2006 VPDES Permit Annual Report

Fairfax County, Virginia

VPDES Permit No. 0088587

March 7, 2007

The following annual report is submitted to the Virginia Department of Conservation and Recreation (DCR) in compliance with Fairfax County's Virginia Pollutant Discharge Elimination System (VPDES) permit. The permit was issued January 24, 2002, and expired January 24, 2007. The county is currently operating under an administrative continuance of the existing permit in anticipation of permit renewal. This report covers the previous calendar year from January 1, 2006, to December 31, 2006, and describes all of the activities performed to satisfy the county's permit requirements.

Annual Report requirements as specified in Part I section C.4 of the permit are bold and underlined below and *the stormwater program requirements as specified in the permit, Part I sections B.1, C.1, C.2 and C.3 of the permit are in italics* under the applicable annual report section. The estimate of annual expenditures for the reporting period, with a breakdown for the major elements of the Storm Water Management Program and the budget for the following year, are presented in sub-section d) of this report.

NOTE: Fairfax County's response to the annual report and permit requirements are indented.

a) Provide the status of the components of the Watershed Management Program to include a summary of the implementation of each component and an evaluation of the effectiveness of each component.

The Municipal Separate Storm Sewer System and any stormwater structural controls shall be operated in a manner that reduces the discharge of pollutants to the maximum extent practicable (B.1.a).

Watershed management plans are one component of the Virginia Pollutant Discharge Elimination System Permit requirements, a requirement of the Chesapeake Bay Tributary Strategies, and are part of the Fairfax County Board of Supervisors' Environmental Agenda. Two watershed management plans have been completed and are being implemented. Two more, Cub Run/Bull Run and Difficult Run, were approved for implementation by the Board of Supervisors in February 2007. Two additional plans are in the final draft stage with completion slated for 2007. Combined, these six plans will cover more than 55 percent of the land area in the county. In 2006, work was initiated for the remaining 45 percent, and the watershed plans are anticipated to be completed in the next few years. The watershed plans provide an assessment of watershed conditions, encourage public involvement, and prioritize recommendations for implementation of stormwater management projects.

The goals of the plans include protecting and restoring County streams by identifying strategies to prevent and remove pollution, to support Virginia's commitment under the Chesapeake Bay 2000 Agreement, to help restore the bay, and to replace the current 1970s-era watershed master plans, while preserving property values. These plans will provide a basis for the evaluation and implementation of solutions for protecting and restoring the health of receiving waters, ecological systems, and other natural resources of the county.

The development of comprehensive watershed management plans began in 2003 with the Little Hunting Creek Watershed. The plans include the following tasks: 1) review and synthesis of

previous studies and data compilation; 2) evaluation of current watershed conditions and projection of stormwater runoff from ultimate development conditions; 3) development of non-structural and structural watershed management projects to improve streams; 4) development of capital project implementation options including preliminary cost estimates, cost/benefit analysis, and prioritization; 5) public involvement to gain input, provide education, and build community support ; and 6) documentation of the watershed management plan.

a.1) Structural and Source Controls

a.1 (a) Report all inspections performed on SWM facilities and BMP Ponds.

In 2006, the county inspected all 1,209 county maintained Stormwater Management (SWM) and Best Management Practice (BMP) facilities at least once. This was well above the permit requirement to inspect the facilities once during the term of the permit. In addition, the county inspected 457 (20%) of the 2,270 privately maintained facilities as required by the permit. After the large storm in the summer of 2006, Fairfax County employees performed emergency inspection services on 517 of the county's SWM and BMP facilities. In addition, a detailed inspection report including photographs and Geographic Information System (GIS) maps was provided to the facility owner upon completion of the inspection. Education of owners/operators of stormwater management facilities continues to be effective in achieving the desired level of service for these facilities.

a.1 (b) Report all maintenance performed on SWM facilities and BMP Ponds.

During 2006, the county mowed 659 dam embankments and performed 196 maintenance work orders to correct deficiencies in county maintained SWM/BMP facilities. In addition, the county inspected 215 miles of county-maintained storm sewers for deficiencies and wrote 261 orders to correct deficiencies, all of which were completed.

The county maintained dams that are state regulated are inspected every year by county maintenance staff, and a biennial inspection is conducted by staff with expertise in dam design and construction. The purpose of the inspections is to identify any safety or operational items in need of corrective action and to ensure that the dams satisfy state requirements for dam safety. State issued operating permits are typically valid for six years and are reissued at the end of each permitting period. Permit reissuing is tied to the most recent biennial inspection and its associated operation and maintenance plan. Based on these biennial inspections, as well as other less formal inspections, a work program to correct deficiencies and address maintenance items is established and implemented. Critical items such as the stability of the dam embankment and the functioning of the water control structures are addressed on a priority basis. Routine items such as mowing are accomplished on a scheduled basis, currently five times per year.

a.2) Areas of New Development and Significant Redevelopment

The permittee shall comply with and enforce all components of the County's Comprehensive Land Use Plan that are relevant to storm water discharges. The goals of such controls shall be to limit increases in the discharge of pollutants from storm water as a result of development and significant re-development (B.1.b).

