

Middle Pohick Watershed Management Area has a total area of approximately 4.71 square miles and is comprised of 19 subwatersheds. It is bound on the west by portions of Sydenstricker Road and Pohick Road and on the south by Interstate 95. A portion of the eastern boundary is Rolling Road. It is bisected on the upstream end by Old Keene Mill Road and in the center by Fairfax County Parkway.

The WMA has approximately 29.84 miles of stream which flow from north to south. The area consists mainly of single-family attached and detached residences. Land cover is primarily associated with residential development such as, rooftops, sidewalks, roadways and landscaping including managed turf. The area is approximately 26 percent impervious. Notable features include West Springfield High School and several elementary schools.

In the Middle WMA the most prevalent stream condition problems noted include disturbed stream buffers and stream channel widening and erosion/incision. In addition, pipe and ditch discharge into the WMA's streams have a significant impact on this WMA, including some severe impacts on the WMA headwaters and the main stem of Pohick Creek. These pipes and ditches discharge stormwater runoff directly into the streams in many instances, contributing to the observed widening and erosion conditions. The more severe pipe, ditch, obstruction and crossing impacts appear upstream of the Fairfax County Parkway. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.3.1 0-10 Year Structural Projects

PC9107 Stormwater Pond Retrofit

A dry pond at Saratoga Elementary School receives runoff from a school parking lot and driveway. This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The sediment forebays will provide pretreatment of stormwater runoff.

PC9122 Stormwater Pond Retrofit

This project proposes the retrofit of an existing pond north of Old Keene Mill Road and east of Field Master Drive, which receives runoff from adjacent roads and neighborhoods. The existing dry pond will be retrofitted to create an extended detention dry pond with a sediment forebay. The pond receives runoff from a large drainage area consisting of dense residential development, roadways and wooded areas. The pond outfalls to the adjacent stream in the wooded area to the east.

PC9201 Stream Restoration

This stream restoration is located west of Matisse Way and east of Godolphin Drive, and is located on Fairfax County Park Authority land. This project proposes repairing bank and bed erosion, restoring channel morphology and reducing excessibe channel meander. Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the channel and controlling unwanted meander.

PC9203 Stream Restoration

The project area is the stream southwest of Lake Pleasant Drive, north of Kings Point Court. This project proposes repairing bank and bed erosion to restore channel morphology. The primary indicator is poor channel morphology. Stream stabilization will help to reduce sediment loads to the stream channel and control unwanted meander.

PC9205 Stream Restoration

A closed system collects runoff from Kings Point Court and one other cul-de-sac. The system outfalls into a stream to the northwest. This project proposes daylighting the outfall pipe farther upstream. The primary problem indicator is poor channel morphology. This project returns the water to its natural state before entering the stream, allowing more time for the water to infiltrate and the flow velocities to decrease.

PC9206 Stream Restoration

This project proposes restoring stream just northeast of Lake Pleasant drive. The current stream has bank and bed erosion and poor channel morphology. The stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. This stream segment is steep and receives runoff from townhomes and a roadway outfall. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric, and rapid native vegetation establishment.

PC9211 Stream Restoration

Subproject A is proposed to daylight a pipe that collects runoff at the end of Middlewood Place and pipes it south into a stream. The primary indicator is channel morphology. The pipe leading into the stream is very steep, the outflow is at potentially erosive velocities. Subproject B is proposed to re-plant upland buffer area and provide reforestation. The existing stream buffer is deficient. This project will increase vegetation for filtration of pollutants and will reduce runoff by intercepting the water and increasing surface storage and infiltration.

PC9222 Stream Restoration

This stream flows northeast towards Old Keene Mill Road. The stream collects runoff from several adjacent neighborhoods. This project proposes repairing bank and bed erosion to restore channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. The primary indicator is poor channel morphology. The stream is located on Fairfax County Park Authority land.

PC9225 Stream Restoration

The stream is located southwest of Huntsman Boulevard. It receives runoff from adjacent neighborhoods. This project is proposed to repair bank and bed erosion to restore channel morphology. The primary indicator is poor channel morphology. The stream conveys runoff from dense residential development. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid native vegetation establishment.

PC9226 Stream Restoration

The stream is located northeast of Hillside Road. Stream receives stormwater runoff as sheet flow from adjacent neighborhoods and three closed systems from the Red Fox Estates neighborhood. Stream restoration is proposed to repair bank and bed erosion to restore channel morphology. Primary indicator is poor channel morphology. The stream stabilization will reduce sediment loads while maintaining capacity of the stream and controlling unwanted meander.

PC9229 Stream Restoration

This Suite of project proposes restoration projects along the stream northeast of Hillside Road. Subproject A will be along the main stream, subproject B is a ripararian buffer restoration, and subproject C is a daylighting of a storm pipe that outfalls to this stream. The primary indicator is poor channel morphology. The Stream receives runoff from sheet flow and closed systems from adjacent residential neighborhoods. These projects will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

5.3.2 11-25 Year Structural Projects

PC9111 Stormwater Pond Retrofit

Dry pond receives runoff from Ridge Creek Way (south) and Deer Creek Place (east) and adjacent neighborhoods. This project proposes the retrofit of an existing pond to create an extended detention dry pond with a sediment forebay. The primary indicators are nitrogen, phosphorus and total suspended solids. The retrofit will provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes settlement. Minimal room for expansion without disturbing paved paths within wooded area.

PC9113 Stormwater Pond Retrofit

Dry pond located north of Ridge Road, Quincy Hall Court and Shepherd Ridge Court. Runoff from those streets is conveyed in a closed system and outfalls into existing pond. This project proposes the retrofit of pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes settlement of particulate. Room for expansion.

PC9115 Stormwater Pond Retrofit

Dry pond west of Bethelen Woods Lane receives runoff indirectly from adjacent neighborhood by means of a stream. This project proposes to retrofit the existing dry pond to create an extended detention dry pond with sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, promoting particulate settlement. This is an ideal location because there is space for expansion.

PC9116 Stormwater Pond Retrofit

Existing dry pond south of Walnut Knoll Drive and west of Bethelen Woods Lane. Current pond is well vegetated. This project proposed to retrofit and create and extended detention dry pond with sediment forebay. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out. Area is steep which could limit the expansion of the pond area.

PC9117 Stormwater Pond Retrofit

Dry pond at a commuter parking lot east of Gambrill Road and south of Fairfax County Parkway. Project proposes the retrofit of pond to create an extended detention dry pond with a sediment forebay. Primary indicators are pollutants including phosphorus, nitrogen and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which will promote settlement. Pond receives runoff from Hoose Road and Gambrill Road, which enters pond before outfalling in stream to east.

PC9119 Stormwater Pond Retrofit

Dry pond northeast of Hadlow Drive and northwest of Hadlow Court. This project proposes the retrofit of an existing pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure. This will promote particulate settlement. This pond receives runoff from adjacent neighborhoods and outfalls into a stream.

PC9200 Stream Restoration

Stream northwest of Henry G. Shirley Memorial Highway has indicators of poor channel morphology. This project proposes repairing bank and bed erosion thereby restoring the morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.

PC9209 Stream Restoration

Stream southwest of Richfield Road and southeast of Ships Curve Lane. This project proposes repairing the bank and bed by restoring channel morphology. This primary indicator is poor channel morphology. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.

PC9213 Stream Restoration

An inlet collects runoff at the end of Ridgebrook Drive and a pipe conveys the runoff to a stream to the northeast. The primary indicator is poor channel morphology. This project proposes to daylight the pipe farther upstream to return the water to its natural state and reduce runoff rates, thereby minimizing erosion.

PC9216 Stream Restoration

Stream northeast of Whitlers Creek Court. Receives runoff from road and adjacent neighborhoods. This project proposes to repair bank and bed erosion to restore channel morphology. Primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

PC9217 Stream Restoration

Inlet collects runoff from the west end of Whitlers Creek Court. The pipe outfalls directly into a stream to the west. This project proposes daylighting the outfall pipe farther upstream to return the water to its natural state. This will reduce runoff rates and minimize erosion.

PC9218 Stream Restoration

Closed system collects runoff from portions of Olde Lantern Way and Ridge Crossing Lane. The runoff is conveyed through a pipe and outfalls into a stream to the east. The primary indicator is poor channel morphology. This project proposes daylighting a pipe farther upstream, providing outfall protection with an energy dissipation device and constructing an open channel. This will return the water to its natural state and reduce runoff rates, thereby minimizing erosion to the stream.

PC9513 BMP/LID

This project proposes the installation of a bioswale at Hunt Valley Elementary School west of Sydenstricker Road. Check dams may be used to reduce velocity. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioswale is proposed on the side of a slope in a large athletic field behind the school. The bioswale will create an ideal environment for filtration, biological uptake and microbial activity. It will reduce runoff and promote groundwater recharge.

PC9519 BMP/LID

This suite of projects involves the creation of a bioretention landscaping features to receive runoff from impervious areas at Rolling Valley Elementary School, south of Rolling Road. Runoff will sheet flow to the area of proposed bioretention. Primary indicators are pollutants, including phosphorus, nitrogen and total suspended solids. This will create an ideal environment for filtration, biological uptake and microbial activity. Area should have minimal disturbance.

PC9521 BMP/LID

This project proposes the replacement of existing pavement in parking stalls with pervious pavement or pavers at Rolling Valley Elementary School, east of Barnack Drive. The primary indicator is total impervious area. The pervious pavement will treat and reduce parking lot runoff by using a semi-porous material that allows runoff to infiltrate. Pollutants will be trapped in soil. Additional underground detention may be provided as site conditions permit.

PC9522 BMP/LID

This project proposes the replacement of existing pavement in parking stalls with pervious pavement or pavers at Orange Hunt Pool, south of Bridle Wood Drive. The primary indicator is total impervious area. The pervious pavement will treat and reduce parking lot runoff by using a semi-porous material that allows runoff to infiltrate. Pollutants will be trapped in soil. Additional underground detention may be provided as site conditions permit.

PC9529 BMP/LID

This project proposes the creation of bioretention landscaping features to receive runoff from impervious areas at West Springfield High School, west of Rolling Road. Area will receive runoff from athletic fields. Primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. This area will create an ideal environment for filtration, biological uptake and microbial activity. This will treat the impervious runoff before entering the storm drain system. It will also reduce runoff rates. Not a very ideal area because will not receive much runoff from impervious areas.

PC9532 BMP/LID

This project proposes the creation of bioretention landscaping features to receive runoff from impervious areas at West Springfield High School, west of Rolling Road. Area will receive runoff from large portions of parking lot and buildings. Primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. This area will create an ideal environment for filtration, biological uptake and microbial activity. This will treat the impervious runoff before entering the storm drain system. It will also reduce runoff rates.

5.3.3 Non-Structural Projects

PC9507 BMP/LID

The project is proposed to install a rain barrel/cistern at Saratoga Elementary School, east of Northumberland Road. This system will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9514 BMP/LID

This project is proposed to install a rain barrel/cistern at Hunt Valley Elementary School. This system will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9516 BMP/LID

This project is proposed to install a rain barrel/cistern at Orange Hunt Elementary School. This system will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9520 BMP/LID

This project is proposed to install a rain barrel/cistern at Rolling Valley Elementary School. This system will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwatersystem. The rain barrels can be used by students for hands-on educational programs.PC9804 Dumpsite/Obstruction Removal

There is a steam obstruction southeast of Ships Curve Lane. Primary indicators are flood complaints. The obstruction has been field verified as concrete and debris. This project is proposed to remove the obstructions blocking the stream channel in order to restore natural conditions and the function of the stream.

PC9813 Buffer Restoration

The stream northwest of Beatrice Court had indications of stream bank buffer deficiency in headwater riparian habitat. Runoff comes from adjacent neighborhoods both by sheet flow and through a closed system. This project is proposed to re-plant the stream buffer to re-establish the RPA. Increased vegetation from buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.

Table 5-3: Project List - WMA (Pohick – Middle Pohick)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9107	Stormwater Pond Retrofit	PC-PC-0021	8111 Northumberland Rd., Saratoga Elementary School	Water quality and quantity control	Public/Local - FCPS, FCPA	0-10
PC9122	Stormwater Pond Retrofit	PC-PC-0034	Between Field Master Dr. & Huntsman Blvd.	Water quality and quantity control	Private - HOA	0-10
PC9201	Stream Restoration	PC-PC-0021	Behind 7756 Matisse Way	Water quality control	Public/Local - FCPA	0-10
PC9203	Stream Restoration	PC-PC-0023	8100 Lake Pleasant Dr.	Water quality control	Public/Local - FCPA	0-10
PC9205	Stream Restoration	PC-PC-0023	Behind 8106 Kings Point Ct.	Water quality and quantity control	Public/Local - FCPA	0-10
PC9206	Stream Restoration	PC-PC-0023	Next to 8021 Lake Pleasant Dr.	Water quality control	Private - HOA	0-10
PC9211	Stream Restoration Suite	PC-PC-0025	Near 8000 Middlewood Pl.	Water quality and quantity control	Public/Local - FCPA	0-10
PC9222	Stream Restoration	PC-PC-0033	Behind 8817 Bridle Wood Dr.	Water quality control	Public/State - VDOT, Public/Local - FCPA, Private - Residential	0-10
PC9225	Stream Restoration	PC-PC-0036	Next to 6297 Kerrydale Dr.	Water quality control	Private - HOA	0-10
PC9226	Stream Restoration	PC-PC-0035	Behind 6321 Hillside Rd.	Water quality control	Private - Residential, Private - HOA	0-10
PC9229	Stream Restoration Suite	PC-PC-0037	Behind 8901 Winding Hollow Way	Water quality control	Private - Residential	0-10
PC9529	BMP/LID	PC-PC-0035	6100 Rolling Rd., West Springfield High School	Water quality and quantity control	Public/Local - FCPS	11-25

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

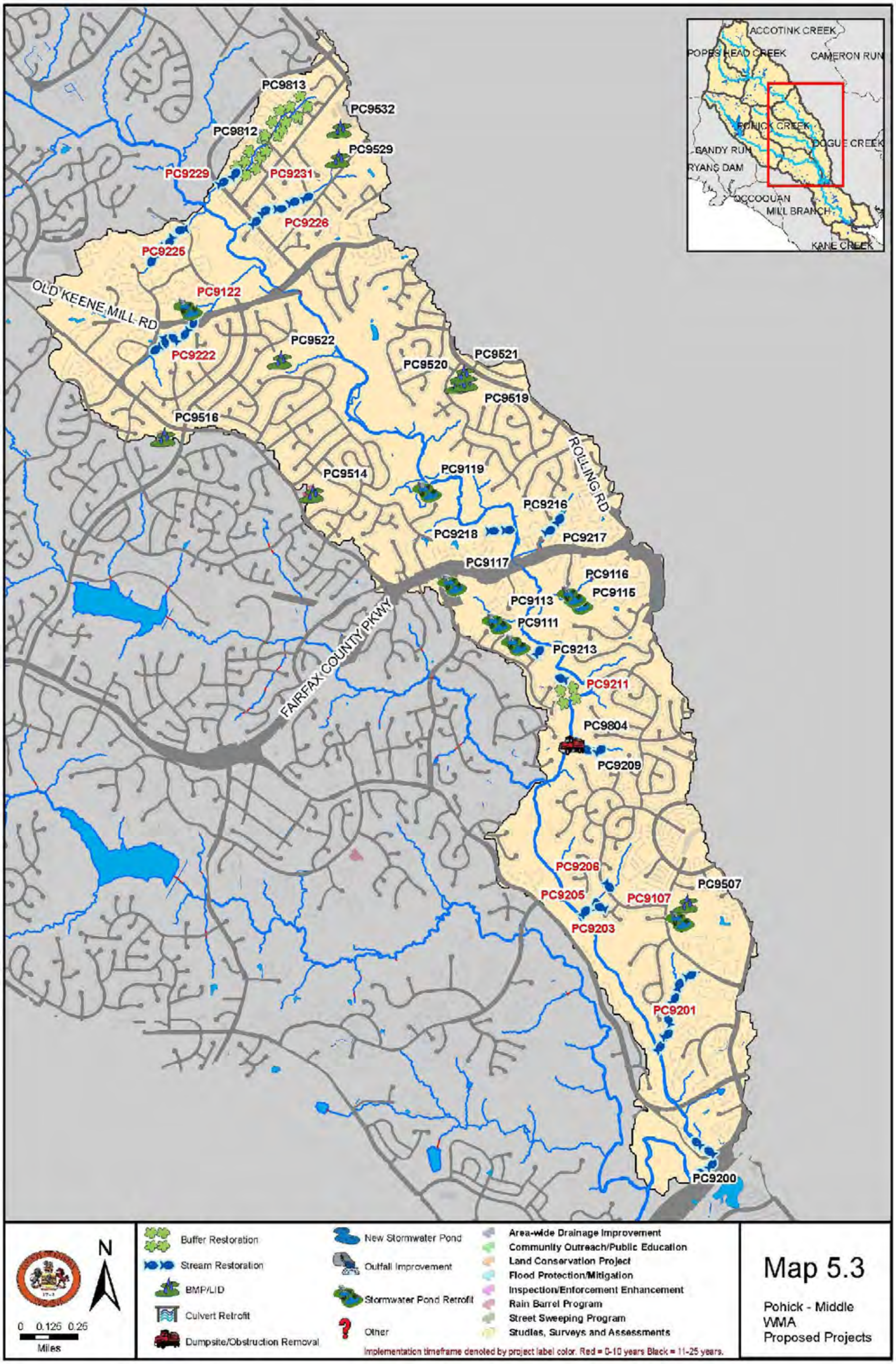
Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9111	Stormwater Pond Retrofit	PC-PC-0026	8110 Deer Creek Pl.	Water quality and quantity control	Private - HOA	11-25
PC9113	Stormwater Pond Retrofit	PC-PC-0026	Behind 7439 Quincy Hall Ct.	Water quality and quantity control	Private - HOA, Private - Residential	11-25
PC9115	Stormwater Pond Retrofit	PC-PC-0026	Behind 8032 Bethelen Woods La.	Water quality and quantity control	Private - Residential, Public/Local - FCPA	11-25
PC9116	Stormwater Pond Retrofit	PC-PC-0026	Behind 73919 Walnut Knoll Dr.	Water quality and quantity control	Public/Local - FCPA, Private - Residential	11-25
PC9117	Stormwater Pond Retrofit	PC-PC-0026	Across from 7320 Gambrill Rd., Commuter lot	Water quality and quantity control	Public/State - VDOT	11-25
PC9119	Stormwater Pond Retrofit	PC-PC-0028	Behind 7106 Hadlow Ct.	Water quality and quantity control	Public/Local - FCPA	11-25
PC9200	Stream Restoration	PC-PC-0020	Behind 7800 Creekside View La.	Water quality control	Public/State - VDOT	11-25
PC9209	Stream Restoration	PC-PC-0025	Behind 8154 Ships Curve La.	Water quality control	Public/Local - FCPA, Private - HOA	11-25
PC9213	Stream Restoration	PC-PC-0026	Behind 7500 Ridgebrook Dr.	Water quality and quantity control	Public/Local - FCPA	11-25
PC9216	Stream Restoration	PC-PC-0027	Behind 8098 Whitlers Creek Ct.	Water quality control	Private - HOA, Private - Residential	11-25
PC9217	Stream Restoration	PC-PC-0027	Behind 8084 Whitlers Creek Rd.	Water quality and quantity control	Private - HOA	11-25
PC9218	Stream Restoration	PC-PC-0027	Behind 7211 Olde Lantern Way	Water quality and quantity control	Public/Local - FCPA	11-25

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9519	BMP/LID Suite	PC-PC-0028	6703 Barnack Dr., Rolling Valley Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9521	BMP/LID	PC-PC-0029	6703 Barnack Dr., Rolling Valley Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9522	BMP/LID	PC-PC-0031	8600 Bridle Wood Dr., Orange Hunt Pool	Water quality and quantity control	Private - Residential	11-25
PC9532	BMP/LID	PC-PC-0035	6100 Rolling Rd., West Springfield High School	Water quality and quantity control	Public/Local - FCPS	11-25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
PC9507	BMP/LID	PC-PC-0021	8111 Northumberland Rd., Saratoga Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9514	BMP/LID	PC-PC-0028	7107 Sydenstricker Rd., Hunt Valley Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9516	BMP/LID	PC-PC-0033	6820 Sydenstricker Rd., Orange Hunt Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9520	BMP/LID	PC-PC-0029	6703 Barnack Dr., Rolling Valley Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9804	Dumpsite/ Obstruction Removal	PC-PC-0025	Between Cliffside Ct. & Richfield Rd. (7927 Richfield Rd.)	Water quality control	Public/Local - FCPA
PC9813	Buffer Restoration	PC-PC-0037	Behind 8586 Beatrice Ct.	Water quality control	Private - HOA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**


ACCOTINK CREEK
POPES HEAD CREEK
CAMERON RUN
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RYANS DAM
OCCOQUAN
MILL BRANCH
KANE CREEK
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PC9226
PC9225
OLD KEENE MILL RD
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ROLLING RD
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FAIRFAX COUNTY PKWY
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Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal
New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other
Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments
Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.
Map 5.3
Pohick - Middle
WMA
Proposed Projects

5.4 Pohick – Middle Run Watershed Management Area

Middle Run Watershed Management Area has a total area of approximately 3.97 square miles and is comprised of 12 subwatersheds. It is bound to the north by Old Keene Mill Road and to the roughly by Sydenstricker Road to the northeast. Fairfax County Parkway bisects to the east and Lee Chapel Road bisects to the west.

The WMA has approximately 20.23 miles of stream that flow northwest to southeast. The area consists mainly of single-family attached and detached residential homes. Land cover is primarily impervious surface associated with residential development (i.e., rooftops, sidewalks and roadways) and landscaping, including managed turf. The area is approximately 28 percent impervious. Notable features of the WMA are Huntsman Lake, several elementary schools, a park and ride facility along Fairfax County Parkway and several churches.

Stormwater infrastructure consists primarily of curb and gutter stormwater collection leading to a piped network of storm drains discharging to either dry detention basins or directly into Middle Run and its associated stream valleys and tributaries. The Middle Run WMA contains approximately 37 dry detention facilities designed to manage stormwater quantity. In addition, the WMA contains two underground chambers and one infiltration trench for water quality management. In the Middle Run WMA the most prevalent stream condition features noted include disturbed stream buffers and stream channel widening. The pipes discharging directly into the WMA's streams have a demonstrated impact. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.4.1 0-10 Year Structural Projects

PC9109 Stormwater Pond Retrofit

This stormwater pond retrofit is located at St. Raymond's Penafort Catholic Church east of Fairfax County Parkway and north of Pohick Road. The pond receives runoff from the church and the parking lot. This project proposes modifying the existing discharge structure and expanding the pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.

PC9114 Stormwater Pond Retrofit

This project is proposed as a pond retrofit at Sangster Elementary School, northwest of Reservation Drive. Stormwater runoff is collected in a closed system and outfalls into a dry pond near the school's entrance. The pond outfalls across Reservation Drive into a wooded area and ultimately into a stream. This project proposes removing the pond's existing pilot channel and retrofitting the pond to create a wetland system with sediment forebays for the two inflows and bench planting to help increase pollutant uptake. The primary indicators are wetland habitat, nitrogen, phosphorus and total suspended solids.

PC9118 Stormwater Pond Retrofit

A large dry pond west of Lee Chapel Road and east of Shipwright Drive receives runoff from a stream in a wooded area and from adjacent neighborhoods. This project is proposed to retrofit the existing pond to create an extended detention dry pond with a sediment forebay. The retrofit will modify the discharge structure to increase the time stormwater stays in the pond. The pond will be increased in size to handle the larger volume and an aquatic bench of wetland plants will be added to treat pollutants. Primary problem indicators are pollutants nitrogen, phosphorus and total suspended solids.

PC9120 Stormwater Pond Retrofit

This project is proposed to create an extended detention dry pond with a sediment forebay. The existing dry pond northwest of Lee Chapel Road and southwest of Southern Cross Lane receives runoff from these roads as well as Ebbtide Lane. Due to the presence of pollutants such as phosphorus, nitrogen and total suspended solids, a retrofit is proposed. This will allow for better downstream channel protection and allow for better function of temporary ponding, as well as promote the settlement of particulate pollution. The pond has easy access and room for expansion.

PC9214 Stream Restoration

This stream is between Arley Drive and Golden Ball Tavern Court. The project is proposed to repair bank and bed erosion, thereby restoring channel morphology. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream, maintaining the capacity of the stream channel and controlling unwanted meander.

PC9515 BMP/LID Suite

This suite of projects is proposed to create bioretention landscaping features to receive runoff from areas at Orange Hunt Elementary School. Both projects are on the west side of the school. Bioretention areas would receive runoff from the fields and blacktops. A filter layer made of 18 – 48 inches of sand is placed below a mulch layer. During a storm the runoff ponds 6 – 9 inches, rapidly filters to an underdrain and outfalls into a wooded area or infiltrates into the native soil. Indicators are pollutants, including nitrogen, phosphorus and total suspended solids.

PC9517 BMP/LID Suite

This suite of projects is proposed to create a bioretention area to receive runoff at Cherry Run Elementary School. The subproject A site is on the south side of the school near the entrance. The subproject B site is on the far north side of the athletic fields. Primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioretention areas will be created by grading a depressed area, with a cover layer of mulch and a filter layer of 18 – 48 inches of sand. During a storm the runoff ponds 6 – 9 inches, rapidly filters to an underdrain and outfalls into a wooded area or infiltrates into the native soil.

5.4.2 11-25 Year Structural Projects

PC9112 Stormwater Pond Retrofit

This project proposes retrofiting an existing dry pond west of Throncliff Lane and east of Eagle Rock Lane, which receives runoff from adjacent residential neighborhoods and outfalls into a stream to the south. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. This retrofit will create an extended detention dry pond with a sediment forebay and will modify the existing pond to provide adequate downstream channel protection by using a control structure to allow for of temporary ponding , which will promote particulate settlement. This site allows for pond expansion in several directions.

PC9123Stormwater Pond Retrofit

This project proposes the retrofit of an existing public pond to create an extended detention dry pond with a sediment forebay at Pohick Regional Library. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes pollutant settlement. The location is ideal because it will have minimal disturbances.

PC9215 Stream Restoration

This project proposes daylighting a closed stormwater pipe that collects runoff from Beachway Lane northwest of the stream. The current storm pipe outfalls in a stream to the northwest. The primary indicator is channel morphology. This proect will return the water to its natural state before entering the stream, which will increase infiltration, reduce runoff rates and reduce erosion.

PC9511 BMP/LID Suite

This project proposes using BMP inlet inserts or manufactured BMP filtration systems to provide pollutant removal at the Huntsman Square Shopping Center, west of Huntsman Boulevard and north of Fairfax County Parkway. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Filtration will capture and treat stormwater runoff from the highly impervious area prior to entering storm drain system.

PC9524 BMP/LID Suite

This project proposes the replacement of existing pavement in parking stalls with pervious pavement or pavers at the School of the Nativity. Primary indicators are total impervious area and total urban land cover. The pervious pavement will treat and reduce parking lot runoff using a semi-porous material that allows runoff to infiltrate then trap pollutants in the soil. It will also allow for surface storage which will reduce runoff rates. This large parking lot would be an ideal location for this type of treatment.

5.4.3 Non-Structural Projects

PC9512 BMP/LID

The project proposes installing rain barrels/cisterns at Sangster Elementary School northwest of Reservation Drive. This will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9518 BMP/LID

This project proposes installing rain barrels/cisterns at Cherry Run Elementary School, northwest of Raftelis Road. This will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9807 Buffer Restoration

The buffer area has deficiencies at the entrance to a wooded area upstream of a culvert on the north side of Shadowlake Way. This project is proposed to replant to reestablish the RPA. Increased vegetation from buffer repair will provide additional filtration and reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.

PC9808 Dumpsite/Obstruction Removal

An obstruction is located between the northbound and southbound overpasses on the Fairfax County Parkway, west of Wild Spruce Drive. The primary indicators are flood complains. The obstruction was field verified as concrete. This project is proposed to remove the obstructions and restore the stream channel to its natural conditions. This will also improve the function of the stream.

PC9809 Buffer Restoration

This project is proposed to re-plant stream buffer west of Sea Brook Lane in order to re-establish the RPA. The primary indicators are stream bank buffer deficiency and headwater riparian habitat. Increased vegetation from buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and filtration. The stream receives direct runoff from untreated sources, so the buffer is an important feature for water quality and quantity.

PC9810 Dumpsite/Obstruction Removal Suite

This project suite contains two subprojects. Subproject A involves the removal of an obstruction in the stream south of Gutman Court, west of Sea Brook Lane. This project is proposed to restore natural conditions. The primary indicators are flood complaints. This obstruction has been field verified as a beaver dam. Removal of this obstruction will eliminate flood complaints and help restore the natural shape and function of the stream. Subproject B will address erosion in the stream behind Cottontail Swim and Racquet Club, which has caused trees and other natural debris to build up in the stream, causing potential damming. This project is proposed to remove obstructions to restore natural conditions. This obstruction was also field verified as a beaver dam, and has a high impact score. This will help restore the function of the stream.

PC9824 Lake Management for W.Q. Study

This project is a study to determine the water quality benefits of dredging Huntsman Lake. The lakes are currently trapping sediment. One possible benefit of dredging includes an increased permanent pool volume (which will in turn trap more sediment). Other benefits include extending the lifespan of the lakes, and enhancing recreation. Other water quality benefits include removing shallow foraging areas which may decrease the numbers of waterfowl and associated fecal contamination; increased depth benefits thermal stratification which in turn benefits fisheries. If the lake is eutrophic, dredging may increase dissolved oxygen by decreasing biological oxygen demand (BOD) by removing organic sediment. Dredging may also remove phosphorus bound to these sediments, although this phosphorus is currently locked in place within the lake.

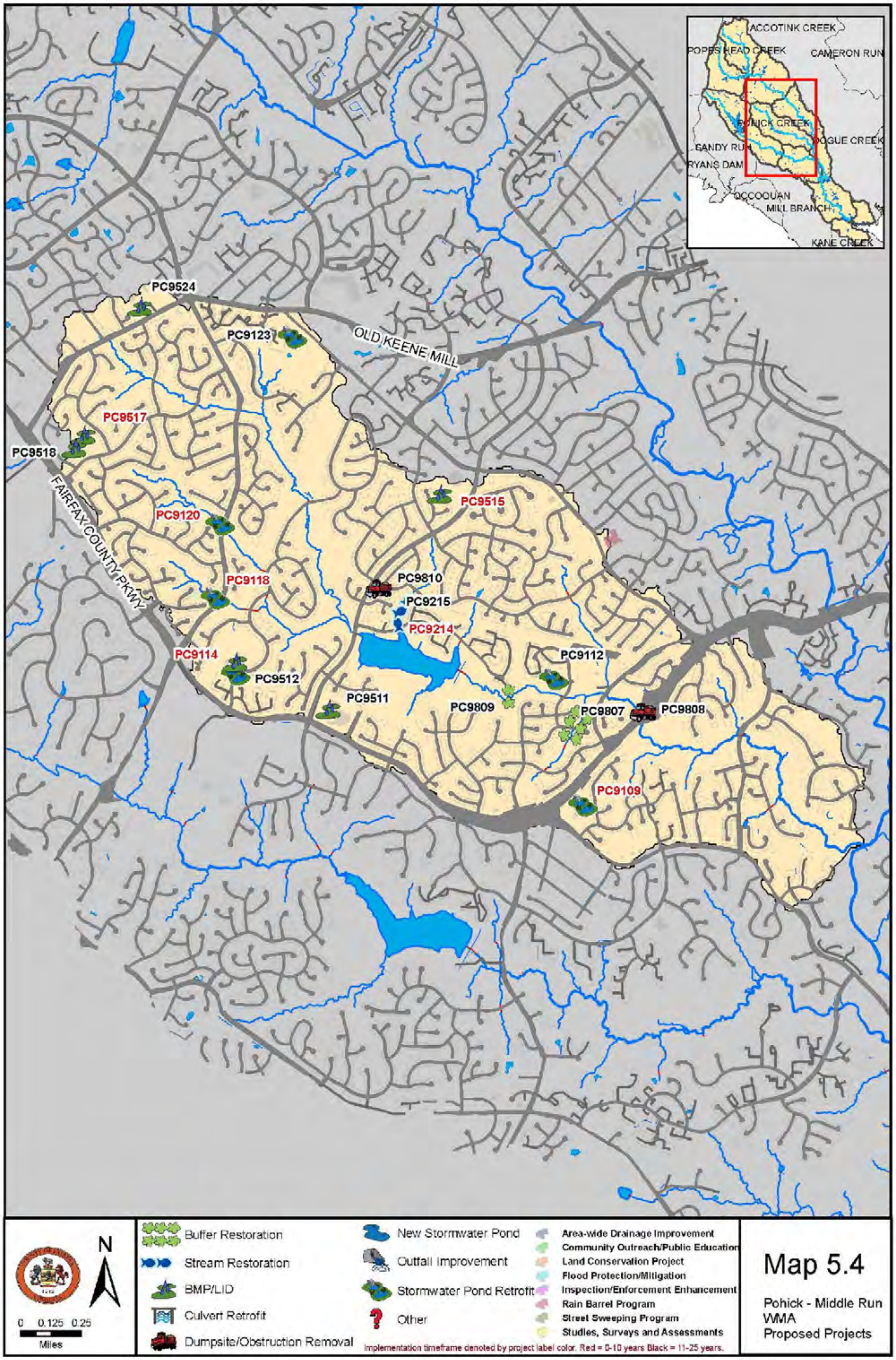
Table 5-4: Project List - WMA (Pohick - Middle Run)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9109	Stormwater Pond Retrofit	PC-MR-0002	8750 Pohick Rd., St. Raymond's - Penafort Catholic Church	Water quality and quantity control	Private - Church	0-10
PC9114	Stormwater Pond Retrofit	PC-PR-0001	7420 Reservation Dr., Sangster Elementary School	Water quality and quantity control	Public/Local - FCPS	0-10
PC9118	Stormwater Pond Retrofit	PC-SB-0001	Behind 9500 Shipwright Dr.	Water quality and quantity control	Private - HOA	0-10
PC9120	Stormwater Pond Retrofit	PC-PR-0002	Behind 9505 Southern Cross La.	Water quality and quantity control	Private - HOA	0-10
PC9214	Stream Restoration	PC-MR-0005	Behind 7309 Gist Ct.	Water quality control	Public/Local - FCPA	0-10
PC9515	BMP/LID Suite	PC-MR-0006	6820 Sydenstricker Rd., Orange Hunt Elementary School	Water quality and quantity control	Public/Local - FCPS	0-10
PC9517	BMP/LID Suite	PC-PR-0002	9732 Ironmaster Dr., Cherry Run Elementary School	Water quality and quantity control	Public/Local - FCPS	0-10
PC9112	Stormwater Pond Retrofit	PC-MR-0004	Behind 8874 Eagle Rock La.	Water quality and quantity control	Private - HOA	11-25
PC9123	Stormwater Pond Retrofit	PC-CY-0002	6450 Sydenstricker Rd., near Pohick Regional Library	Water quality and quantity control	Public/Local - FCPS	11-25
PC9215	Stream Restoration	PC-MR-0005	Behind 9111 Beachway La.	Water quality and quantity control	Public/Local – FCPA	11-25
PC9511	BMP/LID	PC-MR-0005	7500 Huntsman Blvd., Huntsman Square Shopping Center	Water quality control	Private - Commercial	11-25
PC9524	BMP/LID	PC-CY-0003	6938 Nativity La., School of the Nativity (Church)	Water quality and quantity control	Private - Church	11-25

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
PC9512	BMP/LID	PC-PR-0001	7420 Reservation Dr., Sangster Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9518	BMP/LID	PC-PR-0002	9732 Ironmaster Dr., Cherry Run Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9807	Buffer Restoration	PC-MR-0004	Next to 8800 Shadowlake Way	Water quality control	Private - HOA
PC9808	Dumpsite/ Obstruction Removal	PC-MR-0002	Northeast of intersection of Hooes Rd. & Fairfax County Pkwy.	Water quality control	Public/State - VDOT
PC9809	Buffer Restoration	PC-MR-0004	Behind 7410 Seabrook La.	Water quality control	Public/Local - FCPA
PC9810	Dumpsite/ Obstruction Removal Suite	PC-MR-0004	Behind 8903 Gutman Ct. & 7000 Cottontail Ct.	Water quality control	Public/Local - FCPA
PC9824	Lake Management for W.Q. Study	PC-MR-0005	Huntsman Lake, Near 7600 Modisto Ln.	Water quality and quantity control	Public/Local - FCPA

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.


ACCOTINK CREEK
POPES HEAD CREEK
CAMERON RUN
POHICK CREEK
SANDY RUN
DOGUE CREEK
RYANS DAM
OCCOQUAN
MILL BRANCH
KANE CREEK
OLD KEENE MILL
FAIRFAX COUNTY PKWY
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Miles
Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal
New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other
Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments
Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.
Map 5.4
Pohick - Middle Run
WMA
Proposed Projects

5.5 Pohick – Middle South Run Watershed Management Area

Middle South Run Watershed Management Area has a total area of approximately 2.95 square miles and is comprised of 10 subwatersheds. It is located in the west central portion of the Pohick Creek Watershed. It is bound on the west by Ox Road and the north and east by Fairfax County Parkway. It is bisected by Lee Chapel Road, which runs from the northeast to southwest, and Silverbrook Road is the southern boundary.

The WMA has approximately 16.06 miles of stream, which primarily flow northwest to southeast, ultimately reaching Lake Mercer. The area consists mainly of single-family residential homes. Land cover consists primarily of impervious surface associated with residential development (i.e., rooftops, sidewalks and roadways) and landscaping, including managed turf. The area is approximately 17 percent impervious. Notable features of the WMA are Lake Mercer, South Run Recreation Center and a portion of Burke Lake Park.

In the Middle South Run WMA the most prevalent stream condition features noted include disturbed stream buffers and stream channel erosion and/or widening. Upstream of Lake Mercer significant channel widening has been documented, along with some limited channel incision and scour. In addition, there are numerous pipes and ditches discharging directly into streams in the WMA. These outfalls contribute to the observed widening and erosive conditions. Several significant obstructions were documented in the WMA. Road crossing impacts in the WMA, while generally minor, were also documented at Lee Chapel Road, as well as the interior of several subdivisions. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.5.1 0-10 Year Structural Projects

<u>PC9110 Stormwater Pond Retrofit</u>

This project is proposed to retrofit an existing wet pond at a community center on Park Circle. To create a wetland system a sediment forebay will be constructed and a bench planting added. The pond collects runoff from adjacent neighborhoods and roadways to the north and outfalls into a stream to the south. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids.

<u>PC9210 Stream Restoration</u>

This project is proposed to repair bank and bed erosion and restore the channel morphology of the stream that runs parallel to the east side of Lee Chapel Road. The proposed restoration ends where the stream connects with a perpendicular stream to the south. The primary indicator is the poor channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

5.5.2 11-25 Year Structural Projects

<u>PC9108 Stormwater Pond Retrofit</u>

This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebay. The pond is adjacent to Lake Mercer. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enable particulate pollutants to settle out.

PC9207 Stream Restoration

This stream is west of Wagon Trail Lane and south of Huntsman Boulevard, collects runoff from adjacent residential neighborhoods. This project proposes to repair bank and bed erosion to restore channel morphology. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream, maintaining the capacity of the stream channel and controlling unwanted meander.

PC9208 Stream Restoration

This project proposes daylighting a pipe from Northedge Drive. Along with this project, outfall protection and an energy dissipation device will be provided. The primary indicator is poor channel morphology. Daylighting redirects a closed system to an aboveground channel, returning the water to its natural state. This reduces erosion to the stream.

PC9212 Stream Restoration

This project proposes repairing bank and bed erosion in a stream east of Burke Lake and Lake Tree Drive. The primary project indicator was the channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining the capacity of the stream channel and controlling unwanted meander of the stream.

PC9510 BMP/LID

Subproject A proposes the creation of a bioretention landscaping feature to receive runoff from South Run Recreation Center. The location is such that the bioretention area should receive runoff from the adjacent parking lot. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The filtration will capture and treat stormwater before entering the storm drain system. Subproject B proposes the reconstruction of roadside swales on the access road to South Run Recreation Center. These swales will have vegetative plantings, an energy dissipation device and check dams. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. These retrofitted swales will reduce flow velocities and increase filtration capacity. Swales along road should have minimal disturbance.

5.5.3 Non-Structural Projects

PC9803 Buffer Restoration

This project is proposed to re-plant stream buffer south of Lake Mercer and west of Jeffrey Court. Re-planting the buffer will re-establish the RPA. The main indicators are stream bank buffer deficiency and headwater riparian habitat. Increased vegetation from buffer repair will provide additional stream buffer for filtration of pollutants, and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.

PC9805 Dumpsite/Obstruction Removal

A dumpsite/obstruction is located in the portion of the stream west (upstream) of the culvert under Lee Chapel Road and north of Stony Creek Court. The primary indicators are flood complaints. Field verification revealed obstructions are from trash and debris. This project proposes the cleanup of trash in or near the stream channel to help reduce the amount of pollutants entering adjacent streams and storm systems. The cleanup will help restore the function of the stream.

PC9806 Dumpsite/Obstruction Removal

This project is proposed to remove an obstruction in the stream south of Rambling Ridge Road and Wilderness Way. The primary indicators are flood complaints. The obstruction was verified as a beaver dam. The removal will reduce flood complaints and will restore the stream to its natural conditions and help restore its function.

PC9823 Lake Management for W.Q. Study

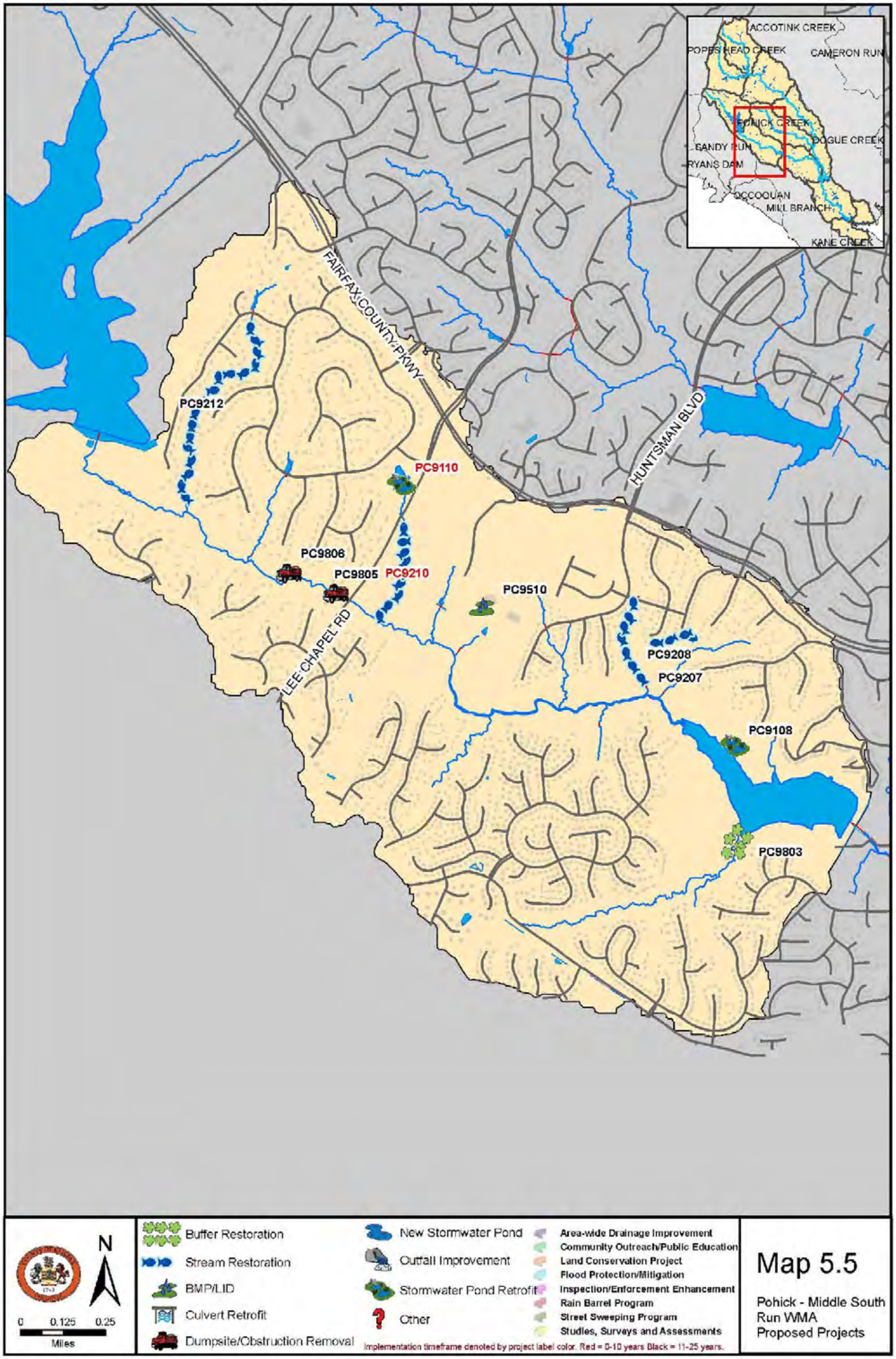
This project is a study to determine the water quality benefits of dredging Lake Mercer. The lakes are currently trapping sediment. One possible benefit of dredging includes an increased permanent pool volume (which will in turn trap more sediment). Other benefits include extending the lifespan of the lakes, and enhancing recreation. Other water quality benefits include removing shallow foraging areas which may decrease the numbers of waterfowl and associated fecal contamination; increased depth benefits thermal stratification which in turn benefits fisheries. If the lake is eutrophic, dredging may increase dissolved oxygen by decreasing biological oxygen demand (BOD) by removing organic sediment. Dredging may also remove phosphorus bound to these sediments, although this phosphorus is currently locked in place within the lake.

Table 5-5: Project List - WMA (Pohick - Middle South)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9110	Stormwater Pond Retrofit	PC-SR-0013	9908 South Park Ci.	Water quality and quantity control	Private - Residential	0-10
PC9210	Stream Restoration	PC-SR-0013	Behind 7801 Preakness La.	Water quality control	Public/Local - FCPA	0-10
PC9108	Stormwater Pond Retrofit	PC-SR-0018	Behind 7278 Lakeland Valley Dr.	Water quality and quantity control	Public/Local - FCPA	11-25
PC9207	Stream Restoration	PC-SR-0010	Along access road next to 7719 Wagon Trail La.	Water quality control	Public/Local - FCPA	11-25
PC9208	Stream Restoration	PC-SR-0018	Next to 9245 Northedge Dr.	Water quality and quantity control	Private - HOA	11-25
PC9212	Stream Restoration	PC-SR-0015	Behind 4312 South View Ct.	Water quality control	Private - HOA, Public/Local - FCPA	11-25
PC9510	BMP/LID Suite	PC-SR-0011	7549 Reservation Dr., South Run Recreation Center	Water quality and quantity control	Public/Local - FCPS	11-25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
PC9803	Buffer Restoration	PC-SR-0018	Behind 8104 Jeffrey Ct.	Water quality control	Public/Local - FCPA
PC9805	Dumpsite/ Obstruction Removal	PC-SR-0014	Along Lee Chapel Rd., behind Stony Creek Ct.	Water quality control	Public/Local - FCPA
PC9806	Dumpsite/ Obstruction Removal	PC-SR-0014	Near 7528 Rambling Ridge Dr.	Water quality control	Public/Local - FCPA
PC9823	Lake Management for W.Q. Study	PC-SR-0018	Lake Mercer, Near 7720 Wagon Trail Ln.	Water quality and quantity control	Public/Local - FCPA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**



ACCOTINK CREEK
POPES HEAD CREEK
CAMERON RUN
POHICK CREEK
DOGUE CREEK
SANDY RUN
RYANS DAM
OCCOQUAN
MILL BRANCH
KANE CREEK
FAIRFAX COUNTY PKWY
HUNTSMAN BLVD
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Stream Restoration
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Dumpsite/Obstruction Removal
New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other
Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments
Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.
Map 5.5
Pohick - Middle South Run WMA Proposed Projects

5.6 Pohick – Potomac Watershed Management Area

The Potomac Watershed Management Area is located in the extreme southern portion of the Pohick Creek watershed and contains a total of eight subwatersheds. The Potomac WMA is bounded on the south by Gunston Road and is comprised primarily of public lands, including a portion of Fort Belvoir and the Pohick Regional Park. The Potomac WMA contains limited single-family, detached residential properties. The majority of the observed single-family detached dwellings were constructed on lots estimated at one acre or more. The age of development, in this WMA, ranges from 25 years old to approximately 5 years old (2000s), with little evidence of recent infill development.

Land cover consists primarily of woodland and tidal wetlands, with some impervious surface associated with residential development (i.e., rooftops, streets and driveways) and limited landscaping management. No stormwater management facilities or infrastructure were observed in the Potomac WMA, including curb and gutter on roadways. Among the non-residential land uses observed, Potomac contains primarily institutional properties associated with public lands and open space holdings, including the majority of Pohick Bay Regional Park on the south side of Pohick Bay and the Accotink Bay Wildlife Refuge and Fort Belvoir on the north shore of Pohick Bay.

In the Potomac WMA the most prevalent stream condition problems noted were stream channel widening and incision. Given the lack of development in this WMA, these conditions may be attributable to the fairly steep drop in elevation seen between points in Pohick Bay Regional Park and Pohick Bay itself. The elevation drop and soil conditions may give rise to excessive channel incision and head cutting, which was also documented on two small tributaries in the park draining to Pohick Bay.

This WMA had the best subwatershed scores throughout the entire Pohick Creek Watershed, and therefore no projects were proposed in this WMA. Improving the headwaters of the Pohick Creek Stream was given priority over the Potomac WMA, due to the fact that any improvements done to the headwater areas would have compounding advantages downstream. The WMA map is provided for reference.

5.6.1 0-10 Year Structural Projects

No projects proposed.

5.6.2 11-25 Year Structural Projects

No projects proposed.

5.6.3 Non-Structural Projects

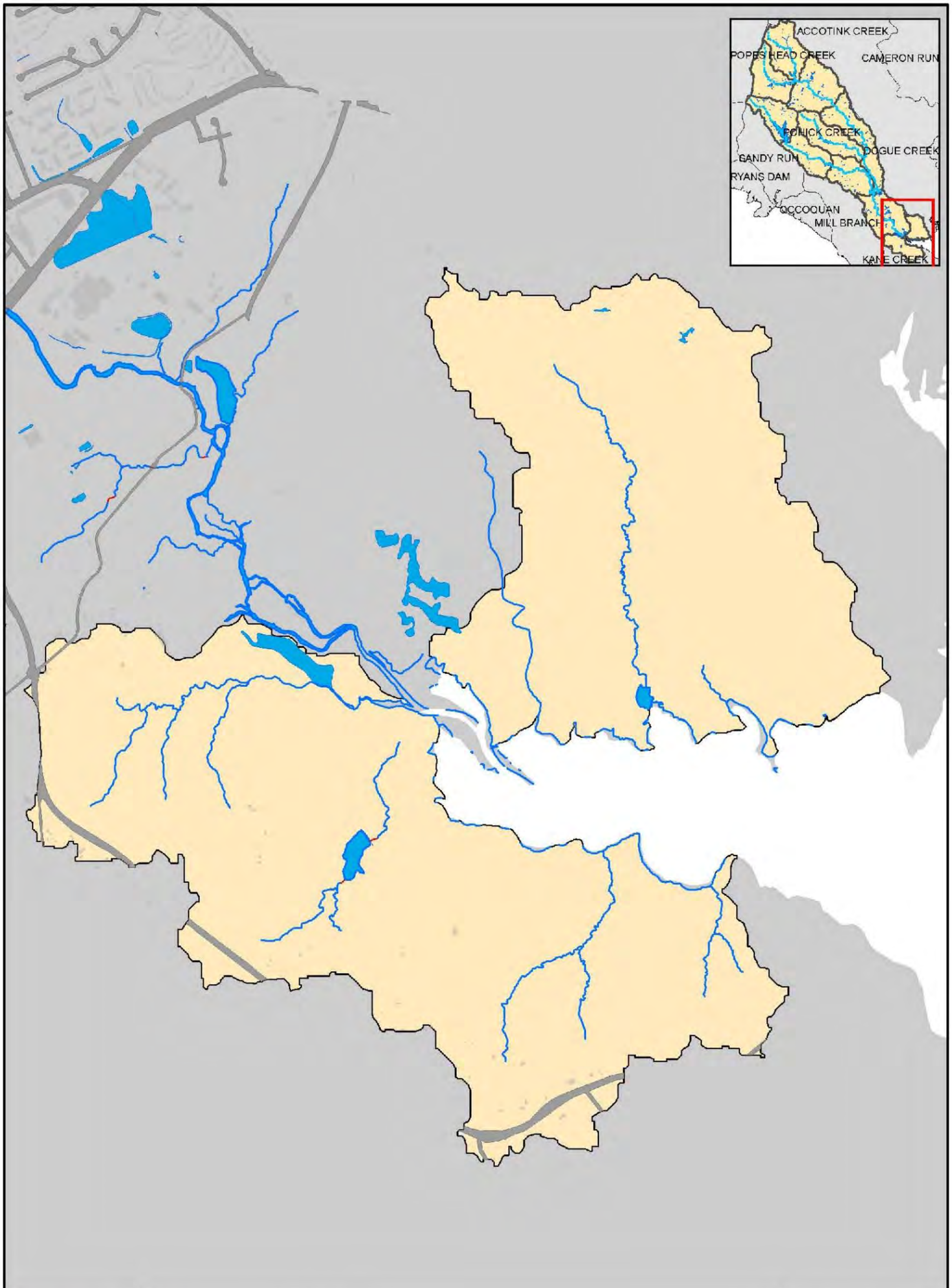
No projects proposed.

Table 5-6: Project List - WMA (Pohick - Potomac)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
N/A	No projects	N/A	N/A	N/A	N/A	N/A

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
N/A	No projects	N/A	N/A	N/A	N/A

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**



N

0 0.125 0.25
Miles

- Area-wide Drainage Improvement
- Community Outreach/Public Education
- Land Conservation Project
- Flood Protection/Mitigation
- Inspection/Enforcement Enhancement
- Rain Barrel Program
- Street Sweeping Program
- Studies, Surveys and Assessments

Note: No restoration strategies are proposed for this WMA due to its high quality natural state.

Map 5.6

Pohick - Potomac
WMA
Proposed Projects

5.7 Pohick – Rabbit Branch Watershed Management Area

Rabbit Branch Watershed Management Area has a total area of approximately 3.95 square miles and is comprised of 15 subwatersheds. It is located in the northern part of the Pohick Creek Watershed. A portion of the northern part is within the city of Fairfax. Its northern boundary is south of Route 236, the western boundary is Ox Road and Sideburn Road, the eastern boundary is Burke Station Road, Braddock Road and Twinbrook Road, and the boundary extends just beyond Burke Centre Parkway to the south.

The WMA has approximately 15.50 miles of stream, which primarily flows from north to south. The area consists mainly of single-family residential homes, and also includes some dense residential communities. Land cover consists of mainly impervious surfaces related to residential development (i.e., rooftops, sidewalks and roadways) and landscaping, including managed turf. The area is 27.80 percent impervious. Notable features of the watershed management area are Royal Lake, George Mason University and Robinson Secondary School.

In the Rabbit Branch WMA the most prevalent stream condition problems noted include disturbed stream buffers and stream channel erosion and/or widening. Pipes and ditches discharge untreated stormwater directly into the WMA’s streams in many instances, and have contributed to the observed widening and eroded conditions. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.7.1 0-10 Year Structural Projects

PC9135 Stormwater Pond Retrofit

A dry pond retrofit is proposed east of Nottinghill Lane and west of Roberts Road. The pond is upstream of the culvert under Roberts Road, which outfalls to a stream on the other side of the road. This project is proposed to create an extended detention dry pond with a sediment forebay. The primary indicators are nitrogen, phosphorus and total suspended solids.

PC9138 Stormwater Pond Retrofit

This proposed stormwater pond retrofit is east of Nantucket Court and northwest of Allenby Road. The pond, 0036DP, collects runoff from adjacent residential neighborhoods. This project is proposed to retrofit the pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.

PC9140 Stormwater Pond Retrofit

This project is proposed to retrofit of an existing wet pond at George Mason University, near Mason Pond Drive and Roanoke River Lane, to create a wetland system with sediment forebays and bench planting. The sediment forebays will provide pretreatment of stormwater runoff and the bench planting will increase the pollutant removal. The primary problem indicators are pollutants, including nitrogen, phosphorus and total suspended solids.

PC9256 Stream Restoration

This stream is located on Fairfax County Park Authority land, north of Windsor Hills Drive. The stream has indicators of poor channel morphology, which could be improved though the proposed repair to bank and bed erosion. The stream receives water from adjacent residential neighborhoods. The stormwater is collected in pipes and receives no treatment before discharging to the stream. Stream stabilization will reduce sediment while maintaining capacity of the channel and controlling unwanted meander.

PC9259 Stream Restoration

This project is proposed to repair bank and bed erosion in a stream that discharges to pond 0223DP. The stream is located in a wooded open space. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity. This is especially important at the upstream location of the lake.

PC9260 Stream Restoration

This stream runs parallel to Powell Road towards Commonwealth Boulevard and has indicators of poor channel morphology. The project is proposed to repair bank and bed erosion and restore channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the channel and controlling unwanted meander. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabrics, and rapid native vegetation establishment.

PC9263 Stream Restoration

The stream west of Dequincey Drive shows indications of poor channel morphology. This project is proposed to improve channel morphology by repairing bed and bank erosion. These repairs will include streambed shaping, rock toe reinforcement, erosion control fabric, and revegetation in degraded areas. The stream currently conveys water from three different sources: sheet flow from adjacent neighborhoods, untreated stormwater from a closed storm system outfall and the outfall from a dry pond. Stream stabilization will reduce sediment loads, maintain capacity of the stream channel and control unwanted meander.

PC9269 Stream Restoration

This stream, east of Glemere Road and south of Cotton Farm Road, outfalls into 0588DP. This project is proposed to repair bank and bed erosion due to poor channel morphology. Stream stabilization will be used to reduce sediment loads to the stream while maintaining the capacity of the channel and control unwanted meander of the stream.

PC9548 BMP/LID

This project proposes installing manufactured BMP filtration systems into existing storm inlets at Twinbrook Shopping Centre, southwest of Braddock Road to provide pollutant removal. A typical insert acts as a basket that collects sediment and larger debris such as trash and leafs. Filters should be selected to target the known pollutants. The filters need to be cleaned on a routine basis, typically every six months. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.

5.7.2 11-25 Year Structural Projects

PC9137 Stormwater Pond Retrofit

Existing dry pond east of Wenzel Street proposed to be retrofitted to create an extended detention dry pond with sediment forebay. Pond currently receives runoff from adjacent neighborhoods. A stream also flows into it from the northeast. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection, which is important because the pond outfalls into an existing stream. It will also allow for better function of ponding using a control structure, which enables particulate pollutants to settle before entering the stream.

PC9248 Stream Restoration

This project proposes repairing bank and bed erosion between Guinea Road and the railroad tracks. This will help to restore the poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining the capacity of the channel and controlling unwanted meandering.

PC9265 Stream Restoration

Stream running parallel to Tapestry Drive and west of Roberts Road. This project proposes to improve channel morphology by repairing bank and bed erosion. Stream receives runoff from several adjacent residential neighborhoods. Stream stabilization will reduce sediment loads to the stream, maintaining capacity of the stream channel and controlling unwanted meander.

PC9266 Stream Restoration

Stream west of Banting Drive, receives runoff from adjacent development. To improve poor channel morphology, this project proposes to repair bank and bed erosion. Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.

PC9267 Stream Restoration

This project proposes daylighting the storm pipe coming from the hospital/healthcare facility campus entering the stream. The primary indicator is poor channel morphology. Daylighting a piped outfall farther upstream and providing both outfall protection and an energy dissipation device will redirects a closed system back to an aboveground channel returning the water to its natural state and helping reduce runoff rates, thereby minimizing channel erosion.

PC9268 Stream Restoration

This project proposes improving the stream morphology by repairing bank and bed erosion. The stream runs southeast towards Braddock Road alongside Tapestry Drive where it connects with another stream. Many adjacent neighborhoods convey their stormwater in closed systems and outfall into stream. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.

PC9546 BMP/LID Suite

Subproject A proposes the creation of bioretention landscaping west of the parking lot at Laurel Hill Elementary School. Primary indicators are pollutants, such as nitrogen, phosphorus and total suspended solids. The selected area is generally a low spot, however a large portion of the runoff will already be captured by a closed system before reaching the bioretention area. This area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm system and promote ground water recharge. Subproject B proposes the installation of a bioswale to route runoff at the Laurel Hill Center. Runoff comes from a blacktop, the building and fields. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The proposed bioswale will capture sheet flow and help create an ideal environment for filtration, biological uptake and microbial activity. It will also help in reducing runoff volume and increase groundwater recharge.

PC9547 BMP/LID

This project proposes the creation of a bioretention landscaping feature at Robinson Secondary School. The area selected is higher than the impervious runoff. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Bioretention landscaping will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce outfall to the storm sewer system and recharge groundwater.

PC9549 BMP/LID

This project proposes the replacement of existing pavement in parking stalls with pervious pavement or pavers at Robinson Secondary School. The primary indicator is large total impervious area. The pervious pavement will treat and reduce parking lot runoff using a semi-porous material that allows runoff to infiltrate then trap pollutants in the soil. It also promotes surface storage and a reduction in runoff volumes.

PC9553 BMP/LID

This project proposes retrofitting existing roof of parking garage at George Mason University at the intersection of Patriot Circle and Sandy Creek Way with extensive green roof. The primary indicators are pollutants, including nitrogen and phosphorus. Green roofs will store, treat and reduce the runoff volume using vegetation and soil. It offers an option for pollutant removal in areas that are completely built out.

PC9554 BMP/LID

This project proposes retrofitting existing roof of parking garage at George Mason University between Mason Pond Drive and George Mason Boulevard with extensive vegetative cover. The primary indicators are pollutants, including nitrogen and phosphorus. Green roofs will store, treat and reduce the runoff volume using vegetation and soil. It offers an option for pollutant removal in areas that are completely built out.

5.7.3 Non-Structural Projects

PC9821 Buffer Restoration

The buffer area of stream leading into Royal Lake (PL 566 dam number four), adjacent to Gainsborough Drive, has deficiencies. This project is proposed to re-plant the buffer to re-establish the RPA. Increased vegetation from the buffer repair will provide additional filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration. This is an especially critical area because it is upstream of a large lake and will affect the overall health of this body of water.

PC9822 Buffer Restoration

This project is proposed to re-plant a stream buffer to re-establish the RPA of the stream at Lakeside Park. The primary indicator is buffer deficiency. Increased vegetation from buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting water, thereby increasing surface storage infiltration.

PC9827 Lake Management for W.Q. Study

This project is a study to determine the water quality benefits of dredging Royal Lake. The lakes are currently trapping sediment. One possible benefit of dredging includes an increased permanent pool volume (which will in turn trap more sediment). Other benefits include extending the lifespan of the lakes, and enhancing recreation. Other water quality benefits include removing shallow foraging areas which may decrease the numbers of waterfowl and associated fecal contamination; increased depth benefits thermal stratification which in turn benefits fisheries. If the lake is eutrophic, dredging may increase dissolved oxygen by decreasing biological oxygen demand (BOD) by removing organic sediment. Dredging may also remove phosphorus bound to these sediments, although this phosphorus is currently locked in place within the lake.

Table 5-7: Project List - WMA (Pohick - Rabbit Branch)

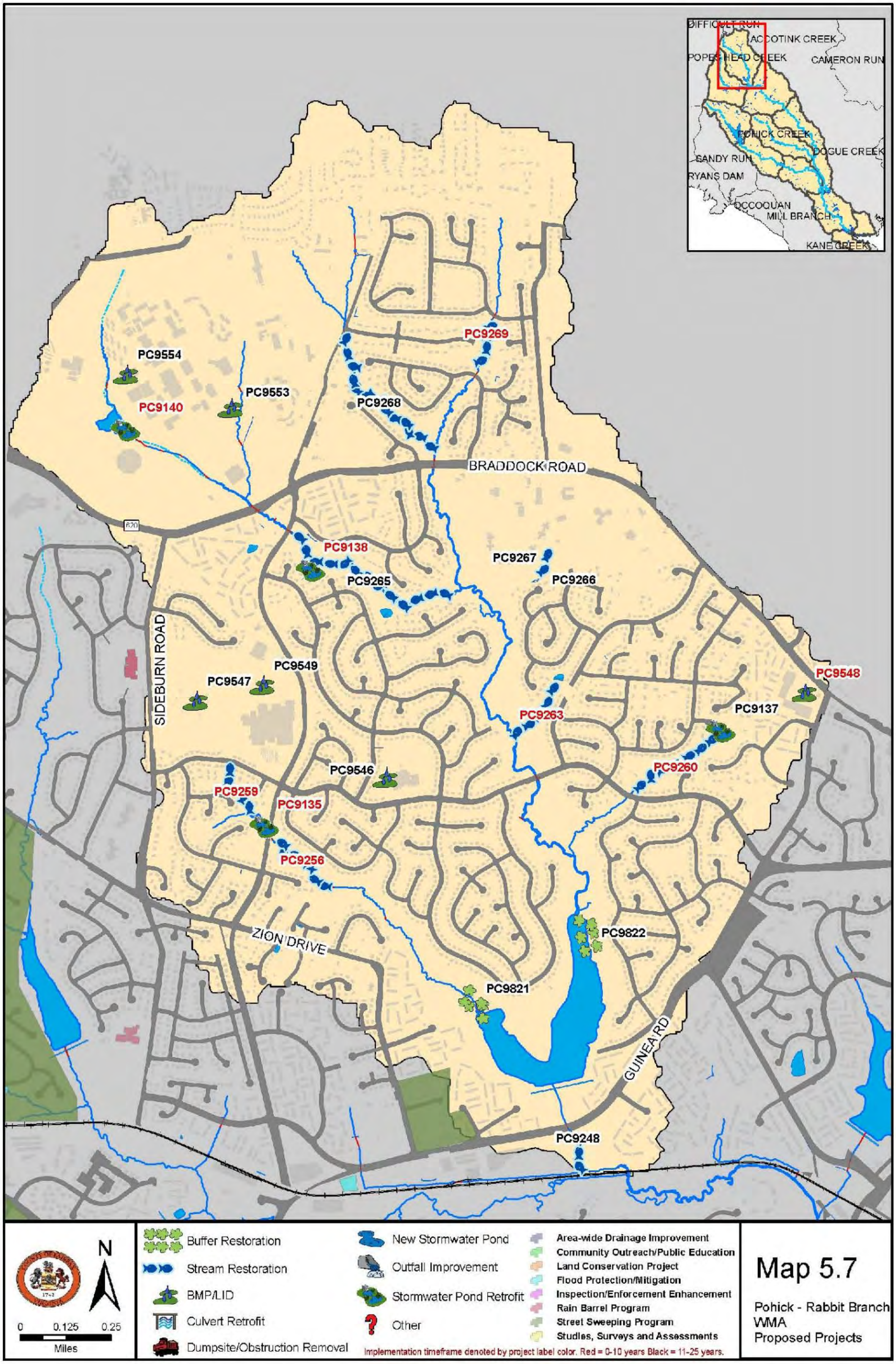
Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9135	Stormwater Pond Retrofit	PC-RA-0005	Behind 5220 Nottinghill La., Pond along Roberts Rd.	Water quality and quantity control	Private - HOA	0-10
PC9138	Stormwater Pond Retrofit	PC-RA-0010	Behind 10305 Nantucket Ct.	Water quality and quantity control	Private - HOA	0-10
PC9140	Stormwater Pond Retrofit	PC-RA-0011	Intersection of Mason Pond Dr. and Roanoke River La.	Water quality and quantity control	Public/State - GMU	0-10
PC9142	New Stormwater Pond	PC-RA-0012	Northwest of intersection of Roberts Road and Braddock Road	Water quality and quantity control	Public/State - GMU	0-10
PC9256	Stream Restoration	PC-RA-0004	Behind 5351 Brandon Ridge Way	Water quality control	Public/Local - FCPA	0-10
PC9259	Stream Restoration	PC-RA-0005	Behind 5220 Nottinghill La.	Water quality control	Private - HOA	0-10
PC9260	Stream Restoration	PC-RA-0006	Near 9800 Commonwealth Blvd.	Water quality control	Private - HOA	0-10
PC9263	Stream Restoration	PC-RA-0008	Behind 5802 Dequincey Dr.	Water quality control	Public/Local - FCPA	0-10
PC9269	Stream Restoration	PC-RA-0014	Next to 10159 Red Spruce Rd.	Water quality control	Private - HOA, Private - Residential	0-10
PC9548	BMP/LID	PC-RA-0006	9525 Braddock Rd., Twinbrooke Shopping Center	Water quality control	Private - Commercial	0-10
PC9137	Stormwater Pond Retrofit	PC-RA-0006	Behind 9463 Wenzel St.	Water quality and quantity control	Private - HOA	11-25
PC9248	Stream Restoration	PC-RA-0001	Along RR tracks near 5610 Sandy Lewis Dr.	Water quality control	Private - Residential	11-25
PC9265	Stream Restoration	PC-RA-0010	Behind 10156 Bessmer La.	Water quality control	Private - HOA	11-25
PC9266	Stream Restoration	PC-RA-0009	Behind 9733 Abington Ct.	Water quality control	Public/State - Commonwealth of VA, State Hospital Board	11-25

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9267	Stream Restoration	PC-RA-0009	9911 Braddock Rd., near Braddock Rd. Hospital	Water quality and quantity control	Public/State - Commonwealth of VA, State Hospital Board	11-25
PC9268	Stream Restoration	PC-RA-0013	Behind 4613 Tapestry Dr.	Water quality control	Private - HOA	11-25
PC9546	BMP/LID Suite	PC-RA-0004	10110 Commonwealth Blvd., Laurel Ridge Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9547	BMP/LID	PC-RA-0005	5035 Sideburn Rd., Robinson Secondary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9549	BMP/LID	PC-RA-0005	5035 Sideburn Rd., Robinson Secondary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9553	BMP/LID	PC-RA-0012	Intersection of Patriot Ci. and Sandy Creek Way, George Mason University Parking Garage	Water quality and quantity control	Public/State - GMU	11-25
PC9554	BMP/LID	PC-RA-0011	Between Mason Pond Dr. and George Mason Blvd. (Parking Garage)	Water quality and quantity control	Public/State - GMU	11-25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
PC9821	Buffer Restoration	PC-RA-0003	Behind 5330 Gainsborough Dr.	Water quality control	Public/Local - FCPA
PC9822	Buffer Restoration	PC-RA-0002	5216 Pommeroy Dr., Lakeside Park	Water quality control	Public/Local - FCPA
PC9827	Lake Management for W.Q. Study	PC-RA-0002	Royal Lake, Near 5344 Gainsborough Dr.	Water quality and quantity control	Public/Local - FCPA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**



Map 5.7

Pohick - Rabbit Branch WMA Proposed Projects

5.8 Pohick – Sideburn Branch Watershed Management Area

Sideburn Branch Watershed Management Area has a total area of approximately 3.61 square miles and is comprised of 16 subwatersheds. It is located on the northeast side of the Pohick Creek Watershed. It is bound on the west side by Ox Road and the south side by Fairfax County Parkway and points north. The eastern boundary is approximately two miles east of Ox Road and the northeastern boundary is Sideburn Road to Zion Drive to Guinea Road.

The WMA has approximately 15.40 miles of stream, which primarily flows from the north and west to the east. The area mainly consists of single-family residential, largely characterized by streets ending in cul-de-sacs. Land cover consists of mainly impervious surfaces related to the residential development (i.e., rooftops, sidewalks and roadways) and landscaping, including managed turf. The area is 33 percent impervious. Notable features of the watershed management area are Woodglen Lake, Lake Barton, several elementary schools and libraries, Virginia Railway Express (VRE) parking facility and Fairfax County Wastewater Collection Division.

In the Sideburn Branch WMA the most prevalent stream condition features noted include disturbed stream buffers and stream channel erosion and/or widening. Upstream of Woodglen Lake, significant channel erosion has been documented, along with subsequent channel widening. Buffer disturbances and channel widening conditions have also been documented upstream of Lake Barton. In addition, pipe discharge and ditch discharge into the WMA's streams have demonstrated impacts as well. These pipes and ditches discharge stormwater runoff directly into the streams in many instances, contributing to the observed widening and erosive conditions. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.8.1 0-10 Year Structural Projects

<u>PC9127 Stormwater Pond Retrofit</u>

This large dry pond receives runoff from a large drainage area that includes Terre Centre Elementary School to the west and a residential neighborhood to the east. The pond outfalls to the north under Burke Centre Parkway into a stream.The primary indicators are pollutants such as nitrogen, phosphorus and total suspended solids. The pond will be retrofitted as an extended detention dry pond with sediment forebays at the inlet pipes.

<u>PC9128 Stormwater Pond Retrofit</u>

This project is proposed to retrofit the existing pond to create an extended detention dry pond with sediment forebays. The pond receives stormwater from a closed pipe system that collects runoff from an adjacent residential neighborhood. The pond outfalls across Burke Centre Parkway through the Wal-Mart parking lot storm sewer and discharges into a stream across Roberts Parkway.

<u>PC9129 Stormwater Pond Retrofit</u>

The Fairfax County Wastewater Collection Division parking lot drains from south to north. Runoff from the parking lots is piped into the pond on the north side of the site, which outfalls to an adjacent stream. This project is proposed to retrofit the existing dry pond by increasing the

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

pond's size and installing a discharge structure that will increases detention time for stormwater runoff.

PC9130 Stormwater Pond Retrofit

This project is proposed to retrofit an existing dry pond into an extended detention pond with a sediment forebay. The pond is located at the south side of the Target shopping center. Stormwater runoff is collected in the parking lot through storm inlets and conveyed to the existing pond for treatment. This retrofit will improve stormwater runoff quality by using a sediment forebay to pretreat runoff. The pond's detention time will be increased to allow more pollutants to settle out and break down through biological processes.

PC9131 Stormwater Pond Retrofit

This large dry pond behind a residential community is currently well vegetated. This pond retrofit will modify the exisitng discharge structure to create an extended detention dry pond with sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The large drainage area captures runoff from dense residential, single-family residential, roadways and wooded areas.

PC9139 Stormwater Pond Retrofit

This existing pond receives runoff from the shopping center and parking lot. The stormwater is conveyed in a closed system from north to west. Runoff is also received from a subdivision to the east. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The project is proposed to retrofit the existing pond to create an extended detention dry pond with sediment forebays.

PC9236 Stream Restoration

This stream is located behind homes in a single-family residential neighborhood. It conveys stormwater from adjacent homes and streets including Oak Leather Drive, Fred's Oak Road, Fred's Oak Court and Vernon's Oak Court. The stream continues downstream of the culvert under Oak Leather Drive. The project is proposed to repair bank erosion and restore channel morphology upstream of Oak Leather Drive.

PC9237 Stream Restoration

This stream section runs between Reeds Landing Court and Burnside Landing Drive. Pipes discharge directly into streams from adjacent subdivisions. The project consists of repairing bank and bed erosion and restoring channel morphology. The primary indicator is poor channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

PC9239 Stream Restoration

Runoff from a residential neighborhood is collected in a closed system of pipes. Currently, a concrete channel between residential buildings conveys stormwater to a closed system that outfalls directly into the stream. This project is proposed to remove a portion of the concrete channel and closed system to create a more natural channel to convey stormwater to the stream. Due to the slope, a series of check dams or step pools may be necessary to keep velocities low.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

PC9240 Stream Restoration

This project is located upstream of the Burke Centre Parkway culvert. The stream conveys stormwater from single-family homes. The primary indicator is poor channel morphology. The purpose of the project is to restore channel morphology and to add an energy dissipation device. This will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meandering of the stream.

PC9241 Stream Restoration

This project is located upstream of the culvert under Oak Leather Drive. The stream conveys runoff from neighborhood and community recreation facilities. Stream stabilization will repair bank and bed erosion and restore stream morphology. The focus of this project will be on insuring proper buffers from the dense residential areas while improving the five direct stormwater outfalls to the stream bed.

PC9246 Stream Restoration

This project is proposed to repair bank and bed erosion to improve poor channel morphology of a stream east of Roberts Parkway and south of the railroad tracks. The stream conveys runoff from adjacent dense residential development. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

PC9247 Stream Restoration Suite

Subproject A is a stream restoration and will repair bed and bank erosion in the stream southwest of Premier Court at the VRE Station. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment. Subproject B is an obstruction removal southeast of Ships Curve Lane. Primary indicators are flood complaints. The obstruction were field verified as fallen trees and a beaver dam. This project proposes the removal of obstructions blocking the stream channel to reduce flood complaints and restore natural conditions.

PC9250 Stream Restoration

This stream is located south of Golden Eye Lane and north of the railroad tracks. The stream receives runoff from adjacent neighborhoods. The primary indicator is poor channel morphology. This project is proposed to repair bank and bed erosion and restore channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

PC9254 Stream Restoration

For this project, the primary indicator is poor channel morphology. This project is proposed to restore the stream that discharges into Woodglen Pond by repairing bank and bed erosion and restoring channel morphology. This will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander of the stream. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric and rapid native vegetation establishment.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

PC9261 Stream Restoration

This project is proposed to restore a stream running parallel to Colton Street. The primary indicator is poor channel morphology. The stream conveys runoff from adjacent residential development. The project consists of repairing bank and bed erosion and restoring channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

PC9262 Stream Restoration

The stream to the east of Portsmouth Road and west of Gadsen Drive flows to the south. The stream collects runoff from adjacent residential neighborhoods and schools to the north, east and west. This project is proposed to repair and restore bank and bed erosion, some of which is severe. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

PC9531 BMP/LID Suite

This suite of projects is proposed to create bioswales near the back of a green roof at Terra Centre Elementary School. The bioswales will have a filter layer of sand to promote infiltration to native soils or to perforated underdrain. Primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Runoff will enter a closed system and outfall directly into a nearby stormwater facility.

PC9534 BMP/LID

This BMP/LID project will be comprised of inlet inserts placed in the existing inlets to provide pollutant removal. Runoff from the parking lot at Giant Grocery Store is collected in a closed pipe system and discharged to the stream behind the building to the east. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Depending on the existing inlet, the inserts will either be in the form of a basket or a cartridge. This method is ideal due to the high imperviousness and space constraints on the site.

PC9535 BMP/LID

A series of curb inlets collect runoff from the Fairfax County Wastewater Collection Division parking lot, which is conveyed in a closed system. The majority of the site outfalls into a pond on the north side of the site. However, a portion of the runoff is untreated. The primary indicators are pollutants, including phosphorus, nitrogen and total suspended solids. This project proposes a biorentetion area at the northeast side of the parking lot. A filter layer made of 18 – 48 inches of sand is placed below a mulch layer. During a storm, the runoff ponds 6 – 9 inches, rapidly filters to an underdrain, and outfalls into wooded area or infiltrates into the native soil.

PC9539 BMP/LID

This storm system collects runoff from the shopping center located near the intersection of Burke Centre Parkway and Oak Green Way, and outfalls to the stream along the railroad tracks. A portion of the parking lot is conveyed in a closed system in the adjacent shopping center to the east and west, and the remaining is conveyed by a closed system to a stream to the south. This project is proposed to incorporate BMP inlet inserts or manufactured BMP filtration systems to provide pollutant removal before outfalling into the stream.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

PC9702 Outfall Improvement

Swale reconstruction is proposed in the fields behind Fairview Elementary School. An exisitng grass swale discharges into the stream adjacent to the school. The swale is located between two playing fields. The project is proposed to add energy dissipation devices to the swale, such as check dams and increased planting, to decrease velocities, increase infiltration and improve stormwater quality.

PC9703 Outfall Improvement

This project is proposed to improve the outfall located in open space east of a shopping center and west of the power company facility along Guinea Road. An energy dissipation device will be constructed at the outfall. This project will help address the existing erosion problem in the downstream channel. This outfall conveys discharge from dry pond 0175DP and the roadway drainage system for New Quinea Road.

PC9705 Outfall Improvement

A new storage and treatment area is proposed below the outfall from pond 0233DP and the closed system along John Ayres Drive. A sediment basin will be created inline with the stream to help dissipate erosive velocities. Plants with good nutrient uptake will be installed to reduce pollutant loading from the untreated stormwater runoff. A primary indicator is stream bank buffer deficiency in headwater riparian habitat.

5.8.2 11-25 Year Structural Projects

PC9134 Stormwater Pond Retrofit

Small dry pond receiving runoff from closed systems from large parking lot at St. Mary's Church, Concordia Street and Sideburn Road. Indicators are pollutants including phosphorus, nitrogen and total suspended solids. The project proposes the retrofit of the existing pond to create an extended detention dry pond with sediment forebay. The retrofit will modify the existing pond to create adequate downstream channel protection and allow for better function of pond using a control structure. This will promote particulate pollutants to settle out. Large open space adjacent to pond can be used for overflow during large storm events.

PC9243 Stream Restoration

Stream runs adjacent to Roberts Parkway. The project proposes repairing bank and bed erosion and restoring stream morphology. This will help maintain the capacity of the stream and control unwanted meander.

PC9536 BMP/LID Suite

This suite of projects proposes the creation of a bioretention landscaping features to receive impervious runoff at Landings Community Center and Pool. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce runoff rates and recharge the groundwater.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

PC9540 BMP/LID Suite

This suite of projects proposes creating bioretention areas at Bonnie Brae Elementary School. The bioretention will capture runoff from impervious areas, promote infiltration, reduce runoff rates and have some pollutant treatment.

PC9550 BMP/LID Suite

This suite of projects proposes the creation of a bioretention landscaping features to receive runoff from impervious areas at Oak View Elementary School. The impervious areas come from a blacktop and the roof of the school. The primary indicators are pollutants, including nitrogen, phosphorus and suspended solids. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. These features will help reduce the outflow to the storm sewer and recharge the ground water.

5.8.3 Non-Structural Projects

PC9538 BMP/LID

This project is proposed to install a rain barrel/cistern at Fairview Elementary School. This will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9541 BMP/LID

This project is proposed to install a rain barrel/cistern at Bonnie Brae Elementary School off Sideburn Road. This will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9551 BMP/LID

This project is proposed to install a rain barrel/cistern at Oak View Elementary School off Sideburn Road. This will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9815 Street-Sweeping Program

A street-sweeping program is proposed between the Fairfax County Parkway and Burke Centre Parkway, west of Roberts Parkway, to help reduce the amount of potential pollutants entering the nearby streams and storm systems. The area is approximately 430 acres and is comprised of single-family residential development. There is no existing stormwater quality treatment. There are several streams within the proposed project area.

PC9816 Buffer Restoration

This stream is located behind the residential area near Freds Oak Court and conveys runoff from industrial areas and adjacent subdivisions. The primary indicator is stream bank buffer deficiency in headwater riparian habitat. This project is proposed to replant the RPA and upland buffer area. Increasing the vegetation will provide an additional stream buffer for filtration of pollutants and will reduce runoff, increasing surface storage and infiltration.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

PC9817 Street-Sweeping Program

A street-sweeping program is proposed east of Burke Centre Parkway and west of Roberts Parkway to help reduce the amount of potential pollutants entering the nearby streams and storm systems. The area is approximately 42 acres and is comprised multi-family residential development. There is no existing stormwater quality treatment. The area is directly upstream of Lake Barton.

PC9818 Street-Sweeping Program

A street-sweeping program is proposed east of Zion Road to help reduce the amount of potential pollutants entering the nearby streams and storm systems. The area is approximately 20 acres and is comprised of dense residential development. There is no existing stormwater quality treatment.

PC9819 Buffer Restoration

This project is adjacent to a stream running along the side of Zion Road, flowing north to south. The stream receives direct runoff from the road. A primary indicator is stream bank buffer deficiency in headwater riparian habitat. Restoring the stream buffer by increasing vegetation would improve the water quality of the stream by reducing running and filtering the pollutants.

PC9820 Street-Sweeping Program

A street-sweeping program is proposed east of Ox Road to help reduce the amount of potential pollutants entering the nearby streams and storm systems. The area is approximately 350 acres and is comprised of single-family residential development. There is no existing stormwater quality treatment. There are streams within the project area.

PC9825 Lake Management for W.Q. Study

This project is a study to determine the water quality benefits of dredging Lake Barton. The lakes are currently trapping sediment. One possible benefit of dredging includes an increased permanent pool volume (which will in turn trap more sediment). Other benefits include extending the lifespan of the lakes, and enhancing recreation. Other water quality benefits include removing shallow foraging areas which may decrease the numbers of waterfowl and associated fecal contamination; increased depth benefits thermal stratification which in turn benefits fisheries. If the lake is eutrophic, dredging may increase dissolved oxygen by decreasing biological oxygen demand (BOD) by removing organic sediment. Dredging may also remove phosphorus bound to these sediments, although this phosphorus is currently locked in place within the lake.

PC9828 Lake Management for W.Q. Study

This project is a study to determine the water quality benefits of dredging Woodglen Lake. The lakes are currently trapping sediment. One possible benefit of dredging includes an increased permanent pool volume (which will in turn trap more sediment). Other benefits include extending the lifespan of the lakes, and enhancing recreation. Other water quality benefits include removing shallow foraging areas which may decrease the numbers of waterfowl and associated fecal contamination; increased depth benefits thermal stratification which in turn benefits fisheries. If the lake is eutrophic, dredging may increase dissolved oxygen by decreasing biological oxygen demand (BOD) by removing organic sediment. Dredging may also remove

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

phosphorus bound to these sediments, although this phosphorus is currently locked in place within the lake.

