Chapter 8

Pimmit Run Watershed

8.1 Watershed Condition

The Pimmit Run Watershed has an area of approximately 8,083 acres that includes 1,356 acres of Arlington County and 335 acres of land that drain directly to the Potomac River, which were added to the watershed to facilitate planning. It is bounded to the west by Interstate 495; to the north by Chain Bridge Road and Dolley Madison Boulevard; to the northeast by the Potomac River; to the east by Glebe Road in Arlington County; and to the south by Lee Highway and Interstate 66. This watershed drains significant commercial and residential areas located south of Tysons Corner, the largest commercial shopping area in the county. The watershed is divided into five smaller subwatersheds consisting of Upper Pimmit Run, Middle Pimmit Run, Lower Pimmit Run, Little Pimmit Run, and the Potomac River tributaries. These watersheds are shown on Maps 8.1, 8.2, and 8.3.

The major tributaries in the Upper Pimmit Run Subwatershed are Burke's Spring Branch, Darrell Branch and Bridge Branch. The Middle Pimmit Run Subwatershed includes the major tributaries of Bryan Branch and Saucy Branch. The major tributary located in the Lower Pimmit Run Subwatershed is Stromans Branch.

The county initiated a Stream Physical Assessment (SPA), described in detail in Section 2.5.10, for all of its watersheds in August 2002 to systematically characterize the existing conditions of stream corridors. This data has provided invaluable details of the conditions of streams as a "snap-shot" in time. However, it is recognized that conditions are changing and in some cases, may have changed significantly since the initial SPA was conducted. Due to the dynamic nature of streams as they adjust to the continual impact of development, it is believed that reassessment of physical conditions will be needed to determine the exact need before the implementation of any recommended projects.

The overall condition of the watershed, as determined during the SPA, is summarized as follows.

Pimmit Run Watershed Condition Summary

- **Current imperviousness = 27 percent with the majority being medium density residential land use.**
- **Future imperviousness = 30 percent**
- **139 BMPs are located in the watershed.**
- **Three of the 83 road crossings had "moderate to severe" impacts and the rest had "minor to moderate" impacts.**
- **11 utility locations have "minor to moderate" impacts.**

- **One obstruction, located on Little Pimmit Run, has a "severe to extreme" impact. Seven obstructions have "moderate to severe" impacts and three have "minor to moderate" impacts.**
- **The stream has been altered in the upstream reaches and the majority of the downstream reaches (80 percent) are unstable and actively widening.**
- **The majority of the habitat quality is fair with inadequate buffers.**
- **Erosion was observed as "severe to extreme" at two locations, "moderate to severe" at 26 locations, and "minor to moderate" at four locations.**
- **Two dumpsites were observed in Little Pimmit Run.**

8.1.1 Watershed Characteristics

The headwaters of Pimmit Run begin west of Interstate I-495 along Gallows Road and drain into a pond just west of the interstate near Madron Lane and Executive Court. Then the stream outfalls at a storm drain system located on the east side of Interstate 495, just south of John Marshall High School. The stream then enters another pipe and goes underground until it daylights at a pipe outfall at Leesburg Pike. Pimmit Run initially flows east to northeast and then changes direction and flows east to southeast. The length of Pimmit Run from its headwaters to its outfall at the Potomac River is approximately 13.1 miles.

Six major tributaries contribute significant stream flow to Pimmit Run. The longest of these tributaries is Little Pimmit Run, which has a length of approximately 9,080 ft. The shortest is Bryan Branch, with an overall length of approximately 4,074 feet. Numerous small tributaries emerge from storm drain outfalls and natural springs and convey flows into Pimmit Run along its length. Of these smaller tributaries, nine are of significant length ranging from 1,000 to 5,000 feet. The terrain in the watershed is moderate with upstream land elevations ranging from 350 to 400 feet in the southern part to downstream land elevations of 30 to 100 feet in the northern part. The stream has a low-gradient slope of less than 0.50 percent.

8.1.2 Existing and Future Land Use

Land use in the watershed is predominantly medium-density residential with commercial land use in the southwest portion of the watershed and low-density residential and forested land uses located east of the George Washington Memorial Parkway. The Little Pimmit Run and Lower Pimmit Run Subwatersheds include approximately 1,356 acres of Arlington County. This is approximately 17 percent of the total Pimmit Run Watershed area. The Arlington County area consists primarily of medium-density residential land use. Medium-density residential land use currently comprises 40 percent of the total watershed area. The existing and 25-year future land use in the Pimmit Run Watershed are described in Table 8.1.

There are currently 502 acres of open space, parks, and recreational areas in the Pimmit Run Watershed which account for approximately six percent of the existing land use. The parks and recreational areas in the Pimmit Run Watershed are Lewinsville Park, Pimmit Bend

Park, Linway Terrace Park, Bryn Mawr Park, Potomac Hills Park, Kent Gardens Park, Falls Church City Park, Olney Park, Mount Royal Park, Haycock Longfellow Park, Pimmit Run Stream Valley Park, Kirby Park, Fort Marcy Park, and Marie Butler Leven Preserve. There are 188 acres that are currently vacant or undeveloped and 376 acres that are currently underutilized. These parcels comprise more than seven percent of the area and primarily have a future proposed land use of low-density residential. The U.S. Fish and Wildlife Service National Wetlands Inventory shows that there are 4.21 acres of wetlands in this watershed.

Table 8.1 Pimmit Run Watershed Land Use

Land Use Description[1]	Land Use			
	Existing		Future	
	Area (Acres)	%	Area (Acres)	%
Upper Pimmit Run				
Open space, parks, and recreational areas	159	6%	145	5%
Estate residential	39	1%	0	0%
Low-density residential	200	7%	95	4%
Medium-density residential	1,088	40%	1,275	47%
High-density residential	297	11%	307	11%
Low-intensity commercial	239	9%	210	8%
High-intensity commercial	14	1%	19	1%
Industrial	71	3%	96	4%
Other	0	0%	0	0%
Unknown	2	0%	2	0%
Vacant/Undeveloped	40	2%	0	0%
Road right-of-way (including shoulder areas)	553	20%	553	20%
TOTAL	2,702	100%	2,702	100%
Middle Pimmit Run				
Open space, parks, and recreational areas	235	9%	202	8%
Estate residential	204	8%	18	1%
Low-density residential	439	17%	525	20%
Medium-density residential	916	36%	1,145	45%
High-density residential	53	2%	59	2%
Low-intensity commercial	229	9%	200	8%
High-intensity commercial	26	1%	42	2%
Industrial	4	0%	4	0%
Other	0	0%	0	0%
Unknown	2	0%	2	0%
Vacant/Undeveloped	89	4%	0	0%
Road right-of-way (including shoulder areas)	363	14%	363	14%
TOTAL	2,560	100%	2,560	100%
Lower Pimmit Run				
Open space, parks, and recreational areas	23	3%	23	3%
Estate residential	19	3%	7	1%

Land Use Description[1]	Land Use			
	Existing		Future	
	Area (Acres)	%	Area (Acres)	%
Low-density residential	80	11%	88	13%
Medium-density residential	323	46%	336	47%
High-density residential	0	0%	0	0%
Low-intensity commercial	3	0%	3	0%
High-intensity commercial	0	0%	0	0%
Industrial	0	0%	0	0%
Other	0	0%	0	0%
Unknown	0	0%	0	0%
Vacant/Undeveloped	9	1%	0	0%
Road right-of-way (including shoulder areas)	253	36%	253	36%
TOTAL	710	100%	710	100%
Little Pimmit Run				
Open space, parks, and recreational areas	76	4%	56	3%
Estate residential	58	3%	13	1%
Low-density residential	238	14%	292	16%
Medium-density residential	939	53%	971	55%
High-density residential	13	1%	13	1%
Low-intensity commercial	108	6%	107	6%
High-intensity commercial	11	1%	12	1%
Industrial	0	0%	0	0%
Other	0	0%	0	0%
Unknown	7	0%	7	0%
Vacant/Undeveloped	21	1%	0	0%
Road right-of-way (including shoulder areas)	305	17%	305	17%
TOTAL	1,776	100%	1,776	100%
Potomac Tributaries				
Open space, parks, and recreational areas	9	3%	6	2%
Estate residential	102	30%	0	0%
Low-density residential	90	27%	224	67%
Medium-density residential	1	0%	1	0%
High-density residential	22	7%	22	7%
Low-intensity commercial	1	0%	1	0%
High-intensity commercial	0	0%	0	0%
Industrial	1	0%	1	0%
Other	0	0%	0	0%
Unknown	0	0%	0	0%
Vacant/Undeveloped	29	9%	0	0%
Road right-of-way (including shoulder areas)	80	24%	80	24%
TOTAL	335	100%	335	100%
TOTAL for Pimmit Run Watershed	**8,083**	**100%**	**8,083**	**100%**

[1]The land use categories presented here are for watershed planning purposes only and were used to determine the impervious cover in the area.

The current impervious area in this watershed is 27 percent of the total area. In the future,

with ultimate build out conditions, estate residential land use may be replaced by low-density and medium-density residential development and the future imperviousness may increase to 29 percent. In addition to the predicted changes in land use, mansionization will increase the impervious area in the watershed by 71.3 acres, increasing total future imperviousness to 30 percent.

Impervious area measures the amount of hard surfaces such as roofs, roadways and sidewalks which impede rainwater from percolating into the ground. Increases in impervious area allow runoff to flow directly into the streams in larger quantities, often causing downstream flooding and stream deterioration, including instream erosion. When watershed imperviousness reaches ten percent, stream quality begins to decline with poor water quality, alteration of the stream channel, and degraded plant and animal habitat becoming apparent.

The Fairfax County Comprehensive Plan for land use in the Pimmit Run Watershed includes the redevelopment of Chesterbrook Shopping Center in the McLean Community Business Center (CBC). The Plan also includes future transportation improvements such as installing mass transit, widening roadways, improving interchanges, and adding new trails. The mass transit rail will extend through the Tysons Corner area to Dulles Airport and into Loudoun County. The proposed rail line will be located in the Upper Pimmit Run Subwatershed along the Dulles Toll Road. The planned improvements are described in more detail below.

The roadway and interchange improvements planned for the Pimmit Run Watershed include:

- Widening Route 7 to six lanes between Haycock Road and I-495.
- Improving a portion of Idylwood Road between Route 7 and I-495 to two lanes.
- Improving Redmond Drive.

The planned trails for the Pimmit Run Watershed include:

- A stream valley trail with a six- to eight-foot-wide natural surface or stone dust trail along Pimmit Run. Currently, the following easements are needed for this project:
    - Downstream of Old Dominion Bridge on Dominion Hills LLC.
    - Downstream of Bryan Branch.
    - Downstream of Kinyon Place to Kirby road.
    - The two lots downstream of Kirby road located at 1363 Kirby Road and 1361 Kirby Road.
- The extension of the Mount Vernon trail along the George Washington Memorial Parkway.
- The Potomac Heritage National Scenic Trail along I-495.
- An eight-foot-wide asphalt or concrete trail along Great Falls Street, Haycock Road, Idylwood, Road, Kirby Road, Westmoreland Street, Magarity Road, Chain Bridge Road, and Old Dominion Drive.
- A new bike lane along Westmoreland Street and Chain Bridge Road.
- A minor four- to eight-foot-wide asphalt or concrete trail through Kirby Park, Haycock

Longfellow Park, and along Bridge Branch.

- A minor four- to eight-foot-wide asphalt or concrete trail along Powhatan Street, Birch Road, Hillside Drive, Old Chesterbrook Road, Weaver Avenue, Linway Terrace, Potomac School Road, and Colleen Lane.

8.1.3 Existing Stormwater Management

The watershed areas located east of Interstate 495 are drained through a network of drainage ditches and storm drain pipes. The storm drain systems in this area flow into drainage ditches, which then collect additional runoff from an increased drainage area, and eventually flow into the headwaters of Pimmit Run. After daylighting for approximately 2,200 feet, the stream then is conveyed underground by a storm drain system until it daylights again at Leesburg Pike. The stream is conveyed in an open concrete channel from Leesburg Pike to just downstream of the Dulles Toll Road except for a very short section in Olney Park. The storm drain pipe outfalls vary in size, ranging from 12 inches in diameter to a quadruple twelve by twelve-foot box culvert. Most of the channels downstream of the pipe outfalls have been altered with concrete lining or with riprap bed and bank protection. The natural channels are eroding due to the velocity of runoff from the pipe discharges. Similar combinations of storm drain conveyance systems serve the areas draining to Pimmit Run's major tributaries. Smaller networks of storm drain pipe systems and culverts serve the remaining portions of the watershed.

There were 98 storm drain system outfall locations evaluated as part of the SPA. Three of these pipe locations had a "moderate to severe" impact on the stream and the rest of the locations had a "minor to moderate" impact on the stream. The locations of all pipe impacts are shown on Maps 8.1, 8.2, and 8.3. In addition to the pipe outfalls along the streams, there are also two locations in the Pimmit Run Watershed where pipes completely cross the streams. Bryan Branch is traversed by an eight-inch diameter sanitary sewer pipe and Little Pimmit Run is traversed by a 21-inch diameter sanitary sewer pipe. These lines are exposed and are causing some erosion of the streams.

Erosional impacts were also assessed for all roads, footbridges, and driveways that crossed the stream reaches evaluated in the SPA. Maps 8.1, 8.2, and 8.3 show the location of the crossings and their erosional impacts on the streams. Eighty of the 83 crossings evaluated in the SPA had a "minor to moderate" impact and three crossings had a "moderate to severe" impact on the stream as described below:

- Chesterbrook Road: A ten-foot-high bridge with four ten-foot spans crosses Little Pimmit Run has a "moderate to severe" impact on the stream due to bed erosion, debris build-up and sediment deposits at the bridge.
- Park Road: A 2.5-foot diameter culvert along an unnamed tributary to Little Pimmit Run has a "moderate to severe impact" on the stream due to sediment deposits and the poor structural condition of the culvert.
- Unnamed crossing: A private crossing of Pimmit Run just upstream of Kirby Road with six, four-foot circular culverts and one four by four box culvert has a "moderate to severe" impact on the stream due to bed and bank erosion and sediment deposits at the culverts.

In Arlington County, Pimmit Run flows under North Glebe Road just upstream of its confluence with the Potomac River. The impacts of this crossing on the stream were not assessed because it is not in Fairfax County. However, for large storm events in the past, this location has been impassable due to flooding.

The county's list of master plan drainage projects shows that there are 36 identified projects in this watershed. Table 8.2 summarizes the type of master plan drainage project, project name/location, and project cost.

Table 8.2 Pimmit Run Watershed Master Plan Drainage Projects

Type of Work	Project Name/Location	Old Project Number	Cost	Status
750' storm sewer	Great Falls Manor (near Woodgate Lane)	G00048	$458,677	Keep as CIP project.
400' pipe system	Halsey Road	G00052	$202,265	Keep as CIP project.
1000' stream stabilization	Dexter Drive	G00056	$1,755,450	Partially incorporated into PM9232.
Replace 840' storm sewer	Pimmit Hills/Gilson Street	G00059	$833,682	Keep as CIP project.
900' stream stabilization	Noble Drive	G00066	$632,403	Keep as CIP project.
290' stream stabilization	Pimmit Run Main Stream (near Pinetree Road)	PM201	$189,841	Incorporated into PM9208.
675' stream stabilization	Woodacre Drive	PM202	$272,887	Partially incorporated into PM9208.
710' storm sewer pipe	Woodland Terrace	PM212	$945,185	Keep as CIP project.
360' stream stabilization	Old Dominion Drive	PM222	$77,061	Incorporated into PM9203.
1050' stream stabilization	Valley Road and Rhode Island Avenue	PM223	$2,199,857	Incorporated into PM9203.
400' stream stabilization	Little Pimmit Phase II	PM224	$597,600	Partially incorporated into PM9203.
360' stream stabilization	Ramshorn Place	PM231	$151,738	Keep as CIP project.
500' stream stabilization	Potomac School	PM232	$781,949	Partially incorporated into PM9208/PM9209.
1400' stream stabilization	Brookhaven Drive	PM233	$395,741	Partially incorporated into PM9208/PM9209.
340' stream stabilization	Chesterbrook/Divine	PM235	$260,422	Stream flow is piped along half of the project length. Further field verification needed to determine if the remainder of the stream restoration is needed.
1600' channel restoration	McLean Manor Sub	PM241	$747,000	Recommend deletion. Stream is piped along entire project length, so stream restoration is no longer possible.

Type of Work	Project Name/Location	Old Project Number	Cost	Status
60' stream stabilization	Old Dominion Drive	PM251	$42,355	Further field verification needed.
525' stream stabilization	Divine Street	PM252	$172,305	Incorporated into PM9209.
220' stream stabilization	Lemon Road	PM253	$102,131	Incorporated into PM9235.
50' stream stabilization	McKay Street	PM261	$14,544	Incorporated into PM9232.
1300' stream stabilization	Griffith Road	PM272	$1,867,500	Incorporated into PM9232.
350' stream stabilization	Leesburg Pike	PM281	$225,347	Recommend deletion. Stream is piped along entire project length, so stream restoration is no longer possible.
450' stream stabilization	Mohegan Drive	PM282	$95,399	Keep as CIP project.
Floodproof house	6212 Park Road at Old Dominion	PM421	$149,400	Incorporated into PM9663.
Replace culvert at Bryan Branch	Bryan Branch	PM431	$69,772	Incorporated into PM9469.
Add culvert and stream stabilization	Davidson Road	PM442	$526,417	Incorporated into PM9209.
Stabilization/flood control/culvert	Great Falls Street (G00057)	PM451	$265,200	Keep as CIP project.
Raise road and stream stabilization	Kirby Road (near Claiborne Drive)	PM611	$800,732	Partially incorporated into PM9208.
Purchase houses or floodproof	Tucker Avenue (G00062)	PM652	$90,955	Incorporated into PM9663.
Floodproof four homes	Kirkley Ave	PM653	$280,000	Incorporated into PM9663.
Floodproof house	Kirby Road	PM655	$59,484	Incorporated into PM9663.
Add culvert	Ballantrae Lane	N/A	$29,932	Keep as CIP project.
Floodwall	Leonard Road	N/A	$205,542	Incorporated into PM9663.
Olney Reservoir	Olney Reservoir	N/A	$626,531	Recommend deletion. The Dulles Airport Access Road now occupies this space; therefore this project is no longer possible.
Provide bypass	Evers Drive	N/A	$702,143	Keep as CIP project.
Replace culvert	Lorraine Avenue	N/A	$87,408	Keep as CIP project.

The county's Maintenance and Stormwater Management Division (MSMD) tracks storm drainage problems as reported by county residents. According to the MSMD data, 100 drainage complaints regarding flooding and erosion were registered with the county. The locations of these complaints are shown on Maps 8.1, 8.2, and 8.3. Problems were not added for all MSMD complaints; only for the serious complaints where a project was warranted.