On November 15, 2004, the Board of Supervisors adopted an amendment to the Comprehensive Plan pursuant to the comprehensive planning requirements of Virginia's Chesapeake Bay Preservation Act and Chesapeake Bay Preservation Area Designation and Management

Regulations. Included in the amendment were revisions and additions to Comprehensive Plan text and policies as well as the incorporation into the plan of a "Chesapeake Bay Supplement." The amendment satisfied the specific requirements identified by the state while more comprehensively addressing water resource conditions, issues, policies, regulations, and initiatives in support of the county's commitment to the regional Chesapeake Bay Program, in furtherance of the County Board of Supervisors' "Environmental Excellence 20-year Vision Plan," and in support of other environmental and open space goals. The supplement presents information regarding water quality factors, water pollution sources, water quality conditions, and shoreline conditions in the county within the context of the county's land use and its water quality policies, regulations, and initiatives. The supplement culminates in an analysis and series of recommendations addressing water pollution sources, infill development, redevelopment, shoreline erosion control, and shoreline access.

The Environmental Quality Corridor (EQC) policy, as found in the Environment section of the Policy Plan volume of the county's Comprehensive Plan, does not directly address stormwater discharges. However, it is particularly relevant to the county's overall water quality management program as it serves to identify, protect, and, in some cases, restore environmentally-sensitive resources. Specifically, the EQC policy recommends the preservation and restoration of areas such as floodplains, steep slopes (slope gradients of 15% or greater) adjacent to streams or floodplains, wetlands connected to stream valleys, minimum stream buffers (variable in width depending on topography), and sensitive habitat areas. While there is no county regulation requiring EQC protection (Resource Protection Areas (RPA) and floodplain provisions in the County Code protect many, but not all, EQC areas), the application of the EQC policy during the zoning process has been effective in protecting, and in some cases restoring, environmentally-sensitive areas.

Another area of interest with respect to the Comprehensive Plan is an objective addressing water quality and stream protection, and there is a series of policy statements in the plan related to this objective. This section of the Plan was amended in the year 2000 to provide explicit support for better site design and low impact development (LID) measures, and opportunities to implement such measures are explored during the zoning process. In a number of cases, staff have negotiated successfully for measures such as reductions in proposed impervious cover and the provision of biofiltration facilities (rain gardens) to provide water quality control through infiltration.

The Environment and Development Review Branch of the Department of Planning and Zoning (DPZ), in coordination with other DPZ staff and staff from other county agencies, reviewed 143 rezonings and related applications (e.g., amendments), 70 special exceptions and amendments, and 67 special permits in 2006 for environmental considerations.

a.3) Roadways

Public streets, roads, and highways maintained by the permittee shall be operated and maintained in a manner to minimize discharge of pollutants, including those pollutants related to deicing or sanding activities (B.1.c).

The county maintains the roadways and parking lots of public facilities such as government centers, libraries, fire stations, police stations, health centers, bus transit facilities, park and ride lots, commuter rail stations, and approximately 5 miles of road segments. In an effort to limit the discharge of sand and deicing materials into the county's streams, sand and chemical treatment are provided only when dictated by safety. Magnesium chloride is used on sidewalk applications as necessary, as it is more environmentally acceptable than sodium chloride. In an effort to

reduce the discharge of these materials into the county's streams, the county performed sweeping operations at a total of 92 sites in 2006 following the winter season.

a.4) Retrofit

Receiving water quality impacts shall be assessed for all storm water management facilities. When the permittee determines water quality impact, they shall continue to evaluate and implement retrofitting existing storm water management facilities and areas without stormwater controls (B.1.d).

In 2006, the county retrofitted seven stormwater management facilities to provide enhanced water quality. The retrofits included enhancement of water quality through excavation of silt, installation of BMP plates, creation of fore-bays and shallow wetlands, and construction of bioretention swales and basins (rain gardens). The retrofits are designed to reduce the volume of nutrients discharged, and to reduce the impacts of storm flows downstream. These water quality retrofits enhance nutrient uptake, provide an increase in water infiltration, uptake and transpiration, and create habitat for wildlife. Retrofits also include structural repairs or improvements to principal and emergency spillways, outfall pipes, and dams.