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Table 5-8: Project List - WMA (Pohick - Sideburn Branch)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9127	Stormwater Pond Retrofit	PC-SI-0004	Next to 6000 Burke Centre Pkwy., near Terre Centre Elementary School	Water quality and quantity control	Private - Residential	0-10
PC9128	Stormwater Pond Retrofit	PC-SI-0006	6000 Burke Commons Rd., Wal-Mart Supercenter	Water quality and quantity control	Private - Residential	0-10
PC9129	Stormwater Pond Retrofit	PC-SI-0008	6000 Freds Oak Rd., Fairfax Co. Wastewater Collection	Water quality and quantity control	Public/Local - Fairfax County	0-10
PC9130	Stormwater Pond Retrofit	PC-SI-0001	10301 New Guinea Rd., Target shopping center	Water quality and quantity control	Private - Commercial	0-10
PC9131	Stormwater Pond Retrofit	PC-SI-0001	Behind 10268 Colony Park Dr.	Water quality and quantity control	Private - HOA	0-10
PC9139	Stormwater Pond Retrofit	PC-SI-0016	10697 Braddock Rd., University Mall Shopping Center	Water quality and quantity control	Private - Commercial	0-10
PC9236	Stream Restoration	PC-SI-0008	Across the street from 5901 Fred's Oak Rd.	Water quality control	Private - Residential	0-10
PC9237	Stream Restoration	PC-SI-0007	Behind 10550 Reeds Landing Ct.	Water quality control	Private - Residential	0-10
PC9239	Stream Restoration	PC-SI-0007	Next to 5914 Cove Landing Rd.	Water quality and quantity control	Private - Residential	0-10
PC9240	Stream Restoration	PC-SI-0009	Near 5901 Waters Edge Landing La.	Water quality control	Private - Residential	0-10
PC9241	Stream Restoration	PC-SI-0009	Behind 10734 Burr Oak Way	Water quality control	Private - Residential	0-10
PC9246	Stream Restoration	PC-SI-0005	Behind 6001 Burke Commons Rd.	Water quality control	Private - Residential	0-10
PC9247	Stream Restoration Suite	PC-SI-0005	10400 Premier Ct.	Water quality control	Private - Residential	0-10
PC9250	Stream Restoration	PC-SI-0010	Behind 10602 Goldeneye La.	Water quality control	Public/Local - FCPA, FCPS	0-10

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

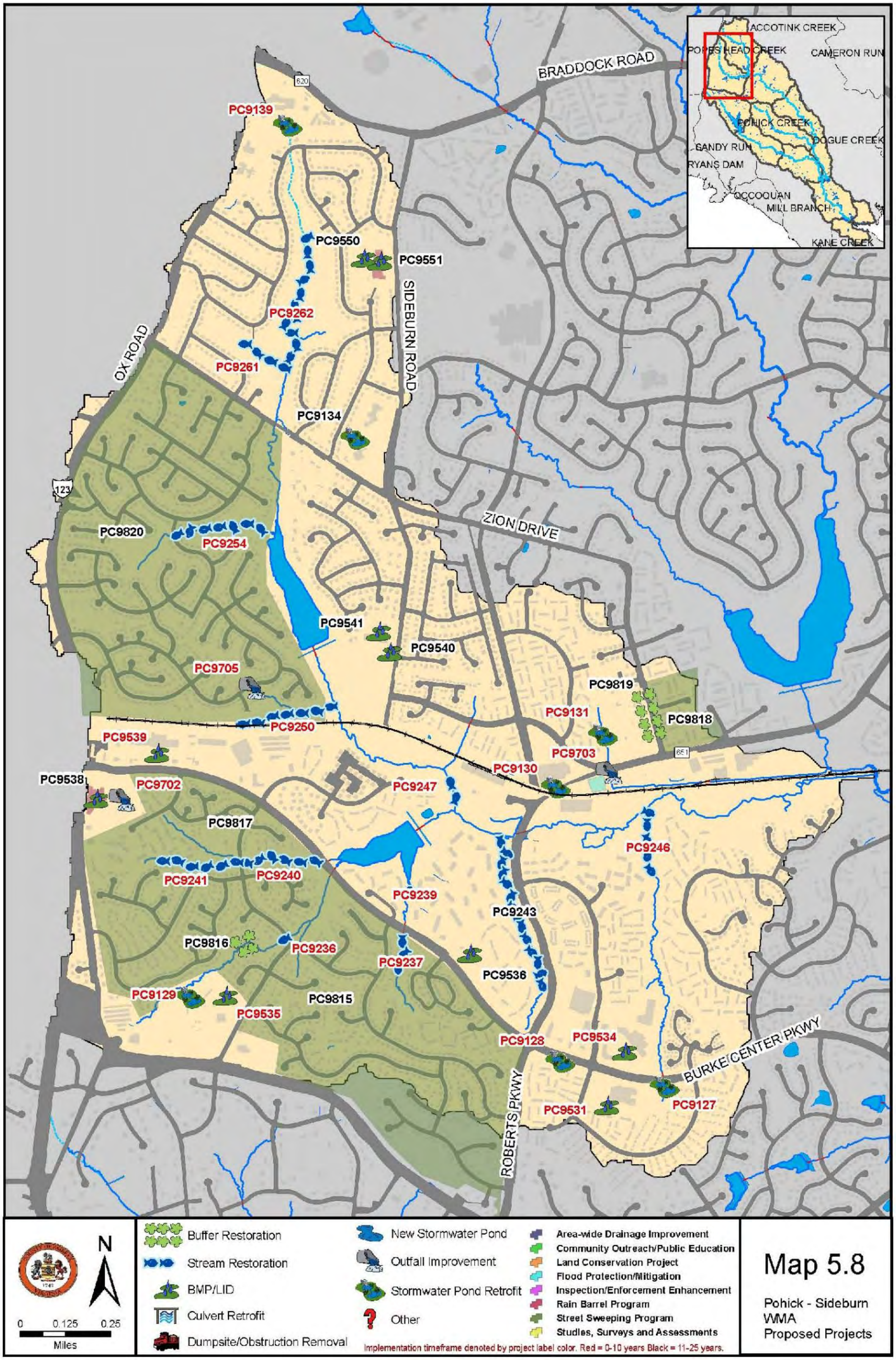
Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9254	Stream Restoration	PC-SI-0013	Behind 10757 John Turley Pl.	Water quality control	Public/Local - FCPA	0-10
PC9261	Stream Restoration	PC-SI-0015	Behind 5282 Beech Haven Ct.	Water quality control	Public/Local - FCPA	0-10
PC9262	Stream Restoration	PC-SI-0015	Behind 5214 Grinnell St.	Water quality control	Public/Local - FCPA	0-10
PC9531	BMP/LID Suite	PC-SI-0004	6000 Burke Centre Pkwy., Terra Centre Elementary School	Water quality and quantity control	Public/Local - FCPS	0-10
PC9534	BMP/LID	PC-SI-0003	6011 Burke Centre Pkwy., Giant Supermarket	Water quality control	Private - Commercial	0-10
PC9535	BMP/LID	PC-SI-0008	6000 Freds Oak Rd., FFC Wastewater Collection Division Office Bldg.	Water quality and quantity control	Public/Local - Fairfax County	0-10
PC9539	BMP/LID	PC-SI-0011	5727 Burke Center Pkwy., Burke Center Shopping Center	Water quality control	Private - Commercial	0-10
PC9702	Outfall Improvement	PC-SI-0009	5815 Ox Rd., Fairview Elementary	Water quality and quantity control	Public/Local - FCPS	0-10
PC9703	Outfall Improvement	PC-SI-0001	5637 Guinea Rd.	Water quality and quantity control	Private - Industrial	0-10
PC9705	Outfall Improvement	PC-SI-0011	Next to pool at 5601 Snowy Owl Dr.	Water quality and quantity control	Private - HOA	0-10
PC9134	Stormwater Pond Retrofit	PC-SI-0015	5222 Sideburn Rd., St. Mary's Church	Water quality and quantity control	Private - Church	11-25
PC9243	Stream Restoration	PC-SI-0005	Behind 5832 First Landing Way	Water quality control	Private - Residential	11-25
PC9536	BMP/LID Suite	PC-SI-0006	6001 Cove Landing Rd., Landings Community Center	Water quality and quantity control	Private - Residential	11-25
PC9540	BMP/LID Suite	PC-SI-0010	5240 Sideburn Rd., Bonnie Brae Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9550	BMP/LID Suite	PC-SI-0015	5004 Sideburn Rd., Oak View Elementary School	Water quality and quantity control	Public/Local - FCPS	11-25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
PC9538	BMP/LID	PC-SI-0009	5815 Ox Rd., Fairview Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9541	BMP/LID	PC-SI-0012	5240 Sideburn Rd., Bonnie Brae Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9551	BMP/LID	PC-SI-0015	5004 Sideburn Rd., Oak View Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9815	Street Sweeping Program	PC-SI-0008	5907 Freds Oak Rd.	Water quality control	Public/State - VDOT
PC9816	Buffer Restoration	PC-SI-0008	Behind 10708 Freds Oak Ct.	Water quality control	Private - Residential
PC9817	Street Sweeping Program	PC-SI-0005	Condominiums at Cove Landing Rd.	Water quality control	Public/State - VDOT
PC9818	Street Sweeping Program	PC-SI-0001	5532 La Cross Ct.	Water quality control	Private - HOA
PC9819	Buffer Restoration	PC-SI-0001	South of 10125 Zion Dr.	Water quality control	Public/State - VDOT
PC9820	Street Sweeping Program	PC-SI-0011	10614 John Ayres Rd.	Water quality control	Public/State - VDOT
PC9825	Lake Management for W.Q. Study	PC-SI-0007	Lake Barton, Near 5738 Lakeside Oak Ln.	Water quality and quantity control	Public/Local - FCPA
PC9828	Lake Management for W.Q. Study	PC-SI-0012	Woodglen Lake, Behind 5502 Fireside Ct.	Water quality and quantity control	Public/Local - FCPA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**


BRADDOCK ROAD
OX ROAD
SIDEBURN ROAD
ZION DRIVE
ROBERTS PKWY
BURKE CENTER PKWY
ACCOTINK CREEK
POPES HEAD CREEK
CAMERON RUN
POHICK CREEK
DOGUE CREEK
SANDY RUN
RYANS DAM
OCCOQUAN
MILL BRANCH
KANE CREEK
PC9139
PC9550
PC9551
PC9262
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PC9134
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PC9531
PC9127
Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal
New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other
Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments
Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.
N
0 0.125 0.25
Miles
Map 5.8
Pohick - Sideburn
WMA
Proposed Projects

5.9 Pohick – Upper Watershed Management Area

Upper Pohick Watershed Management Area has a total area of approximately 4.85 square miles and is comprised of 18 subwatersheds. It is bound to the north by Braddock Road, to the northeast by portions of Rolling Road, to the south by portions of Old Keene Mill Road and to the west by portions of Guinea Road. It is bisected from southwest to northeast by Burke Lake Road and from east to west by the rail line that carries the Virginia Railway Express (VRE) through portions of Northern Virginia.

The WMA has approximately 21.48 miles of stream, which flow from northwest to southeast. The area consists mainly of single-family detached residential homes, with some significant areas of multi-family residential development in established neighborhoods. Land cover consists primarily of impervious surface associated with residential development (i.e., rooftops, sidewalks and roadways) and landscaping, including managed turf. The area is approximately 29 percent impervious. Notable features include Lake Braddock, Lake Braddock Secondary School and the Rolling Valley Virginia Railway Express station.

In the Upper WMA the most prevalent stream condition problems noted include disturbed stream buffers and stream channel widening and erosion/incision. In addition, pipes and ditches discharge directly into the WMA's and have created impacts, including some severe impacts on the main stem of Pohick Creek. Upstream of Lake Braddock several road crossing impacts are noted, some severe. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.9.1 0-10 Year Structural Projects

<u>PC9126 Stormwater Pond Retrofit</u>

This project is proposed to retrofit an existing pond at White Oaks Elementary School to create an extended detention basin with a sediment forebay. The pond size will be increased and the outfall structure will be modified to increase the stormwater detention time. This will improve the stormwater runoff quality and quantity. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.

<u>PC9132 Stormwater Pond Retrofit</u>

This project is proposed to retrofit the large pond behind Lakepointe Drive, by creating an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate settlement.

<u>PC9133 Stormwater Pond Retrofit</u>

This project is proposed to retrofit an existing pond at Lake Braddock Secondary School to create an extended detention dry pond with a sediment forebay. The pond receives runoff from a fairly large impervious drainage area, including the school and adjacent residential area to the north. The pond will be retrofitted into an extended detention pond by modifying the existing discharge structure to increase the time stormwater remains in the pond. The pond size will be enlarged to handle the larger detention volume. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.

PC9136 Stormwater Pond Retrofit

This project is proposed to retrofit an existing pond near Dahlgreen Place Playground. The existing pond will be modified to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing control structure to increase the detention time of stormwater runoff. This will reduce downstream channel erosion and allow more time for particulate pollutants to settle out.

PC9227 Stream Restoration

A closed system collects runoff from Capella Avenue. and a large surrounding area, including residential development. The pipe outfalls into a stream east of Capella Drive. The stream is in a wooded area behind White Oaks Elementary School. Due to poor channel morphology, this project is proposed to daylight the outfall farther upstream to restore the water to its natural state before reaching the stream. Energy dissipation devices, which will consist of a series of reinforced step pools will be put in place to reduce velocity of water entering the stream.

PC9228 Stream Restoration Suite

Subproject A is a stream restoration of the stream west of Shiplett Boulevard and northwest of Glenbard Road, and is located on Fairfax County Park Authority land. This project is proposed to repair bank and bed erosion, restoring the channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the channel and controlling unwanted meander. Subproject B is an obstruction removal in the stream north of Buffie Court and west of Orion Court. The obstruction was verified during a field visit. This project proposes to remove the obstructions blocking the stream channel to restore natural conditions. Removal of obstructions will help restore the function of the stream.

PC9230 Stream Restoration

The stream east of Wilmington Drive and north of Rand Drive has poor channel morphology. This project is proposed to repair bank and bed erosion to restore channel morphology. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric and rapid native vegetation establishment. The stream stabilization will reduce sediment loads while maintaining the capacity of the stream and controlling unwanted meander.

PC9234 Stream Restoration

This project is proposed to repair bank and bed erosion, restoring channel morphology to a stream north of Nantick Road. The stream receives runoff from a residential neighborhood by direct runoff and from a closed system. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment. The primary indicator is poor stream stabilization.

PC9235 Stream Restoration

Two inlets collect runoff from Veranda Drive and pipe it to an adjacent stream to the east. Due to poor channel morphology, this project has been proposed to daylight the pipe farther upstream by creating an open channel and using an energy dissipation device. This device consists of a series of step pools reinforced with either rocks or logs. The daylighting will help reduce the velocity of the water entering the stream.

PC9242 Stream Restoration

This project is proposed to repair bank and bed erosion to a stream north of Burke Towne Court. The primary indicator is poor channel morphology. The stream receives runoff from adjacent residential neighborhood. The stream stabilization will reduce sediment loads while maintaining capacity of the stream and controlling unwanted meander. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

PC9245 Stream Restoration

This project is proposed to repair bank and bed erosion to restore channel morphology of the stream north of Burke Road. The primary indicator is poor channel morphology. The stream conveys runoff from adjacent single-family residential neighborhoods to the stream through closed systems or direct runoff. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

PC9249 Stream Restoration

This project is proposed on the stream northwest of Parliament Drive, and is located in the open space owned by Signal Hill Homes Association. This project is proposed to repair bank and bed erosion and restore channel morphology. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads while maintaining capacity and controlling unwanted meander. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric and rapid native vegetation establishment.

PC9251 Stream Restoration

This stream is located between Olley Lane and Winbourne Road. The stream conveys runoff from adjacent roads and single-family residential neighborhoods. The stream conveys runoff from both a closed system and sheet flow from roads and homes to the north, east and west. The banks of the existing stream are significantly eroded. This project is proposed to repair bank and bed erosion to restore channel morphology.

PC9252 Stream Restoration

This project is proposed to repair bank and bed erosion to restore channel morphology of the stream adjacent to Wallingford Drive. Stream stabilization will reduce sediment loads to the stream while maintaining the capacity and controlling unwanted meander. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric and rapid native vegetation establishment.

PC9257 Stream Restoration

This project addresses restoration of a stream near Fairleigh Court, which receives runoff from closed storm systems that drain residential neighborhoods. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining stream capacity and controlling unwanted meander. The project will improve storm outfalls to the stream and daylight a portion of the storm system.

PC9258 Stream Restoration

This project is proposed to daylight a pipe from a residential neighborhood (Dahlgreen Place) farther upstream. The primary indicator is poor channel morphology. This project will return the water to its natural state. This will reduce the velocity at which stormwater enters the stream.

Additionally, the daylighting will provide more opportunity for the stormwater to infiltrate. This will help reduce runoff rates and stream erosion.

PC9525 BMP/LID

This project is proposed to incorporate BMP inlet inserts or manufactured BMP filtration systems to provide pollutant removal at Rolling Valley Mall north of Old Keene Mill Road. Typical inserts act as baskets that collect sediment and larger debris such as trash and leaves. Filters should be selected to target the known pollutants. The filters need to be cleaned on a routine basis, typically every 6 months. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Filtration will capture and treat stormwater runoff from highly impervious areas before the stormwater enters the storm drain system.

PC9544 BMP/LID Suite

This suite of projects is the installation of bioswales at Lake Braddock Park near the game fields. The bioswales would receive sheet flow from the fields and would increase infilitration and reduce pollutants, such as excessive fertilizer, grass clippings or animal waste. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.

PC9704 Outfall Improvement

This project is the construction of a new storage and treatment area below the outfall of a closed system from Lake Braddock Drive. The improvement will include an energy dissipation device and wetland plantings. The primary indicators include instream sediment. Outfall storage will reduce erosive velocities and sediment loads at the outfall and improve downstream habitats.

5.9.2 11-25 Year Structural Projects

PC9125 Stormwater Pond Retrofit

Large dry pond near intersection of Burke Lake Road and Wilmington Drive. This project proposes the retrofit on an existing public pond to create an extended detention dry pond with a sediment forebay. The primary indicators are nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding by using a control structure. This also promotes the settlement of particulate pollutants.

PC9141 New Stormwater Pond

This project proposes creating a new dry extended detention basin just northeast of the Tilia Court cul-de-sac. This pond will provide water quality and quantity treatment for the west side of Lake Braddock Secondary School and will help reduce erosive velocity to the stream running behind Queen Victoria Court.

PC9232 Stream Restoration

This project proposes a stream restoration for stream west of Lincolnwood Ct. This stream receives sheet flow and runoff from a closed system from adjacent residential neighborhoods. The project proposes repairing bank and bed erosion and restoring channel morphology. Stream stabilization will reduce sediment loads, will maintain capacity of stream and control unwanted meander.

PC9233 Stream Restoration

Stream northwest of Burke Road. Due to poor channel morphology, this project proposes repairing bank and bed erosion while restoring channel morphology. Stream stabilization will reduce sediment loads while maintaining capacity of the stream and controlling unwanted meander.

PC9255 Stream Restoration

A closed system collects runoff from Wallingford Drive and Olley Lane and outfalls to a stream to the south. Due to poor downstream channel morphology, this project has been proposed to daylight pipe farther upstream to return water to its natural state. This will reduce runoff rates and minimize stream erosion.

PC9528 BMP/LID

This project proposes the construction of a bioswale at Burke Center School northeast of Lee Chapel Road. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The bioswale will capture sheet flow and create an ideal environment for filtration, biological uptake and microbial activity. It will reduce runoff volume and increase groundwater discharge. The drainage area for this proposed bioswale does not include much impervious area, which might not make this an ideal location.

PC9537 BMP/LID

This project proposes the creation of a bioretention landscaping feature to receive runoff from impervious areas near the VRE-Rolling Road Station. Primary indicators are pollutants such as nitrogen, phosphorus and total suspended solids. Bioretention will capture sheet flow from impervious areas and create an ideal environment for filtration, biological uptake and microbial activity. Location will not receive much impervious runoff, as the majority enters a closed system and outfalls to a nearby wooded area.

PC9542 BMP/LID Suite

The first subproject proposes installation of a bioswale to route runoff at Lake Braddock Secondary. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Bioswales will capture sheet flow and create an ideal environment for filtration, biological uptake, and microbial activity, providing moderate pollutant removal. It will also reduce runoff volume and increase groundwater recharge. Area receives minimal runoff from impervious surfaces. The second project proposes the creation of a bioretention landscaping feature at Lake Braddock Secondary School that will receive runoff from the tennis courts and part of the track. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioretention feature will create an ideal environment for filtration, biological uptake and microbial activity. Area would have minimal impacts and disturbances.

PC9543 BMP/LID

This project proposes the replacement of existing pavement in parking stalls with pervious pavement or pavers at Lakeside Pool on Lake Braddock Drive. The site currently sheet flows into a wooded area and eventually into a large pond. The primary indicator is a large total impervious area. The pervious pavement will treat and reduce parking lot runoff using a semi-porous material that allows runoff to infiltrate then trap pollutants in the soil. It also promotes surface storage and a reduction in runoff volumes.

5.9.3 Non-Structural Projects

PC9527 BMP/LID

This project is a rain barrel/cistern at White Oaks Elementary School off Sideburn Road. This will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The cisterns can be used by students for hands-on educational programs.

PC9530 BMP/LID

The project is a rain barrel/cistern at Burke Center School northeast of Lee Chapel Road southeast of Burke Lake Road. This will capture, store and reuse runoff from the rooftop. The primary indicators are high impervious areas directly connected to the stormwater system. The rain barrels can be used by students for hands-on educational programs.

PC9811 Dumpsite/Obstruction Removal

The stream north of Rathlin Drive has an obstruction. The primary indicators are flood complains and the obstruction has been field verified as gabions in the stream channel. This project is proposed to remove obstructions blocking the stream channel to restore natural conditions. Removal of obstruction will reduce flood complaints and help restore the natural shape and function of the stream.

PC9814 Buffer Restoration

This project is proposed to re-plant a stream buffer to re-establish the RPA east of Bonnie Bern Court. Indicators are stream bank buffer deficiencies. Increased vegetation from buffer repair will provide additional filtration of pollutants and will reduce runoff by intercepting the water and increasing surface storage and infiltration.

PC9826 Lake Management for W.Q. Study

This project is a study to determine the water quality benefits of dredging Lake Braddock. The lakes are currently trapping sediment. One possible benefit of dredging includes an increased permanent pool volume (which will in turn trap more sediment). Other benefits include extending the lifespan of the lakes, and enhancing recreation. Other water quality benefits include removing shallow foraging areas which may decrease the numbers of waterfowl and associated fecal contamination; increased depth benefits thermal stratification which in turn benefits fisheries. If the lake is eutrophic, dredging may increase dissolved oxygen by decreasing biological oxygen demand (BOD) by removing organic sediment. Dredging may also remove phosphorus bound to these sediments, although this phosphorus is currently locked in place within the lake.

Table 5-9: Project List - WMA (Pohick - Upper Pohick)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9126	Stormwater Pond Retrofit	PC-PC-0044	16130 Shiplett Blvd., White Oaks Elementary School	Water quality and quantity control	Public/Local - FCPS	0-10
PC9132	Stormwater Pond Retrofit	PC-PC-0055	Behind 9713 Lakepointe Dr.	Water quality and quantity control	Private - HOA	0-10
PC9133	Stormwater Pond Retrofit	PC-PC-0046	9200 Burke Lake Rd., Lake Braddock Secondary School	Water quality and quantity control	Public/Local - FCPS	0-10
PC9136	Stormwater Pond Retrofit	PC-PC-0054	Behind 5120 Dahlgreen Pl., Playground	Water quality and quantity control	Private - HOA	0-10
PC9227	Stream Restoration	PC-PC-0044	Behind 9500 Orion Ct.	Water quality and quantity control	Public/Local - FCPS	0-10
PC9228	Stream Restoration Suite	PC-PC-0044	Behind 6300 Glenbard Rd.	Water quality control	Public/Local - FCPA, FCPS, Private - HOA	0-10
PC9230	Stream Restoration	PC-PC-0050	Behind 9820 Rand Dr.	Water quality control	Private - Residential	0-10
PC9234	Stream Restoration	PC-PC-0049	Behind 9840 Natick Rd.	Water quality control	Private - Residential	0-10
PC9235	Stream Restoration	PC-PC-0041	Behind 5913 Veranda Dr.	Water quality and quantity control	Private - HOA	0-10
PC9242	Stream Restoration	PC-PC-0049	Behind 5753 Burke Towne Ct.	Water quality control	Public/Local - FCPA	0-10
PC9245	Stream Restoration	PC-PC-0042	5621 Herbert's Crossing Dr.	Water quality control	Private - HOA, Public/State - VDOT	0-10
PC9249	Stream Restoration	PC-PC-0046	Behind 5565 Queen Victoria Ct.	Water quality control	Private - HOA	0-10
PC9251	Stream Restoration	PC-PC-0053	Behind 9313 Winbourne Rd.	Water quality control	Private - HOA	0-10
PC9252	Stream Restoration	PC-PC-0052	Next to 9535 Wallingford Dr.	Water quality control	Private - HOA	0-10
PC9257	Stream Restoration	PC-PC-0054	Next to 9404 Fairleigh Ct.	Water quality control	Private - HOA	0-10

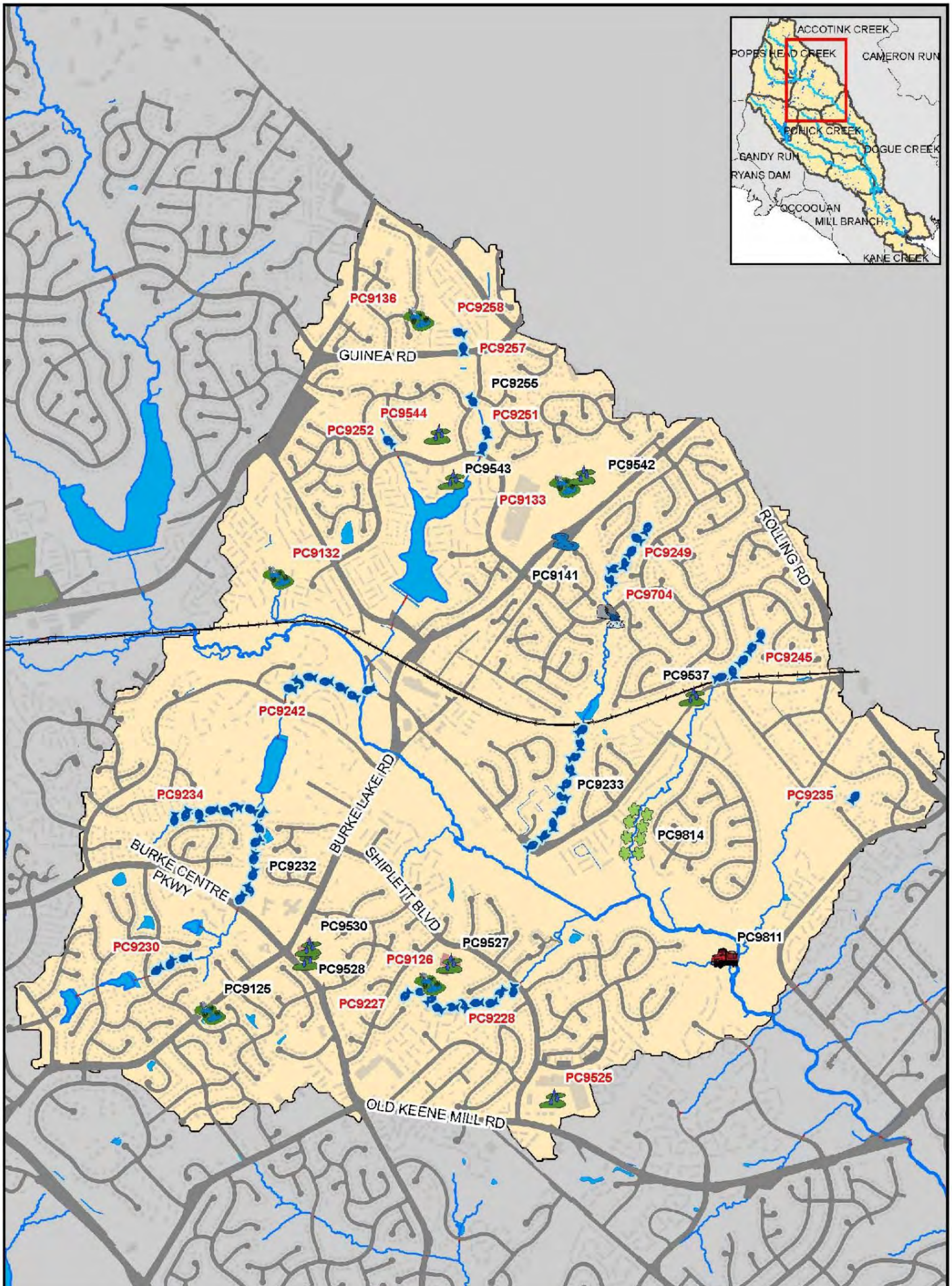
[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9258	Stream Restoration	PC-PC-0054	Next to 5101 Dahlgreen Pl.	Water quality and quantity control	Private - HOA	0-10
PC9525	BMP/LID	PC-PC-0039	9230 Old Keene Mill Rd., Rolling Valley Mall	Water quality control	Private - Commercial	0-10
PC9544	BMP/LID Suite	PC-PC-0053	9450 Lake Braddock Dr., Lake Braddock Park	Water quality and quantity control	Public/Local - FCPA	0-10
PC9704	Outfall Improvement	PC-PC-0046	Next to 9199 Lake Braddock Dr.	Water quality and quantity control	Private - HOA	0-10
PC9125	Stormwater Pond Retrofit	PC-PC-0050	Behind 6301 Wilmington Dr.	Water quality and quantity control	Private - HOA	11-25
PC9141	New Stormwater Pond	PC-PC-0046	Behind 5550 Queen Victoria Ct.	Water quality and quantity control	Public/State - VDOT	11-25
PC9232	Stream Restoration	PC-PC-0049	Behind 9623 Woodedge Dr.	Water quality control	Private - Residential	11-25
PC9233	Stream Restoration	PC-PC-0045	Near intersection of Burke Rd. and Heritage Square Rd.	Water quality control	Private - HOA, Public/State - VDOT	11-25
PC9255	Stream Restoration	PC-PC-0053	Behind 5208 Olley La.	Water quality and quantity control	Private - HOA	11-25
PC9528	BMP/LID	PC-PC-0049	9654 Burke Lake Rd., Burke Center School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9537	BMP/LID	PC-PC-0040	9016 Burke Rd., VA Railway Exp. - Rolling Rd. Station	Water quality and quantity control	Public/Local - FCPS	11-25
PC9542	BMP/LID Suite	PC-PC-0046	9200 Burke Lake Rd., Lake Braddock Secondary School	Water quality and quantity control	Public/Local - FCPS	11-25
PC9543	BMP/LID	PC-PC-0051	9333 Lake Braddock Rd., Lakeside Pool - Lake Braddock C.A.	Water quality and quantity control	Private - HOA	11-25

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
PC9527	BMP/LID	PC-PC-0044	16130 Shiplett Blvd., White Oaks Elementary School	Water quality and quantity control	Public/Local - FCPS
PC9530	BMP/LID	PC-PC-0049	9645 Burke Lake Rd., Burke Center School	Water quality and quantity control	Public/Local - FCPS
PC9811	Dumpsite/ Obstruction Removal	PC-PC-0039	Near 6223 Rathlin Dr.	Water quality control	Public/Local - FCPA
PC9814	Buffer Restoration	PC-PC-0040	Behind 6025 Bonnie Bern Ct.	Water quality control	Private - HOA
PC9826	Lake Management for W.Q. Study	PC-PC-0051	Lake Braddock, Near 9408 Odyssey Ct.	Water quality and quantity control	Private - HOA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**



Map 5.9

Pohick - Upper WMA Proposed Projects

5.10 Pohick – Upper South Run Watershed Management Area

Upper South Run Watershed Management Area has a total area of approximately 3.19 square miles and is comprised of 11 subwatersheds. It is located in the western part of the Pohick Creek Watershed. It is roughly bounded on the west and south by Ox Road and to the north by Fairfax County Parkway.

The WMA has approximately 12.90 miles of stream, which primarily flow from north to south, ultimately reaching Burke Lake. Burke Lake accounts for approximately 10 percent of the surface area of the WMA. The area consists mainly of single-family residential homes. Land cover consists primarily of impervious surfaces related to residential development (i.e., rooftops, sidewalks and roadways) and landscaping, including managed turf. The area is 11 percent impervious. Notable features of the WMA are Burke Lake Park (including golf course), approximately two miles of Fairfax County Parkway and the Fairfax Baptist Temple and Academy.

In the Upper WMA the most prevalent stream condition features noted include disturbed stream buffers and stream channel widening and erosion/incision. In addition, pipes and ditches discharging into the WMA's streams have demonstrated impacts, including some severe impacts on the main stem of Pohick Creek. These pipes and ditches discharge stormwater runoff directly into the streams in many instances, contributing to the observed widening and erosion conditions. Descriptions of the proposed projects for this WMA follow. Also, a list of all the projects proposed and a map of this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.10.1 0-10 Year Structural Projects

<u>PC9003 Stormwater Pond Retrofit</u>

This project is an alternative to the regional pond P-03. Regional pond P-03 was never constructed. Instead a smaller neighborhood pond (0922DP) was built near the site of the proposed regional pond. This project proposes retrofitting this existing pond which is north of Fairfax County Parkway and south of Lake Meadow Drive, into a constructed wetland system with a sediment forebay and bench planting. This pond is upstream of another pond, and is located across Lake Meadow Drive. The primary problem indicators are poor wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids.

<u>PC9004 Stream Restoration Suite</u>

This project suite is a proposed alternative to Regional Pond P-04, which was never constructed and was proposed upstream (northwest) of Burke Lake. Subproject A is the stabilization of the stream northwest of Burke Lake. The main indicator is poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. The stream stabilization will reduce sediment loads to Burke Lake maintaining the capacity of the stream and controlling unwanted meander. This project is critical due to its impact on Burke Lake. Subproject B proposes removing an obstruction farther upstream of Burke Lake. This obstruction was verified during field verification. Removing the obstruction will help restore the stream channel to its natural conditions and improve the function of the stream. Due to the proximity of the pond, removing obstruction could improve overall condition of the pond.

<u>PC9007 Stormwater Pond Retrofit</u>

This project proposes retrofitting an existing neighborhood pond (0956DP) as an alternative to Regional Pond P-07, which was not constructed. The existing neighborhood pond is upstream of where Regional Pond P-04 was originally proposed. The pond is northeast of Fairfax County Parkway and receives runoff from adjacent neighborhoods. This project proposes to retrofit the pond to create a wetland system with a sediment forebay and bench planting. The sediment forebay will provide pretreatment of stormwater runoff and the bench planting will increase pollutant removal. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids.

PC9008 Stormwater Pond Retrofit

This project is a proposed supplement to the existing Regional Pond P-05 (0525DP) and will retrofit the pond into an extended detention dry pond with sediment forebays and additional planting. The pond is located southeast of Rice Field Place. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids. The pond collects runoff from a large drainage area that is mostly single-family residential development and roadways. Three separate systems outfall into the pond. All outfalls will have a forebay installed to collect coarse sediments and debris. The pond outfalls into a stream at the south end.

PC9121 Stormwater Pond Retrofit

This project is proposed to retrofit an existing pond northeast of Fairfax County Parkway at Burke Community Church. The project will create a wetland system with construction of a sediment forebay and the addition of low marsh and high marsh plantings. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids. The pond receives runoff from the church and parking lot. The retrofit will modify the existing pond to increase pollutant removal and to provide adequate channel protection. The retrofit will create a better functioning environment for gravitational settling, biological uptake and microbial activity.

PC9124 Stormwater Pond Retrofit

This project is proposed to retrofit two connecting ponds at Fairfax Baptist Temple Academy to create an extended detention dry pond with sediment forebays. The retrofit will install sediment forebays on the inflow pipes, remove the pilot channels, add an aquatic bench with an engineered landscaping plan and modify the outlet structure to increase the stormwater treatment time. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The pond is bisected by an access road. A pipe goes under the access road to connect the two ponds.

PC9223 Stream Restoration

This stream outfalls into a pond northeast of Lake Meadow Drive. It collects runoff by sheetflow from an adjacent single-family housing development. The primary indicator is poor channel morphology. The project proposes repairing bank and bed erosion, thereby restoring channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid native vegetation establishment.

5.10.2 11-25 Year Structural Projects

PC9001 Stormwater Pond Retrofit Suite

This project suite is a supplement to the large regional wet pond P-01 southeast of Pohick Court. Subproject A involves retrofitting the existing pond to increase pollutant removal and to provide adequate channel protection above the permanent pool. The retrofit will create a better functioning environment for gravitational settling, biological uptake and microbial activity by creating a wetland system with the construction of a sediment forebay and the addition of bench planting. The pond receives stormwater from Pohick Court closed system and a stream. Subproject B is a retrofit of this stream. The primary indicator was the poor channel morphology. The project proposes repairing bank and bed erosion to restore channel morphology. The stream stabilization will reduce sediment loads to the stream and pond, maintaining capacity of the stream channel and controlling unwanted meander. This project will improve the overall condition of the pond by restoring the stream that flows into it.

PC9219 Stream Restoration

Stream running parallel to Old Keene mill Road to the northwest. Stream feeds directly into Burke Lake. The primary indicator is the poor channel morphology. This project proposes repairing bank and bed erosion, restoring channel morphology. Stream stabilization will reduce sediment while maintaining the capacity and controlling unwanted meander of the stream. This project is critical because of its proximity to Burke Lake.

PC9220 Stream Restoration

Stream running north of Burke Lake Road. Receives runoff from adjacent residential neighborhoods. This project proposes repairing bank and bed erosion to restore poor channel morphology. Stream stabilization will reduce sediment loads while maintaining capacity and controlling unwanted meander. Stream will eventually outfall into Burke Lake. Improving upstream conditions will have a positive affect on the lake.

PC9221 Stream Restoration

Stream located northeast of Hillside Road. Stream receives stormwater runoff as sheet flow from adjacent neighborhoods and three closed systems from the Red Fox Estates neighborhood. Stream restoration proposes repairing bank and bed erosion to restore channel morphology. Primary indicator is poor channel morphology. The stream stabilization will reduce sediment loads while maintaining capacity of the stream and controlling unwanted meander.

PC9224 Stream Restoration

This project proposes restoration of the stream northeast of Hillside Road and will consist of repairing bank and bed erosion. The primary indicator is poor channel morphology. Stream receives runoff from sheet flow and closed systems from adjacent residential neighborhoods. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

PC9526 BMP/LID

Bioswale proposed at the Fairfax Baptist Temple Academy. Area proposed at foot of soccer field. Indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioswale will capture sheet flow and create an ideal environment for filtration, biological uptake and microbial activity. Will also contribute to reduced runoff volumes and increase groundwater recharge.

5.10.3 Non-Structural Projects

No projects are proposed.

Table 5-10: Project List - WMA (Pohick - Upper South Run)

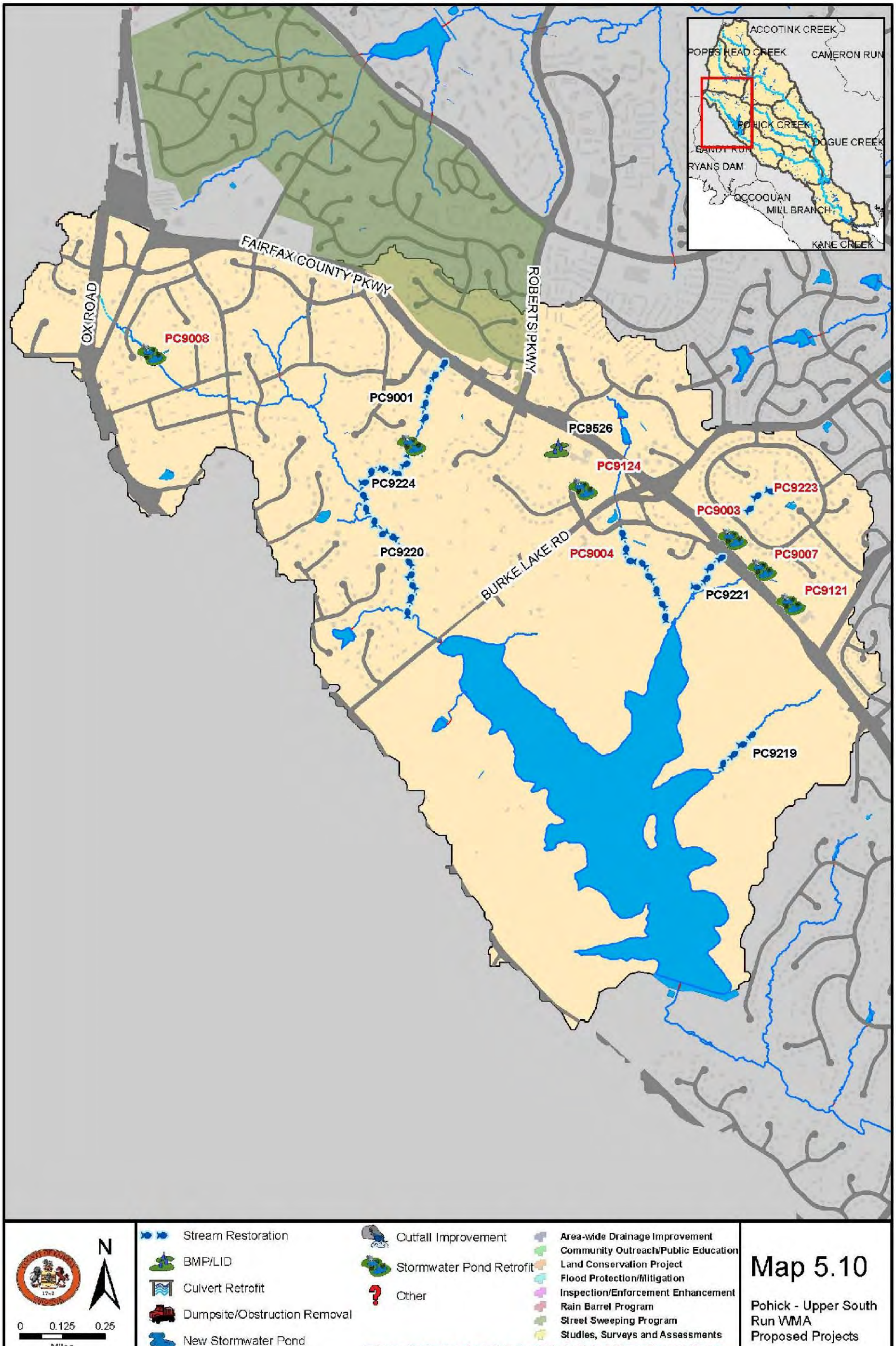
Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9003	Regional Pond Alternative/Stormwater Pond Retrofit	PC-SR-0022	Next to 6424 Lake Meadow Dr.	Water quality and quantity control	Private - HOA	0-10
PC9004	Regional Pond Alternative/Stormwater Pond Retrofit Suite	PC-SR-0020	10125 Lakehaven Ct.	Water quality control	Public/Local - FCPA	0-10
PC9007	Regional Pond Alternative/Stormwater Pond Retrofit	PC-SR-0020	Behind 6416 Lake Meadow Dr.	Water quality and quantity control	Private - HOA	0-10
PC9008	Regional Pond Alternative/Stormwater Pond Retrofit	PC-SR-0026	Next to 10995 Rice Field Pl.	Water quality and quantity control	Private - Residential	0-10
PC9121	Stormwater Pond Retrofit	PC-SR-0020	9900 Old Keene Mill Rd. , Burke Community Church	Water quality and quantity control	Private - Church	0-10
PC9124	Stormwater Pond Retrofit	PC-OS-0001	6401 Missionary La., Fairfax Baptist Temple Academy	Water quality and quantity control	Private - Church	0-10
PC9223	Stream Restoration	PC-SR-0022	Between Waterside Dr. & Burke Woods Dr.	Water quality control	Private - HOA	0-10
PC9001	Regional Pond Alternative/Stormwater Pond Retrofit	PC-SR-0024	Across from 10503 Pohick Ct., Church of Latter Day Saints	Water quality and quantity control	Public/Local - FCPA, Private - Residential, Private - HOA	11-25
PC9219	Stream Restoration	PC-SR-0017	Northwest of Old Keene Mill Rd. & Fairfax Co. Pkwy.	Water quality control	Public/State - Game and Inland Fisheries Commission	11-25

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
PC9220	Stream Restoration	PC-SR-0023	Behind 6803 Jeremiah Ct.	Water quality control	Public/Local - FCPA, Private - Residential	11-25
PC9221	Stream Restoration	PC-SR-0020	Along Fairfax County Pkwy. behind Deckhand Dr.	Water quality control	Private - Residential Conservation	11-25
PC9224	Stream Restoration	PC-SR-0023	East of Ox Croft Ct.	Water quality control	Public/Local - FCPA, Private - Residential	11-25
PC9526	BMP/LID	PC-OS-0001	6401 Missionary La., Fairfax Baptist Temple Academy	Water quality and quantity control	Private - Church	11-25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
N/A	No projects	N/A	N/A	N/A	N/A

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**



Map 5.10

Pohick - Upper South Run WMA Proposed Projects

5.11 Pohick Creek – Project Fact Sheets

Project fact sheets for each 10-yr structural project included in the Pohick Creek Watershed Management Plan are included in this section. Individual project fact sheets are comprised of the following information:

- Address / Location
- Land owner
- PIN (Tax map and parcel info)
- Control type (Water quality control, water quantity control, or both)
- Drainage area
- Receiving waters
- Description of proposed project
- Aerial view and sketch of proposed project
- Project Benefits
- Project Design Considerations
- Project Costs
- Site photos (existing conditions)

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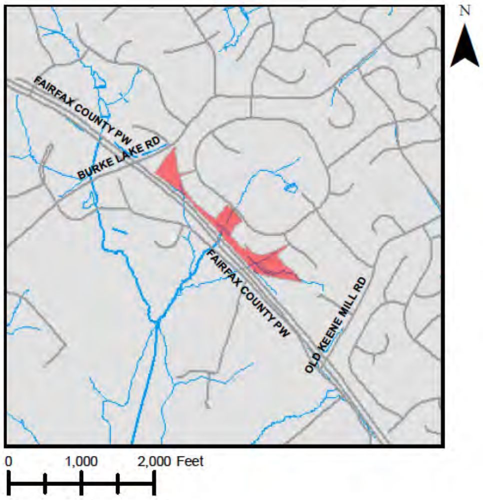
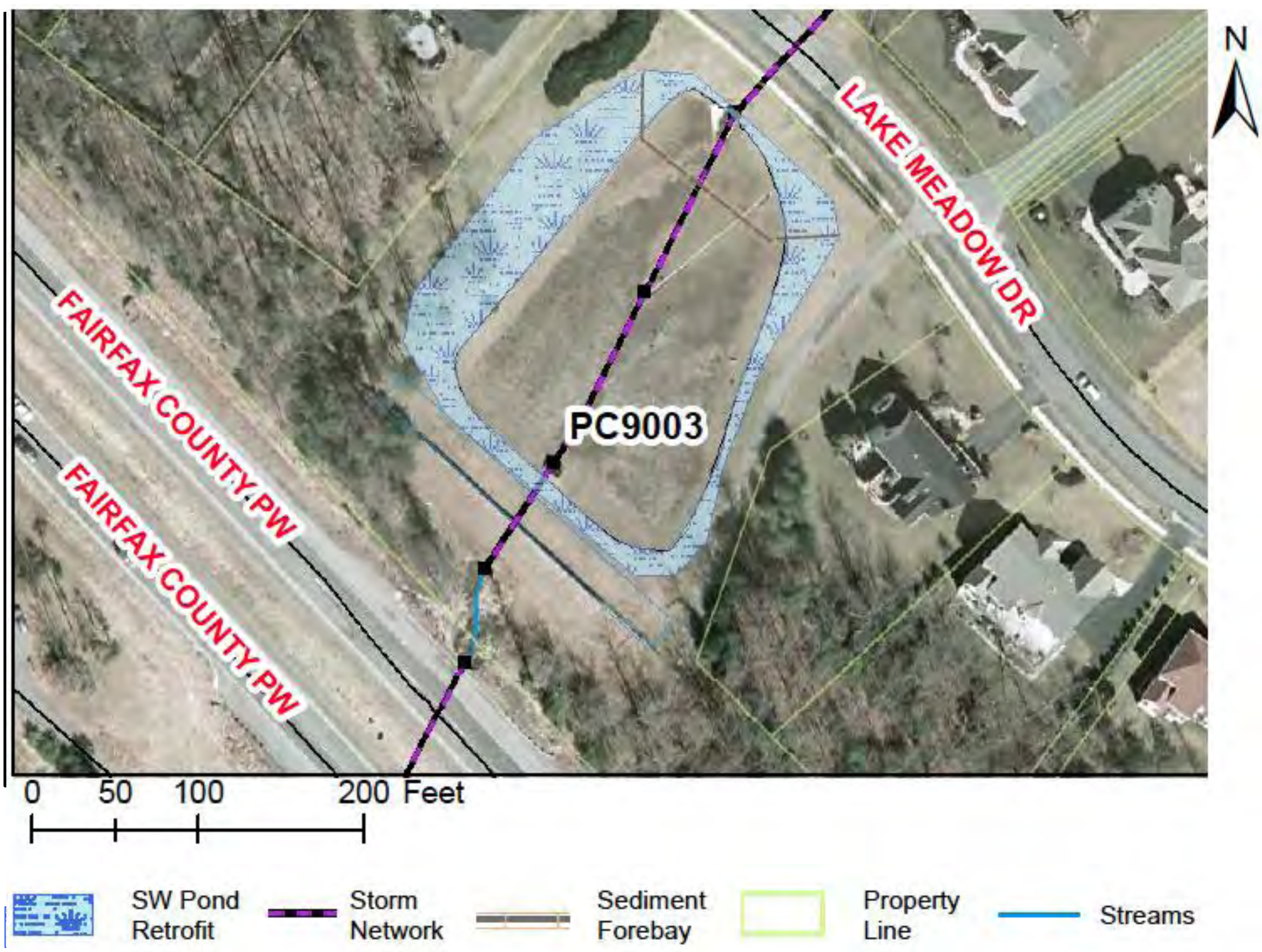
PC9003 Stormwater Pond Retrofit



Address: Next to 6424 Lake Meadow Dr., Burke, Virginia
Location: Regional pond near Lake Meadow Dr.
Land Owner: Private – Edgewater Land Bays 2&3 Homeowners Association
PIN: 0872 08 A
Control Type: Water quality and quantity control
Drainage Area: 18.22 acres
Receiving Waters: Tributary of South Run

Description: This project is an alternative to the regional pond P-03 Regional Pond P-03 which not been constructed. Instead a smaller neighborhood pond (0922DP) was built near the site of the proposed regional pond. This project proposes retrofitting this existing pond which is north of Fairfax County Parkway and south of Lake Meadow Drive, into a constructed wetland system with a sediment forebay and bench planting. This pond is upstream of another pond, and is located across Lake Meadow Drive. The primary problem indicators are poor wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids.



Project Benefits: The retrofit will increase the time that stormwater travels through the facility, which will increase pollutant particulate settlement and provide a better environment for biological uptake and microbial activity. Adding a permanent pool prevents resuspension of sediments and other pollutants. Also increasing the time stormwater stays in the facility will provide better channel protection. Lastly, installing the sediment forebay will reduce debris and coarse sediment in the facility and will reduce maintenance requirements. Below are the project's estimated pollutant removal amounts.

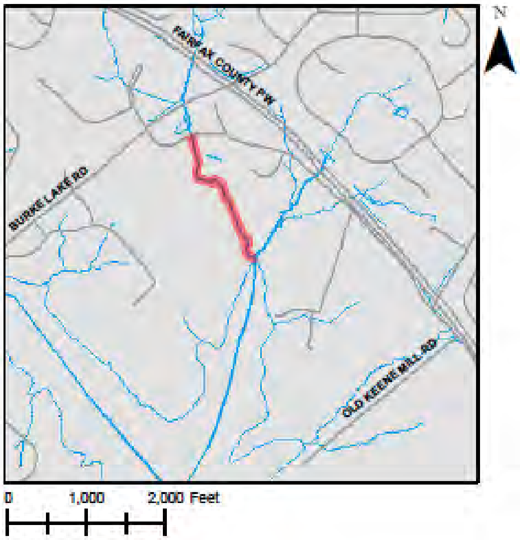
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.39	8.69	2.07

Project Design Considerations: Property is owned by local homeowners association, but is in a drainage easement, according to County records. The existing easement might have to be enlarged to allow facility to be expanded on the northwest side. (See project map.) Project is easily accessible and should not have any major impacts; however efforts should be made to minimize such impacts to existing mature vegetation. The sediment forebay should be 10% of the surface area of the pond. The aquatic bench should be planted 10 to 15' inward from top of bank. The vegetative buffer should be 10 to 15' outward from the top of bank. The existing concrete pilot channels should be removed.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.35	AC	$8,500	$2,975
Grading and Excavation	2350	CY	$35	$82,250
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	50	CY	$50	$2,500
Outflow Pipe	100	LF	$125	$12,500
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	300	CY	$40	$12,000
Plantings	1	LS	5%	$6,861
Ancillary Items	1	LS	5%	$6,861
Erosion and Sediment Control	1	LS	10%	$13,723
			Base Construction Cost	$164,670
			Mobilization (5%)	$8,234
			Subtotal 1	$172,904
			Contingency (25%)	$43,226
			Subtotal 2	$216,129
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$97,258
			Total	$313,388
			Estimated Project Cost	$320,000

PC9004 Stream Restoration Suite



Address: 10125 Lakehaven Court, Springfield, Virginia
Location: Roads – Lakehaven Court and Deckhand Drive
Land Owner: Private/Public –Accotink Unitarian Church, Fairfax County Park Authority, Common Wealth of Virginia Commision of Game and Inland Fisheries
PIN: 0872 01 0026, 0872 01 0029, 0874 01 0003
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of South Run

Description: This project suite is a proposed alternative to Regional Pond P-04, which was proposed upstream (northwest) of Burke Lake but was not constructed. Subproject A is the stabilization of the stream northwest of Burke Lake. This project proposes repairing bank and bed erosion to restore channel morphology. The stream stabilization will reduce sediment loads to Burke Lake maintaining the capacity of the stream and controlling unwanted meander. This project is critical due to its impact on Burke Lake. Subproject B proposes removing an obstruction farther upstream of Burke Lake. This obstruction was verified during field verification. Removing the obstruction will help restore the stream channel to its natural conditions and improve the function of the stream.

Project Benefits: The stream stabilization will reduce sediment loads to the stream, maintaining the capacity of the stream and controlling unwanted meander. Removing the obstruction will help restore the stream channel to its natural conditions and improve the function of the stream. This suite of projects will help to return the stream to its natural condition and reduce pollutant loads and erosion. Below are the project's estimated pollutant removal amounts.

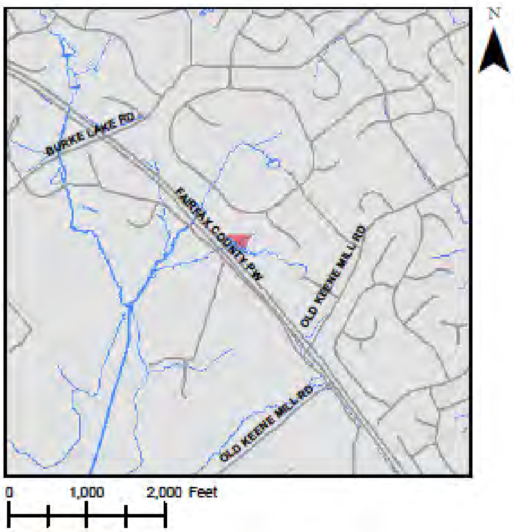
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
19.92	31.88	12.35

Project Design Considerations: Obstruction removal is on private residential property. Records show a storm drainage easement is located along Burke Lake Road at the entrance of the stream with the obstruction. Stream for restoration is located on property that is both publicly and privately owned. Efforts should be made to minimize impacts to mature vegetation.

Cost:

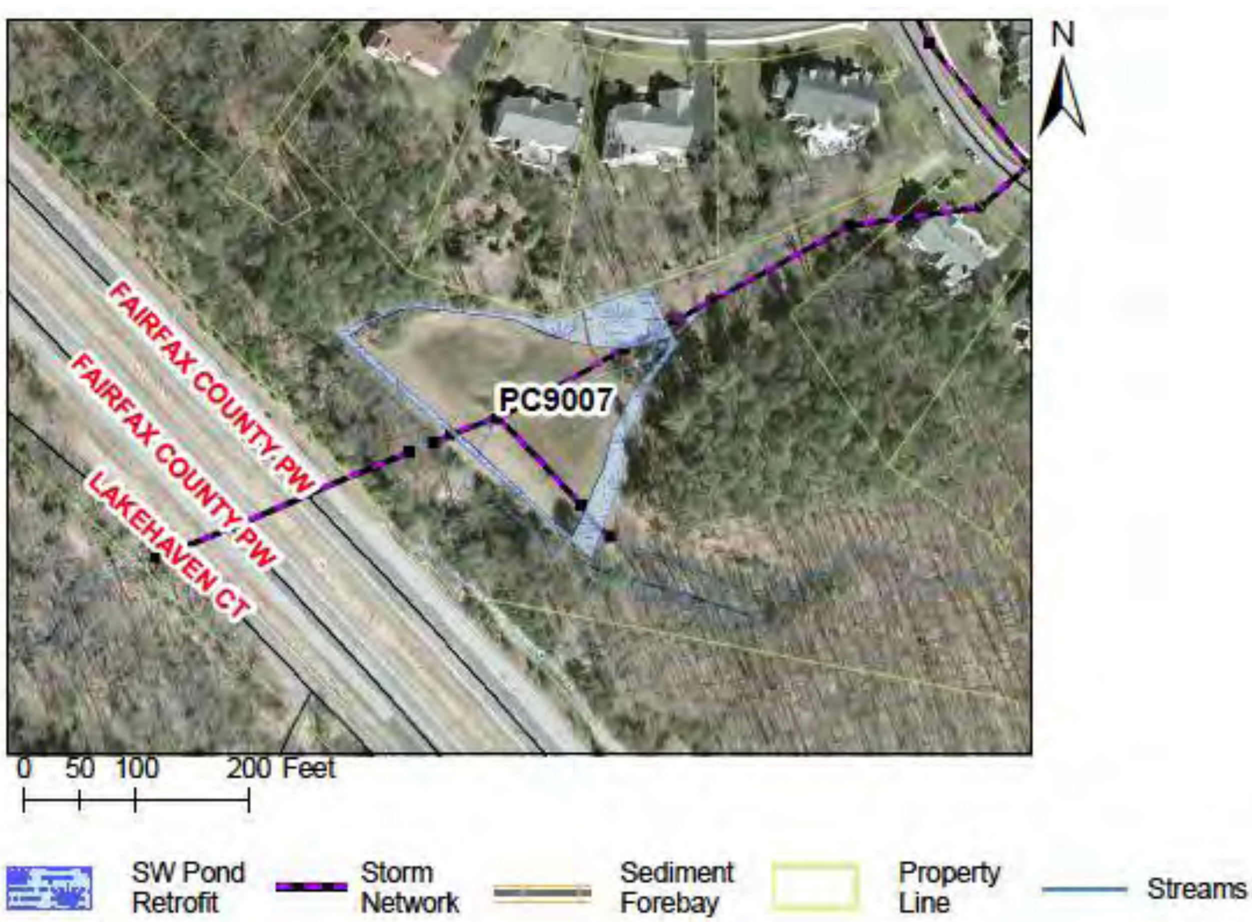
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Stream Restoration East of Pohick Ct.			
Construct New Channel	2026	LF	$200	$405,200
Clear and Grub	2.73	AC	$10,000	$27,300
Plantings	2.73	AC	$25,000	$68,250
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$60,075
Ancillary Items	1	LS	5%	$30,038
Subproject B	Obstruction Removal Near Lakehaven La.			
Obstruction Removal	1	LS	$5,250	$5,250
			Base Construction Cost	$696,113
			Mobilization (5%)	$34,806
			Subtotal 1	$730,918
			Contingency (25%)	$182,730
			Subtotal 2	$913,648
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$411,141
			Total	$1,324,789
			Estimated Project Cost	$1,330,000

PC9007 Stormwater Pond Retrofit



Address: Behind 6416 Lake Meadow Dr., Burke, Virginia
Location: Northeast of regional pond #3 behind Lake Meadow Dr.
Land Owner: Private – Edgewater Land Bay 2 & 3 Homeowners Association
PIN: 0872 08 A
Control Type: Water quality and quantity control
Drainage Area: 25.26 acres
Receiving Waters: Tributary of South Run

Description: This project proposes retrofitting an existing neighborhood pond (0956DP) as an alternative to Regional Pond P-07, which was not constructed. The existing neighborhood pond is upstream of where Regional Pond P-04 was originally proposed. The pond is northeast of Fairfax County Parkway and receives runoff from adjacent neighborhoods. This project proposes to retrofit the pond to create a wetland system with a sediment forebay and bench planting. The sediment forebay will provide pretreatment of stormwater runoff and the bench planting will increase pollutant removal. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids.



Project Benefits: The retrofit will increase pollutant removal and provide adequate channel protection above the permanent pool. The retrofit will create a better functioning environment for gravitational settling, biological uptake and microbial activity. Below are the project's estimated pollutant removal amounts.

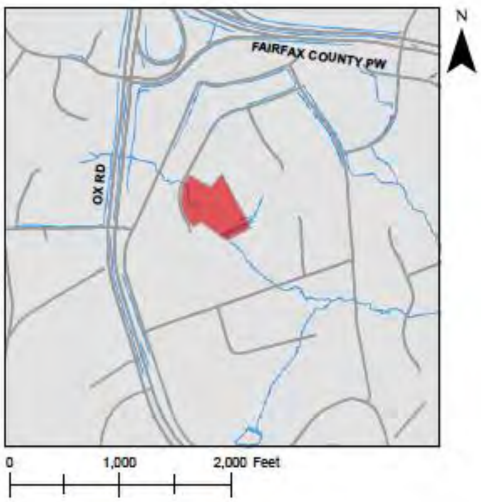
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.89	15.17	3.76

Project Design Considerations: Pond is located within a stormwater easement on private property. Additional easements may be required to prevent loss of existing mature vegetation. The sediment forebay should be no less than 10% of the size of the pond. The aquatic bench should be planted 10-15' inward from the water's edge. The vegetative buffer should be 10 to 15' outward from the water's edge. Effort should be made to minimize impacts to existing mature vegetation. Adjacent property owner said swale leading from his property to dry pond has eroded significantly. Rip rap and check dams have been placed in swale recently. Project will also address swale leading into the pond.

Cost:

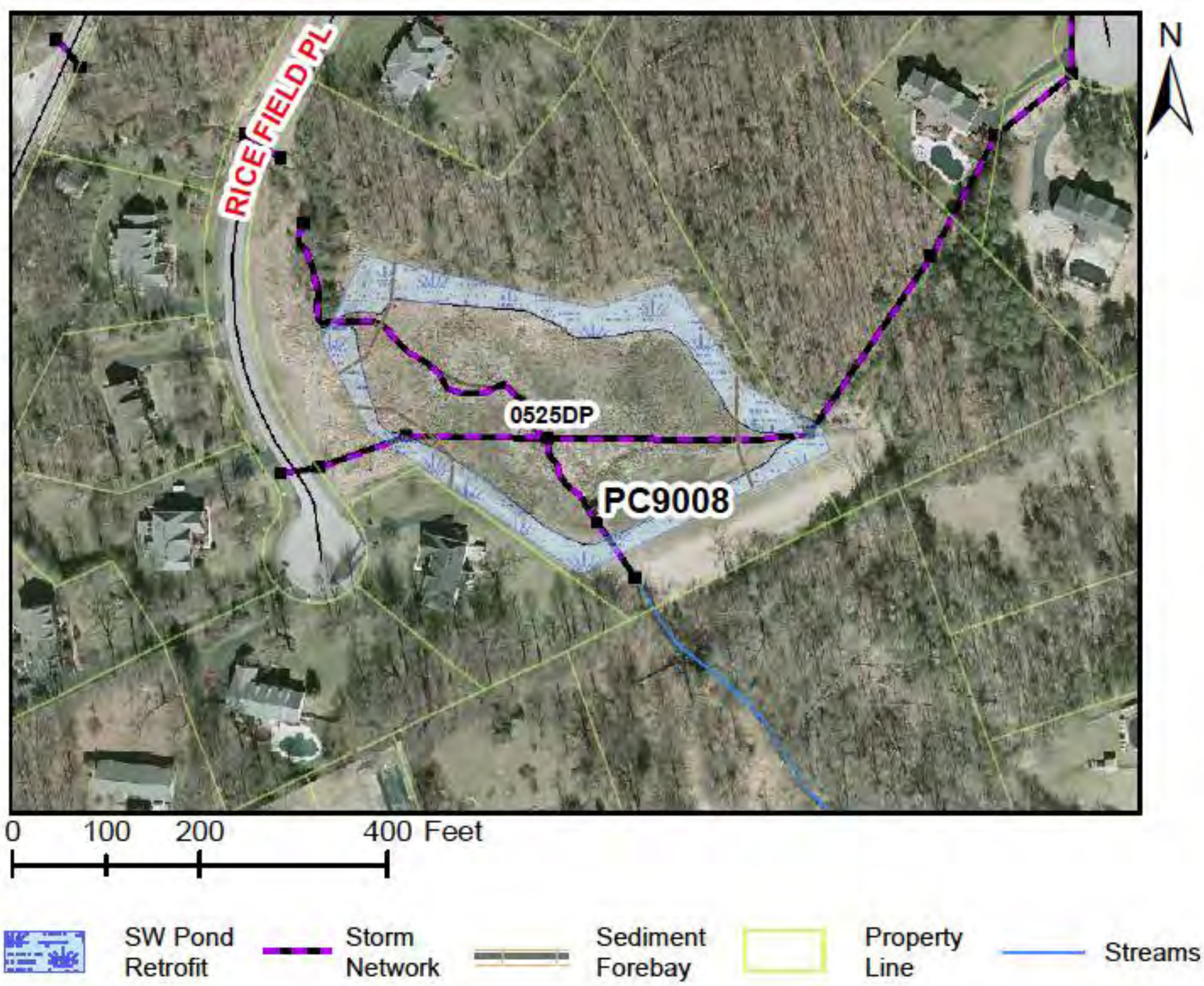
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.2	AC	$8,500	$1,700
Grading and Excavation	1300	CY	$35	$45,500
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	60	CY	$50	$3,000
Outflow Pipe	75	LF	$125	$9,375
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	160	CY	$40	$6,400
Plantings	1	LS	5%	$4,549
Ancillary Items	1	LS	5%	$4,549
Erosion and Sediment Control	1	LS	10%	$9,098
			Base Construction Cost	$109,170
			Mobilization (5%)	$5,459
			Subtotal 1	$114,629
			Contingency (25%)	$28,657
			Subtotal 2	$143,286
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$64,479
			Total	$207,764
			Estimated Project Cost	$210,000

PC9008 Stormwater Pond Retrofit



Address: Next to 10995 Rice Field Pl, Fairfax Station, Virginia
Location: Wet Pond near Rice Field Pl
Land Owner: Private – Private Owner
PIN: 0773 12 A1, 0773 12 C
Control Type: Water quality and quantity control
Drainage Area: 121.67 acres
Receiving Waters: Tributary of South Run

Description: This project is a proposed supplement to the existing Regional Pond P-05 (0525DP) and will retrofit the pond into an extended detention dry pond with sediment forebays and additional planting. The pond is located southeast of Rice Field Place. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids. The pond collects runoff from a large drainage area that is mostly single-family residential development and roadways.



Project Benefits: This pond retrofit will result in estimated 17.20 lbs/year of additional phosphorus removal. Extending the detention time of water in the pond will provide better downstream channel protection, create a better functioning environment for gravitational settling of pollutant particulates, increase biological uptake of polluntants and increase stormwater infiltration. Lastly, adding the the sediment forebays will prevent debris and coarse sediment from entering the pond and will reduce maintenance. Below are the project's estimated pollutant removal amounts.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
3.99	75.99	17.20

Project Design Considerations: Three separate systems outfall into the pond. All outfalls will have a forebay installed to collect coarse sediments and debris. The pond outfalls into a stream at the south end. Pond is easily accessible because it is close to a roadway and access will not impact vegetation. Pond is on private property. Records show no onsite drainage easements. Pond can expand on all sides, especially to the north. (See project map.) Retrofit should not require significant tree removal. The sediment forebays should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank.

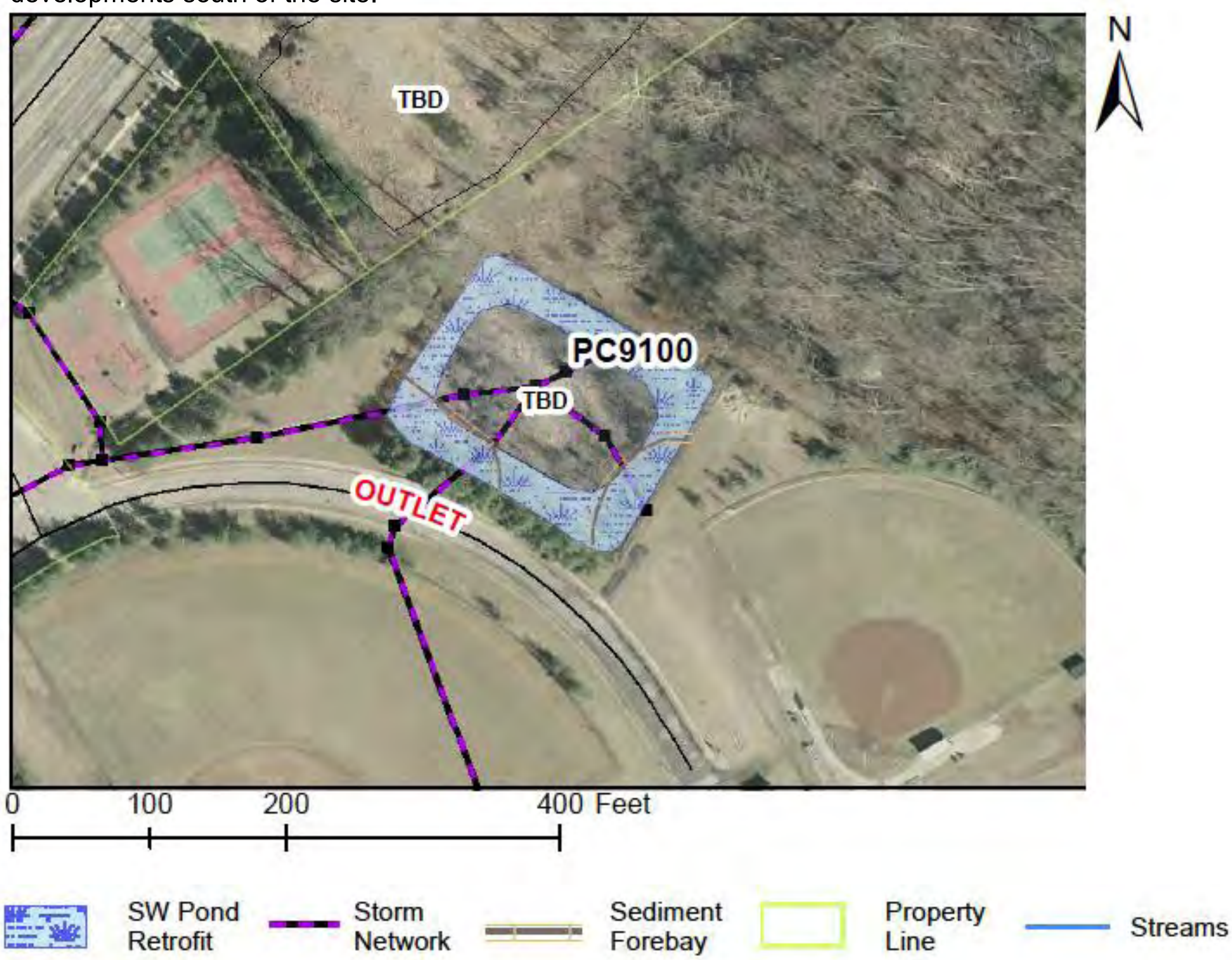
Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.8	AC	$8,500	$6,800
Grading and Excavation	5000	CY	$35	$175,000
Structural BMP Retrofit and Incidentals	1	LS	$20,000	$20,000
Embankment	100	CY	$50	$5,000
Outflow Pipe	100	LF	$125	$12,500
Rip Rap Stabilization	200	SY	$100	$20,000
Organic Compost Soil Amendment	635	CY	$40	$25,400
Plantings	1	LS	5%	$13,235
Ancillary Items	1	LS	5%	$13,235
Erosion and Sediment Control	1	LS	10%	$26,470
			Base Construction Cost	$317,640
			Mobilization (5%)	$15,882
			Subtotal 1	$333,522
			Contingency (25%)	$83,381
			Subtotal 2	$416,903
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$187,606
			Total	$604,509
			Estimated Project Cost	$610,000

PC9100 Stormwater Pond Retrofit

Address: 9515 Richmond Highway, Lorton, Virginia
Location: Lorton Athletic Fields
Land Owner: Public/Local – Fairfax County Government
PIN: 1074 01 0031
Control Type: Water quality and quantity control
Drainage Area: 11.50 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebays at the Lorton Athletic Fields near Richmond Highway in Lorton. Two forebays will be created around the inlet areas and the pond can be expanded on all sides, especially to the northeast. The pond's detention time will be increased by modifiying the existing discharge structure and increasing the pond's storage. The primary indicators are pollutants including phosphorus, nitrogen and total suspended solids. The pond collects runoff through a closed system from on-site fields and tennis courts, Richmond Highway, and from dense residential developments south of the site.



Project Benefits: An estimated 1.30 lbs/year of phosphorus will be removed. Increasing the time the water stays in the pond before outfalling into adjacent wooded area, will provide better downstream channel protection and promote pollutant settlement. (See hatched area on project map.) Installing the sediment forebays will collect debris and sediment that can reduce a facility's infiltration rate. This project will also increase the biological uptake of pollutants. Below are the project's estimated pollutant removal amounts.

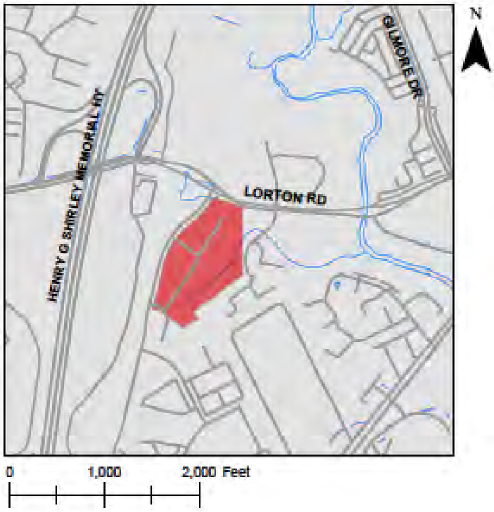
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.74	4.76	1.30

Project Design Considerations: This project is located on Fairfax County property. The pond is in a fenced in area and there is space available for expansion without impacting playing fields. The pond can expand on every side, especially to the northwest. The sediment forebays should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank. The pond expansion will preserve mature vegetation as much as possible.

Cost:

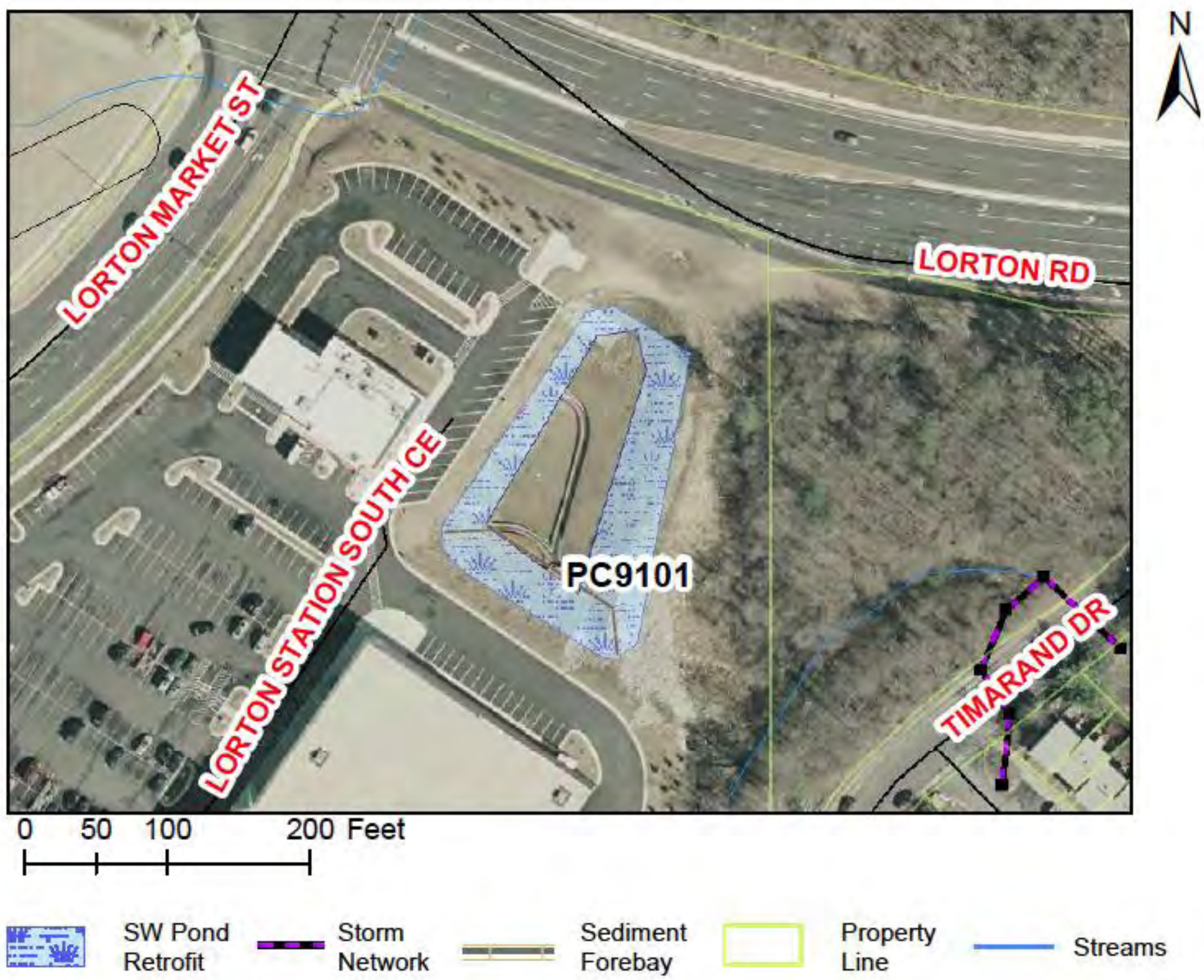
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.35	AC	$8,500	$2,975
Grading and Excavation	2260	CY	$35	$79,100
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	60	CY	$50	$3,000
Outflow Pipe	100	LF	$125	$12,500
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	280	CY	$40	$11,200
Plantings	1	LS	5%	$6,439
Ancillary Items	1	LS	5%	$6,439
Erosion and Sediment Control	1	LS	10%	$12,878
			Base Construction Cost	$154,530
			Mobilization (5%)	$7,727
			Subtotal 1	$162,257
			Contingency (25%)	$40,564
			Subtotal 2	$202,821
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$91,269
			Total	$294,090
			Estimated Project Cost	$300,000

PC9101 Stormwater Pond Retrofit



Address: 9409 Lorton Market St., Lorton, Virginia
Location: Lorton Marketplace Shopping Center
Land Owner: Private – Columbia Lorton Station Marketplace LLC
PIN: 1074 23 E8
Control Type: Water quality and quantity control
Drainage Area: 7.60 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofitting of an existing pond to create an extended detention dry pond with a sediment forebay at 9409 Lorton Market St. (Lorton Marketplace Shopping Center). The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The existing discharge structure will be modified to increase the amount of time water is detained in the pond. The existing concrete pilot channels will be removed to promote infiltration of low flows which can have high concentrations of pollutants.



Project Benefits: An estimated 2.43 lbs/year of phosphorus will be removed. Extending the pond detention time will provide better downstream channel protection and promote settlement of particulate pollutants. Installing the sediment forebay will reduce debris and coarse sediment in the pond, which will reduce pond maintenance. Installing the sediment forebay, removing the concrete pilot channels, and the landscaping improvements will improve the ponds infiltration. Below are the project's estimated pollutant removal amounts.

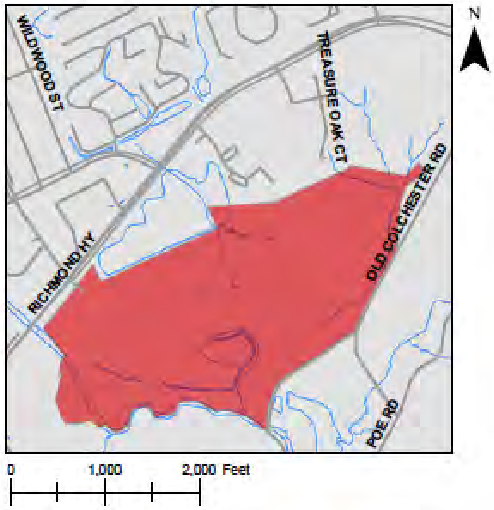
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.75	16.27	2.43

Project Design Considerations: Pond receives direct runoff from shopping center area. Pond has room for expansion. (See the project map). County records show this pond's name is to be determined (TBD). This might explain why GIS does not show an outfall from the pond. Pond is on private property but it is entirely within a storm drainage easement. The sediment forebay should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank. Efforts should be made to minimize impacts to existing mature vegetation.

Cost:

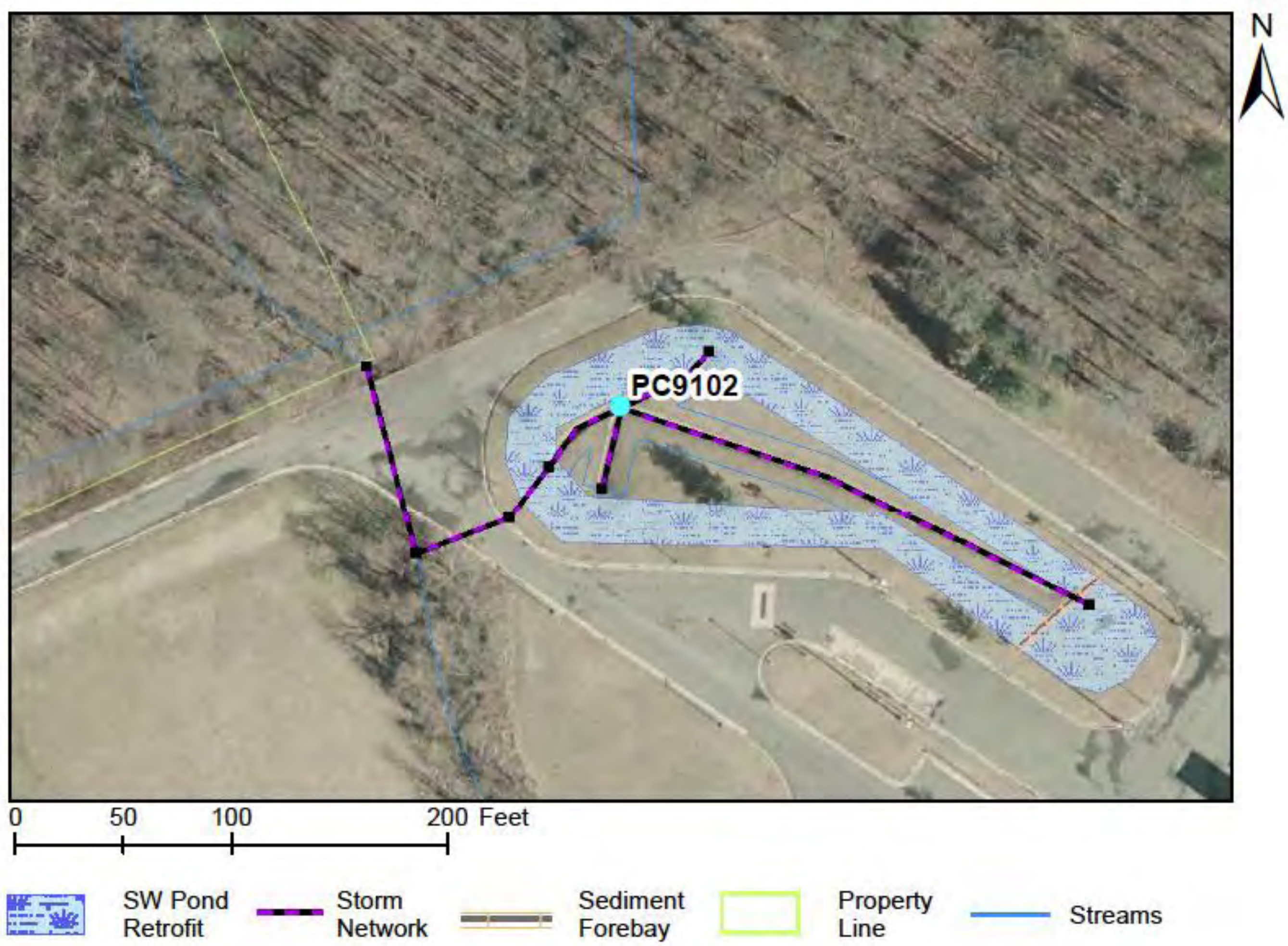
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.4	AC	$8,500	$3,400
Grading and Excavation	2000	CY	$35	$70,000
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	40	CY	$50	$2,000
Outflow Pipe	100	LF	$125	$12,500
Rip Rap Stabilization	75	SY	$100	$7,500
Organic Compost Soil Amendment	300	CY	$40	$12,000
Plantings	1	LS	5%	$5,870
Ancillary Items	1	LS	5%	$5,870
Erosion and Sediment Control	1	LS	10%	$11,740
			Base Construction Cost	$140,880
			Mobilization (5%)	$7,044
			Subtotal 1	$147,924
			Contingency (25%)	$36,981
			Subtotal 2	$184,905
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$83,207
			Total	$268,112
			Estimated Project Cost	$270,000

PC9102 Stormwater Pond Retrofit



Address: 9399 Richmond Highway, Lorton, Virginia
Location: Norman M. Cole WWTP
Land Owner: Public/Local – Fairfax County Government
PIN: 1083 01 0023
Control Type: Water quality and quantity control
Drainage Area: 12.60 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing dry pond to create an extended detention basin with a sediment forebay at the Norman M. Cole Jr. Wastewater Treatment Plant. The retrofit will increase the detention time of stormwater runoff and will improve stormwater quality. The existing dry pond is located in the parking lot for the plant. The indicators were pollutants including nitrogen, phosphorus and total suspended solids.