According to the MSMD BMP inspection database, there are 107 private and 32 public

stormwater management facilities located in the watershed. Approximately 609 acres are served by these stormwater management facilities out of the total area of 8,083 acres, or eight percent of the watershed. The majority of the private facilities are located in the southwestern part of the watershed in Upper Pimmit Run. The types of facilities listed in the MSMD database are described in Table 8.3. The facilities listed in the table are shown on Maps 8.1, 8.2, and 8.3 along with additional stormwater management facilities that are in the county's Stormnet GIS database. The Stormnet database does not have as much detailed information as the MSMD database, so the type of facility could not be determined for these additional sites.

Table 8.3 Pimmit Run Watershed Stormwater Management Facilities

Type of Facility	Number of Facilities	
	Privately owned	Publicly owned
Bioretention	1	--
Dry pond	13	28
Manufactured BMP	1	--
Parking lot	2	--
Roof top detention	24	--
Sand filter	5	--
Infiltration trench	42	1
Underground	16	3
Wet pond	3	--
Total	**107**	**32**

The source of data for this table was the MSMD database.

8.1.4 Stream Geomorphology

The majority of the soil types in the watershed exhibit characteristics of hydrologic soil groups B and D. The hydrologic soil group classifications of A, B, C, and D describe the soil's runoff potential and are based on the characteristics of soil texture, permeability, and infiltration rate. Hydrologic soil group B soils are classified as having moderate infiltration rates and tend to soak up more water and have less runoff than many of the other soil groups. Hydrologic soil group D soils have a high potential for runoff, a very low infiltration rate, and consist chiefly of clayey soils or very wet soils.

The geomorphology of the stream segments of Pimmit Run and its tributaries can be summarized as shown below. More information about the Channel Evolution Model (CEM) used to classify the watersheds is in Section 2.5.10 of Chapter 2.

- The dominant substrate in the majority of stream segments is gravel; however, the downstream reaches of Pimmit Run consist mainly of cobbles.
- The majority of reaches are of channel evolution model (CEM) type 3, referring to nearly vertical stream bank slopes, active widening and accelerated bend migration.
- The upstream segments are paved with concrete or reinforced with riprap; hence no geomorphic assessment was performed.
- Portions of the upstream- and downstream-most reaches are of CEM type 4, meaning that they are stabilizing with a new channel configuration.

Maps 8.4, 8.5, and 8.6 show the stream segment CEM types in the Pimmit Run

subwatersheds. Fallen trees and debris obstructing the flow were observed at several locations along Pimmit Run and its tributaries. The impact of this debris on the stream was "severe to extreme" in one location along Little Pimmit Run, "moderate to severe" in seven locations, and "minor to moderate" in the other three locations. Two dumpsites were identified along Little Pimmit Run during the SPA. These obstruction and dumpsite locations are shown on Maps 8.4, 8.5 and 8.6..

8.1.5 Stream Habitat and Water Quality

The Virginia Department of Environmental Quality's (DEQ's) 2006 305(b)/303(d) Water Quality Assessment Integrated Report (found at www.deq.virginia.gov/wqa/ir2006.html) states that the recreation use goal for Pimmit Run is not supported due to exceedances of the fecal coliform bacteria water quality standard recorded at two DEQ water quality monitoring stations located on this stream. In addition to the bacteria impairment, DEQ's 2006 Integrated Report states that Pimmit Run is also impaired for fish consumption due to polychlorinated biphenyls (PCBs), chlordane, and heptachlor epoxide. These contaminants were found in American Eel specimens collected in 2001 and 2004 at DEQ's downstream Pimmit Run water quality monitoring station, located at the bridge at Glebe Road. The aquatic life use in Pimmit Run is fully supported with observed effects due to exceedances of the sediment screening value at the downstream portion of the stream.

There are three volunteer water quality monitoring sites located in the Pimmit Run Watershed which are coordinated by the Northern Virginia Soil and Water Conservation District. The sites are located along Upper Pimmit Run, Middle Pimmit Run and Little Pimmit Run. The data collected from these sites generally support the findings of the Fairfax County Stream Protection Strategy Baseline Study and indicate significant biological impairment at the sites.

The Fairfax County Health Department monitored stream water quality at four sampling sites in the Pimmit Run Watershed in 2002. Sampling Site 10-04 is along Little Pimmit Run, approximately 1,000 feet upstream from Claiborne Drive. The other three sites are along Pimmit Run. Sampling Site 10-03 is approximately 300 feet upstream of Claiborne Drive, 10-02 is just downstream of Old Dominion Drive and 10-05 is approximately 700 feet upstream of Westmoreland Street. Water samples were collected from each of these sites and evaluated for fecal coliform, dissolved oxygen, nitrate nitrogen, pH, phosphorous, temperature, and heavy metals. These parameters indicate the amount of non-point source pollution contributed from manmade sources and help to evaluate the quality of the aquatic environment. Almost eight percent of samples collected from site 10-02 in the Pimmit Run Watershed showed a dissolved oxygen concentration of less than 4.0 mg/l, which is the minimum standard considered suitable for aquatic life. In 2002, 93 percent of the samples from one site in Pimmit Run had fecal coliform counts greater than 400/100 ml, one site had 67 percent of its samples with fecal coliform counts greater than 400/100 ml, and for the remaining two sites, 53 percent of the samples had fecal coliform counts greater than 400/100 ml. The maximum fecal coliform count of all the samples was 2,100/100ml. For fecal coliform, a count less than 200/100 ml is considered good water quality and a count of

250,000/100 ml can be considered a direct sewage discharge. Approximately 688 acres in the Pimmit Run Watershed, or nine percent, are served by on-site sewage disposal systems. These properties are widely scattered in the watershed, but are concentrated in the Cedarview Manor and Crestwood Neighborhoods, as well as properties along the Potomac River. Properties with on-site sewage systems are shown on Maps 8.4, 8.5 and 8.6, but this information is based on the best available data only and may not be completely accurate. Permits are required from the Health Department for all septic tanks and details about regulations can be found at www.vdh.virginia.gov/onsite/regulations.asp. These systems can discharge untreated sewage contaminated with fecal coliforms when not maintained properly, which may contribute to high fecal coliform counts in the streams.

The *Fairfax County Stream Protection Strategy (SPS) Baseline Study* from January 2001 evaluated the quality of streams throughout the county. Pimmit Run and its tributaries received "very poor" composite site condition ratings. These ratings were based on environmental parameters such as an index of biotic integrity, stream physical assessment, habitat assessment, fish taxa richness, and percent imperviousness. In the *SPS Baseline Study*, Pimmit Run was classified as a Watershed Restoration Level II area with the goal of maintaining this area to prevent further degradation and implementing measures to improve water quality in order to comply with Chesapeake Bay initiatives, TMDL regulations, and other water quality initiatives and standards.

The stream reaches of Pimmit Run and its tributaries have high gradient slopes and are classified as the riffle/run-prevalent stream type. A riffle/run is an area in a stream where the water flow is rapid and usually shallower than the reaches above and below.

The habitat assessment for Upper Pimmit Run and its tributaries, as determined from the *Fairfax County Stream Physical Assessment (SPA)*, can be summarized as follows:

- Approximately 25 percent of the stream reaches had five of the common habitat types such as fallen trees, large woody debris, deep pools, large rocks, undercut banks, thick root mats, and dense macrophyte beds. Macrophyte beds consist of a canopy of aquatic plants.
- Seven reaches in Upper Pimmit Run are concrete-lined, piped, or channelized; hence, habitat was not assessed on these reaches.
- The dominant substrate in the stream reaches is a mixture of cobble and gravel stones. Fine sediment and silt surrounds 50 percent of the living spaces around gravel, cobble and boulders.
- Approximately 40 percent of the stream segments have minor alterations of the channel or banks.
- For most of the stream, the water fills approximately 65 percent of the available channel cross section during normal flow periods. This amount of water filling the channel allows for adequate aquatic habitat.
- The majority of the stream bank surfaces have 60 to 70 percent vegetated cover, typically composed of scattered shrubs, grasses and forbs. A majority of the stream buffers consist of shrubs and few trees with 50 to 100 feet of buffer width. There are also extensive areas of deficient buffer. Thirty percent of the banks have erosional areas.

The locations of deficient buffer areas and erosion along the stream corridor are shown on Map 8.4. According to the SPA conducted by Fairfax County, five out of seven areas affected by erosion have moderate restoration potential.

The habitat assessment for Middle Pimmit Run can be summarized as follows:

- More than 25 percent of the stream reaches had less than four of the common habitat types. Less than four common habitat types signifies that the stream's habitat structures are becoming monotonous, thus decreasing the diversity of macroinvertebrates.
- Three reaches in Middle Pimmit Run are concrete-lined, piped, or channelized; hence, habitat was not assessed on these reaches.
- The dominant substrate in the stream reaches is a mixture of cobble and gravel stones. Fine sediment and silt surrounds 50 percent of the living spaces around gravel, cobble and boulders.
- Approximately 20 percent of the stream segments have minor alterations of the channel or banks.
- For most of the stream, the water fills approximately 65 percent of the available channel cross section during normal flow periods. This amount of water filling the channel allows for adequate aquatic habitat.
- The majority of the stream bank surfaces have 60-70 percent vegetated cover, typically composed of scattered shrubs, grasses and forbs. A majority of the stream buffers consist of shrubs and few trees with 50 to 100 feet of buffer width. Thirty percent of the banks have erosional areas. The locations of deficient buffer areas and erosion along the stream corridor are shown on Map 8.5. According to the SPA conducted by Fairfax County, twelve out of fifteen areas affected by erosion have moderate restoration potential.

The habitat assessment for Little Pimmit Run can be summarized as follows:

- The majority of the stream reaches had five of the common habitat types.
- A portion of an unnamed tributary to Little Pimmit Run was concrete-lined, piped or channelized; hence habitat was not assessed along that reach.
- The dominant substrate in the stream reaches is a mixture of gravel stones and boulders. Fine sediment and silt surrounds 40 percent of the living spaces around gravel, cobble and boulders.
- Approximately ten to 20 percent of the stream segments have minor alterations of the channel or banks.
- For most of the stream, the water fills approximately 75 percent of the available channel cross section during normal flow periods. This amount of water filling the channel allows for adequate aquatic habitat.
- The majority of the stream bank surfaces have 70 to 80 percent vegetated cover, typically composed of scattered shrubs, grasses and forbs. A majority of the stream buffers consist of shrubs and few trees with 25 to 50 feet of buffer width. Fifteen to 30 percent of the banks have erosional areas. The locations of deficient buffer areas and erosion along the stream corridor are shown on Map 8.6. According to the SPA conducted by Fairfax County, seven out of eight areas affected by erosion have moderate restoration potential.

The habitat assessment for Lower Pimmit Run can be summarized as follows:

- The majority of the stream reaches had four to five of the common habitat types.
- A portion of Stromans Branch was piped; hence, habitat was not assessed along that

reach.

- The dominant substrate in the stream reaches is a mixture of cobble stones and boulders. Fine sediment and silt surrounds 30 to 40 percent of the living spaces around gravel, cobble and boulders.
- Approximately ten percent of the stream segments have minor alterations of the channel or banks.
- For most of the stream, the water fills approximately 80 percent of the available channel cross section during normal flow periods. This amount of water filling the channel allows for adequate aquatic habitat.
- The majority of the stream bank surfaces have 70 to 80 percent vegetated cover, typically composed of scattered shrubs, grasses and forbs. A majority of the stream buffers consist of shrubs and few trees with 25 to 50 feet of buffer width. Five percent of the banks have erosional areas. The locations of deficient buffer areas and erosion along the stream corridor are shown on Map 8.6. According to the SPA conducted by Fairfax County, one out of two areas affected by erosion has moderate restoration potential.

8.1.6 Problem Locations Identified During Public Forums

Problem locations were provided by the public at the Community Watershed Forum held on April 16, 2005, the Draft Plan Workshop on November 1, 2005, and by the Middle Potomac Watersheds Steering Committee. The problem locations were investigated and the resulting observations are included in the following table. Maps 8.1, 8.2, and 8.3 show the locations of the problems identified.

Table 8.4 Problem Locations Identified During Public Forums

Map ID	Description
Upper Pimmit Run	
PM1	Location: Pimmit Run at Marshall Drive Problem: Pimmit Run has fallen trees, debris, and trash in the channel. There is a noticeable amount of trash and some minor blockages, mainly due to woody debris carried downstream during large storm events Observation: There is no action required for this problem location as a recent stream cleanup effort has occurred and cleared most of the debris.
PM2	Location: George Marshall High School Problem: Impervious cover. Observation: Although there is a significant amount of impervious parking pavement for the high school, it all seems to be utilized and the size of the parking area should not be reduced. This issue will be addressed by New BMP Project PM9155 and New LID Project 9856, both proposed on school property.
PM3	Location: Pimmit Run at Olney Park Problem: Floodplains are disconnected from the stream because streambed erosion has created a deep channel from which floodwaters cannot escape. Observation: It was observed that the floodplains are disconnected from the stream from the Lemon Road Elementary School downstream to the Dulles Toll Road. There is a moderate floodplain to the northwest of the Lemon Road Elementary School, downstream of the school, and from Hillside Drive downstream to the Dulles Toll Road where the floodplain may be reconnected. Reconnecting the stream channel to the floodplains will give the overflow a chance to spread out which will help slow down the velocity and reduce the volume of the flow in the downstream channel. This will reduce the effects of erosion and down cutting in the channel. This issue will be addressed by Floodplain Restoration Project PM9347.

Map ID	Description
PM4	Location: Pimmit Run upstream of the Dulles Toll Road Problem: A large concrete culvert built in 1978 has increased the water velocity and washed out the stream channel. Observation: Increased runoff velocities from upstream development have caused stream erosion. This issue will be addressed by Stream Restoration Project PM9232.
PM5	Location: Downstream from the Dulles Toll Road on the right side of Pimmit Run Problem: Floodplains are disconnected from the stream. This relates to the flooding problem in Problem Area PM7. Observation: There is a five- to seven-foot high bank just downstream of the Dulles Toll Road and upstream of Old Idylwood Road that significantly decreases the flooding of the floodplain area to the west of Pimmit Run. This issue will be addressed by Floodplain Restoration Project PM9346.
PM6	Location: Great Falls Street near Pimmit Run. Problem: Illegal dumping of waste, south of Dominion Power's dump. Observation: There is a minor amount of yard and woody debris deposited in this area. Whenever a major storm comes through the McLean area, the landscape companies dump large amounts of debris in this location. The metal barrier should be reestablished on Great Falls Street in order to prevent people from driving on Old Idylwood Road close to the stream. A "no dumping" sign should be installed at this location. This issue will be addressed by Dumpsite/Obstruction Removal PM9937.
PM7	Location: Great Falls Street on Pimmit Run near the intersection of Lemon Road. Problem: A residence at this location is frequently flooded as reported by several Steering Committee members. Observation: The primary flooding of the stream is in the floodplain to the east of Pimmit Run at this location. The solution is to lower the high bank on the west side of the run located at PM5. This issue will be addressed by Floodplain Restoration Project PM9346. Another problem is that Pimmit Run is in a concrete channel and travels in a straight line from Leesburg Pike to downstream of the Dulles Toll Road (DTR), it then turns into the streambed just after DTR causing flooding. The flow cannot get around the turns fast enough, so Pimmit Run just keeps going over the east bank into the east floodplain and flooding the house. There is no riparian buffer through this area and the stream channel is significantly degraded with several blockages. This issue will be addressed by Stream Restoration Project PM9232.
PM8	Location: Bridge Branch at its confluence with Pimmit Run Problem: Utility towers, located in stream channel, are obstructing flow. Observation: The utility towers are causing a moderate impact and blockage. This issue will be addressed by Stream Restoration Project PM9232.
PM9	Location: Pimmit Run at McFall Street Problem: Sanitary sewer lines are exposed. Observation: There are no exposed sanitary sewer lines in this area; however, there is an exposed sanitary sewer manhole. There is no action required for this problem location.
PM10	Location: Westmoreland Street at Pimmit Run upstream of the McLean Little League Ballfields. Problem: Utility towers are located in the stream channel. Observation: It was observed that a tower of the high tension electric line sits directly in the middle of Pimmit Run and the second tower is located upstream of the Little League Fields. Debris builds up on these towers regularly. This issue will be addressed by Stream Restoration Project PM9235.
PM11	Location: Sewer line right-of-way adjacent to Pimmit Run Problem: Trees are growing over the sewer lines and are being cut down. Excessive sewer line right of way maintenance. Observation: Trees and vegetation have been removed along the sanitary sewer line from above Great Falls Street downstream to below Old Dominion Drive. In several places, the clearing is directly next to Pimmit Run, especially in the area upstream of the Little League Fields. This issue will be addressed by Stream Restoration Project PM9235.