Two regional stormwater management facilities were substantially completed during 2006, providing BMP control for 60 acres and controlling stormwater runoff from 355 acres of land. There were an additional two regional ponds under construction and five regional facilities in the design plan stage in 2006.

a.5) Pesticides, Herbicide, and Fertilizer Application

The permittee will implement controls to reduce the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied to public right of ways, parks, and other municipal property. The permittee shall develop and implement a program within one year of the effective date of the permit to achieve the above goal (B.1.e).

Fairfax County's Pesticide, Herbicide, and Fertilizer (PHF) Application Program Plan was developed in 2002 and 2003, and was submitted to DEQ on January 24, 2003. A survey of PHF usage by county agencies was conducted in 2003 and 2004 according to the plan, and an application rate reduction report was generated. An updated survey was conducted in 2006 to document current usage. County agencies responsible for county public rights of way, parks, and other municipal property were surveyed as they are part of the county's Municipal Separate Storm Sewer System (MS4) permit. The county is in the process of working with other county agencies in accordance with the PHF plan to develop strategies for development and implementation of a nutrient management plan (NMP) and an integrated pest management (IPM) plan. All applications of pesticides, herbicides, and fertilizers were applied by certified applicators.

a.6) Illicit Discharges and Improper Disposal

a.6 (a) Report all identified illicit dischargers. This shall include site inspections and a description of any follow-up activities associated with illicit dischargers (see No. 12 below for dry weather screening);

Non-storm water discharges to the Municipal Separate Storm Sewer System will be effectively prohibited (B.1.f).

The Fire and Rescue Department's (FRD) Hazardous Materials and Investigative Services section aggressively enforces County Code Chapters 62, 105 and 106 in conjunction with the Department of Public Works and Environmental Services and the Department of Planning and Zoning, and issues criminal citations during the investigations of Hazardous Materials Incidents. Chapters 105 and 106 contain provisions that address illicit discharges to state waters and the county's storm drainage system. Procedural Memorandum No. 71-01, Illegal Dump Site Investigation, Response, and Cleanup, outlines the process of follow-up action for non-emergency incidents of illegal dumping, establishes action under County Code Chapter 46, Health or Safety Menaces; and provides referrals for action on complaints that are neither public health hazards nor regulated. During 2006, the Hazardous Materials Technical Support Branch performed oversight management to 61 sites that had ongoing remediation activities. This includes 39 active sites, and 22 closed sites .

The Sanitary Sewer Infiltration Abatement Program conducts wastewater flow measurements and analysis to identify areas of the wastewater collection system with excessive inflow/infiltration problems and uses closed circuit television (CCTV) to inspect trunk sewer mains in an effort to specifically identify defective sewer lines for repair and rehabilitation. In 2006, 246 miles of old sewer lines and 22 miles of new sewer lines were inspected, resulting in the identification of sanitary sewer lines and manholes needing repair and rehabilitation. In 2006, approximately 75,058 feet of sanitary sewer lines were rehabilitated, bringing the total length of sewer lines repaired over the past nine years to 1,230,315 feet (233 miles).

a.7) Spill Prevention and Response

A program to prevent, contain, and respond to spills that may discharge into the Municipal Separate Storm Sewer System shall be implemented. The spill response program may include a combination of spill response actions by the permittee (and/or another public or private entity), and legal requirements for private entities within the permittees' jurisdiction (B.1.g).

The Fire and Rescue Department (FRD) responds to all reported incidents of hazardous material releases, spills, and discharges. Staff are trained and equipped to initiate spill control measures to reduce the possibility of hazardous materials reaching the MS4 drainage systems. Resources available to FRD personnel include personal protective equipment, technical tools and equipment for spill control, and absorbent products such as pads and booms for spill containment. The FRD also maintains a contract with a major commercial hazardous materials response company to provide additional containment and clean-up support for large-scale incidents.

In 2006, the Fire and Rescue Department's Hazardous Materials and Investigative Services (HMIS) section received 395 complaints, of which 347 were reported spills, leaks or releases of hazardous materials. There were 60 hydraulic oil spills/releases (mostly from trash trucks), 73 fuel oil or home heating oil releases, 43 gasoline releases, and 32 diesel fuel releases. There were 66 responses to incidences which had the immediate potential to discharge, or did discharge, hazardous materials directly into the stormsewer.

HMIS, through vigorous enforcement of appropriate codes and ordinances, ensures that the responsible party takes appropriate spill control and cleanup action. In both emergency and non-emergency spills that reach the municipal storm sewer system, HMIS utilizes appropriate enforcement actions to ensure that proper cleanup activities are undertaken to protect and restore the environment, as well as recover costs incurred by the county for initial emergency response to the incident.