Project Benefits: This retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure. This will promote the settling of particulate pollutants before discharging into the system. Below are the project's estimated pollutant removal amounts.

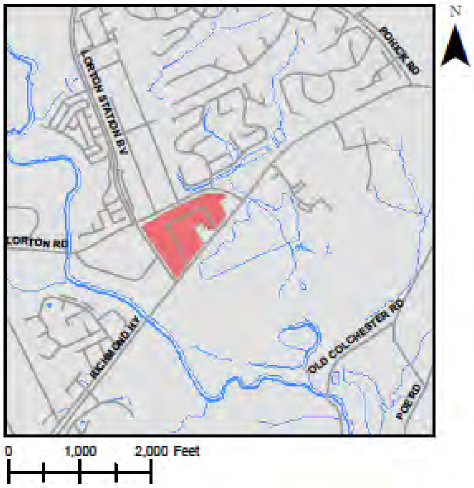
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.58	33.47	5.03

Project Design Considerations: The existing pond has concrete pilot channels. In smaller storms pollutants are concentrated in smaller flows and directed by the concrete channels to the outfall. This retrofit will remove the pilot channels, install sediment forebays, and add an aquatic bench. The two forebays will be approximately 10% of the pond area. The pond area will be expanded as shown on the project area map to allow the pond to provide extended detention of the stormwater to better treat the of stormwater runoff. The soil will be amended to improve infiltration. The island is located in the plant's main thoroughfare so a plan to maintain traffic during construction will be required.

Cost:

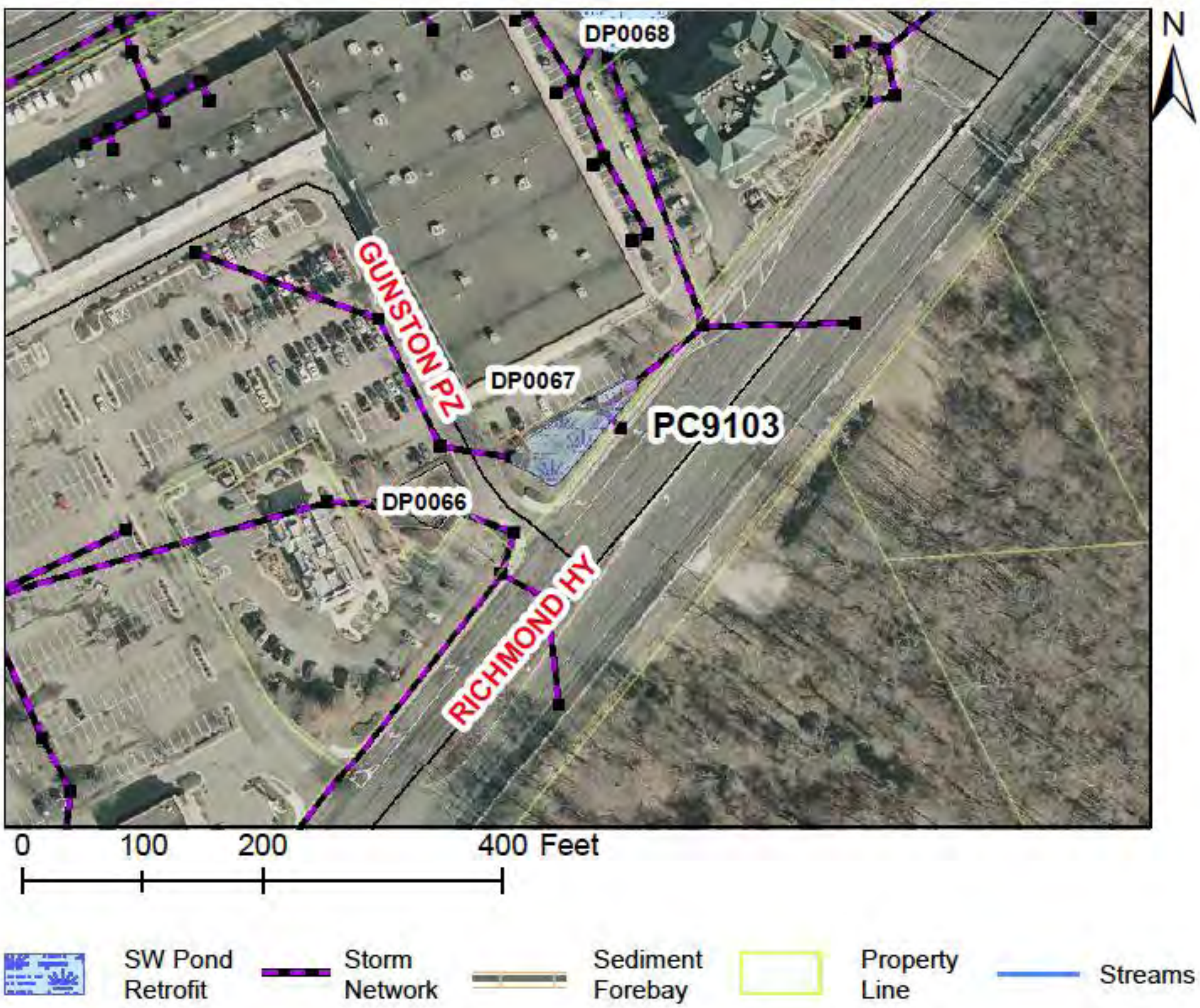
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.3	AC	$8,500	$2,550
Grading and Excavation	900	CY	$35	$31,500
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	25	CY	$50	$1,250
Outflow Pipe	100	LF	$125	$12,500
Rip Rap Stabilization	75	SY	$100	$7,500
Organic Compost Soil Amendment	240	CY	$40	$9,600
Plantings	1	LS	5%	$3,745
Ancillary Items	1	LS	5%	$3,745
Erosion and Sediment Control	1	LS	10%	$7,490
			Base Construction Cost	$89,880
			Mobilization (5%)	$4,494
			Subtotal 1	$94,374
			Contingency (25%)	$23,594
			Subtotal 2	$117,968
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$53,085
			Total	$171,053
			Estimated Project Cost	$180,000

PC9103 Stormwater Pond Retrofit



Address: 7665 Lorton Rd., Lorton, Virginia
Location: Gunston Shopping Plaza
Land Owner: Private – Gunston Station, LLC
PIN: 1074 03 0001B
Control Type: Water quality and quantity control
Drainage Area: 11.12 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebays at Gunston Plaza Shopping Center, northwest of Richmond Highway. The pond receives runoff from the shopping center and outfalls across Richmond Highway into wooded area. The indicators are pollutants including nitrogen, phosphorus and total suspended solids. The sediment forebays will provide pretreatment of stormwater runoff.



Project Benefits: An estimated 2.07 lbs/year of phosphorus will be removed. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out before entering the system and controls the outfall volume. Below are the project's estimated pollutant removal amounts.

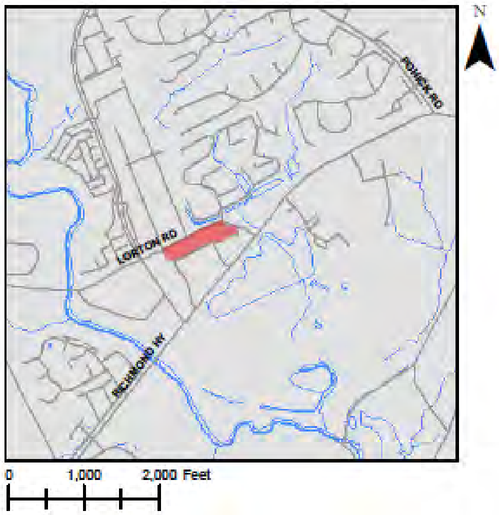
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.81	14.64	2.17

Project Design Considerations: Based on field observations, it appears the depth of the dry pond has significantly decreased due to sediment deposition in the pond area. The hatched area shown on the project map should have sediment removed to increase detention volume. Location has space limitations and no room for any expansion. All retrofitting will need to be inside of the existing pond area. Property is owned by Gunston Station, LLC. Records show no existing easements onsite. Area is too small to have sufficient vegetative buffer. The sediment forebays should account for approximately 10% of the pond area.

Cost:

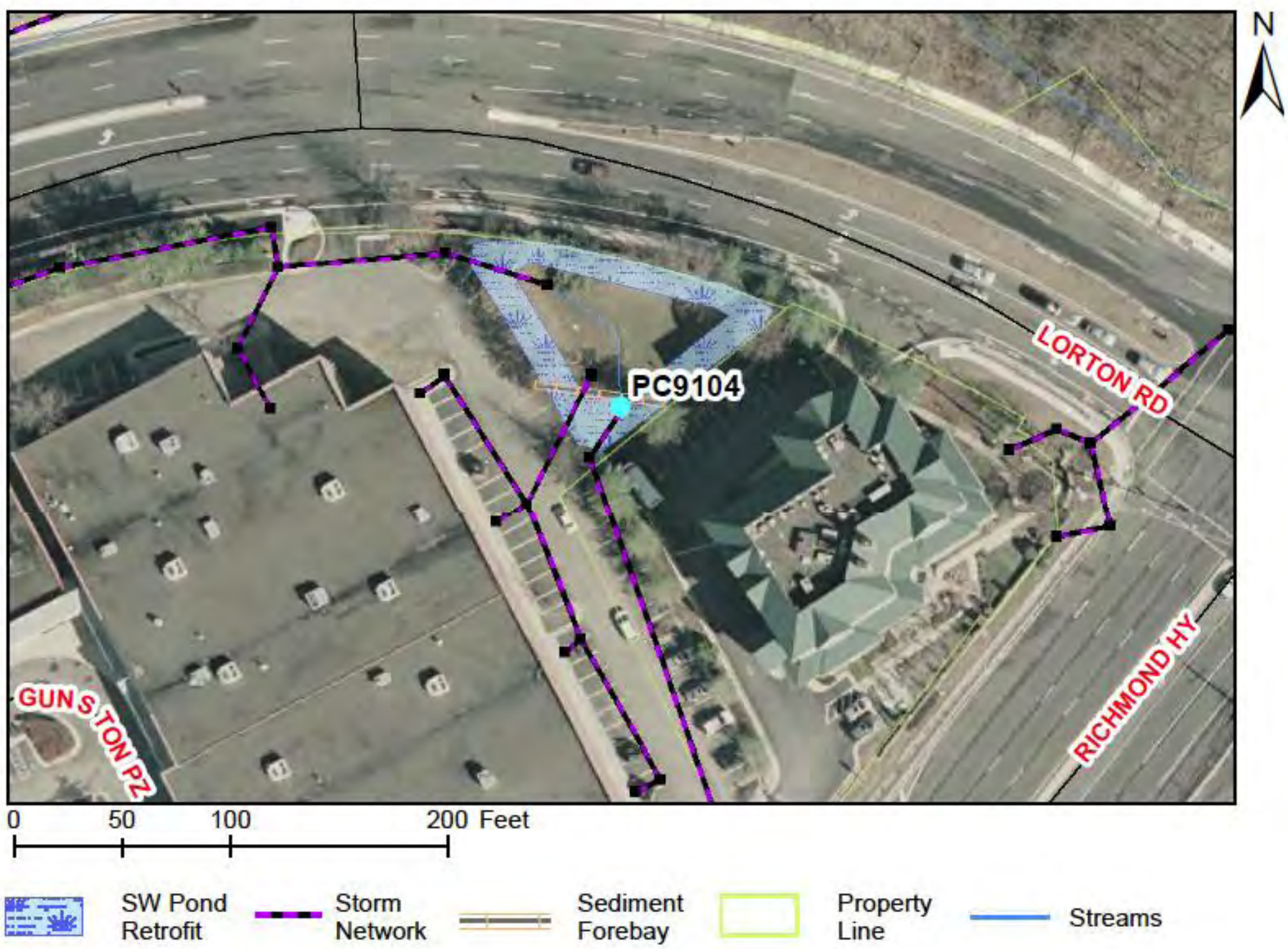
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.08	AC	$8,500	$680
Grading and Excavation	500	CY	$35	$17,500
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	40	CY	$50	$2,000
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	75	SY	$100	$7,500
Organic Compost Soil Amendment	140	CY	$40	$5,600
Plantings	1	LS	5%	$2,477
Ancillary Items	1	LS	5%	$2,477
Erosion and Sediment Control	1	LS	10%	$4,953
			Base Construction Cost	$59,436
			Mobilization (5%)	$2,972
			Subtotal 1	$62,408
			Contingency (25%)	$15,602
			Subtotal 2	$78,010
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$35,104
			Total	$113,114
			Estimated Project Cost	$120,000

PC9104 Stormwater Pond Retrofit



Address: 7665 Lorton Road, Lorton, Virginia
Location: Gunston Shopping Plaza
Land Owner: Private – Gunston Station LLC.
PIN: 1074 03 0001B
Control Type: Water quality and quantity control
Drainage Area: 4.97 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebays at Gunston Plaza Shopping Center south of Lorton Road and northwest of Richmond Highway. The pond receives runoff from the shopping center and Lorton Road. The indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection. This will allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out before entering the system.



Project Benefits: This project will add a sediment forebay to the pond which will reduce sediment and debris. Also, enlarging the pond and modifying the existing outfall structure will increase the stormwater detention time. This allows more time for pollutants to settle and will increase biological uptake. An estimated 0.98 lbs/year of additional phosphorus will be removed after this retrofit. Below are the project's estimated pollutant removal amounts.

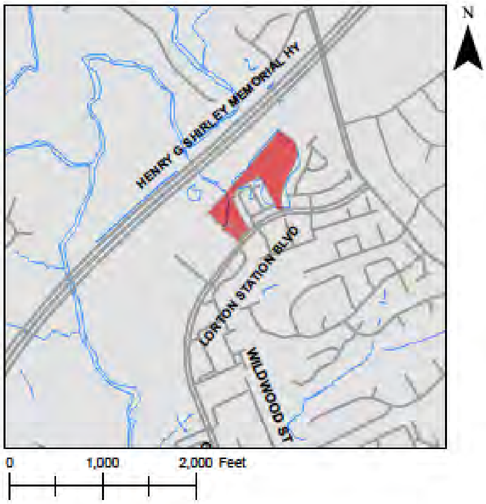
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.38	6.60	0.98

Project Design Considerations: Pond receives runoff from a large parking lot and building. The pond has three inflows and will require two sediment forebays. The sediment forebays should be sized to be about 10% of the size of the pond area. The size of the pond is limited due to constraints on all four sides. Available head difference in the pond needs to be determined from the construction plans. Records show no storm drain easements. Construction of sediment forebays alone and regular maintenance will help improve stormwater quality.

Cost:

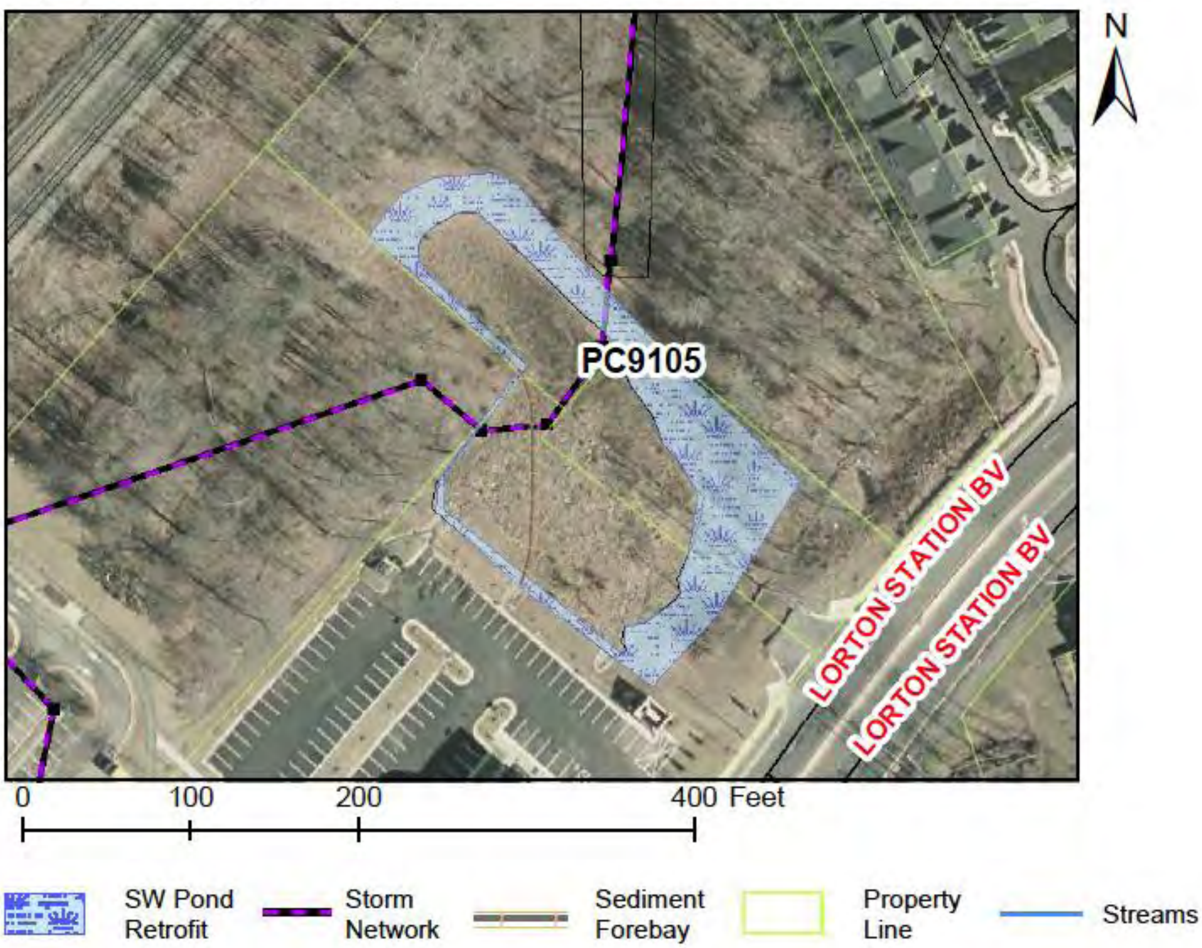
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.1	AC	$8,500	$850
Grading and Excavation	630	CY	$35	$22,050
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	25	CY	$50	$1,250
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	75	SY	$100	$7,500
Organic Compost Soil Amendment	80	CY	$40	$3,200
Plantings	1	LS	5%	$2,555
Ancillary Items	1	LS	5%	$2,555
Erosion and Sediment Control	1	LS	10%	$5,110
			Base Construction Cost	$61,320
			Mobilization (5%)	$3,066
			Subtotal 1	$64,386
			Contingency (25%)	$16,097
			Subtotal 2	$80,483
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$36,217
			Total	$116,700
			Estimated Project Cost	$120,000

PC9105 Stormwater Pond Retrofit



Address: Near intersection of Lorton Station Blvd & Milford Haven Dr. (Behind 7747 Milford Haven Ct), Lorton, Virginia
Location: Stormwater Pond near Lorton Station Blvd & Milford Haven Dr.
Land Owner: Private – Laurel Hill Site Center LLC, Lorton Station Community Association, South Station LLC
PIN: 1072 01 0048A, 1072 01 0048B, 1072 01 0049
Control Type: Water quality and quantity control
Drainage Area: 21.76 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing dry pond northwest of Lorton Station Boulevard to create an extended detention dry pond with a sediment forebay. The pond's existing discharge structure will be modified to increase the pond's detention time, and the pond's size will be enlarged to handle the longer detention time. Primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Pond collects runoff from dense residential development and highly impervious commerical areas. The pond outfalls to the north and is conveyed in a concrete swale under a railroad track before discharging into a wooded area. The large majority of the drainage area is impervious.



Project Benefits: Extending this pond's detention time will provide better downstream channel protection, promote particulate pollutant settlement, increase stormwater infiltration, and increase biological uptake of pollutants. Additional plantings will create a better functioning buffer to the pond. The forebay will prevent coarse sediments and debris from entering the pond and will reduce maintenance. Below are the project's estimated pollutant removal amounts.

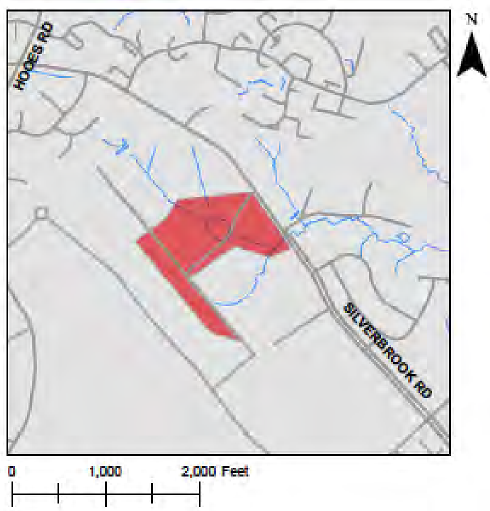
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
2.50	37.55	5.88

Project Design Considerations: Extending the detention time of the existng dry pond 1158DP will require expanding the pond into the wooded area. Efforts should be made to minimize impacts to existing mature vegetation. See hatched area on map. The sediment forebay should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank. The majority of the land the pond is located on is owned by Lorton Station Community Association, but pond is also located on land owned by Laurel Hill Site Center LLC and South Station LLC. Records show the pond is located in an existing storm drain easement. This easement will need to be enlarged for the pond retrofit. This project outfalls to another proposed project, outfall improvement PC9701. Coordination of these projects should be investigated to determine cost savings.

Cost:

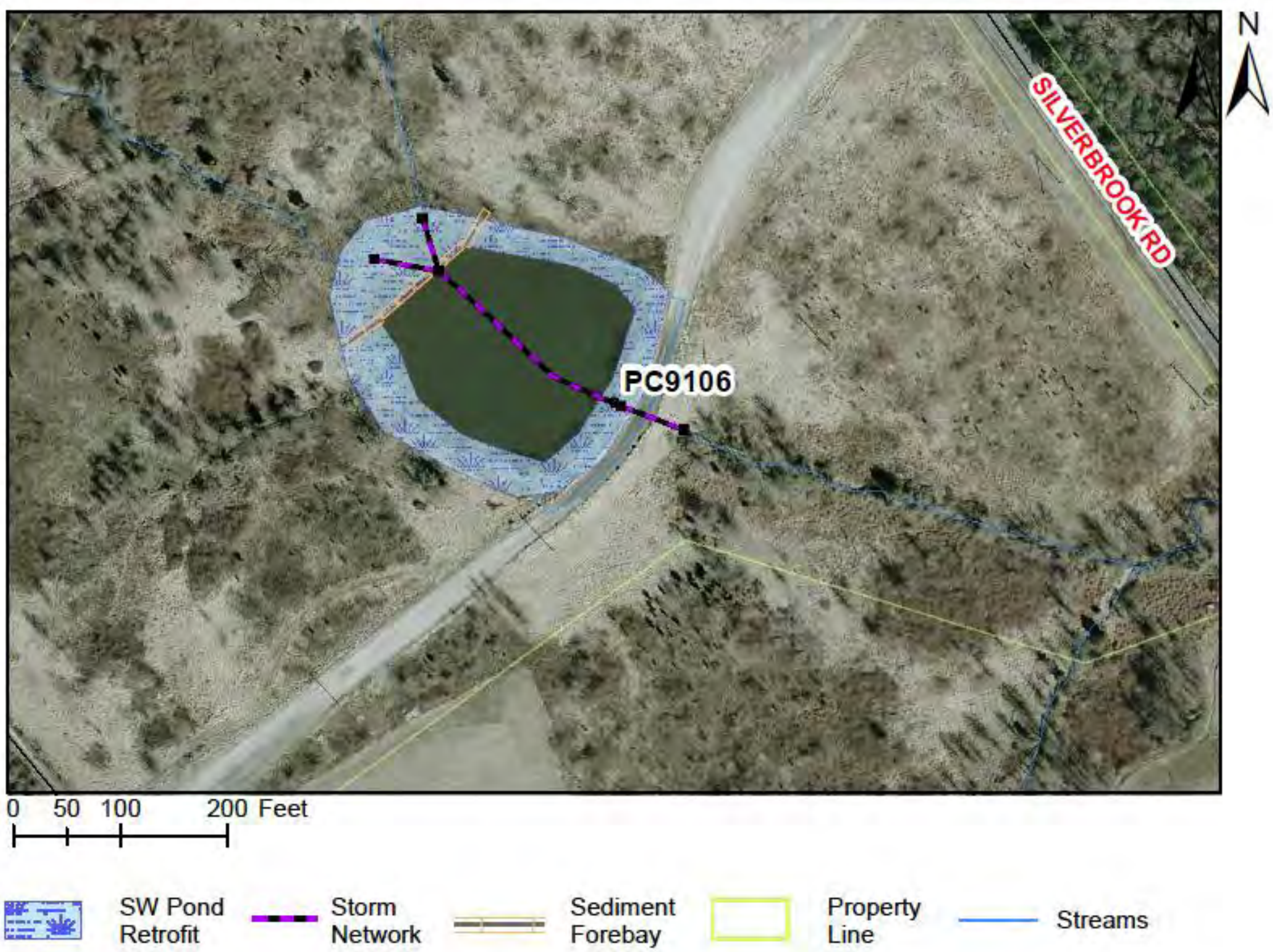
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.35	AC	$8,500	$2,975
Grading and Excavation	2300	CY	$35	$80,500
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	60	CY	$50	$3,000
Outflow Pipe	75	LF	$125	$9,375
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	290	CY	$40	$11,600
Plantings	1	LS	5%	$6,623
Ancillary Items	1	LS	5%	$6,623
Erosion and Sediment Control	1	LS	10%	$13,245
			Base Construction Cost	$158,940
			Mobilization (5%)	$7,947
			Subtotal 1	$166,887
			Contingency (25%)	$41,722
			Subtotal 2	$208,609
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$93,874
			Total	$302,483
			Estimated Project Cost	$310,000

PC9106 Stormwater Pond Retrofit



Address: 8501 Silverbrook Road, Lorton, Virginia
Location: South County Secondary School
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 1073 01 0019
Control Type: Water quality and quantity control
Drainage Area: 40.23 acres
Receiving Waters: Tributary of Silver Brook

Description: Wet pond retrofit planned near South County Secondary School. Pond is set back from main road. This project proposes creating wetland system with the construction of a sediment forebay and the addition of bench planting. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorus and total suspended solids.



Project Benefits: This retrofit will increase pollutant removal and provide adequate channel protection above the permanent pool. The retrofit will create a better functioning environment for gravitational settling, biological uptake and microbial reliable pollutant removal performance. Below are the project's estimated pollutant removal amounts.

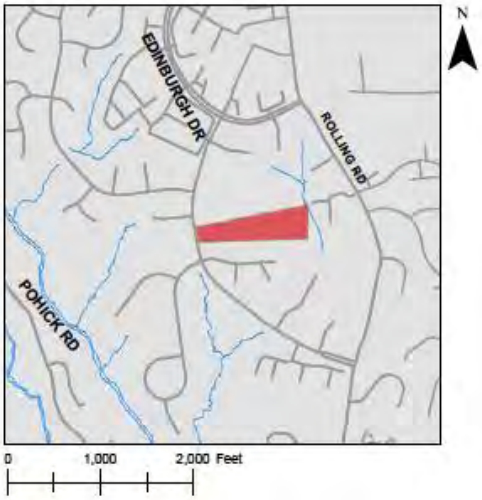
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal I(Lbs/Yr)
3.73	58.51	15.80

Project Design Considerations: Project is at an existing wet pond. The pond has an unpaved access road from the main road and is easily accessible. Construction should not impact existing mature vegetation, but efforts should be made to minimize disturbance. Forebay should be constructed at the northwest side and will be approximately 10% of the size of the pond. Forebay will be around both inlet pipes to the pond. A safety bench 10' to 15' outward and an aquatic bench 10' to 15' inward from the water's edge should be constructed.

Cost:

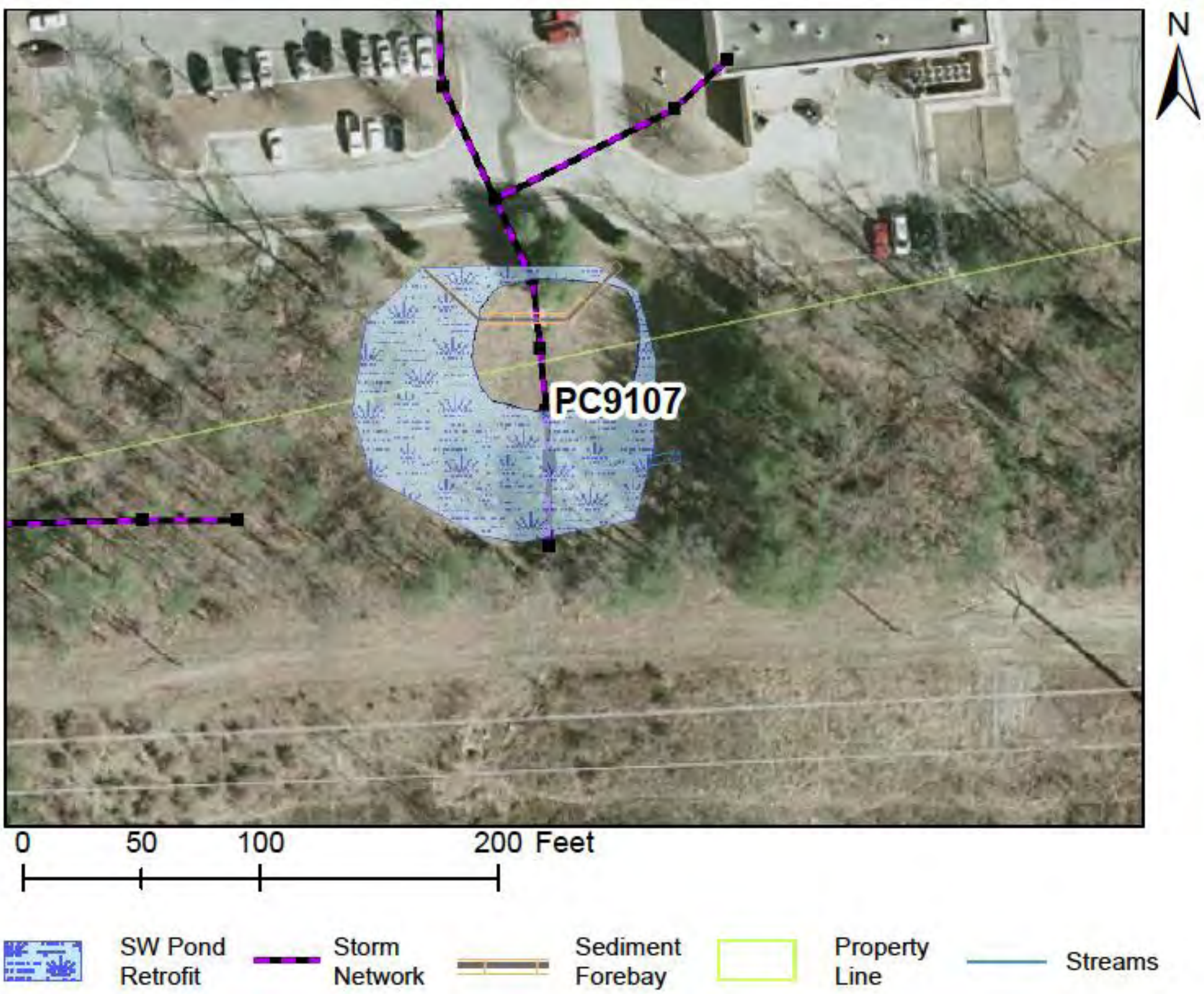
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.7	AC	$8,500	$5,950
Grading and Excavation	3500	CY	$35	$122,500
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	60	CY	$50	$3,000
Outflow Pipe	200	LF	$125	$25,000
Rip Rap Stabilization	50	SY	$100	$5,000
Organic Compost Soil Amendment	500	CY	$40	$20,000
Plantings	1	LS	5%	$9,823
Ancillary Items	1	LS	5%	$9,823
Erosion and Sediment Control	1	LS	10%	$19,645
			Base Construction Cost	$235,740
			Mobilization (5%)	$11,787
			Subtotal 1	$247,527
			Contingency (25%)	$61,882
			Subtotal 2	$309,409
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$139,234
			Total	$448,643
			Estimated Project Cost	$450,000

PC9107 Stormwater Pond Retrofit



Address: 8111 Northumberland Rd., Springfield, Virginia
Location: Saratoga Elementary School
Land Owner: Public/Local – Fairfax County Public School, Fairfax County Park Authority
PIN: 0984 04 S, 0984 11 B
Control Type: Water quality and quantity control
Drainage Area: 5.97 acres
Receiving Waters: Tributary of Pohick Creek

Description: Dry pond at Saratoga Elementary School receives runoff from a school parking lot and driveway. This project proposes the retrofit of an existing pond to create an extended detention dry pond with sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The sediment forebays will provide pretreatment of stormwater runoff.



Project Benefits: This retrofit will extend the pond's detention time, provide better downstream channel protection and promote the settlement of particulate pollutants. Installing the sediment forebays will reduce debris and coarse sediment in the pond which will help reduce maintenance and will increase infiltration. Below are the project's estimated pollutant removal amounts.

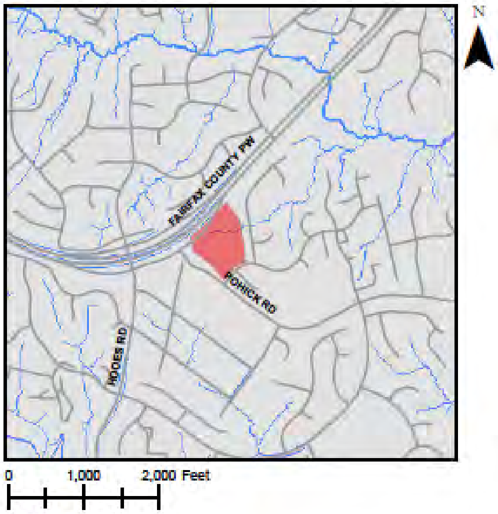
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.27	4.60	1.05

Project Design Considerations: Pond is partially on property owned by School Board of Fairfax County and partially on property owned by Fairfax County Park Authority. The pond size will need to be increased to accommodate the greater detention volume. Efforts should be made to minimize impacts to existing mature vegetation. The sediment forebays should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.2	AC	$8,500	$1,700
Grading and Excavation	1300	CY	$35	$45,500
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	20	CY	$50	$1,000
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	50	SY	$100	$5,000
Organic Compost Soil Amendment	170	CY	$40	$6,800
Plantings	1	LS	5%	$3,813
Ancillary Items	1	LS	5%	$3,813
Erosion and Sediment Control	1	LS	10%	$7,625
			Base Construction Cost	$91,500
			Mobilization (5%)	$4,575
			Subtotal 1	$96,075
			Contingency (25%)	$24,019
			Subtotal 2	$120,094
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$54,042
			Total	$174,136
			Estimated Project Cost	$180,000

PC9109 Stormwater Pond Retrofit



Address: 8750 Pohick Rd., Springfield, Virginia
Location: St. Raymonds - Penafort Catholic Church
Land Owner: Private – Catholic Church
PIN: 0981 01 0013A
Control Type: Water quality and quantity control
Drainage Area: 6.96 acres
Receiving Waters: Tributary of Middle Run

Description: This stormwater pond retrofit is located at St. Raymond's Penafort Catholic Church east of Fairfax County Parkway and north of Pohick Road. The pond receives runoff from church and parking lot. This project proposes modifying the existing discharge structure and expanding the pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids.

Project Benefits: Extending the time stormwater is detained in the pond will provide better downstream channel protection and promote particulate settlement. Installing the sediment forebays reduces debris and coarse sediment in the pond, increases infiltration, and decreases required maintenance. Below are the project's estimated pollutant removal amounts.

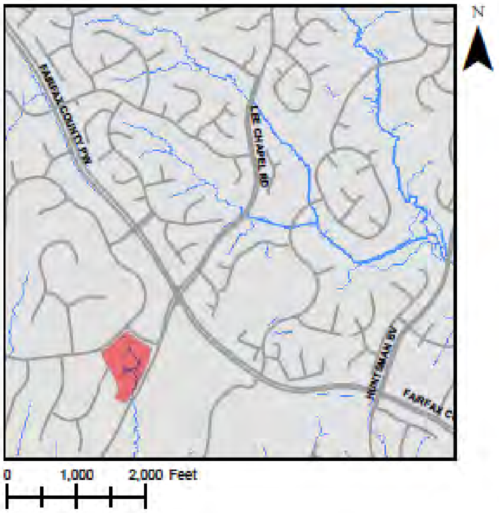
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.31	6.81	1.20

Project Design Considerations: The pond is on church property and does not have a County ID number. Records show there are no easements on site. Pond receives runoff by a swale in the northwest corner of pond and sheet flow along the south side of pond. The main sediment forebay would be located in the northwest corner. The sediment forebays should account for approximately 10% of the pond area. Creating an additional swale may be necessary to direct runoff to sediment forebay. Adding a vegetative buffer 10-15' off of the top of bank would help provide pretreatment to sheet flow that drains into the south side of the pond. The pond can expand to north and east. (See project map). Efforts should be made to minimize impacts to existing mature vegetation.

Cost:

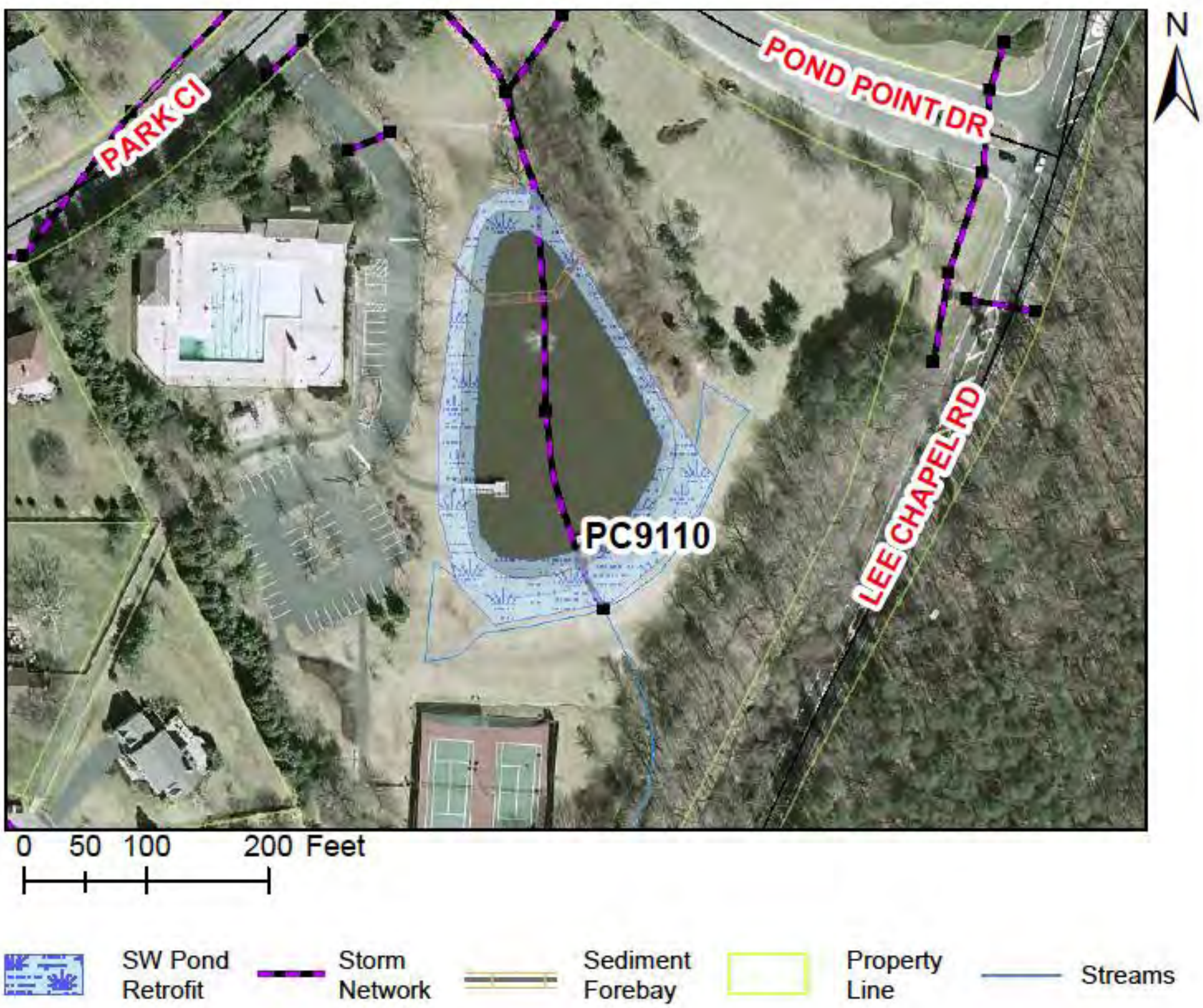
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.25	AC	$8,500	$2,125
Grading and Excavation	1600	CY	$35	$56,000
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	60	CY	$50	$3,000
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	200	CY	$40	$8,000
Plantings	1	LS	5%	$4,769
Ancillary Items	1	LS	5%	$4,769
Erosion and Sediment Control	1	LS	10%	$9,538
			Base Construction Cost	$114,450
			Mobilization (5%)	$5,723
			Subtotal 1	$120,173
			Contingency (25%)	$30,043
			Subtotal 2	$150,216
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$67,597
			Total	$217,813
			Estimated Project Cost	$220,000

PC9110 Stormwater Pond Retrofit



Address: 9908 South Park Circle, Fairfax Station, Virginia
Location: Wetland near South Park
Land Owner: South Run Regency
PIN: 0883 06 G
Control Type: Water quality and quantity control
Drainage Area: 42.66 acres
Receiving Waters: Tributary of South Run

Description: This project proposes the retrofit of an existing wet pond at a community center off of Park Circle to create a wetland system with construction of a sediment forebay and the addition of a bench planting. The pond collects runoff from adjacent neighborhoods and roadways to the north and outfalls into a stream to the south. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorous and total suspended solids.



Project Benefits: This retrofit will modify the existing pond to increase pollutant removal and provide adequate channel protection above the permanent pool. It will create a better functioning environment for gravitational settlement, biological uptake and microbial activity. The addition of the sediment forebay provides improved treatment. Below are the project's estimated pollutant removal amounts.

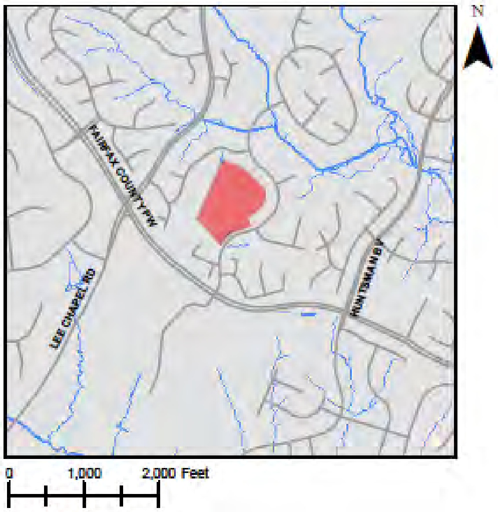
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.21	24.16	5.83

Project Design Considerations: Proposed project is at a community swim club. Efforts should be made to minimize impacts to the functions of the community center. There is an existing pier that goes into the water. The effects on existing mature vegetation should be minimized. The forebay should account for approximately 10% of the total surface area of the pond. The pond is not within any easements and is on private property owned by South Run Regency.

Cost:

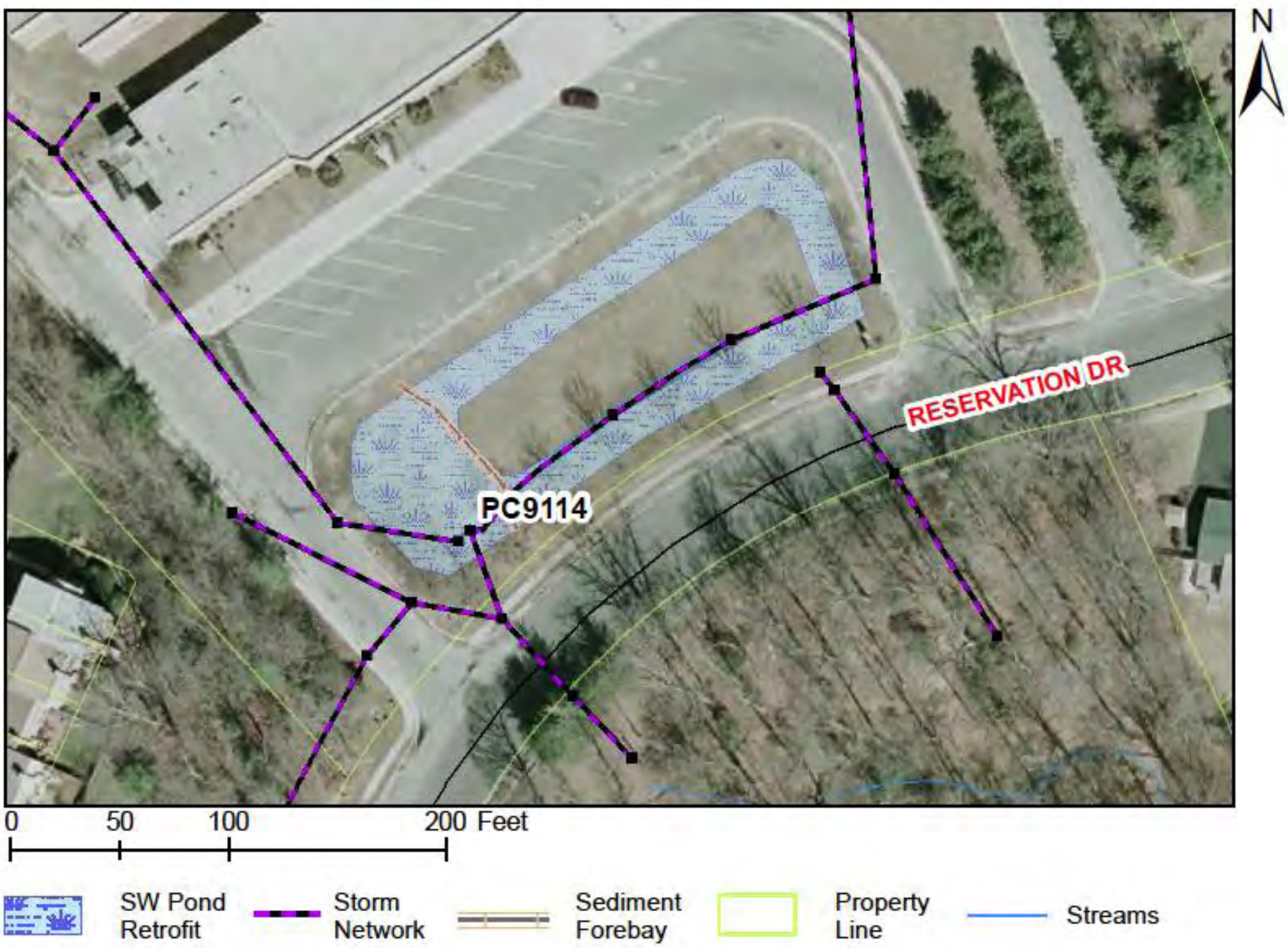
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	1	AC	$8,500	$8,500
Grading and Excavation	4000	CY	$35	$140,000
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	50	CY	$50	$2,500
Outflow Pipe	100	LF	$125	$12,500
Rip Rap Stabilization	150	SY	$100	$15,000
Organic Compost Soil Amendment	800	CY	$40	$32,000
Plantings	1	LS	5%	$11,275
Ancillary Items	1	LS	5%	$11,275
Erosion and Sediment Control	1	LS	10%	$22,550
			Base Construction Cost	$270,600
			Mobilization (5%)	$13,530
			Subtotal 1	$284,130
			Contingency (25%)	$71,033
			Subtotal 2	$355,163
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$159,823
			Total	$514,986
			Estimated Project Cost	$520,000

PC9114 Stormwater Pond Retrofit



Address: 7420 Reservation Dr., Springfield, Virginia
Location: Pond at Sangster Elementary School
Land Owner: Public/Local – School Board of Fairfax County
PIN: 0883 02 N
Control Type: Water quality and quantity control
Drainage Area: 8.65 acres
Receiving Waters: Tributary of Peyton Run

Description: This project proposes a pond retrofit at Sangster Elementary School northwest of Reservation Drive. Stormwater runoff is collected in a closed system and outfalls into a dry pond near the school's entrance. The pond outfalls across Reservation Drive into a wooded area and ultimately into a stream. This project proposes removing the pond's existing pilot channel and retrofitting the pond to create a wetland system with sediment forebays for the two inflows and bench planting to help increase pollutant uptake. The primary indicators are wetland habitat, nitrogen, phosphorus and total suspended solids.



Project Benefits: This retrofit will increase the time stormwater remains in the basin to be treated and will allow more time for the stormwater to infiltrate. This will help decrease erosion downstream where the pond outfalls through a culvert directly into a wooded area. The retrofit will increase pollutant removal and provide adequate downstream channel protection to minimize erosion.

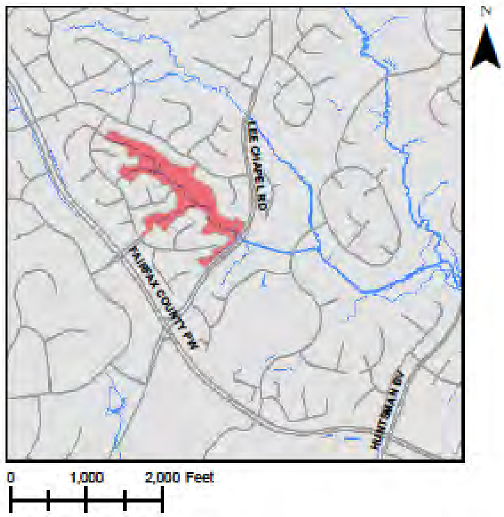
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.59	9.74	2.57

Project Design Considerations: The existing dry pond's pilot channels direct flows from small storm events with high pollutant concentrations directly to the outfall with no chance for infiltration. Due to the existing pond's limited difference in outfall elevation, and the need to remove the concrete pilot channels, it is necessary to convert the existing dry pond into a wetland system. The pond's footprint will be expanded to utilize most of the area in the landscape island as shown by the hatched area. Additional planting would be added in this area. The existing trees would be incorporated into the design. To allow more infiltration and pretreatment of the stormwater, curb cuts and gravel filter strips should be used along the road edge. The stormwater facility would be an educational asset to the school, because of its ability to showcase how stormwater can be treated by natural processes.

Cost:

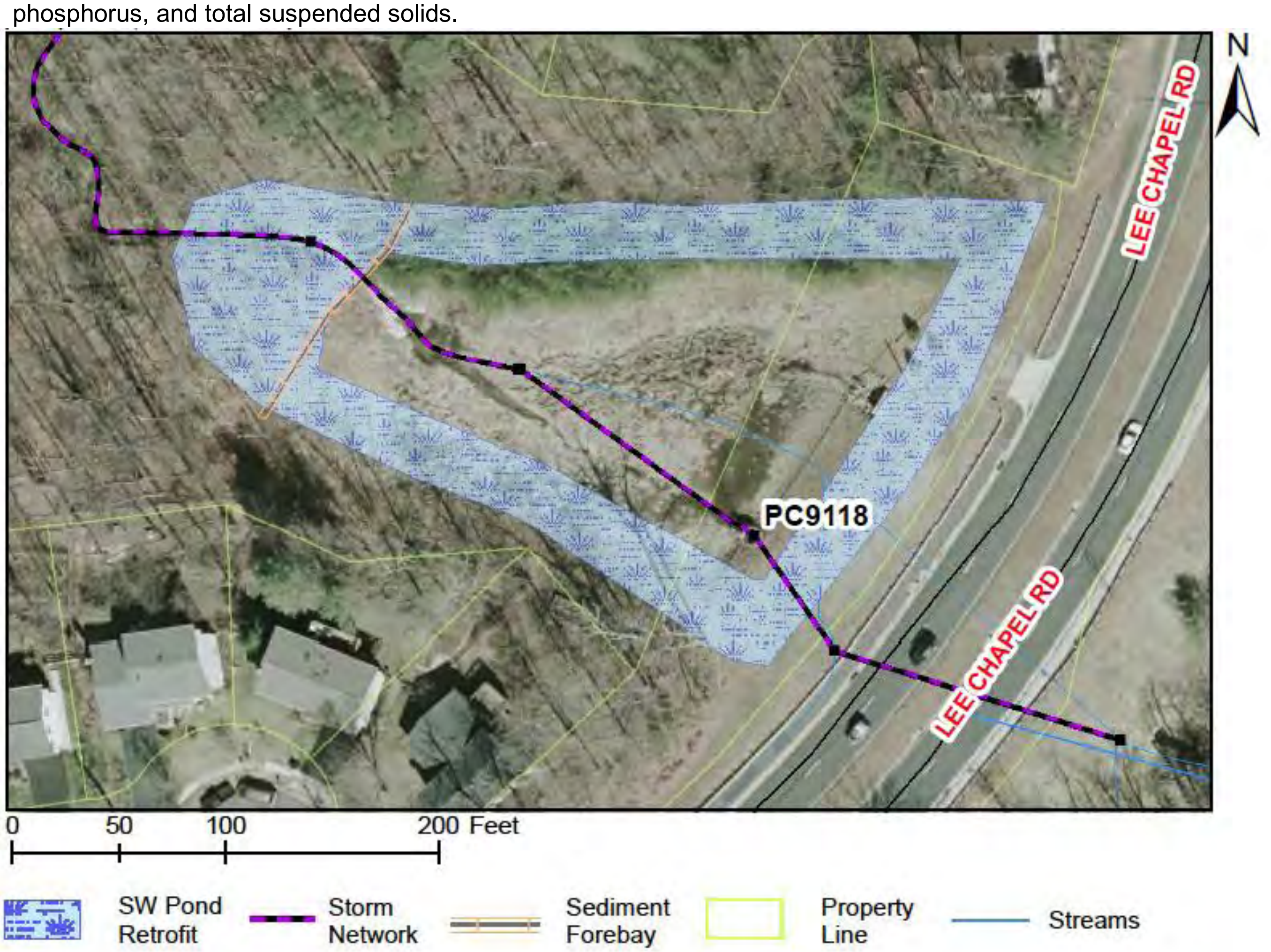
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.35	AC	$8,500	$2,975
Grading and Excavation	500	CY	$35	$17,500
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	25	CY	$50	$1,250
Outflow Pipe	40	LF	$125	$5,000
Rip Rap Stabilization	50	SY	$100	$5,000
Organic Compost Soil Amendment	250	CY	$40	$10,000
Plantings	1	LS	5%	$2,586
Ancillary Items	1	LS	5%	$2,586
Erosion and Sediment Control	1	LS	10%	$5,173
			Base Construction Cost	$62,070
			Mobilization (5%)	$3,104
			Subtotal 1	$65,174
			Contingency (25%)	$16,293
			Subtotal 2	$81,467
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$36,660
			Total	$118,127
			Estimated Project Cost	$120,000

PC9118 Stormwater Pond Retrofit



Address: Behind 9500 Shipwright Dr., Burke, Virginia
Location: Pond near Shipwright Dr.
Land Owner: Private – Longwood Knolls Homeowners Association
PIN: 0883 03 A, 0883 03 A2
Control Type: Water quality and quantity control
Drainage Area: 90.90 acres
Receiving Waters: Tributary of Sangster Branch

Description: Large dry pond west of Lee Chapel Road and east of Shipwright Drive receives runoff from a stream in wooded area and adjacent neighborhoods. Project proposes to retrofit the existing pond to create an extended detention dry pond with a sediment forebay. The retrofit will modify the discharge structure to increase the time stormwater stays in the pond. The pond will be increased in size and to handle the larger volume and an aquatic bench of wetland plants will be added to treat pollutants. Primary problem indicators are pollutants: nitrogen, phosphorus, and total suspended solids.



Project Benefits: This retrofit will provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out of the stormwater discharge. The addition of the sediment forebay will reduce debris and coarse sediment, reducing maintenance costs. Below are the project's estimated pollutant removal amounts.

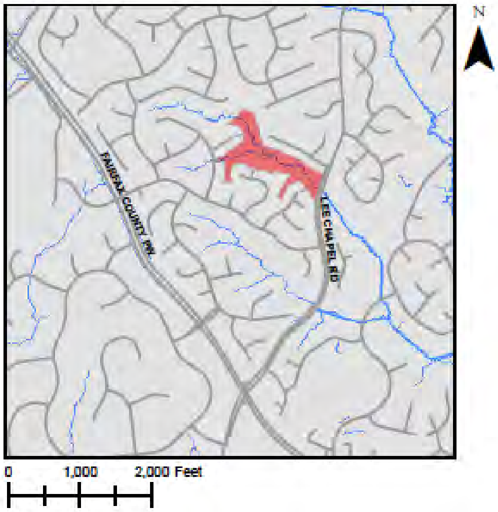
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.38	6.27	2.05

Project Design Considerations: There appears to be sufficient land area for expansion of the pond. Improving this pond which treats a very large residential drainage area will have great benefits. Additionally the pond is easily accessible. Entire pond is on land owned by Longwood Knolls Homeowner's Association. There are no onsite easements. Forebay should account for approximately 10% of pond area and should be constructed on the upstream side, which is to the northwest. Outfall pipe goes under Lee Chapel Road. Landscaping plan for aquatic bench should incorporate existing vegetation as much as possible.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	1.3	AC	$8,500	$11,050
Grading and Excavation	2000	CY	$35	$70,000
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	55	CY	$50	$2,750
Outflow Pipe	250	LF	$125	$31,250
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	750	CY	$40	$30,000
Plantings	1	LS	5%	$8,503
Ancillary Items	1	LS	5%	$8,503
Erosion and Sediment Control	1	LS	10%	$17,005
			Base Construction Cost	$204,060
			Mobilization (5%)	$10,203
			Subtotal 1	$214,263
			Contingency (25%)	$53,566
			Subtotal 2	$267,829
				$120,523
			Total	$388,352
			Estimated Project Cost	$390,000

PC9120 Stormwater Pond Retrofit



Address: Behind 9505 Southern Cross La., Burke, Virginia
Location: Pond near Southern Cross La.
Land Owner: Private – Longwood Knolls Homeowners Association
PIN: 0881 05 D
Control Type: Water quality and quantity control
Drainage Area: 116.09 acres
Receiving Waters: Tributary of Peyton Run

Description: This project proposes the creation of an extended detention dry pond with sediment forebay. The existing dry pond northwest of Lee Chapel Road and southwest of Southern Cross Lane receives runoff from these roads as well as Ebb tide Lane. Due to pollutants such as phosphorous, nitrogen and total suspended solids, a retrofit is proposed. This will allow for better downstream channel protection and allow for better function of temporary ponding, as well as promote the settlement of particulate pollution. Pond has easy access and room for expansion.

Project Benefits: This retrofit will provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out. Installing the sediment forebay will reduce debris and course sediment in the pond. The planting in the proposed aquatic bench and safety bench will increase the ponds biological uptake of pollutants, such as nitrogen and phosphorus. Below are the project's estimated pollutant removal amounts.

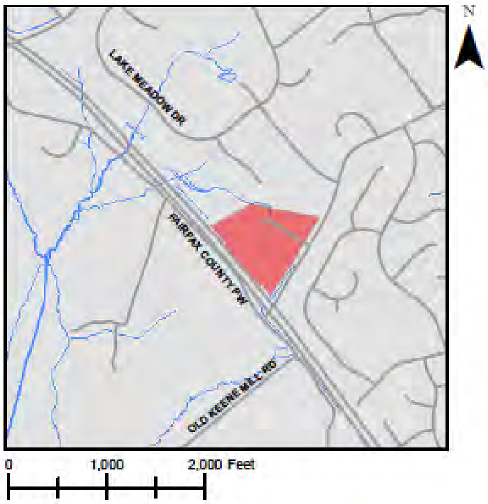
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.50	6.94	2.26

Project Design Considerations: This project is proposed on private land owned by Longwood Knolls Homeowners Association. The pond's safety bench and aquatic bench should be landscaped to prevent access to the pool due to proximity to homes. Location has a large amount of existing vegetation. Efforts should be made to minimize impacts to existing mature vegetation. The pond receives inflows from a culvert and sheet flow from the adjacent residential homes. The total area of the sediment forebay should be approximately 10% of the pond's surface area.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	1.15	AC	$8,500	$9,775
Grading and Excavation	5000	CY	$35	$175,000
Structural BMP Retrofit and Incidentals	1	LS	$20,000	$20,000
Embankment	60	CY	$50	$3,000
Outflow Pipe	200	LF	$125	$25,000
Rip Rap Stabilization	150	SY	$100	$15,000
Organic Compost Soil Amendment	800	CY	$40	$32,000
Plantings	1	LS	5%	$13,989
Ancillary Items	1	LS	5%	$13,989
Erosion and Sediment Control	1	LS	10%	$27,978
			Base Construction Cost	$335,730
			Mobilization (5%)	$16,787
			Subtotal 1	$352,517
			Contingency (25%)	$88,129
			Subtotal 2	$440,646
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$198,291
			Total	$638,936
			Estimated Project Cost	$640,000

PC9121 Stormwater Pond Retrofit



Address: 9900 Old Keene Mill Road, Burke, Virginia
Location: Burke Community Church
Land Owner: Private - Burke Community Church
PIN: 0881 01 0007A
Control Type: Water quality and quantity control
Drainage Area: 7.63 acres
Receiving Waters: Tributary of South Run

Description: This project proposes to retrofit an existing pond northeast of Fairfax County Parkway at Burke Community Church to create a wetland system with construction of a sediment forebay and the addition of low marsh and high marsh plantings. The primary indicators are wetland habitat and pollutants.The pond receives runoff from the church and parking lot. The retrofit will modify the existing pond to increase pollutant removal and to provide adequate channel protection. The retrofit will create a better functioning environment for gravitational settling, biological uptake and microbial activity.

Project Benefits: The extended detention basin and sediment forebay will provide additional stormwater management. The sediment forebay and increased detention time will increase sediment settling and biological uptake. Enlarging the pond and adjusting the outfall structure will decrease the ponds peak discharge which will protect the downstream channel. Below are the project's estimated pollutant removal amounts.

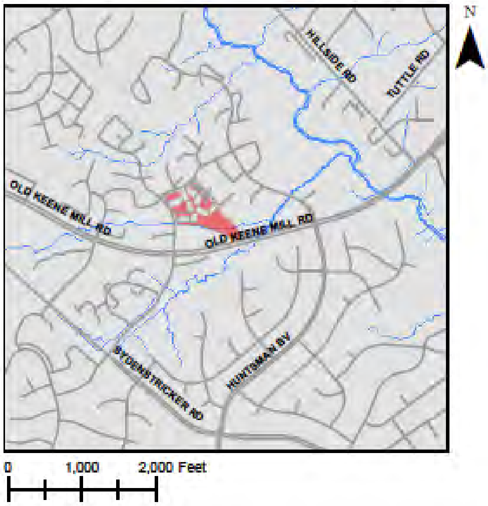
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.73	14.76	4.08

Project Design Considerations: This pond receives a significant amount of runoff due to the impervious parking lot. Due to this pond being labeled TBD in the County's system (meaning To Be Determined), it appears that this pond's maintenance is not reviewed by the County. Improving this facility to meet today's standards, would help insure proper maintenance for this facilitiy and incorporation into the County's system. This project appears feasibile due to the fact that there is available space. The records do not show this pond as being located in an easement.

Cost:

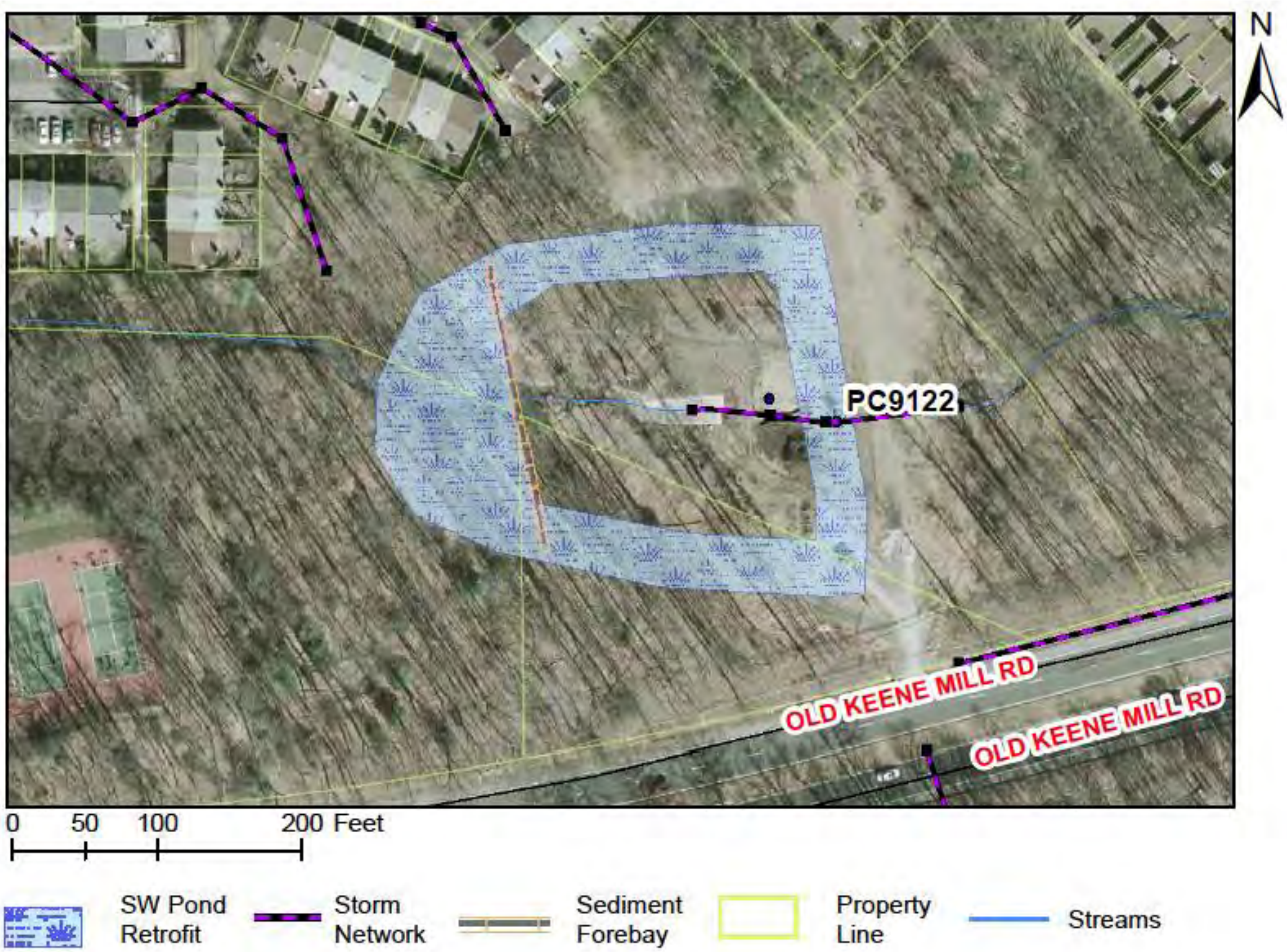
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.25	AC	$8,500	$2,125
Grading and Excavation	1000	CY	$35	$35,000
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	50	CY	$50	$2,500
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	75	SY	$100	$7,500
Organic Compost Soil Amendment	175	CY	$40	$7,000
Plantings	1	LS	5%	$3,519
Ancillary Items	1	LS	5%	$3,519
Erosion and Sediment Control	1	LS	10%	$7,038
			Base Construction Cost	$84,450
			Mobilization (5%)	$4,223
			Subtotal 1	$88,673
			Contingency (25%)	$22,168
			Subtotal 2	$110,841
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$49,878
			Total	$160,719
			Estimated Project Cost	$170,000

PC9122 Stormwater Pond Retrofit



Address: Field Master Dr. & Old Keene Mill Road, Springfield, Virginia
Location: Pond along Old Keene Mill Road (access road)
Land Owner: Private – Keene Mill Village Two Homeowners Association, III Keene Mill Village Homeowners Association, Keene Mill Village Recreation Association
PIN: 0882 13 B, 0882 1303 D, 0882 13 E
Control Type: Water quality and quantity control
Drainage Area: 40.47 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing pond north of Old Keene Mill Road and east of Field Master Drive, which receives runoff from adjacent roads and neighborhoods. The existing dry pond will be retrofitted to create an extended detention dry pond with a sediment forebay. Pond receives runoff from a large drainage area consisting of dense residential development, roadways and wooded areas. Pond outfalls to the adjacent stream in the wooded area to the east.



Project Benefits: Extending the pond's detention time will help prevent downstream channel erosion and will increase pollutant settlement in the pond. The forebay will collect the majority of the roadway fines and help maintain the infiltration capacity of the pond and reduce major maintenance repairs. Below are the project's estimated pollutant removal amounts.

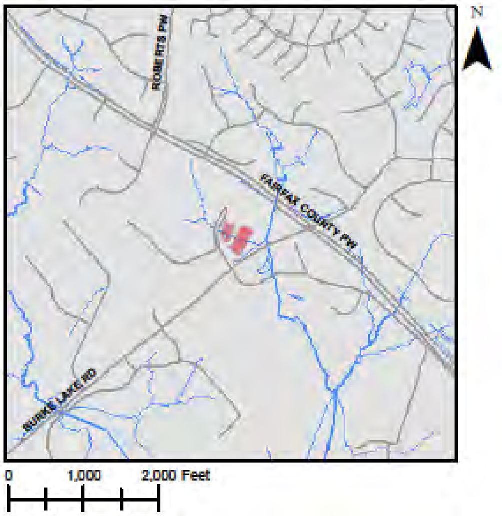
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
2.58	42.76	8.35

Project Design Considerations: This project is on private property owned by Keene Mill Village Two Homeowners Association. Records show no easements near the site. The sediment forebay should account for approximately 10% of pond area. The existing concrete pilot channel should be removed, and the existing discharge structure will need to be modified to extend the pond's detention time. Due to the addition of the sediment forebay and the extended detention time, the pond size will probably have to be increased as shown on the project area map. The pond is in a heavily wooded area, and efforts should be made to minimize impacts to existing mature vegetation. The landscaping plan should allow the pond to mature into a native forest in the right places yet keep mowable turf along the embankment and all access areas. Thepond has its own access road off of the main road.

Cost:

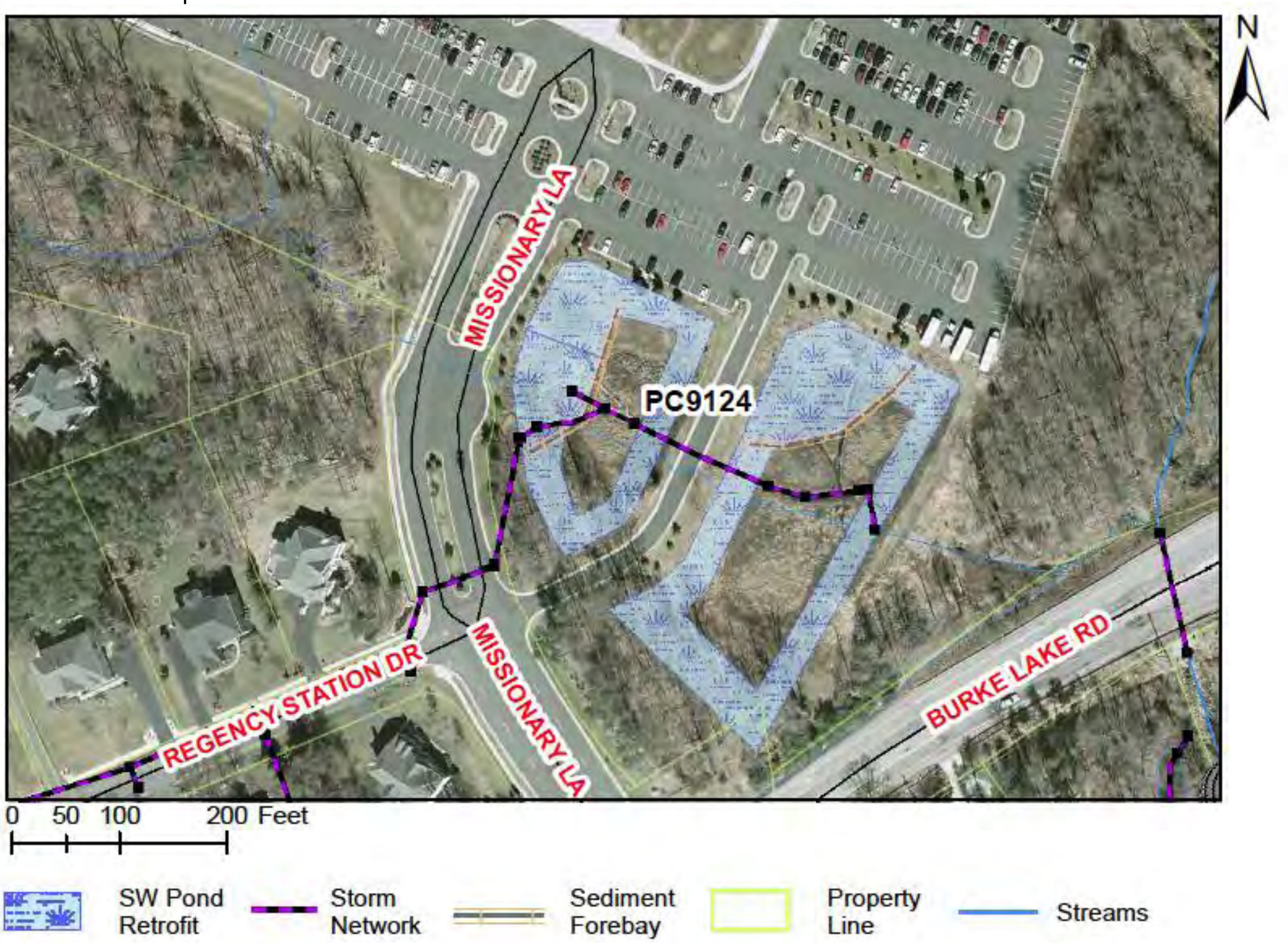
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.9	AC	$8,500	$7,650
Grading and Excavation	2500	CY	$35	$87,500
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	65	CY	$50	$3,250
Outflow Pipe	150	LF	$125	$18,750
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	700	CY	$40	$28,000
Plantings	1	LS	5%	$8,508
Ancillary Items	1	LS	5%	$8,508
Erosion and Sediment Control	1	LS	10%	$17,015
			Base Construction Cost	$204,180
			Mobilization (5%)	$10,209
			Subtotal 1	$214,389
			Contingency (25%)	$53,597
			Subtotal 2	$267,986
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$120,594
			Total	$388,580
			Estimated Project Cost	$390,000

PC9124 Stormwater Pond Retrofit



Address: 6401 Missionary Lane, Fairfax Station, Virginia
Location: Fairfax Baptist Temple Academy
Land Owner: Private – Fairfax Baptist Temple
PIN: 0872 01 0036
Control Type: Water quality and quantity control
Drainage Area: 37.90 acres
Receiving Waters: Tributary of Oppossum Branch

Description: This project proposes the retrofit of two connecting ponds at Fairfax Baptist Temple Academy to create an extended detention dry pond with sediment forebays. The retrofit will install sediment forebays on the inflow pipes, remove the pilot channels, add an aquatic bench with an engineered landscaping plan, and modify the outlet structure to increase the stormwater treatment time. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Pond is bisected by an access road. A pipe goes under the access road to connect the two ponds.



Project Benefits: Extending the detention of stormwater in this pond will provide better downstream channel protection and more time to promote particulate pollutant settlement. The new sediment forebays will reduce debris and coarse sediment that typically wash off of parking lots. The sediment forebay, if maintained properly, will decrease the necessary maintenance to the rest of the pond. Lastly, removing the pilot channels will allow the pond to better treat runoff from small storms which yield runoff with high pollutant concentrations. Below are the project's estimated pollutant removal amounts.

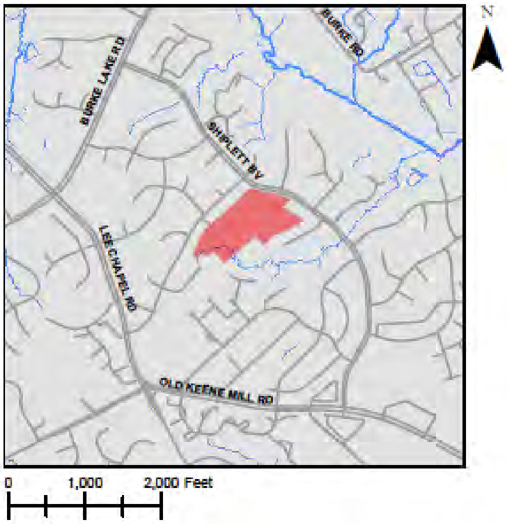
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.44	29.76	6.41

Project Design Considerations: There appears to be room for expansion and enhancement of existing ponds. The pond is on property owned by Fairfax Baptist Temple. Both ponds have inflow pipes and concrete pilot channels. Sediment forebays should be installed on the inflow pipes and be sized no less than 10% of the size of the pond. To install the sediment forebays and extend the stormwater detention the size of the pond may have to be increased. Efforts should be made to minimize impacts to existing vegetation. The concrete pilot channels should be removed and the landscaping plan should allow the pond to mature into a native forest in the right places yet keep mowable turf along the embankment and along access areas.

Cost:

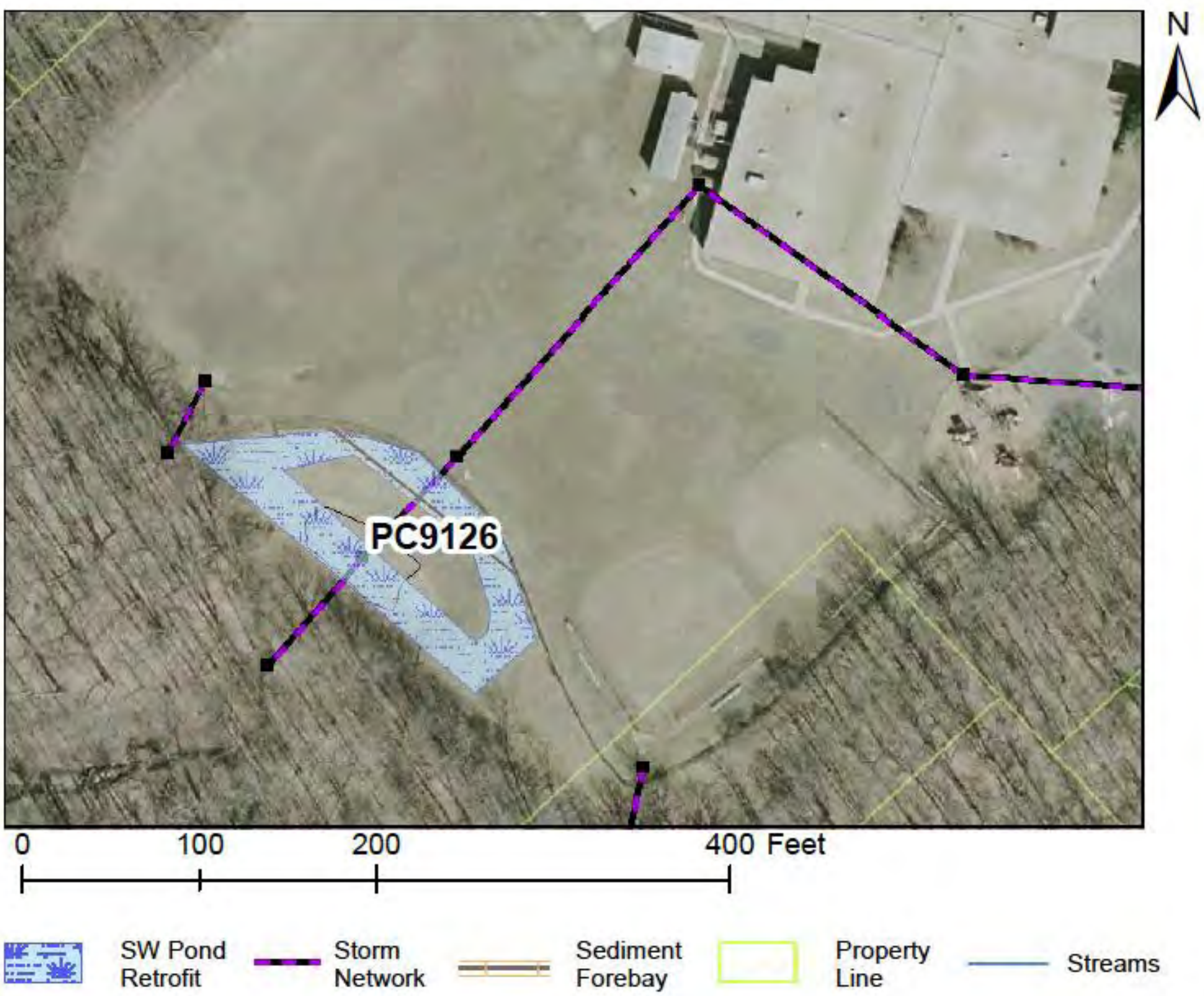
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	2	AC	$8,500	$17,000
Grading and Excavation	4000	CY	$35	$140,000
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	150	CY	$50	$7,500
Outflow Pipe	280	LF	$125	$35,000
Rip Rap Stabilization	125	SY	$100	$12,500
Organic Compost Soil Amendment	800	CY	$40	$32,000
Plantings	1	LS	5%	$12,950
Ancillary Items	1	LS	5%	$12,950
Erosion and Sediment Control	1	LS	10%	$25,900
			Base Construction Cost	$310,800
			Mobilization (5%)	$15,540
			Subtotal 1	$326,340
			Contingency (25%)	$81,585
			Subtotal 2	$407,925
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$183,566
			Total	$591,491
			Estimated Project Cost	$600,000

PC9126 Stormwater Pond Retrofit



Address: 16130 Shiplett Blvd, Burke, Virginia
Location: White Oaks Elementary School
Land Owner: Public/Local – School Board of Fairfax County
PIN: 0784 13 A
Control Type: Water quality and quantity control
Drainage Area: 4.60 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing pond at White Oaks Elementary School to create an extended detention basin with a sediment forebay. The pond size will be increased and the outfall structure will be modified to increase the stormwater detention time. This will improve the stormwater runoff quality and quantity. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.



Project Benefits: This retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure which promotes the settlement of pollutant particulates. Below are the project's estimated pollutant removal amounts.

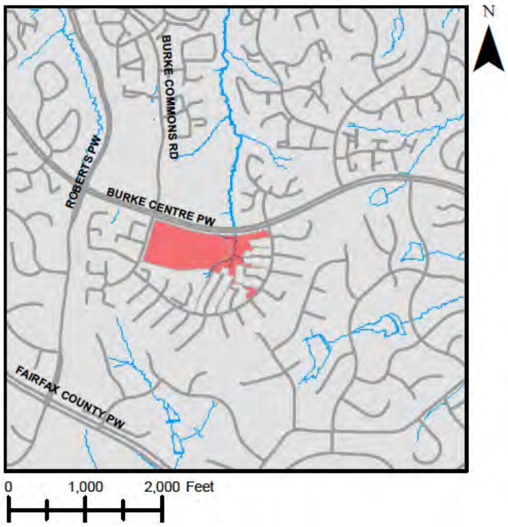
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.45	7.21	1.66

Project Design Considerations: An additional inlet or swale on the east side of the playground should be added to capture runoff and direct it to the existing dry pond. The forebay should be sized as approximately 10% of the pond area. There is ample room for expansion and a significant amount of impervious areas contributing runoff. The retrofit will add a discharge control structure to increase the detention time of the stormwater in the pond. An aquatic bench will be added as shown on the project area map. The planting plan will include wetland plants and buffer areas that will promote greater wildlife and water fowl use. The Watershed Advisory Group supports this project and says this project is important.