Map ID	Description
PM12	Location: Kirby Park Problem: Kirby Park is a skinny park, in which the vegetation is mowed to the edge. The buffer here is all grass and is inadequate. Observation: There is very little buffer and the channel has been straightened. This issue will be addressed by Stream Restoration Project PM9235.
PM13	Location: Westmoreland Street and Great Falls Street at the McLean Little League Baseball Field Problem: McLean Little League Baseball Field gets flooded regularly. Every year clean up and maintenance is required. This facility was built in the flood plain and the flooding gets so bad that large objects are carried into the stream. Observation: One problem is that the dumpster in the Little League area is not secured to the ground and when the area floods, the dumpster ends up clogging one of the channels of the Westmoreland Street Bridge. There are rapidly deepening side drainage channels starting at various points on the Little League property draining to Pimmit Run. Drainage swales from the park complex probably back up with flood flows from Pimmit Run. In addition to flooding, there is an inadequate buffer and considerable impervious/compacted surface in the floodplain/RPA. This issue will be addressed by New LID Project PM9826.
None – watershed wide	Location: Hutchison Street and Pimmit Run Problem: Low water quality was revealed by citizen monitoring results. Observation: State and county data have also shown poor water quality. All of the projects proposed in the watershed plan will help improve water quality.
PM14	Location: Corner of Overbrook Street and Crimmins Lane along Darrell Branch Problem: There is erosion on the vacant property across Darrell Branch at 2131 Crimmins Lane that should be addressed. Observation: The property is in the county zoning and site plan approval process. This issue will be addressed by Stream Restoration Project PM9235.
PM15	Location: Burke's Spring Branch near the intersection of Kirby Court and Westmoreland Street at Temple Rodef Shalom Synagogue. Problem: Excess runoff from parking lot. Observation: The synagogue has a dry detention BMP, which does not appear to be functioning properly. This BMP may be retrofitted to provide additional water quality treatment. This issue will be addressed by BMP Retrofit Project PM9134.
PM16	Location: Temple Rodef Shalom located at 2100 Westmoreland Street Problem: Two homeowners' lawns are flooding because of an improperly designed wet pond and the map should be showing a maintenance complaint and it does not. Observation: It is not likely that the BMP is causing all the flooding of the yards at the downstream properties, as it appears that the BMP outfall ditch is inadequate due to sedimentation. This issue will be addressed by Infrastructure Improvement Project PM9464.
PM17	Location: Longfellow Middle School at Westmoreland Street at an unnamed Pimmit Run tributary. Problem: A new basketball court and a mini-soccer field both have gullies going directly into Burke's Spring Branch. These gullies have started over the past few years. Trailers have also added impervious surfaces. Observation: The gullies are a result of poor grading around the basketball court and mini-soccer field. This issue will be addressed by New LID Project PM9829.
PM18	Location: Brooks Square Place above Kirby Road on Burke's Spring Branch Problem: There is inadequate buffer surrounding an on-site stormwater detention pond. This location would be a good opportunity for a BMP retrofit. Observation: There is an existing berm (mound of dirt) with a culvert beneath it at this location with mowed grass upstream of the berm. This issue will be addressed by Buffer Restoration Project PM9317 and BMP Retrofit Project PM9136.
Middle Pimmit Run	

Map ID	Description
PM19	Location: 6622 Chesterfield Avenue, McLean, VA. Problem: Flooding occurs behind the house. The house under construction behind 6622 Chesterfield Avenue is located along Tucker Avenue in McLean. The storm ditch has filled in over time and now is a flooding hazard to the surrounding homes. Observation: The ditch is significantly degraded, and the channel capacity has been greatly reduced by sediment and debris. The house under construction does not appear to be impacting the ditch. This issue will be addressed by Dumpsite/Obstruction Removal PM9902 and Infrastructure Improvement Project PM9451.
PM20	Location: Upstream from Kent Gardens Elementary School at the bridge on Beverly Avenue. Problem: There have been approximately ten trees down in the past few months and significant erosion is occurring in this location. Observation: Increased runoff velocities due to upstream development have caused stream erosion. This issue will be addressed by Stream Restoration Project PM9209.
PM21	Location: Hunting Avenue in the Great Falls area near Saucy Branch Problem: An underground culvert has been overflowing after any type of rain event for the past 25 to 30 years. Observation: There is possibly inadequate drainage at this intersection that could be causing the localized flooding. The upstream private entrance culvert appears to be restricted by overgrown vegetation. This issue will be addressed by Infrastructure Improvement Project PM9465.
PM22	Location: Saucy Branch Problem: There are steep, vertical banks resulting from the new townhouse developments. Also in Lewinsville Park, there are sloping fields that are fertilized for ball fields and community gardens. Observation: The stream is significantly degraded in this area. The county's stream physical assessment observed an actively widening channel. This issue will be addressed by Stream Restoration Project PM9209.
PM23	Location: McLean High School, Westmoreland Street near Saucy Branch Problem: Fields with artificial turf. Observation: No fields with artificial turf were found at the high school. The school has a large parking lot. This issue will be addressed by New BMP Project PM9120 and New LID Project PM9821.
PM24	Location: Lewinsville Park in McLean near Saucy Branch Problem: Locations with artificial turf. Observation: The area with artificial turf is one soccer field at the entrance to the park, which covers approximately 0.75 acres. Artificial turf is typically installed with a subsurface drainage system that allows the runoff to infiltrate into the ground. No fertilizers are applied to an artificial turf field so the amount of pollutants in the runoff should be less. Water quality at this location will be addressed by New LID Project PM9822.
PM25	Location: Dillon Avenue at Saucy Branch Problem: Concrete channelization behind the houses. Channel is falling apart and the culvert is blocked. Observation: The stream is moderately impacted by the blockage and degraded by erosion. This issue will be addressed by Infrastructure Improvement Project PM9466.
PM26	Location: Bryn Mawr Park Problem: Saucy Branch upstream of Bryn Mawr Park is heavily channelized with concrete that dumps water into Bryn Mawr Park. The bank of Saucy Branch at this location is eroding and there are significant problems with invasive species. Kudzu is killing vegetation along the creek and English Ivy is growing up the trees and covering the ground. Observation: This area has the potential for stream restoration. The project should include restoring the stream bank, removing the invasive species as much as possible and planting more vegetation that is native to the watershed. The concrete in the channelized portion cannot be removed because of the proximity of houses along the banks but perhaps the velocity of the flow from the channelized portion can be reduced in conjunction with the Infrastructure Improvement Project PM9466. This issue will be addressed by Stream Restoration Project PM9209.

Map ID	Description
PM26	Location: Tennyson Drive in front of the Bryn Mawr Park near Saucy Branch. Problem: There is a culvert that goes below Tennyson Drive, which overflows in all types of rain events. When the culvert overflows, the water is approximately one foot in depth on Tennyson Drive. The last rain event that resulted in an overflow occurred on April 2, 2005. This is a hazard to drivers and has been occurring for an extended period of time. The solutions enacted by the County have not addressed the road flooding at Tennyson Drive. Observation: The culvert has very little cover (fill material above the pipes) due to the low elevation of the road with respect to the surrounding ground. Flooding is likely caused at this location by the inadequate capacity of the culvert as well as the low elevation of the roadway. This issue will be addressed by Infrastructure Improvement Project PM9417.
PM27	Location: Pimmit Run at Washburn Court upstream from Old Dominion Drive. Problem: Sanitary sewer lines are exposed. Observation: Sanitary sewer lines are not exposed; however, a sanitary sewer manhole is located well away from the stream and should not cause any impacts. This issue requires no action.
PM28	Location: Dominion Woods, A ¼-mile upstream from Old Dominion Drive on Pimmit Run Problem: Debris jams, big trees washing down and blocking Pimmit Run creating a potential for flash flooding. Observation: Increased runoff from development causes increased stream velocities, which erode the stream banks. The trees on the banks have become uprooted and are being carried downstream. This issue will be addressed by Dumpsite/Obstruction Removal PM9902.
PM29	Location: Holmes Place at Pimmit Run Problem: Channelization and major erosion. Observation: There is a moderate amount of channelization and erosion at this location. This issue will be addressed by Stream Restoration Project PM9209.
PM30	Location: Pimmit Run at McLean Court Problem: Sanitary sewer lines are exposed. Observation: Sanitary sewer lines are not exposed; however, a sewer manhole is located well away from the stream and should not cause any impacts. This issue requires no action.
PM31	Location: Bryan Branch near Linway Terrace and Valley Drive, 1603 East Avenue Problem: There are eroding stream banks at Bryans Branch. Multiple new streets and housing construction on Linway Terrace and Valley Drive have increased the runoff into Bryan Branch from where it flows under Old Dominion Drive, thence under Linway Terrace and northeast into Pimmit Run. In the past six years, the streambed has widened threefold and has caused numerous healthy trees and vegetation to erode and wash away. The stream banks have a height of over six feet and the stream floods its banks. There is also a major property loss due to stream erosion to the ten East Avenue homes that border the north bank of Bryan Branch and the two homes that border the south bank. Observation: It is evident that the stream has experienced considerable negative impacts due to continuing development in the surrounding area. The stream's response to increased runoff from development includes down cutting, widening of the channel, and considerable bed and bank erosion. There are also several locations with woody debris buildup and large tree obstructions. The culverts along the stream appear to be in fair condition. This will be addressed by BMP Retrofit Project PM9175 which will reduce the amount of stormwater going to the stream.
PM32	Location: St. John's Catholic School at Linway Terrace and Old Dominion Drive. Problem: Impervious areas cause increased runoff amounts. Observation: Low impact development (LID) techniques may help to decrease the amount of runoff from the school. This issue will be addressed by New LID Project PM9813.
None-watershed wide	Location: 1438 Brookhaven Drive Problem: A participant would like funding for pervious surface pavers at her home. Observation: Residential development creates the most imperviousness in the watershed and LID techniques in residential areas will help reduce the amount of runoff. This issue will be addressed by LID Promotion Project PM9986.

Map ID	Description
PM33	Location: Oakview Drive, Brookhaven Drive (1434 Brookhaven Drive), Forest Villa Lane Problem: Bank erosion and down cutting in Pimmit Run. This location has severely eroding streambeds and banks and debris jams, which produce frequent and high levels of flooding. The floodplains are disconnected from the stream. Floodwater used to spread out beyond the channel at this location, but in the last three to five years, the stream channel seems to be eroding more significantly. Observation: There is considerable stream channel and bank alteration in this area. It is evident that the stream is responding to increased runoff by widening and more frequent flooding. The stream banks have become unstable and there are several fallen trees and several other trees in danger of falling. The floodplain is somewhat disconnected. It was also observed that the portion of the stream located at 1434 Brookhaven Drive has major log jams causing debris to pile up on the steps of this house every time there is a significant flood. These obstructions are the largest and most disruptive obstructions in the entire Pimmit Run stream. The log jams will be will be addressed by Dumpsite/Obstruction Removal PM9902 and the remainder of the problem will be addressed by Stream Restoration Project PM9209.
PM34	Location: Dominion Power line easement that runs adjacent to Pimmit Run in the Brookhaven neighborhood between Brookhaven Road and Old Dominion Drive and from Westmoreland Street to Great Falls Street Problem: Dominion Power line easement has inadequate buffer along stream. The power company mows and cuts back everything every couple of years—right down to the ground. They have become aggressive in expanding the cleared area for the power lines. The trees are losing to right-of-way and there needs to be more balance. Observation: There is mostly grass under the power lines. This issue will be addressed by Buffer Restoration Project PM9315.
None – watershed wide	Location: Hands' property at Ballantrae Court Problem: This location has had clear cutting at the streambed and in the right-of-way for sanitary sewer lines for new development. There should be stronger regulations to preclude anyone from cutting and mowing vegetation down to the stream bank. This should extend to public utility agencies also. Observation: Trees should not be located over sanitary sewer lines; however, other vegetation may be suitable at this location. This is related to PM35, which will be addressed by Buffer Restoration Project PM9311.
PM35	Location: Langley Place near Pimmit Run. Problem: Large clear-cut, all the trees were removed. Observation: No recent clear cut was observed at this location; however, significant portions of the riparian buffer have been cleared in the past. The cleared areas adjacent to the stream while currently stable do not provide an adequate buffer and will certainly degrade further over time. This issue will be addressed by Buffer Restoration Project PM9311.
PM36	Location: Cola Drive at an unnamed tributary to Pimmit Run Problem: A building at this location was damaged from recent flooding and has been condemned. Observation: The house at 1403 Cola Drive was condemned last fall because the bank behind the house had collapsed along the unnamed tributary to such an extent as to threaten the foundation of the rear portion of the house. A retaining wall was constructed to stabilize the bank below this house. This stream stability in this area will be addressed further by Stream Restoration Project PM9209.
PM37	Location: Pimmit Run below the Potomac School near the end of Cola Drive Problem: Bank scour (undercutting) and sediment deposition Observation: There is significant bank degradation and sediment deposition through this area. This issue will be addressed by Stream Restoration Project PM9209.
PM38	Location: Pimmit Run upstream from Kinyon Place Problem: Floodplains are disconnected from the stream. Observation: The floodplains in this location are moderately disconnected from the stream. This issue will be addressed by Stream Restoration Project PM9209. There is also a log jam here which will be addressed by Dumpsite/Obstruction Removal PM9902.

Map ID	Description
None – watershed wide	Location: Pimmit Run near Merchant Lane Problem: Resident is concerned about the fecal coliform bacteria in the stream because her children play in the stream. Observation: Many county streams including Pimmit Run are considered unsafe because of high levels of fecal coliform bacteria. Pimmit Run is on the Virginia Impaired Waters List and is scheduled to have a total maximum daily load established for bacteria in 2014. This issue will be addressed by Fecal Coliform Source Study PM9796.
PM39	Location: Pimmit Run downstream of Merchant Lane (serious erosion begins ¼ mile upstream and stops just downstream of 1331 Merchant Lane where the banks become rockier and more stable) Problem: This section of Pimmit Run has a lot of erosion. Numerous mature trees have come down and some downed trees continue to block flow causing more erosion. The last heavy rain completely flooded the floodplain to a distance of 400 feet across and ripped out large numbers of new plantings the residents have been trying to establish. Observation: This site will be investigated in June. The County's stream physical assessment noted erosion of the banks in this location and the geomorphology was assessed as actively widening. This issue will be addressed by Stream Restoration Project PM9209.
PM46	Location: Pimmit Run near the intersection of Kirby Road and Claiborne Drive where the bridge crosses an unnamed tributary to Pimmit Run. Problem: The stream banks in Pimmit Run and Little Pimmit Run are severely eroded. Trees that have been planted to preserve the streams in this location have been removed by high water velocity and debris flowing downstream. There are exposed tree roots and the hiking trail is washed out. Hikers must scale the stream bank. Observation: Moderate stream degradation and impacts were noted at this location; however, there is no hiking trail at this location. The hiking trail along Pimmit Run south of Kirby Road turns toward Little Pimmit Run and does not go to Kirby Road. The culvert crossing at this location is impacted by alteration of the stream channel, channel obstructions and debris blockages. Little Pimmit Run appears to be more degraded at the confluence with Pimmit Run than the main branch of Pimmit Run itself. There is noticeable bed and bank erosion and channel alteration at this location. This issue will be addressed by Stream Restoration Project PM9208.
PM49	Location: 1362 Kirby Road Problem: The south bank of Pimmit Run just below the house at 1362 Kirby Road has eroded badly and threatens to undermine the foundation of the house Observation: It was observed to be the worst erosion problem in Pimmit Run. This issue will be addressed by Stream Restoration Project PM9208.
PM51	Location: Near Poplar Place Problem: Backyards in the area flood during heavy rainfall due to inadequate pipe drainage. Observation: This issue will be addressed by Stream Restoration Project PM9209, which will stabilize the stream banks. Infrastructure Improvement Project PM9469 in conjunction with BMP Retrofit Project PM9170 will help reduce the flooding in the backyard of 1553 Forest Villa Lane.
PM52	Location: Behind the Potomac School, along Hardy Drive Problem: Natural obstructions (i.e. falling trees) are a problem in this area Observation: This debris will be addressed by Dumpsite/Obstruction Removal PM9902.
PM53	Location: Near Madison Court on Pimmit Run Problem: A special "300 year old" tree is falling in the stream due to significant bank erosion. The stream is located close to the trunk of this tree. Observation: Buffer Restoration Project PM9315 will include stabilizing the area near the tree. The tree may not be able to be saved if the stream bank cannot be stabilized without disturbing the tree.
PM54	Location: At the intersection of Pimmit Run and Old Dominion Drive Problem: Extreme bank erosion, denuded vegetation and sedimentation along this portion of the stream. Observation: This issue will be addressed by Buffer Restoration Project PM9311.

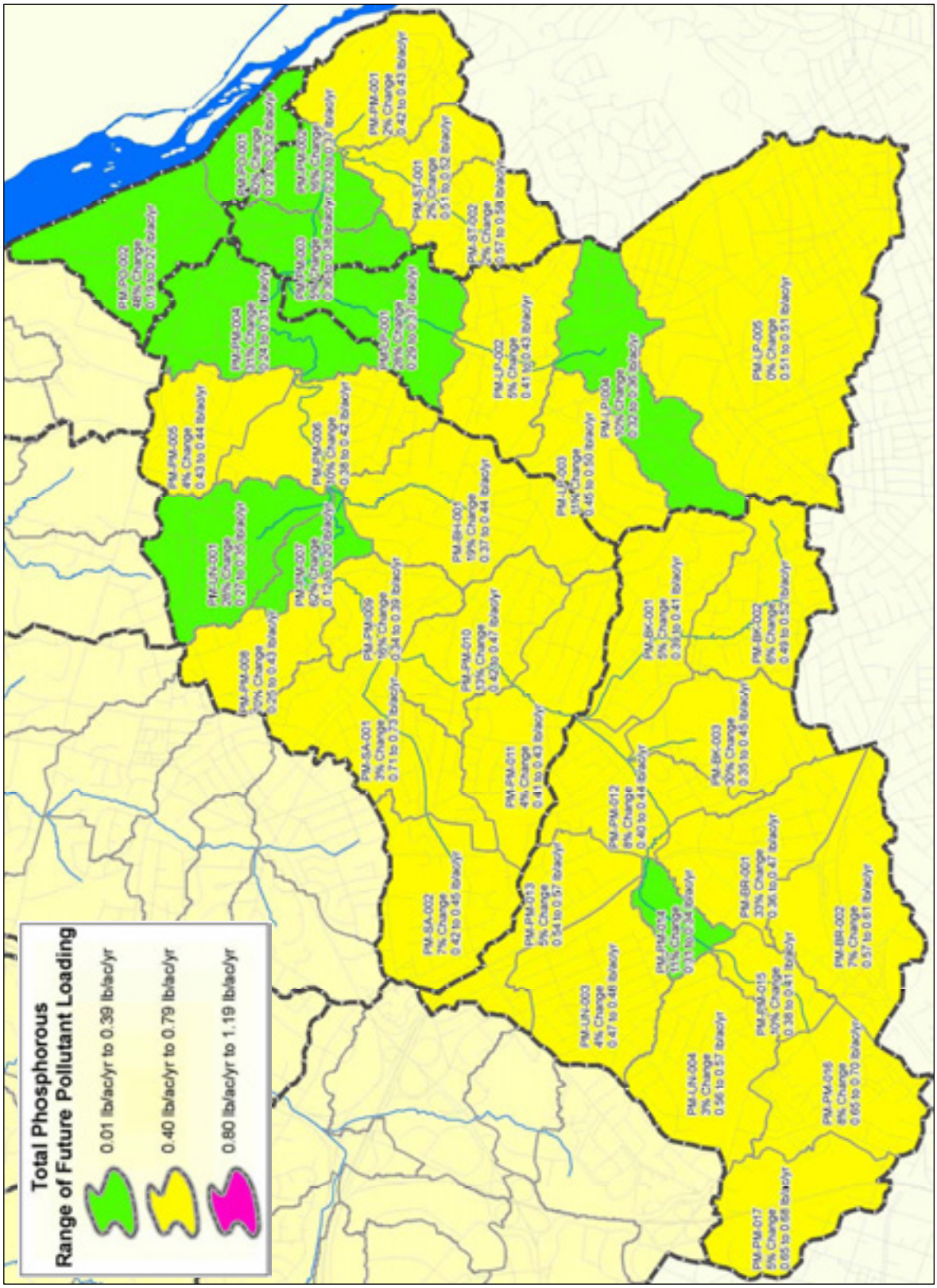
Map ID	Description
PM55	Location: Upstream of Kent Gardens Elementary School, off of Melbourne Drive Problem: Incorporate wetlands by school. Observation: Water quality at the school will be addressed by New LID Project PM9824.
Lower and Little Pimmit Run	
PM40	Location: 1901 Valley Wood Road at an unnamed tributary to Little Pimmit Run Problem: Stream routinely floods Valley Wood Road. When this happens, the water rises eight to ten feet and floods out the lower third of the yard. Observation: The roadside ditch is in poor condition and needs maintenance to alleviate reduced runoff capacity. The roadside ditch discharges into a stream adjacent to the roadway. The stream is also in poor condition, with considerable overgrowth of vegetation blocking the channel and degraded stream banks. This issue will be addressed by Stream Restoration Project PM9203.
PM41	Location: New development near Chesterbrook Elementary School on the north unnamed tributary to Little Pimmit Run. Problem: Erosion problems at this site need to be addressed. Observation: The new development appears to have the proper erosion and sediment control practices in place; however, there is still sediment transport to the adjacent stream. It is important to note that erosion and sediment control practices will not eliminate sediment-laden runoff from entering adjacent streams, but they will reduce it significantly. This issue requires no action.
PM42	Location: Chesterbrook Elementary School in McLean Problem: Impervious surfaces which increase the amount of runoff and contribute pollutants. Observation: LID techniques may help mitigate the effects of impervious surfaces at this site. This issue will be addressed by New LID Project PM9807.
PM43	Location: 6231 to 6241 Park Road, McLean Problem: There is a new development under construction that may not be meeting the requirement of maintaining a 100-foot buffer along the adjacent creek. Maintaining a 100-foot buffer may not be sufficient in all cases and a greater buffer requirement may be needed at particular sites. This site has very steep slopes and the buffer might need to be wider to function effectively. [The distance was checked by a participant after the forum and the building under construction is approximately 40 feet from the stream.] Observation: The development has encroached on the stream buffer. This issue will be addressed by Buffer Restoration Project PM9301.
PM44	Location: Maddux Lane bike path Problem: The fair-weather crossing is diverting water flow and causing stream erosion. Observation: This crossing appeared to be an old and failing stream channel improvement project, which consisted of concrete lining the channel bottom and gabion slope reinforcement. The improvements have failed and are adversely impacting stream flow, including the diversion of flow and accelerated stream bank erosion. The Northern Virginia Soil and Water Conservation District and several homeowners along Maddux Lane are in the design phase of a project to address the erosion problem just downstream of the trail entrance path off Maddux Lane. This issue will be addressed by Stream Restoration Project PM9203.
PM45	Location: Sycamore Falls subdivision at Maddux Lane on Little Pimmit Run Problem: There is a new development 25 feet from the stream with a very steep slope and possible erosion problems. Observation: The new development is on a steep slope and the developer proposes moving the upper third of the lot down onto the middle third of the lot to make the area level enough to build houses on. Erosion of the properties is evident. The site plan has not been approved, but there are lots that are cleared to the stream banks, which are located in the Chesapeake Bay RPA. This issue will be addressed by Stream Restoration Project PM9203.
PM47	Location: Rosamora Court where Stromans Branch enters Lower Pimmit Run Problem: There are inadequate vegetated stream buffers in this location. Observation: Four homeowners in this area mow to the edge of the stream on their land. This issue will be addressed by Buffer Restoration Projects PM9379 and by Public Education Project PM9984.