HMIS monitors, on a long-term basis, contaminated sites that have a potential for the contaminant coming in contact with surface waters or stormwater management facilities. As a part of the Oversight Program, HMIS, as an agent of the Director of DPWES, accepts, reviews, and processes requests to discharge treated groundwater from remedial activities at those sites into county stormsewers. HMIS then monitors the discharge for the duration of the agreement. HMIS staff receive regular training in pollution prevention measures and in proper response procedures for incidences where pollutants or spills are found that have the potential of reaching stormsewers. As part of the Household Hazardous Waste collection program, HMIS staff are trained in the proper handling of hazardous wastes.

a.8) Industrial & High Risk Runoff
a.8 (a) Report on all inspections of any new or previously unidentified facilities.
a.8 (b) Report an updated list of all industrial storm water sources and VPDES permitted facilities that discharge into the MS4.

A program to identify and control pollutants in storm water discharges to the Municipal Separate Storm Sewer System (municipal landfills; other treatment, storage, or disposal facilities for municipal waste; hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313) and any other industrial or commercial discharge the permittee determine are contributing a substantial pollutant loading to the Municipal Separate Storm Sewer System shall be implemented under this program (B.1.h).

The county has not located any new or unidentified industrial facilities that discharge directly into the county's MS4.

Fairfax County's efforts regarding the permit requirements related to Industrial and High Risk Runoff are also presented in sections a.12.b and -c of this report, which contain a discussion of the county's Wet Weather and Industrial and High Risk Runoff Monitoring Program.

Fairfax County's Division of Solid Waste Disposal and Resource Recovery (DSWDRR) is responsible for the operation of the I-95 Landfill located at 9850 Furnace Road, Lorton, Virginia 22079, and the I-66 Transfer Station/Closed Landfill, located at 4618 West Ox Road, Fairfax, Virginia 22030. Both facilities are located on county property. Both facilities are covered under a VPDES General Permit. The I-95 Landfill is registered as permit number VAR051076, and the I-66 Transfer Station/Closed Landfill is registered asVAR051074. Both permits expire on June 30, 2009.

The I-95 Closure Project was designed to complete the capping of approximately 130 acres of the Municipal Solid Waste section of the landfill and was approved by the Virginia Department of Environmental Quality (DEQ). The closure project is divided into four phases, with each phase consisting of approximately 40 acres. Phases III and IV of the closure project are currently being implemented in the central area of the landfill. The final cover system consists of 18 inches of low-permeability soil and a 15-inch protective cover/vegetative support layer. As a result of this work, stormwater is managed more efficiently and infiltration is reduced significantly, in turn providing for less generation of leachate. The final cover system also minimizes the need for post-closure maintenance. In addition, a new stormwater detention pond is currently under construction north of the ash cell in Area Three Lined Landfill, Phase IIB.

The Area Three Lined Landfill, Phase IIB project is part of the I-95 Area Three Lined Landfill Project (ATLL). The Phase IIB project has a disposal capacity of 375,000 tons, and will accept ash from the Energy/Resource Recovery Facility (E/RRF) located at the I-95 Complex and a similar facility in Alexandria. This phase has a service life of four years. The 7.5-acre cell

consists of a bottom lining system that includes two feet of low-permeability soil, a double synthetic liner (60 mil HDPE) system, and a leachate collection and detection system.

Staff performs quarterly visual inspections of the stormwater outfalls located at the I-95 Landfill and the I-66 Transfer Station/Closed Landfill. The inspections are performed in each quarter of the calendar year (January through March, April through June etc.). Annual benchmark sampling is performed between July 1 and June 30 of the monitoring year. The costs for the required VPDES monitoring, testing, and other related activities are included as part of the operating budget for each facility and are not funded separately. This is because most of the activities required by the VPDES permit are also required under the operating permits granted by VADEQ. Test results and inspection reports are maintained at the division's main office, and copies are on file at the facility's administration offices.

Training in pollution prevention for facility staff is provided and is a part of the I-95 Landfill and I-66 Transfer Station/closed landfill waste disposal permits. Pollution Prevention Plans are maintained at each facility and are updated when conditions change. Additionally, spill kits are readily available at each location. Water quality test results conducted to satisfy VPDES permit conditions have been satisfactory.

a.9) Construction Site Runoff

a.9 (a) Report all Erosion and Sediment Control Plans the permittee has approved for sites disturbing greater than 1 acre of land for that year.

A program to reduce the discharge of pollutants from construction sites (land disturbing activities equal to or greater than one acre) shall be implemented under this program (B.1.i).

Fairfax County's Erosion and Sediment (E&S) Control Plan for land disturbing activities resulted in 38,052 Erosion and Sediment inspections, approximately 3,200 per month, during 2006 on all sites under construction in Fairfax County. This represents an increase of 19% from last year. There were 370 notices of violation given to construction sites not conforming to the approved plans. The county's E&S program is fully approved by DCR.