Cost:

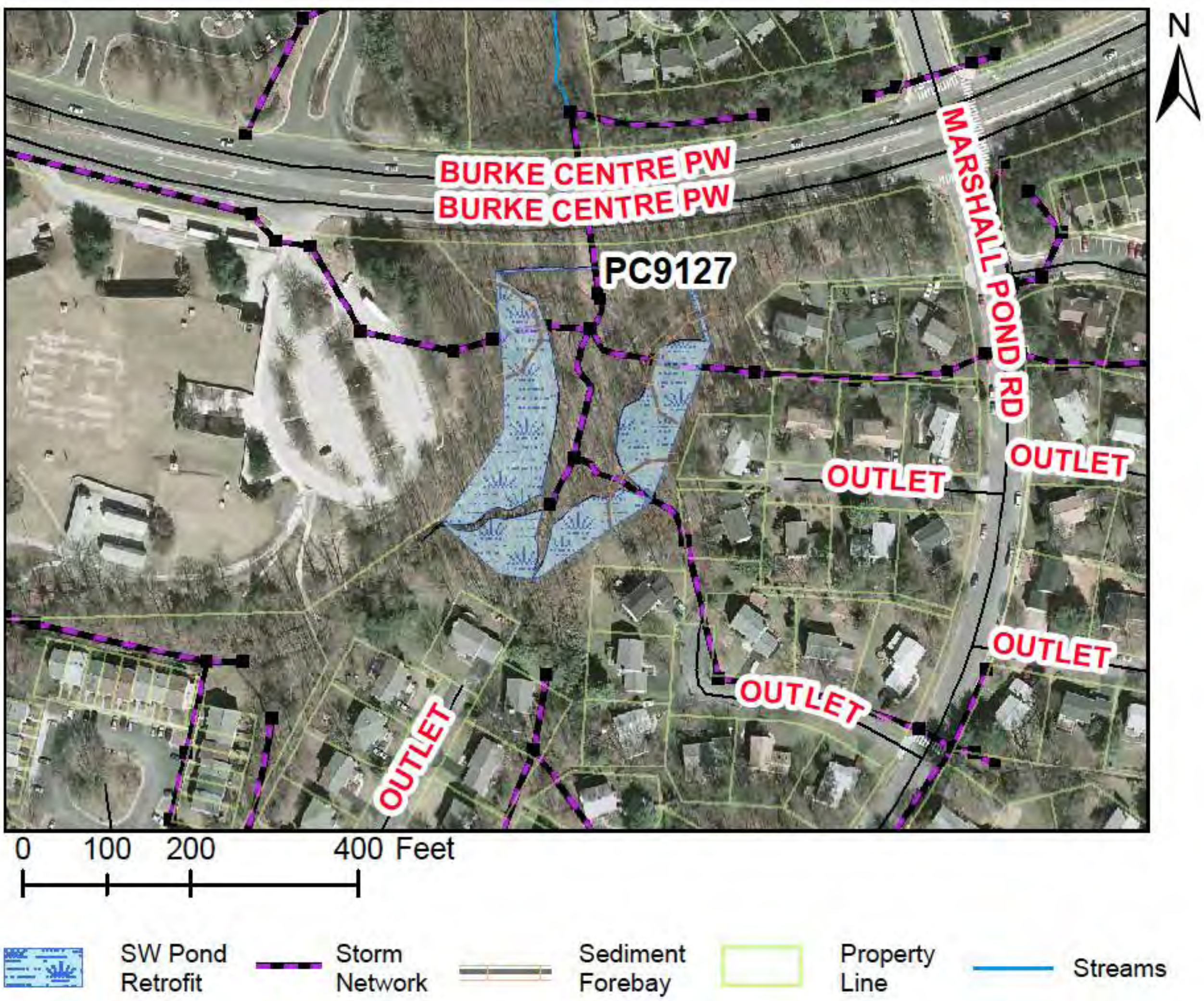
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.2	AC	$8,500	$1,700
Grading and Excavation	1000	CY	$35	$35,000
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	50	CY	$50	$2,500
Outflow Pipe	75	LF	$125	$9,375
Rip Rap Stabilization	75	SY	$100	$7,500
Organic Compost Soil Amendment	160	CY	$40	$6,400
Plantings	1	LS	5%	$3,624
Ancillary Items	1	LS	5%	$3,624
Erosion and Sediment Control	1	LS	10%	$7,248
			Base Construction Cost	$86,970
			Mobilization (5%)	$4,349
			Subtotal 1	$91,319
			Contingency (25%)	$22,830
			Subtotal 2	$114,148
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$51,367
			Total	$165,515
			Estimated Project Cost	$170,000

PC9127 Stormwater Pond Retrofit



Address: Next to 6000 Burke Centre Pkwy, Burke, Virginia
Location: Pond near Terre Centre Elementary School
Land Owner: Private - Burke Centre Conservancy
PIN: 0774 05 E2, 0774 01 0028A
Control Type: Water quality and quantity control
Drainage Area: 57.22 acres
Receiving Waters: Tributary of Sideburn Branch

Description: Large dry pond receives runoff from a large drainage area that includes Terre Centre Elementary School to the west and a residential neighborhood to the east. The primary indicators are pollutants such as nitrogen, phosphorus and total suspended solids. Pond will be retrofitted to be an extended detention dry pond with sediment forebays at the inlet pipes. Pond outfalls to the north under Burke Centre Parkway into a stream.



Project Benefits: This retrofit will modify the existing pond to increase pollutant removal and provide adequate downstream channel protection. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity by increasing the time the stormwater is in the pond. Vegetation will be planted to improve pond area and create a buffer. Below are the project's estimated pollutant removal amounts.

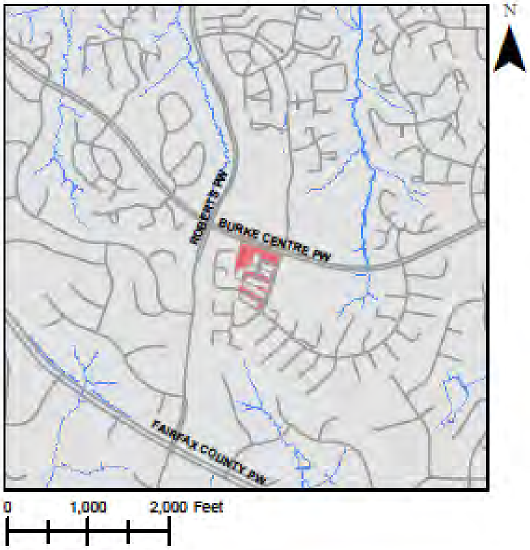
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
3.25	60.61	11.85

Project Design Considerations: This pond has a highly impervious drainage area with significant runoff from closed systems. The area directly surrounding the pond is wooded. Retrofit should not require significant tree removal. The sediment forebays should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank. The pond is on land owned by Burke Centre Conservancy.

Cost:

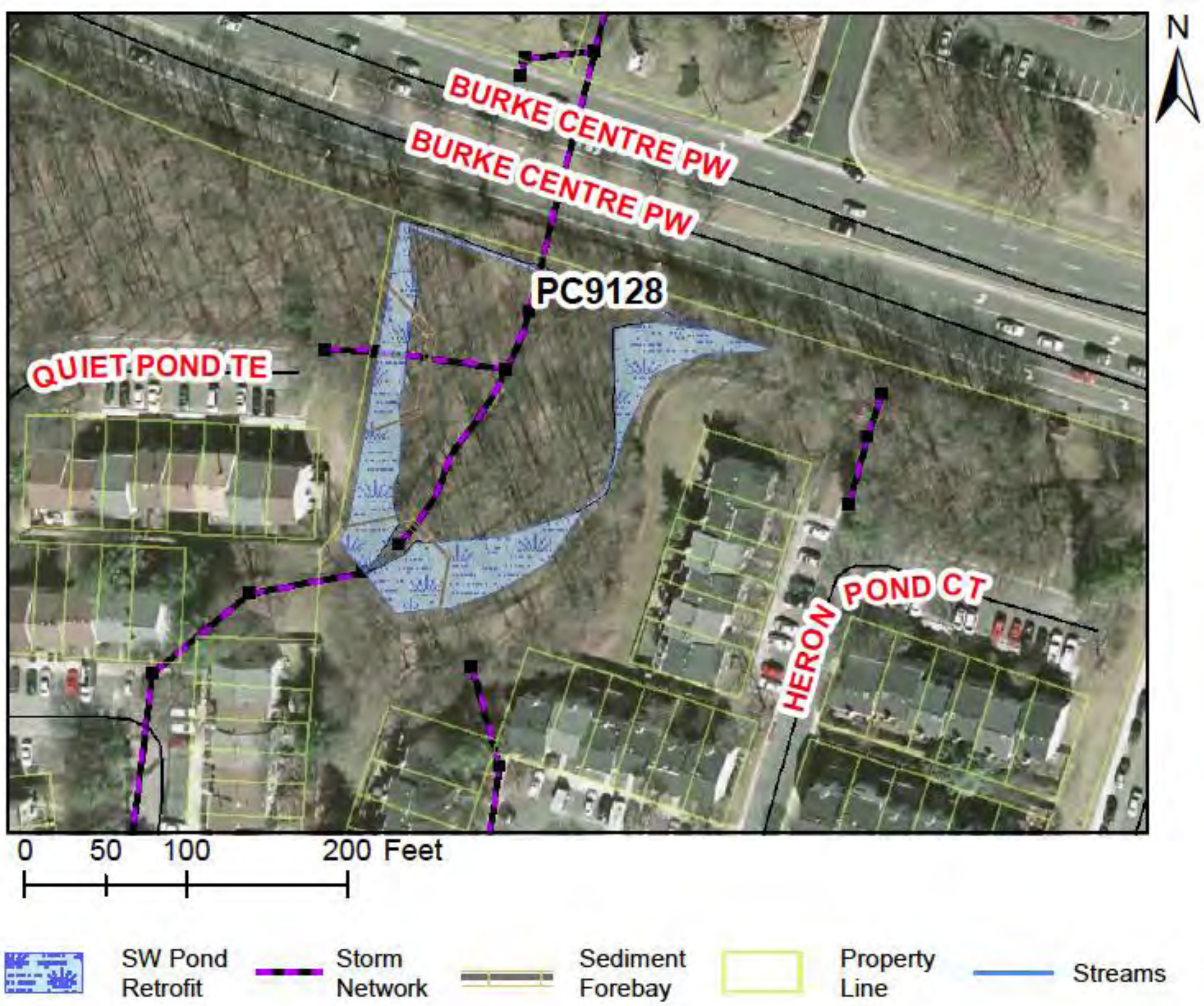
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.9	AC	$8,500	$7,650
Grading and Excavation	4500	CY	$35	$157,500
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	100	CY	$50	$5,000
Outflow Pipe	125	LF	$125	$15,625
Rip Rap Stabilization	250	SY	$100	$25,000
Organic Compost Soil Amendment	300	CY	$40	$12,000
Plantings	1	LS	5%	$11,889
Ancillary Items	1	LS	5%	$11,889
Erosion and Sediment Control	1	LS	10%	$23,778
			Base Construction Cost	$285,330
			Mobilization (5%)	$14,267
			Subtotal 1	$299,597
			Contingency (25%)	$74,899
			Subtotal 2	$374,496
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$168,523
			Total	$543,019
			Estimated Project Cost	$550,000

PC9128 Stormwater Pond Retrofit



Address: 6000 Burke Commons Rd., Burke, Virginia
Location: Across from Wal-Mart Supercenter 0174DP
Land Owner: Private – Burke Centre Conservancy
PIN: 0774 10 H1
Control Type: Water quality and quantity control
Drainage Area: 18.58 acres
Receiving Waters: Tributary of Sideburn Branch

Description: The project proposes to retrofit an existing pond to create an extended detention dry pond with sediment forebays. The pond receives stormwater from a closed pipe system that collects runoff from adjacent residential neighborhood. The pond outfalls across Burke Centre Parkway through the Wal-Mart parking lot storm sewer and discharges into a stream across Roberts Parkway.



Project Benefits: Modifying the existing control structure to increase the detention time will allow for more sediment deposition and downstream channel protection. Installing the sediment forebays will reduce debris and coarse sediment in the pond and will reduce required maintenance. Area draining to pond is large and very impervious. This project will help remove more pollutants before entering streams. Below are the project's estimated pollutant removal amounts.

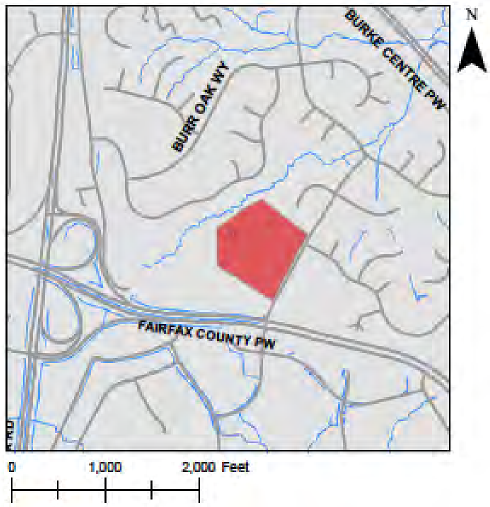
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.50	28.84	5.45

Project Design Considerations: Pond is located behind existing dense residential townhouse neighborhood and across from large commercial development. Pond is on private property. According to County records, there are no onsite easements. The sediment forebays should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank. Efforts should be made to minimize impacts to existing mature vegetation. Paved path in wooded area near pond should not be disturbed.

Cost:

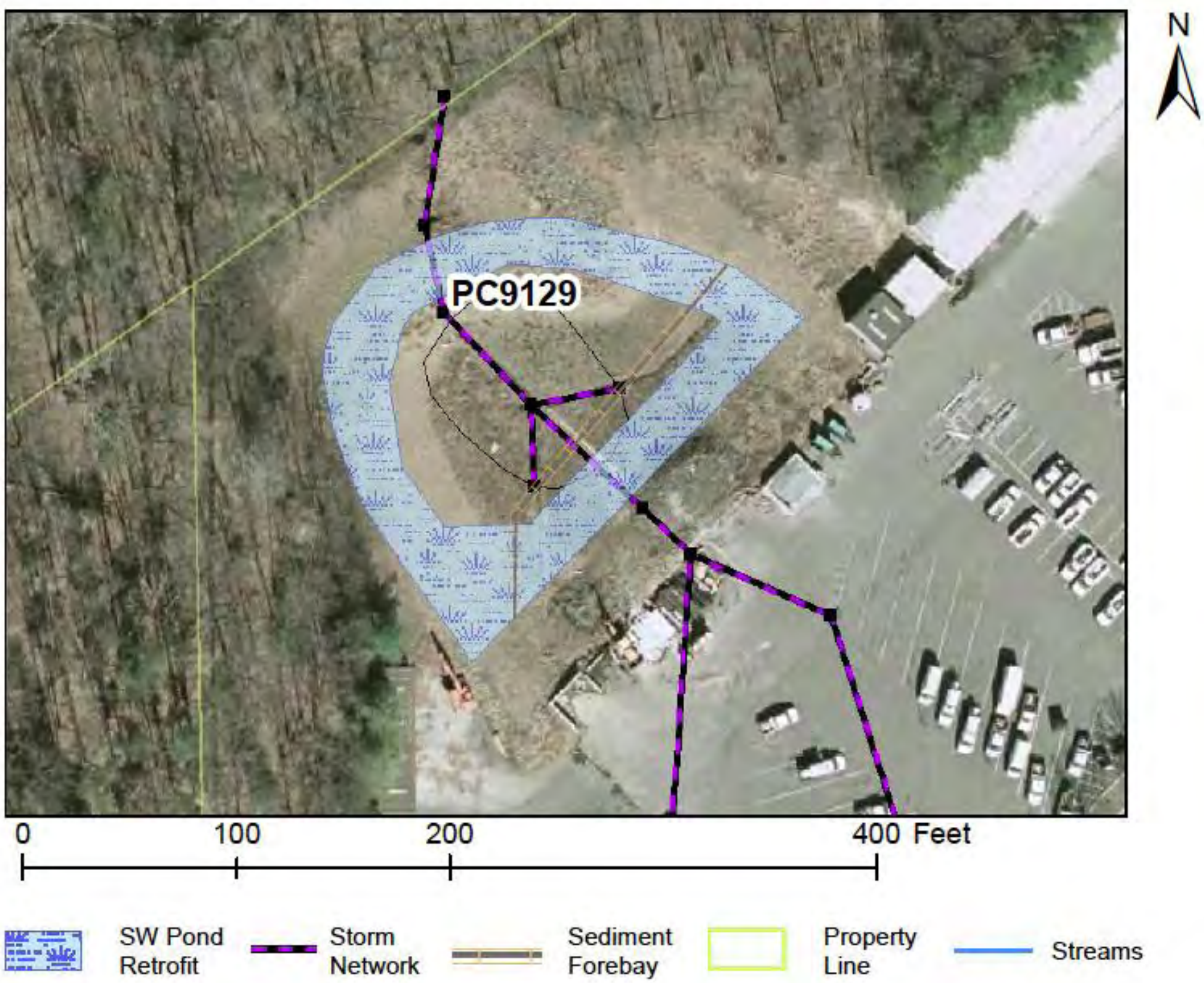
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.3	AC	$8,500	$2,550
Grading and Excavation	1650	CY	$35	$57,750
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	65	CY	$50	$3,250
Outflow Pipe	90	LF	$125	$11,250
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	200	CY	$40	$8,000
Plantings	1	LS	5%	$5,140
Ancillary Items	1	LS	5%	$5,140
Erosion and Sediment Control	1	LS	10%	$10,280
			Base Construction Cost	$123,360
			Mobilization (5%)	$6,168
			Subtotal 1	$129,528
			Contingency (25%)	$32,382
			Subtotal 2	$161,910
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$72,860
			Total	$234,770
			Estimated Project Cost	$240,000

PC9129 Stormwater Pond Retrofit



Address: 6000 Freds Oak Road, Burke, Virginia
Location: Fairfax Co. Wastewater Collection
Land Owner: Public/Local – Fairfax County Government
PIN: 0773 01 0013
Control Type: Water quality and quantity control
Drainage Area: 10.67 acres
Receiving Waters: Tributary of Sideburn Branch

Description: Fairfax County Wastewater Collection Division parking lot drains from south to north. Runoff from the parking lots is piped into the pond on the north side of the site, which outfalls to an adjacent stream. This project proposes to retrofit the existing dry pond by increasing the pond's size and installing a discharge structure that will increases detention time for stormwater runoff.



Project Benefits: This pond retrofit will allow the pond to better treat stormwater runoff from more frequent smaller storms which has higher pollutant concentrations than larger storms. This project will promote particulate pollutant deposition, biological uptake of pollutants, and downstream erosion protection. The sediment forebay will provide additional treatment for the pond.. Since this pond already provides some water quality the TSS removal will remain the same, but he TN removal and TP removal will increase by 25% and 10% respectively.

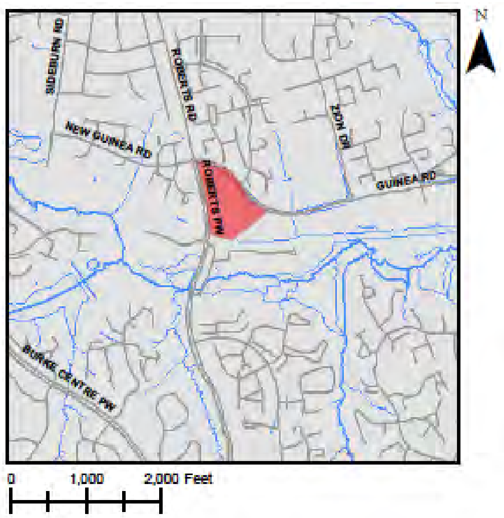
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0	20.6	0.9

Project Design Considerations: Significant impervious area is piped directly from the parking lot. Installing a sediment forebay that is 10% of the area of the pond would prevent sediment fines from entering the pond and clogging the basin floor. The existing pond has concrete pilot channels and lacks a planting plan to promote pollutant uptake and stormwater infiltration. The pond retrofit will remove the pilot channels and will include a planting plan to create a stormwater wetlands bottom. There appears to be room to expand the pond without impacting existing mature vegetation.

Cost:

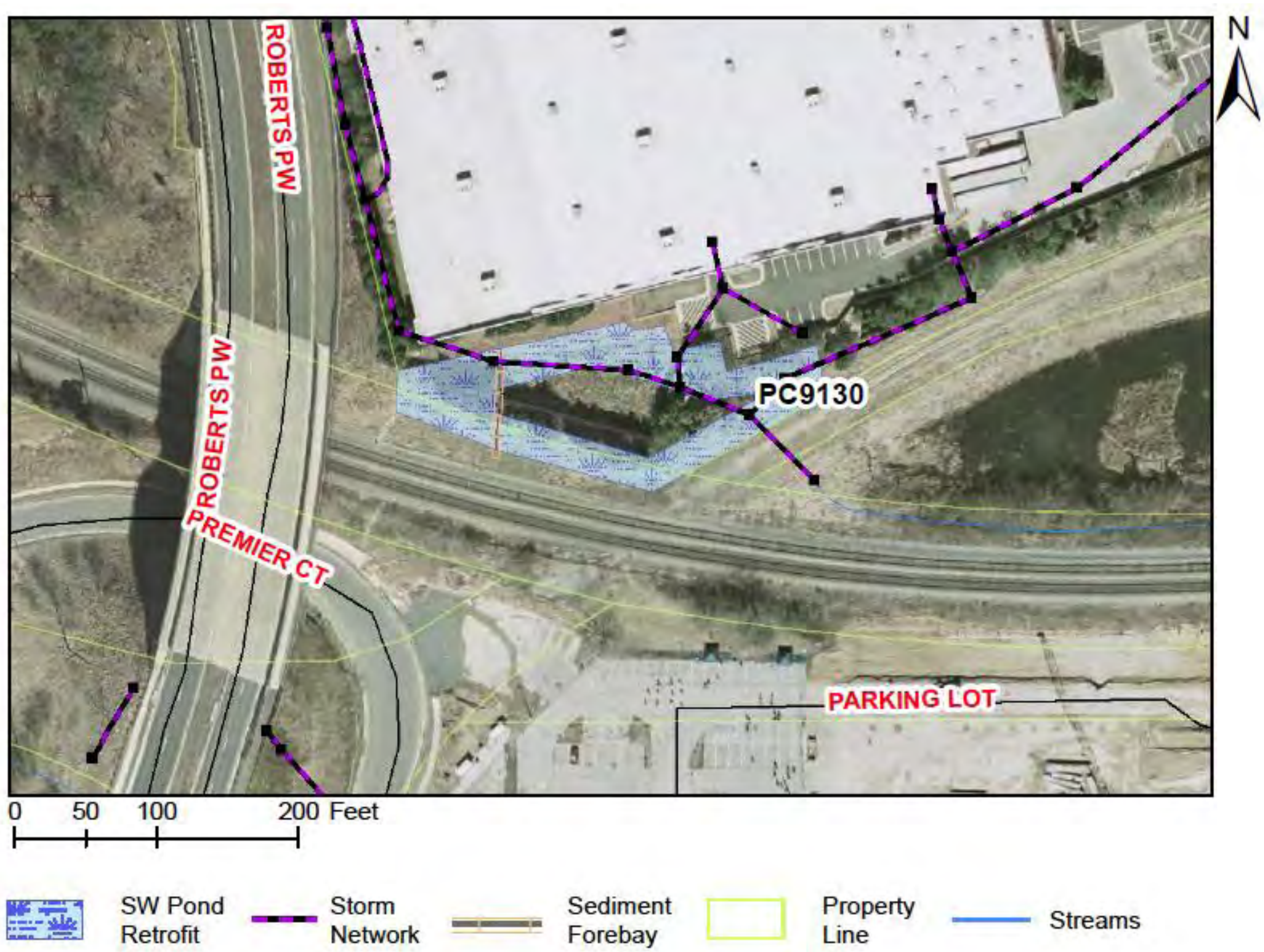
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.35	AC	$8,500	$2,975
Grading and Excavation	1800	CY	$35	$63,000
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	50	CY	$50	$2,500
Outflow Pipe	120	LF	$125	$15,000
Rip Rap Stabilization	120	SY	$100	$12,000
Organic Compost Soil Amendment	275	CY	$40	$11,000
Plantings	1	LS	5%	$6,074
Ancillary Items	1	LS	5%	$6,074
Erosion and Sediment Control	1	LS	10%	$12,148
			Base Construction Cost	$145,770
			Mobilization (5%)	$7,289
			Subtotal 1	$153,059
			Contingency (25%)	$38,265
			Subtotal 2	$191,323
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$86,095
			Total	$277,419
			Estimated Project Cost	$280,000

PC9130 Stormwater Pond Retrofit



Address: 10301 New Guinea Road, Fairfax, Virginia
Location: New Guinea Road Target
Land Owner: Private – Marshall Field Stores, Inc, Target Corporation
PIN: 0772 01 0013C
Control Type: Water quality and quantity control
Drainage Area: 12.24 acres
Receiving Waters: Tributary of Sideburn Branch

Description: This project proposes to retrofit an existing dry pond into an extended detention pond with a sediment forebay. The pond is located at the south side of the Target shopping center. Stormwater runoff is collected in the parking lot through storm inlets and conveyed to the existing pond for treatment. This retrofit will improve stormwater runoff quality by using a sediment forebay to pretreat runoff. The pond's detention time will be increased to allow more pollutants to settle out and break down through biological processes.



Project Benefits: The addition of the sediment forebay will provide for more particulate pollution deposition. The retrofit of the pond will increase the detention time of stormwater before it is released downstream. This will help protect the channel downstream of the pond. Below are the project's estimated pollutant removal amounts.

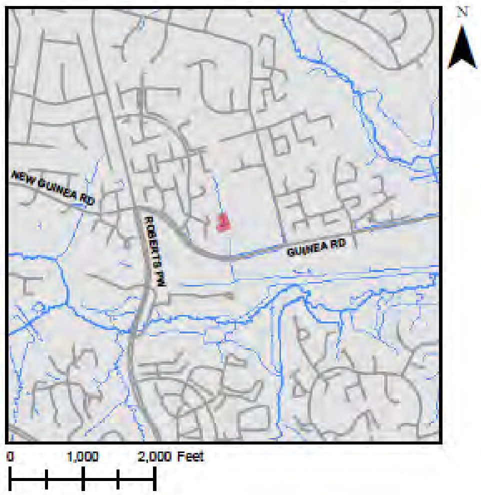
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.27	26.75	4.21

Project Design Considerations: The vegetation in the pond is dead and the pond has a lot of trash in it. The outfall pipe seems to be half full of trash and other debris. The pond limits are confined by a road on the west and south and by a building on the north. The only storage expansion availabe is to the east. The sediment forebays and regular maintenance would help with the trash and debris issues. This project would include removal of the concrete pilot channels and landscaping plan that would try to incorporate the existing vegetation. Records show the exisitng pond is in an easement.

Cost:

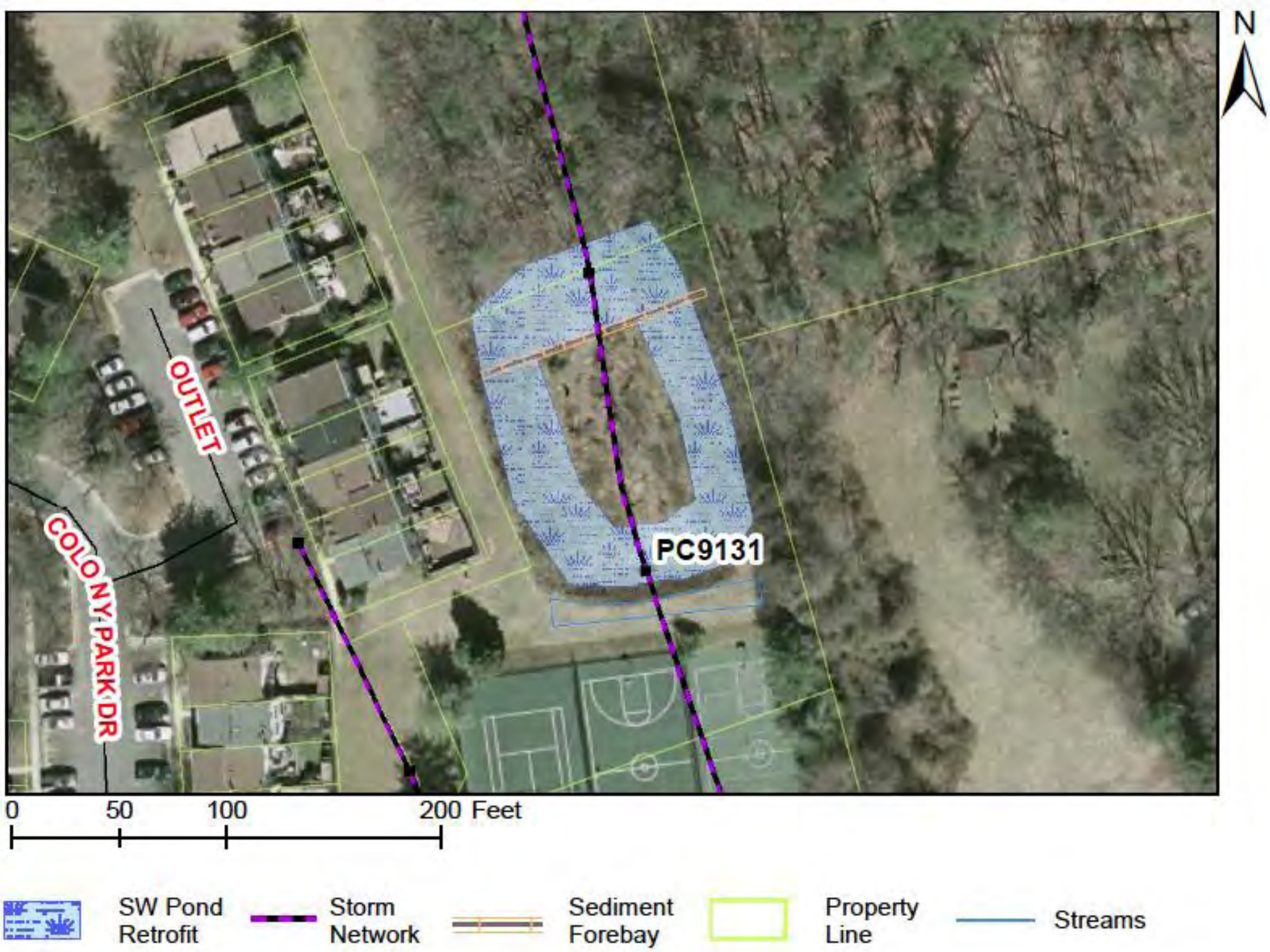
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.35	AC	$8,500	$2,975
Grading and Excavation	1300	CY	$35	$45,500
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	25	CY	$50	$1,250
Outflow Pipe	150	LF	$125	$18,750
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	275	CY	$40	$11,000
Plantings	1	LS	5%	$4,974
Ancillary Items	1	LS	5%	$4,974
Erosion and Sediment Control	1	LS	10%	$9,948
			Base Construction Cost	$119,370
			Mobilization (5%)	$5,969
			Subtotal 1	$125,339
			Contingency (25%)	$31,335
			Subtotal 2	$156,673
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$70,503
			Total	$227,176
			Estimated Project Cost	$230,000

PC9131 Stormwater Pond Retrofit



Address: Behind 10268 Colony Park Drive, Fairfax, Virginia
Location: Pond near Colony Park Dr.
Land Owner: Private – Woodlynne Community Association
PIN: 0772 05 F
Control Type: Water quality and quantity control
Drainage Area: 47.26 acres
Receiving Waters: Tributary of Sideburn Branch

Description: This large dry pond behind a residential community is currently very well vegetated. This pond retrofit will modify the exisitng discharge structure to create an extended detention dry pond with sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The large drainage area captures runoff from dense residential, single family residential, roadways and wooded areas.



Project Benefits: Extending the pond detention time will help reduce downstream erosion and promote particulant pollutant settlement in the pond. The new forebay will capture a majority of the sediment in the roadway runoff to the pond, reducing major pond maintenance and improving removal of particulate pollutants. Below are the project's estimated pollutant removal amounts.

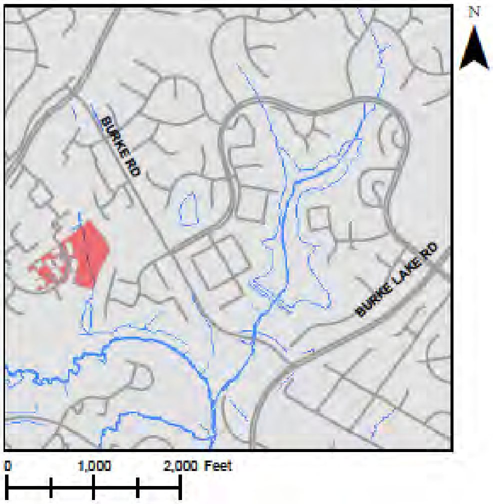
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
3.26	60.53	11.44

Project Design Considerations: The pond is entirely on Woodlynne Community Association property. Records show no easements. Sediment forebay should account for approximately 10% of pond area. Due to increasing the stormwater's detention time and installing the sediment forebay the pond size will probably need to be enlarged as shown on the project area map. Area is very well vegetated. Efforts must be made to minimize impacts to mature vegetation, however some impacts will be made. The landscaping plan should allow the pond to mature into a native forest in the right places yet keep mowable turf along the embankment and all access areas.

Cost:

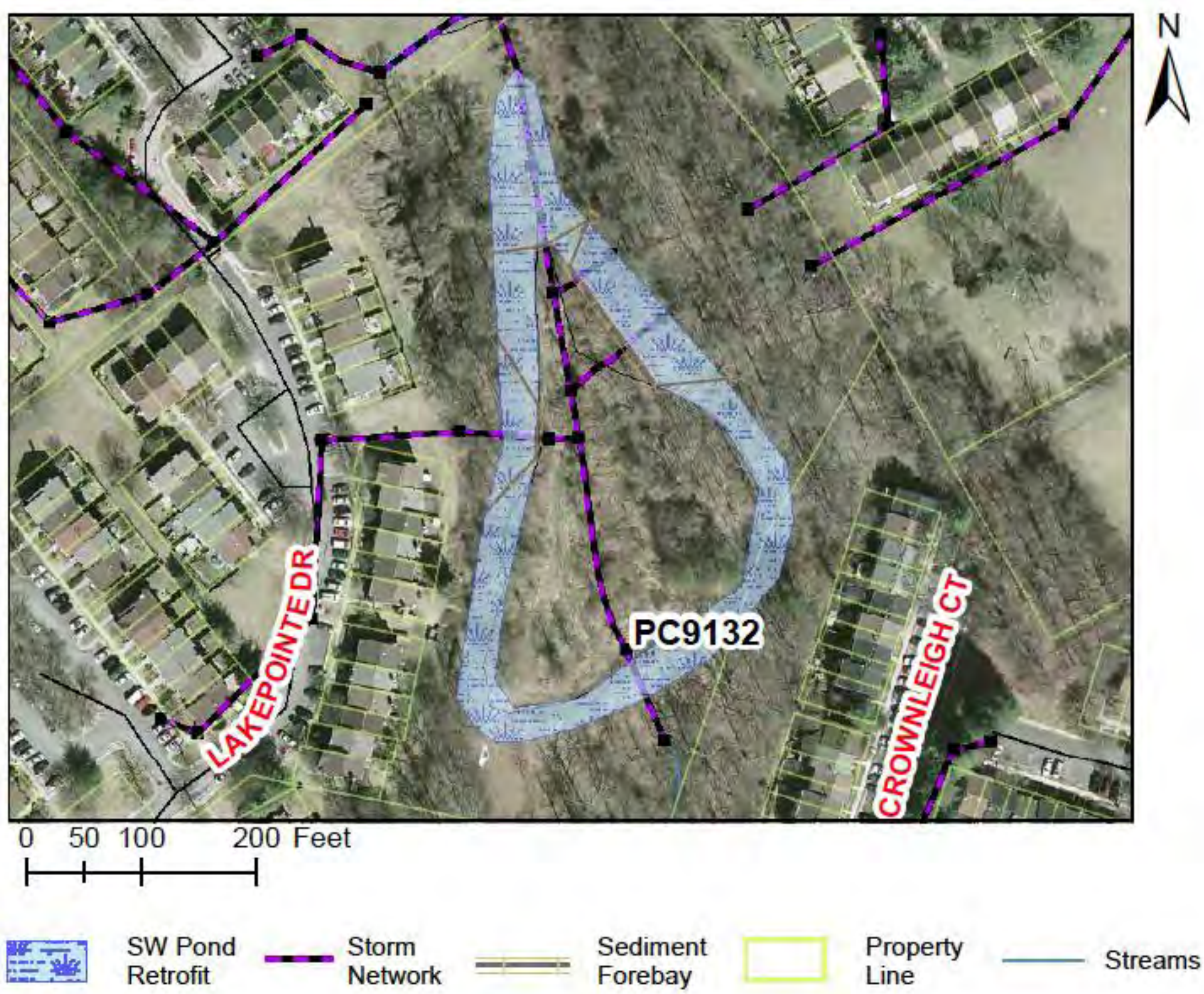
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.25	AC	$8,500	$2,125
Grading and Excavation	1200	CY	$35	$42,000
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	30	CY	$50	$1,500
Outflow Pipe	75	LF	$125	$9,375
Rip Rap Stabilization	100	SY	$100	$10,000
Organic Compost Soil Amendment	200	CY	$40	$8,000
Plantings	1	LS	5%	$4,400
Ancillary Items	1	LS	5%	$4,400
Erosion and Sediment Control	1	LS	10%	$8,800
			Base Construction Cost	$105,600
			Mobilization (5%)	$5,280
			Subtotal 1	$110,880
			Contingency (25%)	$27,720
			Subtotal 2	$138,600
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$62,370
			Total	$200,970
			Estimated Project Cost	$210,000

PC9132 Stormwater Pond Retrofit



Address: 9713 Lakepointe Dr., Burke, Virginia
Location: Pond behind Houses along Lakepointe Dr.
Land Owner: Private – Lakepointe Townhome Association
PIN: 0781 16 H
Control Type: Water quality and quantity control
Drainage Area: 71.39 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project is the large pond behind Lakepointe Drive. The project proposes the retrofit of the pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate settlement.



Project Benefits: The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate settlement. Sediment forebays will reduce debris and coarse sediment in the pond. This will reduce costly maintenance and improve water quality. The planting in the proposed aquatic bench will increase the ponds biological uptake of pollutants, such as nitrogen and phosphorus. Below are the project's estimated pollutant removal amounts.

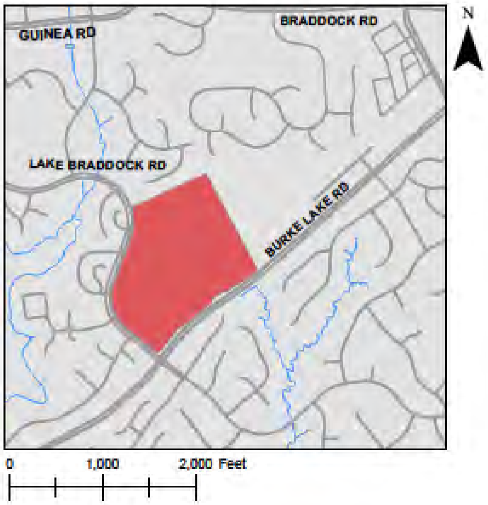
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
5.89	106.34	20.62

Project Design Considerations: This project is located on private property owned by Lakepointe Townhome Association. Potential for pond expansion is diminished due to existing vegetation. Efforts should be made to have minimal impacts to existing mature vegetation. Sediment forebays should be constructed for inflows that drain 10% or more of the contributing drainage area. The total area of the sediment forebays should be approximately 10% of the pond's surface.

Cost:

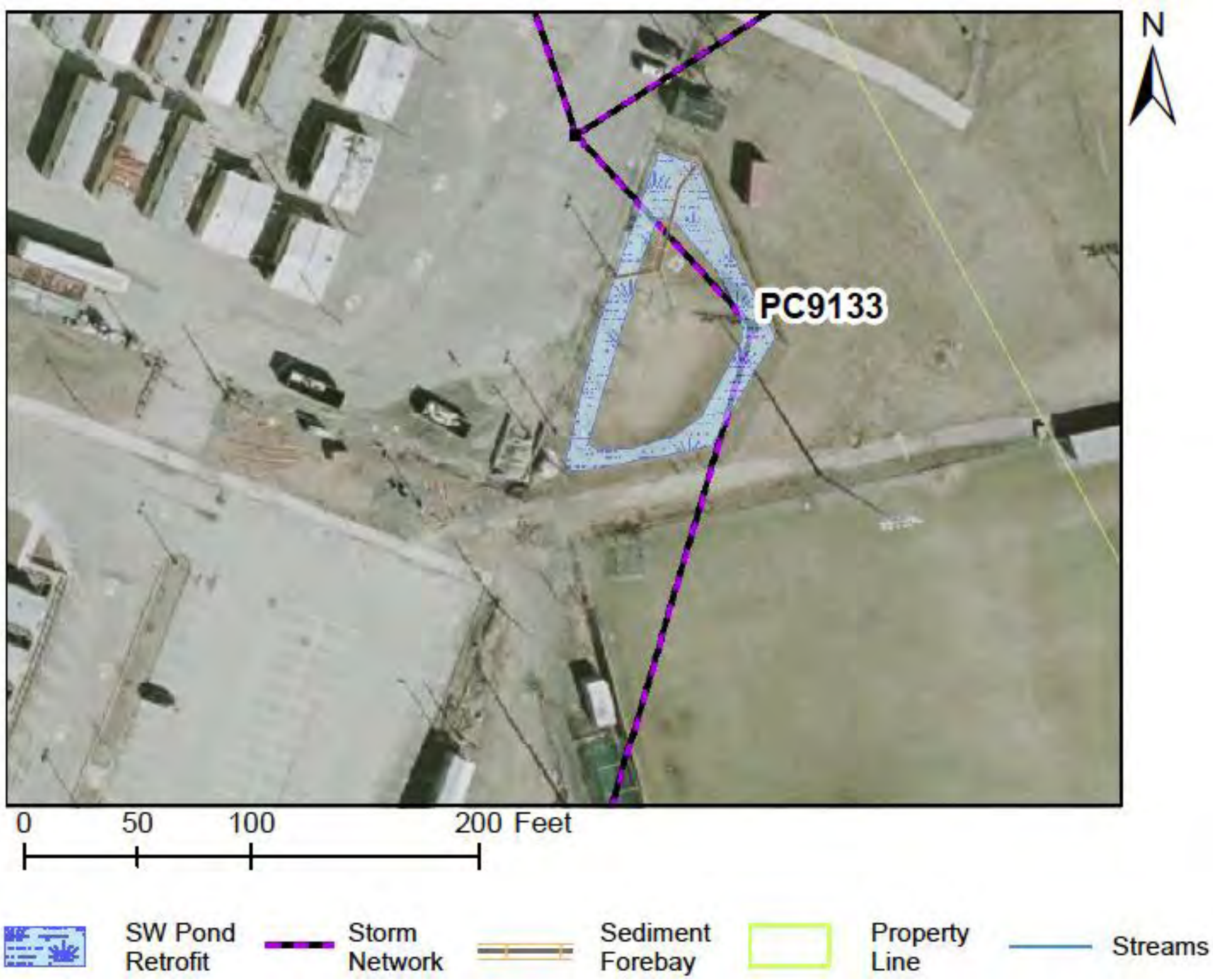
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.98	AC	$8,500	$8,330
Grading and Excavation	3500	CY	$35	$122,500
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	100	CY	$50	$5,000
Outflow Pipe	75	LF	$125	$9,375
Rip Rap Stabilization	150	SY	$100	$15,000
Organic Compost Soil Amendment	750	CY	$40	$30,000
Plantings	1	LS	5%	$10,260
Ancillary Items	1	LS	5%	$10,260
Erosion and Sediment Control	1	LS	10%	$20,521
			Base Construction Cost	$246,246
			Mobilization (5%)	$12,312
			Subtotal 1	$258,558
			Contingency (25%)	$64,640
			Subtotal 2	$323,198
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$145,439
			Total	$468,637
			Estimated Project Cost	$470,000

PC9133 Stormwater Pond Retrofit



Address: 9200 Burke Lake Rd., Burke, Virginia
Location: Lake Braddock Secondary School
Land Owner: Public/Local – School Board of Fairfax County
PIN: 0782 07 B
Control Type: Water quality and quantity control
Drainage Area: 13.96 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing pond at Lake Braddock Secondary School to create an extended detention dry pond with a sediment forebay. Pond receives runoff from a fairly large impervious drainage area, including the school and adjacent residential area to the north. The pond will be retrofitted into an extended detention pond by modifying the existing discharge structure to increase the time stormwater remains in the pond. The pond size will be enlarged to handle the larger detention volume. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.



Project Benefits: Extending the pond detention time will provide better downstream channel protection and promote settlement of particulate pollutants. Installing a sediment forebay will reduce the debris and coarse sediment in the pond, which will reduce pond maintenance. Below are the project's estimated pollutant removal amounts.

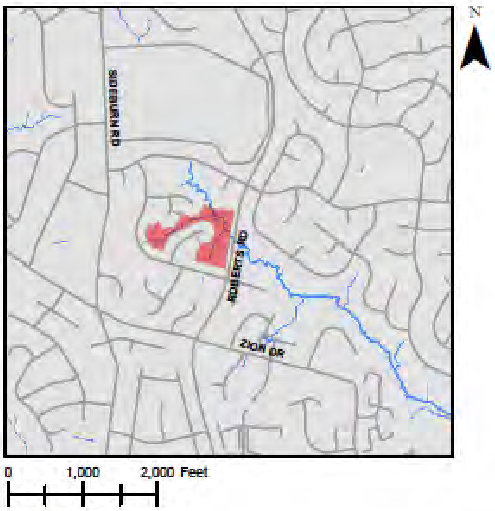
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.69	10.06	2.23

Project Design Considerations: Pond is located at Lake Braddock Secondary School. County records show no existing easements for the pond. The existing pond is behind a fence close to playing fields. The sediment forebay should account for approximately 10% of the pond area. The pond size would be increased as shown on the project map. The vegetative buffer should be 10-15' off of the top of bank. Efforts should be made to minimize impacts to existing mature vegetation.

Cost:

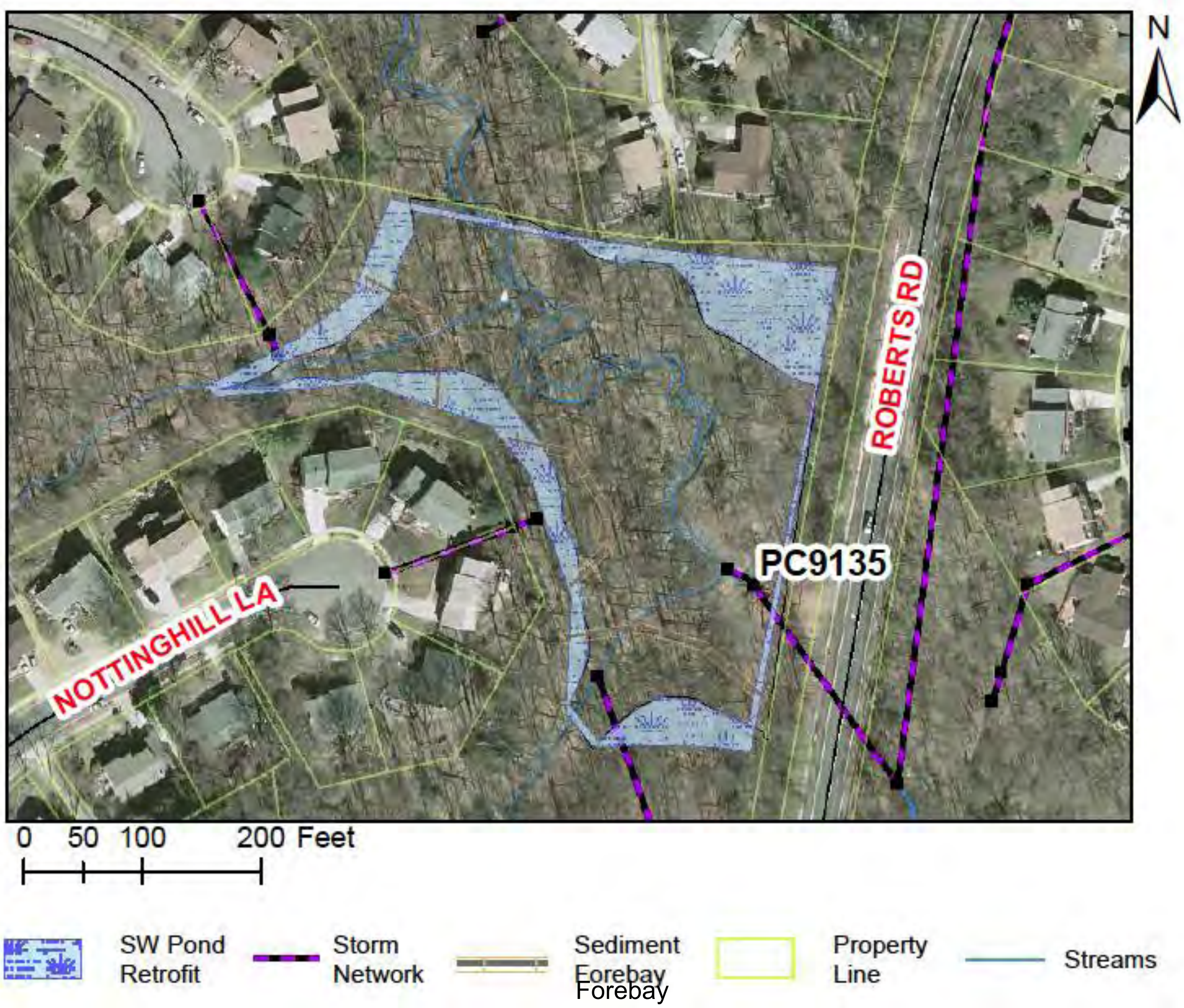
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.1	AC	$8,500	$850
Grading and Excavation	510	CY	$35	$17,850
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	20	CY	$50	$1,000
Outflow Pipe	75	LF	$125	$9,375
Rip Rap Stabilization	75	SY	$100	$7,500
Organic Compost Soil Amendment	65	CY	$40	$2,600
Plantings	1	LS	5%	$2,459
Ancillary Items	1	LS	5%	$2,459
Erosion and Sediment Control	1	LS	10%	$4,918
			Base Construction Cost	$59,010
			Mobilization (5%)	$2,951
			Subtotal 1	$61,961
			Contingency (25%)	$15,490
			Subtotal 2	$77,451
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$34,853
			Total	$112,303
			Estimated Project Cost	$120,000

PC9135 Stormwater Pond Retrofit



Address: Behind 5220 Nottinghill Lane, Fairfax, Virginia
Location: Pond along Roberts Road
Land Owner: Private – Kings Park West Community Association
PIN: 0684 09 C
Control Type: Water quality and quantity control
Drainage Area: 145.21 acres
Receiving Waters: Tributary of Rabbit Branch

Description: A dry pond retrofit is proposed east of Nottinghill Lane and west of Roberts Road. The pond is upstream of a culvert under Roberts Road, which outfalls to a stream on the other side of the road. This project proposes to create an extended detention dry pond with sediment forebay. The primary indicators are nitrogen, phosphorus and total suspended solids.



Project Benefits: This retrofit will provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes deposition of particulate pollutants. Implementation of a sediment forebay will increase the pollutant removal benefits of the stormwater pond. Below are the project's estimated pollutant removal amounts.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
7.95	106.09	23.07

Project Design Considerations: Very large drainage area outfalling to the pond, including large school. Pond is on private property owned by Kings Park West Community Association and according to County-provided GIS data, there are no easements on site. The sediment forebays should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank. Efforts should be made to minimize impacts to existing mature vegetation.

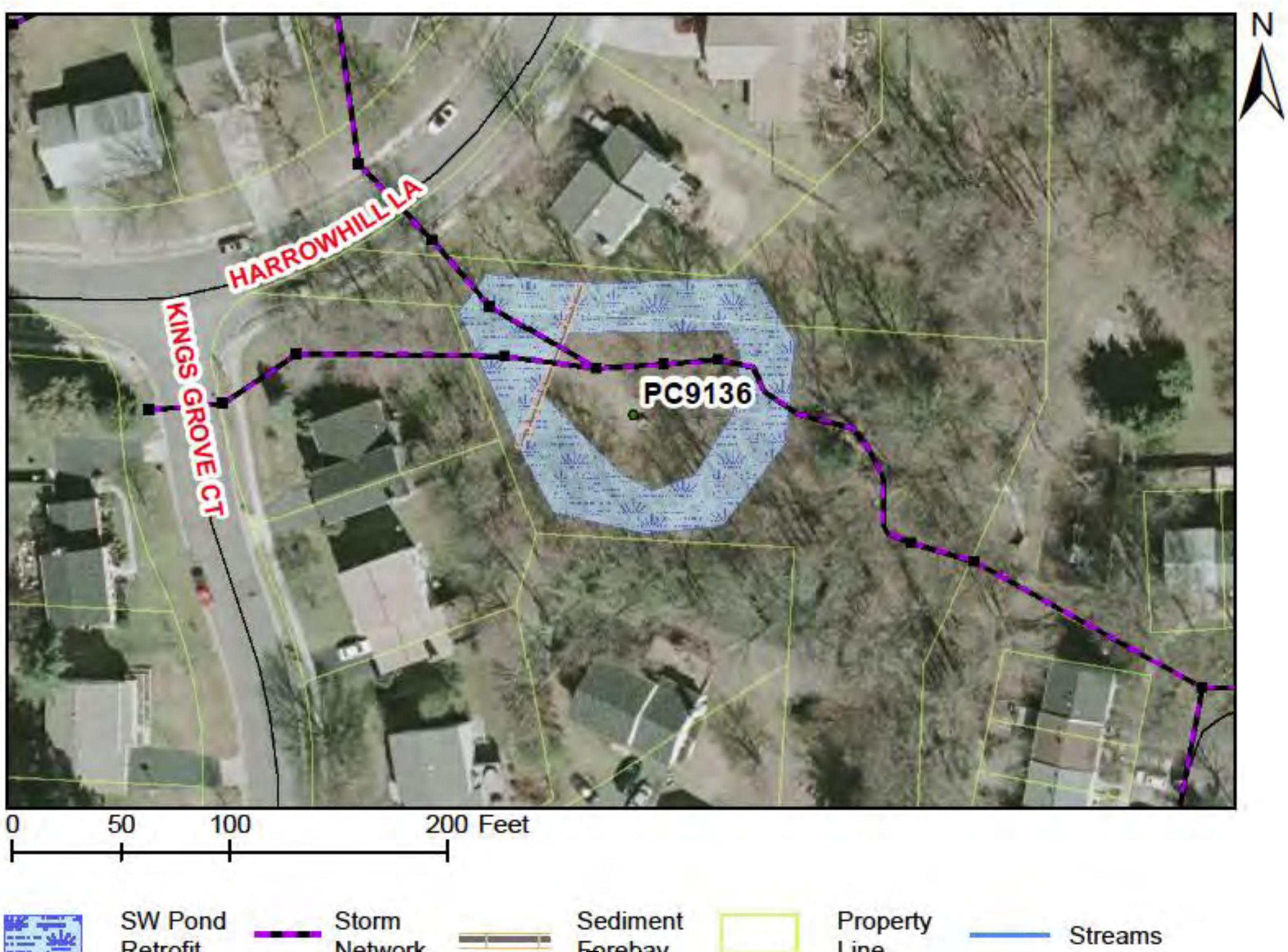
Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.75	AC	$8,500	$6,375
Grading and Excavation	4400	CY	$35	$154,000
Structural BMP Retrofit and Incidentals	1	LS	$20,000	$20,000
Embankment	115	CY	$50	$5,750
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	200	SY	$100	$20,000
Organic Compost Soil Amendment	550	CY	$40	$22,000
Plantings	1	LS	5%	$11,719
Ancillary Items	1	LS	5%	$11,719
Erosion and Sediment Control	1	LS	10%	$23,438
			Base Construction Cost	$281,250
			Mobilization (5%)	$14,063
			Subtotal 1	$295,313
			Contingency (25%)	$73,828
			Subtotal 2	$369,141
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$166,113
			Total	$535,254
			Estimated Project Cost	$540,000

PC9136 Stormwater Pond Retrofit

Address: Behind 5120 Dahlgreen Place, Burke, Virginia
Location: Dahlgreen Place Playground
Land Owner: Private – Queens Gate Homeowners Association, Kings Grove Community Association
PIN: 0693 16 B, 0693 10 A1
Control Type: Water quality and quantity control
Drainage Area: 8.70 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the retrofit of an existing pond near Dahlgreen Place Playground. The existing pond will be modified to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing control structure to increase the detention time of stormwater runoff. This will reduce downstream channel erosion and allow more time for particulate pollutants to settle out.



Project Benefits: The enlarged pond and modified outfall structure will increase the detention time for stormwater. This will help lessen stream erosion downstream. Also, the increased detention time will increase pollutant settling and biological uptake of the pollutants. Below are the project's estimated pollutant removal amounts.

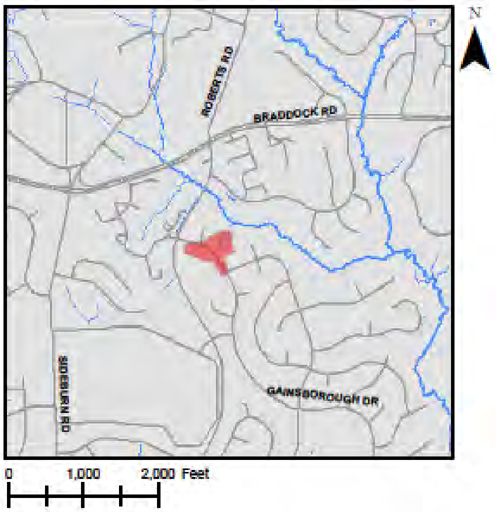
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.33	6.61	1.19

Project Design Considerations: The pond size will probably need to be increased to provide adequate detention time. The current pond size is limited on the north, west and south by single family homes. Therefore the pond will have to be enlarged on the east side. Records show that the pond is located in a storm drain easement. The easement will have to be enlarged as well. To access the pond on the north side an easement on the Queens Gate Homeowners Association open space may need to be obtained. A channel is deeply cut on the side of pond. This will have to be addressed. The pond has two inflows and will require a sediment forebay, and the existing control structure will need to be modified. The existing vegetation should be retained as much as possible when the pond is expanded. The landscaping plan should allow the pond to mature into a native forest in the right places yet keep mowable turf along the embankment and all access areas.

Cost:

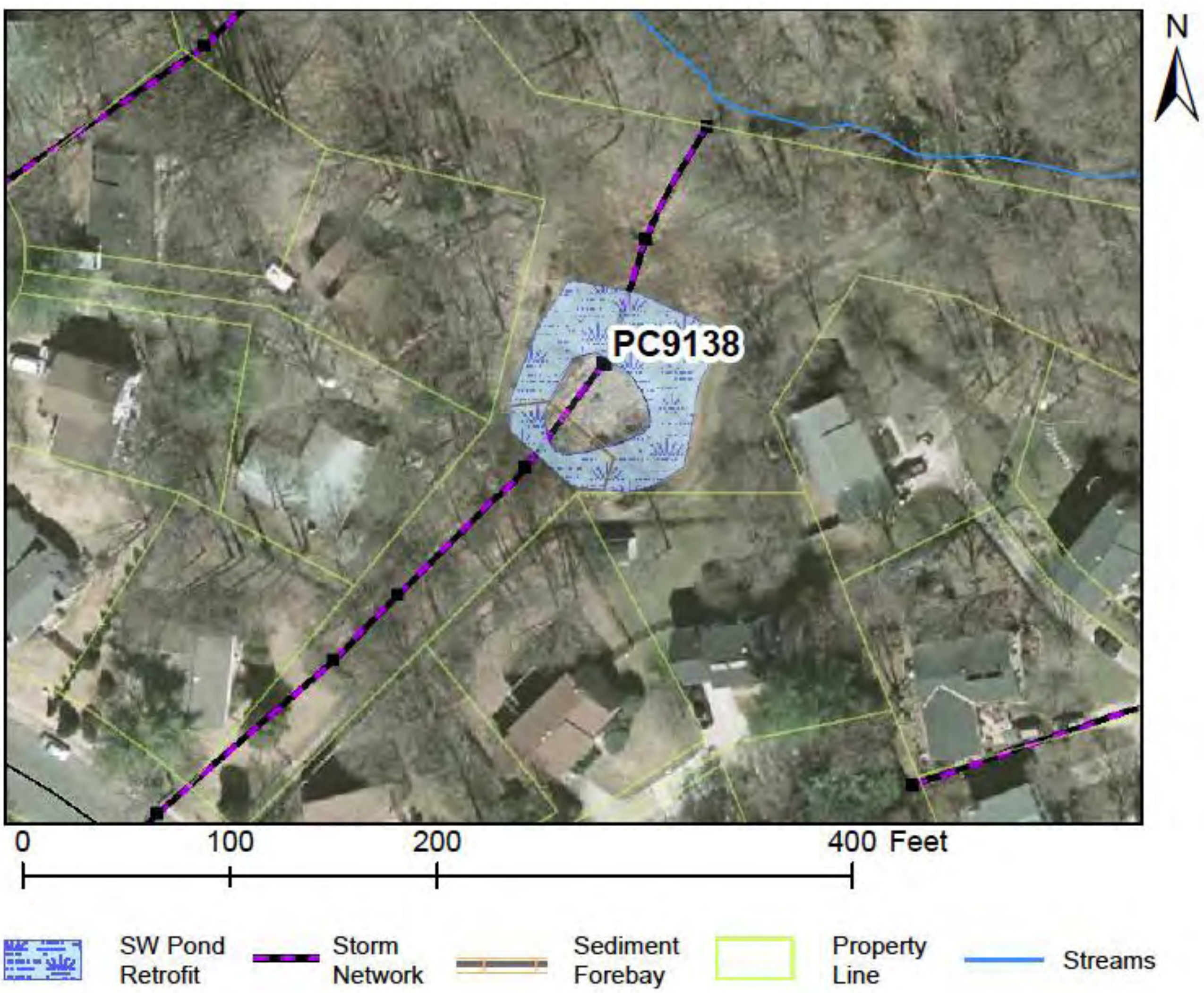
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.22	AC	$8,500	$1,870
Grading and Excavation	1370	CY	$35	$47,950
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	55	CY	$50	$2,750
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	50	SY	$100	$5,000
Organic Compost Soil Amendment	170	CY	$40	$6,800
Plantings	1	LS	5%	$4,031
Ancillary Items	1	LS	5%	$4,031
Erosion and Sediment Control	1	LS	10%	$8,062
			Base Construction Cost	$96,744
			Mobilization (5%)	$4,837
			Subtotal 1	$101,581
			Contingency (25%)	$25,395
			Subtotal 2	$126,977
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$57,139
			Total	$184,116
			Estimated Project Cost	$190,000

PC9138 Stormwater Pond Retrofit



Address: Behind 10305 Nantucket Court, Fairfax, Virginia
Location: Pond near Nantucket Court
Land Owner: Private – Kings Park West Community Association
PIN: 0682 05 A
Control Type: Water quality and quantity control
Drainage Area: 4.73 acres
Receiving Waters: Tributary of Rabbit Branch

Description: The proposed stormwater pond retrofit is east of Nantucket Court and northwest of Allenby Road. The pond, 0036DP, collects runoff from adjacent residential neighborhoods. This project proposes to retrofit the pond to create an extended detention dry pond with sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.



Project Benefits: Extending the pond's detention time will provide better downstream channel protection and promote settlement of particulate pollutants. Installing a sediment forebay will decrease debris and coarse sediment in the pond, which will increase the benefits of the stormwater pond. Below are the project's estimated pollutant removal amounts.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.05	1.08	0.20

Project Design Considerations: Pond is on property owned by King Park West Community Association. There is adequate room on site for pond expansion, to the north and east, and some to the west. See hatched area on project map. Efforts should be made to minimize impacts to existing mature vegetation. The sediment forebays should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.13	AC	$8,500	$1,105
Grading and Excavation	840	CY	$35	$29,400
Structural BMP Retrofit and Incidentals	1	LS	$10,000	$10,000
Embankment	25	CY	$50	$1,250
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	50	SY	$100	$5,000
Organic Compost Soil Amendment	100	CY	$40	$4,000
Plantings	1	LS	5%	$2,850
Ancillary Items	1	LS	5%	$2,850
Erosion and Sediment Control	1	LS	10%	$5,701
			Base Construction Cost	$68,406
			Mobilization (5%)	$3,420
			Subtotal 1	$71,826
			Contingency (25%)	$17,957
			Subtotal 2	$89,783
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$40,402
			Total	$130,185
			Estimated Project Cost	$140,000

PC9139 Stormwater Pond Retrofit

Address: 10697 Braddock Rd., Fairfax, Virginia
Location: University Mall Shopping Center
Land Owner: Private – Private Owner
PIN: 0681 01 0009
Control Type: Water quality and quantity control
Drainage Area: 21.85 acres
Receiving Waters: Tributary of Sideburn Branch

Description: Existing pond receives runoff from shopping center and parking lot. The stormwater is conveyed in a closed system from north to west. Runoff is also received from a subdivision to the east. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. This project proposes retrofitting the existing pond to create an extended detention dry pond with sediment forebays.

Project Benefits: Extending the pond's detention time will provide better channel protection and promote particulate pollutant settlement. Installing the sediment forebays will reduce debris and coarse sediment in the pond and will improve the infiltration of the pond. Since this pond already provides some water quality the TSS removal will remain the same, but the TN removal and TP removal will increase by 25% and 10% respectively. Below are the project's estimated pollutant removal amounts. Below are the project's estimated pollutant removal amounts

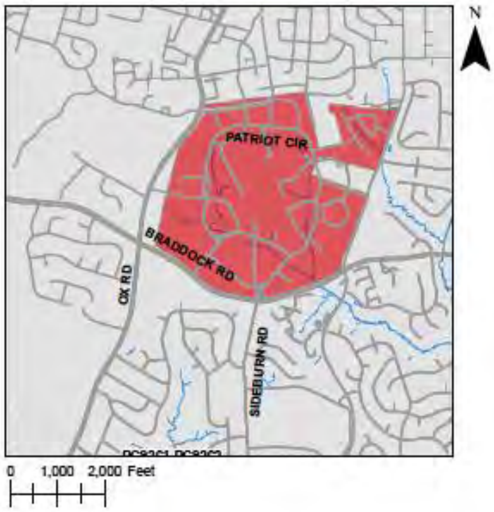
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.00	35.38	1.59

Project Design Considerations: Project is on private property. Property owner same as that of the shopping center area. Records show no easements on or near the property. Pond is behind a large brick fence. A large amount of impervious area drains to the pond from shopping center buildings and parking area. Efforts should be made to minimize impacts to existing mature vegetation. The sediment forebays should account for approximately 10% of the pond area. The vegetative buffer should be 10-15' off of the top of bank.

Cost:

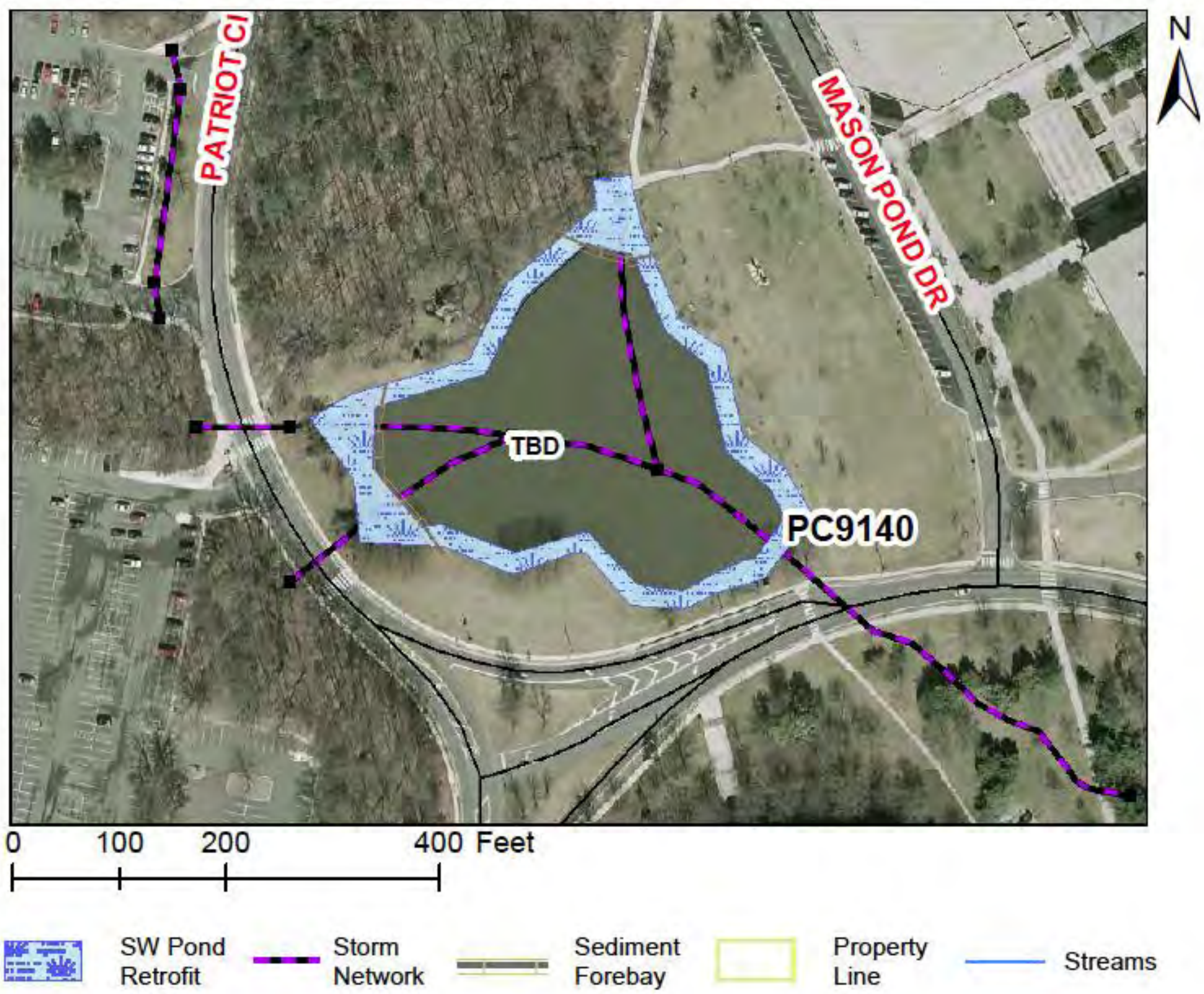
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.25	AC	$8,500	$2,125
Grading and Excavation	1500	CY	$35	$52,500
Structural BMP Retrofit and Incidentals	1	LS	$15,000	$15,000
Embankment	30	CY	$50	$1,500
Outflow Pipe	50	LF	$125	$6,250
Rip Rap Stabilization	75	SY	$100	$7,500
Organic Compost Soil Amendment	190	CY	$40	$7,600
Plantings	1	LS	5%	$4,624
Ancillary Items	1	LS	5%	$4,624
Erosion and Sediment Control	1	LS	10%	$9,248
			Base Construction Cost	$110,970
			Mobilization (5%)	$5,549
			Subtotal 1	$116,519
			Contingency (25%)	$29,130
			Subtotal 2	$145,648
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$65,542
			Total	$211,190
			Estimated Project Cost	$220,000

PC9140 Stormwater Pond Retrofit



Address: Intersection of Mason Pond Dr. and Roanoke River Lane, Fairfax, Virginia
Location: Pond near Roanoke River Lane
Land Owner: Public - George Mason University
PIN: 0682 01 0003
Control Type: Water quality and quantity control
Drainage Area: 140.03 acres
Receiving Waters: Tributary of Rabbit Branch

Description: This project proposes the retrofit of an existing wet pond at George Mason University, near Mason Pond Drive and Roanoke River Lane, to create a wetland system with sediment forebays and bench planting. The sediment forebays will provide pretreatment of stormwater runoff and the bench planting will increase the pollutant removal. The primary problem indicators are pollutants, including nitrogen, phosphorus and total suspended solids.



Project Benefits: This retrofit will modify the existing pond to increase pollutant removal and to provide adequate channel protection above the permanent pool. It will also create an environment for gravitational settling, biological uptake and microbial activity. Below are the project's estimated pollutant removal amounts.

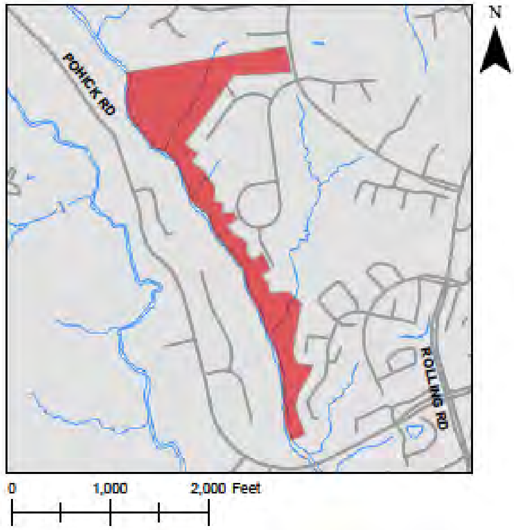
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal I(Lbs/Yr)
8.67	174.61	48.44

Project Design Considerations: A significant amount of impervious area drains to this pond, so additional treatment would be beneficial. The sediment forebays should be 10% as large as the pond. The aquatic bench should be planted 10 to 15' inward from the water's edge. The vegetative buffer should be 10 to 15' outward from the water's edge. Records do not currently show an existing easement, but the entire area is owned by George Mason University. The pond receives runoff from three pipes, and therefore would require the construction of three sediment forebays. The forebays would be created by adding berms in the pond (see map). The area of the bench plantings is shown on the map by the lighter portion of the pond on the perimeter. The existing pond is the darker inner portion.

Cost:

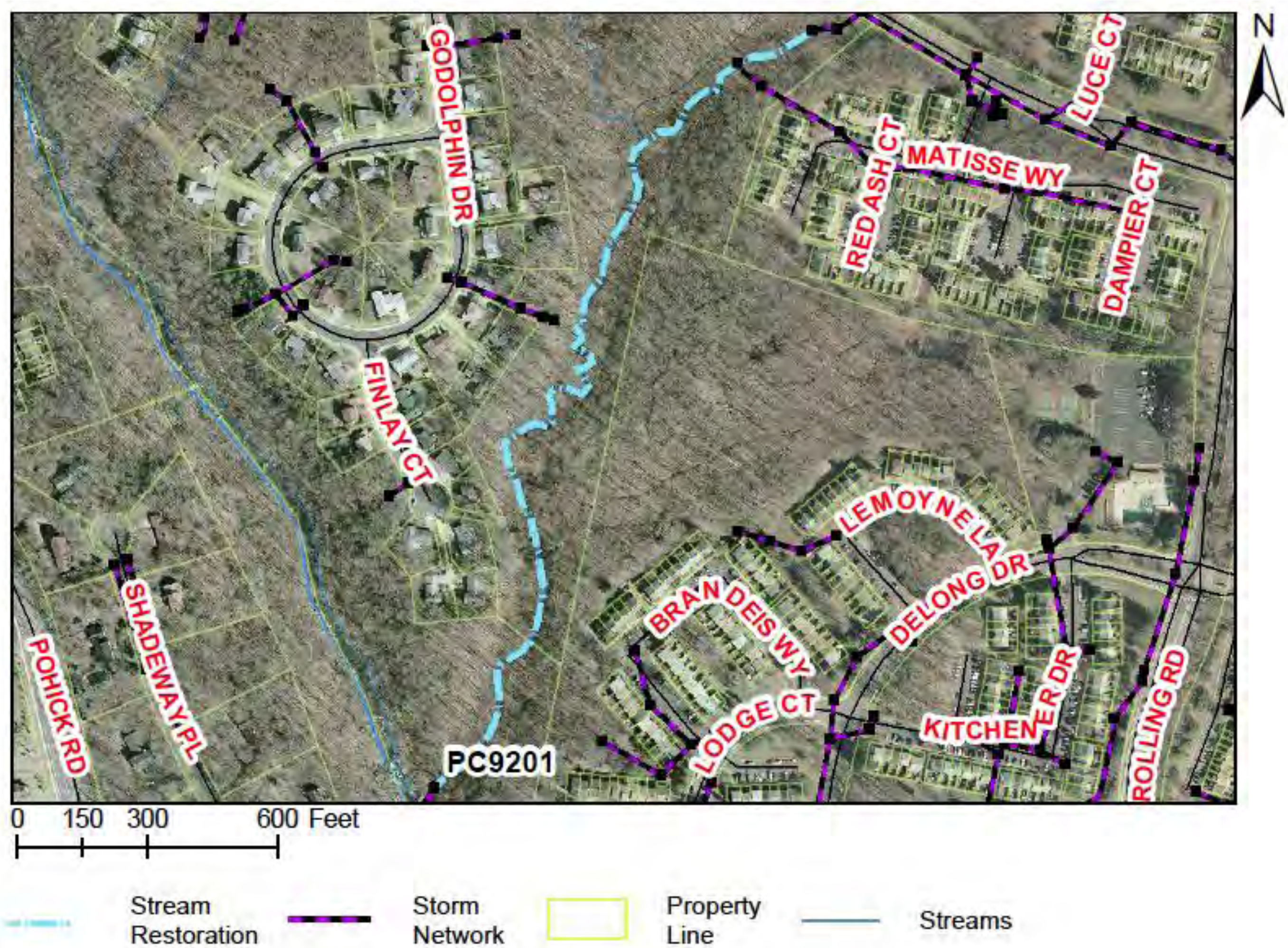
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.65	AC	$8,500	$5,525
Grading and Excavation	1000	CY	$35	$35,000
Structural BMP Retrofit and Incidentals	1	LS	$20,000	$20,000
Embankment	50	CY	$50	$2,500
Outflow Pipe	150	LF	$125	$18,750
Rip Rap Stabilization	90	SY	$100	$9,000
Organic Compost Soil Amendment	500	CY	$40	$20,000
Plantings	1	LS	5%	$5,539
Ancillary Items	1	LS	5%	$5,539
Erosion and Sediment Control	1	LS	10%	$11,078
			Base Construction Cost	$132,930
			Mobilization (5%)	$6,647
			Subtotal 1	$139,577
			Contingency (25%)	$34,894
			Subtotal 2	$174,471
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$78,512
			Total	$252,982
			Estimated Project Cost	$260,000

PC9201 Stream Restoration



Address: Behind 7756 Matisse Way, Springfield, Virginia
Location: Stream behind Matisse Way
Land Owner: Public/Local – FCPA
PIN: 0984 06 E, 0984 06 C
Control Type: Water quality control
Drainage Area:
Receiving Waters: Tributary of Pohick Creek

Description: This stream restoration is located west of Matisse Way and east of Godolphin Dr., and is located on Fairfax County Park Authority land. This project proposes repairing bank and bed erosion, restoring channel morphology, and reducing excessibe channel meander. Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the channel and controlling unwanted meander.



Project Benefits: This stream restoration will help eliminate erosion from the stream and will reduce the amount of instream sediment and the resulting pollutants. This will result in a deeper dry weather channel and better functioning stream shape. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

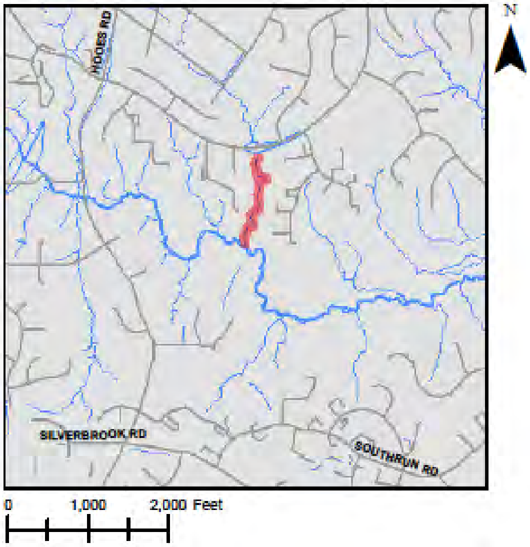
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
43.15	69.04	26.75

Project Design Considerations: The stream receives runoff from two closed storm systems at its upstream end. These outfalls are from dense townhouses with no stormwater treatment. Installing settling basins and boulder clusters would help roadway sediment settle out and reduce erosive velocities. Other measures include using streambank shaping, erosion control fabrics, and vegetation establishment.

Cost:

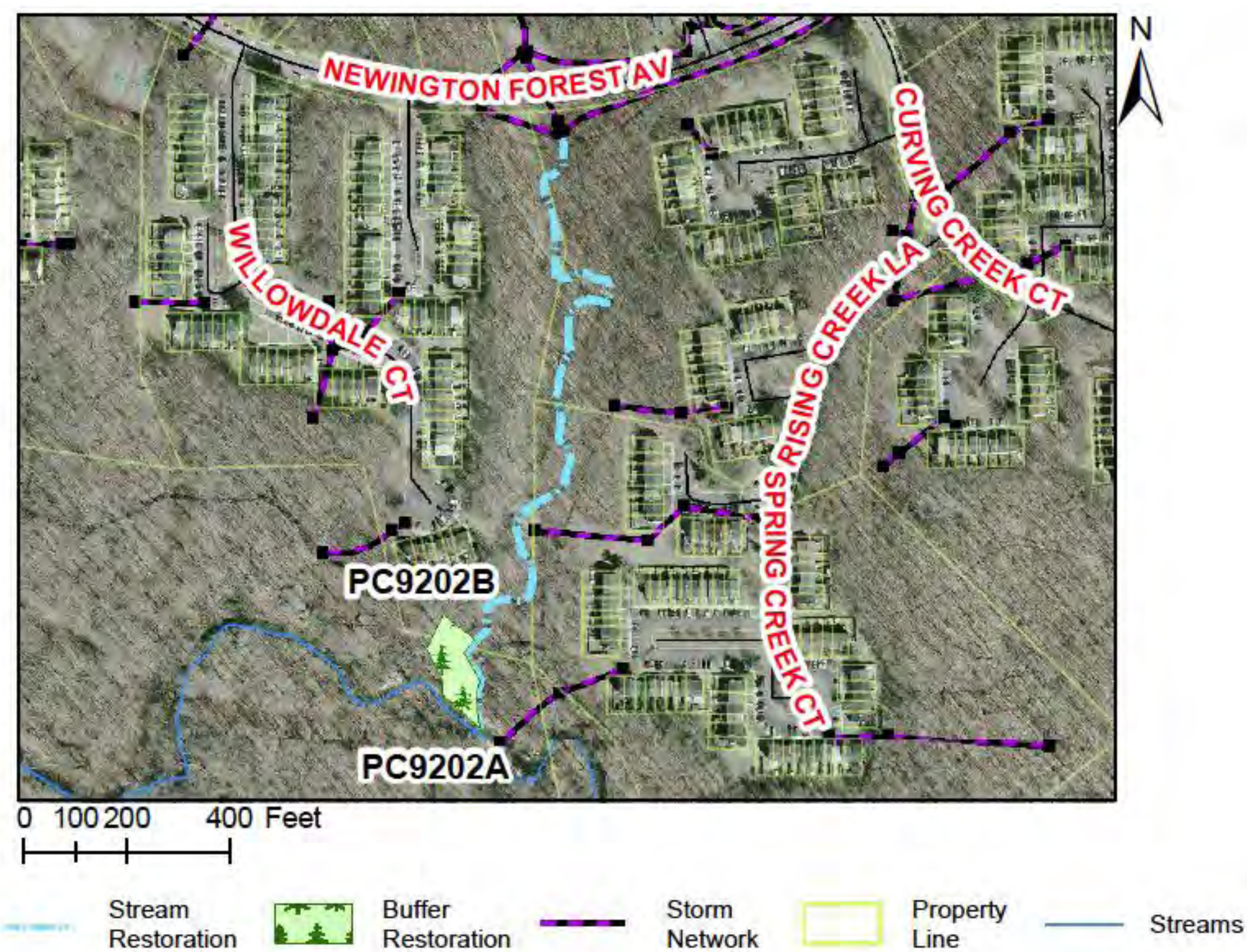
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	2381	LF	$200	$476,200
Clear and Grub	2.74	AC	$10,000	$27,382
Plantings	2.74	AC	$25,000	$68,454
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$67,204
Ancillary Items	1	LS	5%	$33,602
			Base Construction Cost	$772,841
			Mobilization (5%)	$38,642
			Subtotal 1	$811,483
			Contingency (25%)	$202,871
			Subtotal 2	$1,014,353
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$456,459
			Total	$1,470,812
			Estimated Project Cost	$1,480,000

PC9202 Stream Restoration Suite



Address: Behind 8181 Willowdale Court, Fairfax, Virginia
Location: Near South Run Stream Valley Park
Land Owner: Public/Private - Fairfax County Park Authority, Newington Forest Community Association,
PIN: 0983 02 0001B, 0981 04 W, 0981 04 T, 0983 02 V
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of South Run

Description: Subproject A is a stream restoration and will repair bank and bed erosion in the stream west of Spring Creek Court and southeast of Willowdale Court. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. Subproject B is a buffer repair near the downstream end of the stream restoration. This buffer will provide additonal treatment for runoff from the adjacent townhouses. The indicators are stream bank buffer deficiencies in headwater riparian habitat.