Map ID	Description
PM48	Location: George Washington Parkway Problem: Significant construction is being planned on the George Washington Parkway. These plans include modifications to the ramps to Route 123 and the CIA. These changes could have a significant impact on Pimmit Run, which is already very degraded. The residents at 1369 Kirby Road have lived there for almost ten years. During the first seven years they lived there, neither Pimmit Run nor Little Pimmit Run ever flooded. In the last three years, the streams have probably flooded five or six times. Unless runoff issues are addressed in the planning stages, additional road surface on the George Washington Parkway will likely make the flooding even worse. Observation: The planning team will talk to the National Park Service regarding BMPs for this roadway improvement.
PM50	Location: End of Briar Ridge Road Problem: The stream becomes a raging torrent every time it rains and it has significant bank erosion. There was speculation that the main source of runoff was coming from the Chesterbrook Shopping Center. Old Dominion Drive was also identified as a potential source of runoff. There was further concern expressed about a proposed "by right" cluster development nearby that will compound the problem of excess stormwater flows. Observation: The New LID Project PM9825 will address this issue at the Chesterbrook Shopping Center to help reduce the amount of runoff.

8.1.7 Modeling Results

Hydrologic, hydraulic, and water quality models were developed for the Pimmit Run Watershed to simulate the generation of runoff, how the runoff is transported downstream, and the amount of pollutants in the runoff and stream flow. The hydrologic and water quality models include the entire Pimmit Run Watershed which also includes the area draining from portions of Arlington County. The Pimmit Run Watershed was divided into five subwatersheds and further divided into thirty-seven subbasins in order to provide more detail for the modeling results. These subbasins are shown in Figure 8.1 below with the future total phosphorus loading.

Figure 8.1 Pimmit Run Future Total Phosphorous Loading



8.1.7.1 Hydrology and Water Quality Modeling

In the hydrologic model the current watershed imperviousness is 27 percent, which generates moderate to high peak runoff flows. Additional residential imperviousness caused by adding on to existing houses was added to the future land use conditions for the hydrologic model. The predicted increase in runoff volumes for future development conditions may be attributed to the potential development of estate residential land use to low and medium density residential land uses. The projected future development of vacant parcels also contributes to the increase in runoff volumes. Table 8.5 shows the cumulative peak runoff flows for the two- and ten-year rainfall events and compares the peak flow between the existing and future land use conditions.

Table 8.5 Pimmit Run Cumulative Peak Runoff Flows

	Two-Year Rainfall Event			Ten-Year Rainfall Event		
Subbasin	Existing Peak Flow (cfs)	Future Peak Flow (cfs)	% Peak Flow Increase	Existing Peak Flow (cfs)	Future Peak Flow (cfs)	% Peak Flow Increase
PM-BH-001	136	160	18%	288	325	13%
PM-BK-001	168	180	7%	307	328	7%
PM-BK-002	106	114	8%	194	209	8%
PM-BK-003	59	73	24%	108	132	22%
PM-BR-001	198	213	8%	356	382	7%
PM-BR-002	144	147	2%	254	258	2%
PM-LP-001	331	346	5%	801	819	2%
PM-LP-002	333	346	4%	753	776	3%
PM-LP-003	76	82	8%	213	221	4%
PM-LP-004	298	307	3%	658	679	3%
PM-LP-005	187	187	0%	353	353	0%
PM-PM-001	1,080	1,140	6%	2,890	2,980	3%
PM-PM-002	1,030	1,090	6%	2,770	2,860	3%
PM-PM-003	951	1,010	6%	2,600	2,690	3%
PM-PM-004	767	824	7%	2,020	2,110	4%
PM-PM-005	68	70	3%	125	128	2%
PM-PM-006	765	822	7%	1,980	2,060	4%
PM-PM-007	749	807	8%	1,860	1,940	4%
PM-PM-008	45	58	29%	86	108	26%
PM-PM-009	710	765	8%	1,640	1,720	5%
PM-PM-010	695	754	8%	1,550	1,630	5%
PM-PM-011	634	691	9%	1,350	1,430	6%
PM-PM-012	591	656	11%	1,360	1,430	5%
PM-PM-013	93	99	6%	187	199	6%
PM-PM-014	441	470	7%	969	1,000	3%
PM-PM-015	313	333	6%	618	653	6%
PM-PM-016	190	203	7%	346	369	7%
PM-PM-017	88	91	3%	151	156	3%
PM-PO-001	21	27	29%	59	65	10%

Subbasin	Two-Year Rainfall Event			Ten-Year Rainfall Event		
	Existing Peak Flow (cfs)	Future Peak Flow (cfs)	% Peak Flow Increase	Existing Peak Flow (cfs)	Future Peak Flow (cfs)	% Peak Flow Increase
PM-PO-002	49	58	18%	136	148	9%
PM-SA-001	227	239	5%	426	447	5%
PM-SA-002	99	105	6%	181	193	7%
PM-ST-001	154	158	3%	334	340	2%
PM-ST-002	97	100	3%	212	216	2%
PM-UN-001	55	62	13%	96	108	13%
PM-UN-003	124	131	6%	286	297	4%
PM-UN-004	118	124	5%	228	239	5%

In the water quality model, the moderate levels of pollutants for both existing and future land use conditions can be attributed to the large amount of open space in the watershed. The subbasins that drain to Pimmit Run and its tributaries have a predominant land use of medium density residential for both existing and future land use conditions. The predicted increase in pollutant loads for future land use conditions can be attributed to the projected development of vacant parcels and the projected development of estate residential areas. Table 8.6 shows the annual pollutant loading rates for each subbasin and shows the comparison of the existing and future pollutant loading rates for the Pimmit Run Watershed.

Table 8.6 Pimmit Run Pollutant Loads

Pollutants		Upper Pimmit												
		PM-BK-001	PM-BK-002	PM-BK-003	PM-BR-001	PM-BR-002	PM-PM-012	PM-PM-013	PM-PM-014	PM-PM-015	PM-PM-016	PM-PM-017	PM-UN-003	PM-UN-004
BOD5	Existing (lb/ac/yr)	16.0	21.6	17.6	14.3	41.5	18.0	23.5	12.4	15.9	38.3	33.8	20.2	26.6
	Future (lb/ac/yr)	17.0	23.0	22.4	21.0	44.5	19.6	25.1	14.8	18.1	42.8	40.4	21.3	27.1
	% Load Increase	6%	6%	27%	47%	7%	9%	7%	19%	14%	12%	20%	5%	2%
COD	Existing (lb/ac/yr)	95	128	117	83	186	106	136	72	90	277	235	115	161
	Future (lb/ac/yr)	102	136	147	121	209	115	144	86	104	305	251	121	164
	% Load Increase	7%	6%	26%	46%	12%	8%	6%	19%	16%	10%	7%	5%	2%
TSS	Existing(lb/ac/yr)	50	70	66	44	139	57	80	42	57	122	140	63	95
	Future (lb/ac/yr)	53	75	83	65	143	62	86	50	65	135	149	67	96
	% Load Increase	6%	7%	26%	48%	3%	9%	8%	19%	14%	11%		6%	1%
TDS	Existing (lb/ac/yr)	70	93	92	61	184	80	102	60	74	178	175	85	121
	Future (lb/ac/yr)	73	99	111	87	192	86	109	70	83	196	193	90	124
	% Load Increase	4%	6%	21%	43%	4%	8%	7%	17%	12%	10%	10%	6%	2%
DP	Existing (lb/ac/yr)	0.28	0.35	0.25	0.25	0.40	0.29	0.38	0.22	0.26	0.45	0.46	0.33	0.40
	Future (lb/ac/yr)	0.29	0.37	0.32	0.34	0.44	0.31	0.40	0.24	0.29	0.50	0.48	0.34	0.41
	% Load Increase	4%	6%	28%	36%	10%	7%	5%	9%	12%	11%		3%	2%
TP	Existing (lb/ac/yr)	0.39	0.49	0.35	0.36	0.57	0.40	0.54	0.31	0.38	0.65	0.65	0.47	0.56
	Future (lb/ac/yr)	0.41	0.52	0.45	0.47	0.61	0.44	0.57	0.34	0.41	0.70	0.68	0.48	0.57
	% Load Increase	5%	6%	29%	31%	7%	10%	6%	10%	8%	8%		2%	2%
TKN	Existing (lb/ac/yr)	2.2	2.8	2.0	2.0	2.9	2.3	3.1	1.8	2.2	3.6	3.8	2.7	3.2
	Future (lb/ac/yr)	2.3	3.0	2.6	2.7	3.2	2.5	3.3	2.0	2.4	3.9	3.8	2.8	3.3
	% Load Increase	5%	7%	30%	35%	10%	9%	6%	11%	9%	8%		4%	3%
TN	Existing (lb/ac/yr)	2.99	3.84	2.88	2.72	5.42	3.15	4.25	2.38	2.97	5.41	5.59	3.60	4.54
	Future (lb/ac/yr)	3.16	4.08	3.71	3.67	5.78	3.41	4.50	2.66	3.27	5.89	5.99	3.76	4.64
	% Load Increase	6%	6%	29%	35%	7%	8%	6%	12%	10%	9%		4%	2%
Cadmium ($x 10^{-4}$)	Existing (lb/ac/yr)	2.3	2.7	2.3	2.1	1.7	2.5	2.9	2.1	2.2	3.7	3.4	2.7	3.0
	Future (lb/ac/yr)	2.4	2.8	2.7	2.6	1.9	2.7	3.0	2.3	2.4	3.9	3.2	2.8	3.1
	% Load Increase	4%	4%	17%	24%	12%	8%	3%	10%	9%	5%	-6%	4%	3%
Copper ($x 10^{-3}$)	Existing (lb/ac/yr)	11.7	17.9	30.3	9.4	58.6	12.4	19.2	8.6	14.0	70.6	72.2	10.9	30.3
	Future (lb/ac/yr)	12.8	19.0	34.1	13.1	62.1	13.2	19.4	9.8	15.0	75.4	72.4	11.5	30.4
	% Load Increase	9%	6%	13%	39%	6%	6%	1%	14%	7%	7%	0%	6%	0%
Lead ($x 10^{-3}$)	Existing (lb/ac/yr)	2.9	3.8	3.7	2.6	10.8	3.4	4.0	2.6	3.0	7.1	6.0	3.6	4.8
	Future (lb/ac/yr)	3.0	3.9	4.2	3.6	11.1	3.6	4.3	3.1	3.4	7.8	8.1	3.7	4.8
	% Load Increase	3%	3%	14%	38%	3%	6%	8%	19%	13%	10%	35%	3%	0%
Zinc ($x 10^{-2}$)	Existing (lb/ac/yr)	5.4	8.4	11.4	4.7	34.0	6.3	10.0	4.7	7.7	18.9	26.1	6.4	13.5
	Future(lb/ac/yr)	5.7	8.8	13.2	6.8	35.0	6.7	10.5	5.5	8.3	20.5	28.7	6.7	13.4
	% Load Increase	6%	5%	16%	45%	3%	6%	5%	17%	8%	8%	10%	5%	-1%

Pollutants		Middle Pimmit											
		PM-BH-001	PM-PM-004	PM-PM-005	PM-PM-006	PM-PM-007	PM-PM-008	PM-PM-009	PM-PM-010	PM-PM-011	PM-SA-001	PM-SA-002	PM-UN-001
BOD5	Existing (lb/ac/yr)	14.5	6.6	14.6	15.4	3.0	9.8	12.6	16.5	17.9	35.6	19.8	7.3
	Future (lb/ac/yr)	19.0	9.3	15.8	17.2	5.5	15.0	17.3	20.2	18.7	40.1	22.1	9.9
	% Load Increase	31%	41%	8%	12%	83%	53%	37%	22%	4%	13%	12%	36%
COD	Existing (lb/ac/yr)	84	38	81	89	18	59	73	93	102	203	126	42
	Future (lb/ac/yr)	108	52	88	99	32	87	99	114	107	223	141	56
	% Load Increase	29%	37%	9%	11%	78%	47%	36%	23%	5%	10%	12%	33%
TSS	Existing(lb/ac/yr)	52	22	46	63	10	34	39	51	62	140	73	29
	Future (lb/ac/yr)	63	30	50	70	18	48	54	62	65	148	80	37
	% Load Increase	21%	36%	9%	11%	80%	41%	38%	22%	5%	6%	10%	28%
TDS	Existing (lb/ac/yr)	67	33	61	75	17	50	55	69	81	165	100	36
	Future (lb/ac/yr)	83	41	66	83	26	63	75	85	84	177	109	44
	% Load Increase	24%	24%	8%	11%	53%	26%	36%	23%	4%	7%	9%	22%
DP	Existing (lb/ac/yr)	0.26	0.17	0.30	0.27	0.08	0.18	0.24	0.29	0.29	0.50	0.30	0.19
	Future (lb/ac/yr)	0.32	0.22	0.31	0.30	0.14	0.30	0.28	0.33	0.30	0.52	0.32	0.24
	% Load Increase	23%	29%	3%	11%	75%	67%	17%	14%	3%	4%	7%	26%
TP	Existing (lb/ac/yr)	0.37	0.24	0.43	0.38	0.12	0.25	0.34	0.42	0.41	0.71	0.42	0.27
	Future (lb/ac/yr)	0.44	0.31	0.44	0.42	0.20	0.43	0.39	0.47	0.43	0.73	0.45	0.35
	% Load Increase	19%	29%	2%	11%	67%	72%	15%	12%	5%	3%	7%	30%
TKN	Existing (lb/ac/yr)	2.1	1.3	2.4	2.2	0.7	1.4	1.9	2.4	2.4	4.0	2.4	1.5
	Future (lb/ac/yr)	2.6	1.7	2.5	2.4	1.0	2.3	2.3	2.7	2.5	4.1	2.6	1.9
	% Load Increase	24%	31%	4%	9%	43%	64%	21%	13%	4%	2%	8%	27%
TN	Existing (lb/ac/yr)	2.89	1.74	3.21	3.09	0.89	1.94	2.56	3.17	3.24	5.94	3.40	2.06
	Future (lb/ac/yr)	3.47	2.27	3.32	3.40	1.40	3.21	3.04	3.62	3.37	6.21	3.66	2.56
	% Load Increase	20%	30%	3%	10%	57%	65%	19%	14%	4%	5%	8%	24%
Cadmium ($x 10^{-4}$)	Existing (lb/ac/yr)	2.2	1.6	2.4	2.1	1.0	1.8	2.1	2.4	2.4	3.6	2.7	1.6
	Future (lb/ac/yr)	2.5	1.8	2.4	2.2	1.3	2.3	2.5	2.7	2.4	3.7	2.9	1.8
	% Load Increase	14%	13%	0%	5%	30%	28%	19%	13%	0%	3%	7%	13%
Copper ($x 10^{-3}$)	Existing (lb/ac/yr)	12.2	4.9	8.4	19.2	2.0	10.3	7.0	8.0	14.1	47.9	27.7	8.2
	Future (lb/ac/yr)	12.6	6.1	9.0	21.0	3.4	11.9	9.2	9.6	14.6	47.7	29.5	9.6
	% Load Increase	3%	24%	7%	9%	70%	16%	31%	20%	4%	0%	6%	17%
Lead ($x 10^{-3}$)	Existing (lb/ac/yr)	2.7	1.5	2.6	2.8	0.8	2.3	2.4	2.9	3.3	6.9	4.1	1.4
	Future (lb/ac/yr)	3.4	1.8	2.8	3.1	1.2	2.6	3.3	3.6	3.4	7.9	4.4	1.7
	% Load Increase	26%	20%	8%	11%	50%	13%	38%	24%	3%	14%	7%	21%
Zinc ($x 10^{-2}$)	Existing (lb/ac/yr)	6.6	2.6	4.9	10.1	1.0	4.4	3.8	4.8	7.8	22.2	11.2	4.2
	Future(lb/ac/yr)	7.2	3.3	5.3	11.0	1.9	5.6	5.2	5.8	8.1	22.0	12.0	5.1
	% Load Increase	9%	27%	8%	9%	90%	27%	37%	21%	4%	-1%	7%	21%