A class and a workshop were conducted through the Engineers and Surveyors Institute on constructability issues. This unique gathering examined how to prepare, review and implement quality plans from project conception to completion. Experienced construction superintendents shared their experience. The class and the associated field trip were attended by both private and public sector personnel.

Several policies were implemented through letters to the land development industry aimed at improving stormwater management. Two amendments to the Public Facilities Manual (PFM) were adopted, and in February 2006, a Letter to Industry was issued to advise the industry of these amendments. The first amendment clarified the requirements for drainage divides. The second amendment revised the requirements of "adequate" stormwater outfall from a development site and clarified the extent of downstream review.

During 2006, a total of 886 E&S plans were submitted and approved for projects that would disturb a land area of 2,500 square feet or more. Monthly letters were written to DCR informing them of these individual sites.

A 24-hour hotline established by Department of Public Works and Environmental Services continues to be a means for citizens to report complaints about erosion and sedimentation. More information is available with regard to reporting environmental concerns or possible violations of Fairfax County Environmental Regulations at DPWES' Web site:

http://www.fairfaxcounty.gov/dpwes/publications/urbanfor.htm

a.10) Storm Sewer Infrastructure Management

A program to maintain and update the accuracy and inventory of the storm sewer system shall be implemented. The permittee shall submit to the Department of Environmental Quality, Northern Virginia Office a plan and schedule by which the entire storm sewer Infrastructure will be mapped. The plans and schedule shall be submitted within 180 days of the effective date of this permit (B.1.j).

A Storm Sewer Infrastructure Management Plan and Schedule was submitted to DEQ on July 24, 2002, in accordance with the permit and has been updated with each annual report (see Attachment 1 for this year's update.) The requirements in the plan have been fulfilled and the infrastructure inventory will continue to be updated in accordance with the permit.

The inventory of stormwater management and storm sewer facilities is tracked through the use of the county's GIS. The county's 400-square-mile jurisdiction is currently divided into 436 tax map grids. The documented inventory of storm drainage infrastructure has been digitized in GIS format for management and identification purposes, and the county is continually field-verifying the inventory, verifying ownership, and maintaining/updating the GIS layer.

a.11) Public Education

A public education program shall be implemented (B.1.k).

Fairfax County has more than one million residents, making its public education and involvement program an essential component of stormwater management. The program raises awareness about stormwater issues facing the county and educates residents about what they can do to help improve Fairfax County's waterways. A summary of the education activities conducted by Fairfax County in 2006 follows.

Fairfax County gives presentations to various groups throughout the county regarding stormwater management and watershed basics. The presentations include an overview of watersheds, stormwater management, and actions that residents can take to protect the water quality of local streams, the Occoquan Reservoir, the Potomac River, and the Chesapeake Bay. In 2006, the county presented this information to homeowner's associations, school groups, civic associations, and others. In addition, the county works with residents on each stormwater project, of which education is a component.

Fairfax County hosts educational booths at several public events annually to raise awareness among residents about stormwater issues and to encourage watershed-friendly behaviors. The following is a list of 13 events in which Fairfax County participated as an exhibitor or environmental educator: Celebrate Fairfax, Centreville Days, Cross County Trail Day, Fall for Fairfax, Fairfax County Earth Day Exposition, Earth Day Celebration Tree Planting, Geographic Information Systems Week, Hurricane Awareness, Middle Ridge Community Night Out, Invasive Management Area Program, Mount Vernon Town Hall Meeting, Providence District Environmental Workshop, and Riverside Fall Festival at Riverbend Park.

In partnership with the Northern Virginia Regional Commission and surrounding jurisdictions, Fairfax County implemented a region-wide radio outreach campaign. The radio campaign first aired in July, 2005, and was continued in 2006. In 2006, the radio campaign aired on 8 stations a total of 1,115 times. It was aimed at raising awareness among residents about harmful non-point

source pollutants and actions residents can take to help protect the water quality of local streams and the Chesapeake Bay. Pre-campaign and post-campaign surveys were conducted, and one key result was that 75 percent of the listening audience indicated that the radio campaign increased their level of concern. Another result of the survey was that 50 percent of listeners indicated they would think or act differently as a result of the radio campaign.

Environmental issues and concerns are a part of many science courses. The Fairfax County Public Schools curriculum for its approximately 14,000 seventh grade students includes a course titled "Investigations in Environmental Science." During this course, the students study basic ecology concepts and how to apply them to their local watershed and the Chesapeake Bay ecosystem. The Biology curriculum for the approximately 10,000 ninth grade students in the county includes exploring the interactions of populations in ecology. The course in Geosystems includes a section on the hydrologic cycle and a study of the effect of economic and public policy on our natural resources. This course exposes students to specific environmental projects across the county. Students in advanced courses in biology and environmental science do school-based projects that examine geomorphologic changes, nonpoint source pollution, and stream monitoring.