Project Benefits: Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. The buffer repair will re-establish the ripiarian protection areat (RPA). Increasing vegetation will provide additional filtration of pollutants and will reduce runoff by intercepting water. This will increase surface storage, promote infiltration, and minimize stream erosion. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

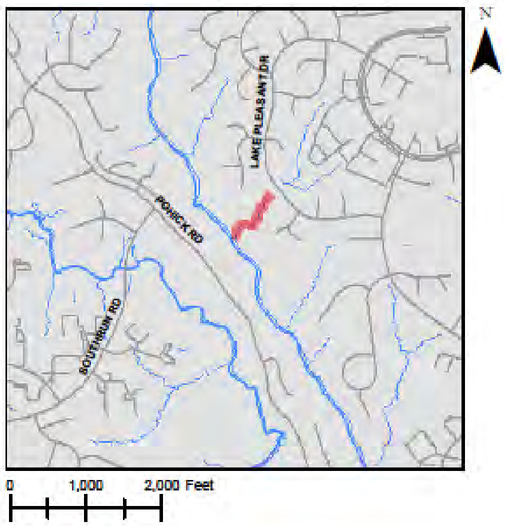
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
7.84	12.55	4.86

Project Design Considerations: Stream banks are steep and stream access is obstructed. Trees were hanging into the stream and there were many sediment deposits creating "islands." Areas were dammed. The degraded buffer area is surrounded by vegetation; therefore its deficiency is minimized. The degraded area could act as a staging point for the stream restoration. Records show no existing easements and stream appears to be in HOA open space. Project should be coordinated with outfall improvement project PC9204 (located just west of Rising Creek Court) to try and maximize the project benefits.

Cost:

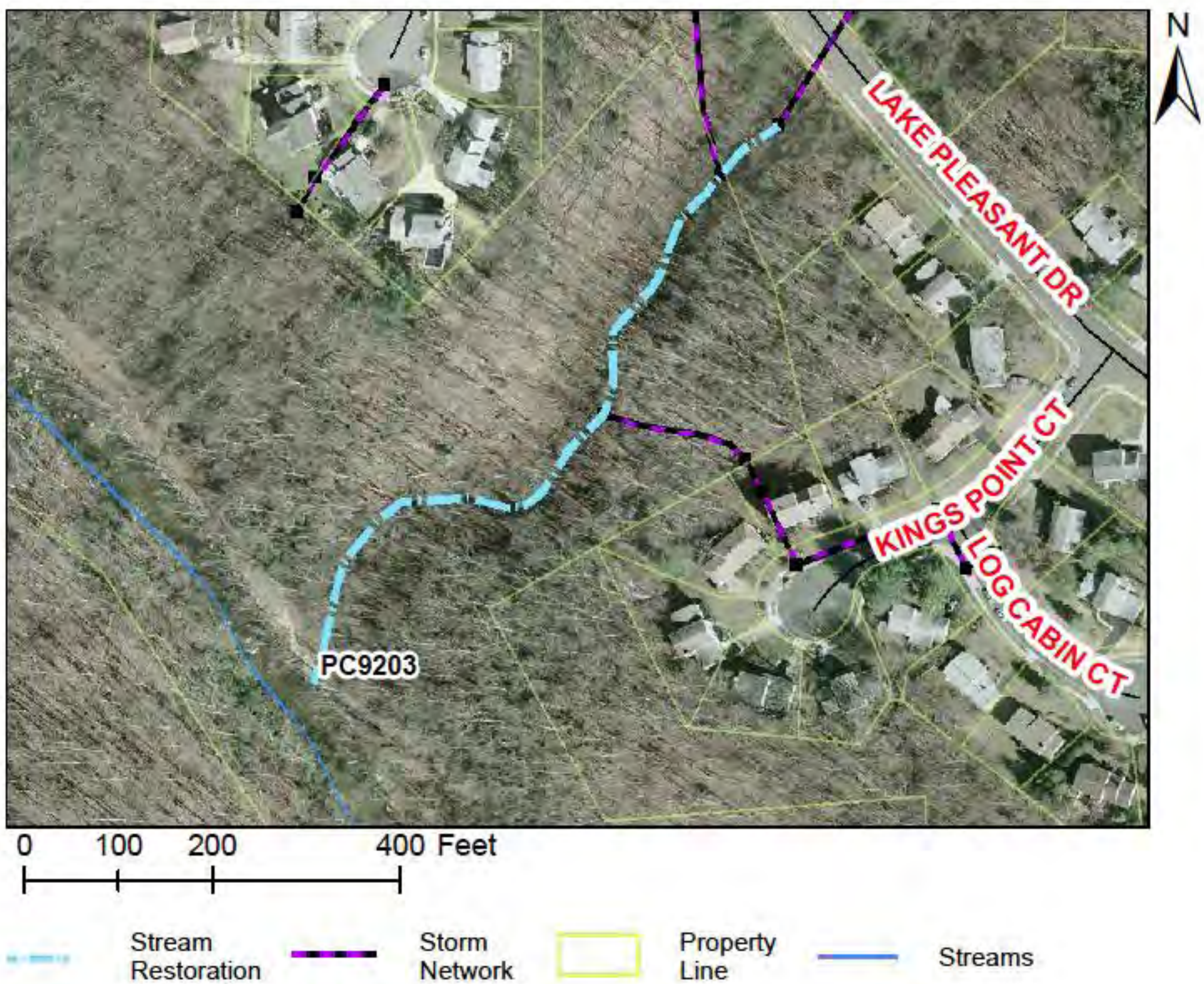
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Stream restoration west of Spring Creek Ct.			
Construct New Channel	1510	LF	$200	$302,000
Clear and Grub	1.7365	AC	$10,000	$17,365
Plantings	1.7365	AC	$25,000	$43,413
Additional Cost, First 500 LF	500	LF	$200	$100,000
Subproject B	Stream Buffer Behind Willowdale Ct.			
Plantings	0.27	AC	$25,000	$6,750
Organic Compost Soil Amendment	870	CY	$40	$34,800
Invasive Plant Eradication	1	LS	10%	$4,155
Common Items				
Ancillary Items	1	LS	5%	$25,424
Erosion and Sediment Control	1	LS	10%	$50,848
			Base Construction Cost	$584,755
			Mobilization (5%)	$29,238
			Subtotal 1	$613,993
			Contingency (25%)	$153,498
			Subtotal 2	$767,491
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$345,371
			Total	$1,112,862
			Estimated Project Cost	$1,120,000

PC9203 Stream Restoration



Address: 8100 Lake Pleasant Dr. (Adj. to Kings Point Ct.), Springfield, Virginia
Location: Stream along Lake Pleasant Dr.
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0982 06 B2, 0982 06 A2
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: Stream is southwest of Lake Pleasant Drive and north of Kings Point Court. The stream conveys runoff from adjacent residential neighborhoods and flows southwest. This project proposes repairing bank and bed erosion to restore channel morphology. The primary indicator is poor channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Stream stabilization will help to reduce sediment loads to the stream channel and control unwanted meander. Stabilization will help in reducing stream erosion over time. Replanting will help reduce pollutant loads. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

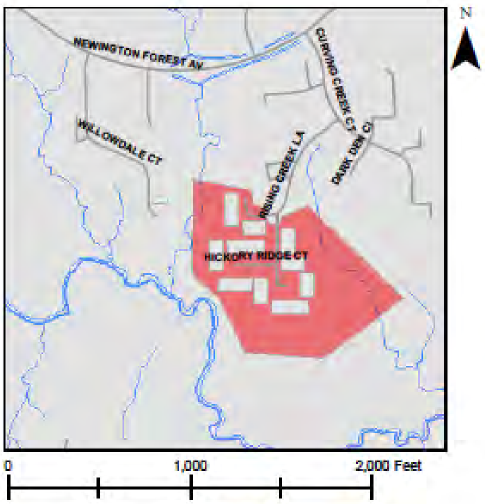
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
10.71	14.57	5.64

Project Design Considerations: While there is significant contributing impervious area, the buffer area appears well maintained. Efforts should be made to minimize the impact to this existing vegetation. A majority of the land is owned by Fairfax County Park Authority; however the farthest upstream portion is on property owned by Saratoga Community Association. No easements exist on site according to the County-provided GIS data.

Cost:

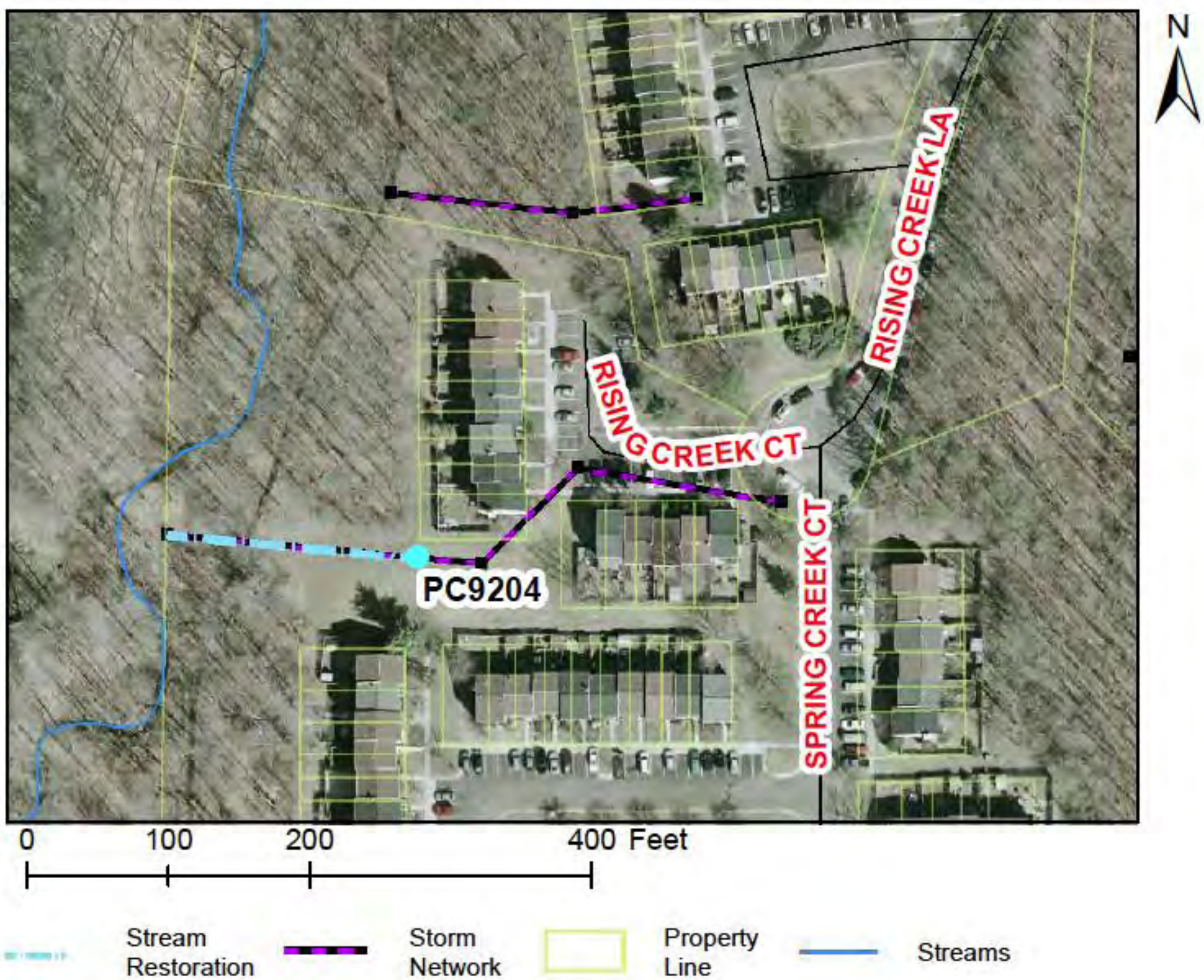
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	867	LF	$200	$173,400
Clear and Grub	1.00	AC	$10,000	$9,971
Plantings	1.00	AC	$25,000	$24,926
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$30,830
Ancillary Items	1	LS	5%	$15,415
			Base Construction Cost	$354,541
			Mobilization (5%)	$17,727
			Subtotal 1	$372,268
			Contingency (25%)	$93,067
			Subtotal 2	$465,335
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$209,401
			Total	$674,736
			Estimated Project Cost	$680,000

PC9204 Stream Restoration



Address: Next to 8661 Rising Creek Court, Springfield, Virginia
Location: West of townhouses on Rising Creek Court
Land Owner: Private – Newington Forest Community Association
PIN: 0983 02 V
Control Type: Water quality control
Drainage Area: 0.74 acres
Receiving Waters: Tributary of South Run

Description: This project proposes daylighting a pipe from Rising Creek Court farther upstream with an energy dissipation device and construction of an open channel. The energy dissipation device consists of a series of step pools reinforced with either rocks or logs. The daylighting will help reduce the velocity of the water entering the stream. The primary problem indicator is poor channel morphology.



Project Benefits: Redirecting a closed system back to an aboveground channel will return the water to its natural state sooner. This will reduce runoff rates and volumes, which will help minimize stream erosion. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

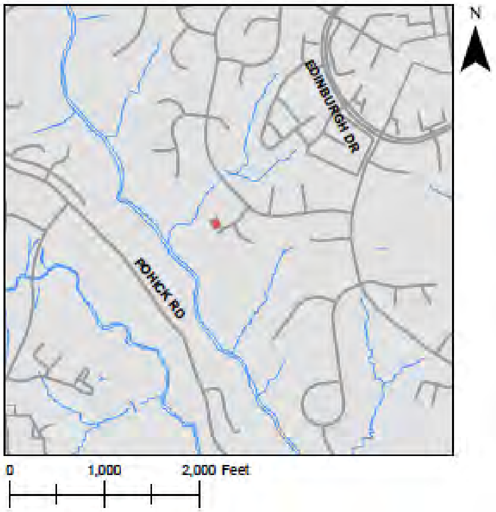
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.92	1.48	0.57

Project Design Considerations: The high density townhouses have a high percentage of impervious area. Much of the outfall run to be daylighted is not vegetated. The number of step pools required will be determined by the slope and length of pipe daylighted. Records do not show an existing stormwater easement, but the pipe and stream are located in the community open space. This project discharges into the stream that will be restored in project PC9202. Sequencing should be coordinated to combine efforts and minimize additional disturbances.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	178	LF	$200	$35,600
Clear and Grub	0.20	AC	$10,000	$2,047
Plantings	0.20	AC	$25,000	$5,118
Additional Cost, First 500 LF	178	LF	$200	$35,600
Erosion and Sediment Control	1	LS	10%	$7,836
Ancillary Items	1	LS	5%	$3,918
			Base Construction Cost	$90,119
			Mobilization (5%)	$4,506
			Subtotal 1	$94,625
			Contingency (25%)	$23,656
			Subtotal 2	$118,281
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$53,227
			Total	$171,508
			Estimated Project Cost	$180,000

PC9205 Stream Restoration



Address: Behind 8106 Kings Point Court, Springfield, Virginia
Location: Stream near Kings Point Court
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0982 06 B2
Control Type: Water quality and quantity control
Drainage Area: 3.32 acres
Receiving Waters: Tributary of Pohick Creek

Description: Closed system collects runoff from Kings Point Court and one other cul-de-sac. The systems outfalls into a stream to the northwest. This project proposes daylighting the outfall pipe farther upstream. The primary problem indicator is poor channel morphology. This project returns the water to its natural state before entering the stream, allowing more time for the water to infiltrate and the flow velocities to decrease.

Project Benefits: Daylighting this section of the storm pipe will allow for the creation of step pools, which provides a reduction of energy in the stormwater discharge and allows for settling of some of the stormwater sediment. This project will encourage infiltration. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

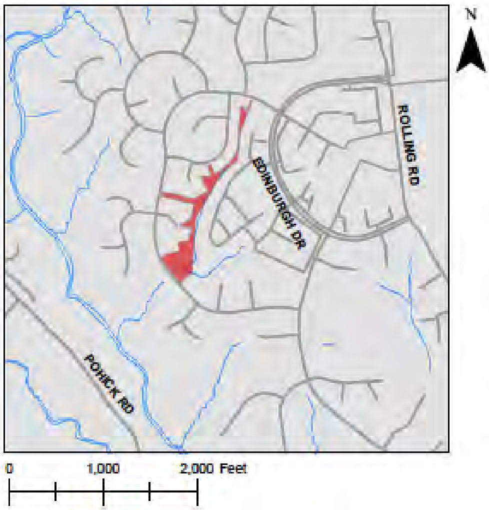
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
2.00	2.72	1.05

Project Design Considerations: This project discharges into a proposed stream restoration (PC9203). This daylighting project should be coordinated with the stream restoration project to help facilitate access to the pipe, since the pipe is located behind a single family home owned by Thomas Lambert. The slope of the land over the existing pipe is approximately 20%. A number of stepping pools will need to be used to reduce velocity of the discharge. The number of stepping pools will depend on the invert elevations of the storm pipe at the start and end of the daylighting.

Cost:

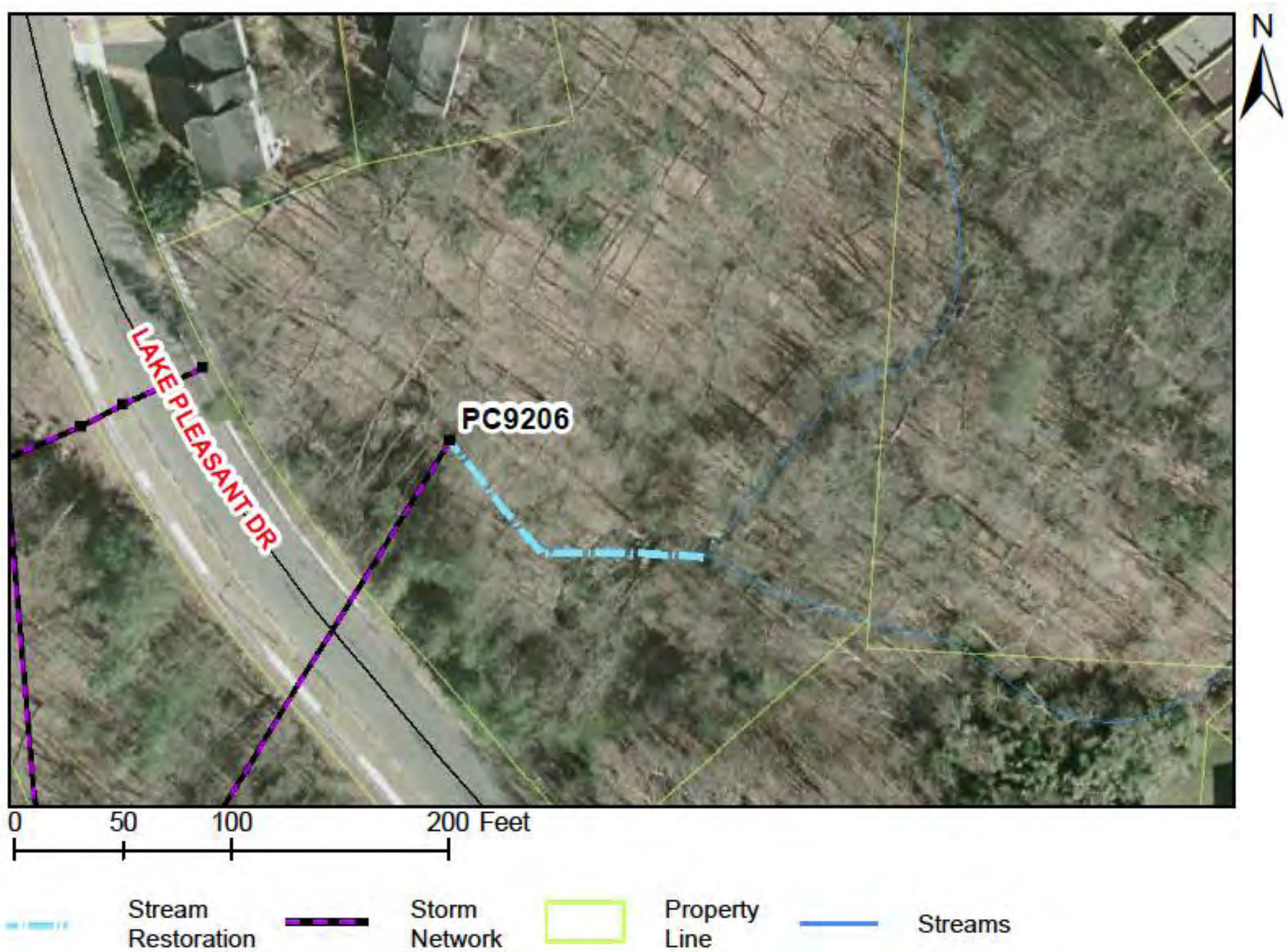
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	162	LF	$200	$32,400
Clear and Grub	0.19	AC	$10,000	$1,863
Plantings	0.19	AC	$25,000	$4,658
Additional Cost, First 500 LF	162	LF	$200	$32,400
Erosion and Sediment Control	1	LS	10%	$7,132
Ancillary Items	1	LS	5%	$3,566
			Base Construction Cost	$82,019
			Mobilization (5%)	$4,101
			Subtotal 1	$86,120
			Contingency (25%)	$21,530
			Subtotal 2	$107,649
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$48,442
			Total	$156,092
			Estimated Project Cost	$160,000

PC9206 Stream Restoration



Address: Next to 8021 Lake Pleasant Drive, Springfield, Virginia
Location: Stream near Lake Pleasant Dr.
Land Owner: Private – Saratoga Community Association
PIN: 0982 06 B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: The project proposes restoring the stream just northeast of Lake Pleasant drive. The current stream has bank and bed erosion and poor channel morphology. The stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. This stream segment is steep and receives runoff from townhomes and a roadway outfall. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric, and rapid vegetation establishment.



Project Benefits: This stream restoration will reduce erosion and instream sediment. This will result in a deeper dry weather channel and better functioning stream shape. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

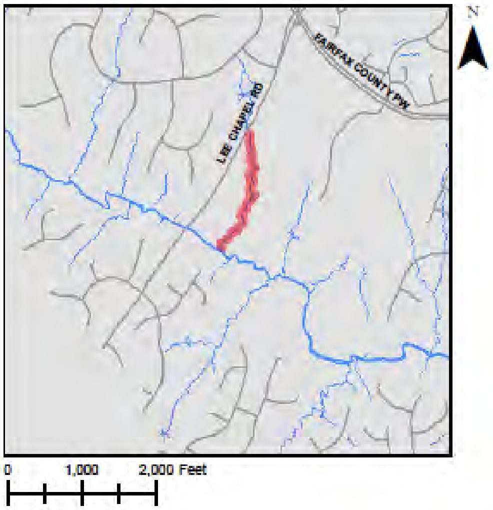
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.74	2.37	0.92

Project Design Considerations: This short stream segment receives flow from two branches upstream. To the north, the stream receives runoff from a row of townhouses. To the east, a cul-de-sac drains across a single family lot into the stream. The contours show the stream has a slope of approximately 7.1%. To address this steep slope, grade control measures and bank reinforcement will be required.

Cost:

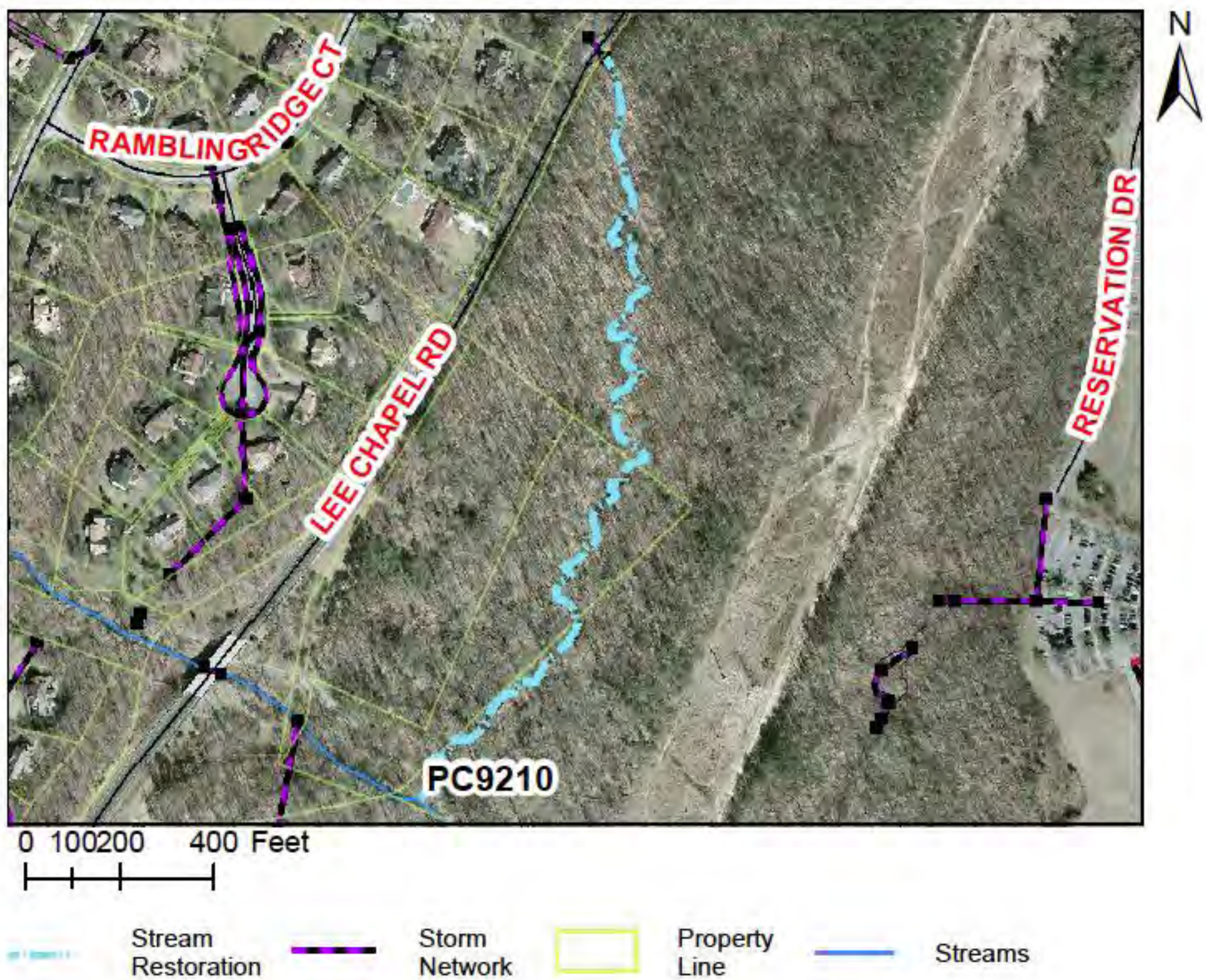
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	141	LF	$200	$28,200
Clear and Grub	0.16	AC	$10,000	$1,622
Plantings	0.16	AC	$25,000	$4,054
Additional Cost, First 500 LF	141	LF	$200	$28,200
Erosion and Sediment Control	1	LS	10%	$6,208
Ancillary Items	1	LS	5%	$3,104
			Base Construction Cost	$71,387
			Mobilization (5%)	$3,569
			Subtotal 1	$74,956
			Contingency (25%)	$18,739
			Subtotal 2	$93,695
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$42,163
			Total	$135,858
			Estimated Project Cost	$140,000

PC9210 Stream Restoration



Address: Behind 7801 Preakness Lane, Fairfax Station, Virginia
Location: Stream behind Oak Bridge Lane
Land Owner: Public – Fairfax County Park Authority
PIN: 0883 01 0004, 0971 01 0001A
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of South Run

Description: This project proposes repairing bank and bed erosion and restoring the channel morphology of the stream that runs parallel on the east side of Lee Chapel Road. The proposed restoration ends where the stream connects with a perpendicular stream to the south. The primary indicator is the poor channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Stabilizing this stream will reduce erosion and instream sediment and the associated pollutants with this sediment. The stream stabilization will reduce sediment while maintaining the capacity and controlling unwanted meander of the stream. The project will not only repair existing erosion but prevent future erosion over time by implementing the measures above. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

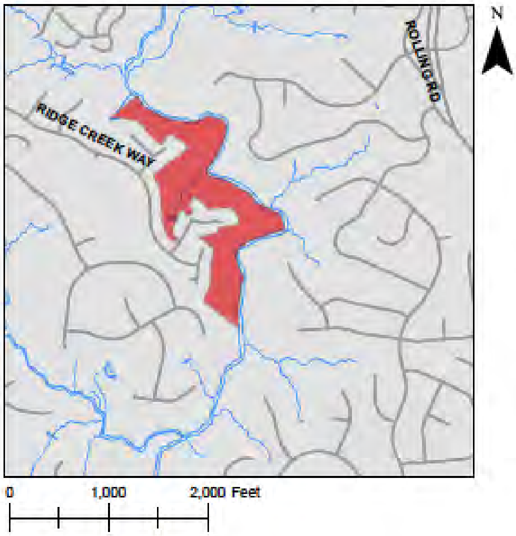
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
42.38	67.81	26.28

Project Design Considerations: This proposed project is in a densely wooded area behind homes and the South Run Recreation Center and is just west of a Dominion Virginia Power easement (open area east of stream on project map). The stream is located in Fairfax County Park Authority land. Efforts should be made to minimize impacts to existing mature vegetation. Measures implemented should address the poor channel morphology.

Cost:

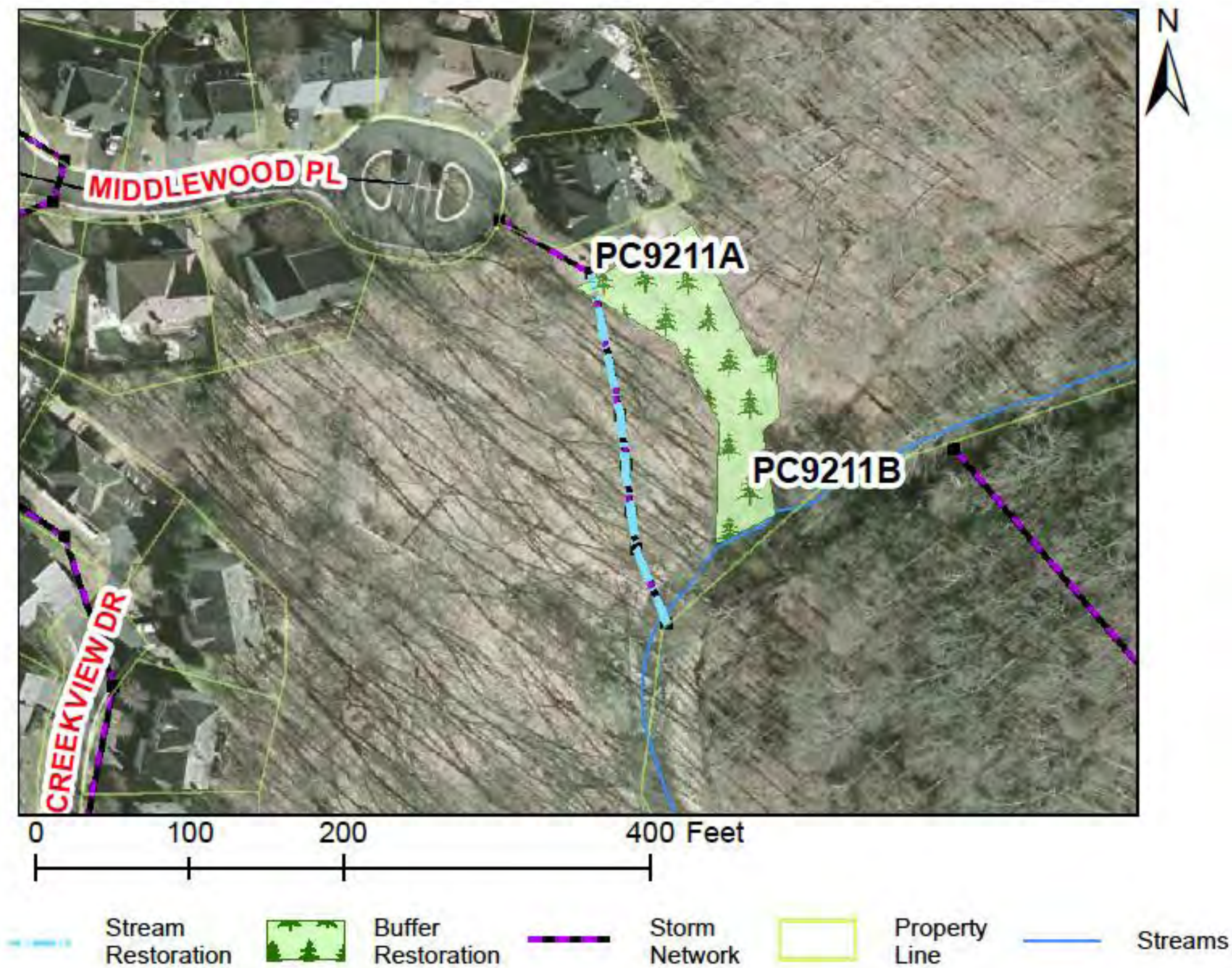
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	2198	LF	$200	$439,600
Clear and Grub	2.53	AC	$10,000	$25,277
Plantings	2.53	AC	$25,000	$63,193
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$62,807
Ancillary Items	1	LS	5%	$31,403
			Base Construction Cost	$722,280
			Mobilization (5%)	$36,114
			Subtotal 1	$758,394
			Contingency (25%)	$189,598
			Subtotal 2	$947,992
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$426,597
			Total	$1,374,589
			Estimated Project Cost	$1,380,000

PC9211 Stream Restoration Suite



Address: Near 8000 Middlewood Place, Springfield, Virginia
Location: Stream/Buffer near Middlewood Place
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0894 24 A
Control Type: Water quality control
Drainage Area: 0.71 acres
Receiving Waters: Tributary of Pohick Creek

Description: Subproject A proposes to daylight a pipe that collects runoff at the end of Middlewood Place and pipes it south into a stream. The primary indicator is channel morphology. The pipe leading into the stream is very steep, outfalling runoff at potentially erosive velocities. Subproject B proposes re-planting upland buffer area and providing reforestation. This project was proposed due to the existing stream buffer being deficient.



Project Benefits: Daylighting this storm pipe will help poor downstream channel morphology by redirecting a closed system back to an aboveground channel, returning the water to its natural state. This will reduce velocities entering the stream and minimize stream erosion. Buffer restoration will increase vegetation for filtration of pollutants and reduce runoff by intercepting the water and increasing surface storage and infiltration. Buffers can also help provide food and temperature control for organisms in and around the stream. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

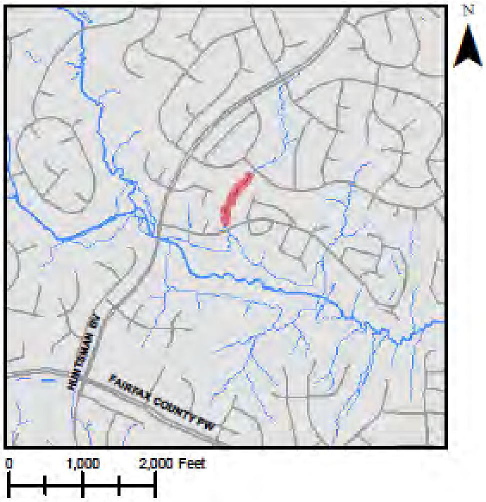
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
4.82	7.71	2.99

Project Design Considerations: Projects proposed on are Fairfax County Park Authority property. Projects should be built in conjunction with one another. The number of step pools required will be determined by the slope and length of pipe daylighted. Efforts should be made to minimize impacts to mature vegetation. Buffer area to be replanted is steep (approximately 4%). Plants should be chosen for the buffer replanting that can survive at this slope. Diameter of pipe to be daylighted is 15".

Cost:

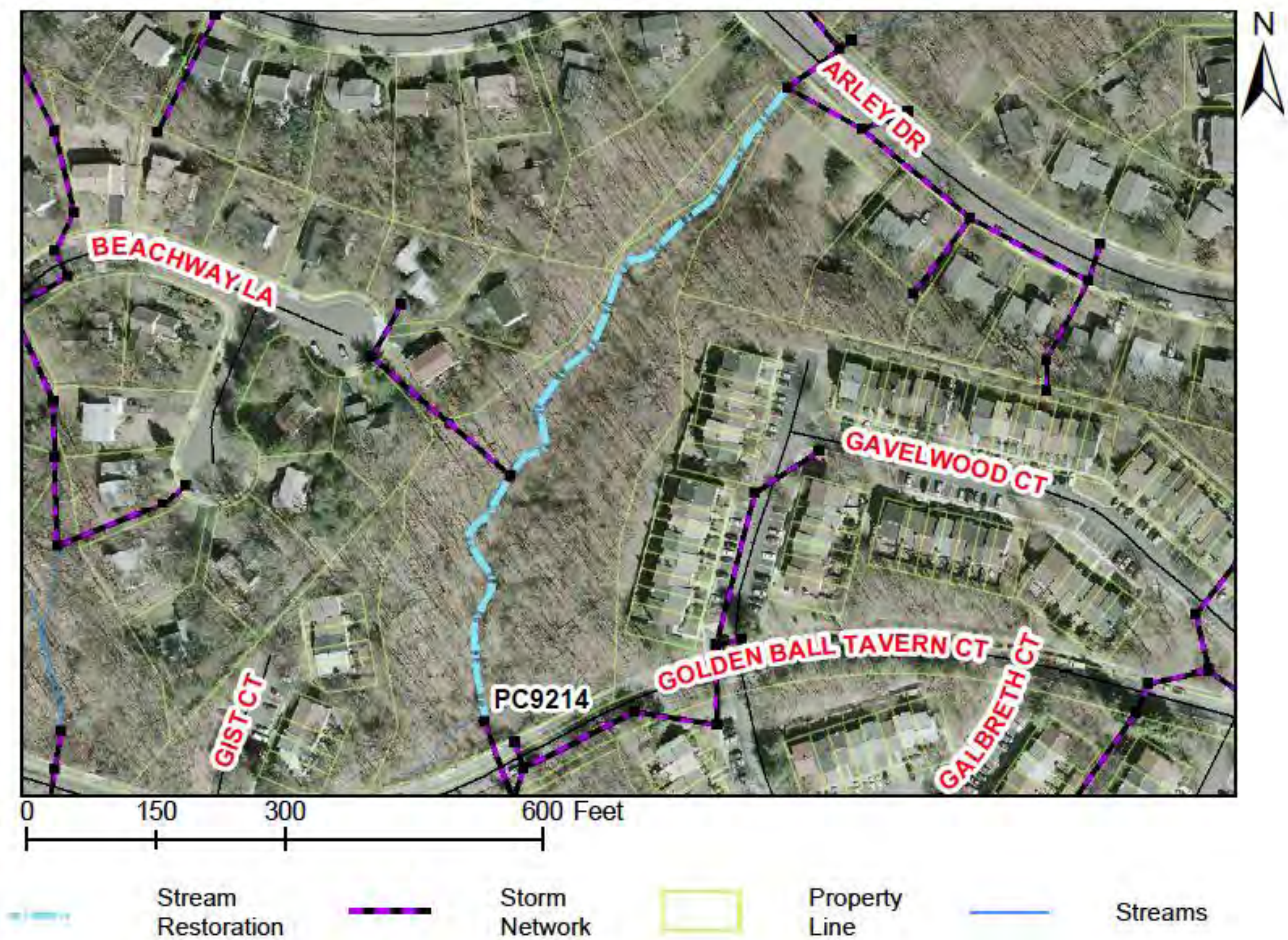
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Stream east of Middlewood Pl.			
Construct New Channel	234	LF	$200	$46,800
Clear and Grub	0.27	AC	$10,000	$2,691
Plantings	0.27	AC	$25,000	$6,728
Additional Cost, First 500 LF	234	LF	$200	$46,800
Subproject B	Stream Buffers Adjacent to Middlewood Pl.			
Plantings	0.22	AC	$25,000	$5,500
Organic Compost Soil Amendment	650	CY	$40	$26,000
Invasive Plan Eradication	1	LS	10%	$3,150
Common Items				
Erosion and Sediment Control	1	LS	10%	$13,452
Ancillary Items	1	LS	5%	$6,726
			Base Construction Cost	$157,846
			Mobilization (5%)	$7,892
			Subtotal 1	$165,739
			Contingency (25%)	$41,435
			Subtotal 2	$207,173
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$93,228
			Total	$300,401
			Estimated Project Cost	$310,000

PC9214 Stream Restoration



Address: Behind 7309 Gist Court, Springfield, Virginia
Location: Stream near Gist Court
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0884 01 0009
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Middle Run

Description: The stream is between Arley Drive and Golden Ball Tavern Court. This project proposes repairing bank and bed erosion, thereby restoring channel morphology. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream, maintaining the capacity of the stream channel and controlling unwanted meander.



Project Benefits: Reducing erosion from this stream will reduce instream sediment and its associated pollutants. Additionally, this stream receives untreated runoff from the surrounding residential areas and would benefit from improvements. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

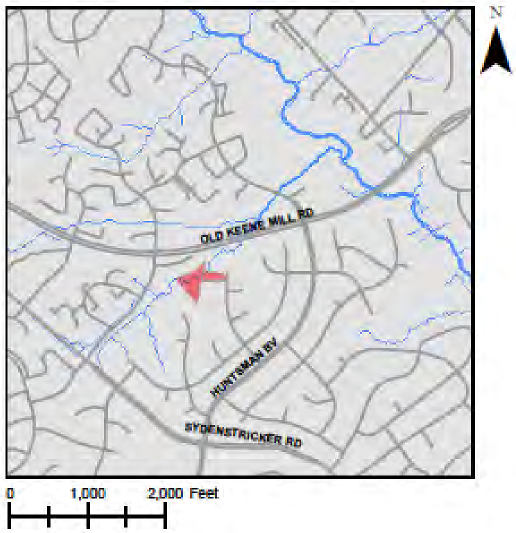
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
8.95	12.17	4.71

Project Design Considerations: The stream is located on Fairfax County Park Authority property. The stream restoration starts and ends at roadway culverts. A storm pipe discharges directly to the middle of the stream restoration. The installation of settling basins and boulder clusters at the outfalls would help roadway sediment settle out of the stormwater runoff and lessen impacts from the increased velocity caused by inflows from the roadway. Stream stabilization techniques would include streambank shaping, rootwad revetments, and rock toe reinforcements. The stream appears to have adequate buffer from the townhouses.

Cost:

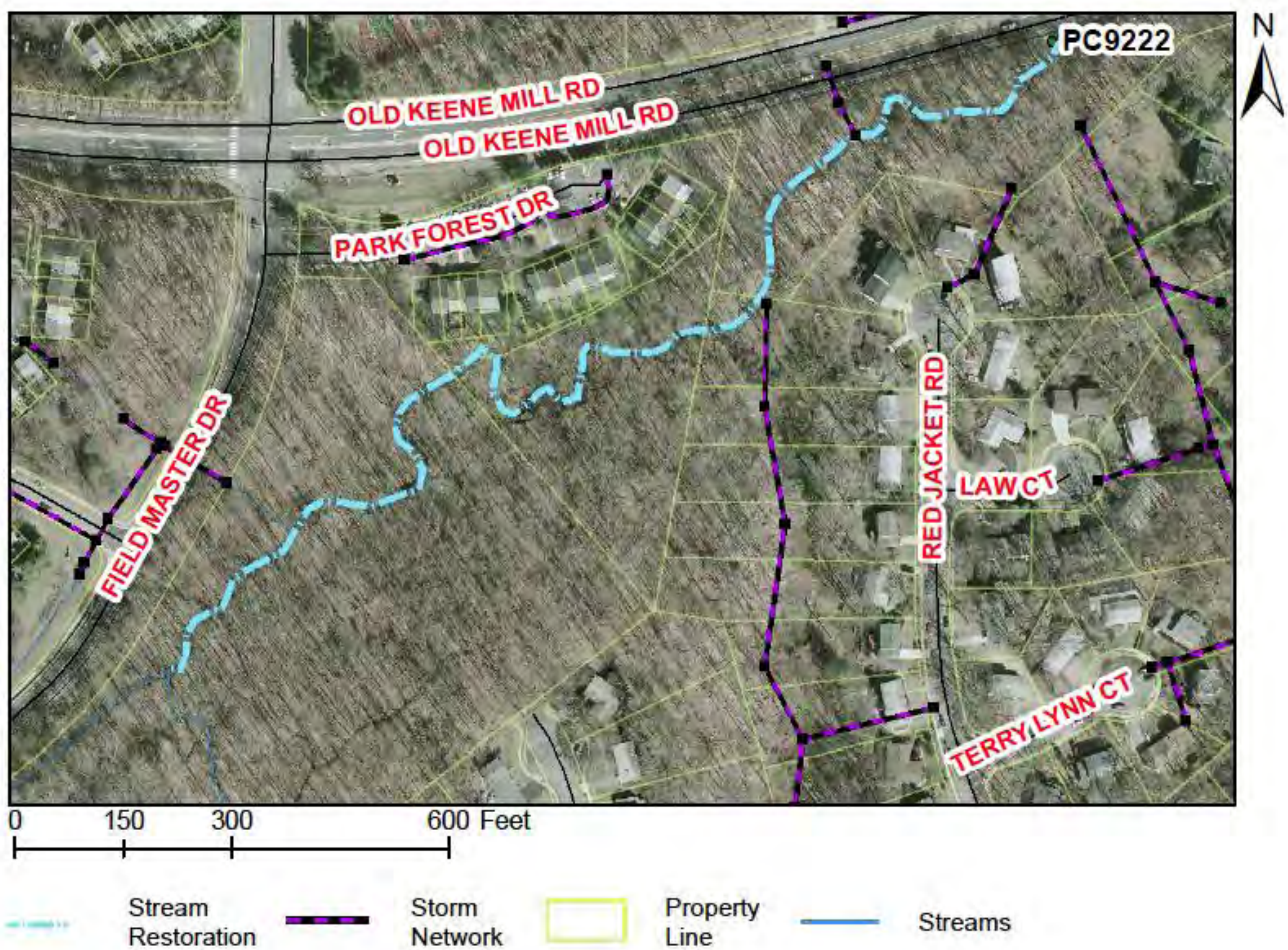
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	904	LF	$200	$180,800
Clear and Grub	1.04	AC	$10,000	$10,396
Plantings	1.04	AC	$25,000	$25,990
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$31,719
Ancillary Items	1	LS	5%	$15,859
			Base Construction Cost	$364,764
			Mobilization (5%)	$18,238
			Subtotal 1	$383,002
			Contingency (25%)	$95,751
			Subtotal 2	$478,753
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$215,439
			Total	$694,191
			Estimated Project Cost	$700,000

PC9222 Stream Restoration



Address: Behind 8817 Bridle Wood Drive, Springfield, Virginia
Location: Stream near Old Keene Mill Road
Land Owner: Public/Private – Virginia Department of Transportation, Fairfax County Park Authority and Private Owner
PIN: 0882 09 A, 0882 22 A, 0882 22 B, 0882 04 0148
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: Stream flowing northeast towards Old Keene Mill Road. Stream collects runoff from several adjacent neighborhoods. This project proposes repairing bank and bed erosion to restore channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. The primary indicators are poor channel morphology. The stream is located on Fairfax County Park Authority land.



Project Benefits: Reducing bed and bank erosion from this stream will reduce instream sediment. Restoring this channel will help ensure the stream does not meander any closer to the townhouses. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

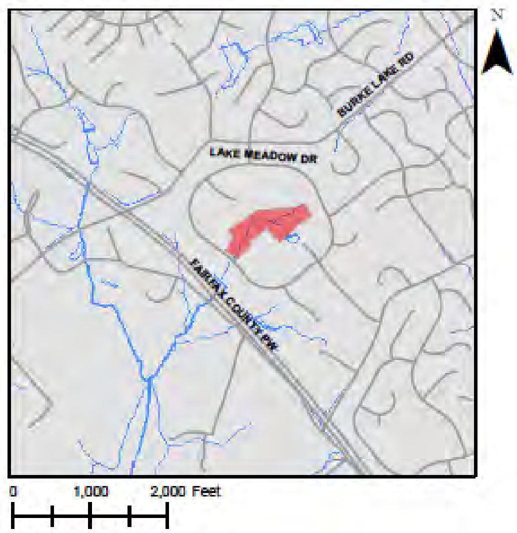
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal I(Lbs/Yr)
39.73	63.56	24.63

Project Design Considerations: This project starts just downstream of two roadway stormwater systems. This project is mostly located on Fairfax County Park Authority land, but a section of the stream crosses the northwest corner of Philip Hodges single family home lot. An easement will be needed for this section. Additionally, another section of the stream meanders near the back of a townhouse. This section should be stabilized and the buffer well vegetated. The stream receives discharge from a stormwater system that drains the houses to the west of Red Jacket Rd. This project will help reduce erosive velocities around this outfall.

Cost:

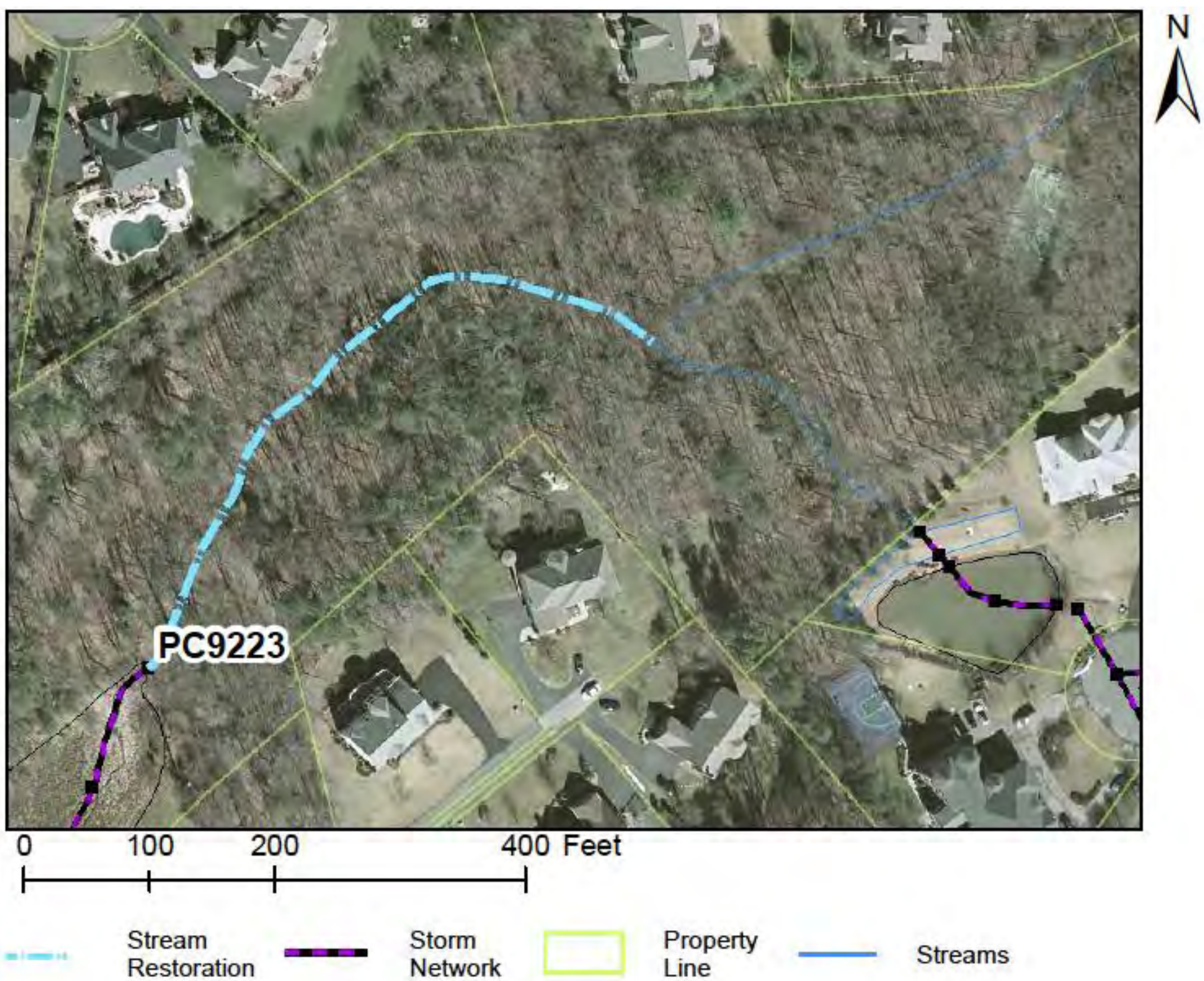
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1970	LF	$200	$394,000
Clear and Grub	2.27	AC	$10,000	$22,655
Plantings	2.27	AC	$25,000	$56,638
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$57,329
Ancillary Items	1	LS	5%	$28,665
			Base Construction Cost	$659,286
			Mobilization (5%)	$32,964
			Subtotal 1	$692,251
			Contingency (25%)	$173,063
			Subtotal 2	$865,313
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$389,391
			Total	$1,254,704
			Estimated Project Cost	$1,260,000

PC9223 Stream Restoration



Address: In open space between Waterside Dr. & Burke Woods Dr., Burke, Virginia
Location: Stream between Waterside Dr. & Burke Woods Dr.
Land Owner: Private – Edgewater Land Bays 2&3 Homeowners Association
PIN: 0881 28 B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of South Run

Description: The stream outfalls into a pond northeast of Lake Meadow Drive. The stream collects runoff by sheetflow from adjacent single family housing development. The primary indicator is poor channel morphology. The project proposes repairing bank and bed erosion, thereby restoring channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: This stream stabilization will reduce sediment loads to the stream, maintaining capacity of the stream channel and controlling unwanted meander of the stream. Repairing the stream will help minimize erosion of the streambanks over time. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

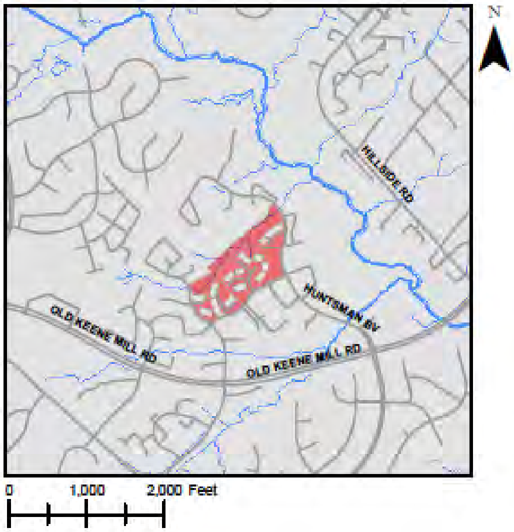
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
5.78	9.25	3.59

Project Design Considerations: There are two stormwater ponds downstream of this location. Property is owned by homeowners association. A stormwater drainage easement exists over this segment of stream and includes the surrounding buffers and downstream ponds. Efforts should be made to minimize impacts to existing vegetation. Streambed is lined in places with very large stones.

Cost:

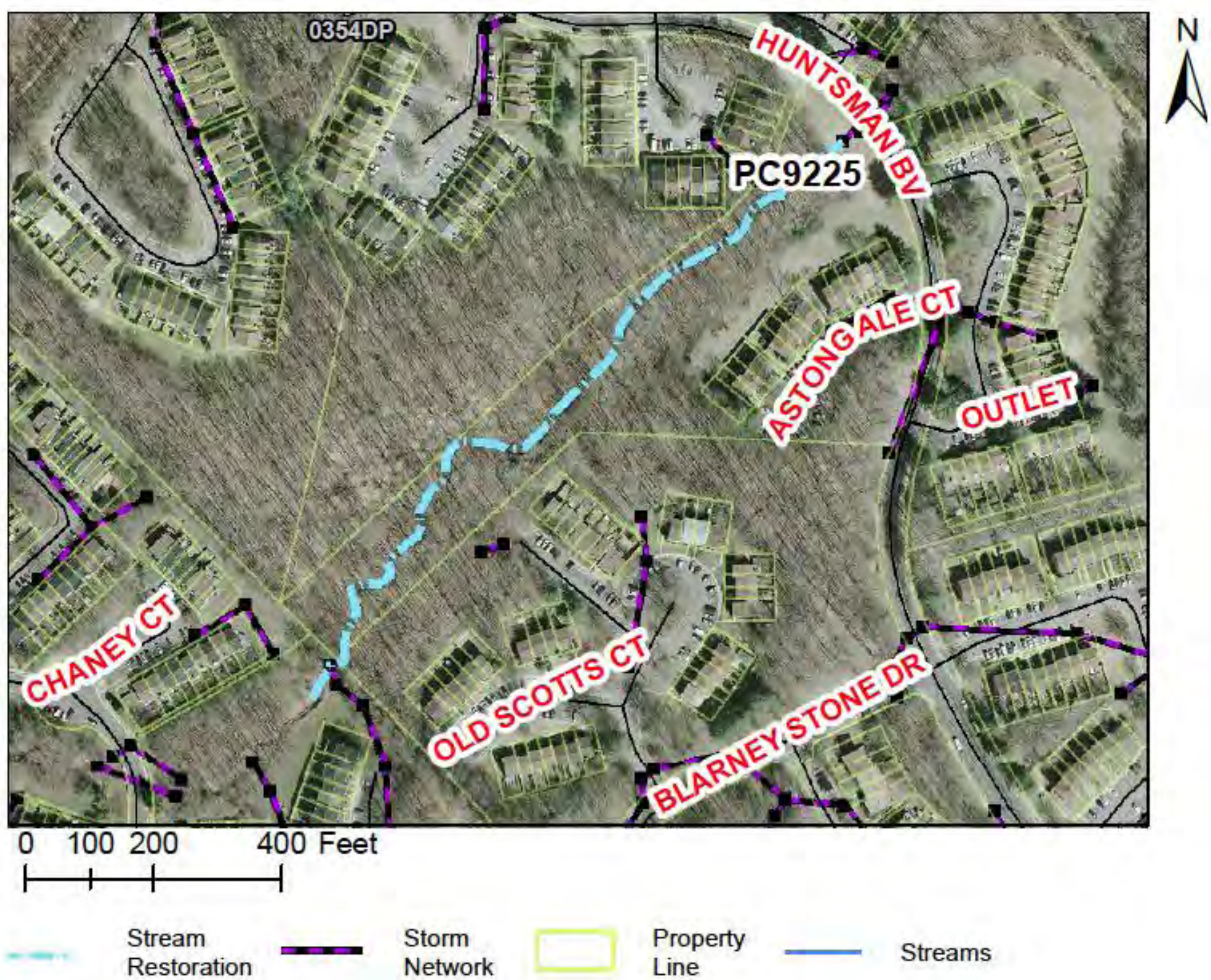
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	588	LF	$200	$117,600
Clear and Grub	0.68	AC	$10,000	$6,762
Plantings	0.68	AC	$25,000	$16,905
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$24,127
Ancillary Items	1	LS	5%	$12,063
			Base Construction Cost	$277,457
			Mobilization (5%)	$13,873
			Subtotal 1	$291,330
			Contingency (25%)	$72,832
			Subtotal 2	$364,162
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$163,873
			Total	$528,035
			Estimated Project Cost	$530,000

PC9225 Stream Restoration



Address: Next to 6297 Kerrydale Drive, Springfield, Virginia
Location: Stream near Kerrydale Drive
Land Owner: Private – Shannon Station Townhouse Association, Four Keene Mill Village Homeowners Association
PIN: 0784 21 M, 0882 1304 B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: Stream is located southwest of Huntsman Boulevard. Receives runoff from adjacent neighborhoods. This project proposes repairing bank and bed erosion to restore channel morphology. The primary indicator is poor channel morphology. Stream conveys runoff from dense residential development. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Stream stabilization will reduce sediment loads while maintaining the capacity of the stream and controling unwanted meander. Measures will be put in place to repair existing erosion and prevent future erosion over time. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

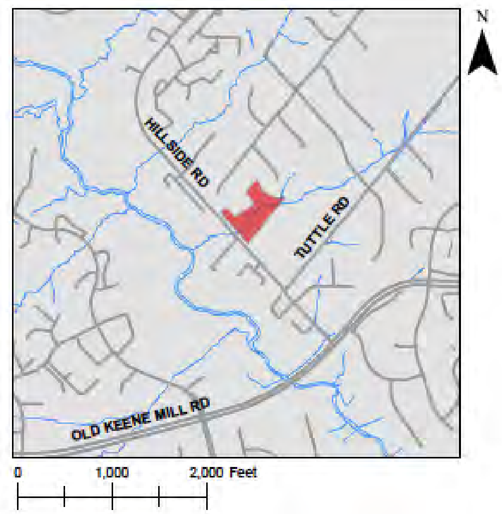
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
76.02	121.62	47.13

Project Design Considerations: The majority of the site is on property owned by Shannon Townhouse Association. A small portion of the site is on property owned by Four Keene Mill Village Homeowners Association. Per County-provided GIS, there are no existing easements on site. Efforts should be taken to minimize impacts to mature vegetation.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1355	LF	$200	$271,000
Clear and Grub	1.56	AC	$10,000	$15,583
Plantings	1.56	AC	$25,000	$38,956
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$42,554
Ancillary Items	1	LS	5%	$21,277
			Base Construction Cost	$489,370
			Mobilization (5%)	$24,468
			Subtotal 1	$513,838
			Contingency (25%)	$128,460
			Subtotal 2	$642,298
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$289,034
			Total	$931,331
			Estimated Project Cost	$940,000

PC9226 Stream Restoration



Address: Behind 6321 Hillside Road, Springfield, Virginia
Location: Stream near Hillside Road
Land Owner: Public/ Private – Virginia Department of Transportation, Red Fox Estate Homeowners Association, Private Owners
PIN: 0793 36 A, 0793 04 0017, 0793 04 0016, 0793 04 0015A, 0793 07 0020A
Control Type: Water quality control
Drainage Area: NA
Receiving Waters: Tributary of Pohick Creek

Description: The stream is located northeast of Hillside Road. The stream receives stormwater runoff as sheet flow from adjacent neighborhoods and three closed systems from the Red Fox Estates neighborhood. Stream restoration proposes repairing bank and bed erosion to restore channel morphology. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads while maintaining capacity of the stream and controlling unwanted meander.

Project Benefits: Stabilizing this stream will reduce erosion and instream sediment. The restoration will also improve the stream habitat. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

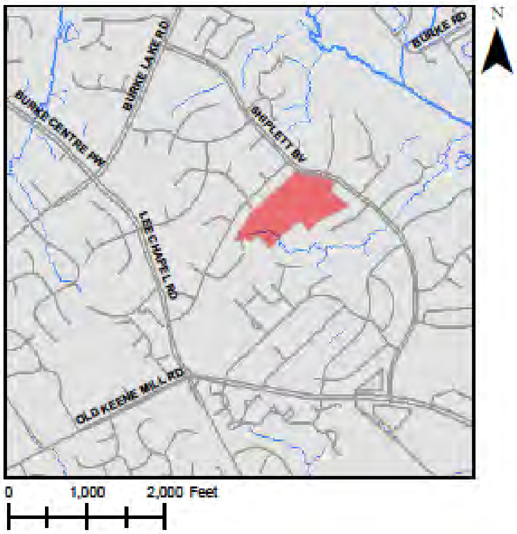
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
22.23	35.56	13.78

Project Design Considerations: Measures to stabilize this stream should include improving the three stormwater outfalls. This stream section is located on the Red Fox Estate HOA open space and the private property of four single family house lots. Construction easements will need to be secured for the private properties. Possible stream stabilization improvements include: grade control measures, streambank shaping, boulder revetments, erosion control fabric, and vegetation establishment.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1490	LF	$200	$298,000
Clear and Grub	1.71	AC	$10,000	$17,135
Plantings	1.71	AC	$25,000	$42,838
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$45,797
Ancillary Items	1	LS	5%	$22,899
			Base Construction Cost	$526,668
			Mobilization (5%)	$26,333
			Subtotal 1	$553,002
			Contingency (25%)	$138,250
			Subtotal 2	$691,252
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$311,064
			Total	$1,002,316
			Estimated Project Cost	$1,010,000

PC9227 Stream Restoration



Address: Behind 9500 Orion Court, Burke, Virginia
Location: Daylight stream near Orion Court
Land Owner: Public/Local – Fairfax County Public School
PIN: 0784 13 A
Control Type: Water quality and quantity control
Drainage Area: 9.12 acres
Receiving Waters: Tributary of Pohick Creek

Description: A closed system collects runoff from Capella Ave. and a large surrounding area, including residential development. A pipe outfalls into the stream east of Capella Drive. This stream is in wooded area behind White Oaks Elementary School. Due to poor channel morphology, this project proposes daylighting the outfall farther upstream to restore the water to its natural state before reaching the stream. Energy dissipation devices, which will consist of a series of reinforced step pools will be put in place to reduce velocity of water entering the stream.

Project Benefits: Daylighting this storm pipe will help poor downstream channel morphology by redirecting a closed system back to an aboveground channel, returning the water to its natural state. This will reduce velocities entering stream and minimize stream erosion. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

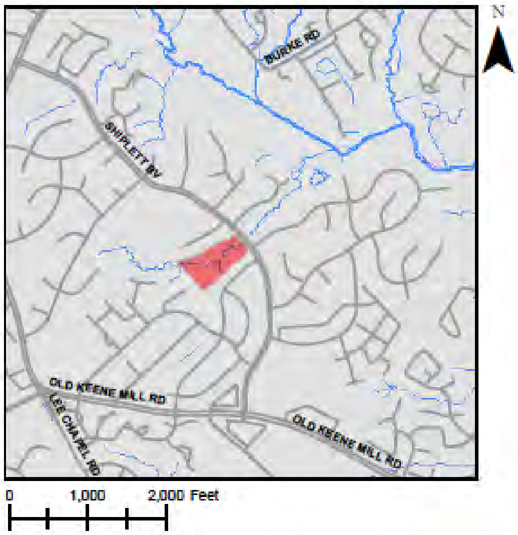
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.66	2.66	1.03

Project Design Considerations: This project is on Fairfax County Public School property. The number of step pools required will be determined by the slope and length of pipe daylighted. Efforts should be made to minimize impacts to mature vegetation. Daylighting will occur in open space behind several residential houses. There is an access point on Orion Court. Pipe currently outfalls at the upstream most point of the stream. Project will extend the length of the stream. Stream section to be daylighted is close to residential lot, and therefore extra precautions may need to be taken. A construction easement may need to be obtained or slope stabilization may need to be done near the residential lot.

Cost:

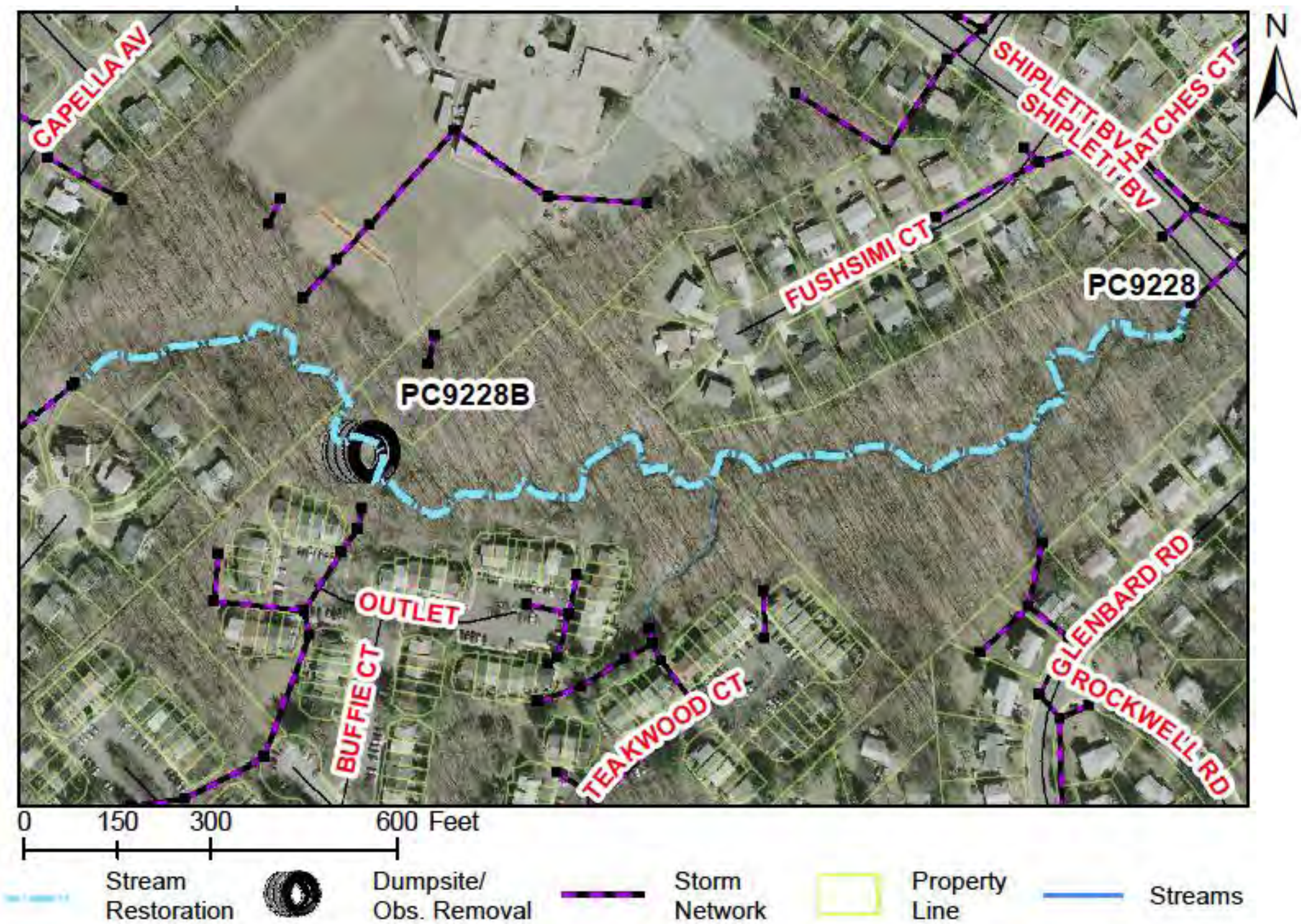
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	86	LF	$200	$17,200
Clear and Grub	0.10	AC	$10,000	$989
Plantings	0.10	AC	$25,000	$2,473
Additional Cost, First 500 LF	86	LF	$200	$17,200
Erosion and Sediment Control	1	LS	10%	$3,786
Ancillary Items	1	LS	5%	$1,893
			Base Construction Cost	$43,541
			Mobilization (5%)	$2,177
			Subtotal 1	$45,718
			Contingency (25%)	$11,429
			Subtotal 2	$57,147
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$25,716
			Total	$82,863
			Estimated Project Cost	$90,000

PC9228 Stream Restoration Suite



Address: Behind 6300 Glenbard Road, Burke, Virginia
Location: Stream near Glenbard Road
Land Owner: Public/Local/Private – Fairfax County Park Authority, School Board of Fairfax County, Old Mill Community Council
PIN: 0784 24 B, 0784 13 A, 0783 06 D1
Control Type: Water quality control
Drainage Area:
Receiving Waters: Tributary of Pohick Creek

Description: Subproject A is a stream restoration of the stream west of Shiplett Boulevard and northwest of Glenbard Road, and is located on Fairfax County Park Authority land. This project proposes repairing bank and bed erosion, restoring the channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the channel and controlling unwanted meander. Subproject B is an obstruction removal in the stream north of Buffie Court and west of Orion Court. The obstruction was verified during a field visit. This project proposes to remove the obstructions blocking the stream channel to restore natural conditions. Removal of obstructions will help restore the function of the stream.



Project Benefits: Restoring this stream will reduce erosion and instream sediment. The obstruction removal would help improve the function of the stream and with coordination of the community could improve local stewardship of the stream. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

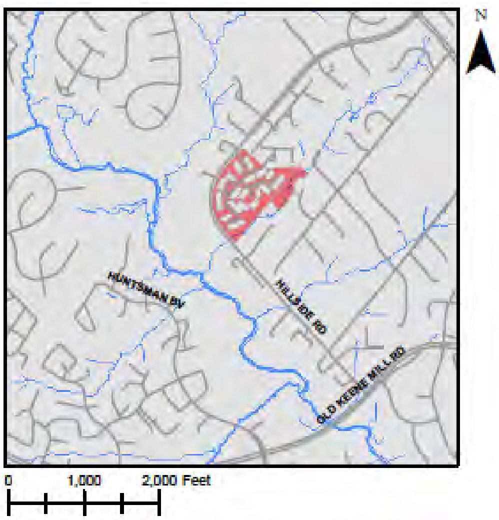
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
156.06	249.69	96.75

Project Design Considerations: Streambed is excessively wide and dry. Measures should be implemented to help restore baseflow. These measures could include rock vane deflectors, which would help concentrate flow to a stable deeper baseflow channel. During larger flows caused by storm events the water would utilize the entire streambank width. Other measures to improve water quality should include improving outfall connections to the stream for the six outfalls discharging runoff from the townhomes and single family homes. A positive condition for the success of this restoration is that there is a good existing stream buffer.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Stream South of Fushsimi Ct.			
Construct New Channel	2515	LF	$200	$503,000
Clear and Grub	2.89	AC	$10,000	$28,923
Plantings	2.89	LS	$25,000	$72,306
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$70,423
Ancillary Items	1	LS	5%	$35,211
Subproject B	Obstruction Removal Near Lakehaven La.			
Obstruction Removal	1	LS	$5,250	$5,250
			Base Construction Cost	$815,113
			Mobilization (5%)	$40,756
			Subtotal 1	$855,869
			Contingency (25%)	$213,967
			Subtotal 2	$1,069,836
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$481,426
			Total	$1,551,262
			Estimated Project Cost	$1,560,000

PC9229 Stream Restoration



Address: Behind 8901 Winding Hollow Way, Springfield, Virginia
Location: Stream near Winding Hollow Way
Land Owner: Private – Lee Brooke Homeowners Association, Timbers Homeowners Association
PIN: 0793 22 A, 0784 17 J
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This Suite of project proposes restoration projects along the stream northeast of Hillside Road. Subproject A will be along the main stream, subproject B is a riparian buffer restoration, and subproject C is a daylighting of a storm pipe that outfalls to this stream. The primary indicator is poor channel morphology. The Stream receives runoff from sheet flow and closed systems from adjacent residential neighborhoods. These projects will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

Project Benefits: Daylighting the storm pipe to the stream will increase infiltration and will decrease erosion near the outfall. The stream restoration will improve the other stormwater outfalls along the stream to help reduce the roadway fines from the untreated stormwater runoff. The buffer restoration will decrease the amount of pollutants following the stream. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

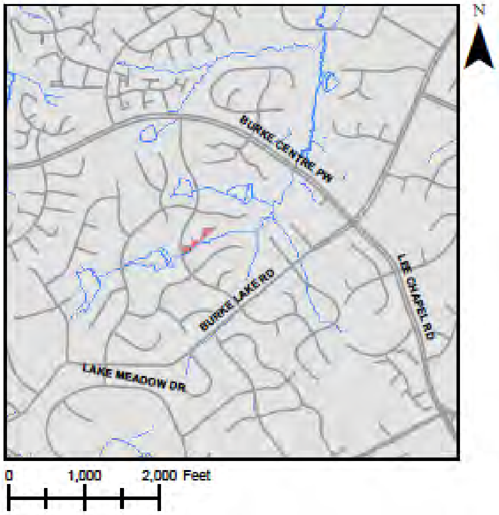
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
36.70	58.72	22.75

Project Design Considerations: The stream is behind single family homes and townhouses. The upstream section is located on Lee Brook HOA open space and the downstream section is located on Timber HOA open space. The longitudinal slope of the stream is approximately 1.6%. Grade control measures should be investigated to prevent stream incision. A culvert draining Garden Road is Upstream. The stream receives untreated runoff from nine stormwater outfalls. Stream stabilization around these outfalls will help reduce erosion. Trees are leaning into the stream due to erosion. A stream restoration project (PC9231) is also proposed upstream of Garden Road and a buffer restoration project (PC9812) is proposed northwest of the Lee Brooke PL cul-de-sac. Coordination of these projects should be investigated for cost savings.

Cost:

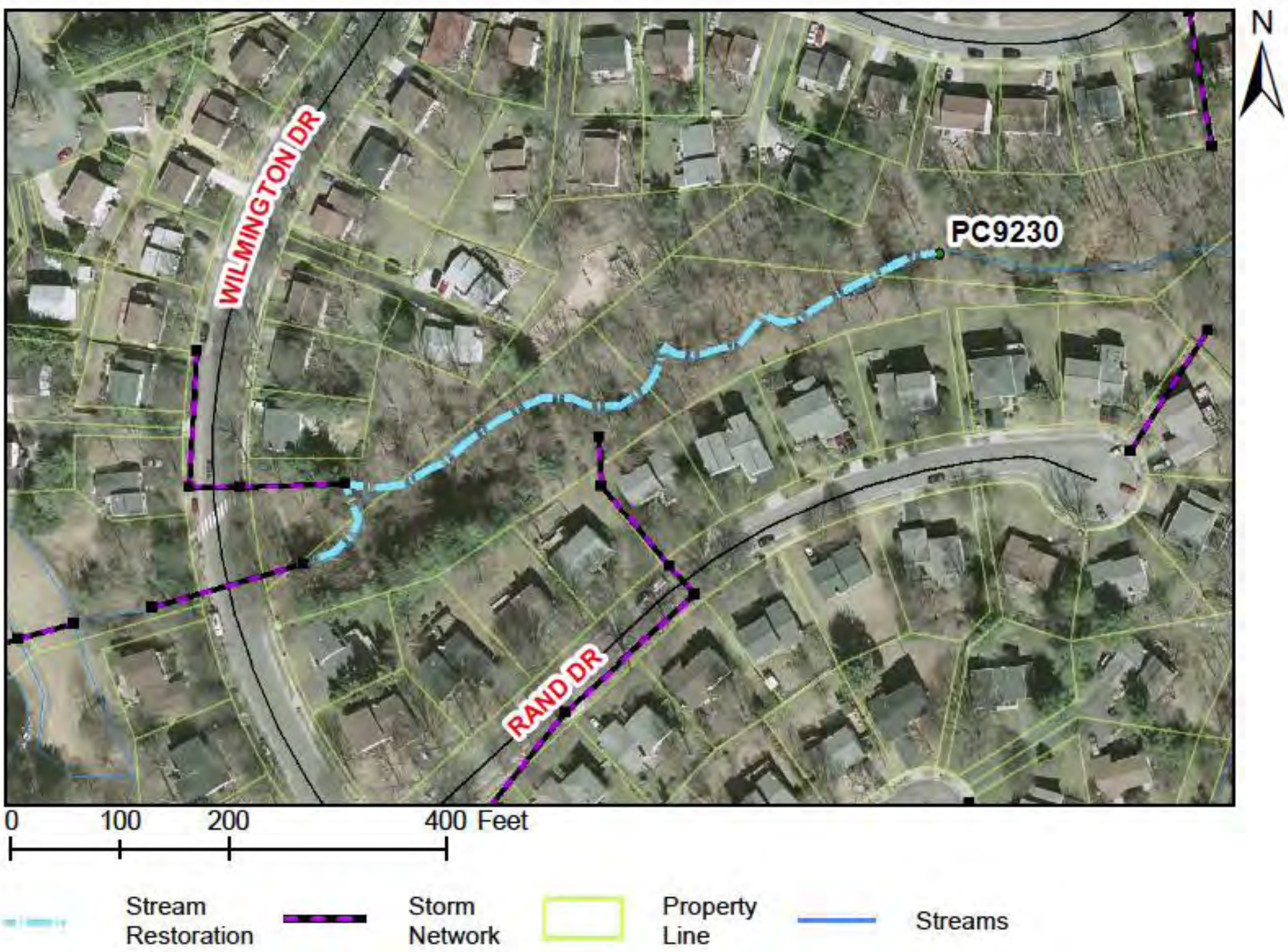
SUBPROJECT A ITEMS	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	2533	LF	$200	$506,600
Clear and Grub	2.91295	AC	$10,000	$29,130
Plantings	2.91295	AC	$25,000	$72,824
Additional Cost, First 500 LF	500	LF	$200	$100,000
SUBPROJECT B ITEMS	QUANTITY	UNITS	UNIT COST	TOTAL
Plantings	0.26	AC	$25,000	$6,500
Organic Compost Soil Amendment	725	CY	$40	$29,000
Invasive Plant Eradication	1	LS	10%	$3,550
SUBPROJECT C ITEMS	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	72	LF	$200	$14,400
Clear and Grub	0.0828	AC	$10,000	$828
Plantings	0.0828	AC	$25,000	$2,070
COMMON ITEMS	QUANTITY	UNITS	UNIT COST	TOTAL
Erosion and Sediment Control	1	LS	10%	$76,490
Ancillary Items	1	LS	5%	$38,245
			Base Construction Cost	$879,636
			Mobilization (5%)	$43,982
			Subtotal 1	$923,618
			Contingency (25%)	$230,905
			Subtotal 2	$1,154,523
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	$519,535
			Total	$1,674,058
			Estimated Project Cost	$1,680,000

PC9230 Stream Restoration



Address: Behind 9820 Rand Drive, Burke, Virginia
Location: Stream near Rand Drive
Land Owner: Private - Burke Centre Conservancy
PIN: 0783 11 S, 0783 10 Q, 0783 10 B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: The stream east of Wilmington Drive and north of Rand Drive has poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric, and rapid vegetation establishment. The stream stabilization will reduce sediment loads while maintaining the capacity of the stream and controlling unwanted meander.



Project Benefits: Restoring this stream will reduce erosion and instream sediment. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

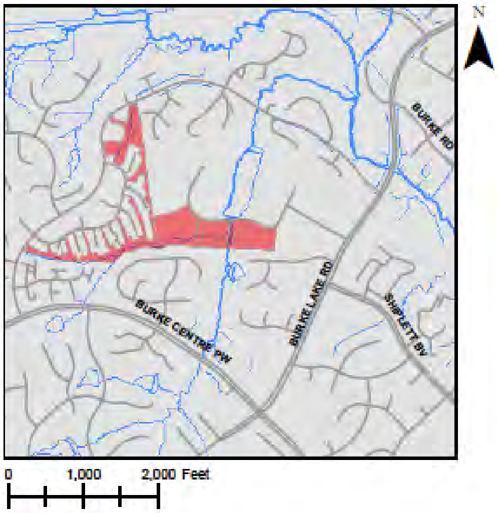
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
11.64	15.84	6.14

Project Design Considerations: Fully developed single family residential area drains to this stream with no stormwater management. The stream has a longitudinal slope of approximately 2.5%. Upstream end of restoration is Wilmington Drive culvert. Downstream of restoration is the confluence of another stream. Significant impervious area drains to the stream and there is minimal buffer between the residential area and the stream. Stream receives sheet flow from back of houses and runoff from two storm pipe outfalls. Installing settling basins at these outfalls will reduce erosive flow velocities and reduce roadway sediment.

Cost:

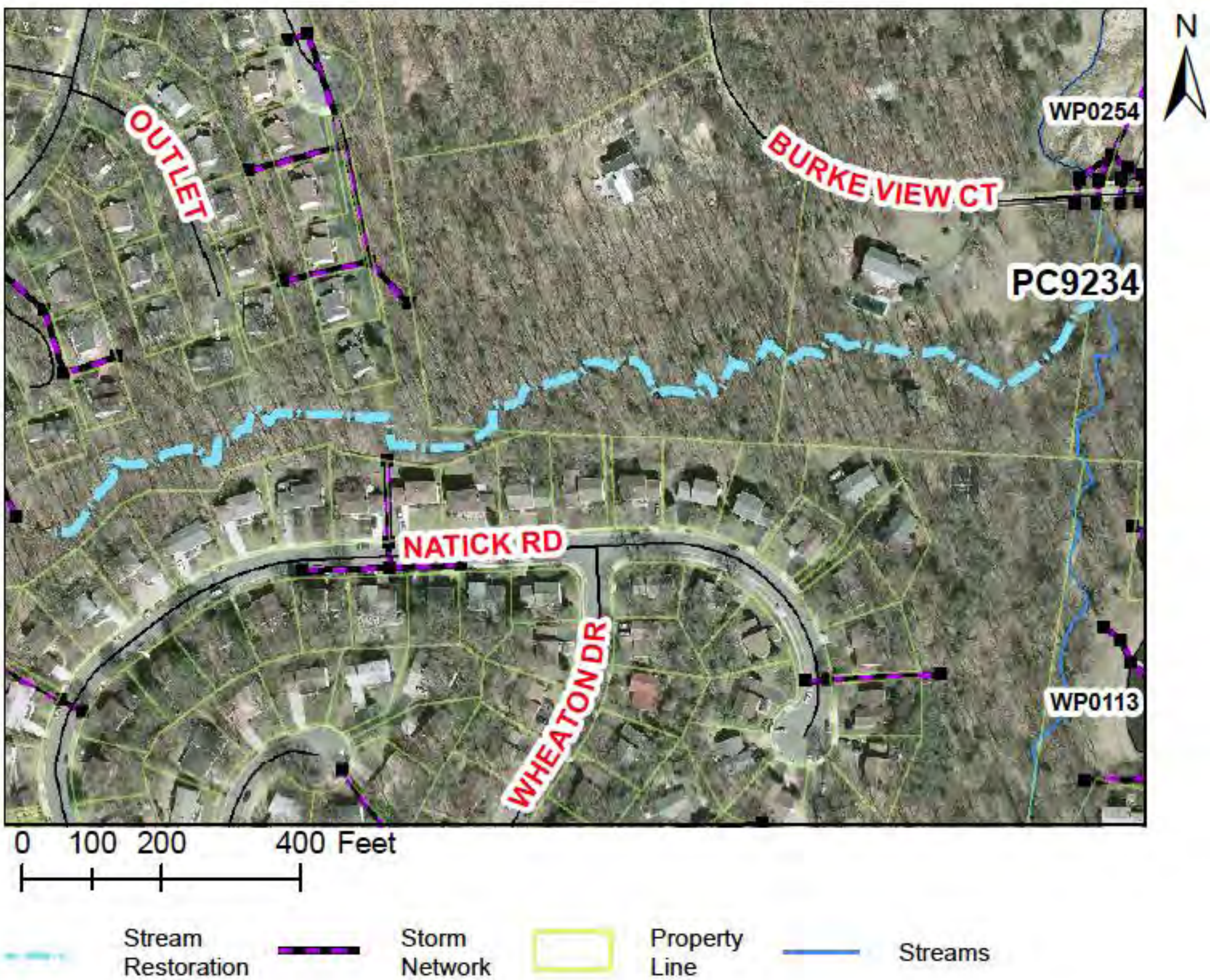
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	737	LF	$200	$147,400
Clear and Grub	0.85	AC	$10,000	$8,476
Plantings	0.85	LS	$25,000	$21,189
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$27,706
Ancillary Items	1	LS	5%	$13,853
			Base Construction Cost	$318,624
			Mobilization (5%)	$15,931
			Subtotal 1	$334,555
			Contingency (25%)	$83,639
			Subtotal 2	$418,194
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$188,187
			Total	$606,381
			Estimated Project Cost	$610,000

PC9234 Stream Restoration



Address: Behind 9840 Natick Rd., Burke, Virginia
Location: Stream near Natick Rd.
Land Owner: Private – Burke Centre Conservancy, Private Homeowners
PIN: 0781 14 L, 0783 02 0009A, 0783 02 0010, 0783 02 0011
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes repairing bank and bed erosion, restoring channel morphology to a stream north of Nantick Road. Stream receives runoff from a residential neighborhood by both direct runoff and from a closed system. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The primary indicator is poor stream stabilization.