Pollutants		Lower Pimmit					Little Pimmit					Potomac Tributaries	
		PM-PM-001	PM-PM-002	PM-PM-003	PM-ST-001	PM-ST-002	PM-LP-001	PM-LP-002	PM-LP-003	PM-LP-004	PM-LP-005	PM-PO-001	PM-PO-002
BOD5	Existing (lb/ac/yr)	17.7	13.1	12.0	20.8	23.1	9.5	16.9	17.1	11.3	22.0	8.8	4.1
	Future (lb/ac/yr)	18.4	15.4	12.7	21.3	23.7	12.5	18.0	19.2	12.5	22.0	12.8	6.6
	% Load Increase	4%	18%	6%	2%	3%	32%	7%	12%	11%	0%	45%	61%
COD	Existing (lb/ac/yr)	100	75	68	118	130	54	94	102	64	125	65	23
	Future (lb/ac/yr)	104	88	72	120	133	71	100	114	70	125		37
	% Load Increase	4%	17%	6%	2%	2%	31%	6%	12%	9%	0%	40%	
TSS	Existing (lb/ac/yr)	55	41	37	66	70	30	56	61	37	75	26	13
	Future (lb/ac/yr)	57	48	39	67	72	38	59	68	40	75	38	20
	% Load Increase	4%	17%	5%		3%	27%	5%	11%	8%	0%	46%	54%
TDS	Existing (lb/ac/yr)	75	59	50	86	94	43	72	78	49	95	41	19
	Future (lb/ac/yr)	78	66	53	88	96	53	76	86	52	95	58	27
	% Load Increase	4%	12%	6%		2%	23%	6%	10%	6%	0%	41%	42%
DP	Existing (lb/ac/yr)	0.30	0.23	0.26	0.36	0.41	0.20	0.29	0.32	0.23	0.36	0.16	0.13
	Future (lb/ac/yr)	0.31	0.26	0.27	0.37	0.41	0.26	0.30	0.35	0.25	0.36	0.23	0.19
	% Load Increase	3%	13%	4%		0%	30%	3%	9%	9%	0%	44%	46%
TP	Existing (lb/ac/yr)	0.42	0.32	0.36	0.51	0.57	0.29	0.41	0.45	0.32	0.51	0.23	0.19
	Future (lb/ac/yr)	0.43	0.37	0.38	0.52	0.58	0.37	0.43	0.50	0.36	0.51	0.32	0.27
	% Load Increase	2%	16%	6%	2%	2%	28%	5%	11%	13%	0%	39%	42%
TKN	Existing (lb/ac/yr)	2.5	1.8	2.0	2.9	3.3	1.6	2.3		1.8	2.9	1.3	1.0
	Future (lb/ac/yr)	2.5	2.1	2.1	3.0	3.3	2.0	2.4		2.0	2.9	1.7	1.4
	% Load Increase	0%	17%	5%	3%	0%	25%	4%	12%	11%	0%	31%	40%
TN	Existing (lb/ac/yr)	3.26	2.43	2.68	3.94	4.36	2.16	3.18	3.48	2.42	3.98	1.80	1.33
	Future (lb/ac/yr)	3.32	2.83	2.82	4.00	4.45	2.73	3.33	3.88	2.67	3.99	2.42	1.92
	% Load Increase	2%	16%	5%	2%	2%	26%	5%	11%	10%	0%	34%	44%
Cadmium ($x 10^{-4}$)	Existing (lb/ac/yr)	2.5	2.1	2.1	2.8	3.1	1.9	2.3	2.5	1.9	2.7	1.5	1.2
	Future (lb/ac/yr)	2.7	2.2	2.2	2.8	3.2	2.1	2.3	2.6	2.0	2.7	1.9	1.4
	% Load Increase	8%	5%	5%	0%	3%	11%	0%	4%	5%	0%	27%	17%
Copper ($x 10^{-3}$)	Existing (lb/ac/yr)	19.2	6.7	5.9	11.4	10.7	5.0	13.3	18.3	7.2	16.0	14.9	2.4
	Future (lb/ac/yr)	21.0	7.6	6.2	11.6	11.0	6.2	13.5	20.1	7.2	16.0	18.9	3.3
	% Load Increase	9%	13%	5%	2%	3%	24%	2%	10%	0%	0%	27%	38%
Lead ($x 10^{-3}$)	Existing (lb/ac/yr)	3.3	2.6	2.1	3.5	3.9	1.9	3.2	3.0	2.1	3.8	1.7	0.9
	Future (lb/ac/yr)	3.6	2.9	2.2	3.6	4.0	2.2	3.3	3.3	2.1	3.8	2.3	1.1
	% Load Increase	11%	12%	5%	3%	3%	16%	3%	10%	0%	0%	35%	22%
Zinc ($x 10^{-2}$)	Existing (lb/ac/yr)	4.8	3.9	3.5	6.7	6.6	2.9	6.8	8.5	4.1	9.0	3.5	1.3
	Future(lb/ac/yr)	5.8	4.5	3.7	6.9	6.7	3.6	6.9	9.4	4.2	9.0	4.9	1.9
	% Load Increase	21%	15%	6%	3%	2%	24%	1%	11%	2%	0%	40%	46%

8.1.7.2 Hydraulic Modeling

The hydraulic model includes the portion of Pimmit Run from the boundary of Arlington County to its headwaters, along with Little Pimmit Run, Stromans Branch, Saucy Branch, Bridge Branch and Darrell Branch. The hydraulic model results show that the peak discharge from the two-year rainfall event is contained within the main channel banks for almost all of the modeled length of Pimmit Run. However, an elliptical culvert across Tennyson Drive, a box culvert and multi-pipe culvert driveway crossing at Ranleigh Road, and a bridge across Kirby Road were found to be overtopped during the ten- and 100-year storm events. The peak discharge from the ten-year rainfall event is generally contained within the main channel banks with a few areas of minor overtopping where there are adjacent and connected floodplains. Pimmit Run Watershed has been heavily developed over the years, resulting in higher imperviousness. Hence, future changes due to redevelopment in this watershed will not significantly affect the overall imperviousness of the watershed but instead, present an opportunity to improve existing stormwater controls. Therefore, the future conditions hydraulic modeling results are consistent with the existing conditions results.

The majority of the 100-year event slightly overtops the main channel banks as well as the tributary banks; however, the floodplains are utilized where they are connected to the stream channel. Sixty properties have buildings that lie within the 100-year floodplain and these locations are listed in the Flood Protection Project PM9663.

The velocities produced by the model for the two-year rainfall event in the Pimmit Run Watershed average approximately 5.3 ft/sec. The velocities are somewhat lower through the stream's upstream portions and increase as the stream flows northeast to its confluence with the Potomac River. The model indicates higher and much more erosive velocities at the stream segment located downstream of the concrete channels on Pimmit Run, which is likely caused by the channelization and constriction of Pimmit Run in this area.

According to the county's SPA, over 5,000 linear feet of erosion along the stream banks was observed in the bends and meanders of the upstream half of Pimmit Run and along most areas of Little Pimmit Run. The 2001 SPA also characterized these portions as CEM Type 3, which means they are actively widening. This characterization is further supported by the results of the hydraulic model because the flow for the two-year storm is contained mostly within the channel banks. The flow volumes are causing erosion and changes in the stream channel geometry in the more sinuous portions of Pimmit Run and its tributaries. Please note that conditions in the stream may have worsened since the SPA was conducted due to new development in the watershed.

8.2 Management Plan Strategy

This section outlines proposed projects for the Pimmit Run Watershed. The locations of the projects in this section are shown on Maps 8.7, 8.8, and 8.9. The projects are organized by goal, objective and action as they were presented in Chapter 3.

Goal A: Reduce stormwater impacts to protect human health, safety and property.

Objective 1: Reduce stormwater volumes and velocities to minimize stream bank erosion.

Action A1.1: Retrofit existing stormwater management facilities and BMPs.

A number of the BMP retrofit options described in Section 3.2.1 may be suitable for implementation in the Pimmit Run Watershed. These options are:

1. Increasing detention storage
2. Modifying or replacing existing riser structures and/or outlet controls
3. Adding infiltration features
4. Modifying basins that are currently "short circuiting"
5. Redirecting runoff from additional drainage area
6. Adding water quality treatment
7. Planting buffer vegetation

Locations of existing stormwater management facilities and BMPs that may be suitable for retrofit projects are described below and grouped by public or private ownership. Retrofit option numbers from the list above are provided in the following project descriptions.

Public BMP Retrofits

Upper Pimmit Run

- Publicly owned dry detention BMP at the southeast corner of Kirby Road and Great Falls Street opposite of 2072 Kirby Road. Possible retrofit options include 2 and 6. Modifying the outlet structure will provide detention of the channel erosion control volume and adding a shallow wetland will increase the removal of pollutants. (BMP Retrofit Project PM9133)
- Publicly owned dry detention SWM basin at Brooks Square Place town home community located at 2035 Brooks Square Place. Adding a riser structure will allow for extended detention storage and adding a shallow wetland will also improve water quality. Possible retrofit options include 2, 6, and 7. (BMP Retrofit Project PM9136)
- Publicly owned dry detention SWM facility at 2225 McLean Park Road at the Churchill Square town homes. Possible retrofit options include 2 and 6. Modifying the riser structure will allow for storage of the channel erosion control volume and adding a shallow wetland will improve water quality. (BMP Retrofit Project PM9148)
- Publicly owned dry detention SWM basin at Tysons Pimmit Regional Library located at 7550 Leesburg Pike. Modifying the riser structure will allow for extended detention storage and storage of the channel erosion control volume. Adding a shallow wetland will also improve water quality. The existing channel located behind the library near the picnic area should be regraded and modified to an infiltration basin or dry detention pond. Possible retrofit options include 2 and 6. (BMP Retrofit Project PM9153)
- Publicly owned dry detention SWM basin at the Marshall Heights multi-family residential property located at 2100 Dominion Heights Drive. Possible retrofit options include 2 and 6. Adding a shallow wetland will help to improve water quality. (BMP

Retrofit Project PM9154)

- Publicly owned dry detention BMP at the Courts of Tyson multi-family residential community located at 2117 Madron Lane. Possible retrofit options include modifying the riser structure to allow storage of the channel erosion control volume and adding a shallow wetland to provide greater pollutant removal. (BMP Retrofit Project PM9161)

Middle Pimmit Run

- Publicly owned dry detention SWM basin at Hamptons of McLean, a townhouse community, located at 1473 Hampton Ridge Drive. Possible retrofit options include 2, 6, and 7. (BMP Retrofit Project PM9116)
- Publicly owned BMP in the Brookhaven Neighborhood, located at the corner of Forest Villa Lane and Highland Glen Place. Possible retrofit options include 2, 3, 6, and 7. (BMP Retrofit Project PM9170)
- Publicly owned BMP in the Forest Villa Neighborhood, located at 1619 Linway Park Drive. Possible retrofit options include 2 and 6. (BMP Retrofit Project PM9175)

Lower Pimmit Run

- Publicly owned SWM pond located in the ravine behind 1416 Grady Randall Court. The BMP is currently abandoned due to a breach in the earthen dam. Since the outlet structure is still intact and appears to be in good condition, it may be reasonable to restore the BMP to use. The most important retrofit will be to repair or rebuild the earthen dam. The outlet structure may also need to be cleaned and/or replaced. (BMP Retrofit Project PM9176)

Private BMP Retrofits

Upper Pimmit Run

- Privately owned dry detention BMP at Temple Rodef Shalom located at 2100 Westmoreland Street. Possible retrofit options for this facility include 2 and 6. This dry detention basin is holding water like a wet pond and may also be contributing to flooding downstream. The basin outlet structure should be evaluated to determine the best options for retrofitting to allow it to function as a dry detention basin. Modifying the riser structure may also allow detention of the channel erosion control volume and adding a shallow wetland will help improve the water quality. (BMP Retrofit Project PM9134)
- Privately owned dry detention SWM facility located on Washington Metropolitan Area Transit Authority property located at 7040 Haycock Road. Possible retrofit options for this facility include 2, 6, and 7. The land surrounding the pond is very steep which will make it difficult to enlarge. Adding a shallow wetland will help to provide water quality treatment of runoff. (BMP Retrofit Project PM9140)
- Privately owned dry detention SWM facility located at the Northern Virginia Center of the University of Virginia at 7048 Haycock Road. Possible retrofit options include 2 and 6, and 7. Modifying the riser structure will allow for extended detention storage and storage of the channel erosion control volume. Adding a shallow wetland will also improve water quality. (BMP Retrofit Project PM9142)
- Retrofit the northern-most privately owned dry detention SWM facility located at 2251 Pimmit Drive at the Fairfax Towers Apartments. Possible retrofit options include 2, 6, and 7. On July 7, 2004, the county inspected the ponds and silt was noticed in one of

the ponds. The silt should be removed as part of this retrofit project in order to restore capacity to the dry detention facility. Modifying the riser structure will provide extended detention storage and storage of the channel erosion control volume. Adding a shallow wetland will also help improve the water quality. (BMP Retrofit Project PM9149)

- Dry detention BMP at The Renaissance apartment building located at 2230 George C. Marshall Drive. Possible retrofit options include 2, 6, and 7.(BMP Retrofit Project PM9158)
- Retrofit the southern-most privately owned dry detention SWM facility for the commercial property located at 7990 Science Application Court. Possible retrofit options include 2, 6, and 7. (BMP Retrofit Project PM9160)

Middle Pimmit Run

- Privately owned SWM wet pond located in Lynwood neighborhood at 1239 Aldebaran Drive. The Lynwood Home owners association owns this BMP. Possible retrofits for this facility include options 2, 6, and 7. (BMP Retrofit Project PM9112)

Little Pimmit Run

- Privately owned dry detention BMP at Vinson Hall, a retirement community, located at 1739 Kirby Road. Vinson Hall Corporation owns the BMP. Possible retrofits for this facility include options 2 6, and 7. Modifying the riser structure will allow for storing the channel erosion control volume and adding a shallow wetland will help to improve water quality. This project should be completed in conjunction with New LID project PM9805. (BMP Retrofit Project PM9106)

The size of the proposed drainage areas and the benefits for the BMP retrofits that will be implemented first are included in Table 8.7. The projects that will be implemented later in the watershed plan did not have drainage areas or benefits calculated for them and have an N/A in these columns. These parameters will be computed prior to the implementation of the projects.

Table 8.7 Benefits of Stormwater Management Facility and BMP Retrofits

Project Number	Subbasin ID	Location	Proposed Drainage Areas (acres)	Total Phosphorus Removal (lbs/yr)	Channel Erosion Control Volume Provided (ac-ft)
PM9106	PM-LP-002	1739 Kirby Road	17.7	4.9	1.0
PM9112	PM-UN-001	1239 Aldebaran Drive	N/A	N/A	N/A
PM9116	PM-SA-001	1473 Hampton Ridge Drive	5.0	3.4	0.7
PM9133	PM-PM-012	2072 Kirby Road	6.2	1.3	0.3
PM9134	PM-UN-002	2100 Westmoreland Street	6.1	1.2	0.2
PM9136	PM-UN-002	2035 Brooks Square Place	2.0	1.4	0.1
PM9140	PM-BR-002	7040 Haycock Road	21.2	5.9	2.4
PM9142	PM-BR-002	7048 Haycock Road	4.3	2.9	0.3
PM9148	PM-BR-002	2225 McLean Park Road	8.3	1.7	0.1
PM9149	PM-PM-016	2251 Pimmit Drive	18.4	12.4	1.6
PM9153	PM-UN-004	7550 Leesburg Pike	17.5	8.8	1.4

Project Number	Subbasin ID	Location	Proposed Drainage Areas (acres)	Total Phosphorus Removal (lbs/yr)	Channel Erosion Control Volume Provided (ac-ft)
PM9154	PM-PM-016	2100 Dominion Heights Court	4.8	1.0	0.2
PM9158	PM-PM-017	2230 George C. Marshall Drive	7.9	1.6	0.6
PM9160	PM-PM-017	7990 Science Application Court	8.3	7.7	1.8
PM9161	PM-PM-017	2117 Madron Lane	16.2	3.3	0.9
PM9170	PM-BH-001	Highland Glen Place	N/A	N/A	N/A
PM9175	PM-BH-001	1619 Linway Park Drive	2.0	0.3	0.1
PM9176	PM-PM-002	1416 Grady Randall Court	N/A	N/A	N/A

Action A1.2: Construct new BMPs including Low Impact Development (LID) practices.

The new BMP projects have been grouped into public or privately owned land and conventional BMPs or LID methods. The proposed new BMP locations are described below and are shown on Maps 8.7, 8.8, and 8.9.

New Public BMPs

Upper Pimmit Run

- Construct a new one-year extended dry detention BMP at Olney Park located at 1840 Olney Road. There is an open area of approximately 2,400 square feet at the southeast corner of the street that may be appropriate for a BMP site. (New BMP Project PM9144)
- Construct a new one-year extended dry detention BMP at the George C. Marshall High School at 7731 Leesburg Pike. There is an open flat area of land behind the baseball field near the edge of the property adjacent to George C. Marshall Drive that may be used as a new BMP site. The open area is approximately 4,100 square feet and is located near the storm drain network. Another possible location for a linear dry detention BMP may be at the southwest edge of the property. (New BMP Project PM9155)

Middle Pimmit Run

- Construct a new one-year extended dry detention BMP at McLean High School located at 1633 Davidson Road. The BMP should be located in the open area at the northeast corner of the property where it drains to Saucy Branch. The area adjacent to the stream is wooded, but there is an open area near Westmoreland Street with approximately 2,200 square feet of land that may be appropriate for a BMP site. (New BMP Project PM9120)

Public LID Projects

Schools were targeted for LID projects because, with the exception of the Potomac School, the properties are owned by the county, usually have large impervious areas, most have no existing stormwater controls, and the projects are ideally situated to help educate the students on watershed issues. Parks were also targeted for LID projects because the land is

owned by the Park Authority and county facilities should be examples of environmentally friendly design.