Fairfax County Stormwater Management continues to partner with Fairfax County Public Schools to implement the Meaningful Watershed Field Experience (MWFE) Program. The program incorporates field trips for students in the seventh grade “Investigations in Environmental Science” course and creates a hands-on learning experience that calls for the students to collect data on and analyze a variety of water quality parameters. Fairfax County Public Schools have adapted some of their materials from information provided by the Chesapeake Bay Foundation. Stormwater Management assists this program by training Life Science teachers in the county’s water quality monitoring techniques and program; local, state, and federal policies surrounding watershed protection; and stewardship opportunities offered by the county for teachers and students.

Fairfax County Stormwater Management has partnered with the county’s Department of Wastewater Management to implement a Sewer Science program for high school students. This new program promotes an understanding of stormwater, its relationship with wastewater, how the water and the land are connected, and how each individual can make a difference in the health of our environment. This program has been presented to over 1700 student in 16 schools.

a.12) Monitoring Programs

a.12 (a) Report on the Dry Weather Screening Program; (1) Number of outfalls inspected and test results; (2) Follow-up activities to investigate problematic areas and illicit dischargers.

The permittee shall continue ongoing efforts to detect the presence of illicit connections and improper discharges to the Municipal Separate Storm Sewer System. Representative outfalls of the entire Municipal Separate Storm Sewer System must be screened at least once during the permit term. Screening methodology may be modified based on experience gained during actual field screening activities and need not conform to the protocol at 40 CFR 122.26(d)(1)(iv)(D). Sample collection and analysis need not conform to the requirements of 40 CFR Part 136 (B.1.l.1).

In 2006, the county selected 106 MS4 outfalls for dry weather monitoring and recorded physical parameters at each outfall. Water was found to be flowing at 21 of the outfalls, and was tested for a range of pollutants (ammonia, conductivity, surfactants, fluoride, pH, potassium, phenol, copper and chlorine) using field testing kits. Of the outfalls tested, four required follow-up investigations because pollutants were detected. Upon retest of these four sites, only one continued to exceed the water quality criteria for chlorine. DEQ and DCR were both notified of a potential illicit

connection. In addition, because chlorine was involved, the Fairfax County Water Authority was contacted and notified of a potential water line leak. A retest of this site a few weeks later showed that water was no longer flowing and DEQ and DCR were notified that the problem had been corrected.

a.12 (b) Report on the Wet Weather Screening Program; (1) Number of outfalls inspected and test results; (2) Follow-up activities to investigate problematic areas and illicit dischargers.

The permittee shall investigate, and address known areas within their jurisdiction that are contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System. The Permittee shall specify the sampling and nonsampling techniques to be used for initial screening and follow-up purposes. Sample collection and analysis need not conform to the requirements of 40 CFR Part 136 (B.1.l.2).

In 2006 the county reviewed other jurisdictions' wet weather screening and industrial high risk monitoring programs in Virginia and other states, and reviewed federal and state regulations and guidelines pertaining to these permit requirements. This information was used in conjunction with county GIS data layers to identify those industrial and commercial facilities with the greatest potential for discharging pollutants, and to select sites for monitoring. Four sites were selected and monitoring began in early 2007.

a.12 (c) Report on the Industrial and High Risk Runoff Monitoring Program

The permittee may include monitoring for pollutants in storm water discharges to the Municipal Separate Storm Sewer System which include: municipal landfills; other treatment, storage, or disposal facilities for municipal waste; hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313. Monitoring may also be required on other industrial or commercial discharges the permittee determines are contributing a substantial pollutant loading to the Municipal Separate Storm Sewer System. Permittee may require the industrial facility to conduct self-monitoring to satisfy this requirement (B.1.l.3).

This part of the permit is satisfied through the Wet Weather Screening Program in the preceding section, a.12 (b).

a.12 (d) Report on the Watershed Monitoring Program; (1) Monitoring plan; (2) Summarize the implementation including, Storm Event Data, Station test results, Seasonal Loadings and Yearly Loadings.

The permittee shall develop a long-term monitoring plan and trend analysis to verify the effectiveness and adequacy of control measures in the County's Storm Water Management Plan and to identify water quality improvement or degradation. The permittee shall submit an approvable monitoring program to the Department of Environmental Quality no later than one year from the effective date of this permit. The program shall be implemented within two years of the effective date of the permit. Monitoring shall be conducted on representative stations to characterize the quality of storm water in at least two watersheds during the term of this permit (C.1).