Project Benefits: This project will reduce sediment loads while maintaining the capacity of the stream and controlling unwanted meander. Repairing the stream erosion will also help minimize erosion of the streambanks over time. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

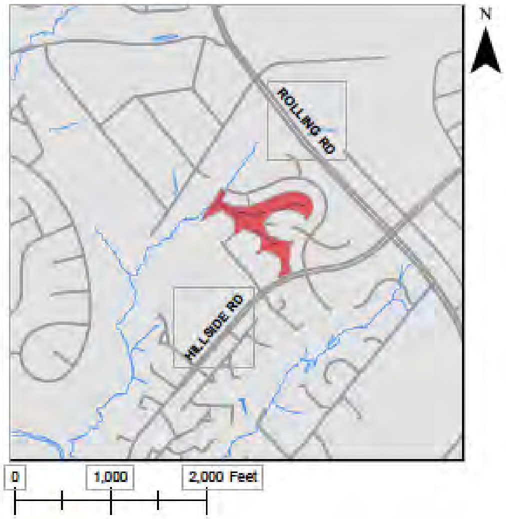
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
51.17	81.87	31.72

Project Design Considerations: About half of the stream length to be restored is on property owned by the Burke Centre Conservancy, however the rest of the stream is on lots with private homeowners. According to County-provided GIS, no easements exist on these properties. Efforts should be made to insure that disturbance to existing mature vegetation is minimized.

Cost:

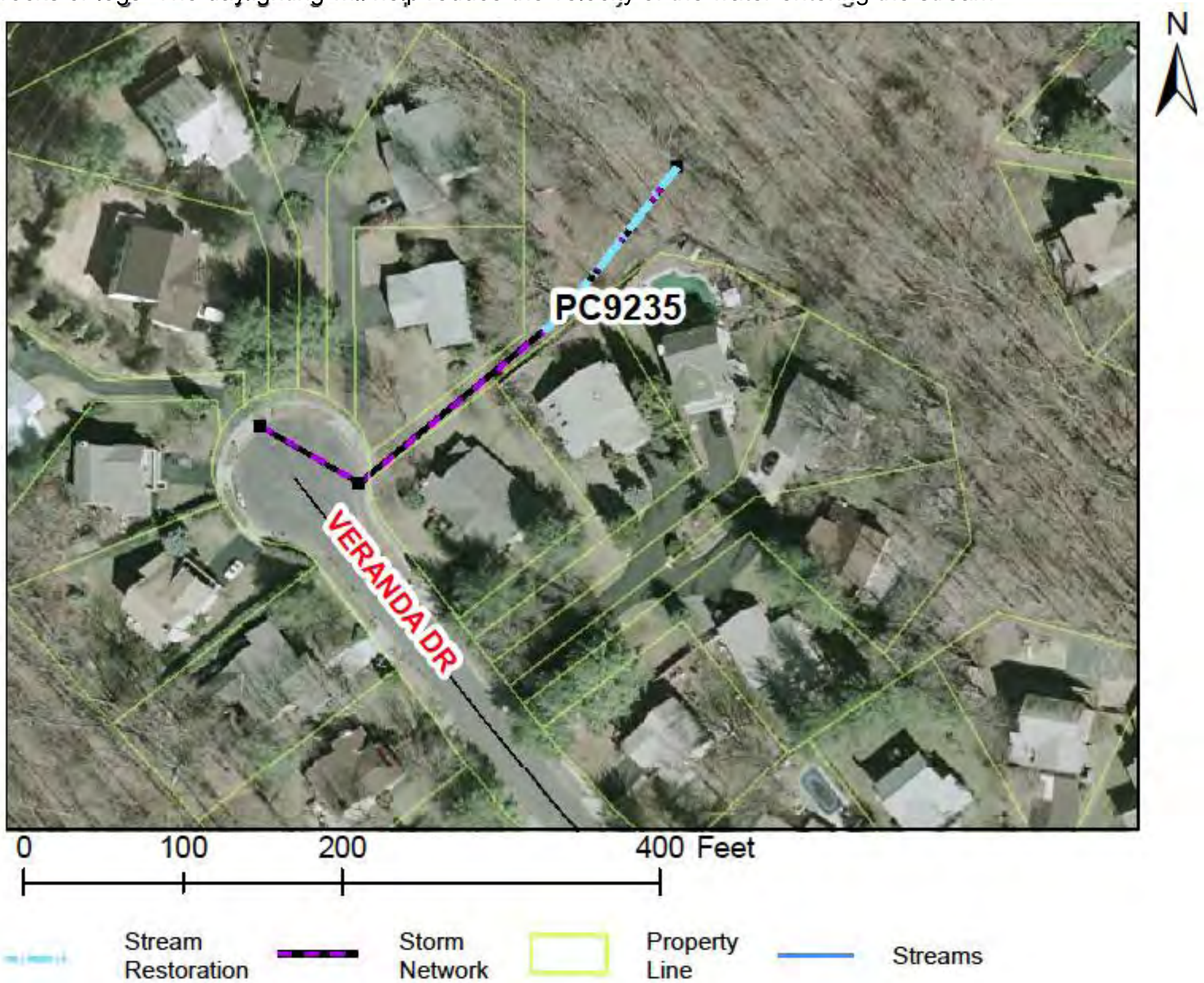
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1981	LF	$200	$396,200
Clear and Grub	2.28	AC	$10,000	$22,782
Plantings	2.28	AC	$25,000	$56,954
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$57,594
Ancillary Items	1	LS	5%	$28,797
			Base Construction Cost	$662,326
			Mobilization (5%)	$33,116
			Subtotal 1	$695,442
			Contingency (25%)	$173,860
			Subtotal 2	$869,302
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$391,186
			Total	$1,260,488
			Estimated Project Cost	$1,270,000

PC9235 Stream Restoration



Address: Behind 5913 Veranda Drive, Springfield, Virginia
Location: Stream near Veranda Drive
Land Owner: Private – The Crossings Homeowners Association
PIN: 0793 16 A
Control Type: Water quality and quantity control
Drainage Area: 3.12 acres
Receiving Waters: Tributary of Pohick Creek

Description: Two inlets collect runoff from Veranda Drive and pipe it to an adjacent stream to the east. Due to poor channel morphology, this project has been proposed to daylight the pipe farther upstream by creating an open channel and using an energy dissipation device. This device consists of a series of step pools reinforced with either rocks or logs. The daylighting will help reduce the velocity of the water entering the stream.



Project Benefits: Daylighting this storm pipe will help poor downstream channel morphology by redirecting a closed system back to its natural state prior to entering the stream area, thereby reducing runoff rates and minimizing stream erosion. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

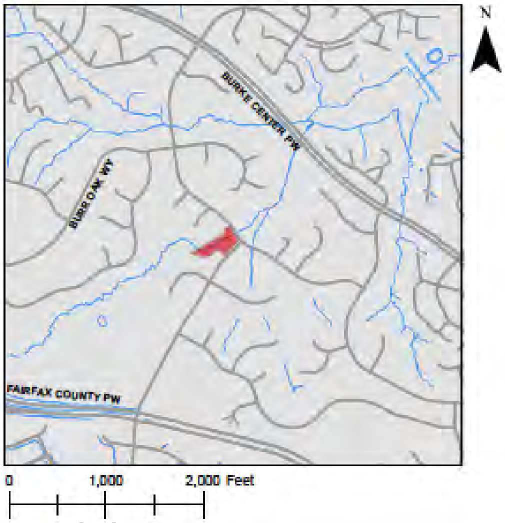
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
2.31	3.70	1.43

Project Design Considerations: The property is owned by The Crossings Homeowners Association. There are no on-site easements according to the County-provided GIS. Efforts should be made to minimize impacts to existing mature vegetation.

Cost:

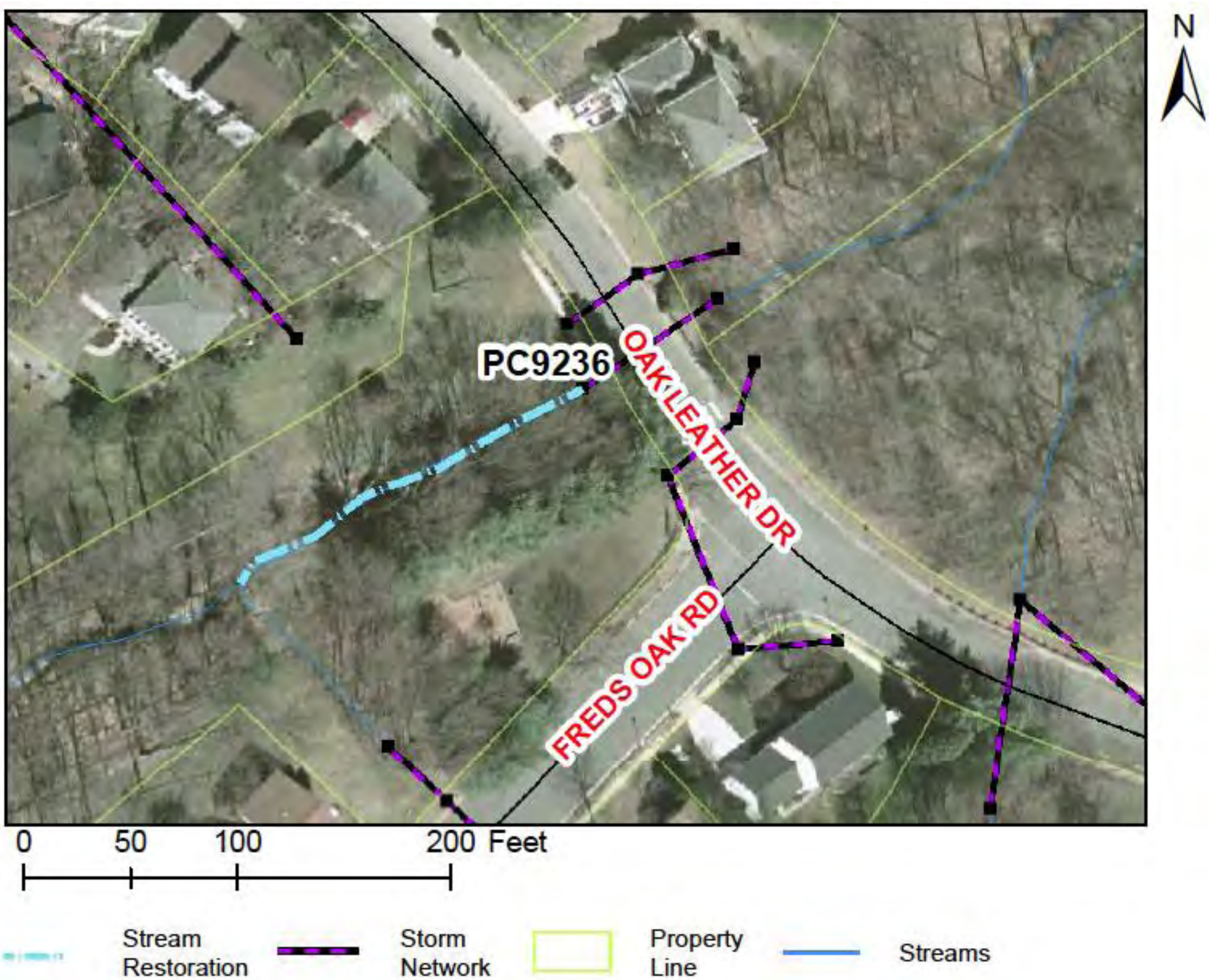
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	134	LF	$200	$26,800
Clear and Grub	0.15	AC	$10,000	$1,541
Plantings	0.15	AC	$25,000	$3,853
Additional Cost, First 500 LF	134	LF	$200	$26,800
Erosion and Sediment Control	1	LS	10%	$5,899
Ancillary Items	1	LS	5%	$2,950
			Base Construction Cost	$67,843
			Mobilization (5%)	$3,392
			Subtotal 1	$71,235
			Contingency (25%)	$17,809
			Subtotal 2	$89,043
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$40,069
			Total	$129,113
			Estimated Project Cost	$130,000

PC9236 Stream Restoration



Address: Across the street from 5901 Freds Oak Road, Burke, Virginia
Location: Stream near Freds Oak Road
Land Owner: Private- Burke Centre Conservancy
PIN: 0773 05 A
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: The stream is located behind homes in a single family residential neighborhood. It conveys stormwater from adjacent homes and streets including Oak Leather Drive, Fred's Oak Road, Fred's Oak Court and Vernon's Oak Court. The stream continues downstream of the culvert under Oak Leather Drive. This project proposes repairing bank erosion and restoring channel morphology upstream of Oak Leather Drive.



Project Benefits: This stream restoration will reduce the erosion and instream sediment load. Additionally this project will improve the two stormwater discharges outfalling to the stream, which will reduce coarse sediment from the roadway and reduce erosive velocities. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

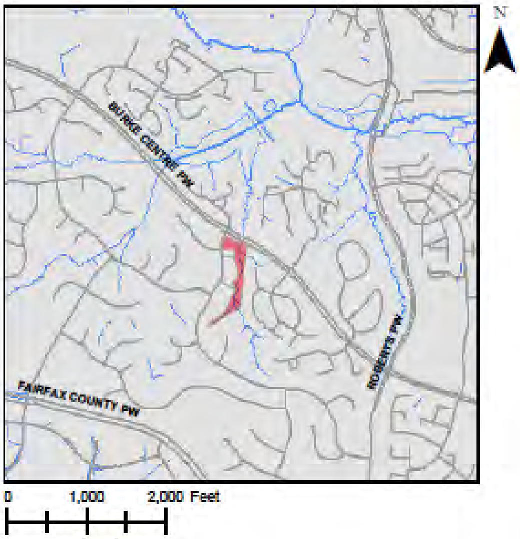
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
2.28	3.65	1.42

Project Design Considerations: This section of the stream has two outfalls discharging untreated stormwater runoff from the neighborhood roads. The outfalls will be improved through stream buffer plantings, creation of sediment ponding areas, and stream stabilization. During a field visit in the spring the stream appeared to be dry (see photos). There is evidence of erosion along the banks. Due to the location in a residential neighborhood, the buffer area is greatly reduced.

Cost:

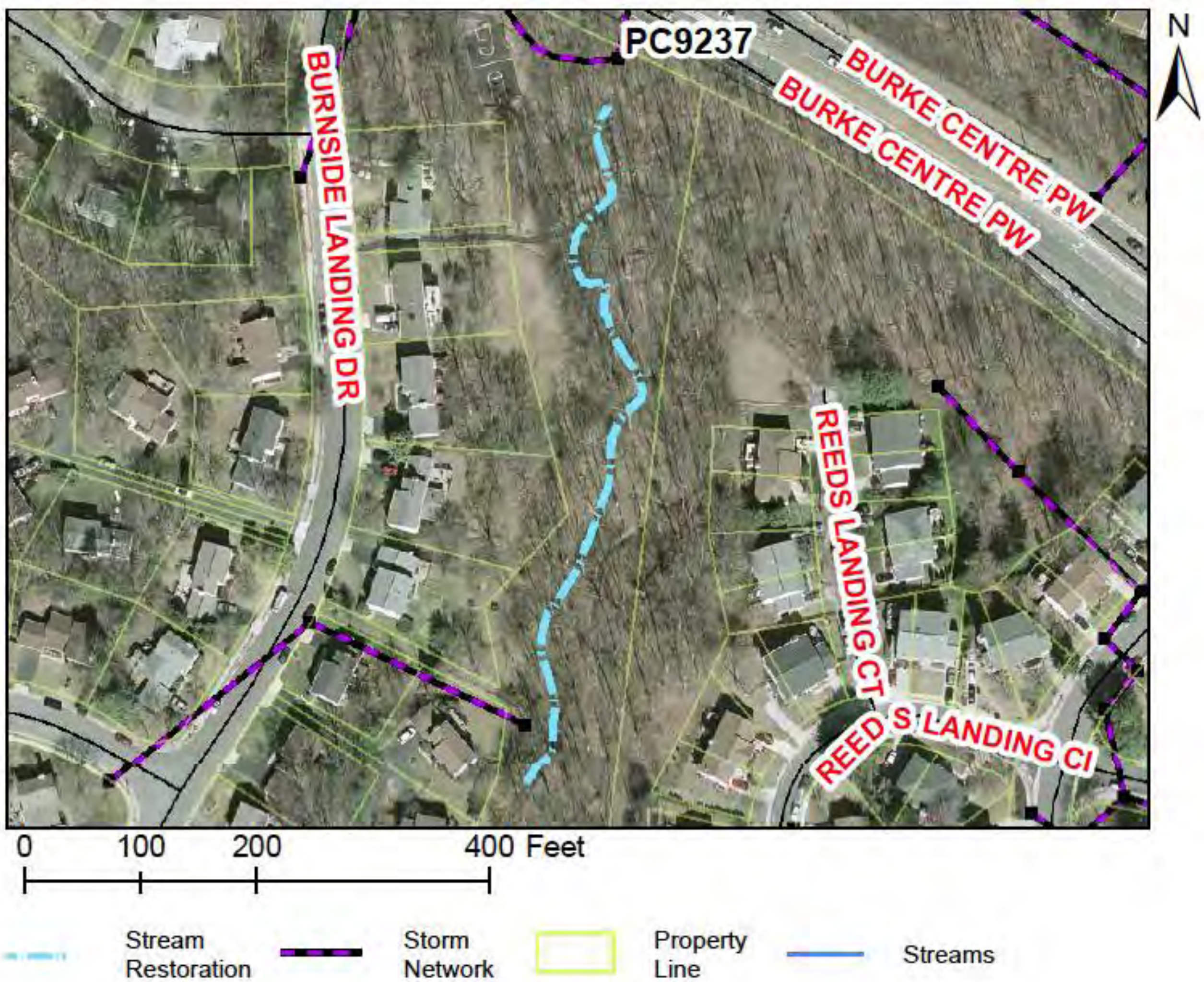
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	187	LF	$200	$37,400
Clear and Grub	0.22	AC	$10,000	$2,151
Plantings	0.22	AC	$25,000	$5,376
Additional Cost, First 500 LF	187	LF	$200	$37,400
Erosion and Sediment Control	1	LS	10%	$8,233
Ancillary Items	1	LS	5%	$4,116
			Base Construction Cost	$94,676
			Mobilization (5%)	$4,734
			Subtotal 1	$99,410
			Contingency (25%)	$24,852
			Subtotal 2	$124,262
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$55,918
			Total	$180,180
			Estimated Project Cost	$190,000

PC9237 Stream Restoration



Address: Behind 10550 Reeds Landing Ct., Burke, Virginia
Location: Stream near Reeds Landing Ct.
Land Owner: Private – Burke Centre Conservancy
PIN: 0774 07 A
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: The stream runs between Reeds Landing Court and Burnside Landing Drive. Pipes discharge directly into the stream from adjacent subdivisions. This project consists of repairing bank and bed erosion and restoring channel morphology. The primary indicator is poor channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Stream stabilization will reduce sediment loads to the stream, maintain the capacity of the stream channel and control unwanted meander. The proposed measures will repair existing erosion and prevent future erosion over time. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

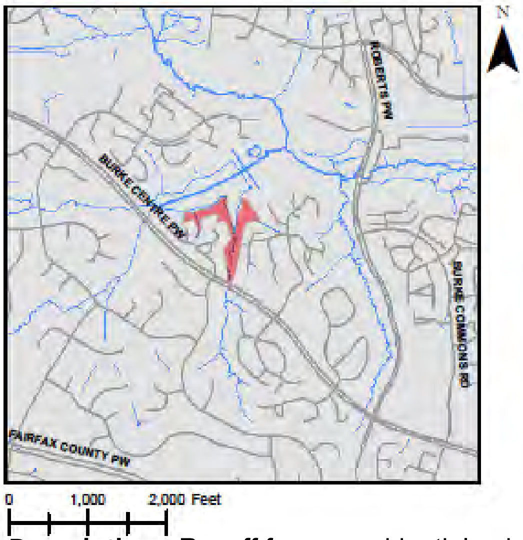
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
10.26	16.42	6.36

Project Design Considerations: Stream is on property owned by Burke Centre Conservancy. There are no easements on the property, according to County-provided GIS. Residential area is piped to stream at one location without any pre-treatment. Efforts should be taken to minimize impacts to mature vegetation and to maintain the buffer.

Cost:

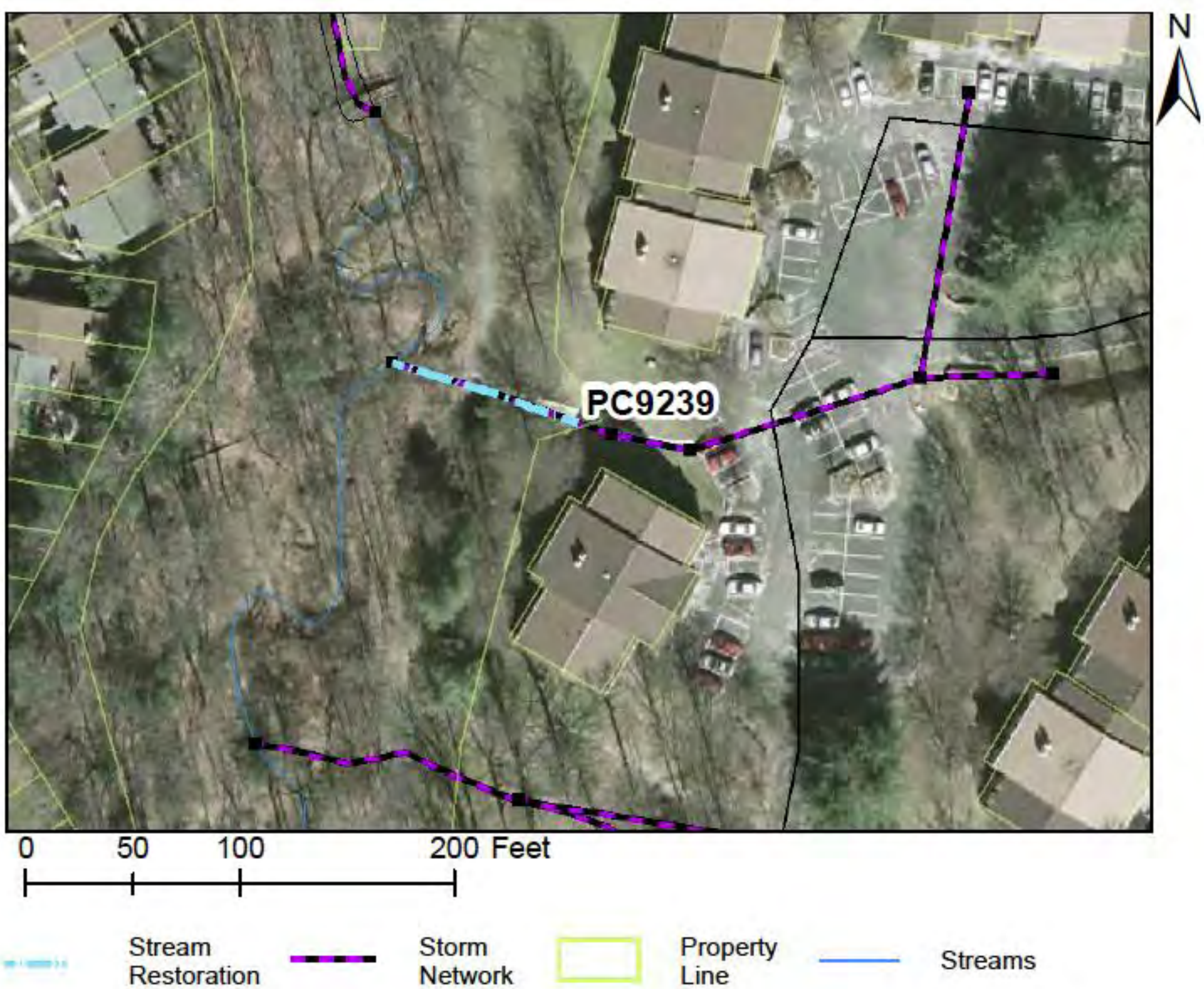
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	673	LF	$200	$134,600
Clear and Grub	0.77	AC	$10,000	$7,740
Plantings	0.77	AC	$25,000	$19,349
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$26,169
Ancillary Items	1	LS	5%	$13,084
			Base Construction Cost	$300,941
			Mobilization (5%)	$15,047
			Subtotal 1	$315,989
			Contingency (25%)	$78,997
			Subtotal 2	$394,986
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$177,744
			Total	$572,729
			Estimated Project Cost	$580,000

PC9239 Stream Restoration



Address: Next to 5914 Cove Landing Road, Burke, Virginia
Location: Daylight Stream near Landing Rd
Land Owner: Private - Burke Centre Conservancy
PIN: 0772 01 0044C
Control Type: Water quality and quantity control
Drainage Area: 2.05 acres
Receiving Waters: Tributary of Sideburn Branch

Description: Runoff from a residential neighborhood is collected in a closed system of pipes. Currently, a concrete channel between residential buildings conveys stormwater to a closed system that outfalls directly into the stream. This project proposes to remove a portion of the concrete channel and closed system to create a more natural channel to convey stormwater to the stream. Due to the slope, a series of check dams or step pools may be necessary to keep velocities low.



Project Benefits: This project will retrofit a concrete channel and closed system into a natural channel, returning the water to its natural state and helping reduce runoff rates, which will help minimize stream erosion. Runoff will also travel through the buffer and reduce pollutant loads. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

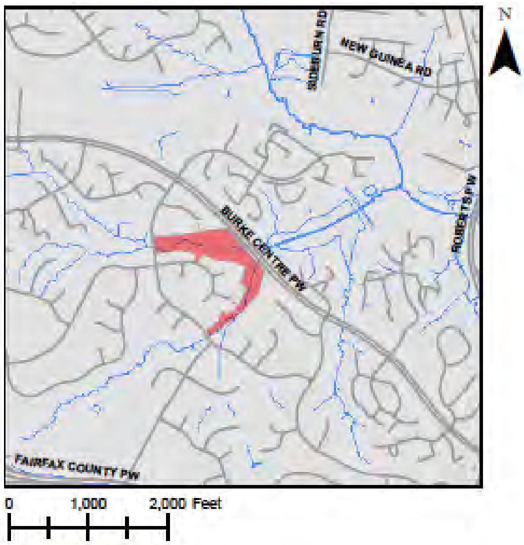
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.39	2.22	0.86

Project Design Considerations: Stormwater runoff flows down a concrete channel and eventually into a closed system. This project proposes that starting at the property line, the channel be retrofitted into a natural channel. A portion of the existing channel is in open space and the rest is in a wooded area. Efforts should be made to minimize impacts to existing mature vegetation. Step pools and check dams will be necessary to reduce velocities in the naturalized stream. Maintaining the existing walking path will be necessary. See project map and photos. The stream project is located on property owned by Burke Centre Conservancy. County records show no onsite easements.

Cost:

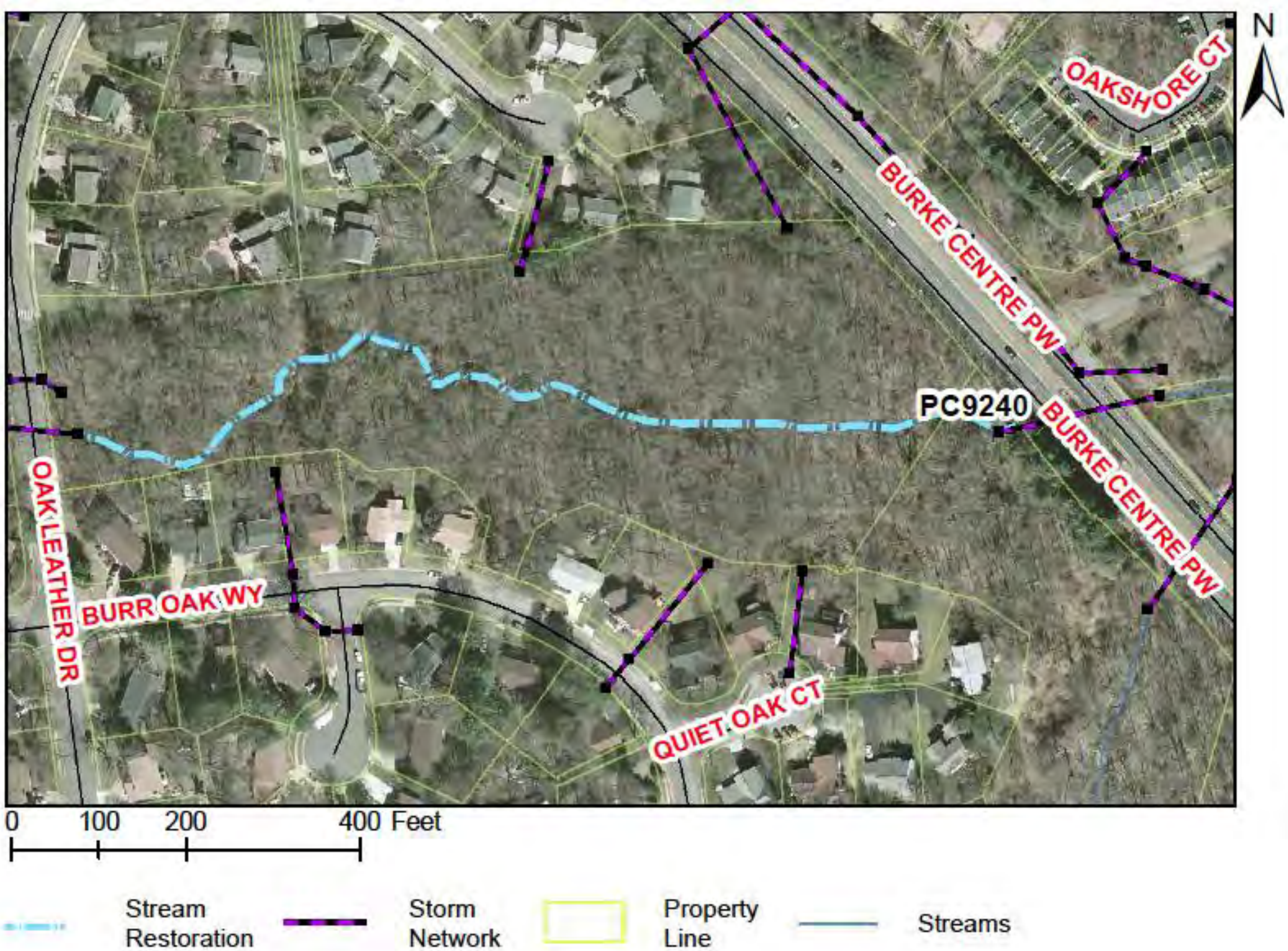
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	91	LF	$200	$18,200
Clear and Grub	0.10	AC	$10,000	$1,047
Plantings	0.10	AC	$25,000	$2,616
Additional Cost, First 500 LF	91	LF	$200	$18,200
Erosion and Sediment Control	1	LS	10%	$4,006
Ancillary Items	1	LS	5%	$2,003
			Base Construction Cost	$46,072
			Mobilization (5%)	$2,304
			Subtotal 1	$48,376
			Contingency (25%)	$12,094
			Subtotal 2	$60,470
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$27,211
			Total	$87,681
			Estimated Project Cost	$90,000

PC9240 Stream Restoration



Address: Along Burke Centre Pkwy, Near 5901 Waters Edge Landing Lane, Burke, Virginia
Location: Stream near Water Edge Landing Lane
Land Owner: Private - Burke Centre Conservancy
PIN: 0771 07 B, 0771 09 F
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: This project is located upstream of the Burke Centre Parkway culvert. The stream conveys stormwater from single family homes. The primary indicator is poor channel morphology. The purpose of the project is to restore channel morphology and to add an energy dissipation device. This will reduce sediment loads to the stream, while maintaining capacity of the stream channel and controlling unwanted meandering of the stream.



Project Benefits: Restoring this stream will reduce instream sediment and its associated pollutants. Additionally, installing an energy dissipation basin downstream of the culvert at Oak Leather Drive will reduce erosion at the outfall. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

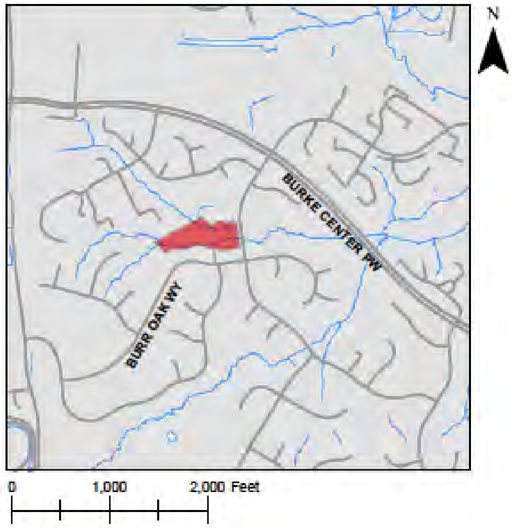
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
27.84	44.54	17.26

Project Design Considerations: This stream conveys water from two culverts at Oak Leather Drive. The stream has a longitudinal slope of approximately 1.6%. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabrics, and rapid vegetation establishment. The stream receives untreated runoff from two stormwater outfalls that are not directly connected to the main stream bed. The stream has meandered close to the back property line of one of the single family homes. Bank stability should be ensured at this point to prevent any futher meander. This project is downstream of another stream restoration, PC9241. These projects should be coordinated to ensure maximum benefit.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1214	LF	$200	$242,800
Clear and Grub	1.40	AC	$10,000	$13,961
Plantings	1.40	AC	$25,000	$34,903
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$39,166
Ancillary Items	1	LS	5%	$19,583
			Base Construction Cost	$450,413
			Mobilization (5%)	$22,521
			Subtotal 1	$472,934
			Contingency (25%)	$118,233
			Subtotal 2	$591,167
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$266,025
			Total	$857,192
			Estimated Project Cost	$860,000

PC9241 Stream Restoration



Address: Behind 10734 Burr Oak Way, Burke, Virginia
Location: Stream near Burr Oak Way
Land Owner: Private –Burke Centre Conservancy (open space)
PIN: 0771 07 A
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: The stream is upstream of a culvert under Oak Leather Drive. The stream conveys runoff from neighborhood and community recreation facilities. Stream stabilization will repair bank and bed erosion and restore stream morphology. This project will also improve the five direct stormwater outfalls to the stream bed. This project will focus on insuring proper buffers from the dense residential areas.

Project Benefits: Restoring this stream will reduce erosion and instream sediment. Additionally, improving the five outfalls will help reduce fines from the roadway. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

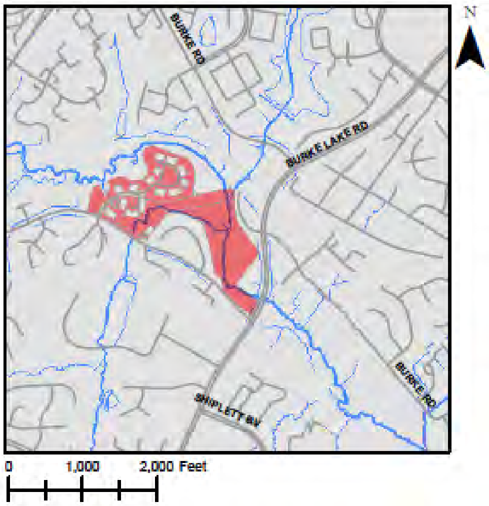
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
26.50	42.40	16.43

Project Design Considerations: The stream is located on Burke Centre Conservancy open space, but the stream runs close to the back property line of some of the single family homes and townhouses. Based on the County's GIS contours, the stream might have meandered from its original stream bed and is now closer to the houses. Measures should be implemented to ensure proper stream buffers are maintained. The five stormwater outfalls should be reviewed and improved to ensure stabile stream morphology. Possible improvements to the outfalls include installing settling basins and boulder clusters. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabrics, and rapid vegetation establishment.

Cost:

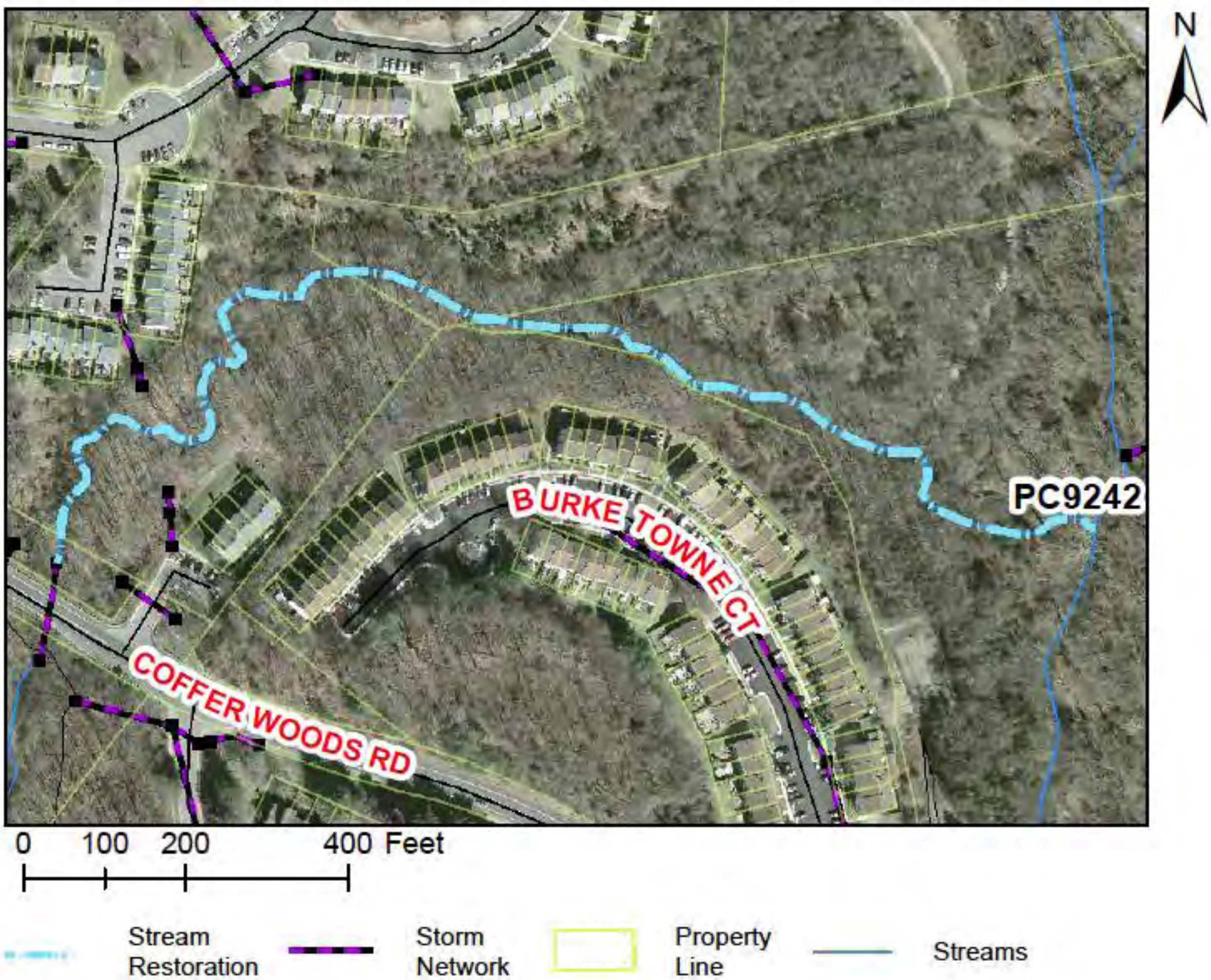
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1323	LF	$200	$264,600
Clear and Grub	1.52	AC	$10,000	$15,215
Plantings	1.52	AC	$25,000	$38,036
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$41,785
Ancillary Items	1	LS	5%	$20,893
			Base Construction Cost	$480,528
			Mobilization (5%)	$24,026
			Subtotal 1	$504,555
			Contingency (25%)	$126,139
			Subtotal 2	$630,693
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$283,812
			Total	$914,506
			Estimated Project Cost	$920,000

PC9242 Stream Restoration



Address: Behind 5753 Burke Towne Ct, Burke, Virginia
Location: Stream near Burke Towne Ct.
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0781 19 A, 0781 21 B, 0781 21 A, 0781 13 A3
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the repair of bank and bed erosion to a stream north of Burke Towne Court. The primary indicator is poor channel morphology. Stream receives runoff from adjacent residential neighborhood. The stream stabilization will reduce sediment loads while maintaining capacity of the stream and controlling unwanted meander. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Stabilizing this stream will reduce erosion and instream sediment. The stream stabilization will reduce sediment while maintaining the capacity and controlling unwanted meander of the stream. Project will not only repair existing erosion but prevent future erosion over time by implementing the measures above. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

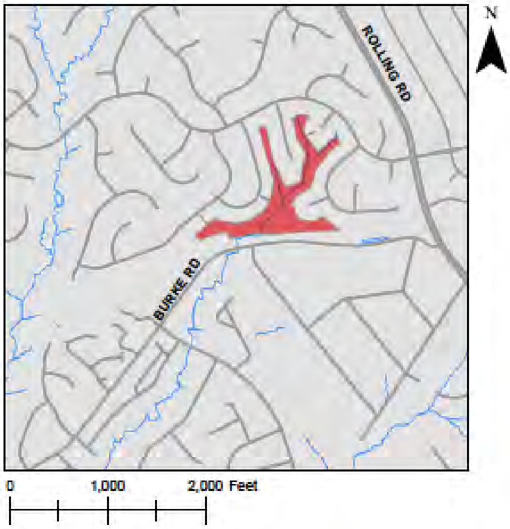
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
28.21	45.13	17.49

Project Design Considerations: Stream restoration starts at downstream point of culvert under Coffer Woods Road and extends to intersection with another stream. Stream runs close to dense residential development on Burke Towne Court and Mason Bluff Court. Stream is in dense woods. Efforts should be made to minimize impacts to existing mature vegetation.

Cost:

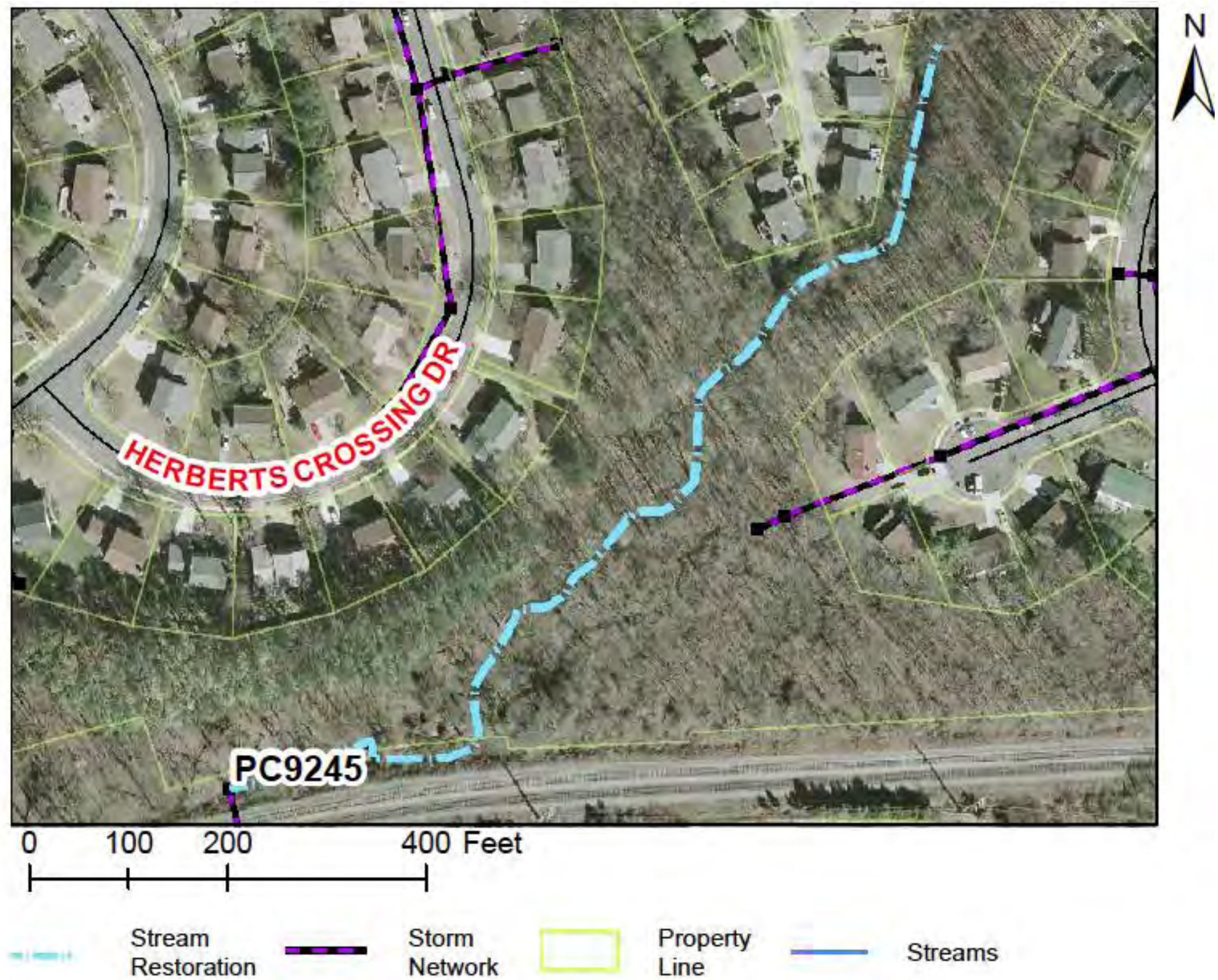
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1785	LF	$200	$357,000
Clear and Grub	2.05	AC	$10,000	$20,528
Plantings	2.05	AC	$25,000	$51,319
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$52,885
Ancillary Items	1	LS	5%	$26,442
			Base Construction Cost	$608,173
			Mobilization (5%)	$30,409
			Subtotal 1	$638,582
			Contingency (25%)	$159,645
			Subtotal 2	$798,227
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$359,202
			Total	$1,157,430
			Estimated Project Cost	$1,160,000

PC9245 Stream Restoration



Address: 5621 Herbert's Crossing Dr., Burke, Virginia
Location: Stream behind Herbert's Crossing Dr.
Land Owner: Private – Signal Hill Homeowners Association, Southern Railway
PIN: 0782 14 A, 0782 01 0047
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes repairing bank and bed erosion to restore channel morphology of the stream north of Burke Road. Primary indicator is poor channel morphology. Stream conveys runoff from adjacent single family residential neighborhoods to the stream through closed systems or direct runoff. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Stream stabilization will reduce sediment loads to the stream while maintaining the capacity of the channel and controlling unwanted meander. Repairing the stream erosion will also help minimize erosion of the streambanks over time. Erosion needs to be minimized, especially because of proximity to private homes. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

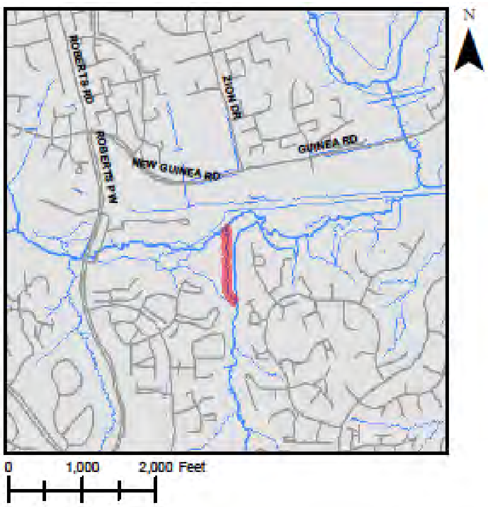
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
43.15	69.04	26.75

Project Design Considerations: Stream area is surrounded by significant dense residential development. Property is owned by Signal Hill Homeowners Association and does not have any easements on it, according to County-provided GIS. Efforts should be made to minimize impacts to existing vegetation. Portions of stream are very close to private lots and roadways. Upstream portion of stream (as shown) is a concrete channel.

Cost:

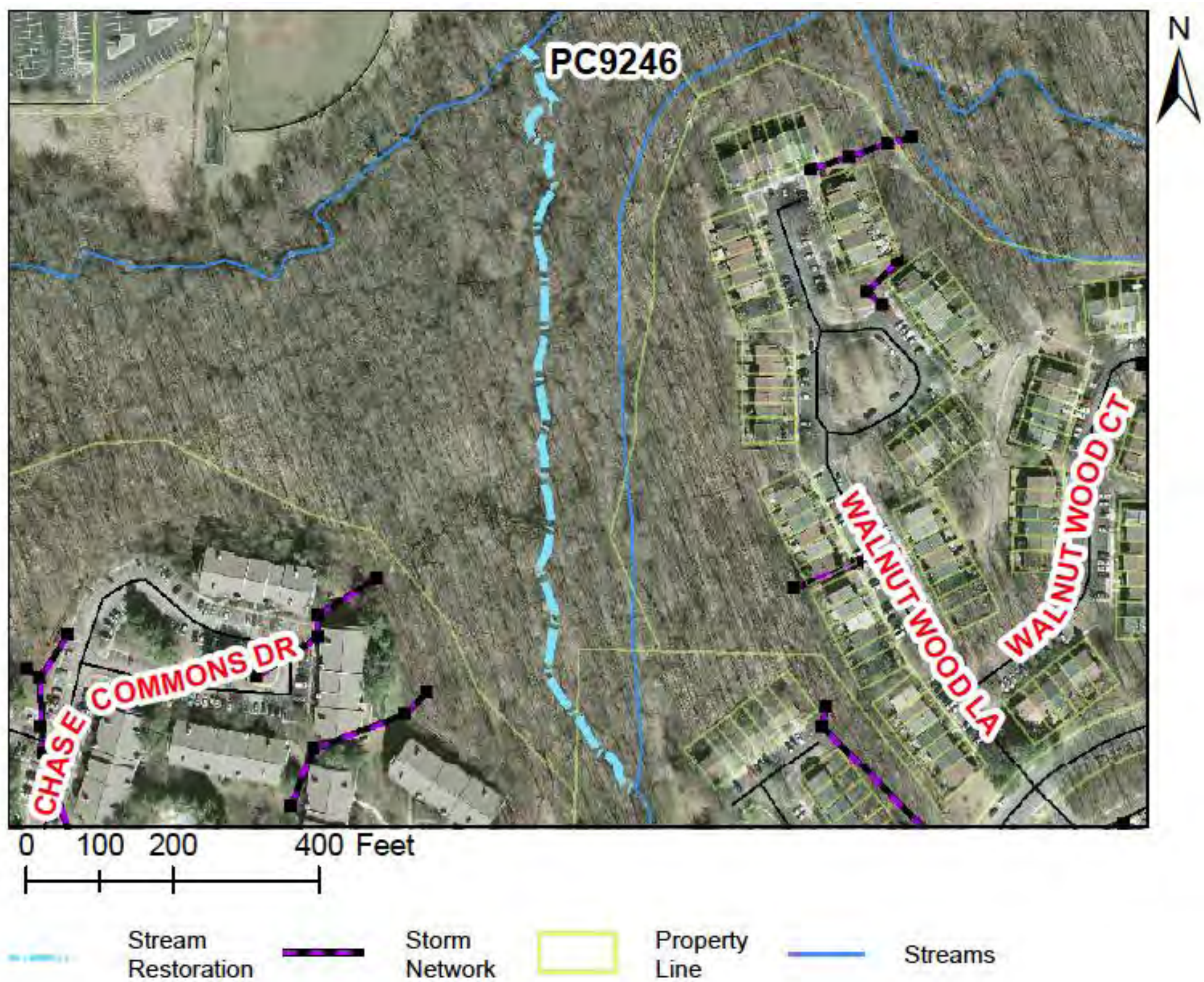
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1209	LF	$200	$241,800
Clear and Grub	1.39	AC	$10,000	$13,904
Plantings	1.39	AC	$25,000	$34,759
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$39,046
Ancillary Items	1	LS	5%	$19,523
			Base Construction Cost	$449,032
			Mobilization (5%)	$22,452
			Subtotal 1	$471,483
			Contingency (25%)	$117,871
			Subtotal 2	$589,354
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$265,209
			Total	$854,563
			Estimated Project Cost	$860,000

PC9246 Stream Restoration



Address: Behind 6001 Burke Commons Rd., Burke, Virginia
Location: Stream near Burke Commons Rd.
Land Owner: Private – Burke Centre Conservancy
PIN: 0772 01 0019B, 0772 09 C
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: This project proposes bank and bed erosion repair to improve poor channel morphology of a stream east of Roberts Parkway and south of the railroad tracks. Stream conveys runoff from adjacent dense residential development. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Stream restoration will reduce sediment loads while maintaining capacity and controlling unwanted meander. The proposed measures will repair existing erosion and prevent future erosion. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

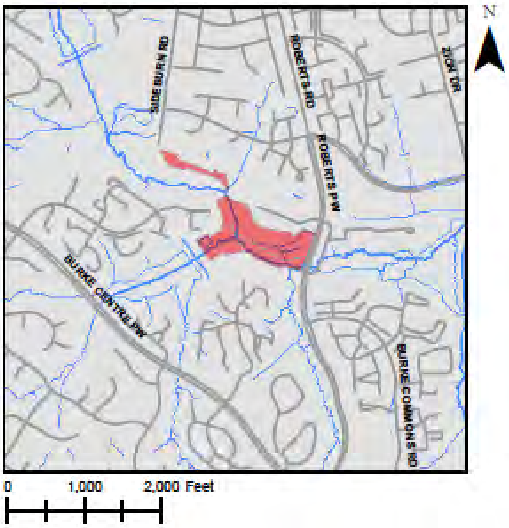
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal I(Lbs/Yr)
43.15	69.04	26.75

Project Design Considerations: Project located in wooded area behind houses. Throughout length of stream restoration, there are several footbridges crossing the water. Per a site visit, it was evident that some erosion control was in place. The bed of the stream is covered in large stones. There are several areas of significant sediment deposition. Efforts should be taken to minimize impacts to mature vegetation.

Cost:

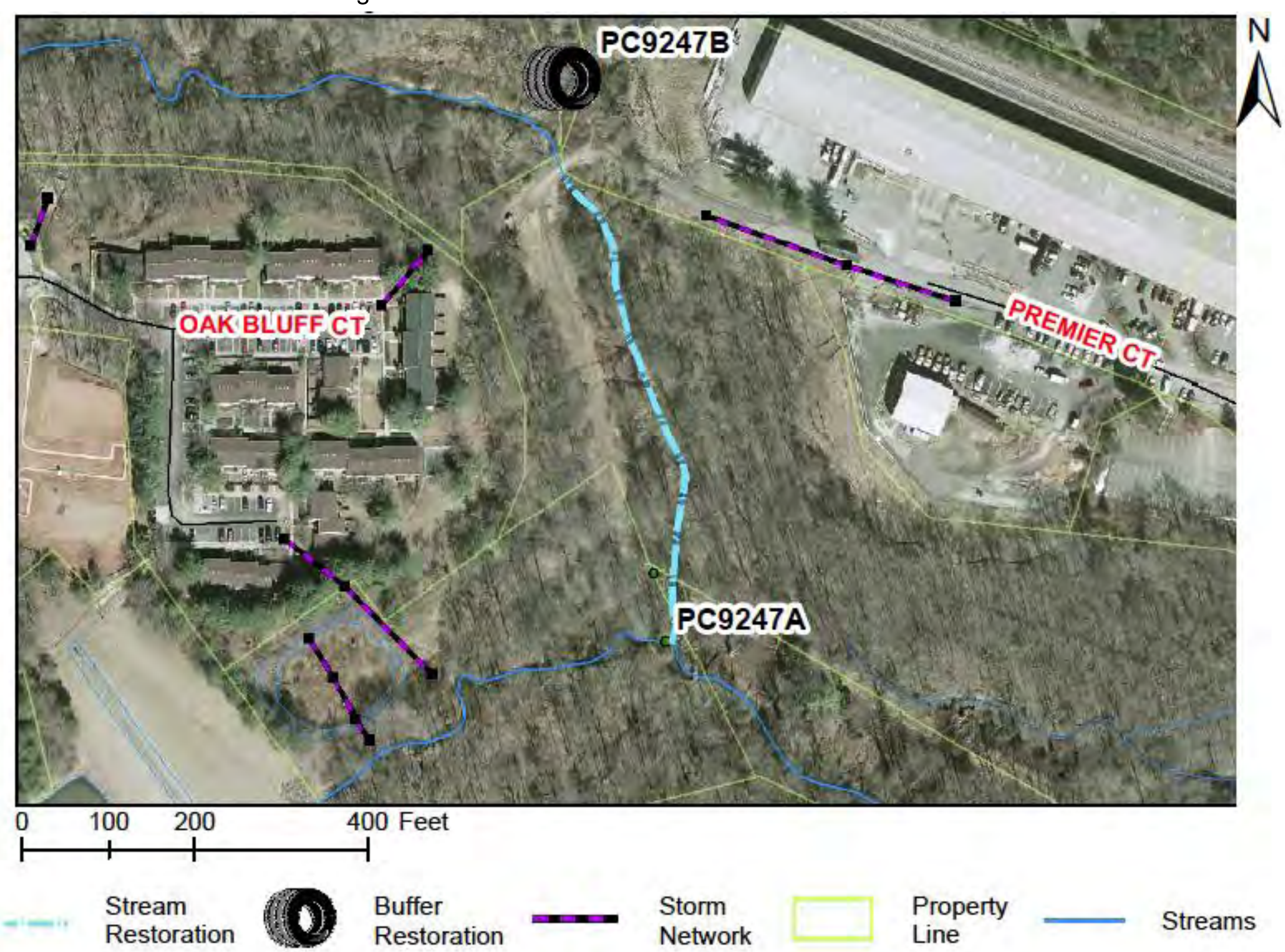
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1143	LF	$200	$228,600
Clear and Grub	0.34	AC	$10,000	$3,400
Plantings	0.34	AC	$25,000	$8,500
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$34,050
Ancillary Items	1	LS	5%	$17,025
			Base Construction Cost	$391,575
			Mobilization (5%)	$19,579
			Subtotal 1	$411,154
			Contingency (25%)	$102,788
			Subtotal 2	$513,942
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$231,274
			Total	$745,216
			Estimated Project Cost	$750,000

PC9247 Stream Restoration Suite



Address: 10400 Premier Ct., Burke, Virginia
Location: Stream near Premier Ct.
Land Owner: Private - Burke Centre Conservancy
PIN: 0772 01 0061C, 0772 01 0062, 0772 01 0062, 0772 01 0058B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: Subproject A is a stream restoration and will repair bed and bank erosion in the stream southwest of Premier Court at the VRE Station. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. Subproject B is an obstruction removal southeast of Ships Curve Lane. Primary indicators are flood complaints which have been field verified. This project proposes the removal of obstructions blocking the stream channel to restore natural conditions.



Project Benefits: Stabilizing this stream will reduce instream sediment and its associated pollutants. The proposed measures will repair the erosion that has occurred over time and help minimize and prevent future erosion. The obstruction removal will help restore the function of the stream by removing existing unnatural impediments. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

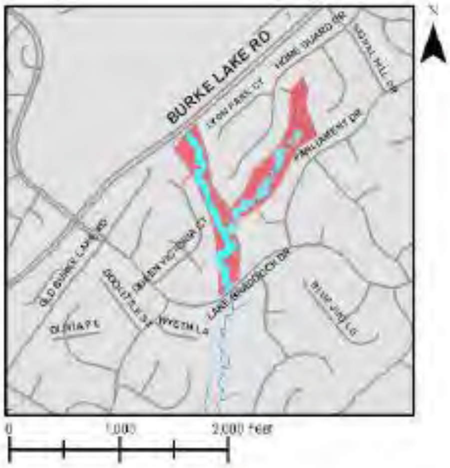
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
11.81	18.90	7.32

Project Design Considerations: Stream is accesible by a non-paved road. Stream is in a heavily wooded area and measures should be taken to minimize impacts to trees . Obstructions apprear to be relatively small in size. Records show no stormwater easements. Project is located on private land owned by Burke Centre Conservancy. This suite of projects is located upstream of another stream restoration project, PC9243. Coordination of these project might result in additional benefits.

Cost:

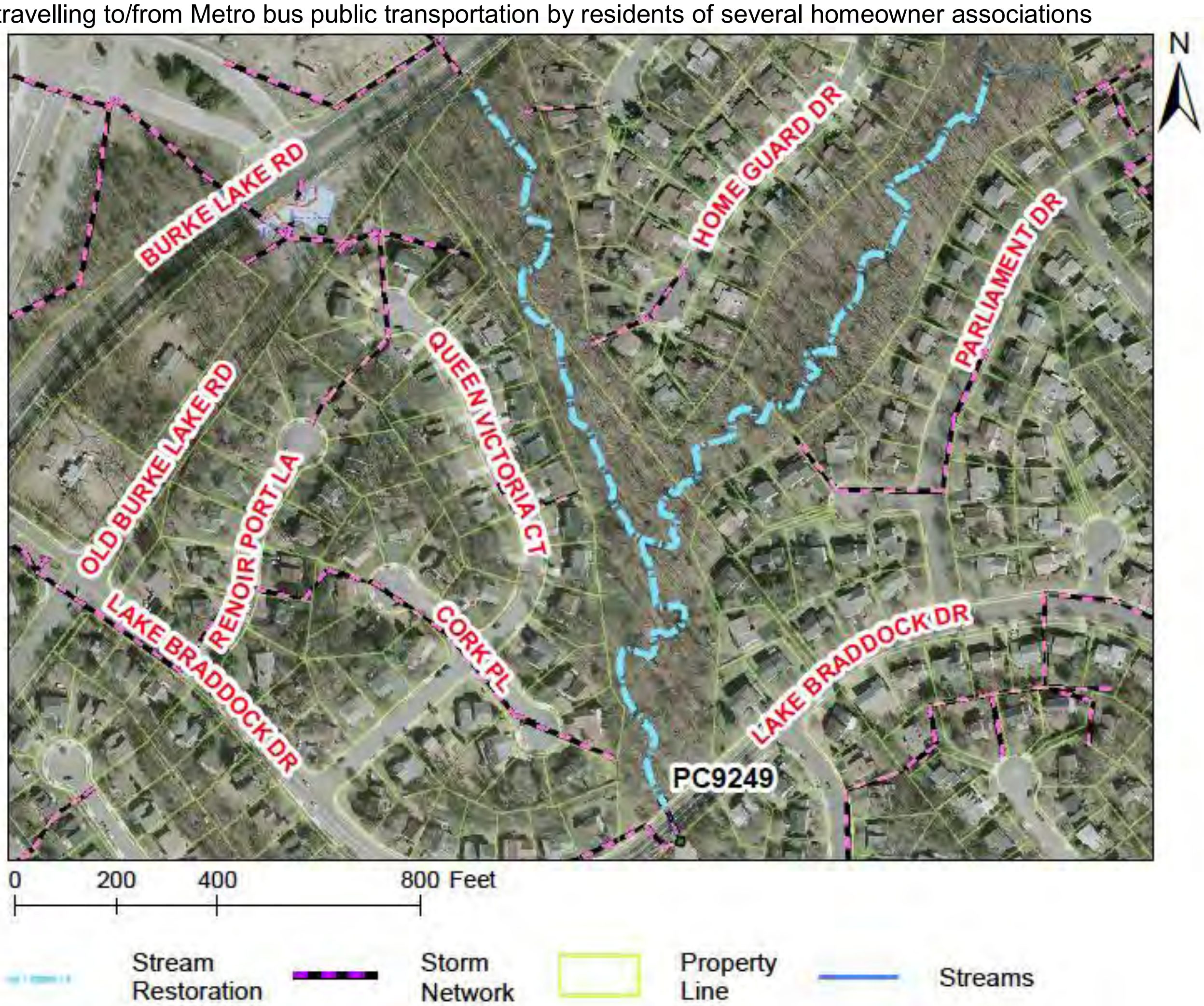
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Stream Stabilization Behind Cove Landing Road			
Construct New Channel	574	LF	$200	$114,800
Clear and Grub	0.66	AC	$10,000	$6,600
Plantings	0.66	AC	$25,000	$16,500
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$23,790
Ancillary Items	1	LS	5%	$11,895
Subproject B	Dumpsite Removal near VRE Burke Centre Sta.			
Dumpsite Removal	1	LS	$5,250	$5,250
			Base Construction Cost	$278,835
			Mobilization (5%)	$13,942
			Subtotal 1	$292,777
			Contingency (25%)	$73,194
			Subtotal 2	$365,971
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$164,687
			Total	$530,658
			Estimated Project Cost	$540,000

PC9249 Stream Restoration



Address: Behind 5565 Queen Victoria Court, Burke, Virginia
Location: Stream near Queen Victoria Court
Land Owner: Private – Southport Homeowners Association, Signal Hill Homes Association
PIN: 0782 19 A, 0782 16 C, 0782 14 B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This project is proposed on the stream northwest of Parliament Drive and east of Queen Victoria Court, including the outfalls from Lake Braddock Secondary School and Braddock Road, extending to Lake Braddock Drive. This project is proposed to repair bank and bed erosion through the use of bank shaping, toe of slope protection, erosion control fabric and rapid vegetation establishment. The primary indicator is poor channel morphology and macro invertebrate. Stream stabilization will reduce sediment loads while maintaining capacity and controlling unwanted meander. It will also improve safety of a foot path/trail heavily used by Lake Braddock Secondary School students for educational activities and travelling to/from school, as well as for recreation and travelling to/from Metro bus public transportation by residents of several homeowner associations



Project Benefits: Restoring this impaired stream will reduce erosion and instream sediment and the phosphorus and nitrogen pollutants associated with the erosion. Below are the estimated pollutant removal amounts for this project. Also this restoration will improve the three stormwater outfalls to this section of the stream and will reduce the roadway sediment loading to the stream. This project will also provide educational benefit on the importance of proper stormwater management through posting of signage about the project. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

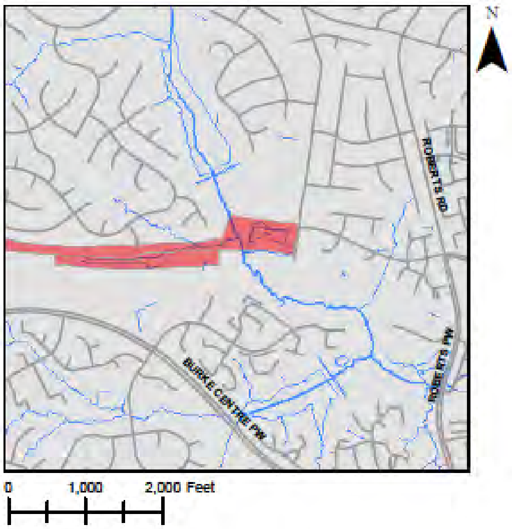
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
191.81	306.89	118.92

Project Design Considerations: This restoration is located in the Signal Hills and Southport Homeowners open space. It appears that the surrounding development has no stormwater facilities. This area appears completely developed, so the channel's geomorphology should be stable making this site favorable for stream improvements. Possible stream bank repair measures include rootwad revetments, streambank shaping, erosion control fabrics, or live stakes. This stream is adjacent to a trail used by the Lake Braddock Secondary School. Improving this stream will prevent further stream encroachment on the trail. This project is located downstream of the new stormwater project PC9141 and upstream of the outfall improvement project PC9704.

Cost:

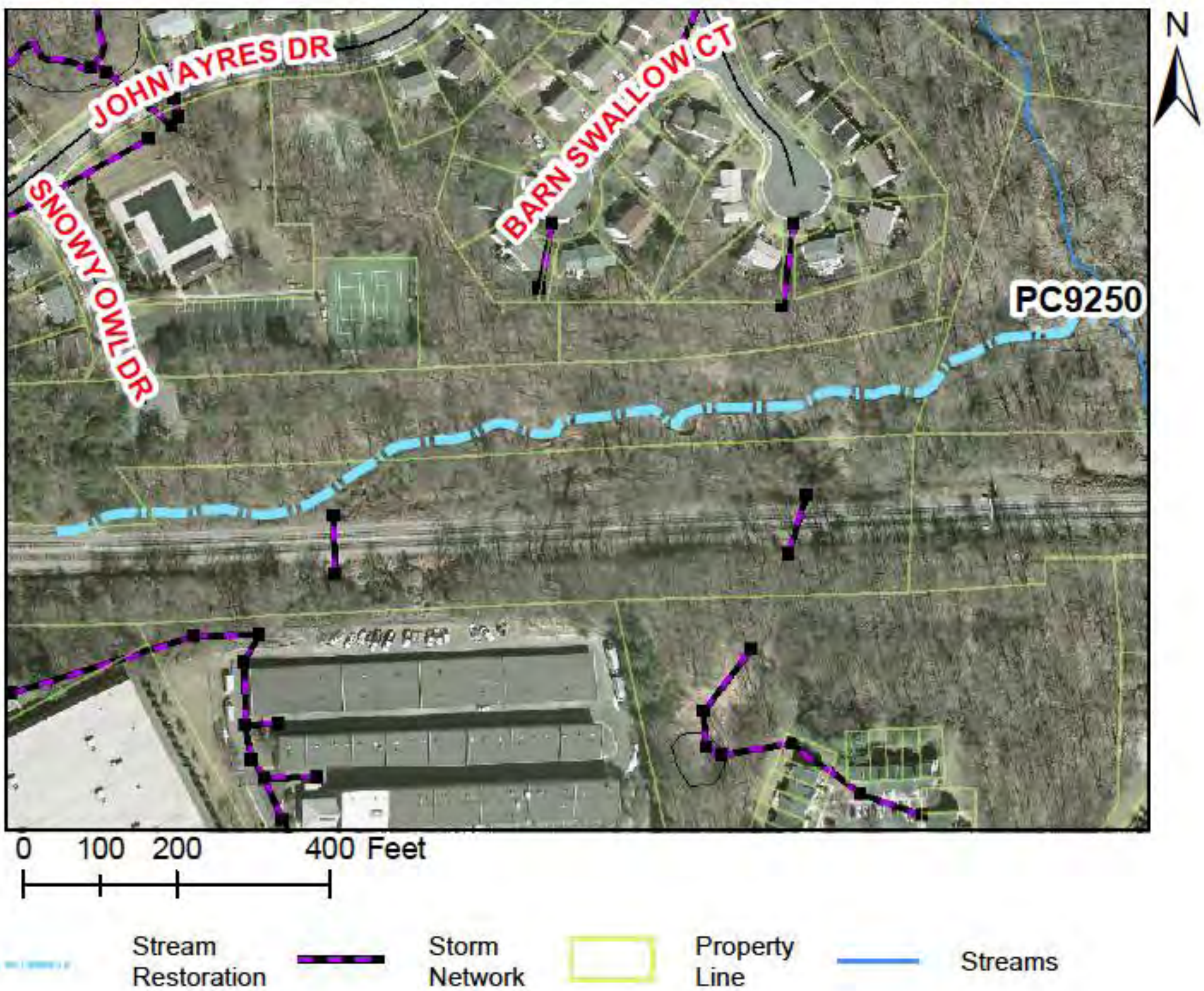
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	3353	LF	$200	$670,600
Clear and Grub	3.86	AC	$10,000	$38,560
Plantings	3.86	AC	$25,000	$96,399
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$90,556
Ancillary Items	1	LS	5%	$45,278
			Base Construction Cost	$1,041,392
			Mobilization (5%)	$52,070
			Subtotal 1	$1,093,462
			Contingency (25%)	$273,365
			Subtotal 2	$1,366,827
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$615,072
			Total	$1,981,899
			Estimated Project Cost	$1,990,000

PC9250 Stream Restoration



Address: Behind 10602 Goldeneye Lane, Fairfax, Virginia
Location: Stream near Goldeneye Lane
Land Owner: Public/Local – Fairfax County Park Authority, Fairfax County Government, Southern Railway
PIN: 0772 01 0001, 0771 12 A, 0771 01 0058
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: The stream is south of Golden Eye Lane and north of the railroad tracks. The stream receives runoff from adjacent neighborhoods. This project proposes to repair bank and bed erosion and restore channel morphology. The primary indicator is poor channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: This restoration will reduce the sediment loads to the stream while maintaining capacity and controlling the meandering. The proposed measures will help repair existing erosion and prevent future erosion over time. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

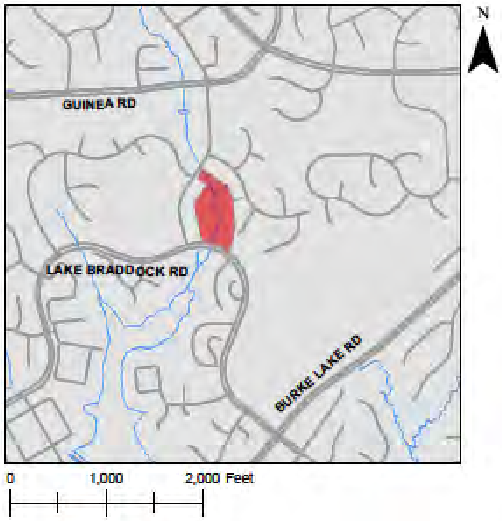
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
85.65	137.04	53.10

Project Design Considerations: Stream is on property owned by Fairfax County Park Athority, Fairfax County Government and Southern Railway. The stream runs parallel to railroad tracks. Efforts should be made to minimize impacts to mature vegetation. Coordination with Southern Railway will be necessary to ensure there will be no impacts to the tracks.

Cost:

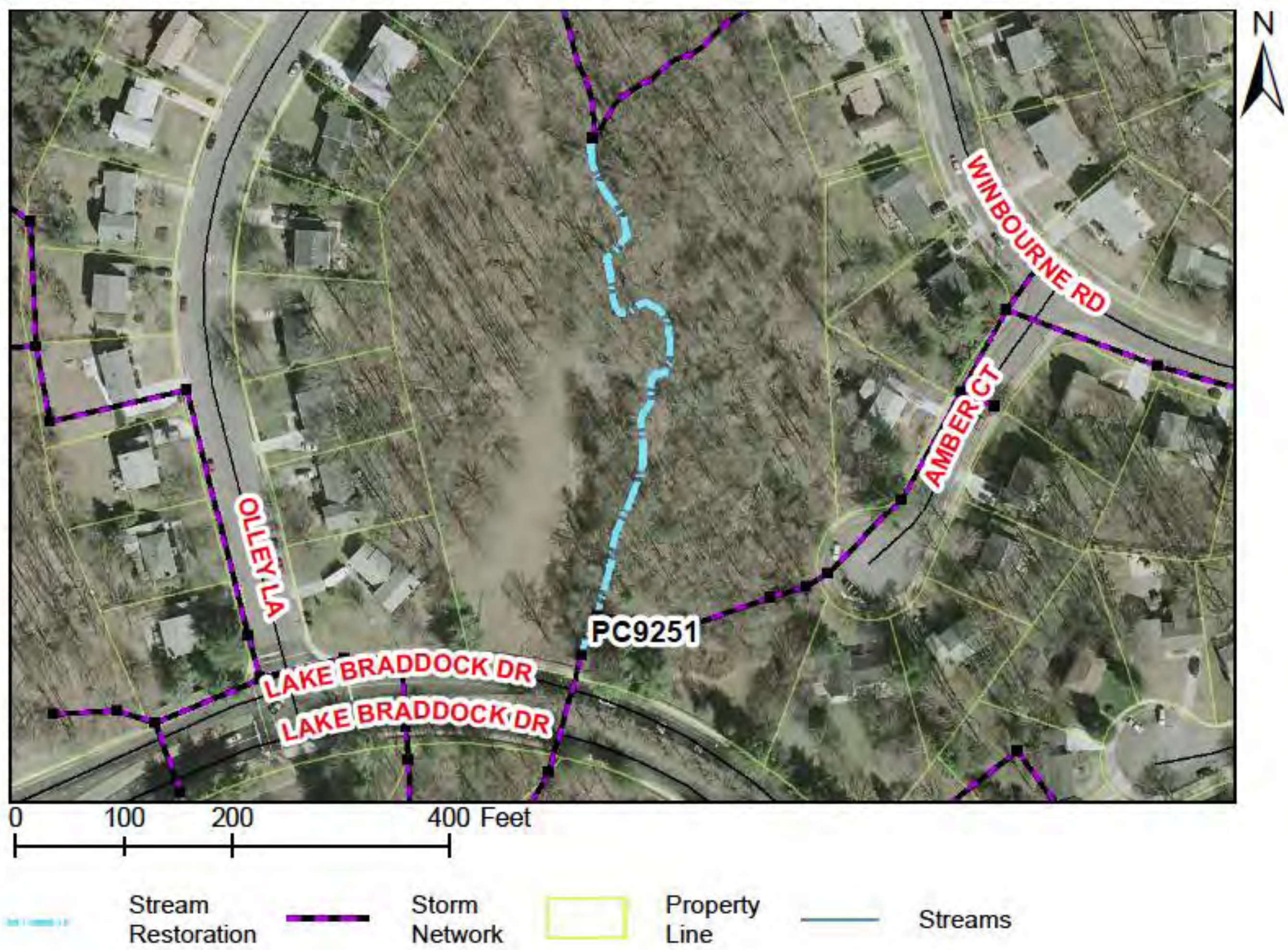
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1471	LF	$200	$294,200
Clear and Grub	1.69	AC	$10,000	$16,917
Plantings	1.69	AC	$25,000	$42,291
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$45,341
Ancillary Items	1	LS	5%	$22,670
			Base Construction Cost	$521,419
			Mobilization (5%)	$26,071
			Subtotal 1	$547,490
			Contingency (25%)	$136,872
			Subtotal 2	$684,362
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$307,963
			Total	$992,325
			Estimated Project Cost	$1,000,000

PC9251 Stream Restoration



Address: Behind 9313 Winbourne Road, Burke, Virginia
Location: Stream near Winbourne Road
Land Owner: Private – Lake Braddock Community Association
PIN: 0694 10 A
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: The stream is located between Olley Lane and Winbourne Road. The stream conveys runoff from adjacent roads and single family residential neighborhoods. Stream conveys runoff from both a closed system and sheet flow from roads and homes to the north, east and west. The banks of the existing stream are significantly eroded. This project proposes repairing bank and bed erosion to restore channel morphology.



Project Benefits: This stream stabilization will reduce sediment loads to the stream, maintain the capacity of the stream channel, and control unwanted meander. These measures will help reduce the erosion that is occurring over time. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

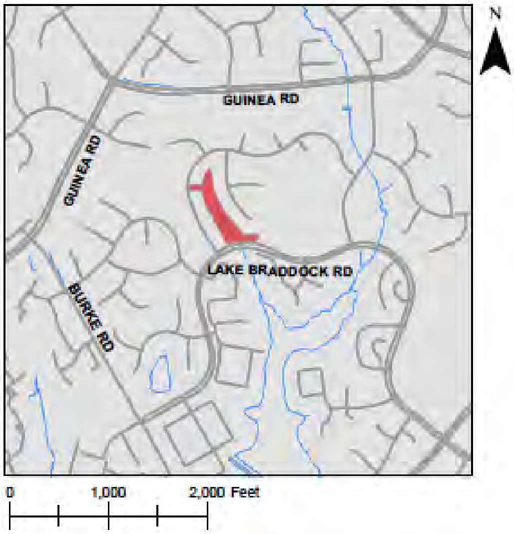
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
8.23	13.16	5.10

Project Design Considerations: Existing stream bed is dry and appears to have been reinforced with riprap in sections. The restoration will focus on improving the connection of the three storm pipes to the stream. Areas of streambed erosions will be stabilized by using bank shaping techniques such as rock toe enforcements, bank revegetation, and erosion control fabric reinforcements. The stream is located on open space property.

Cost:

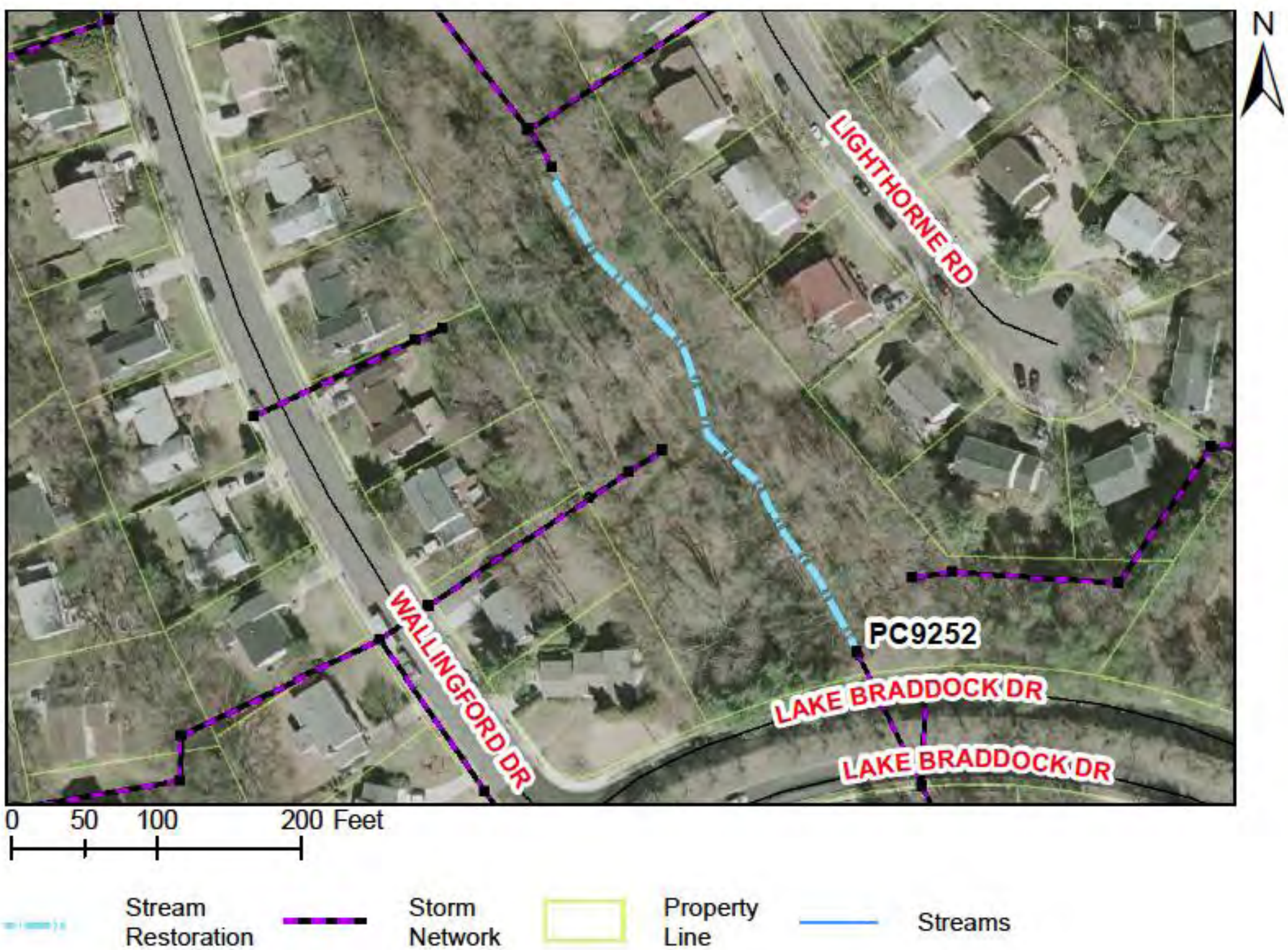
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	564	LF	$200	$112,800
Clear and Grub	0.65	AC	$10,000	$6,486
Plantings	0.65	AC	$25,000	$16,215
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$23,550
Ancillary Items	1	LS	5%	$11,775
			Base Construction Cost	$270,826
			Mobilization (5%)	$13,541
			Subtotal 1	$284,367
			Contingency (25%)	$71,092
			Subtotal 2	$355,459
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$159,957
			Total	$515,416
			Estimated Project Cost	$520,000

PC9252 Stream Restoration



Address: Next to 9535 Wallingford Drive, Burke, Virginia
Location: Stream near Wallingford Drive
Land Owner: Private – Lake Braddock Homeowners Association
PIN: 0693 06 G
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes repairing bank and bed erosion to restore channel morphology of the stream near Wallingford Drive. Stream stabilization will reduce sediment loads to the stream while maintaining the capacity and controlling unwanted meander. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric, and rapid vegetation establishment. Stream is adjacent to the roadway.