Upper Pimmit Run

- Construct LID practices at Kirby Park located at 2020 Kirby Road and at the McLean Little League Baseball Fields located at 1836 Westmoreland Street. Current channels along the baseball field should be regraded or modified into infiltration trenches or bioswales. A riparian buffer should be reestablished along the stream. (New LID Project PM9826)
- Construct LID practices at Longfellow Middle School located at 2000 Westmoreland Street. The existing eroded channels near the stream and the side of the school could be regraded and modified into infiltration trenches or bioswales. In addition, bioretention areas could be added in the landscaped areas around the school and around inlets near the track. Also, some of the storm drain inlets in the parking lot may be replaced with tree box filters. (New LID Project PM9829)
- Construct LID practices at Haycock Elementary School located at 6616 Haycock Road. Two bioretention areas could be added, one near the front parking lot and another to capture runoff from the playground in the back of the school. Four storm drain inlets in the parking lots could be replaced with tree box filters. (New LID Project PM9831)
- Construct LID practices at the City of Falls Church George Mason Middle School and High School located at 7124 Leesburg Pike. Bioretention areas could be installed in the parking lot medians and around the building to help detain water and remove pollutants. Ten storm drain inlets in the parking lots could be replaced with tree box filters. (New LID Project PM9843)
- Construct LID practices at Marshall High School at 7731 Leesburg Pike. The school property is located adjacent to a portion of Pimmit Run and implementing LID methods will help improve water quality before the runoff enters the stream. Bioretention areas could be added to the medians in the parking lots, around the buildings, and around the athletic fields. Ten storm drain inlets in the parking lots could be replaced with tree box filters. (New LID Project PM9856)
- Construct LID practices at the Lemon Road School located at 7230 Idylwood Road. The school is located adjacent to a portion of Pimmit Run that will be restored as part of Project PM9232. The LID and stream restoration should be coordinated to maximize the benefits of both projects. Bioretention areas could be added in the landscaped around the school and an existing channel at the rear of the school could be regraded and turned into a bioswale. (New LID Project PM9867)
- Construct LID practices at the Mount Daniel Elementary School located at 2328 North Oak Street. The school is surrounded by open fields, part of which could be used for a bioretention area. Also, an infiltration trench or bioswale could be constructed adjacent to the parking lot to treat the pollutants in the runoff. (New LID Project PM9871)

Middle Pimmit Run

- Construct LID practices at the Potomac School, located at 1301 Potomac School Road, adjacent to Pimmit Run. The existing channel leading to the wet pond can be regraded or modified into an infiltration trench or bioswale. (New LID Project PM9810)

- Construct LID practices at the McLean High School located at 1633 Davidson Road near Saucy Branch. Implementing LID methods at this location will benefit downstream restoration of Saucy Branch, a tributary of Pimmit Run. Currently the school's runoff flows directly into the stream without any stormwater controls. Bioretention areas could be constructed in the grassed areas in order to reduce the peak runoff and pollutants from the parking lot and the building. An existing channel to the west of the school could be regraded and turned into a bioswale and ten tree box filters could be installed in the drop inlets in the parking lots. (New LID Project PM9821)
- Construct LID practices at Lewinsville Park at 1659 Chain Bridge Road. The park is located adjacent to Saucy Branch. The existing eroding ditches along the parking area and soccer field could be regraded and modified to be infiltration trenches or bioswales. (New LID Project PM9822)
- Construct LID practices at Franklin Sherman Elementary School located at 6630 Brawner Street. Bioswales and infiltration trenches should be installed along the athletic fields to help redirect runoff and reduce peak flows. (New LID Project PM9823)
- Construct LID practices at Kent Gardens Elementary School located at 1717 Melbourne Road. This school is located near Middle Pimmit Run and currently does not have water quality controls. Installing rain gardens near the buildings and in the athletic fields will help improve water quality before the runoff enters the stream. (New LID Project PM9824)
- Construct LID practices at Linway Terrace Park located at 6246 Linway Terrace, near Bryan Branch. Infiltration trenches or bioswales could be constructed adjacent to the parking lot to treat the runoff and help reduce the peak flows. Also, an existing grass swale adjacent to the soccer field can be regraded and turned into a bioswale. (New LID Project PM9872)

Little Pimmit Run

- Construct LID practices at Chesterbrook Elementary School located at 1753 Kirby Road. This school is located adjacent to an unnamed tributary to Little Pimmit Run and has a large amount of impervious surface from the parking lot. Bioretention areas could be installed in the parking lot medians and in the landscaped areas. Replacing the asphalt playground surface with porous pavement will help reduce the peak runoff. An infiltration trench could be constructed adjacent to the parking lot in order to treat the pollutants in the runoff from the parking lot. (New LID Project PM9807)

Private LID Projects

LID projects are recommended for the privately owned commercial properties, multi-family residential developments, and places of worship listed below. These LID sites were chosen because they have large impervious areas and do not have existing stormwater management controls.

Upper Pimmit Run

- Construct LID practices at Temple Rodef Shalom located at 2100 Westmoreland Street near Burke's Spring Branch. There are grassed areas between the parking rows in the parking lot that could be modified into rain gardens or infiltration trenches. (New LID Project PM9830)
- Construct LID practices at the Pavilion condominium complex at 7011 Falls Reach

Road. There are numerous landscaped areas around the buildings where bioretention could be added. (New LID Project PM9839)

- Construct LID practices at the West Falls Church Metro station parking lot and parking garage across the street from 7048 Haycock Road. This Metro station has large amounts of impervious surface and currently does not have any water quality controls. Implementing bioretention in the medians of the parking lot, as well as adding tree box filters to the drop inlets in the parking lot, will help to reduce the peak runoff. (New LID Project PM9841)
- Construct LID practices at the Idlywood Towers Condominiums located at 2311/2300 Pimmit Drive. Bioretention areas could be installed in the medians of the parking lots. Tree box filters could replace the storm drain inlets in the parking lots. Bioretention areas could also be added in the landscaped areas near the buildings and yard inlets. (New LID Projects PM9850 and PM9852)
- Construct LID practices at the Tysons Glen multi-family residential development, located at 2250 Mohegan Drive. Bioretention areas could be constructed in the landscaped areas around the buildings and around yard inlets. Some of the storm drain inlets in the parking lot could also be replaced with tree box filters. (New LID Project PM9857)
- Install LID practices at the Tysons Renaissance high rise commercial property located at 2230 George C Marshall Drive. Storm drain inlets in the parking lots can be replaced with tree box filters. Also, landscaped areas around the building can be turned into rain gardens. (New LID Project PM9859)
- Construct LID practices at the commercial property located at 7990 Science Application Court. This location has a large amount of impervious surface in the parking lot. Adding bioretention in the landscaped areas near the buildings and in the medians of the parking lots will help to reduce runoff. The storm drain inlets could be replaced with tree box filters in the parking lots. (New LID Project PM9862)
- Construct LID practices at the Church of Jesus Christ of Latter-day Saints located at 2034 Great Falls Street. Bioretention could be installed in the parking lot medians and around the building to help detain water and remove pollutants. The storm drain inlets in the parking lot could also be replaced with tree box filters. (New LID Project PM9873)
- Construct LID practices at Chesterbrook Presbyterian Church located at 2036 Westmoreland Street. The church is located adjacent to Burke's Spring Branch and implementing LID methods will help improve water quality before the runoff enters the stream. Bioretention could be added to one of the grassed medians in the parking lot and also adjacent to the west edge of the parking lot to reduce runoff and pollutants. (New LID Project PM9874)

Middle Pimmit Run

- Construct LID practices at Saint John's Catholic Church and School located at 6422 Linway Terrace. A tree box filter could replace the grate inlet that is located to the left of the Vianney House, a church building. The channel located along Linway Terrace at the front of the property could be converted into a bioswale. Bioretention areas could be installed near the buildings and in the landscape medians in the parking lot. Porous pavement could be installed in the outlying parking spaces in the northeast parking lot.

(New LID Project PM9813)

- Construct LID practices at the McLean Chain Bridge Shopping Center at 1445 Chain Bridge Road, Langley Shopping Center at 1362 Chain Bridge Road, and Chain Bridge Corner at 6825 Redmond Drive. LID options may include installing tree box filters in the parking areas and constructing bioretention areas in the landscape medians in the parking areas. (New LID Project PM9818)
- Construct LID practices at McLean Baptist Church at 1367 Chain Bridge Road and at Redeemer Lutheran Church at 1545 Chain Bridge Road. McLean Baptist Church has landscaped areas around the building and parking lot that can be converted into bioretention areas. Redeemer Lutheran Church has a large landscaped area in front of the church which can be converted to a bioretention area to help reduce runoff. Bioretention areas could also be added in the landscaped areas around the church. (New LID Project PM9877)
- Construct LID practices at St. Dunstan Episcopal Church at 1830 Kirby Road and the Chesterbrook Swimming Club at 1812 Kirby Road. Adding bioretention in the landscaped areas near the buildings and in the medians of the parking lots will help to reduce runoff. The storm drain inlets at the swim club could be replaced with tree box filters in the parking lot. (New LID Project PM9880)

Little Pimmit Run

- Construct LID practices at the Chesterbrook Methodist Church located at 6224 Old Dominion Drive. A bioswale should be installed east of the church along the side of the property in order to help redirect runoff and reduce peak flows. In the open field on the east side of the property, a bioretention basin could be constructed to help reduce runoff. (New LID Project PM9804)
- Construct LID practices at Vinson Hall, a retirement community, located at 1739 Kirby Road. Vinson Hall has large amounts of green space around the buildings and in the front yard along Kirby Road. Bioswales or bioretention areas could be installed adjacent to the parking lots or the building. This project should be completed in conjunction with the BMP Retrofit project PM9106. (New LID Project PM9805)
- Construct LID practices at the Chesterbrook Shopping Center located at 6224 Old Dominion Drive. LID options could include replacing the drop inlets in the parking lot with tree box filters and constructing bioretention areas in the parking lot medians and landscape areas. (New LID Project PM9825)

The pollutant removal benefit for the New BMP and LID projects that will be implemented first is shown in Table 8.8. The projects that will be implemented later in the watershed plan did not have drainage areas or benefits calculated for them and have an N/A in these columns. These parameters will be computed prior to the implementation of the projects.

Table 8.8 Benefits of New BMPs and LID Projects

Project Number	Subbasin ID	Location	Proposed Drainage Area (acres)	Total Phosphorus Removal (lbs/yr)
PM9120	PM-SA-002	1633 Davidson Road	3.1	2.9
PM9144	PM-UN-003	1840 Olney Road	2.8	1.4
PM9155	PM-PM-016	7731 Leesburg Pike	13.7	12.7
PM9804	PM-LP-002	6224 Old Dominion Drive	N/A	N/A

Project Number	Subbasin ID	Location	Proposed Drainage Area (acres)	Total Phosphorus Removal (lbs/yr)
PM9805	PM-LP-002	1739 Kirby Road	4.4	4.3
PM9807	PM-LP-003	1753 Kirby Road	N/A	N/A
PM9810	PM-PM-006, PM-UN-001	1301 Potomac School Road	N/A	N/A
PM9813	PM-BH-001	6422 Linway Terrace	N/A	N/A
PM9818	PM-SA-001	1445 Chain Bridge Road, 1362 Chain Bridge Road, and 6825 Redmond Drive	N/A	N/A
PM9821	PM-SA-002, PM-PM-011	1633 Davidson Road	8.2	8.0
PM9822	PM-SA-002	1659 Chain Bridge Road	12.9	2.7
PM9823	PM-SA-002	6630 Brawner Street	2.5	2.5
PM9824	PM-PM-011	1717 Melbourne Road	4.1	4.0
PM9825	PM-LP-002	6224 Old Dominion Drive	3.6	3.5
PM9826	PM-PM-012	2020 Kirby Road	N/A	N/A
PM9829	PM-UN-002, PM-BK-001	2000 Westmoreland Street	7.2	6.7
PM9830	PM-UN-002	2100 Westmoreland Street	3.0	2.6
PM9831	PM-UN-002, PM-BK-002	6616 Haycock Road	3.0	2.9
PM9839	PM-BK-002	7011 Falls Reach Drive	2.0	2.0
PM9841	PM-BR-002	7048 Haycock Road	8.6	8.4
PM9843	PM-BR-002	7124 Leesburg Pike	12.0	10.6
PM9850	PM-PM-016	2311 Pimmit Drive	6.9	5.8
PM9852	PM-PM-016	2300 Pimmit Drive	5.1	4.5
PM9856	PM-PM-016, PM-PM-017	7731 Leesburg Pike	16.5	16.2
PM9857	PM-PM-016	2250 Mohegan Drive	7.2	6.7
PM9859	PM-PM-017	2230 George C Marshall Drive	6.2	6.1
PM9862	PM-PM-017	7990 Science Application Court	6.8	6.7
PM9867	PM-PM-015	7230 Idylwood Road	3.0	2.8
PM9871	PM-BR-002	2328 North Oak Street	2.3	2.3
PM9872	PM-BH-001	6246 Linway Terrace	12.2	2.6
PM9873	PM-PM-012	2034 Great Falls Street	3.5	3.4
PM9874	PM-BK-003	2036 Westmoreland Street	1.3	1.1
PM9877	PM-SA-001 PM-SA-002	1367 & 1545 Chain Bridge Road	6.7	4.2
PM9880	PM-BH-001	1812 & 1830 Kirby Road	N/A	N/A

Action A1.3: Construct LID practices in neighborhoods in the public rights-of-way and encourage LID practices on private property.

The neighborhoods selected for neighborhood stormwater improvements do not have existing stormwater management controls and the runoff from these neighborhoods contributes to downstream erosion problems. Targeting these neighborhoods for LID methods will help to mitigate the effects of the impervious surfaces and to improve the effectiveness of stream restoration projects downstream. The neighborhood stormwater improvement areas are described below and are shown on Maps 8.7, 8.8 and 8.9.

Upper Pimmit Run

- Construct LID practices in the Nantucket and Westmoreland Heights neighborhoods. These neighborhoods are located adjacent to an unnamed tributary to Upper Pimmit Run and the runoff releases directly into the stream. Currently this neighborhood has concrete sidewalks, curb and gutter, storm drain inlets and many cul-de-sacs. Bioretention areas could be created in the cul-de-sacs to capture the runoff from the street and the surrounding houses. The storm drain inlets could be replaced with tree box filters. Infiltration trenches could be installed between the sidewalk and the curb. Also, there is a minor flooding problem near Relda Court that may be caused by leaking storm drain pipes that should be investigated as part of this project. (Neighborhood Stormwater Improvement Area PM9827)
- Construct LID practices in the Pimmit Hills and Olney Park neighborhoods. These neighborhoods are located adjacent to the main stem of Upper Pimmit Run and currently have no water quality controls. There are concrete sidewalks, curb and gutter, and storm drain inlets. The storm drain pipes have been cleaned recently, but the curb, gutter, and sidewalk may need to be replaced in some areas in the future. The area between the sidewalk and the curb could be made into an infiltration strip. On the side of the street that does not have a sidewalk, a small bioretention or infiltration area could be constructed. The storm drain inlets could be replaced with tree box filters. Flooding has been occurring on Griffith Road and the surrounding area due to excessive flows. This problem should be addressed as part of this project. (Neighborhood Stormwater Improvement Area PM9845)
- Construct LID practices in the South Ridge and Devon Park neighborhoods. These neighborhoods have concrete sidewalks, curb and gutter, and storm drain inlets. Small bioretention areas could be constructed around storm drain inlets located in low areas behind the houses. Bioretention areas could be constructed in the cul-de-sacs and infiltration areas could be constructed between the sidewalk and the curb. Tree box filters could replace existing curb drop inlets. (Neighborhood Stormwater Improvement Area PM9819)

Middle Pimmit Run

- Construct LID practices in the El Nido, Chesterbrook Garden, and Grass Ridge neighborhoods. Currently the neighborhoods have concrete sidewalks, curb and gutter, and storm drain inlets. Bioretention areas could be constructed in the cul-de-sacs and infiltration areas could be constructed between the sidewalk and the curb. Tree box filters could replace the existing curb drop inlets. Ditches could be replaced with bioswales. The sidewalk may also be replaced with porous pavement to help reduce runoff to the stream. (Neighborhood Stormwater Improvement Area PM9814)

Little Pimmit Run

- Conduct a storm drain study in the Chesterbrook Woods, Chesterbrook Mews and Chain Bridge Heights Neighborhoods. Flooding in these neighborhoods may be a result of inadequate capacity in the storm drain system. A study should be conducted to mitigate the flooding as well as to evaluate installation of LID measures that will reduce the peak flows. The Chesterbrook Woods Neighborhood has grassed ditches in front yards with a minimal number of storm inlets. Bioswales could be constructed in the grassed ditches and bioretention areas could be created in the cul-de-sacs to capture the runoff. The Chesterbrook Mews and Chain Bridge Heights Neighborhoods have storm drain inlets and some sidewalks. The sidewalks could be replaced with porous pavement and infiltration trenches could be installed between the sidewalk and

curb. Also, the storm drain inlets could be replaced with tree box filters in all neighborhoods. (Neighborhood Stormwater Improvement Area PM9889)

- Conduct a storm drain study to evaluate the storm drain system and construct recommended drainage system improvements for the Franklin Park and Chesterbrook neighborhoods. There is no piped storm drain system in either neighborhood so the roadside ditches convey all runoff during storms and the ditches should be maintained in order to prevent erosion and flooding of homes and property. (Neighborhood Stormwater Improvement Area PM9978)

The pollutant removal benefit for the neighborhood stormwater improvement areas that will be implemented first is shown in Table 8.9. The projects that will be implemented later in the watershed plan did not have drainage areas or benefits calculated for them and have an N/A in these columns. These parameters will be computed prior to the implementation of the projects.

Table 8.9 Benefits of Neighborhood Stormwater Improvement Areas

Project Number	Subbasin ID	Location	Proposed Drainage Area (acres)	Total Phosphorus Removal (lbs/yr)
PM9814	PM-PM-010, PM-PM-009, PM-PM-011, PM-BH-001	El Nido, Chesterbrook Garden, and Grass Ridge neighborhoods	15.8	14.7
PM9819	PM-SA-001, PM-SA-002, PM-PM-010, PM-PM-011	South Ridge and Devon Park neighborhoods	7.7	7.2
PM9827	PM-BK-001, PM-BK-002	Nantucket and Westmoreland Heights neighborhoods	N/A	N/A
PM9845	PM-PM-014, PM-PM-015, PM-UN-003, PM-UN-004	Pimmit Hills and Olney Park neighborhoods	13.8	12.8
PM9889	PM-LP-001, PM-LP-002, PM-PM-002, PM-PM-003, PM-ST-001, PM-ST-002	Chesterbrook Woods, Chesterbrook Mews, Chain Bridge Heights neighborhoods	N/A	N/A
PM9978	PM-LP-003, PM-LP-004, PM-LP-005	Franklin Park and Chesterbrook neighborhoods	N/A	N/A

Action A1.4: Reconnect the floodplains to stream channels to provide floodwater storage and treatment.

Reconnecting the stream channels to the floodplains involves removing any existing concrete channel or regrading the stream banks to allow stream flows to spread through the natural floodplain area. The floodplain reconnection projects will be performed in conjunction with stream restoration projects.

Upper Pimmit Run

- Reconnect the existing channel of Pimmit Run with the floodplain located in the Pimmit Run Stream Valley Park near 1912 Great Falls Street. The floodplain area is located east of the Dulles Toll Road at the confluence of Pimmit Run and Bridge Branch and is owned by the county. This project will help to prevent the frequent flooding at a property located on Great Falls Street. (Floodplain Restoration PM9346)
- Reconnect the existing channel of Pimmit Run with the floodplain at two locations within the Upper Pimmit Run subwatershed. The locations include the southern bank of Pimmit Run near Lemon Road Elementary School (7230 Idylwood Road) and the southern bank of Pimmit Run in the Pimmit Run Stream valley Park from 1946 Friendship Place to 1901 Miracle Lane. This section of the channel is lined with concrete, which will need to be removed in order to allow stream flows to reach the floodplain. The two floodplain areas are located on county-owned land. (Floodplain Restoration PM9347)

Middle Pimmit Run

- Reconnect the existing channel of Pimmit Run with the floodplain located just upstream of Old Dominion Drive. The floodplain area is located on the northwestern bank between Byrns Place and Hawthorne Street. (Floodplain Restoration PM9382)

Action A1.5: Remove detrimental channel obstructions.

Channel obstructions that block stream flow, like the ones listed below, should be removed. Dumpsites should also be cleaned up on a regular basis, if needed. Dumpsites and obstructions in the watershed will vary over time. It may be necessary to clean up future dumpsites and/or obstructions that are not listed below or shown on any of the watershed maps. Some of the obstructions and dumpsites shown on Maps 8.4 through 8.6 have been cleaned up since the SPA was conducted, so projects were not needed at those locations.