Fairfax County's Watershed Water Quality Monitoring Program was developed in 2002 and 2003 and submitted on January 24, 2003. It is designed to evaluate the effectiveness and adequacy of control measures in the county's Storm Water Management Program Plan, and to identify areas of water quality improvement or degradation. The county's goals for the watershed monitoring program are to: (1) obtain data for the development, calibration, and verification of water quality simulation models; and (2) determine whether the concentrations of constituents in stormwater runoff from different residential land-uses (low density and medium/high density) are statistically

significant. To support these goals, a long-term monitoring program was established at two in-stream stations. The first station (VNA) drains a 152-acre medium/high density residential area in the Accotink Creek watershed, while the second station (OQN) drains a 415-acre low density residential area in the Sandy Run watershed. Station VNA has an estimated imperviousness of 25.1 percent, while station OQN has an estimated imperviousness of 10.1 percent.

Automated sampling equipment is used to collect stormwater for water quality monitoring. Collection is triggered by preset rainfall amount and stream stage level. The rain gauges, designed to National Weather Service specifications, operate by a tipping bucket mechanism capable of measuring rainfall at 0.01-inch intervals. Sampling equipment consists of the following equipment: Isco 6700 automatic sampler; Isco 730 bubble flow module; Isco Pal 1101 pH and temperature monitors; and American Sigma rain gauges. To report data from the Isco 6700 automatic sampler and Pal 1101 pH monitor, data loggers use Isco FlowLink4 and Isco Samplink software programs, respectively. The FlowLink4 reports include hourly summary reports and graphs (plotted using five-minute data intervals) for rain and flow. The Isco Pal pH monitor measures pH during the entire monitoring period; readings are recorded every fifteen minutes and whenever a sample is collected. For quality control, flow depth calibrations and flow depth measurement checks, along with rain gauge precipitation checks, are conducted during each station set up.

A total of four storms were monitored over this reporting period. Rainfall, flow, and water quality analysis data sheets from the monitored storms are attached. The results of a statistical analysis to determine if there were significant differences between observed constituent concentrations at the two stations, as well as seasonal and annual unit-area constituent loadings from the monitored sites for 2005 and 2006 using the Simple Method, are also attached.

It has been determined that there is a significant statistical difference for concentrations of four of the nine of the constituents measured at the two sites: Ammonia Nitrogen (NH3-N), Nitrate plus Nitrite Nitrogen (NO3+NO2-N), Total Kjeldahl Nitrogen (TKN), and Total Phosphorous (TP). The differences for the other five constituents were not statistically significant. A point estimate for the difference in NH3-N concentrations is 0.205 mg/l, while a point estimate for the difference in TKN concentrations is 0.770 mg/l. Monitoring will continue in 2007, and the full data set will be used to determine if the observed high variance in constituent concentrations from the medium/high density residential site can be reduced sufficiently to allow detection of statistically significant differences for other constituents. The data set will also support the development of continuous water quality models that provide more refined prediction of water quality loadings. The data and data analysis, "Watershed Monitoring Program and 2005 and 2006 WQ Data Summary", are part of the attachment.

a.12 (e) Report on the Bioassessment Monitoring Program; (1) Monitoring plan; (2) Summarize test results.

The permitee can use and is encouraged to use a rapid bioassessment monitoring program to demonstrate the effectiveness of the stormwater management plan. The program will be implemented within one year of the effective date of the permit and an approvable program must be submitted within six months of the effective date of the permit (C.2).

A probability-based site selection sampling methodology was used to identify randomly-selected stream bioassessment locations throughout Fairfax County. These sites were stratified and proportionally distributed throughout the county based on Stahler stream order. This methodology eliminates any site selection bias and is commonly used as a cost-effective way of obtaining statistically defensible determination of stream conditions at a countywide scale. A

total of 52 sites were sampled in 2006: 40 sites randomly selected in Fairfax County as part of the monitoring program; two coastal plain reference locations in Fairfax County; and ten piedmont reference locations in Prince William National Forest Park. Results suggest that approximately 82 percent of the county's waterways are in "Fair" to "Very Poor" condition based on a decrease in biological diversity. The monitoring program is part of the framework to establish a baseline to evaluate future changes in watershed conditions.

a.12. (f) Report on the Floatable Monitoring Program

The permittee shall conduct surveys of floatables. The intent of the survey is to document the effectiveness of the litter control programs for the Municipal Separate Storm Sewer System. Surveys shall be done in accordance with the following procedures: c) The above may be accomplished through the "Adopt a Stream" program referenced in Part I.B.1.k.2 (C.3.c).