Project Benefits: This stream restoration will reduce erosion and instream sediment. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

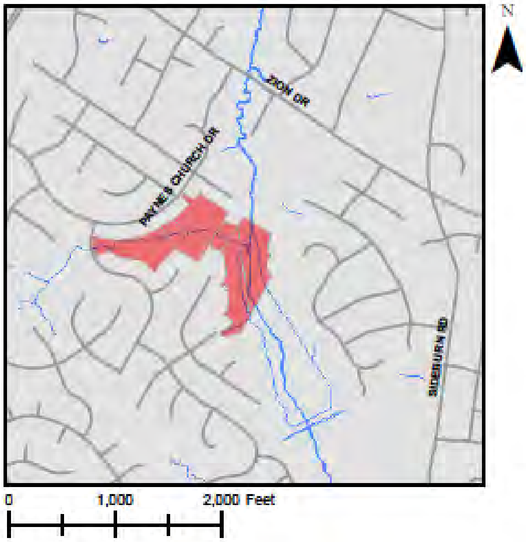
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
3.50	5.59	2.17

Project Design Considerations: This stream is located in the Lake Braddock open space and is near a stream daylighting project (PC9253 – middle left of restoration length) and a bioswale project (PC9544C – southeast of cul-de-sac). This project should be coordinated with the other project to maximize its benefits and minimize costs. This stream receives runoff from an upstream culvert and two other storm pipe outfalls.

Cost:

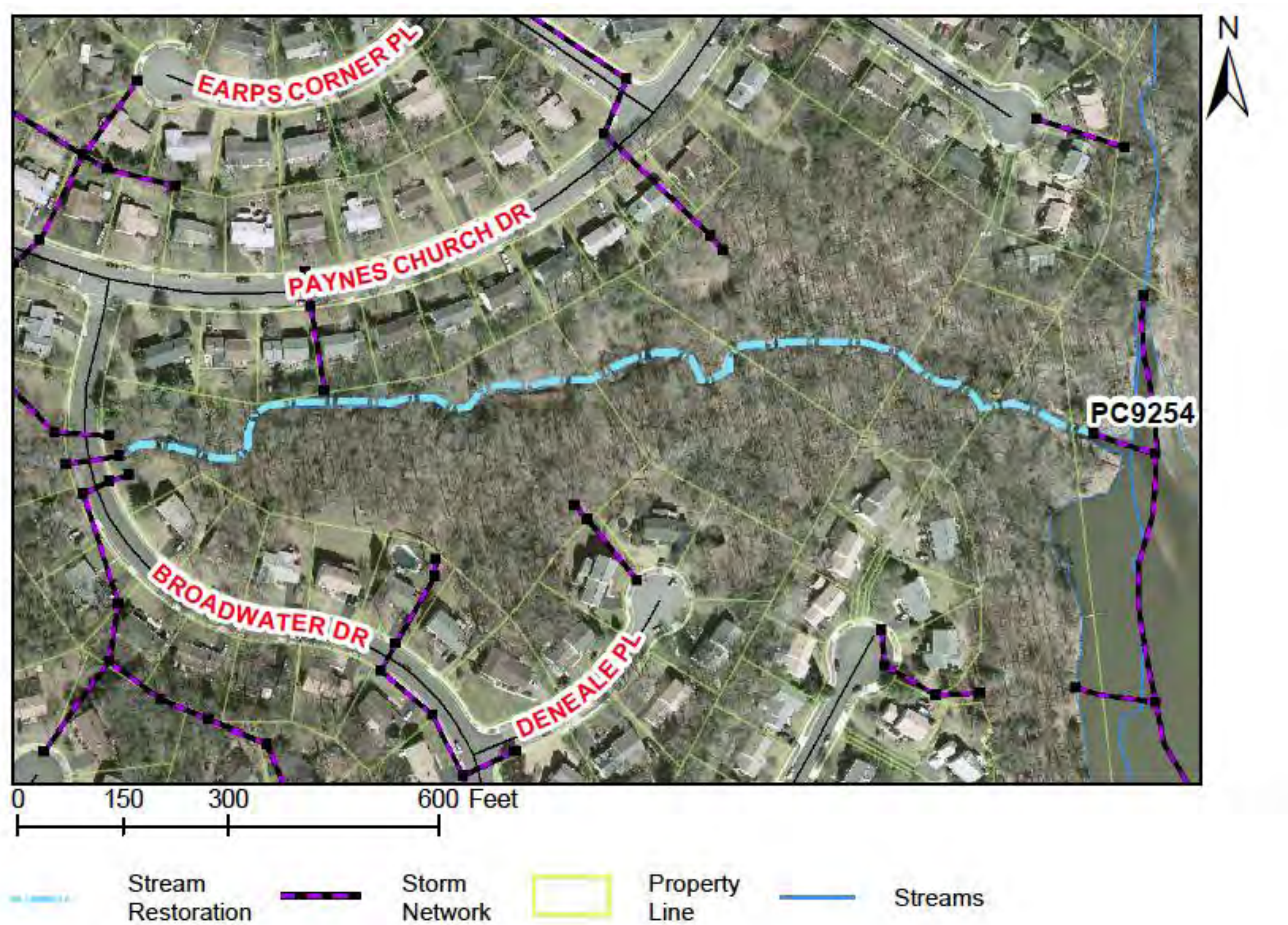
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	393	LF	$200	$78,600
Clear and Grub	0.45	AC	$10,000	$4,520
Plantings	0.45	AC	$25,000	$11,299
Additional Cost, First 500 LF	393	LF	$200	$78,600
Erosion and Sediment Control	1	LS	10%	$17,302
Ancillary Items	1	LS	5%	$8,651
			Base Construction Cost	$198,971
			Mobilization (5%)	$9,949
			Subtotal 1	$208,920
			Contingency (25%)	$52,230
			Subtotal 2	$261,149
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$117,517
			Total	$378,667
			Estimated Project Cost	$380,000

PC9254 Stream Restoration



Address: Behind 10757 John Turley Place, Fairfax, Virginia
Location: Stream near John Turley Place
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0683 01 0035F, 0683 05 A2, 0683 01 0035B, 0683 05 A, 0683 05 B, 0683 05 C
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: The project consists of restoration of a stream that discharges into Woodglen Pond. The primary indicator is poor channel morphology. This project proposes restoring the stream by repairing bank and bed erosion and restoring channel morphology. This will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander of the stream. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabric, and rapid vegetation establishment.



Project Benefits: This stream restoration will reduce erosion and instream sediment. This project will stabilize banks and reestablish the streambed away from the single family homes. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

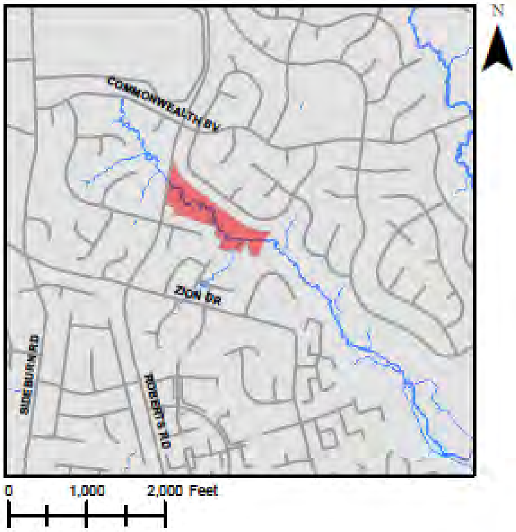
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal I(Lbs/Yr)
123.13	197.00	76.34

Project Design Considerations: This stream restoration is bordered on the upstream end by a culvert under Broadwater Drive and two stormwater system outfalls. Going east, the stream has meandered too close to the back property line of houses near another stormwater outfall. This outfall should be improved to include a settling basin and the stream channel should be directed farther south. The other three stormwater outfall connections should be improved to ensure a stable connection to the stream.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1566	LF	$200	$313,200
Clear and Grub	1.80	AC	$10,000	$18,009
Plantings	1.80	AC	$25,000	$45,023
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$47,623
Ancillary Items	1	LS	5%	$23,812
			Base Construction Cost	$547,666
			Mobilization (5%)	$27,383
			Subtotal 1	$575,050
			Contingency (25%)	$143,762
			Subtotal 2	$718,812
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$323,465
			Total	$1,042,277
			Estimated Project Cost	$1,050,000

PC9256 Stream Restoration



Address: Behind 5351 Brandon Ridge Way, Fairfax, Virginia
Location: Stream near Brandon Ridge Way
Land Owner: Public/Local - Fairfax County Park Authority
PIN: 0684 09 E1
Control Type: Water quality control
Drainage Area:
Receiving Waters: Tributary of Rabbit Branch

Description: The stream north of Windsor Hills Drive has indicators of poor channel morphology. In order to improve the channel, this project proposes repairing bank and bed erosion. This stream is located on Fairfax County Park Authority land. The stream receives water from adjacent residential neighborhoods. The stormwater is collected in pipes and receives no treatment before discharging to the stream. Stream stabilization will reduce sediment while maintaining capacity of the channel and controlling unwanted meander.

Project Benefits: Restoring this stream will reduce erosion and instream sediment. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
19.94	31.90	12.36

Project Design Considerations: The residential area surrounding the stream has been developed long enough for the stream channel to adapt to convey the increased flows of the development. Grade control measures such as step pools and rock cross vanes should be implemented to ensure the future stability of the stream. Streambank shaping techniques such as erosion control fabrics and vegetation establishment should be included to stabilize exposed soil and prevent erosion and sediment loading to the stream. Additionally, outfall improvements can be made at the storm pipe connections to the stream bed.

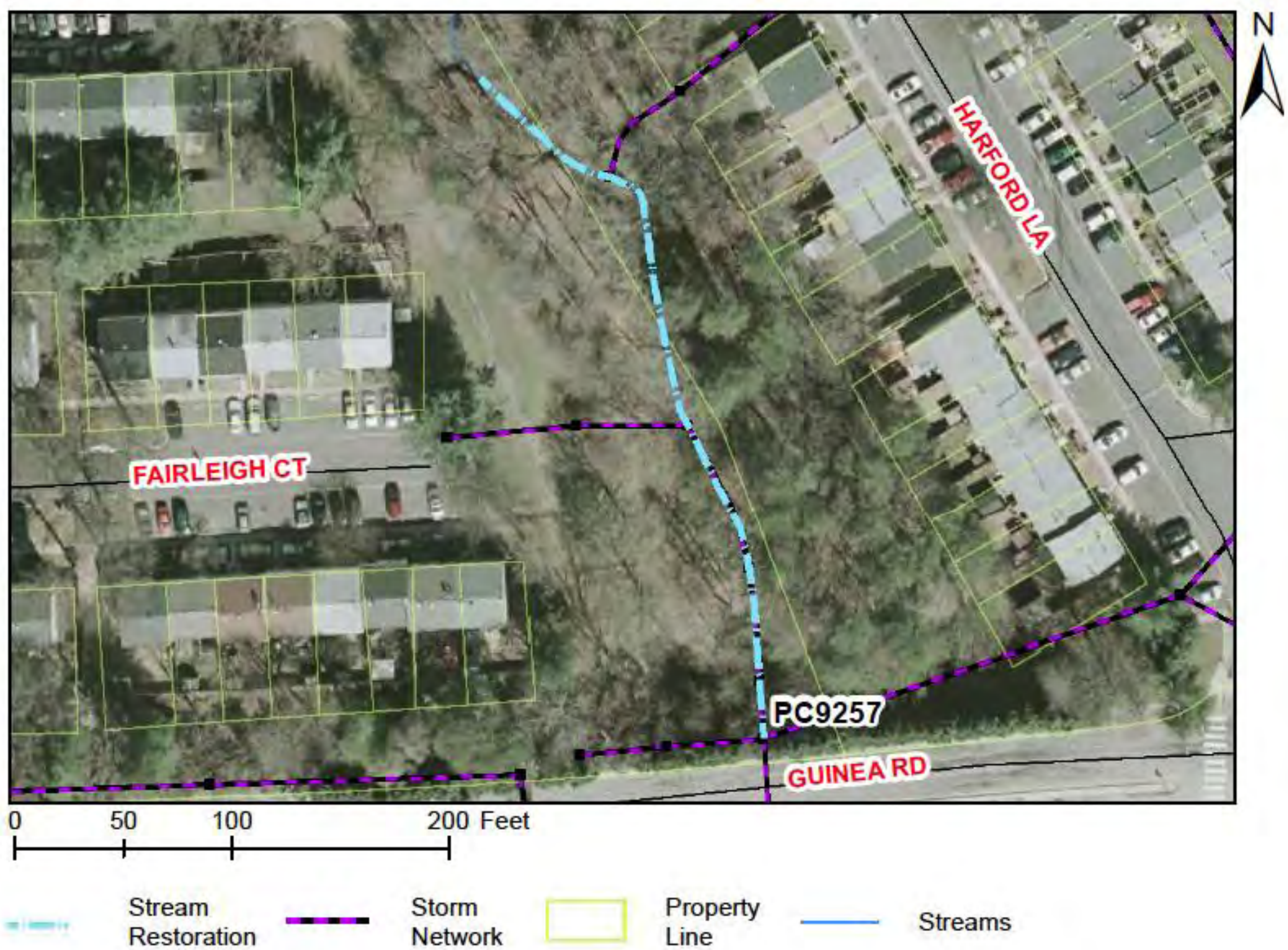
Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1659	LF	$200	$331,800
Clear and Grub	1.91	AC	$10,000	$19,079
Plantings	1.91	AC	$25,000	$47,696
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$49,857
Ancillary Items	1	LS	5%	$24,929
			Base Construction Cost	$573,361
			Mobilization (5%)	$28,668
			Subtotal 1	$602,029
			Contingency (25%)	$150,507
			Subtotal 2	$752,536
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$338,641
			Total	$1,091,178
			Estimated Project Cost	$1,100,000

PC9257 Stream Restoration

Address: Next to 9404 Fairleigh Court, Burke, Virginia
Location: Stream near Fairleigh Court
Land Owner: Private –Lake Braddock Community Association
PIN: 0694 11 C, 0694 11 D
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This project consists of restoration of a stream near Fairleigh Court, which receives runoff from closed storm systems that drain residential neighborhoods. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining stream capacity and controlling



Project Benefits: This stream restoration will reduce erosion and instream sediment. Improving the storm pipe outfalls to stream bed connections will help reduce sediment from the untreated roadway runoff. Daylighting the storm pipe will allow for greater infiltration, baseflow, and a decrease in stormwater temperature. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
5.13	8.21	3.18

Project Design Considerations: Project is just downstream of another pipe daylighting project, PC9258. Both projects are located on Lake Braddock open space. This stream is believed to be a primary source of downstream sediment. In fact, the dry pond downstream has recently been cleaned, but there is concern of the pond having insufficient infiltration of stormwater due to sediment clogging the pond floor. Daylighting the upstream storm system and creating sediment forebays for the storm outfalls will help reduce sediment, improve water quality, and increase infiltration. Currently the stream is dry, eroded, and has debris (see photo).

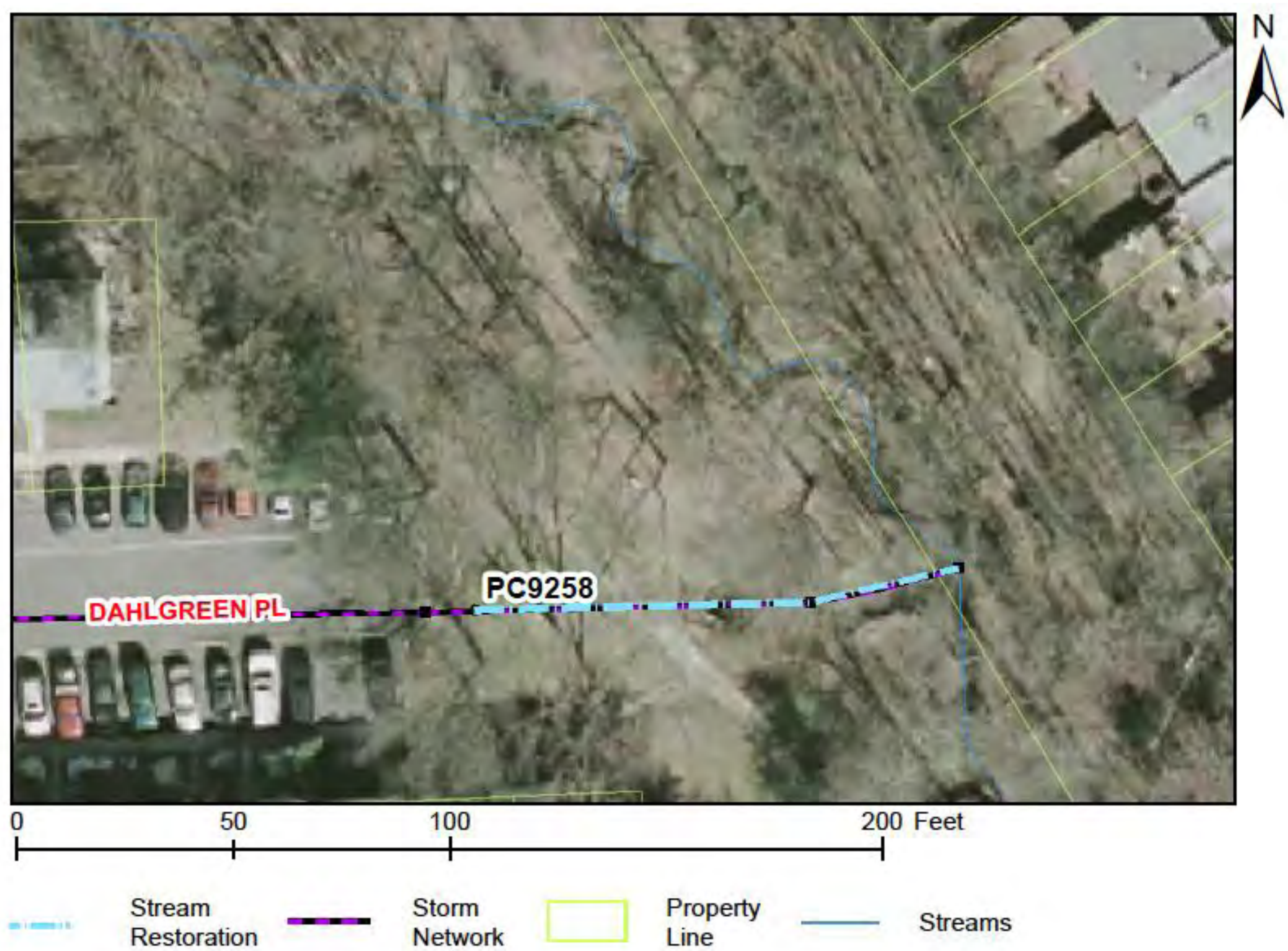
Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	352	LF	$200	$70,400
Clear and Grub	0.40	AC	$10,000	$4,048
Plantings	0.40	AC	$25,000	$10,120
Additional Cost, First 500 LF	352	LF	$200	$70,400
Erosion and Sediment Control	1	LS	10%	$15,497
Ancillary Items	1	LS	5%	$7,748
			Base Construction Cost	$178,213
			Mobilization (5%)	$8,911
			Subtotal 1	$187,124
			Contingency (25%)	$46,781
			Subtotal 2	$233,905
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$105,257
			Total	$339,162
			Estimated Project Cost	$340,000

PC9258 Stream Restoration

Address: Next to 5101 Dahlgreen Place, Burke, Virginia
Location: Stream near Dahlgreen Place
Land Owner: Private – Lake Braddock Community Association
PIN: 0694 11 D
Control Type: Water quality and quantity control
Drainage Area: 4.98 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes daylighting a pipe from a residential neighborhood (Dahlgreen Place) farther upstream. The primary indicator is poor channel morphology. This project will return the water to its natural state. This will reduce the velocity at which stormwater enters the stream. Additionally, the daylighting will provide more opportunity for the stormwater to infiltrate. This will help reduce runoff rates and stream erosion.



Project Benefits: Restoring this stream will lessen the amount of erosion downstream and result in less instream sediment. Daylighting this pipe will allow the stormwater to return to a natural state earlier, which will allow the water to infiltrate better and will help reduce erosive velocities. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

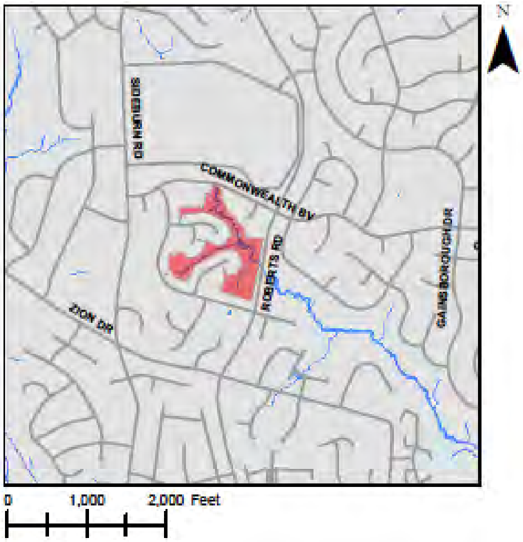
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal I(Lbs/Yr)
1.65	2.64	1.02

Project Design Considerations: This project is located in Lake Braddock Community open space. Records show no easements. Stormwater runoff from these townhouses receives no treatment before being directly discharged to the stream. The existing outfall is reinforced with rip rap, but still shows signs of scour from erosive velocities. Daylighting the existing pipe farther upstream would increase the chance for the stormwater to infiltrate and for vegetation to absorb/ breakdown some of the pollutants. Depending on the slope of the pipe, stepping pools may be required. Other measures at this site could be the creation of storage below the outfall.

Cost:

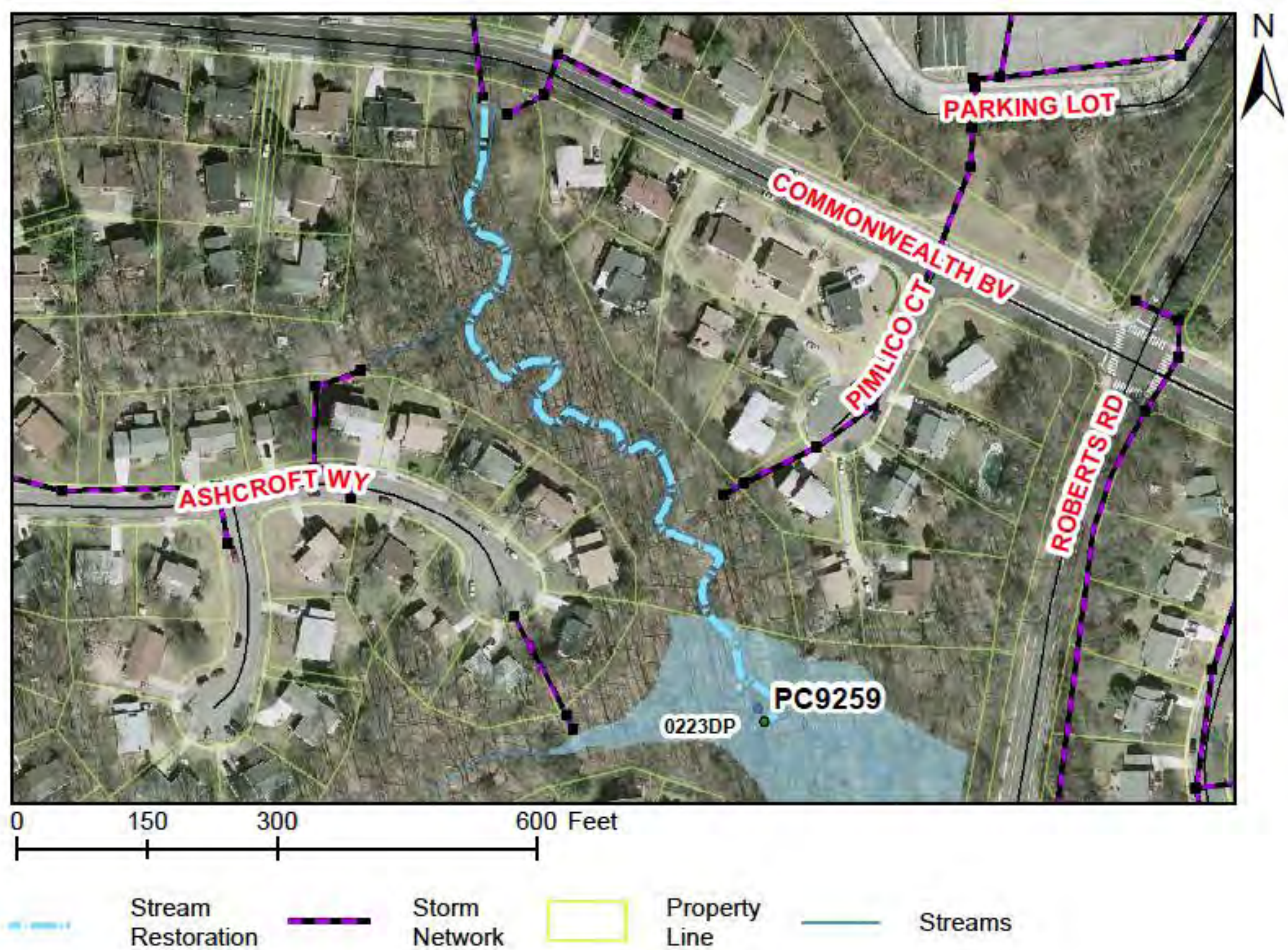
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	113	LF	$200	$22,600
Clear and Grub	0.13	AC	$10,000	$1,300
Plantings	0.13	AC	$25,000	$3,249
Additional Cost, First 500 LF	113	LF	$200	$22,600
Erosion and Sediment Control	1	LS	10%	$4,975
Ancillary Items	1	LS	5%	$2,487
			Base Construction Cost	$57,210
			Mobilization (5%)	$2,861
			Subtotal 1	$60,071
			Contingency (25%)	$15,018
			Subtotal 2	$75,089
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$33,790
			Total	$108,879
			Estimated Project Cost	$110,000

PC9259 Stream Restoration



Address: Behind 5220 Nottinghill Lane, Fairfax, Virginia
Location: Stream near Nottinghill Lane
Land Owner: Private – Kings Park West Community Association
PIN: 0684 09 C, 0684 09 A
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Rabbit Branch

Description: This project proposes the repair of bank and bed erosion to a stream that discharges to the existing pond 0223DP. The stream is located in a wooded open space. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity. Stabilizing this stream will help reduce the sediment to the pond.



Project Benefits: Reducing erosion from this stream will reduce instream sediment and its associated pollutants. Stabilizing the stream will lessen the sediment load to the downstream pond and will decrease the maintenance necessary for the pond. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

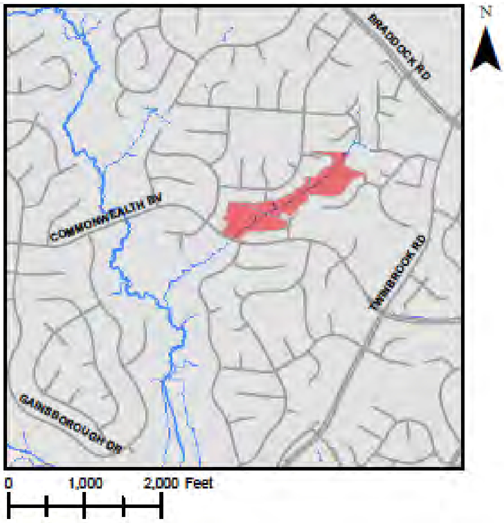
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
11.43	18.28	7.08

Project Design Considerations: This stream conveys water upstream of Commonwealth Blvd. Additionally, the stream receives untreated roadway runoff from closed pipes at Pimlico Court and Commonwealth Blvd. The stream is located in Kings Park West open space. This restoration should be coordinated with the stormwater pond retrofit of 0223DP (PC9135). Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.

Cost:

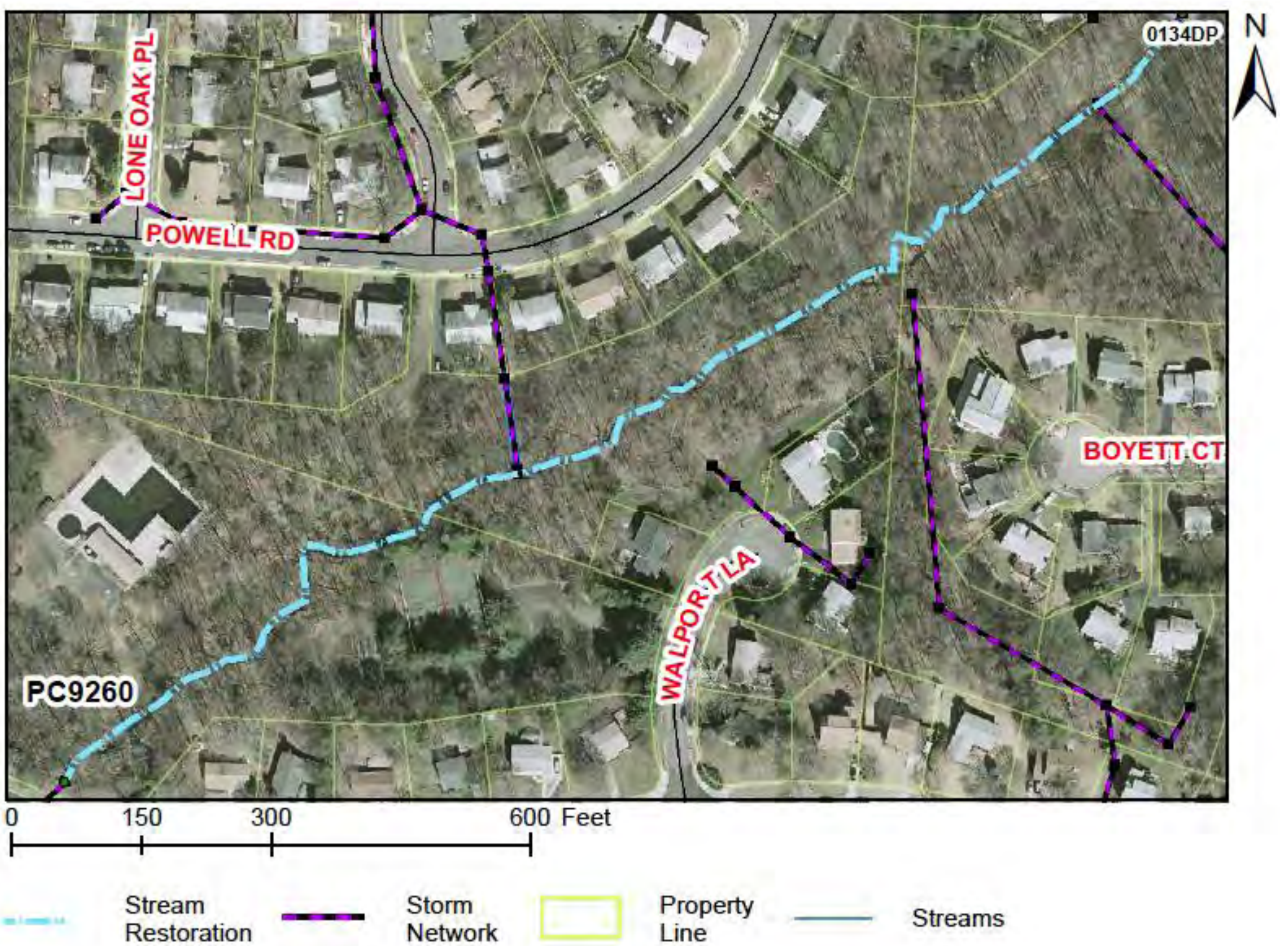
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1100	LF	$200	$220,000
Clear and Grub	1.27	AC	$10,000	$12,650
Plantings	1.27	AC	$25,000	$31,625
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$36,428
Ancillary Items	1	LS	5%	$18,214
			Base Construction Cost	$418,916
			Mobilization (5%)	$20,946
			Subtotal 1	$439,862
			Contingency (25%)	$109,966
			Subtotal 2	$549,828
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$247,422
			Total	$797,250
			Estimated Project Cost	$800,000

PC9260 Stream Restoration



Address: Near 9800 Commonwealth Blvd., Fairfax, Virginia
Location: Stream near Commonwealth Blvd.
Land Owner: Private –Twinbrook HOA, Maywood Terrace HOA, Commonwealth Swim Club Inc.
PIN: 0693 09 E, 0693 07 A1, 0693 05 B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Rabbit Branch

Description: The stream runs parallel to Powell Road towards Commonwealth Boulevard and has indicators of poor channel morphology. This project proposes to repair bank and bed erosion and restore channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity of the channel and controlling unwanted meander. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Restoring this stream will reduce instream sediment and its associated pollutants. Additionally, improving the five stream outfalls will help reduce erosive velocities in the stream. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

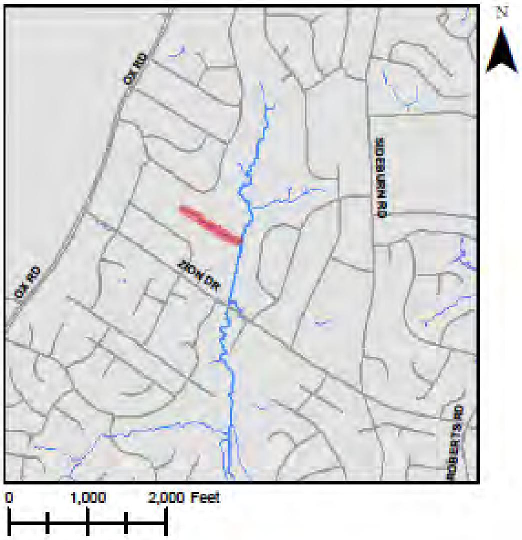
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
15.25	24.40	9.46

Project Design Considerations: This restoration is downstream of the proposed stormwater pond retrofit of 0134DP (Project PC9137). The stream restoration should be coordinated with PC9137 to help maximize the benefits of both projects. This stream has a longitudinal slope of approximately 1.8% and receives runoff from four stormwater outfalls. Three of the outfalls appear to directly discharge to the stream and one is slightly disconnected. Settling basins for these outfalls would reduce flow velocities and allow for some instream settling of any roadway fines. Records show no easements for the stream. This project will need to be coordinated between the three private entities of Twinbrook HOA, Maywood Terrace HOA, and Commonwealth Swim Club Inc.

Cost:

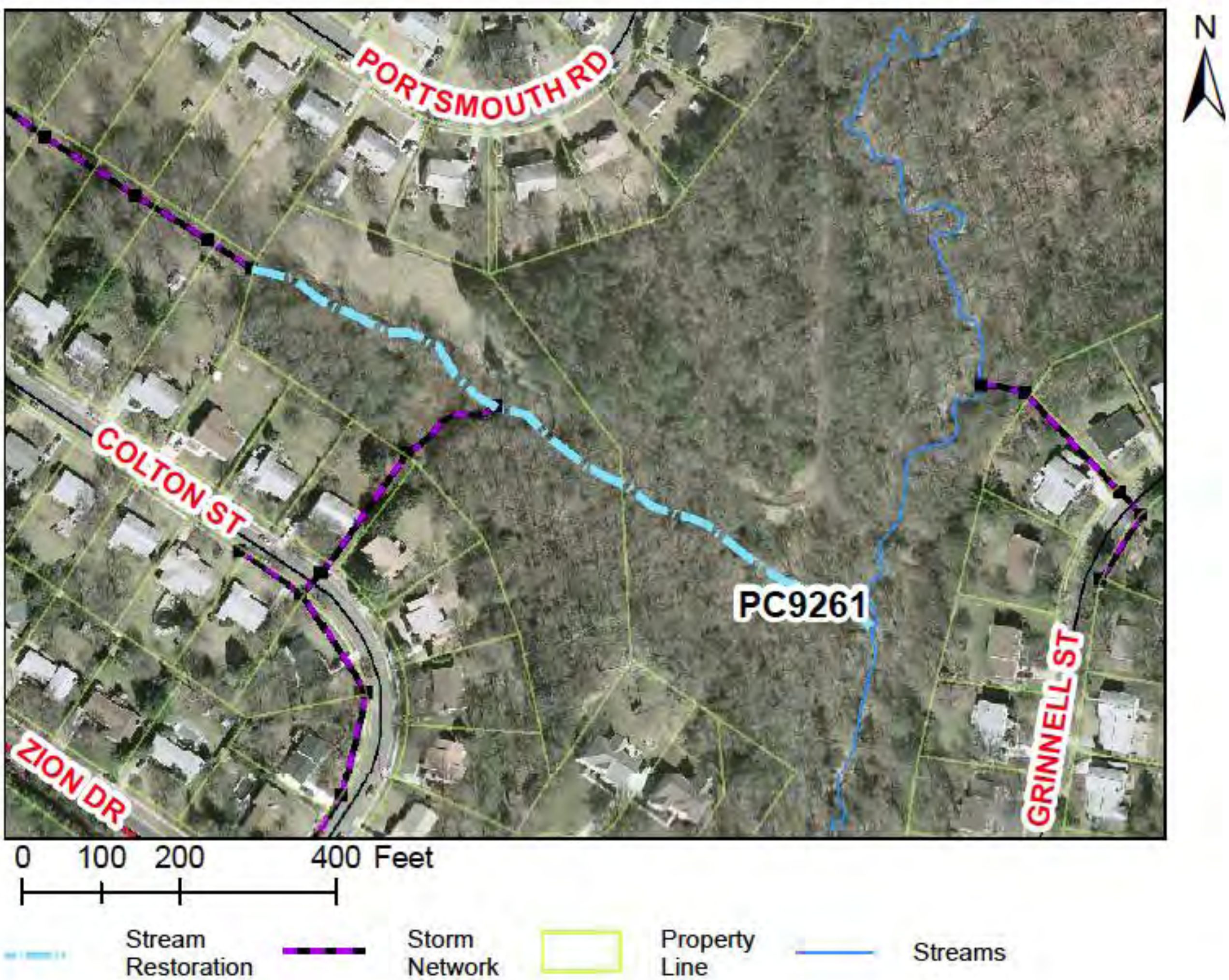
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1673	LF	$200	$334,600
Clear and Grub	1.92	AC	$10,000	$19,240
Plantings	1.92	AC	$25,000	$48,099
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$50,194
Ancillary Items	1	LS	5%	$25,097
			Base Construction Cost	$577,229
			Mobilization (5%)	$28,861
			Subtotal 1	$606,090
			Contingency (25%)	$151,523
			Subtotal 2	$757,613
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$340,926
			Total	$1,098,539
			Estimated Project Cost	$1,100,000

PC9261 Stream Restoration



Address: Behind 5214 Grinnell Street, Fairfax, Virginia
Location: Stream near Grinnell St. (northwest reach)
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0683 0408 A, 0683 0407 B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: This project proposes restoration of a stream running parallel to Colton Street. The project consists of repairing bank and bed erosion and restoring channel morphology. The primary indicator is poor channel morphology. Stream conveys runoff from adjacent residential development. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.



Project Benefits: Stream stabilization of this stream segment will reduce sediment loads while maintaining capacity and controlling unwanted meander. Measures will be put in place to repair existing erosion and prevent future erosion over time. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

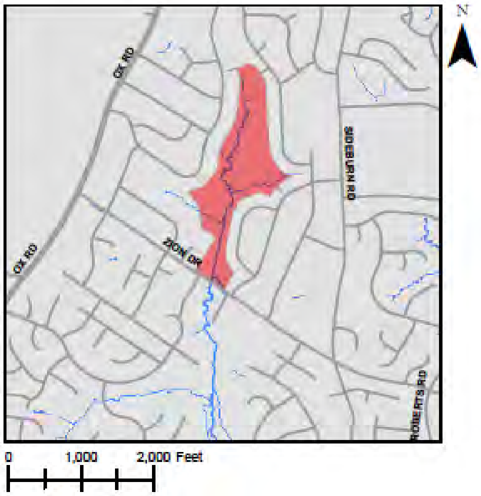
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
7.64	12.23	4.74

Project Design Considerations: The section of stream to be restored is entirely on property owned by Fairfax County Park Authority. The adjacent residential area is piped into the stream without any pre-treatment. During restoration of this stream great effort will be taken to minimize impacts to mature vegetation and to maintain the buffer.

Cost:

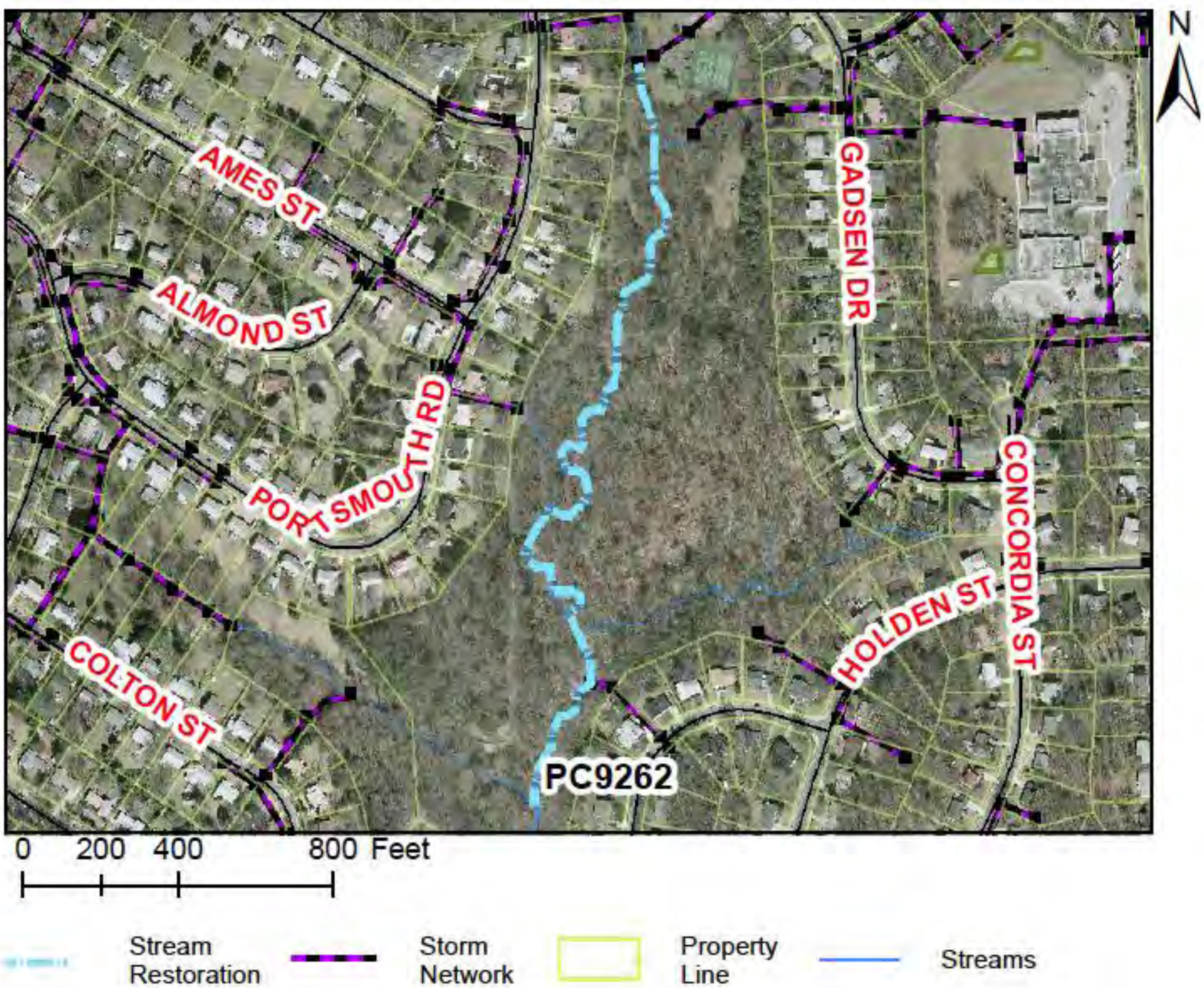
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	938	LF	$200	$187,600
Clear and Grub	1.08	AC	$10,000	$10,787
Plantings	1.08	AC	$25,000	$26,968
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$32,535
Ancillary Items	1	LS	5%	$16,268
			Base Construction Cost	$374,158
			Mobilization (5%)	$18,708
			Subtotal 1	$392,866
			Contingency (25%)	$98,216
			Subtotal 2	$491,082
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$220,987
			Total	$712,069
			Estimated Project Cost	$720,000

PC9262 Stream Restoration



Address: Behind 5214 Grinnell Street, Fairfax, Virginia
Location: Stream near Grinnell Street (northeast reach)
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0683 0407 B
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: The stream is east of Portsmouth Road and west of Gadsen Drive and flows to the south. The stream collects runoff from adjacent residential neighborhoods and a school to the north, east and west. This project proposes the repair and restoration of bank and bed erosion, some of which is severe. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid vegetation establishment.



Project Benefits: The stream stabilization will reduce sediment loads to the stream and maintain the capacity of the stream channel to control unwanted meander. Restoration will reduce erosion over time and improve the overall condition of the stream and buffers. Stream also runs very close to adjacent residential neighborhoods and erosion could eventually have impacts on homes. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
92.15	147.45	57.14

Project Design Considerations: Residential area outfalls through a closed system without any treatment. Runoff may be entering stream areas at a high velocity causing erosion. Some outfalls daylight close to the stream without very much buffer. The entire area of restoration is on property owned by Fairfax County Park Authority.

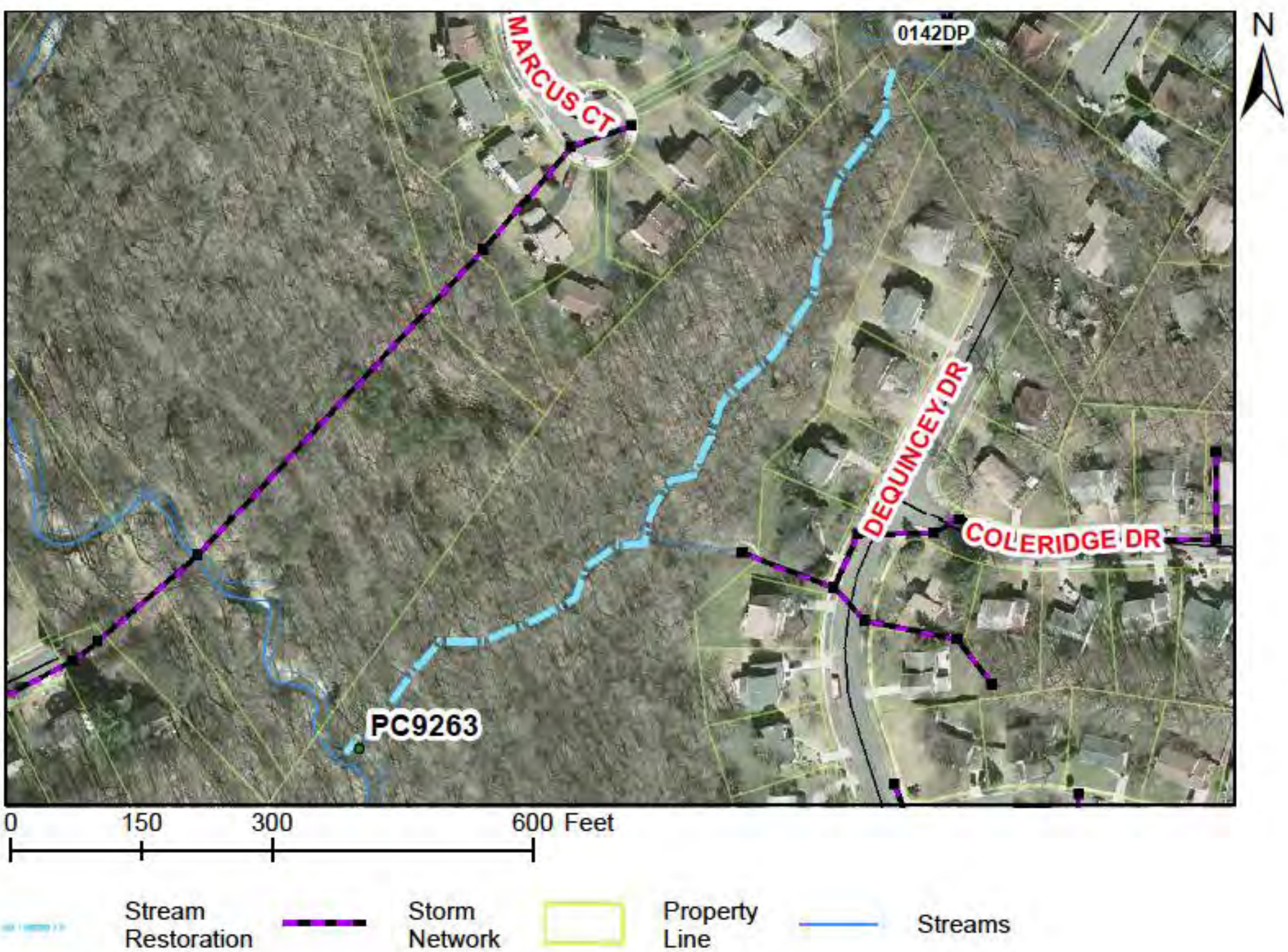
Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	2464	LF	$200	$492,800
Clear and Grub	2.83	AC	$10,000	$28,336
Plantings	2.83	AC	$25,000	$70,840
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$69,198
Ancillary Items	1	LS	5%	$34,599
			Base Construction Cost	$795,772
			Mobilization (5%)	$39,789
			Subtotal 1	$835,561
			Contingency (25%)	$208,890
			Subtotal 2	$1,044,451
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$470,003
			Total	$1,514,454
			Estimated Project Cost	$1,520,000

PC9263 Stream Restoration

Address: Behind 5802 Dequincey Dr., Fairfax, Virginia
Location: Stream near Dequincey Dr.
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0693 05 E
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Rabbit Branch

Description: The stream west of Dequincey Drive shows indications of poor channel morphology. This project proposes improving channel morphology by repairing bed and bank erosion. These repairs will include streambed shaping, rock toe reinforcement, erosion control fabric, and revegetation in degraded areas. The stream currently conveys water from three different sources; sheet flow from adjacent neighborhoods, untreated stormwater from a closed storm system outfall, and the outfall from a dry pond. Stream stabilization will reduce sediment loads, maintain capacity of the stream channel, and control unwanted meander.



Project Benefits: The elimination of bed and bank erosion will reduce instream sediment and result in a reduction of the nitrogen and phosphorus associated with the sediment. Additionally, this project will provide an opportunity to ensure proper operation of dry pond 0142DP. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

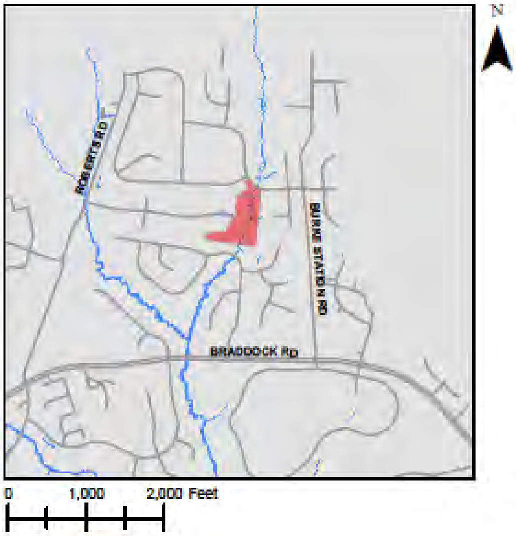
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
12.30	19.67	7.62

Project Design Considerations: This project is located on Fairfax County Park Authority property, so no additional easement will be necessary. Because the stream is located behind single family houses, measures should be incorporated to ensure a proper stream buffer. The upstream dry pond's design and maintenance should be reviewed in coordination with this stream restoration. Grade control measures should be investigated due to this stream having a longitudinal slope of approximately 1.9%.

Cost:

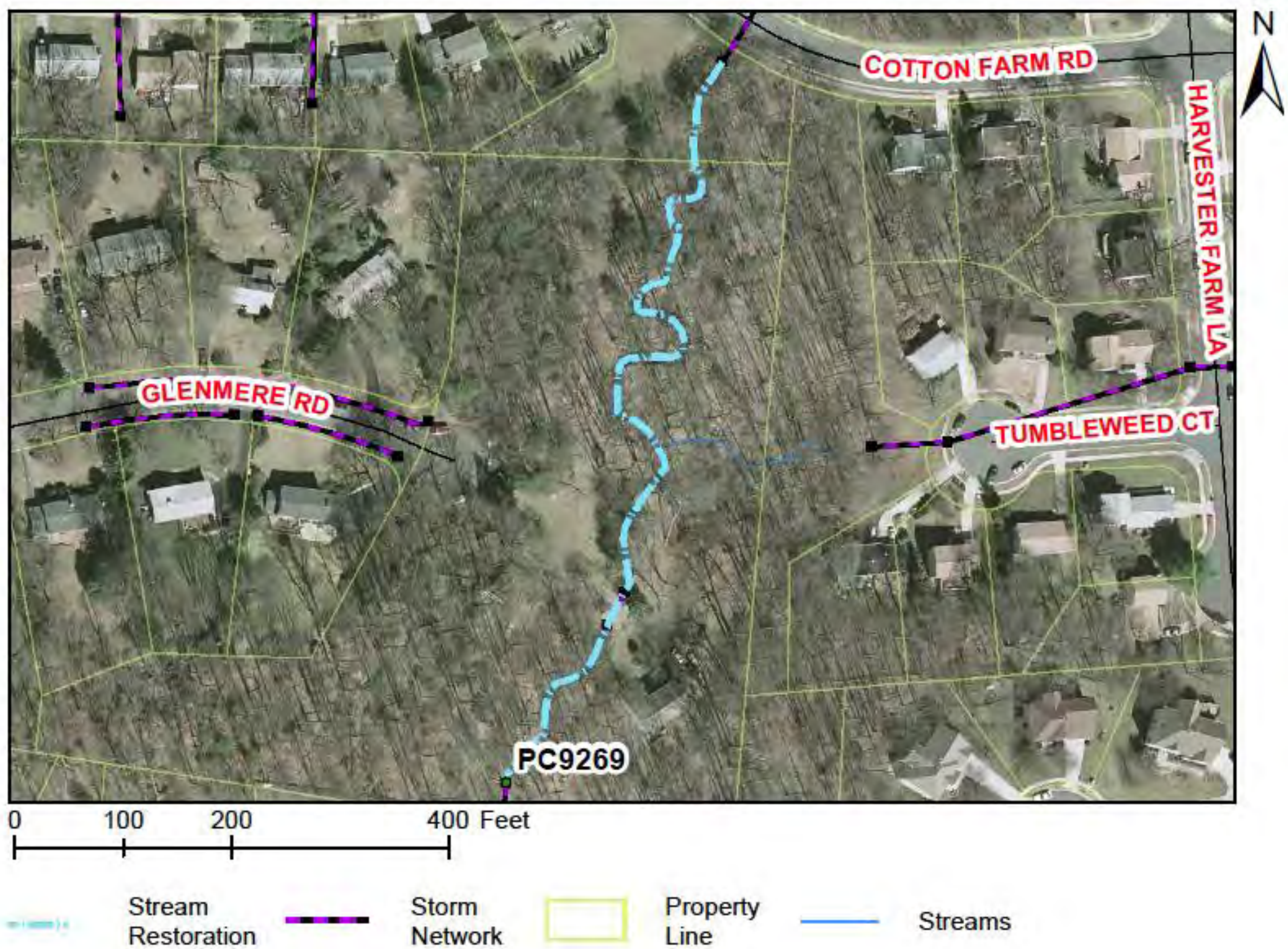
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1099	LF	$200	$219,800
Clear and Grub	1.26	AC	$10,000	$12,639
Plantings	1.26	AC	$25,000	$31,596
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$36,403
Ancillary Items	1	LS	5%	$18,202
			Base Construction Cost	$418,640
			Mobilization (5%)	$20,932
			Subtotal 1	$439,572
			Contingency (25%)	$109,893
			Subtotal 2	$549,465
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$247,259
			Total	$796,724
			Estimated Project Cost	$800,000

PC9269 Stream Restoration



Address: Next to 10159 Red Spruce Drive, Fairfax, Virginia
Location: Stream near Red Spruce Drive
Land Owner: Private – Hickory Farms Community Association, Private Owner
PIN: 0691 08 D1, 0682 01 0012A
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Rabbit Branch

Description: The stream is east of Glemere Road and south of Cotton Farm Road and outfalls into 0588DP. Due to poor channel morphology, this project proposes repairing bank and bed erosion. Stream stabilization will reduce sediment loads to the stream while maintaining the capacity of the channel and controlling unwanted meander of the stream.



Project Benefits: Stabilizing this stream will reduce instream sediment and its associated pollutants. Below are the stream's estimated instream sediment pollutant amounts that will be eliminated after the stream restoration.

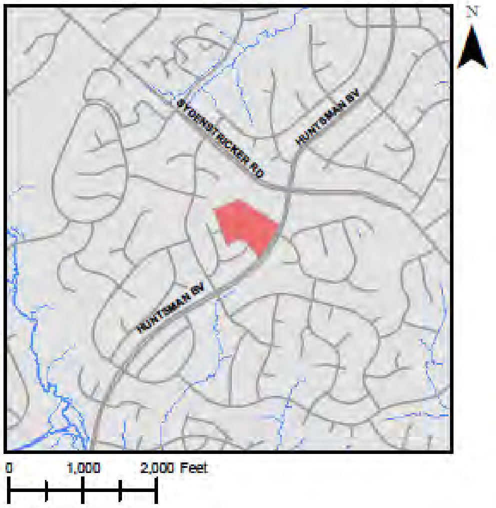
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
11.32	18.11	7.02

Project Design Considerations: Stream starts in HOA open space near Cotton Farm Road, but then crosses a single family home lot. The stream bank should be stabilized to prevent further meander near Cotton Farm Road. Erosion will be stabilized through the use of bank shaping, toe of slope protection, erosion control fabrics, and rapid vegetation establishment. The stream flows through a private driveway culvert and discharges into a dry pond. The dry pond's outfall structure is large with no water quality orfice (See photo). Modification to the structure should be investigated during stream restoration design to help increase baseflow and reduce erosion in the stream overall.

Cost:

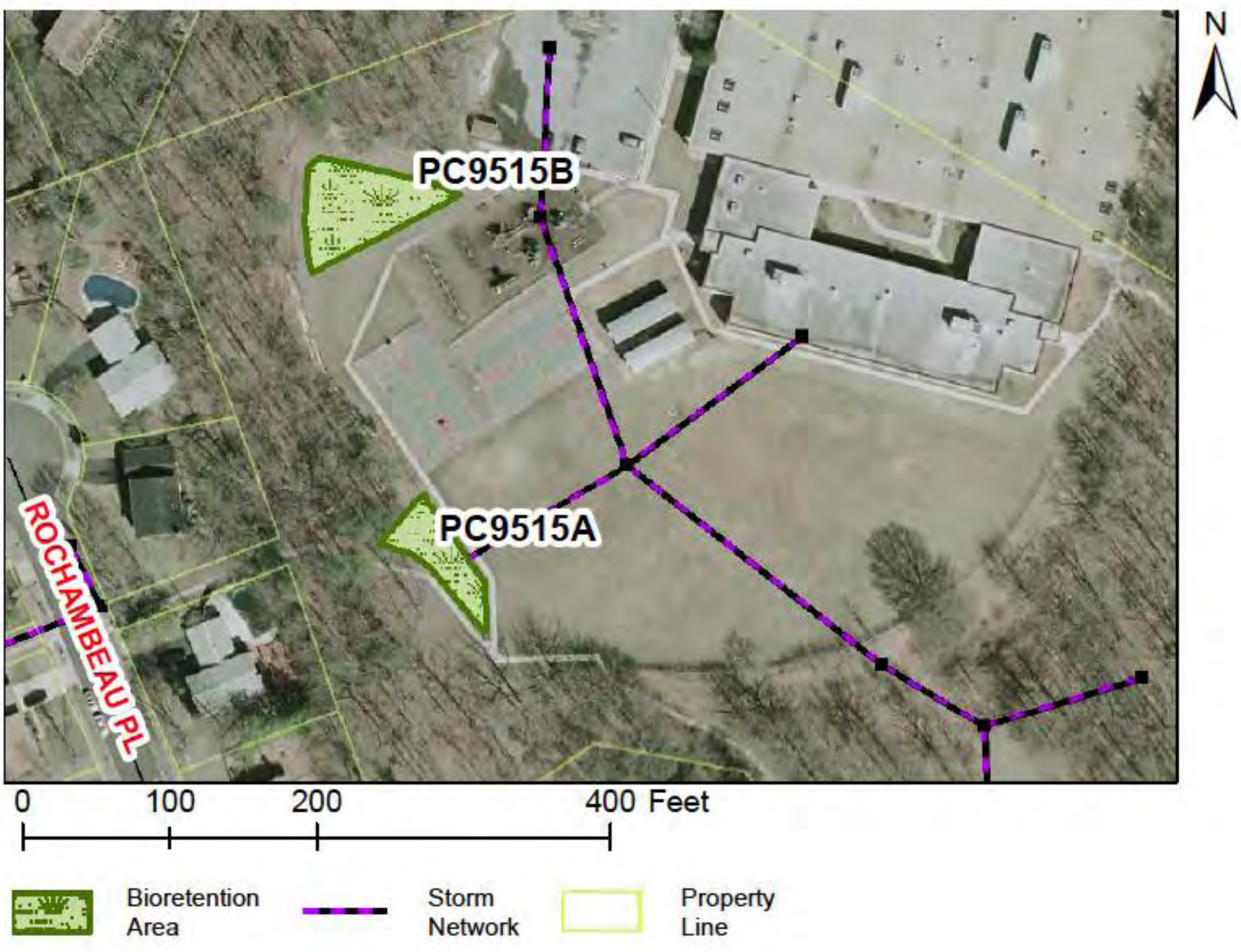
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	872	LF	$200	$174,400
Clear and Grub	1.00	AC	$10,000	$10,028
Plantings	1.00	AC	$25,000	$25,070
Additional Cost, First 500 LF	500	LF	$200	$100,000
Erosion and Sediment Control	1	LS	10%	$30,950
Ancillary Items	1	LS	5%	$15,475
			Base Construction Cost	$355,923
			Mobilization (5%)	$17,796
			Subtotal 1	$373,719
			Contingency (25%)	$93,430
			Subtotal 2	$467,149
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$210,217
			Total	$677,365
			Estimated Project Cost	$680,000

PC9515 BMP/ LID Suite



Address: 6820 Sydenstricker Rd., Springfield, Virginia
Location: Orange Hunt Elementary School
Land Owner: Public/Local – School Board of Fairfax County
PIN: 0882 07 A
Control Type: Water quality and quantity control
Drainage Area: 2.90 acres
Receiving Waters: Tributary of Middle Run

Description: This suite of projects proposes the creation of bioretention landscaping features to receive runoff from areas at Orange Hunt Elementary School. Both projects are on the west side of the school. Bioretention areas would receive runoff from the fields and blacktops. A filter layer made of 18-48" of sand is placed below a mulch layer. During a storm, the runoff ponds 6-9", rapidly filters to an underdrain, and outfalls into wooded area or infiltrates into the native soil. Indicators are pollutants including nitrogen, phosphorus and total suspended solids.



Project Benefits: Bioretention will capture sheet flow and create an ideal environment for filtration, biological uptake and microbial activity. The bioretention areas will promote infiltration and decrease runoff volume from the site. The bioretention areas also provide educational benefits at the school. Below are the bioretention area's estimated pollutant removal amounts.

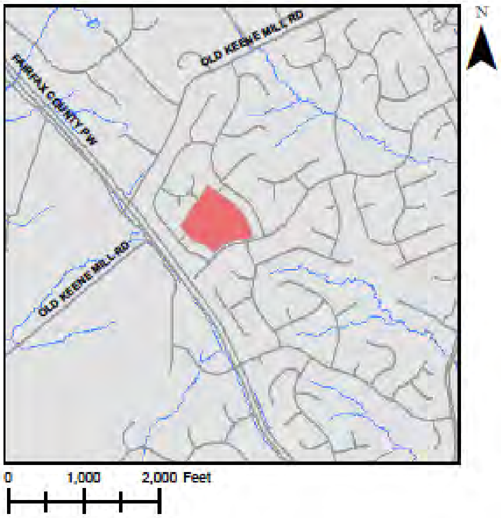
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.20	4.88	1.13

Project Design Considerations: In order to maximize bioretention benefits, more impervious runoff should be directed to this area. Subproject A has an existing concrete swale (dry). This swale should be removed and the soil will need to be ammended. The existing swale is behind a fence. A sign should be posted on the bioretention features to increase their educational benefits and and to increase stormwater stewardship. Soil testing will be need to verify infiltration rates. If the infiltration in the area proposed for subproject B is not good then an outfall pipe will need to be added to the cost.

Cost:

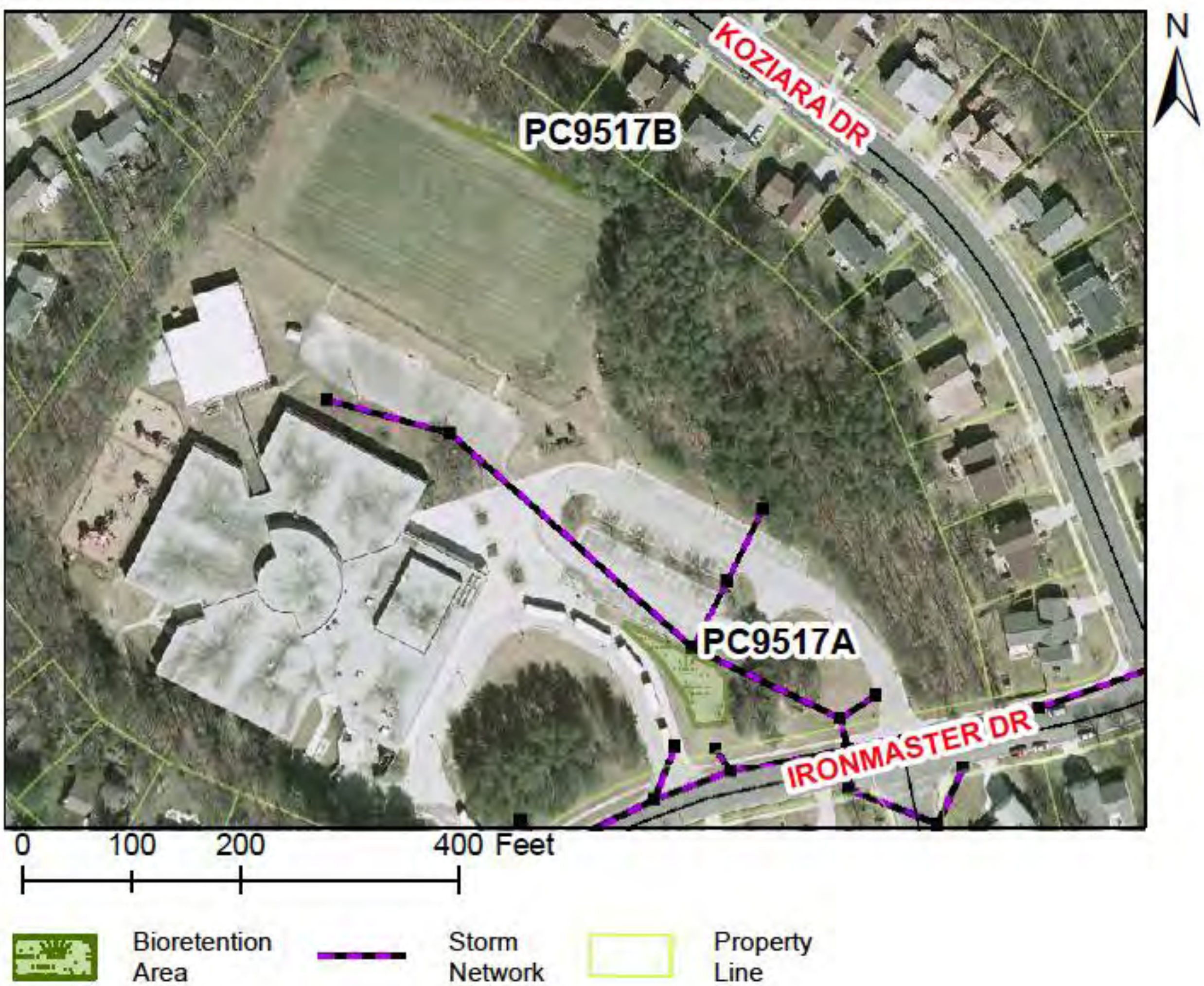
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Bioretention at Orange Hunt Elementary School			
Bioretention Filters and Basins	275	SY	$150	$41,250
Subproject B	Bioretention at Orange Hunt Elementary School			
Bioretention Filters and Basins	480	SY	$150	$72,000
Common Items				
Plantings	1	LS	5%	$5,663
Ancillary Items	1	LS	5%	$5,663
Erosion and Sediment Control	1	LS	10%	$11,325
			Base Construction Cost	$135,900
			Mobilization (5%)	$6,795
			Subtotal 1	$142,695
			Contingency (25%)	$35,674
			Subtotal 2	$178,369
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$80,266
			Total	$258,635
			Estimated Project Cost	$260,000

PC9517 BMP/ LID Suite



Address: 9732 Ironmaster Drive, Burke, VA
Location: Cherry Run Elementary School
Land Owner: Public/Local – Fairfax County Public School
PIN: 0881 07 L1
Control Type: Water quality and quantity control
Drainage Area: 0.86 acres
Receiving Waters: Tributary of Peyton Run

Description: This suite of projects proposes the creation of a bioretention area to receive runoff at Cherry Run Elementary School. The subproject A site is on the south side of the school near the entrance. The subproject B site is on the far north side of the athletic fields. (See project map). Primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The bioretention areas will be created by grading a depressed area, with a cover layer of mulch and a filter layer of 18-48” of sand. During a storm, the runoff ponds 6-9” and rapidly filters to an underdrain and outfalls into wooded area or infiltrates into the native soil.



Project Benefits: These bioretention areas will capture sheet flow from impervious areas and create ideal environments for filtration, biological uptake and microbial activity. They will reduce runoff volume and increase groundwater recharge, by encouraging infiltration. Below are the bioretention areas' estimated pollutant removal amounts.

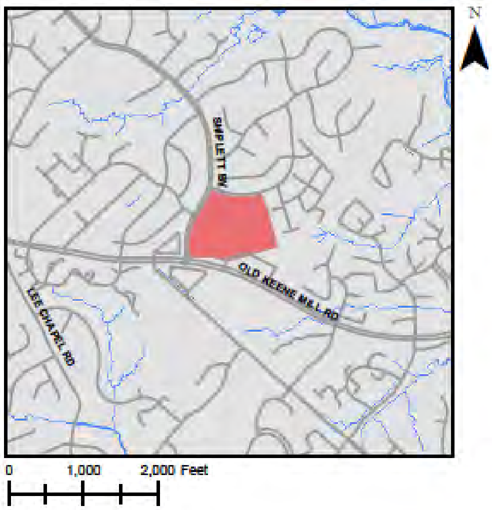
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.06	1.38	0.32

Project Design Considerations: The locations were chosen to cause minimal disturbance. Both locations are on school property. Coordination and sequencing of these projects should be considered to allow sharing of mobilization fees and staging areas. There is adequate room for construction in these two locations; however efforts should be made to minimize disturbance to existing mature vegetation.

Cost:

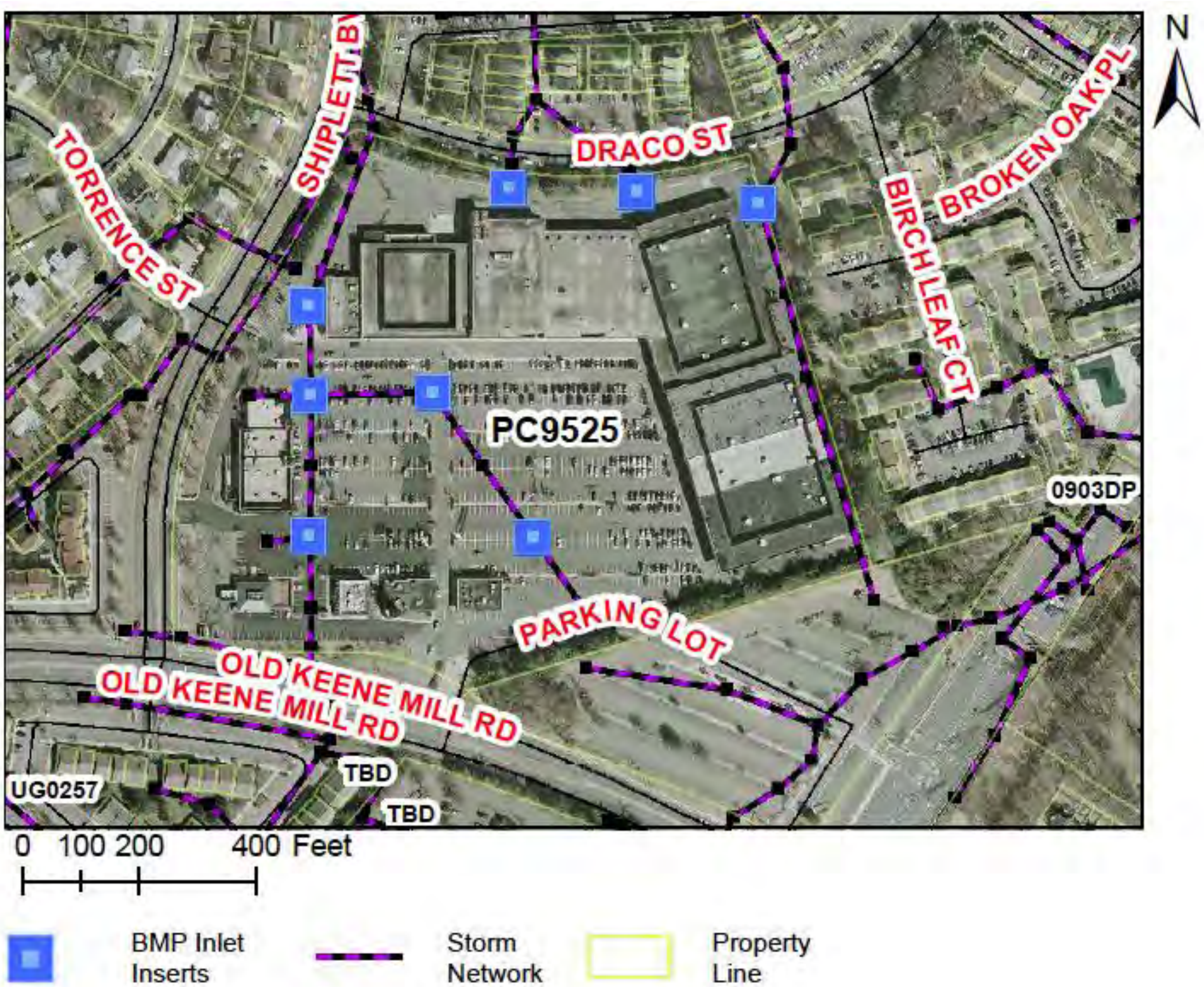
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Bioretention at Cherry Run Elementary School			
Bioretention Filters and Basins	350	SY	$150	$52,500
Subproject B	Bioretention at Cherry Run Elementary School			
Bioretention Filters and Basins	100	SY	$150	$15,000
Common Items				
Plantings	1	LS	5%	$3,375
Ancillary Items	1	LS	5%	$3,375
Erosion and Sediment Control	1	LS	10%	$6,750
			Base Construction Cost	$81,000
			Mobilization (5%)	$4,050
			Subtotal 1	$85,050
			Contingency (25%)	$21,263
			Subtotal 2	$106,313
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$47,841
			Total	$154,153
			Estimated Project Cost	$160,000

PC9525 BMP/LID



Address: 9230 Old Keene Mill Rd., Burke, Virginia
Location: Rolling Valley Mall
Land Owner: Private – Rolling Valley Mall, LLC
PIN: 0882 01 0004A
Control Type: Water quality control
Drainage Area: 18.46 acres
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the incorporation of BMP inlet inserts or manufactured BMP filtration systems to provide pollutant removal at Rolling Valley Mall north of Old Keene Mill Road. Typical inserts act as baskets that collect sediment and larger debris such as trash and leaves. Filters should be selected to target the known pollutants. The filters need to be cleaned on a routine basis, typically every 6 months. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. Filtration will capture and treat stormwater runoff from highly impervious areas prior to entering the storm drain system.



Project Benefits: This shopping center has a high percentage of impervious cover, and stormwater is not treated before ultimately discharging into a stream. This project will help provide some treatment stormwater runoff before it leaves the site. This will greatly reduce the pollutants entering the stream from this site. This retrofit method is a good fit due to this site's space limitations. Below are this project's estimated pollutant removal amounts.

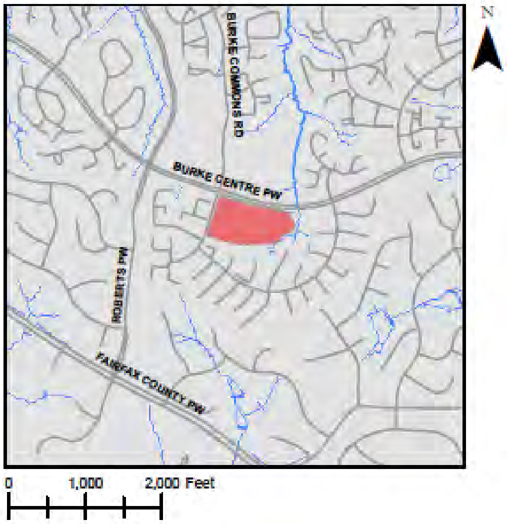
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
2.60	68.36	10.68

Project Design Considerations: Inserts should be placed at several inlets on site that will have the greatest benefit without exceeding the capacity of the system in place. In order to keep cost down, the existing system should be utilized to the greatest extent possible. A maintenance schedule will need to be enforced to ensure maximum benefits.

Cost:

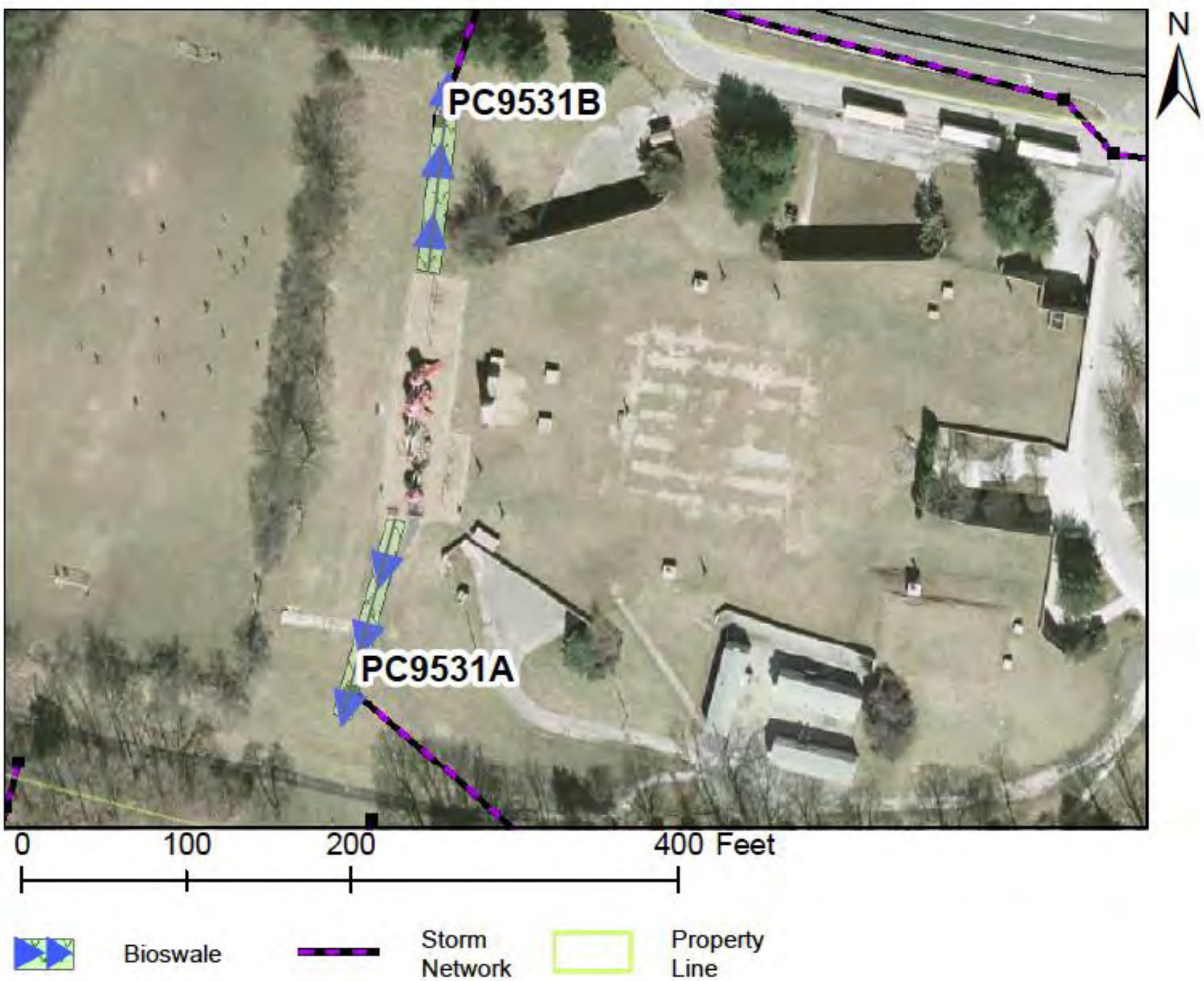
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Manufactured BMP	8	LS	$10,000	$80,000
Plantings	1	LS	5%	$2,500
Ancillary Items	1	LS	5%	$2,500
Erosion and Sediment Control	1	LS	10%	$5,000
			Base Construction Cost	$90,000
			Mobilization (5%)	$4,500
			Subtotal 1	$94,500
			Contingency (25%)	$23,625
			Subtotal 2	$118,125
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$53,156
			Total	$171,281
			Estimated Project Cost	$180,000

PC9531 BMP/ LID Suite



Address: 6000 Burke Centre Parkway, Burke, Virginia
Location: Terra Centre Elementary School
Land Owner: Public/Local – School Board of Fairfax County
PIN: 0774 01 0028A
Control Type: Water quality and quantity control
Drainage Area: 2.72 acres
Receiving Waters: Tributary of Sideburn Branch

Description: This suite of projects proposes creating bioswales near the back of a green roof at Terra Centre Elementary School. The bioswales will have a filter layer of sand to promote infiltration to native soils or to perforated underdrain. Primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. Runoff will enter a closed system and outfall directly into a nearby stormwater facility.



Project Benefits: The bioswales will reduce the pollutant loads and runoff into the stormwater system. The bioswales will capture the sheet flow and create an ideal environment for filtration, biological uptake and microbial activity, providing both pollutant removal and ground water recharge. Below are the bioswales' estimated pollutant removal amounts.

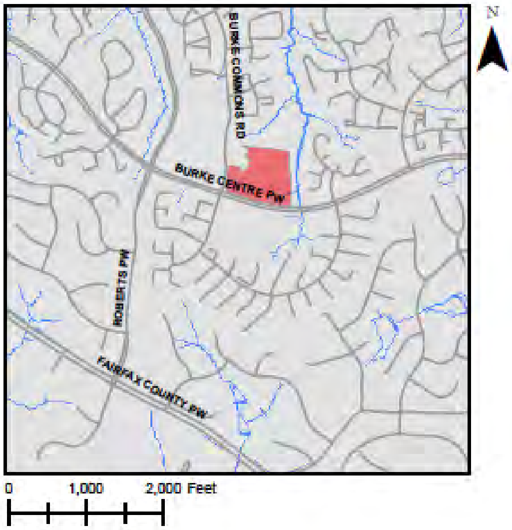
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.18	4.36	1.01

Project Design Considerations: The bioswales would provide a good educational opportunity and would promote proper environmental and stormwater stewardship. Caution should be taken to not impact the student-grown garden near the vicinity of the project. Coordination and sequencing of these projects should be considered to allow sharing of mobilization fees and staging areas.