Upper Pimmit Run

- Remove obstructions from three locations along Upper Pimmit Run and its tributaries. The first obstruction is located along Bridge Branch near 2129 McKay Street and contains natural debris. The second location is along Darrell Branch behind 6458 Overbrook Drive. The third obstruction is a multiple tree logjam just downstream of Taylor Road along Upper Pimmit Run. (Dumpsite/Obstruction Removal PM9902)
- Remove the dumpsite located along Middle Pimmit Run in the Pimmit Run Stream Valley Park east of the Dulles Toll Road and west of Great Falls Street. This dumpsite contains extensive tree limb and yard debris. Whenever a major windstorm comes through the McLean area, the landscape companies dump considerable amounts debris at this location. In order to permanently fix the dumping problem, the missing section of the metal guard rail should be replaced and a "No Dumping" sign should be installed. (Dumpsite/Obstruction Removal PM9937)

Middle Pimmit Run

- Remove obstructions from eight locations along Middle Pimmit Run and its tributaries. The first location is behind 6622 Chesterfield Avenue where the existing channel capacity has been greatly reduced by sediment and rock. The second location is near Dominion Woods about a 1/4-mile upstream from Old Dominion Drive and contains debris and large trees that have washed downstream during large storms. The third

location is the frequent log jams behind 1434 Brookhaven Drive mentioned in Problem Area PM33. The other locations mostly contain tree debris and are located behind 1404 Langley Drive, 6304 Hardy Drive, 1452 Waggaman Circle, 1331 Merchant Lane, 1334 Potomac School Road and 1324 Potomac School Road. (Dumpsite/Obstruction Removal PM9902)

- Remove obstructions from two locations along Bryan Branch at 1601 East Avenue and 1611 East Avenue. There is a large amount of woody debris buildup and large tree obstructions in both locations. (Dumpsite/Obstruction Removal PM9902)

Lower Pimmit Run

- Remove an obstruction about 600 feet downstream of 1428 Woodacre Drive along Lower Pimmit Run. (Dumpsite/Obstruction Removal PM9902)

Little Pimmit Run

- Remove an obstruction from Little Pimmit Run within the Pimmit Run Stream Valley Park. The obstruction is downstream of Chesterbrook Road and contains a newly formed logjam. (Dumpsite/Obstruction Removal PM9902)

Action A1.6: Stabilize eroding streambanks using bioengineering methods.

The projects identified for this action are also addressed by Action B5.1 and are described under that action.

Objective A2: Reduce stormwater flooding and the potential damage from stormwater flooding.

Action A2.1: Improve existing stormwater infrastructure to prevent flooding of roadways and property.

Improve the existing stormwater infrastructure at the following locations:

Upper Pimmit Run

- Connect the outfall and curb inlet located at 7415 Magarity Road. House flooding is occurring in this vicinity because these two structures are not connected. (Infrastructure Improvement PM9494)

- Regrade the ditch downstream of the dry detention basin at Temple Rodef Shalom at 2100 Westmoreland Street as well as the ditch to the west of the detention basin. These ditches should be replaced with infiltration trenches or bioswales to decrease the velocity of the flows and therefore reduce the peak flows. These improvements will help reduce flooding of the homes along Kirby Court, immediately downstream of the temple. The infiltration trenches or bioswales will also help to improve water quality. This project should be performed in conjunction with the BMP retrofit and LID projects at this location. (Infrastructure Improvement PM9464)

Middle Pimmit Run

- Improve the capacity of the storm drain system at Tennyson Drive, which floods often. The street may also need to be raised depending on the severity of the flooding. (Infrastructure improvement PM9417)
- Investigate the probable cause of house flooding occurring along Hunting Avenue and

perform improvements to mitigate flooding in the eastern portion of the Hunting Ridge neighborhood. Flooding could be caused by runoff from the Dulles Toll Road or an undersized open channel flowing near these houses. (Infrastructure Improvement PM9465)

- Construct a channel for runoff to be conveyed from the end of Brookhaven Drive to Pimmit Run. Yard flooding is occurring because the water flows to the end of Brookhaven Drive and does not have a defined channel to the stream. (Infrastructure Improvement PM9468)
- Improve the capacity of the storm drain system near 1553 Forest Villa Lane. House flooding is occurring because the storm drain pipes carrying an unnamed tributary to Pimmit Run are undersized. This project will also include the replacement of a culvert at Bryan Branch from the county's master drainage project PM431. (Infrastructure Improvement PM9469)

Little Pimmit Run

- Improve the capacity of the storm drain system near Corland Court. House flooding is occurring because the storm pipes are undersized causing water to flow from the inlets during large rainfall events. (Infrastructure Improvement PM9492)

Action A2.2: Improve the existing stormwater infrastructure to prevent negative impacts to the stream.

Middle Pimmit Run

- Repair the ditch at 6622 Chesterfield Avenue. The ditch is significantly degraded and the channel capacity has been greatly reduced by accumulated sediment and debris. The channel is causing hazardous flooding of the surrounding homes. The ditch should be evaluated for modification and repair to prevent flooding of the surrounding homes. (Infrastructure Improvement PM9451)
- Repair and/or replace the concrete channel parallel to Dillon Avenue. The channel should be repaired to avoid further erosion of the bank as well as to prevent flooding of the homes in this area. It may be possible to modify the concrete channel with shallow weirs to slow the velocity of the water to help prevent downstream erosion and facilitate the construction of the proposed downstream stream restoration project. (Infrastructure Improvement PM9466)
- Repair the concrete channel at 1631 Wrightson Drive. The concrete is deteriorating causing erosion around the channel banks. (Infrastructure Improvement PM9490)

Little Pimmit Run

- Repair or replace up to 500 feet of concrete channel adjacent to 1821 Briar Ridge Court. The channel has been undermined in several locations and the concrete is in poor condition. The channel carries a large volume of water and should be repaired to maintain the flow capacity and avoid flooding of homes in this area. (Infrastructure Improvement PM9491)

Action A2.3: Protect structures located in the 100-year flood limit from flooding.

Table 8.10 lists the number of properties in the watershed that are located in the 100-year flood plain or are recommended for flood protection. Five of these locations are from the county's list of master drainage plan projects. (Flood Protection Project PM9663)

Table 8.10 Recommended Flood Protection Locations

Street	# Properties
Brookhaven Drive	2
Chesterbrook Road	2
Chesterbrook Vale Court	1
Chesterfield Avenue	1
Chesterfield Place	1
Cola Drive	1
Divine Street	1
Fairlawn Drive	2
Franklin Park Road	1
Hardy Drive	1
Hillside Drive	1
Idylbrook Court	3
Ivy Hill Drive	2
Kinyon Place	1
Kirby Road	3
Kirkley Avenue	4
Leonard Road	2
Linway Terrace	1
Old Dominion Drive	1
Park Road	1
Pimmit Court	6
Pimmit Drive	23
Ranleigh Road	1
Somerville Drive	2
Tucker Avenue	3
Westmoreland Street	1
Woodland Terrace	1

Objective A3: Reduce pollutants in stormwater runoff to protect human health.

Action A3.1: Identify the sources of fecal coliform bacteria in the watersheds and seek to reduce controllable sources.

Collaborate with DEQ and DCR to perform a study to identify the sources of fecal coliform bacteria in the Pimmit Run Watershed using E. coli as the indicator bacteria for and prepare an action plan that describes how the controllable sources, especially human sources, will be reduced. (Fecal Coliform Source Study PM9796)

Pimmit Run has been identified by the Virginia Department of Environmental Quality as an impaired stream due to high levels of bacteria. The proposed study will allow the evaluation and identification of the sources of fecal coliform bacteria in the watershed. The ultimate goal of the study action plan would be to remove Pimmit Run from Virginia's list of impaired waters.

GOAL B: Protect and improve habitat and water quality to sustain native animals and plants.

Objective B1: Reduce pollutants in stormwater runoff to protect fish and other aquatic life.

Action B1.1: Retrofit existing stormwater management facilities and BMPs.
The projects identified for this action are also addressed by Action A1.1 and are described in that section.

Action B1.2: Construct new BMPs including LID methods.
The projects identified for this action also addressed by Action A1.2 and are described under that action.

Objective B2: Increase the use of LID for all development projects to reduce runoff and improve water quality.

This objective will be achieved through policy and land use recommendations which are located in Chapter 9 under Objective B2.

Objective B3: Restore and protect vegetated stream buffers to filter pollutants from runoff, to provide erosion control and to provide habitat for animals.

Action B3.1: Restore vegetated buffers along streams especially at public sites such as schools, park, and municipal facilities.
Restore vegetated buffers along streams especially at public sites such as schools, parks, and municipal facilities. The SPA found that the condition of existing riparian buffers is poor for 29 percent of the stream bank length assessed in the watershed. The deficient buffer locations described below were found during the 2002 SPA or were identified as potential locations for buffer restoration projects during the watershed planning process. These reach lengths will be further evaluated to determine what portions require restoration work. The locations are shown on Maps 8.7, 8.8, and 8.9. Steps to protect existing vegetated buffers are included in Public Education Project PM9984 described later in this chapter.

Upper Pimmit Run

- Evaluate the buffer vegetation adjacent to Pimmit Run and its tributaries in three locations in the Upper Pimmit Run Watershed and determine the locations where restoration work is necessary. The locations include 1,100 feet in Pimmit View Park, 1,400 feet near Olney Road, and 500 feet near Idylwood Road (Buffer Restoration PM9328).
- Evaluate the buffer vegetation adjacent to Pimmit Run and its tributaries in two locations to determine where buffer restoration is required. The locations to be evaluated are 1,100 feet near Rupert Street and 2,600 feet near Hutchinson Street. The location near Rupert Street contains two towers of the high tension utility line that sit directly in the middle of Pimmit Run upstream of the Little League Fields and have caused major destruction to the riparian buffer. Any buffer restoration done in this area should be coordinated with the power company to ensure that the new buffer vegetation will be properly maintained. (Buffer Restoration PM9317)

Middle Pimmit Run

- Evaluate the buffer vegetation adjacent to Salona Branch and unnamed tributaries to Pimmit Run at five different locations in the Middle Pimmit Run Watershed to determine where buffer restoration work is necessary. The locations include 1,900 feet near Langley Place, 1,800 feet near Ballantrae Lane, 1,000 feet of Salona Branch near Darnall Drive, and 900 feet near Wrightson Drive. (Buffer Restoration PM9311)
- Evaluate the buffer vegetation adjacent to Pimmit Run at four locations to determine where buffer restoration work is necessary. The locations are 500 feet near Hardy Drive, two segments in Pimmit Bend Park for a total of 2,400 feet, and 400 feet near Longfellow Court. This project will also include stabilization of a special tree near Madison Court, as described in Problem Area PM53. (Buffer Restoration PM9315)
- Evaluate the buffer vegetation adjacent to 1,400 feet of an unnamed tributary to Pimmit Run near Ranleigh Road to determine where buffer restoration work is necessary. (Buffer Restoration PM9311)

Lower Pimmit Run

- Evaluate the buffer vegetation along 1,200 feet of Stromans Branch and along 1,100 feet of Lower Pimmit Run, both near Rosamora Court, to determine if buffer restoration work is necessary. (Buffer Restoration PM9379)

Little Pimmit Run

- Evaluate the buffer vegetation adjacent to 5,000 linear feet of Little Pimmit Run and its tributaries. The locations are the downstream end of Little Pimmit Run, Little Pimmit Run near Solitaire Lane, and an unnamed tributary to Little Pimmit Run near Rhode Island Avenue (Buffer Restoration PM9301)

Action B3.2: Provide landowner education about the importance of stream buffers and how to manage and protect them (through coordination, brochures, and workshops).

This is a county-wide action and details of this action are presented in Chapter 3.

Action B3.3: Increase enforcement of stream buffer violations.

This is a county-wide action and details of this action are presented in Chapter 3.

Action B3.4: Remove invasive species from stream buffer areas and replant with native plants.

This is a county-wide action and details of this action are presented in Chapter 3.

Action B3.5: Protect stream buffer areas from development.

There are no land conservation projects in this watershed.

Objective B4: Protect and restore wetlands to provide habitat and improve water quality.

Action B4.1: Conduct a detailed inventory of existing wetlands in order to identify areas for

protection or restoration.

A wetlands functions and values survey should be performed. This wetlands survey will provide a baseline condition and mapping of the wetlands in the watershed and help the county and watershed stakeholders make decisions regarding priority wetland conservation and preservation areas. (Wetland Assessment Project PM9988)

Objective B5: Restore natural stream channels, banks and bed to provide improved habitat.

Action B5.1: Utilize bioengineering to restore and stabilize stream banks, restore natural geometries and remove concrete from stream banks and beds.

Utilize bioengineering to restore and stabilize stream banks, restore natural stream geometries, and remove concrete from stream banks and beds. Pimmit Run is actively widening along the majority of its length and the stream protection strategy composite site condition rating was "very poor." Restoring the stream and its tributaries will improve the condition of the aquatic habitat and should be carefully coordinated with the previously described objectives of reducing the quantity and improving the quality of runoff in order to prevent further erosion and channel widening. The locations of proposed stream restoration activities are described below and shown on Maps 8.7, 8.8, and 8.9. It should be noted that the stream reaches identified in the following project descriptions and on the maps designate lengths that will be further evaluated. Restoration work will be done in required areas, not necessarily along the continuous lengths designated.

Upper Pimmit Run

- Evaluate approximately 7,800 feet of Pimmit Run from Leesburg Pike to Great Falls Street for locations where stream restoration is necessary. Proposed activities will include removal of the concrete channel and restoration of the stream to resemble an identified reference reach stream in the same watershed. The new channel will be similar in dimension, pattern and profile to the reference stream. Additional proposed activities include riparian vegetation planting, and selective placement of in-stream structures. The stream restoration in this area should be coordinated with the power company to ensure that the new buffer vegetation will be properly maintained. A portion of this project is in the county's list of master plan drainage projects. (Stream Restoration PM9232)
- Evaluate approximately 2,800 feet of an unnamed tributary to Pimmit Run flowing parallel to Cherri Drive for locations where stream restoration is needed. Ninety percent of this stream has been previously disturbed and is imbedded with sand. Proposed activities will include riparian vegetation planting, channel reconfiguration, and selective placement of in-stream structures. Only natural materials will be used in the construction of all in-stream structures. This project will also include checking the culvert capacity at Dexter Drive. A portion of this project is in the county's list of master plan drainage projects. (Stream Restoration PM9232)
- Evaluate approximately 1,100 feet of Bridge Branch, a tributary to Pimmit Run, west of the Dulles Toll Road for stream restoration locations. Approximately 40 percent of the channel has been altered and the banks are 50 to 70 percent eroded. Proposed activities will include riparian vegetation planting, placement of selective natural in-stream habitat structures and trash and debris removal. A portion of this project is in

the county's list of master plan drainage projects. (Stream Restoration PM9232)

- Evaluate approximately 800 feet of an unnamed tributary to Pimmit Run that runs through Olney Park near the Dulles Toll Road for stream restoration locations. Proposed activities will include riparian vegetation planting, channel reconfiguration, and selective placement of in-stream structures. (Stream Restoration PM9232)
- Evaluate approximately 1,900 feet of Pimmit Run from Great Falls Street to Rupert Street to determine locations where stream restoration is needed. This portion of Pimmit Run is in a transitional phase of stream bank evolution from a stable stream to a widening/stabilizing stream. This type of channel incision is an indication of a change in stream slope. Proposed activities include channel reconfiguration, riparian vegetation planting and installation of in-stream habitat improvement structures. Stream restoration in this area should be coordinated with the power company to ensure that the new buffer vegetation will be properly maintained. (Stream Restoration PM9235)
- Evaluate a 2,600 foot length of the Burke's Spring Branch that flows through Haycock Longfellow Park and Kirby Park for locations for stream restoration. Proposed activities will include removal of riprap along the stream banks, reconfiguring the stream banks, connecting the stream with its floodplain and/or installing soft structure stream bank measures such as live fascines, vegetated geogrids, and brush mattresses. (Stream Restoration PM9235)
- Evaluate approximately 4,300 feet of Darrell Branch in two different stretches, both south of Kirby Road, for locations where stream restoration is necessary. Proposed activities will include channel reconfiguration, riparian vegetation planting, and some bioengineering of the stream banks. (Stream Restoration PM9235)

Middle Pimmit Run

- Evaluate approximately 2,500 feet of Pimmit Run near Claiborne Drive and restore as necessary. The stream is widening and approximately 50 to 60 percent of the stream bank is eroded. Proposed activities will include channel reconfiguration, riparian vegetation planting, placement of in-stream habitat structures, and bioengineering of the stream banks. The stream bank located at 1362 Kirby Road is severely eroded and may need short-term mitigation measures to prevent structural damage to the house located at this property. The bridge located at Kirby Road has experienced flooding in the past and replacement of the bridge should be evaluated as part of this stream restoration project. (Stream Restoration PM9209)
- Evaluate approximately 1,800 feet of Pimmit Run that flows through Kent Gardens Park, as well as 600 feet of an unnamed tributary to Pimmit Run near Dempsey Street for stream restoration locations. The stream banks are widening in order to accommodate the increased flows and a new floodplain is being created within the old channel. The banks are 30 to 50 percent eroded. Proposed activities will include adding in-stream structures, riparian vegetation planting, channel bed and bank reconfiguration, and removing any obstructions present. The stream has been previously altered and further investigation will have to be conducted to determine what proposed activities will be needed. Stream restoration in this area should be coordinated with the power company to ensure that the new buffer vegetation will be properly maintained. A portion of this project is in the county's list of master plan drainage projects. (Stream Restoration PM9209)
- Evaluate approximately 600 feet of Saucy Branch located in Bryn Mawr Park for stream restoration locations. The stream is eroded and has been modified extensively. The upstream portion has been piped and channelized. Proposed activities would include

the establishment of the bed and banks with riparian vegetation and the reconfiguration of the bank slopes. A portion of this project is in the county's list of master plan drainage projects. (Stream Restoration PM9209)

- Evaluate two additional stream segments along Saucy Branch to determine if stream restoration is necessary. The locations to be evaluated are 1,000 feet near Byrnes Place and 2,700 feet near Westbury Road. Proposed activities to stabilize the stream will include placement of in-stream habitat structures, channel reconfiguration, and riparian vegetation planting. This project will also include replacement of the culvert at Davidson Road. (Stream Restoration PM9209)
- Evaluate approximately 1,200 feet of Pimmit Run as it flows through a portion of Pimmit Bend Park for stream restoration locations. The stream is widening with the stream banks eroding and sloughing into the stream. Proposed activities to stabilize the stream will include placement of in-stream habitat structures, channel reconfiguration, and riparian vegetation planting. Floodplain restoration will also be a part of this project; the existing channel of Pimmit Run is disconnected from the floodplain throughout this reach in Pimmit Bend Park as noted in Problem Area PM33. This project is in the county's list of master plan drainage projects. (Stream Restoration PM9209)
- Evaluate approximately 2,600 feet of Pimmit Run and its tributaries in four locations near the Potomac School for locations where stream restoration is necessary. The stream banks are widening to accommodate the increased flows and a new floodplain is being created within the old channel. Proposed activities to stabilize the stream will include placement of in-stream habitat structures, channel reconfiguration, and riparian vegetation planting. A portion of this project is in the county's list of master plan drainage projects. (Stream Restoration PM9209)
- Evaluate approximately 3,400 feet of Bryan Branch and 1,300 feet of an unnamed tributary to Bryan Branch near Forest Villa Lane, for stream restoration locations. Proposed activities to stabilize the stream include placement of in-stream habitat structures, channel reconfiguration, and riparian vegetation planting. This project should also repair the erosion caused along Bryan Branch from an outfall from the Highland Swim and Tennis Club located near the confluence of Bryan Branch with Pimmit Run. (Stream Restoration PM9209)