In 2006, the county promoted the "Adopt a Stream" program by providing support and staff for five cleanup programs. A great example is the biannual cleanup organized by Friends of the Occoquan in April and October of each year. County staff provided coordination and leadership at one of four cleanup sites. This event is a partnership between many organizations with participation by the Bull Run Rotary, Lake Braddock Secondary School, South County Secondary School, Osborne Park High School, Woodbridge High School and JROTC, Lake Braddock Crew Boosters, Prince William Soil & Water Conservation District, and the Girl Scouts of America. Other partners in this event included the Fairfax Water Authority, Clean Fairfax Council, Prince William Clean Community Council, Occoquan Watershed Coalition and the DCR. At the October 14, 2006, cleanup, 156 volunteers collected 167 bags of trash and other items including car batteries and tires. This is a very important effort because the Occoquan Reservoir is a major source of drinking water for Northern Virginia.

The county continues to work with and support the following organizations that coordinate large and small-scale volunteer cleanups:

- The Alice Ferguson Foundation (Potomac River Watershed Cleanup)
- The Virginia Department of Conservation and Recreation
- The International Coastal Cleanup
- The Friends of the Occoquan

b) Proposed changes to the Storm Water Management Program including those changes that were implemented during the reporting year;

Storm Water Management Program Review and Update (B.4).

The county continued to implement the existing program per the permit.

c) Revisions, if necessary, to the assessments of controls and the fiscal analysis of the effectiveness of new controls established by the Storm Water Management Program;

As the county approaches build-out conditions, it has become increasingly challenging to mitigate the impacts of impervious area and nonpoint source pollution on streams. Several efforts through the existing stormwater management program are helping to reduce or minimize water quality impacts. They include: the mandate of controls (BMPs) by the Chesapeake Bay Preservation

Ordinance; development and implementation of Comprehensive Watershed Management Plans; development of a retrofitting program for existing developed areas; and changes to current stormwater management codes, policies, ordinance and guidelines.

d) Annual expenditures for the reporting period, with a breakdown for the major elements of the Storm Water Management Program, and the budget for the year following each annual report;

Department of Public Works and Environmental Services
The county has not tracked expenditures to meet permit requirements separate from its overall stormwater program, nor have we separately tracked the resources other agencies expend on programs that contribute towards meeting MS4 permit conditions. The total expenditures in the Stormwater Business unit associated with stormwater management for calendar year 2006 was approximately $14,177,757. The Stormwater Planning Division and the Maintenance and Stormwater Management Division expenditures were $1,275,105 and $8,216,003 respectively. The capital stormwater expenditures for stormwater public works construction, storm drainage bond construction, storm drainage Pro Rata Share and stormwater program requirements was $4,686,649.

Other costs not directly associated with stormwater management but of importance to the stream environment are incurred by the Division of Solid Waste Disposal and Resource Recovery, DPWES. This division is responsible for the operation of the I-95 Landfill located at 9850 Furnace Road in Lorton, Virginia, and the I-66 Transfer Station Landfill (closed), located at 4618 West Ox Road in Fairfax, Virginia. Annual VPDES expenditures are estimated to be $180,000 for the I-95 facility and $90,000 for the I-66 facility (closed). In addition, this division operates the Household Hazardous Waste program, which costs approximately $560,000 annually.

As part of the annual budget, the county Board of Supervisors authorized one penny of the real estate tax to be dedicated to the stormwater management program for FY 2007, totaling $21.9 million dollars. The one cent of the real estate tax is currently in the county executive's proposed budget for FY 2008. The anticipated continuation of the one cent of the real estate tax dedication should provide greater funding stability, accommodate program growth, and provide continuity across fiscal years.

Department of Planning and Zoning
There are currently four full-time professional positions in the Environment and Development Review Branch, DPZ, devoted to environmental planning. Additional staff resources from other DPZ branches or divisions will occasionally address water quality issues. The environmental planning function in DPZ was funded at approximately $260,000 in FY 2006. A similar budget allocation was established for FY 2007. The branch provides a full range of environmental review, and does not track stormwater efforts independently from other environmental efforts.

e) Identification of water quality improvements or degradation.

Overall, the stormwater control program has complied with the permit to date. However, as the county approaches build-out, increasing challenges are placed on the MS4 system to control pollution and water quality impairments to water bodies. The county, in anticipation of the increasing demands, has attempted to implement best management practices to meet the challenges and to achieve holistic watershed restoration and preservation. Efforts include enhanced infrastructure maintenance and inspections, watershed plans that are being developed

and implemented, improved construction inspection program, and ongoing outreach efforts to increase public awareness. It is anticipated that utilization of existing best management practices should have a positive long-range impact on the future health of county watersheds and help to meet the goal of restoring the Chesapeake Bay.