Cost:

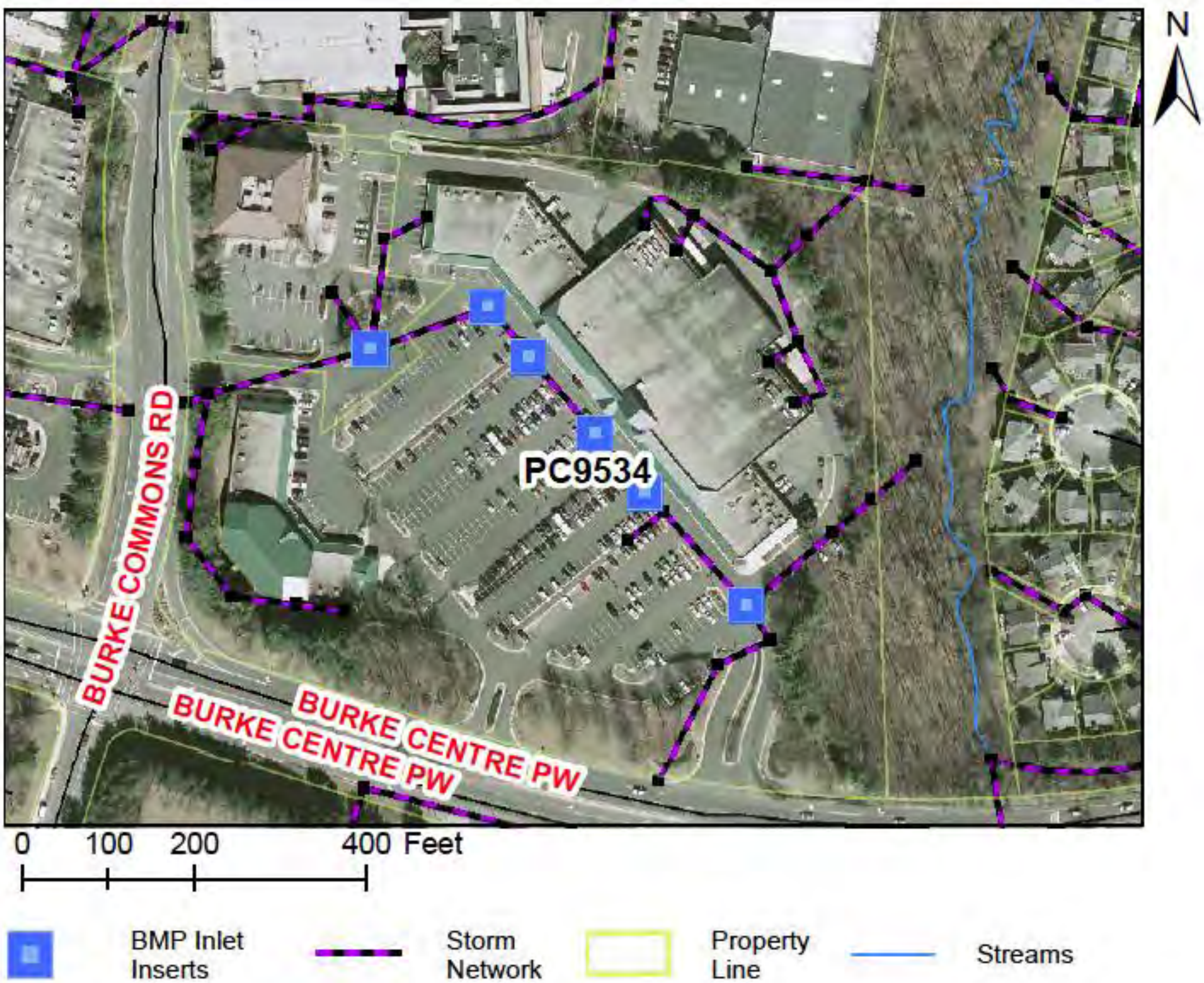
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Bioretention at Terra Centre Elementary School (South)			
Bioretention Filters and Basins	150	SY	$150	$22,500
Subproject B	Bioretention at Terra Centre Elementary School (North)			
Bioretention Filters and Basins	175	SY	$150	$26,250
Common Items				
Plantings	1	LS	5%	$2,438
Ancillary Items	1	LS	5%	$2,438
Erosion and Sediment Control	1	LS	10%	$4,875
			Base Construction Cost	$58,500
			Mobilization (5%)	$2,925
			Subtotal 1	$61,425
			Contingency (25%)	$15,356
			Subtotal 2	$76,781
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$34,552
			Total	$111,333
			Estimated Project Cost	$120,000

PC9534 BMP/LID



Address: 6011 Burke Centre Parkway, Burke, Virginia
Location: Giant Supermarket
Land Owner: Private – Burke Town Center
PIN: 0774 19 0004E
Control Type: Water quality control
Drainage Area: 6.78 acres
Receiving Waters: Tributary of Sideburn Branch

Description: This BMP/ LID project will consist of inlet inserts being placed in the existing inlets to provide pollutant removal. Runoff from the parking lot at Giant Grocery Store is collected in a closed pipe system and discharged to the stream behind the building to the east. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Depending on the existing inlet, the inserts will either be in the form of a basket or a cartridge. This method is ideal due to the high imperviousness and space constraints on the site.



Project Benefits: Currently stormwater run-off from this site receives minimal treatment before outfalling into the adjacent stream. These inlet inserts will provide some pollutant removal of hydrocarbons, nitrogen and phosphorus before stormwater leaves the site. These inlet inserts are a good retrofit solution, because the inserts will not use any additional space. Below are this project's estimated pollutant removal amounts.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.88	22.55	3.52

Project Design Considerations: Site is private property and County records show no existing storm drainage easements. Additional maintenance for cleaning/ replacing the filter inserts will have to be coordinated between the County and the shopping center. The shopping center's stormwater construction documents will have to be reviewed to ensure that the inserts will not cause any adverse effects. The inserts will need to be placed to insure that any clogged filters will not cause adverse flooding.

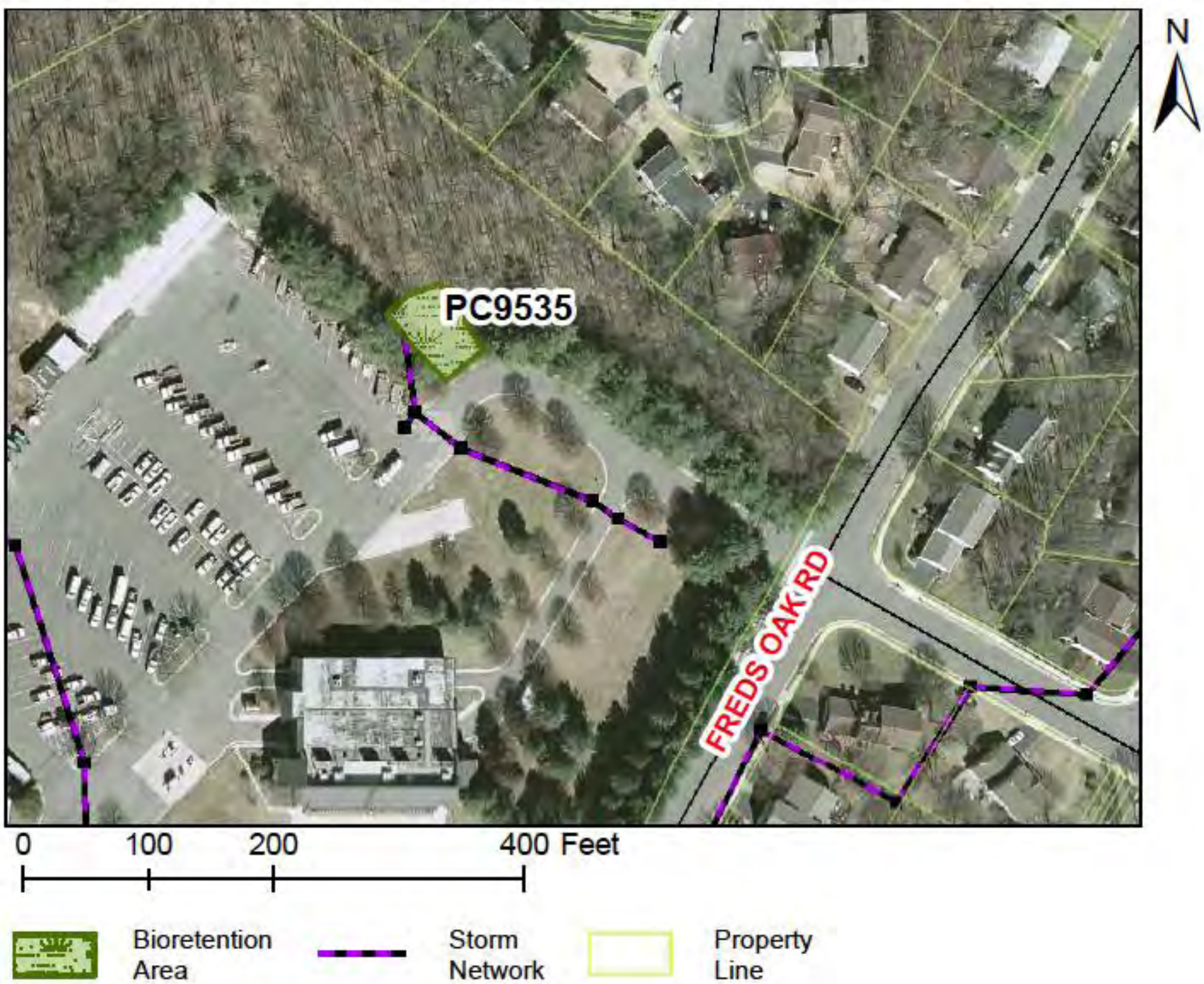
Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Manufactured BMP	6	LS	$10,000	$60,000
Plantings	1	LS	5%	$2,500
Ancillary Items	1	LS	5%	$2,500
Erosion and Sediment Control	1	LS	10%	$5,000
			Base Construction Cost	$70,000
			Mobilization (5%)	$3,500
			Subtotal 1	$73,500
			Contingency (25%)	$18,375
			Subtotal 2	$91,875
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$41,344
			Total	$133,219
			Estimated Project Cost	$140,000

PC9535 BMP/LID

Address: 6000 Fred's Oak Rd., Burke, Virginia
Location: FFC Wastewater Collection Division Office Bldg.
Land Owner: Public/Local – Fairfax County
PIN: 0773 01 0013
Control Type: Water quality and quantity control
Drainage Area: 3.09 acres
Receiving Waters: Tributary of Sideburn Branch

Description: A series of curb inlets collect runoff from the Fairfax County Wastewater Collection Division parking lot, which is conveyed in a closed system. Majority of the site outfalls into a pond on the north side of the site. However, a portion of the runoff is untreated. The primary indicators are pollutants, including phosphorus, nitrogen and total suspended solids. This project proposes a biorentetion area at the northeast side of the parking lot. A filter layer made of 18-48" of sand is placed below a mulch layer. During a storm, the runoff ponds 6-9", rapidly filters to an underdrain, and outfalls into wooded area or infiltrates into the native soil.



Project Benefits: The proposed bioretention area will reduce runoff rates and treat runoff before discharging into woods. The bioretention area will capture sheet flow and create an ideal environment for filtration, biological uptake and microbial activity. The bioretention area will promote infiltration and decrease runoff volume from the site. Below are the bioretention area's estimated pollutant removal amounts.

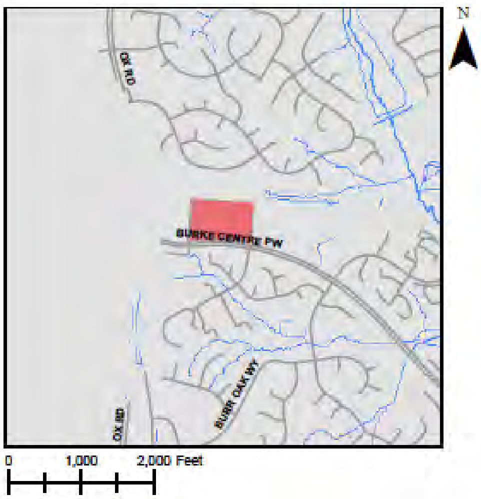
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.18	3.90	0.60

Project Design Considerations: The bioretention area is on Fairfax County property. Efforts should be made to minimize impacts to mature vegetation. Area should have enough space to construct bioretention area without having significant impacts. Pond retrofit (PC9129) proposed on site to treat remainder of site. Drainage area to proposed bioretention is currently untreated.

Cost:

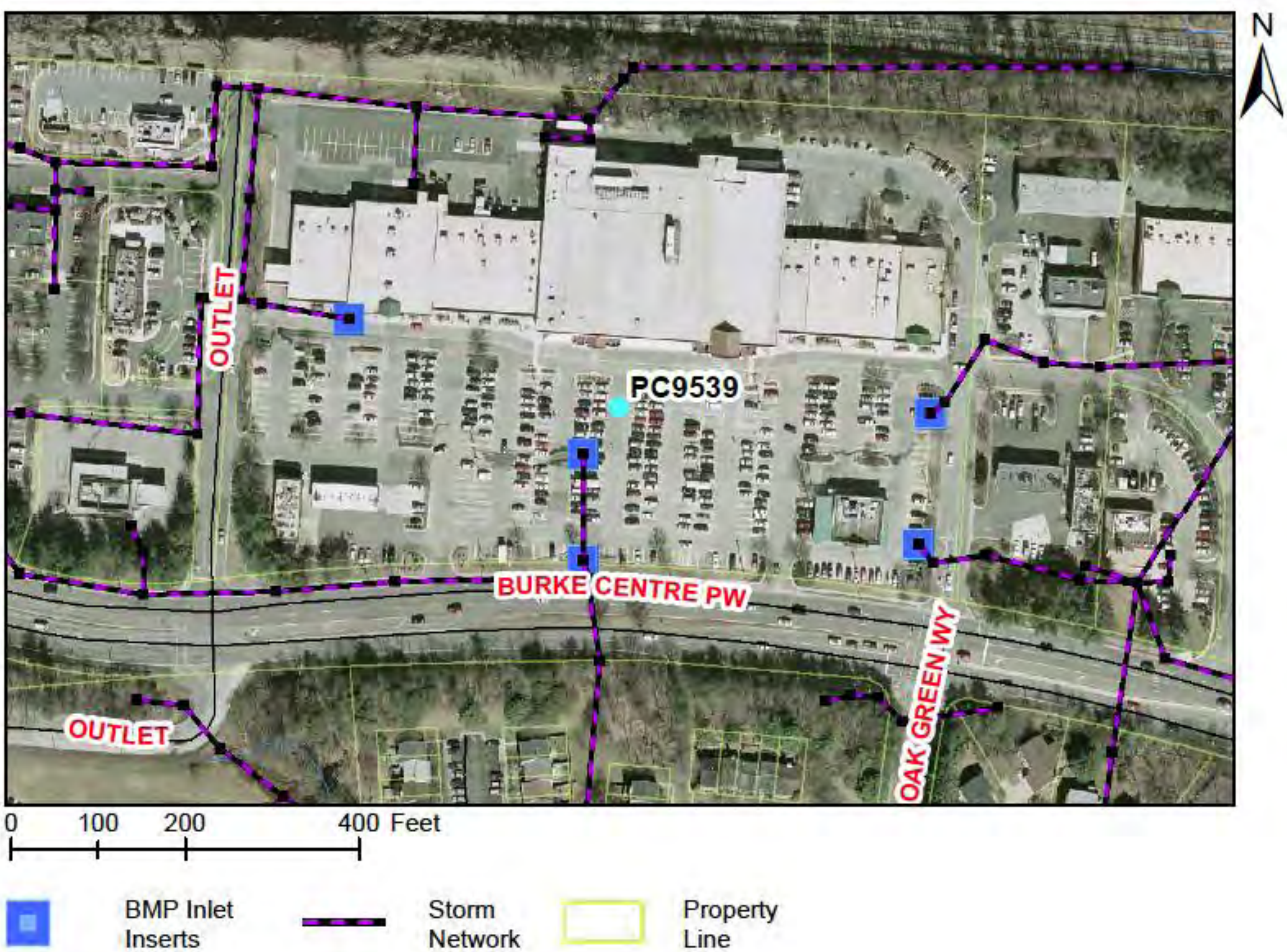
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Filters and Basins	375	SY	$150	$56,250
Plantings	1	LS	5%	$2,813
Ancillary Items	1	LS	5%	$2,813
Erosion and Sediment Control	1	LS	10%	$5,625
			Base Construction Cost	$67,500
			Mobilization (5%)	$3,375
			Subtotal 1	$70,875
			Contingency (25%)	$17,719
			Subtotal 2	$88,594
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$39,867
			Total	$128,461
			Estimated Project Cost	$130,000

PC9539 BMP/LID



Address: 5727 Burke Center Parkway, Burke, Virginia
Location: Burke Center Shopping Center
Land Owner: Private – Steuart Burke Centre Shopping Center LLC
PIN: 0771 01 0063
Control Type: Water quality control
Drainage Area: 9.72 acres
Receiving Waters: Tributary of Sideburn Branch

Description: This project is located at the shopping center near the intersection of Burke Centre Parkway and Oak Green Way. The storm system collects runoff from the shopping center and outfalls to stream along railroad tracks. A portion of the parking lot is conveyed in a closed system in the adjacent shopping center to the east and west and the remaining is conveyed by a closed system to a stream to the south. This project proposes incorporating BMP inlet inserts or manufactured BMP filtration systems to provide pollutant removal before outfalling into stream.



Project Benefits: Currently, trash, parking lot debris, and hydrocarbons flow directly into the surrounding waterways. Any stormwater treatment that can be implemented for this high traffic shopping center would be beneficial. The BMP inlet inserts would help to filter out pollutants and would not require additional space. Below are this project's estimated pollutant removal amounts.

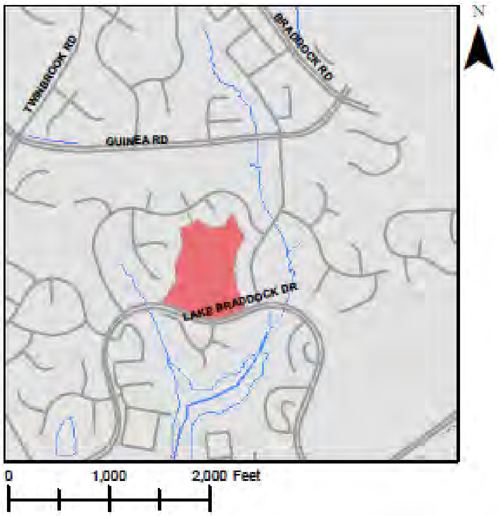
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.31	34.49	5.39

Project Design Considerations: The storm inlets appear to be catch basins in sag conditions. The four inlets chosen are at the farthest upstream ends of the storm system. The storm system needs to be examined to determine whether there is hydraulic head available to make cartridge filters work or if less effective basket filters will need to be used. The records show no existing storm easements. The installation and maintenance of these inserts will need to be coordinated with the shopping center. The inserts will receive runoff from a large amount of untreated impervious area, so maintenance will be more important than normal.

Cost:

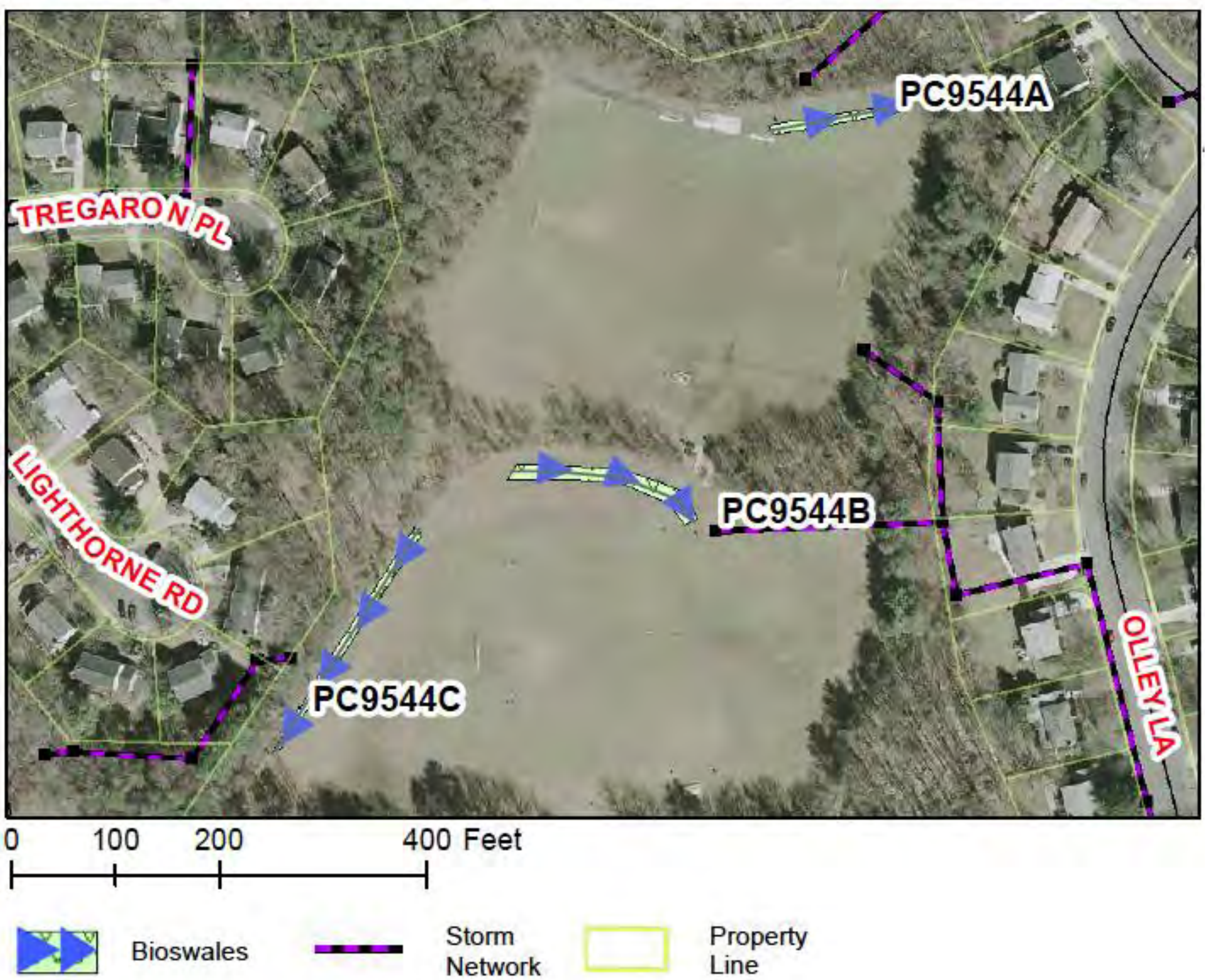
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Manufactured BMP	5	LS	$10,000	$50,000
Plantings	1	LS	5%	$2,500
Ancillary Items	1	LS	5%	$2,500
Erosion and Sediment Control	1	LS	10%	$5,000
			Base Construction Cost	$60,000
			Mobilization (5%)	$3,000
			Subtotal 1	$63,000
			Contingency (25%)	$15,750
			Subtotal 2	$78,750
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$35,438
			Total	$114,188
			Estimated Project Cost	$120,000

PC9544 BMP/LID Suite



Address: 9450 Lake Braddock Dr., Burke, Virginia
Location: Lake Braddock Park
Land Owner: Public/Local – Fairfax County Park Authority
PIN: 0693 06 P
Control Type: Water quality and quantity control
Drainage Area: 0.96 acres
Receiving Waters: Tributary of Pohick Creek

Description: This suite of projects proposes the installation of bioswales at Lake Braddock Park near the game fields. The bioswales would receive sheet flow from the fields and would increase infiltration and reduce pollutants, such as excessive fertilizer, grass clippings or animal waste. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids.



Project Benefits: These bioswales will capture sheet flow and create an ideal environment for filtration, biological uptake and microbial activity, providing both pollutant removal and groundwater recharge. Below are this project's estimated pollutant removal amounts.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
0.27	6.74	1.51

Project Design Considerations: There appears to be adequate open space for construction of the bioswales. These bioswales would provide a good education opportunity. The existing storm pipes are not in easements, but the park is owned by Fairfax County Park Authority. Two stream restoration projects are in the vicinity, projects PC9251 and PC9252. Coordination and sequencing of these projects should be considered to allow sharing of mobilization fees and staging areas.

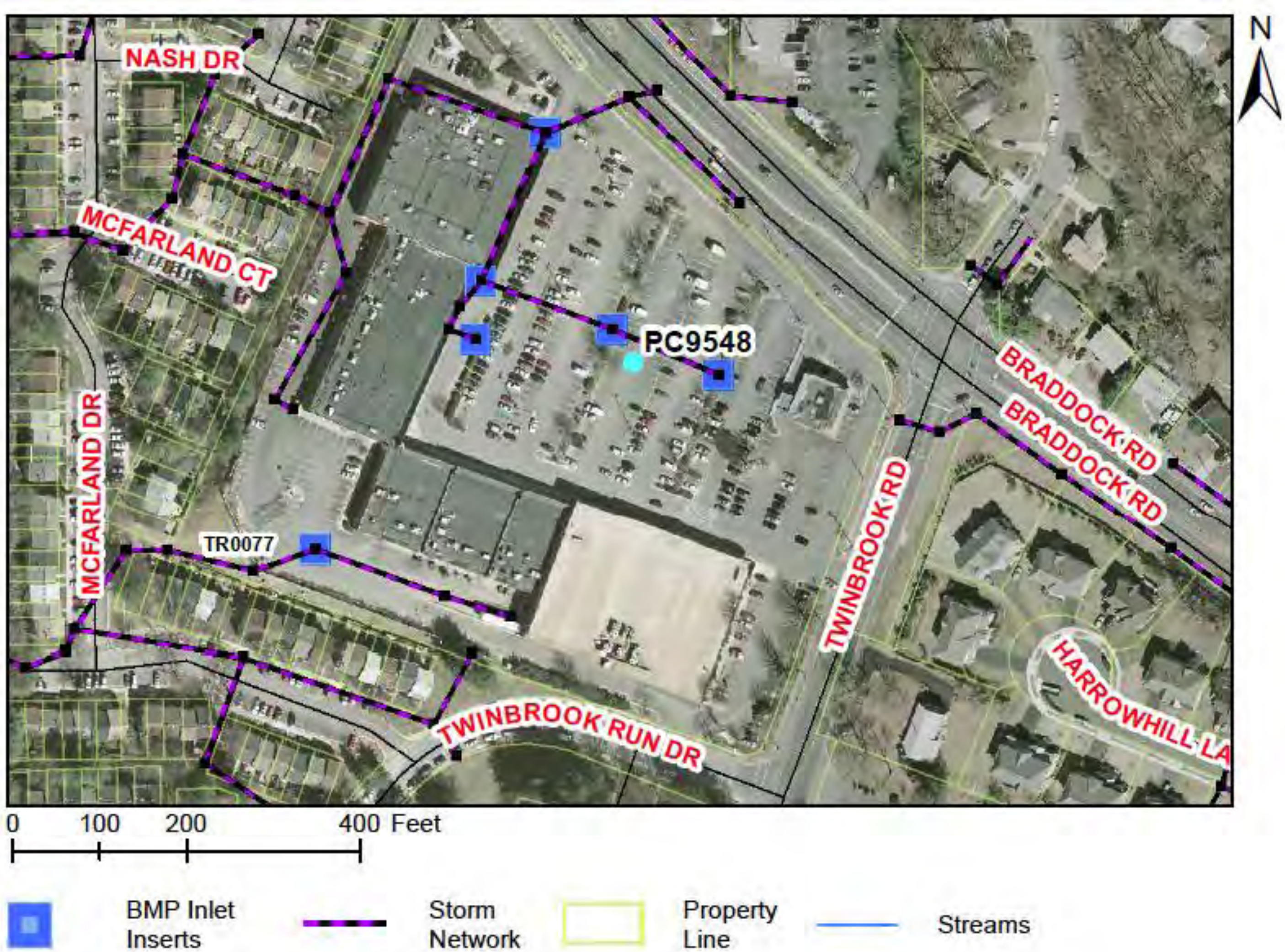
Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Subproject A	Bioswale Near Lake Braddock Dr. (Upper Field)			
Percolation/Infiltration Trench	125	SY	$75	$9,375
Subproject B	Bioswale Near Lake Braddock Dr. (Lower Field North)			
Percolation/Infiltration Trench	290	SY	$75	$21,750
Subproject C	Bioswale Near Lake Braddock Park (Lower Field South)			
Percolation/Infiltration Trench	230	SY	$75	$17,250
Common Items				
Plantings	1	LS	5%	$2,419
Ancillary Items	1	LS	5%	$2,419
Erosion and Sediment Control	1	LS	10%	$4,838
			Base Construction Cost	$58,050
			Mobilization (5%)	$2,903
			Subtotal 1	$60,953
			Contingency (25%)	$15,238
			Subtotal 2	$76,191
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$34,286
			Total	$110,476
			Estimated Project Cost	$120,000

PC9548 BMP/LID

Address: 9525 Braddock Road, Fairfax, Virginia
Location: Twinbrook Shopping Center
Land Owner: Private – Twinbrook Associates
PIN: 0693 01 0018A
Control Type: Water quality control
Drainage Area: 9.99 acres
Receiving Waters: Tributary of Rabbit Branch

Description: This project proposes installing manufactured BMP filtration systems into existing storm inlets to provide pollutant removal at Twinbrook Shopping Centre, southwest of Braddock Road. A typical insert acts as a basket that collects sediment and larger debris such as trash and leaves. Filters should be selected to target the known pollutants. The filters need to be cleaned on a routine basis, typically every 6 months. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids.



Project Benefits: Currently stormwater run-off from this site receives minimal treatment before discharging off-site. These inlet inserts will provide some pollutant removal of hydrocarbons, nitrogen and phosphorus before stormwater leaves the site. These inlet inserts are a good retrofit solution, because the inserts will not use any additional space. Below are this project's estimated pollutant removal amounts.

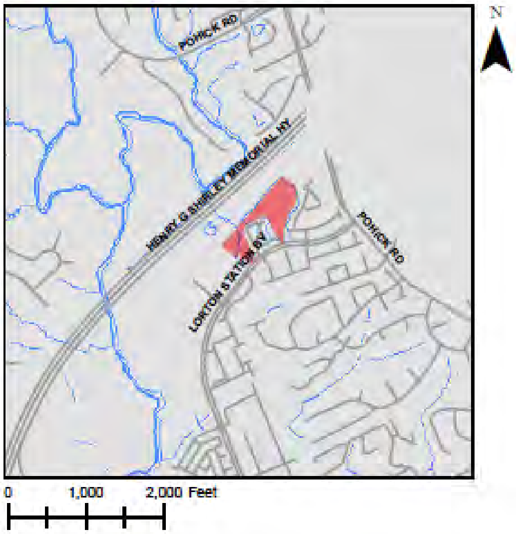
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.32	34.69	5.42

Project Design Considerations: Site is on private property. Additional maintenance for cleaning/ replacing the filter inserts will have to be coordinated between the County and the shopping center. The shopping center's stormwater construction documents will have to be reviewed to ensure that the inserts will not cause any adverse effects. The inserts will need to be designed and modeled to insure that any clogged filters will not cause adverse flooding.

Cost:

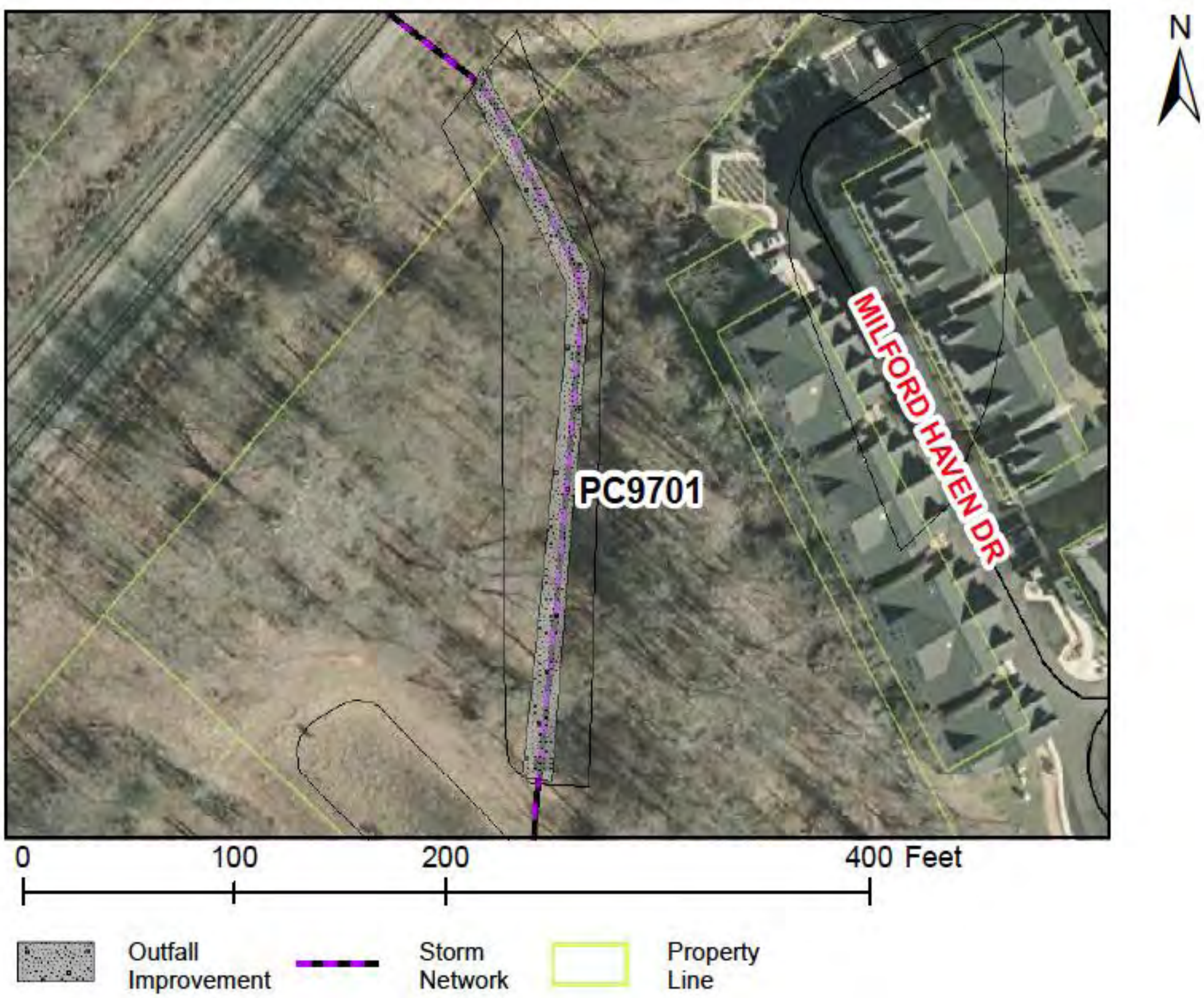
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Manufactured BMP	6	LS	$10,000	$60,000
Plantings	1	LS	5%	$2,500
Ancillary Items	1	LS	5%	$2,500
Erosion and Sediment Control	1	LS	10%	$5,000
			Base Construction Cost	$70,000
			Mobilization (5%)	$3,500
			Subtotal 1	$73,500
			Contingency (25%)	$18,375
			Subtotal 2	$91,875
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$41,344
			Total	$133,219
			Estimated Project Cost	$140,000

PC9701 Outfall Improvement



Address: Along Lorton Station Blvd, adjacent to Milford Haven Dr., Lorton, Virginia
Location: Outfall near Lorton Station Blvd
Land Owner: Private – Lorton Station Community Association
PIN: 1072 01 0048B, 1072 01 0040
Control Type: Water quality control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes improving the outfall west of Milford Haven Drive by replacing the existing concrete channel with a naturalized stream and an energy dissipation device. The concrete channel conveys runoff from pond 1158DP. This pond has a proposed stormwater pond retrofit project PC9105. The concrete channel discharges to a culvert under Henry G Shirley Memorial Highway. The surrounding area consists of mostly townhomes, open wooded area, highway and railroad tracks.



Project Benefits: The outfall reconstruction will reduce erosive velocities and sediment loads at the outfalls, protecting downstream channels. Improving the outfall will reduce instream sediment and its associated pollutants in the eroded stream on the downstream side of the highway (northwest of site). This outfall improvement will increase infiltration and reduce pollutant loads. Below are the estimated instream sediment pollutant amounts that will be eliminated after this project implementation.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
3.11	4.24	1.64

Project Design Considerations: Concrete channel drains to a stormwater pipe that flows under the Plantation Pine Line Easement and Henry G Shirley Memorial Highway, before discharging into a stream. The concrete channel is on private property owned by Lorton Station Community Association, however according to County-records it is within a storm drainage easement. Area is accessible through a BMP access road. This project should be coordinated with pond retrofit project PC9105.

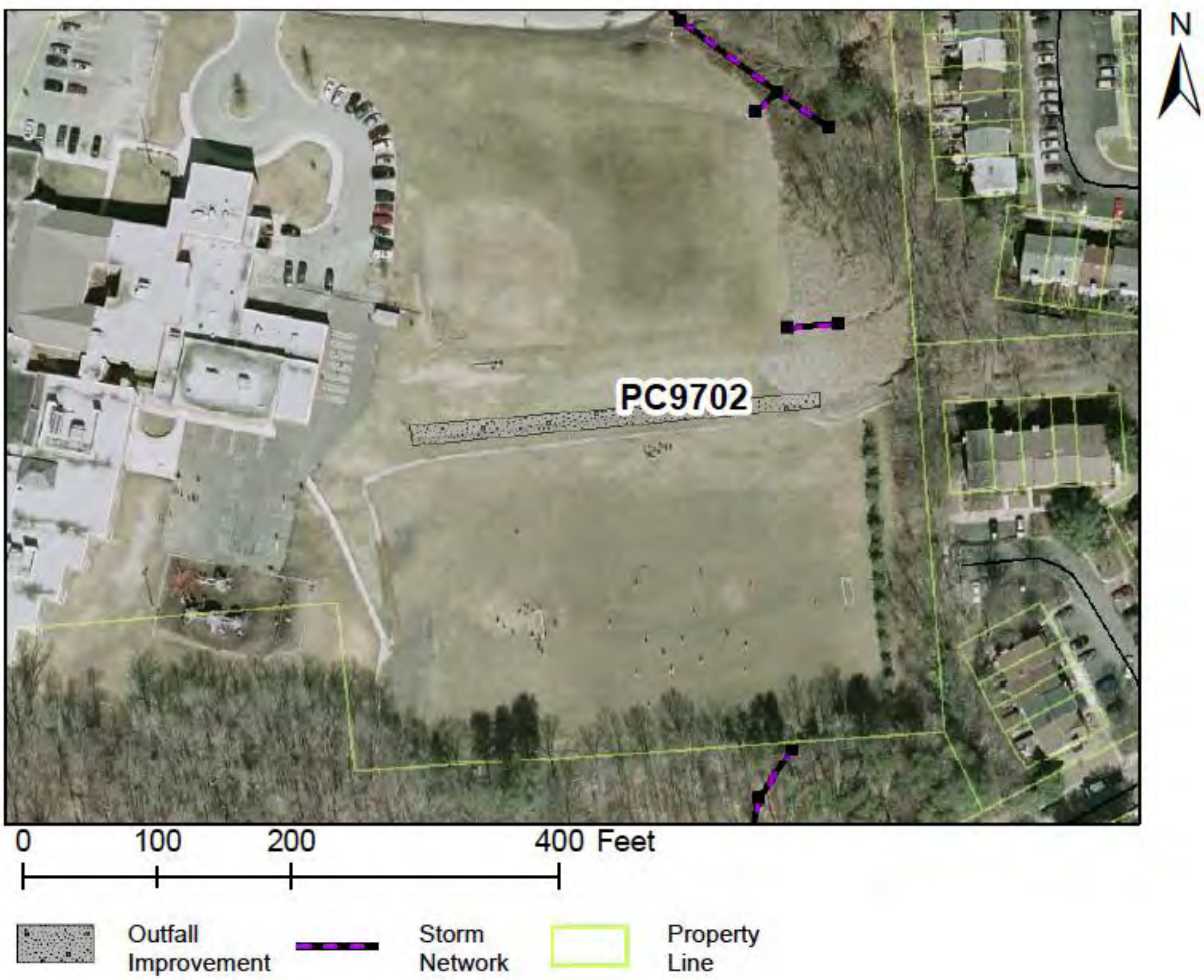
Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.25	AC	$8,500	$2,125
Grading and Excavation	800	CY	$35	$28,000
New Storm Pipe	0	LF	$100	$0
Erosion and Sediment Control	1	LS	10%	$3,763
Ancillary Items	1	LS	5%	$1,881
Plantings	1	LS	5%	$1,881
			Base Construction Cost	$37,650
			Mobilization (5%)	$1,883
			Subtotal 1	$39,533
			Contingency (25%)	$9,883
			Subtotal 2	$49,416
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$22,237
			Total	$71,653
			Estimated Project Cost	$80,000

PC9702 Outfall Improvement

Address: 5815 Ox Road, Fairfax Station, Virginia
Location: Fairview Elementary School
Land Owner: Public/Local – School Board of Fairfax County
PIN: 0771 01 0046
Control Type: Water quality and quantity control
Drainage Area: 1.32 acres
Receiving Waters: Tributary of Sideburn Branch

Description: Swale reconstruction is proposed in the fields behind Fairview Elementary School. An exisitng grass swale discharges into the stream adjacent to the school. The swale is located between two playing fields. The project proposes adding energy dissipation devices to the swale, such as check dams and increased planting, to decrease velocities, increase infiltration, and improve stormwater quality.



Project Benefits: The proposed project will reduce erosive velocities in the swale. Decreasing velocities in the swale will promote infiltration and pollutant removal before discharge. This will also increase groundwater recharge and downstream channel protection. The swale is between fields at a school and excessive erosion could have negative impacts to the fields. Below are the estimated instream sediment pollutant amounts that will be eliminated after this project implementation.

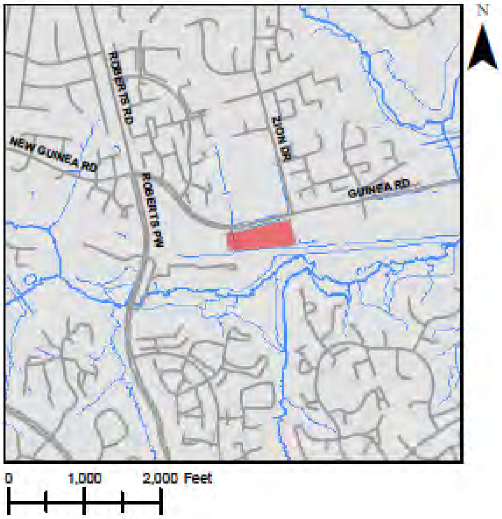
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
3.10	4.95	1.92

Project Design Considerations: The drainage area of the swale is the adjacent fields. The Watershed Advisory Group (WAG) supports these low cost projects that will improve water quality and educate students. Swale needs to be retrofitted in such a way as to minimize potential impacts after contruction. Due to its location, the outfall improvement will have a substantial amount of traffic. In order to insure the project will function properly, foot traffic should be directed to cross at stabilized check dams, and directed away from infiltration areas.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Percolation/Infiltration Trench	450	SY	$75	$33,750
Plantings	1	LS	5%	$1,688
Ancillary Items	1	LS	5%	$1,688
Erosion and Sediment Control	1	LS	10%	$3,375
			Base Construction Cost	$40,500
			Mobilization (5%)	$2,025
			Subtotal 1	$42,525
			Contingency (25%)	$10,631
			Subtotal 2	$53,156
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$23,920
			Total	$77,077
			Estimated Project Cost	$80,000

PC9703 Outfall Improvement



Address: 5637 Guinea Road, Fairfax, Virginia
Location: Outfall Near Power Company Facility
Land Owner: Private - Electric & Power Co., VA
PIN: 0772 01 0034
Control Type: Water quality and quantity control
Drainage Area: N/A
Receiving Waters: Tributary of Sideburn Branch

Description: This project proposes improving the outfall located in open space east of a shopping center and west of the power company facility along Guinea Road. The project proposes to construct an energy dissipation device at the outfall. This project will help address the existing erosion problem in the downstream channel. This outfall conveys discharge from dry pond 0175DP and the roadway drainage system for New Guinea Rd.

Project Benefits: This project will improve the outfall area by installing a settling basin to lower the velocity of the stormwater exiting the storm system. This will decrease erosion downstream. The modifications to the outfall will also allow for more pollutant removal. Water volumes and velocities will be reduced before the water discharges to the wooded area and ultimately into a stream. Below are the estimated instream sediment pollutant amounts that will be eliminated after this project's implementation.

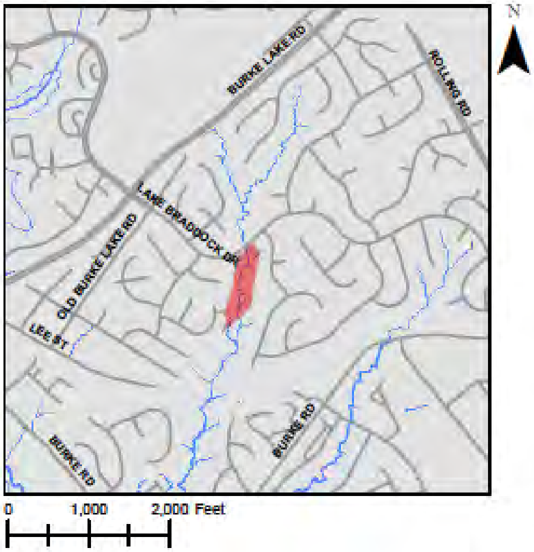
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.73	2.77	1.08

Project Design Considerations: The project map shows three pipes near this area. Additional survey information will be necessary to clarify these pipes' flow directions. Records show that the two eastern pipe ends are located in a small storm drain easement. This easement will need to be enlarged for the project. The area proposed for the outfall improvement area is currently very well vegetated. Efforts should be made to minimize impacts to mature existing vegetation when possible.

Cost:

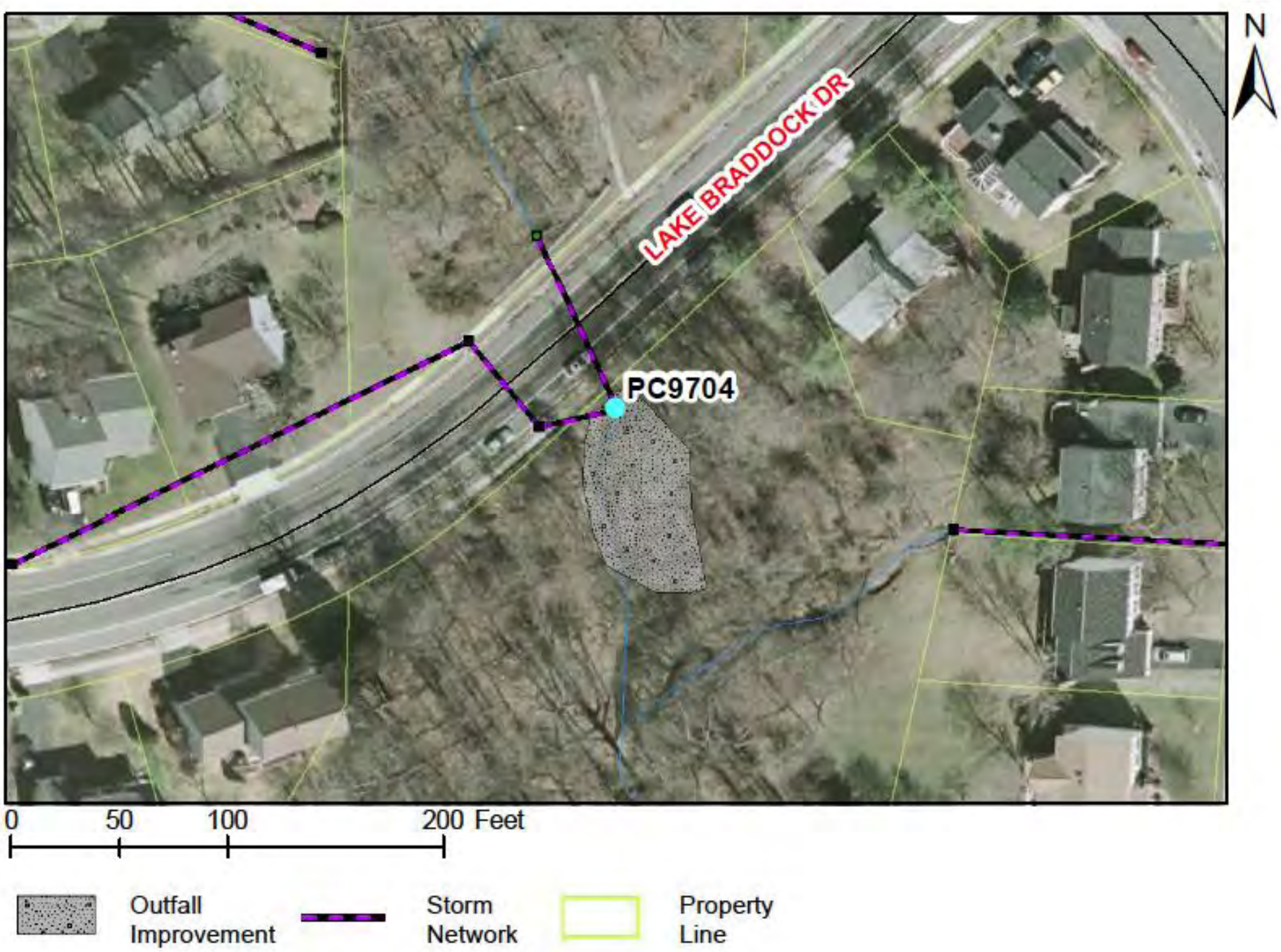
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	1.05	AC	$8,500	$8,925
Grading and Excavation	1000	CY	$35	$35,000
Plantings	1	LS	5%	$2,196
Ancillary Items	1	LS	5%	$2,196
Erosion and Sediment Control	1	LS	10%	$4,393
			Base Construction Cost	$52,710
			Mobilization (5%)	$2,636
			Subtotal 1	$55,346
			Contingency (25%)	$13,836
			Subtotal 2	$69,182
	Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)			$31,132
			Total	$100,314
			Estimated Project Cost	$110,000

PC9704 Outfall Improvement



Address: Next to 9199 Lake Braddock Drive, Burke, Virginia
Location: Outfall near Lake Braddock Drive
Land Owner: Private – Southport Homeowner's Association
PIN: 0782 19 B1
Control Type: Water quality and quantity control
Drainage Area: N/A
Receiving Waters: Tributary of Pohick Creek

Description: This project proposes the construction of a new storage and treatment area below the outfall of a closed system from Lake Braddock Drive. The improvement will include an energy dissipation device and wetland plantings. The primary indicators include instream sediment. Outfall storage will reduce erosive velocities and sediment loads at the outfall and improve downstream habitats.



Project Benefits: The new storage and treatment area will reduce the velocity of runoff entering the stream and help reduce erosion downstream. The settling basin will decrease the debris and sediment contributed to the stream by the untreated runoff from the closed stormwater collection system. Below are the estimated instream sediment pollutant amounts that will be eliminated after this project implementation.

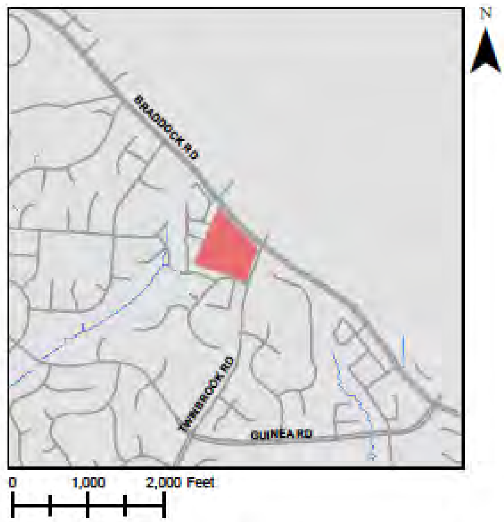
TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
1.64	2.63	1.02

Project Design Considerations: This project is located in Southport open space. The project is located in Southport HOA open space. Records show no existing stormwater easements. This area receives flow from two stormwater pipes. One pipe conveys the runoff from Lake Braddock Dr. and has no prior stormwater quality or quantity management. The pipe is a culvert to convey water under Lake Braddock Dr. This project would consist of a settling basin and possible level spreader. The area of the proposed project is relatively flat.

Cost:

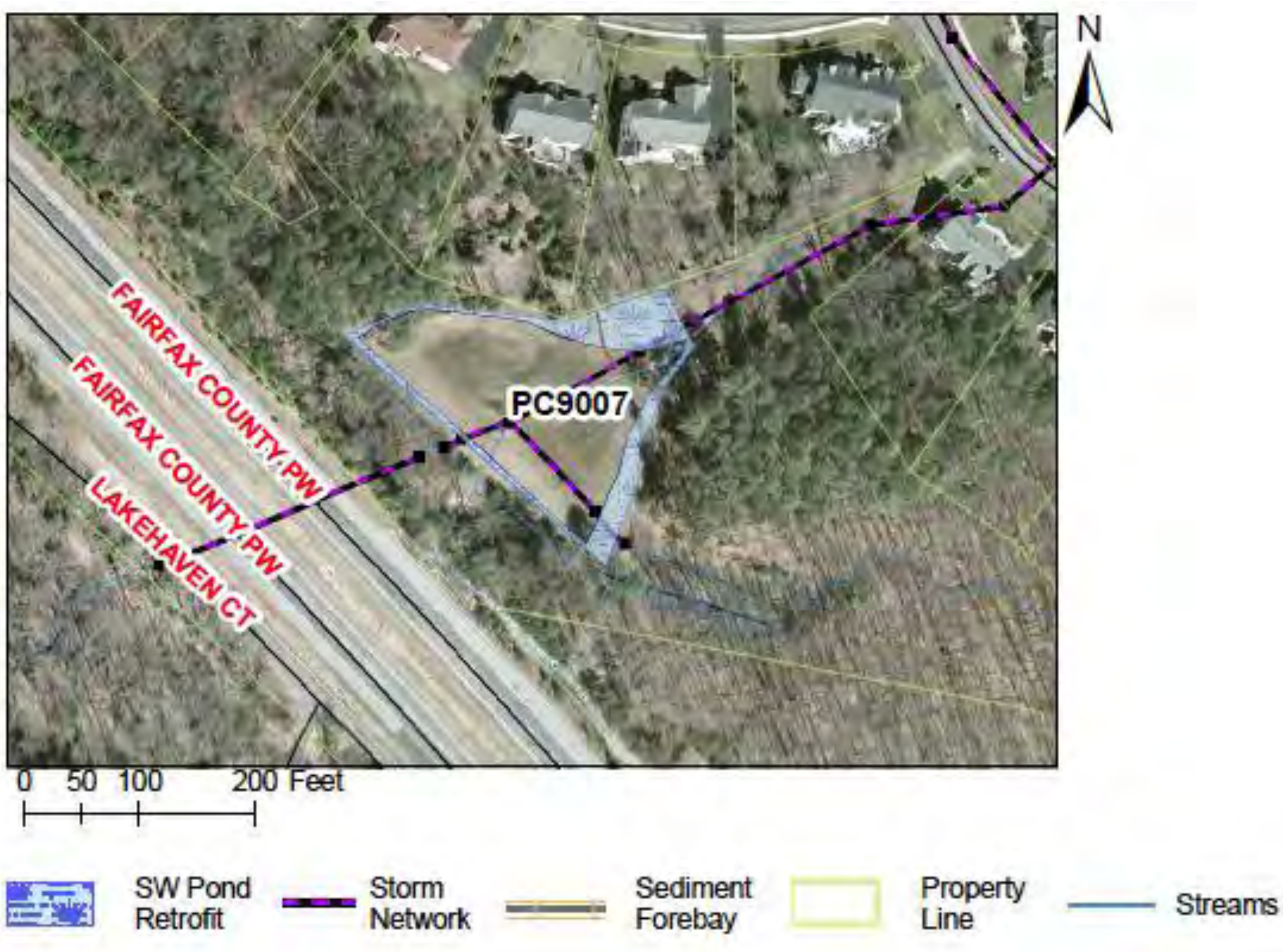
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.1	AC	$8,500	$850
Grading and Excavation	6700	CY	$35	$234,500
Plantings	1	LS	5%	$11,768
Ancillary Items	1	LS	5%	$11,768
Erosion and Sediment Control	1	LS	10%	$23,535
			Base Construction Cost	$282,420
			Mobilization (5%)	$14,121
			Subtotal 1	$296,541
			Contingency (25%)	$74,135
			Subtotal 2	$370,676
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$166,804
			Total	$537,481
			Estimated Project Cost	$540,000

PC9705 Outfall Improvement



Address: Next to pool at 5601 Snowy Owl Drive, Fairfax, Virginia
Location: Outfall near Snowy Owl Dr.
Land Owner: Private Fairfax Club Estates Homeowners Association
PIN: 0771 12 G
Control Type: Water quality and quantity control
Drainage Area: N/A
Receiving Waters: Sideburn Branch

Description: This project proposes improving the outfall area where dry pond 0233DP and the closed system along John Ayres Dr. discharges. This improvement will create an energy dissapation basin inline with the stream to help lessen erosive velocities. Plants with good nutrient uptake will be installed along the banks of the stream to reduce pollutant loading from the untreated stormwater runoff. Primary indicators are stream bank buffer deficiency in headwater riparian habitat. This improvement will be integrated into the surrounding vegetation.



Project Benefits: This outfall improvement will reduce the velocity of runoff directly discharging from the two roadway storm pipes. The energy dissapation basin will create a better transition to the natural stream bed, by changing the shallow high velocity stormwater discharge to deeper slower moving channel flow. This improvement will help minimize erosion downstream. The settling basin will decrease the debris and sediment contributed to the stream by the untreated runoff from the closed stormwater collection system. Below are the estimated instream sediment pollutant amounts that will be eliminated after this project implementation.

TSS Removal (Tons/Yr)	TN Removal (Lbs/Yr)	TP Removal l(Lbs/Yr)
7.86	12.58	4.87

Project Design Considerations: This area receives flow from three stormwater pipes. Two of the stormwater pipes drain areas that have no prior stormwater quality or quantity management. This area is highly visible, since it is near the Fairfax Club Estates clubhouse. Special care should be taken to integrate this improvement into the surrounding area and to make this improvement an asset to the neighborhood. Signage should be included to encourage the public to participate in good watershed stewardship, since stewardship is one of the County's watershed planning final objectives. Records show no existing stormwater easement. Project would occur on the Fairfax Club Estates open space.

Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.1	AC	$8,500	$850
Grading and Excavation	875	CY	$35	$30,625
Plantings	1	LS	5%	$1,574
Ancillary Items	1	LS	5%	$1,574
Erosion and Sediment Control	1	LS	10%	$3,148
			Base Construction Cost	$37,770
			Mobilization (5%)	$1,889
			Subtotal 1	$39,659
			Contingency (25%)	$9,915
			Subtotal 2	$49,573
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				$22,308
			Total	$71,881
			Estimated Project Cost	$80,000

6.0 Benefits of Plan Implementation

For the 10-year plan, projects that might have a measurable impact on the watershed hydrology (rate and timing of flows) or hydraulics (stream water level) were selected for additional modeling. For the Pohick Creek projects, only stormwater pond retrofit projects were assumed to have a measurable effect on the hydrology. Therefore, only the stormwater pond retrofit projects were modeled in the hydrologic model, SWMM. Once the projects had been modeled in SWMM, the resulting flows were input into the hydraulic model, HEC-RAS.

6.1 Hydrology

A total of 32 pond projects were modeled both individually in SWMM and in a combined model. There were a few locations where flows increased from the “future without proposed projects” to the “future with proposed projects” model scenarios. Some of these increases are due to modeling techniques. A detailed discussion of the hydrologic modeling can be found in Appendix B. An overview of the existing, “future without,” and “future with projects” flows can be found in Table 6.1.

6.2 Hydraulics

Flows from the combined model, which included all relevant projects from the 10-year plan, were input into the hydraulic model for the watershed. The 100-year (a storm that has a 1 percent probability of occurring in a given year) and the 10-year (a storm with a 10 percent annual chance) floodplains were mapped. An analysis was performed to determine the affected structures located inside or within 15 feet of the floodplain boundaries.

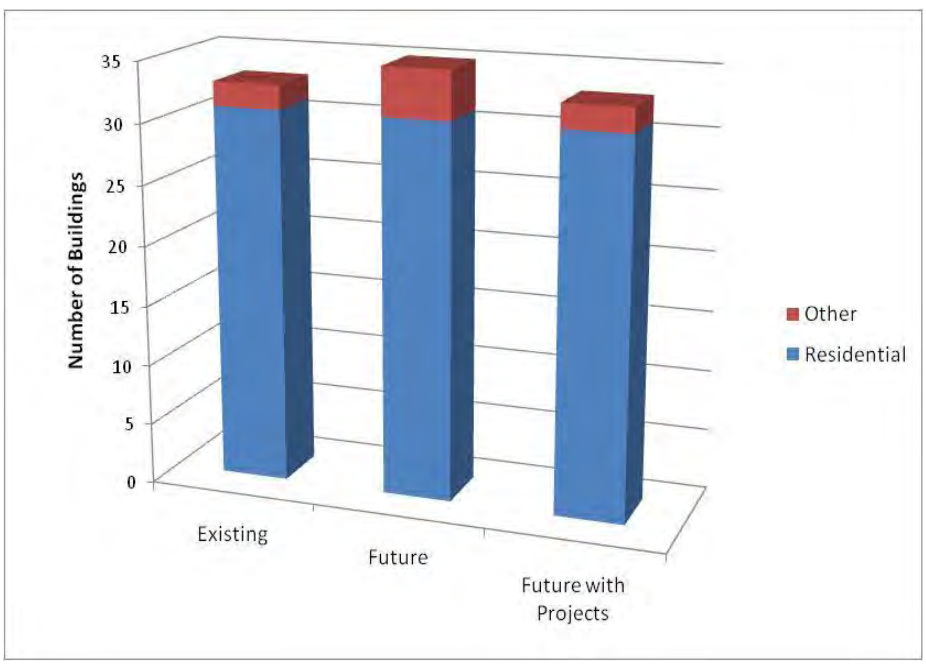


Figure 6-1: Buildings located in the 100-year floodplain

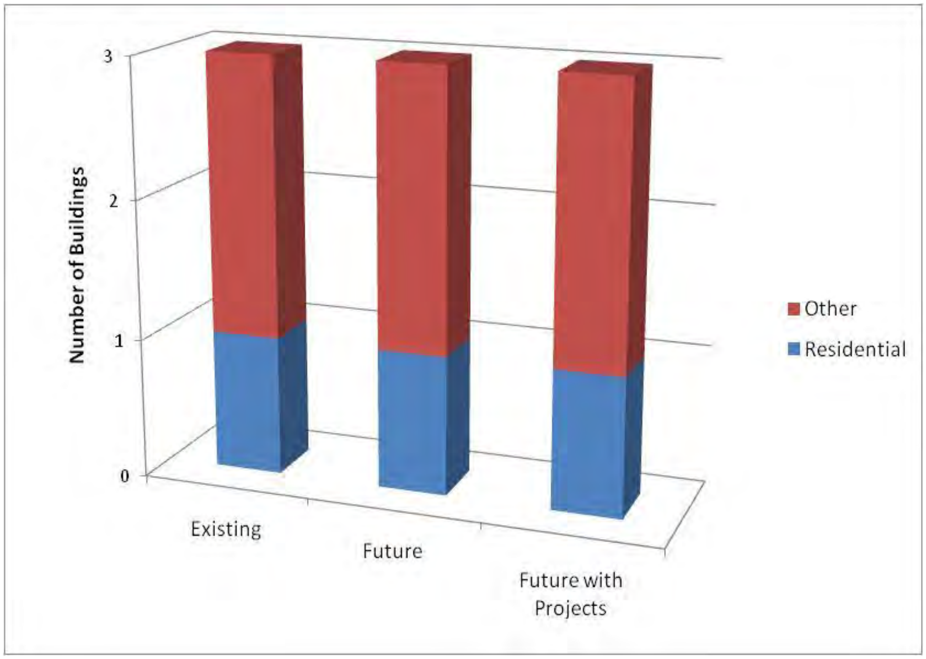


Figure 6-2: Buildings located within 15 feet of the 100-year floodplain

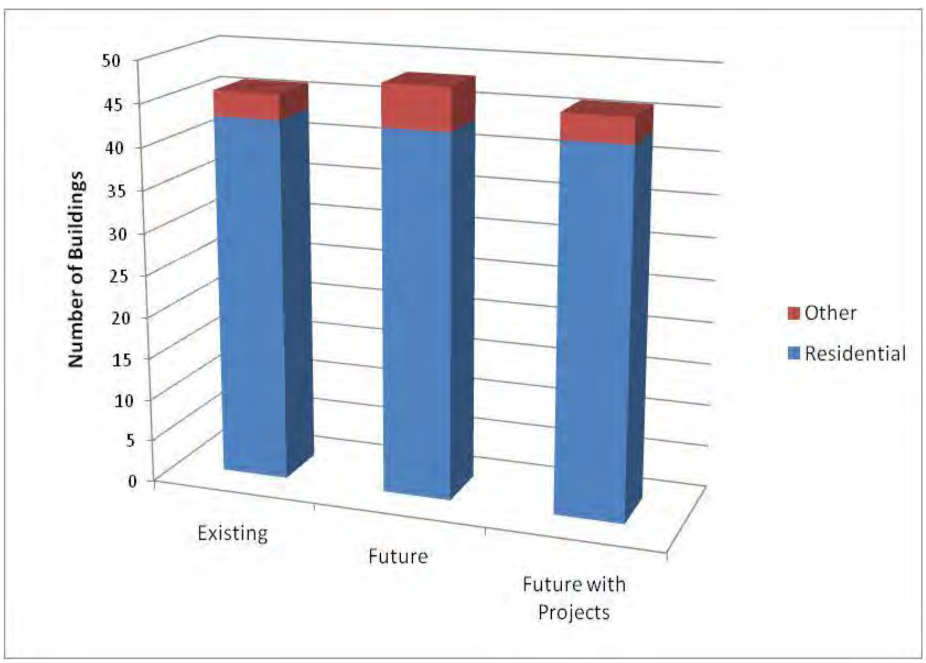


Figure 6-3: Buildings located within the 10-year floodplain

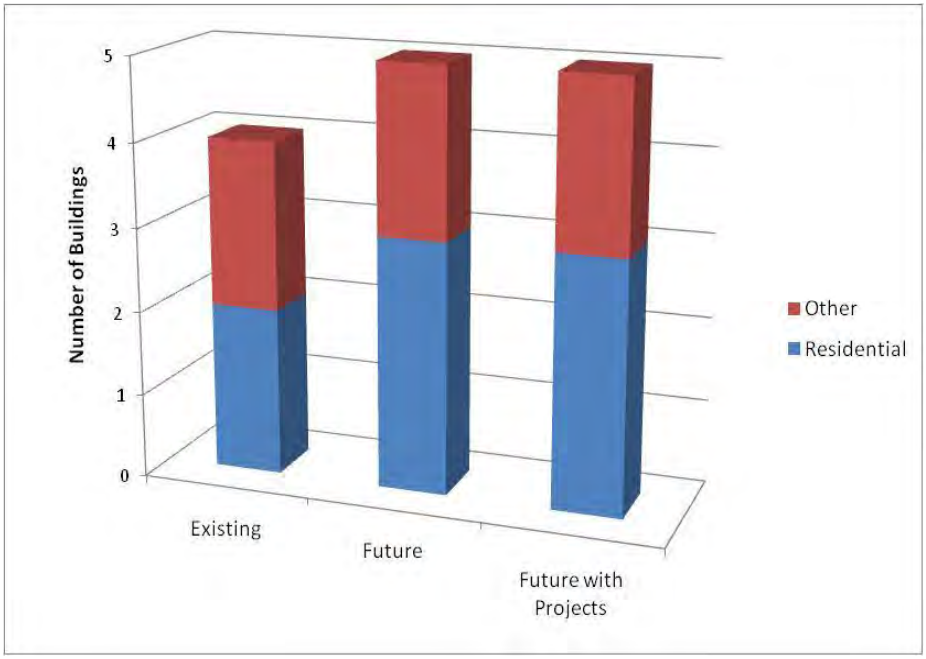


Figure 6-4: Buildings located within 15 feet of the 10-year floodplain

The analysis shows that the number of structures in or near the floodplain remains the same or slightly decreases between “future” conditions and “future with projects” conditions. A more detailed discussion of the hydraulic analysis can be found in Appendix B.

6.3 Pollutant Loading

Pollutant loads at the subwatershed level were estimated using STEPL, a water quality model. Additionally streambank erosion was calculated for affected reaches per guidance from the County. The streambank erosion pollutant loads were broken down into subwatershed loads and added to the STEPL subwatershed pollutant loads. The STEPL model generates estimated pollutant loads based on land use. Various types of stormwater treatment facilities can be modeled by applying reductions to these loads based on the treatment type and area treated. Detailed results from the STEPL model can be found in Appendix B. Table 6.1 includes a summary of the “existing,” “future without,” and “future with proposed projects” pollutant loadings by WMA.

6.4 Plan Costs and Benefits

The total cost of the 10-year plan (includes the 90 structural projects only) is $48 million. If implemented, the benefits to the county are wide-ranging. The yearly total suspended sediment load will be reduced by 1,200 tons. The yearly load of nitrogen will be reduced by 3,000 pounds, and the yearly load of phosphorus will be reduced by 1,000 pounds. This represents a 15.2% reduction in suspended sediment, a 2.4% reduction in nitrogen, and a 4.6% reduction in phosphorus. If the 64 structural projects in the 11-25 year plan are implemented as well, at a cost of $48 million, the suspended sediment load will be reduced by an additional 440 tons. The yearly load of nitrogen will be reduced by an additional 1,000 pounds, and the yearly load of phosphorus will be reduced by an additional 300 pounds. Implementation of the total group of 155 structural projects at a cost of $96 million will yield reductions of 1,700 tons of suspended sediment, 4,000 pounds of nitrogen, and 1,300 pounds of phosphorus yearly. This represents a 20.6% reduction in sediment, a 3.3% reduction in nitrogen, and a 6.2% reduction in phosphorus.

Additionally, the 41 non-structural projects will have water quality benefits as well, although the costs and benefits of these projects are less easily quantified. These benefits will help attain the goals set by the County to improve water quality in the Pohick Creek watershed.

Table 6-1: Pollutant Loading & Flow Reduction Table (Pohick - Lower)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Lower	2346.46	Existing Condition	1.456	3.282	0.261	0.665	482.81	5.69	0.89
		Future Without Projects	1.635	3.475	0.323	0.758	481.91	6.37	0.98
		Future With Projects (10-Yr)	1.623	3.454	0.306	0.734	474.42	6.36	0.97
		Future With Projects (25-Yr)	N/A	N/A	N/A	N/A	469.96	6.31	0.97
		Reduction (10-Year Plan)	0.012	0.021	0.017	0.024	7.49	0.01	0.00
		Reduction (25-Year Plan)	N/A	N/A	N/A	N/A	11.95	0.05	0.01

Table 6-2: Pollutant Loading & Flow Reduction Table (Pohick - Lower South Run)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Lower South Run	1947.69	Existing Condition	1.071	2.769	0.185	0.552	395.39	4.32	0.72
		Future Without Projects	1.090	2.791	0.190	0.552	394.98	4.38	0.72
		Future With Projects (10 yr)	1.091	2.800	0.190	0.553	382.32	4.35	0.71
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	382.28	4.35	0.71
		Reduction (10-year Plan)	-0.002	-0.009	0.000	-0.001	12.66	0.04	0.01
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	12.70	0.04	0.01

[1] 25-year projects were not evaluated in the hydrologic model
[2] Flow is cumulative
[3] Loads are representative of individual land area contributions

Table 6-3: Pollutant Loading & Flow Reduction Table (Pohick - Middle)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Middle	3014.60	Existing Condition	1.118	2.863	0.219	0.509	1236.71	6.32	1.16
		Future Without Projects	1.139	2.887	0.225	0.513	1236.09	6.36	1.16
		Future With Projects (10 yr)	1.141	2.891	0.219	0.510	1077.52	6.22	1.11
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	1018.67	6.14	1.09
		Reduction (10-year Plan)	-0.002	-0.003	0.006	0.003	158.57	0.14	0.05
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	217.42	0.22	0.08

Table 6-4: Pollutant Loading & Flow Reduction Table (Pohick - Middle Run)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Middle Run	2540.17	Existing Condition	1.222	2.966	0.169	0.357	352.29	5.77	0.92
		Future Without Projects	1.246	2.996	0.177	0.371	352.43	5.83	0.92
		Future With Projects (10 yr)	1.240	2.988	0.175	0.368	342.21	5.81	0.92
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	339.96	5.80	0.91
		Reduction (10-year Plan)	0.005	0.008	0.002	0.003	10.22	0.02	0.01
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	12.47	0.03	0.01

[1] 25-year projects were not evaluated in the hydrologic model
[2] Flow is cumulative
[3] Loads are representative of individual land area contributions

Table 6-5: Pollutant Loading & Flow Reduction Table (Pohick - Middle South Run)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Middle South Run	1889.12	Existing Condition	0.778	1.837	0.019	0.041	530.89	4.30	0.74
		Future Without Projects	0.778	1.838	0.019	0.041	530.82	4.30	0.74
		Future With Projects (10 yr)	0.772	1.821	0.019	0.041	484.63	4.25	0.72
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	440.58	4.22	0.71
		Reduction (10-year Plan)	0.006	0.017	0.000	0.000	46.18	0.05	0.02
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	90.23	0.08	0.03

Table 6-6: Pollutant Loading & Flow Reduction Table (Pohick - Potomac)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Potomac	1532.42	Existing Condition	1.031	2.736	0.134	0.430	292.77	1.36	0.32
		Future Without Projects	1.032	2.737	0.134	0.431	292.70	1.38	0.32
		Future With Projects (10 yr)	1.032	2.737	0.134	0.431	292.70	1.38	0.32
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	292.70	1.38	0.32
		Reduction (10-year Plan)	0.000	0.000	0.000	0.000	0.00	0.00	0.00
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	0.00	0.00	0.00

[1] 25-year projects were not evaluated in the hydrologic model
[2] Flow is cumulative
[3] Loads are representative of individual land area contributions

Table 6-7: Pollutant Loading & Flow Reduction Table (Pohick - Rabbit Branch)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Rabbit Branch	2524.90	Existing Condition	1.259	2.792	0.058	0.081	841.80	5.71	1.00
		Future Without Projects	1.248	2.788	0.058	0.082	841.67	5.73	1.01
		Future With Projects (10 yr)	1.294	2.871	0.058	0.080	766.69	5.51	0.95
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	671.86	5.43	0.91
		Reduction (10-year Plan)	-0.046	-0.083	0.000	0.001	74.98	0.22	0.06
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	169.81	0.30	0.09

Table 6-8: Pollutant Loading & Flow Reduction Table (Pohick - Sideburn Branch)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Sideburn Branch	2307.90	Existing Condition	1.290	2.949	0.117	0.240	1131.43	6.93	1.20
		Future Without Projects	1.306	2.984	0.126	0.252	1132.02	6.99	1.21
		Future With Projects (10 yr)	1.310	2.997	0.123	0.254	755.69	6.60	1.08
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	720.48	6.56	1.07
		Reduction (10-year Plan)	-0.003	-0.012	0.003	-0.002	376.33	0.39	0.13
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	411.54	0.42	0.14

[1] 25-year projects were not evaluated in the hydrologic model
[2] Flow is cumulative
[3] Loads are representative of individual land area contributions

Table 6-9: Pollutant Loading & Flow Reduction Table (Pohick - Upper)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Upper	3104.70	Existing Condition	1.185	2.932	0.219	0.446	1003.60	6.36	1.11
		Future Without Projects	1.219	2.971	0.224	0.459	1004.37	6.44	1.12
		Future With Projects (10 yr)	1.213	2.949	0.222	0.455	760.71	6.19	1.04
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	715.81	6.15	1.02
		Reduction (10-year Plan)	0.006	0.022	0.002	0.004	243.65	0.25	0.09
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	288.55	0.29	0.10

Table 6-10: Pollutant Loading & Flow Reduction Table (Pohick - Upper South Run)

WMA	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick-Upper South Run	2040.74	Existing Condition	0.000	0.000	0.000	0.000	326.54	3.40	0.58
		Future Without Projects	0.776	2.274	0.178	0.364	324.03	3.46	0.59
		Future With Projects (10 yr)	0.797	2.296	0.172	0.359	292.56	3.39	0.57
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	221.74	3.31	0.54
		Reduction (10-year Plan)	-0.022	-0.021	0.006	0.005	31.47	0.08	0.02
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	102.29	0.15	0.05

[1] 25-year projects were not evaluated in the hydrologic model
[2] Flow is cumulative
[3] Loads are representative of individual land area contributions

Table 6-11: Pollutant Loading & Flow Reduction Table (Pohick Creek Watershed)

Watershed	Area (ac)	Scenario[1]	Runoff Volume (in)[2]		Peak Flow (cfs/ac)[2]		TSS (lb/ac/yr)[3]	TN (lb/ac/yr)[3]	TP (lb/ac/yr)[3]
			2-Year	10-Year	2-Year	10-Year			
Pohick Creek	23248.71	Existing Condition	1.056	2.315	0.080	0.086	709.57	5.28	0.91
		Future Without Projects	1.127	2.461	0.083	0.227	709.29	5.39	0.92
		Future With Projects (10 yr)	1.132	2.464	0.083	0.204	601.25	5.26	0.88
		Future With Projects (25 yr)	N/A	N/A	N/A	N/A	563.33	5.22	0.87
		Reduction (10-year Plan)	-0.005	-0.003	0.000	0.023	108.05	0.13	0.04
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	145.97	0.18	0.06

[1] 25-year projects were not evaluated in the hydrologic model
[2] Flow is cumulative
[3] Loads are representative of individual land area contributions

7.0 Glossary / Acronyms

B

Best Management Practice (BMP): A structural or nonstructural practice that is designed to minimize the impacts of changes in land use on surface and groundwater systems. Structural best management practices typically designed to trap or filter pollutants from stormwater runoff or reduce runoff velocities. Structural best management practices consist of bioretention filters, constructed stormwater wetlands, pervious pavement, etc. Nonstructural best management practices refer to land use or development practices that are determined to be effective in minimizing the impact on receiving stream systems such as street-sweeping, restoring stream buffers and improving outfalls.

Bioretention Basin: A BMP that retains, filters, and treats stormwater runoff using a shallow depression of conditioned soil topped with a layer of mulch or high carbon soil layer and vegetation tolerant of short-term flooding. Depending on the design, a basin can provide retention or detention of runoff water and will trap and remove suspended solids and filter or absorb pollutants to soils and plant material.

Bioswale: A vegetated swale that is a form of bioretention. It is used to partially treat water quality, attenuate flooding potential and convey stormwater.

Best Professional Judgment (BPJ): This indicates deviation from various standard methods used County-wide, to account for circumstances where strict application of the methods is not advisable.

Buffer: Area of land bordering a stream. Buffer restoration projects are implemented to replant the stream buffer area, providing protection from direct runoff from developed areas.

C

Channel: A natural or manmade waterway.

Channel Evolution Model (CEM): Describes the five stages of channel adjustment. In urban areas, the channel generally adjusts due to increased runoff from development.

Chesapeake Bay Preservation Areas: An area designated by a local government under Virginia's Chesapeake Bay Preservation Act to protect Chesapeake Bay (VDCR, 2008). In Fairfax County, these areas are Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) under the Chesapeake Bay Preservation Ordinance adopted by the County (Fairfax County, 2005).

Cistern: An underground basin of water or above-ground barrel or tank that stores rainwater. They are used to ensure that water is not contaminated nor suffers from evaporation.

Confluence: The joining point where two or more streams create a combined, larger stream.

D

Daylight: Exposing waterways currently conveyed in buried culverts or pipes.

Density: The number of dwelling units per acre.

Detention: The temporary impoundment or holding of stormwater runoff.

Directly Connected Impervious Area (DCIA): Paved or hard surfaces, such as streets and rooftops, for which runoff is collected through a drain and directly piped into the stormwater management system.

Dry Detention Basin: An extended detention basin is designed to completely empty out between runoff events, typically within 48 hours, and therefore have no permanent pool. A dry detention basin can limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of stormwater discharges.

E

Easement: A designated part of a property that allows someone other than the property owner to use the land for a specific purpose.

Energy Dissipation Device: Structure designed to reduce erosive water velocities at an outfall.

Extended Detention Basin: A stormwater management facility whose outlet is designed to detain the stormwater runoff from a water quality storm for some minimum duration, allowing sediment particles and associated pollutants to settle out to the bottom of the basin.

F

Floodplain: The flat area located adjacent to the main stream channel. When streambanks overflow during or after a storm, the floodplain provides natural storage for the excess water. The 100-year frequency storm, which is the rainfall intensity that has a 1-percent chance of occurring in a year, is used to determine the limits of the floodplain. Floodplains include all areas of the County which are designated as a floodplain by the Federal Insurance Administration, the United States Geological Survey or Fairfax County.

G

Geographic Information System (GIS): A system of organizing and viewing digital spatial data; text and numerical data can be attributed to the digital features, or this information can be linked to a database. This system was used to create many of the maps contained in this report.

Green Roof: A roof that is covered with vegetation, which reduces stormwater run-off and lowers cooling costs.

H

Head Cut: Deepening of the stream channel through erosion, which starts at one location and moves upstream.

Headwater: The uppermost reaches of a stream or watershed.

Hydrologic Engineering Center River Analysis System (HEC-RAS): Using flows determined from a hydrologic model, this model computes the water levels in the stream system.

Hydraulics: The modeling or computing of the water elevation in a stream or manmade feature.

Hydrology: The modeling or computing of the quantity or in some cases quantity and timing, of water flow.

I

Impervious Area or Impervious Cover: A surface composed of any material that significantly impedes or prevents natural infiltration of water into soil. Impervious surfaces include, but are not limited to, roofs, buildings, streets, parking areas, and any concrete, asphalt or compacted gravel surface.

Index of Biological Integrity (IBI): evaluates ecological health based on the community structure of bottom-dwelling aquatic invertebrates.

L

Low-Impact Development (LID): A stormwater approach with a basic principle of managing rainfall at the course using uniformly distributed decentralized controls. Instead of conveying and managing/treating stormwater in large, end of pipe facilities located at the bottom of drainage areas, LID addresses stormwater though small landscape features located at the lot level. The primary goal of LID methods is to mimic the predevelopment site hydrology by using techniques that infiltrate, filter, store, evaporate and detain runoff close to its source.

M

Municipal Separate Storm Sewer System (MS4) Permit: Requires the creation of watershed management plans to facilitate compliance with the Clean Water Act

N

National Pollutant Discharge Elimination System (NPDES): A program administered by the Environmental Protection Agency that regulates pollution sources from pipes or man-made ditches (US EPA, 2009).

P

Peak Flows: The highest flow modeled or measured during a storm event at a certain location.

Perennial Streams: A body of water that normally flows year-round in a defined channel or bed, and is capable, in the absence of pollution or other manmade stream disturbances, of supporting bottom-dwelling aquatic animals.

Pervious Cover: Any ground cover material that allows water to infiltrate to the soil below.

Pervious Pavement: Pavement that allows percolation or infiltration of stormwater through the surface into the soil below.

R

Rain Barrel: Low-cost, effective and easily maintainable retention and detention devices that are applicable to residential, commercial and industrial sites to manage rooftop runoff. Rain barrels can be used to store runoff for later use in lawn and garden watering.

Regional Pond: A pond designed to control water quality/quantity for a number of developments in a large area.

Resource Management Area (RMA): A Chesapeake Bay Preservation Area that includes all land that may cause harm to the water quality of the Resource Protection Areas (RPAs); includes all of Fairfax County except those areas designated as RPAs (Fairfax County, 2005).

Resource Protection Area (RPA): A Chesapeake Bay Preservation Area located along sensitive streams draining to the Potomac River (Fairfax County, 2005).

Retention: The permanent storage of stormwater indefinitely.

Retrofit: Converting an existing detention facility into a more functional treatment practice.

Return Period: The average length of time between events having the same volume and duration. If a storm has a 1-percent chance of occurring in any given year, then it has a return period of 100 years.

Riparian Buffer: Land adjacent to a stream where vegetation is strongly influenced by the presence of water. It often contains native grasses, flowers, shrubs and trees that line the stream banks. Riparian buffers are important for good water quality and help to prevent sediment, nitrogen, phosphorus, pesticides and other pollutants from reaching the stream.

Runoff: The portion of precipitation, snow melt or irrigation water that runs off the land into surface waters.

S

Sediment Forebay: An area designed to collect some sediment from stormwater runoff before the runoff enters the main portion of the facility.

Spreadsheet Tool for Estimating Pollutant Load (STEPL): This tool calculates pollutant loads from various land uses, and models the pollutant reduction capabilities of various best management practices (BMPs).

Source Indicators: These are metrics that quantify the presence of pollutant sources or potential stressors that may cause problems.

Stormwater Management Model (SWMM): Estimates the flows at various points in the watershed for a given storm event.

Stream Morphology: The study of the size, pattern and geometry at several points along the stream, including the network of tributaries within the drainage basin.

Stream Physical Assessment (SPA): A report documenting the results from a data collection effort that involved a County-wide assessment of stream conditions. The purpose of the assessment is to collect information on and document: habitat conditions, impacts on the stream from specific infrastructure and problem areas, general stream characteristics and geomorphic classification of stream type.

Stream Protection Baseline Study (SPS): A 2001 study that documented the stream conditions throughout the County using physical, chemical and biological evaluations.

Stream Restoration: The re-establishment of the general structure, function and self-sustaining behavior of a stream.**Stormwater Management Model (SWMM)**: Developed by the EPA, this is a hydrologic model that computes flows in the stream network of the watershed using inputs such as rainfall, land use and other physical characteristics of the watershed.

T

Ten-Year Storm: The rainfall totals or intensity that have a 10-percent probability of occurring at that location in that year.

Total Nitrogen (TN): This is an indicator of water quality, and is a measure of all types of nitrogen in the water.

Total Phosphorus (TP): An indicator of water quality and a measure of all types of phosphorus in the water.

Tributary: A stream or a river that flows into a main stem or large river.

Total Suspended Sediment (TSS): An indicator of water quality, representing the amount of solid material that is being carried in the water.

Two-Year Storm: The rainfall totals or intensity that have a 50-percent probability of occurring at that location in that year.

U

Underground Chamber: An underground structure that detains stormwater for a period of time and discharges it through a hydraulic outlet structure to a downstream conveyance system.

Universal Soil Loss Equation (USLE): An equation for estimating average erosion from an area of land.

V

Virginia Pollutant Discharge Elimination System (VPDES): The Virginia administration of the National Pollutant Discharge Elimination System (NPDES). Administered by the Virginia Department of Environmental Quality (VDEQ), the U.S. Environmental Protection Agency still has authority over major point source discharges, as defined by the quantity and content of the source (VDEQ, 2010).

W

Watershed Advisory Group (WAG): Representatives of various stakeholder groups in the watershed who provide input at various stages of the Watershed Management Plan (WMP).

Watershed: An area of land for which rainwater collects and drains to a particular outlet point. Watersheds are commonly delineated from the mouth of a stream and include any land draining to the stream or its tributaries.

Watershed Management Area (WMA): A group of subwatersheds, used for breaking the watershed into subareas for management purposes.

Wet Pond: A detention basin with a permanent pool of water, which helps increase settling and pollutant uptake.

Watershed Management Plan (WMP): A plan for watershed restoration.

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