Lower Pimmit Run

- Evaluate approximately 2,300 feet of Stromans Branch, and 1,000 feet of Pimmit Run near the confluence of Little Pimmit Run to determine locations where stream restoration is necessary. Proposed activities include channel reconfiguration, selective placement of in-stream habitat structures and riparian vegetation planting. A portion of this project is in the county's list of master plan drainage projects. (Stream Restoration PM9208)

Little Pimmit Run

- Evaluate approximately 4,000 feet of Little Pimmit Run that runs through Pimmit Run Valley Run Park and 500 feet at the downstream end of Little Pimmit Run to determine locations where stream restoration is necessary. The stream has 50 percent eroded banks and is in the early stages of stream incision. Proposed activities include riparian vegetation planting, removal of invasive species, selected placement of in-stream habitat structures, and trash/debris removal. On the upstream end of Maddux Lane, several homeowners are cooperating with the Northern Virginia Soil and Water

Conservation District in the design phase of a project to address the erosion problem just downstream of the trail entrance off of Maddux Lane. Also along Maddux Lane, nine lots in the Sycamore Falls subdivision have very steep slopes. A portion of this project is in the county's list of master plan drainage projects. (Stream Restoration PM9203)

- Evaluate approximately 2,600 feet on an unnamed tributary to Little Pimmit Run near Valley Wood Road and Massachusetts Avenue for stream restoration locations. Approximately 50 percent of the stream has been altered and is eroding, causing the stream bed to widen. Proposed activities include channel reconfiguration, selective placement of in-stream habitat structures and riparian vegetation planting. A short 100-foot section of the unnamed tributary to Little Pimmit Run will be realigned with Little Pimmit Run to help eliminate erosion at the stream confluence. A portion of this project is in the county's list of master plan drainage projects. (Stream Restoration PM9203)
- An assessment and evaluation of headwater streams will be performed. Headwater streams with less than 50 acres of drainage area that were not included in the SPA will be evaluated in this project. (Stream Assessment Project PM9997)

Goal C: Provide for long term stewardship of the Middle Potomac Watersheds by building awareness of the importance of watershed protection and providing opportunities for enjoyment of streams.

Watershed stewardship actions will build awareness of the importance of watershed protection and may also provide citizens with an opportunity to improve their watershed. Several watershed-wide projects will help with this goal. The projects under the following objectives will be developed and overseen by county staff, but will depend on the participation of citizens to be successful.

Objective C1: Improve education and outreach.
Public Education Project PM9984 will include the following actions:

- Provide materials to homeowners with septic tank systems to educate them about the proper operation and maintenance of their system.
- Coordinate with community groups to provide technical assistance and suitable educational materials for planting and maintaining healthy buffers.
- Write and distribute a watershed planning fact sheet and lesson plan for teachers that incorporate Standard of Learning 6.7, which deals with watershed protection. Provide specific information about the *Middle Potomac Watersheds Management Plan*.
- Consolidate existing educational materials that describe the value of the watersheds and make them accessible through one county contact.
- Create a watershed planning slide show with watershed basics that can be shown to civic groups, watershed associations, businesses, realtors and other interested groups.
- Provide homeowner brochures about proper yard compost practices and damage done to streams by improper disposal of yard wastes.
- If a stormwater utility is established and it entails billings to individual properties, include educational messages about reducing stormwater runoff (and incentives for doing so) in any mailings.
- Integrate the watershed management plan with existing state and local government planning efforts such as Capital Improvement Project planning, the County

Comprehensive Plan, Area Plans, the Virginia Department of Transportation (VDOT) Six Year Plans, road standards and mitigation projects.

Objective C2: Improve watershed access and stewardship.
Community Outreach Project PM9985 will include the following actions:

- Establish an on-going relationship with civics and science teachers at middle schools and high schools who need to provide their students with opportunities for service credits or hands-on projects.
- Encourage voluntary donation of trail and conservation easements.
- Promote annual or semiannual cleanup projects for streams.
- Form or designate a volunteer community organization to aid in the stewardship of the Middle Potomac Watersheds and to coordinate watershed plan implementation activities with county staff.
- Post signage at stream crossings and watershed divides identifying the waterway to increase public awareness of watershed boundaries.
- Encourage private BMP owners to post signage at their facilities with contact information for reporting problems at the facility.

Enforcement Enhancement Project PM9987 will include the following actions:

- Evaluate the current enforcement of the Chesapeake Bay Preservation Ordinance to determine the best way to prevent the destruction of buffer vegetation.
- Improve enforcement of anti-dumping regulations.

Objective C3: Promote the implementation and maintenance of Low Impact Development (LID) practices.
LID Promotion Project PM9986 will include the following actions:

- Inspire landowners to use LID measures by demonstrating LID benefits via recognition programs for businesses and neighborhoods that implement LID measures voluntarily.
- Demonstrate that LID measures can increase property values.
- Provide marketing ideas to showcase properties using extensive LID methods and publicize environmental and social benefits.
- Provide a training and certification program for landscaping companies to learn LID installation and maintenance methods.
- Contact supply companies that could carry LID materials (such as biofilter soils and plants or pervious pavers) and encourage them to stock those items so that construction companies, landscaping companies and homeowners will have easy access to them.
- Stock educational brochures about LID practices for homeowners at hardware stores, home improvement stores, and nurseries.

8.3 Benefits of Plan Actions

Nineteen BMP retrofit projects, thirty-one LID projects, five Neighborhood Stormwater Improvement Areas, and three new BMP projects have been proposed for the Pimmit Run Watershed to help improve the quality of the stream. Fifteen of the 19 BMP retrofit projects had benefits calculated. The channel erosion control volume to be provided by these projects will be 76 percent of the required channel erosion control volume. These projects control

approximately 146 acres of land. The channel erosion control volume to be provided by the new BMP projects will serve 70 percent of the required channel erosion control volume for the seven acres of drainage area. For the forty-six BMP retrofit projects, LID projects, Neighborhood Stormwater Improvement Areas, and new BMP projects that had benefit calculations performed, the total additional phosphorus removal for the proposed projects is estimated to be 230 lbs/year upon successful implementation of these projects.

Approximately 23,200 linear feet of stream buffers will be assessed to determine buffer restoration locations. The buffer restoration performed will increase the amount of habitat, reduce erosion and provide nutrient reduction for Pimmit Run. Approximately 46,000 linear feet of Pimmit Run will be assessed for stream restoration locations. The stream restoration performed will help minimize the erosion of the stream, provide nutrient reduction, and increase the amount of habitat. The floodplain reconnection projects will help to decrease the velocity of flow in the streams, which will facilitate the stream restoration projects. The infrastructure improvement projects and storm drain study projects will evaluate the storm drain system deficiencies and construct recommended drainage system improvements within the watershed.

8.4 Implementation of Plan Actions

The recommended plan actions described in this chapter will be implemented over the 25-year life of the watershed plan. The initial implementation schedule was developed using prioritization criteria provided by the county which were used to calculate a numerical score. The prioritization scores are on a scale of 0 to 5 with the highest scores having the highest priority in each watershed. Projects which received higher scores were generally located in the subbasins with the poorest existing conditions, in the headwaters of the watershed, on public land, or would provide the greatest benefits.

Once the prioritization score was calculated, other factors were considered when assigning the implementation timeframes. These factors included promoting projects that have high visibility and low costs but that may not have received a high priority score such as buffer restoration projects and obstruction removal projects. Sequencing and geographic location were also considered so that the Group A or B projects, when successfully implemented, will help to minimize the effects of stormwater in a specific subbasin which will make it possible to implement other projects in later timeframes.

The implementation periods have been divided into five-year timeframes with the following designations:

Group A	0 to 5 years
Group B	5 to 10 years
Group C	10 to 15 years
Group D	15 to 20 years
Group E	20 to 25 years

The public education, community outreach, LID promotion, and the enforcement enhancement capital projects were not ranked because they are to be implemented for the

length of the 25-year plan period. Hence, these projects are designated under Group A*.

Priority projects will be implemented within the first fifteen years of the plan in each watershed. Detailed costs and benefits were computed for these projects. The priority projects each have a Fact Sheet, presented in Appendix A, which summarizes key information about the projects. This is only preliminary information and is expected to change as projects enter the design phase of implementation. The priority project total cost for Pimmit Run is $16,940,000. The priority projects are summarized in Table 8.11 below along with the land owners, prioritization scores and implementation groups for the projects.

Coordination with the land owners will be essential to the successful implementation of the plan actions. Cost-sharing opportunities may be explored for projects where both the land owner and the county will benefit. Projects identified on VDOT property will be coordinated directly with VDOT to determine final schedule and cost sharing.

Table 8.11 Summary of Pimmit Run Priority Projects

Project Number	Type	Land Owner	Estimated Cost	Score	Year Group
PM9155	New BMP Project	Fairfax County Public Schools (FCPS)	$70,000	4.25	A
PM9154	BMP Retrofit Project	Marshall Heights HOA[1]	$40,000	4.10	A
PM9161	BMP Retrofit Project	Courthouse Station HOA[1]	$70,000	4.00	A
PM9856	New LID Project	FCPS	$830,000	4.00	A
PM9148	BMP Retrofit Project	Churchill Square HOA[1]	$50,000	3.90	A
PM9160	BMP Retrofit Project	Commercial Development[1]	$110,000	3.90	A
PM9829	New LID Project	FCPS	$350,000	3.90	A
PM9830	New LID Project	Private Organization[1]	$140,000	3.90	A
PM9831	New LID Project	FCPS	$160,000	3.90	A
PM9843	New LID Project	Falls Church School Board	$540,000	3.90	A
PM9859	New LID Project	Residential Development[1]	$310,000	3.85	A
PM9328	Buffer Restoration	VDOT, Fairfax County Park Authority (FCPA), Fairfax County Water Authority, Private Residential and Commonwealth of VA[1]	$150,000	3.80	A
PM9852	New LID Project	Residential Development[1]	$230,000	3.80	A
PM9874	New LID Project	Private Organization[1]	$60,000	3.75	A
PM9144	New BMP Project	FCPA	$70,000	3.70	A
PM9824	New LID Project	FCPS	$240,000	3.70	A
PM9149	BMP Retrofit Project	Residential Development[1]	$50,000	3.65	A
PM9850	New LID Project	Residential Development[1]	$300,000	3.65	A
PM9136	BMP Retrofit Project	Brooks Square HOA[1]	$30,000	3.60	A
PM9822	New LID Project	FCPA	$120,000	3.30	A
PM9819	Neighborhood Stormwater Improvement Area	VDOT and Private Residential[1]	$350,000	2.80	**
PM9301	Buffer Restoration	VDOT, FCPS, FCPA, and Private Residential[1]	$240,000	2.45	A

Project Number	Type	Land Owner	Estimated Cost	Score	Year Group
PM9379	Buffer Restoration	National Park Service and Chain Bridge Forest HOA[1]	$110,000	2.00	A
PM9311	Buffer Restoration	VDOT, FCPS, FCPA, Private Residential and Private Organization[1]	$340,000	1.25	A
PM9120	New BMP Project	FCPS and McLean Park Manor HOA[1]	$90,000	4.10	B
PM9823	New LID Project	FCPS	$140,000	4.10	B
PM9814	Neighborhood Stormwater Improvement Area	VDOT and Private Residential[1]	$710,000	4.00	**
PM9821	New LID Project	FCPS	$400,000	4.00	B
PM9845	Neighborhood Stormwater Improvement Area	VDOT and Private Residential[1]	$620,000	4.00	**
PM9116	BMP Retrofit Project	Hamptons of McLean HOA and McLean Mews HOA[1]	$30,000	3.90	B
PM9872	New LID Project	FCPA	$140,000	3.85	B
PM9877	New LID Project	Private Organizations[1]	$230,000	3.85	B
PM9841	New LID Project	Washington Metropolitan Area Transit Authority (WMATA) [1]	$450,000	3.75	B
PM9232	Stream Restoration	VDOT, FCPA and Private Residential[1]	$6,140,000	3.70	B
PM9153	BMP Retrofit Project	FCPA, Fairfax County Board of Supervisors and Private Development[1]	$190,000	3.60	B
PM9158	BMP Retrofit Project	Residential Development[1]	$100,000	3.60	B
PM9857	New LID Project	Residential Development[1]	$360,000	3.60	B
PM9867	New LID Project	FCPS	$160,000	3.60	B
PM9134	BMP Retrofit Project	Private Organization[1]	$60,000	3.45	B
PM9464	Infrastructure Improvement	Private Organization[1]	$160,000	2.65	B
PM9140	BMP Retrofit Project	WMATA[1]	$130,000	3.85	C
PM9142	BMP Retrofit Project	City of Falls Church[1]	$60,000	3.85	C
PM9873	New LID Project	Private Organization[1]	$190,000	3.85	C
PM9175	BMP Retrofit Project	Linway Park of McLean HOA[1]	$30,000	3.35	C
PM9106	BMP Retrofit Project	Residential Development[1]	$160,000	3.30	C
PM9133	BMP Retrofit Project	McLean Province HOA[1]	$70,000	3.30	C
PM9805	New LID Project	Residential Development[1]	$240,000	3.15	C
PM9862	New LID Project	Commercial Development[1]	$370,000	3.15	C
PM9988	Wetland Assessment Project	Watershed-wide Project	$100,000	2.95	C
PM9978	Neighborhood Stormwater Improvement Area	VDOT and Private Residential[1]	$450,000	2.90	**
PM9825	New LID Project	Commercial Development[1]	$180,000	2.80	C
PM9839	New LID Project	Residential Development[1]	$120,000	2.80	C

Project Number	Type	Land Owner	Estimated Cost	Score	Year Group
PM9871	New LID Project	Falls Church School Board[1]	$130,000	2.75	C

[1]These projects will require coordination with land owners prior to implementation to determine cost sharing and project schedule.

**These projects will be coordinated directly with VDOT.

The non-priority projects, including the watershed stewardship actions in Year Group A*, are shown in Table 8.12 below along with the land owners, prioritization scores, and implementation groups for the projects. While the projects in Groups A and A* will be implemented right away, the remainder of the projects in the table should be thought of as future opportunities. Conditions in the Middle Potomac Watersheds may be very different in fifteen years time, so the projects in Groups C, D, and E will be re-evaluated at that time.

Table 8.12 Summary of Pimmit Run Non-Priority Projects

Project Number	Type	Land Owner	Score	Year Group
PM9984	Public Education Project	Watershed-wide Project	N/A	A*
PM9985	Community Outreach Project	Watershed-wide Project	N/A	A*
PM9986	LID Promotion Project	Watershed-wide Project	N/A	A*
PM9987	Enforcement Enhancement Project	Watershed-wide Project	N/A	A*
PM9997	Stream Assessment Project	Watershed-wide Project	N/A	A*
PM9902	Dumpsite/Obstruction Removal	Private Organization, FCPA, Private Residential, VDOT, and WMATA[1]	1.95	A
PM9937	Dumpsite/Obstruction Removal	FCPA	1.95	A
PM9889	Neighborhood Stormwater Improvement Area	Private Residential, VDOT, and FCPA[1]	2.85	**
PM9317	Buffer Restoration	VDOT, Private Residential, Private Organization, Brooks Square HOA, McLean Province HOA, Montivideo Square HOA, and Residential Developer[1]	2.75	C
PM9491	Infrastructure Improvement	Private Residential[1]	2.70	C
PM9465	Infrastructure Improvement	VDOT and Private Residential[1]	2.35	**
PM9466	Infrastructure Improvement	Private Residential[1]	2.35	C
PM9468	Infrastructure Improvement	Private Residential, VDOT, and Private Organization[1]	2.35	**
PM9827	Neighborhood Stormwater Improvement Area	Private Residential and VDOT[1]	3.85	**
PM9170	BMP Retrofit Project	Highlands of McLean HOA[1]	3.65	D

Project Number	Type	Land Owner	Score	Year Group
PM9804	New LID Project	Private Organization[1]	3.65	D
PM9807	New LID Project	FCPS	3.30	D
PM9813	New LID Project	Private Organization[1]	3.15	D
PM9112	BMP Retrofit Project	Lynwood HOA[1]	3.10	D
PM9826	New LID Project	Private Organization[1]	3.05	D
PM9235	Stream Restoration	Private Residential, VDOT, FCPA, Private Organizations, Brooks Square HOA, Westmoreland Square HOA, and Residential Developer[1]	3.00	D
PM9810	New LID Project	Private Organization[1]	3.00	D
PM9818	New LID Project	Commercial Development[1]	2.80	D
PM9346	Floodplain Restoration	FCPA, VDOT, and Private Residential[1]	2.65	D
PM9347	Floodplain Restoration	FCPA, FCPS, and Private Residential[1]	2.65	D
PM9494	Infrastructure Improvement	Private Residential and VDOT[1]	2.60	D
PM9469	Infrastructure Improvement	Private Residential, FCPA, VDOT, and Private Organization[1]	2.35	**
PM9492	Infrastructure Improvement	Private Residential and VDOT[1]	2.15	**
PM9490	Infrastructure Improvement	Private Residential and FCPS[1]	2.05	D
PM9417	Infrastructure Improvement	VDOT, FCPA, and Private Residential[1]	1.90	**
PM9203	Stream Restoration	Private Residential, VDOT, FCPA, and Residential Developer[1]	1.60	D
PM9451	Infrastructure Improvement	Private Residential[1]	1.60	D
PM9880	New LID Project	Private Organization[1]	3.60	E
PM9176	BMP Retrofit Project	Private Residential and Private Organization[1]	3.20	E
PM9209	Stream Restoration	Private Residential, Private Organization, FCPA, and McLean Park Manor HOA[1]	2.20	E
PM9315	Buffer Restoration	FCPA, Private Organization, Private Developer, Old Dominion Square HOA, and Private Residential[1]	2.00	E
PM9208	Stream Restoration	VDOT and Private Residential[1]	1.95	E
PM9382	Floodplain Restoration	Private Residential[1]	1.80	E
PM9663	Flood Protection Project	Private Residential[1]	1.80	E
PM9796	Fecal Coliform Source Study	Watershed-wide Project	1.65	E

[1]These projects will require coordination with land owners prior to implementation to determine cost sharing and project schedule.

*All public education and outreach projects will be implemented for the entire 25-year period.
**These projects will be coordinated directly with VDOT.