

EXECUTIVE SUMMARY

The submission of this annual progress report to the Maryland Department of the Environment (MDE) fulfills requirements specified under the Frederick County National Pollutant Discharge Elimination System (NPDES) Permit No. MD0068357. This second-generation Phase I permit is effective from March 11, 2002 through its expiration date of March 11, 2007 and covers stormwater discharges from the municipal separate storm sewer system (MS4) in Frederick County. Continuing progress has been made in developing the stormwater management program since the 2004 Annual Report was submitted in March 2005. NPDES funding remains adequate to meet the conditions of the permit. The sections in this annual report follow specific sections presented under Part III, Standard Permit Conditions, of the County's NPDES Permit to document how required elements of the County's stormwater program are being implemented.

Permit Administration/Legal Authority

The report identifies contact information for key Frederick County personnel responsible for the various program components that support compliance with the County's NPDES permit. This report also documents certification from County Attorney that Frederick County possesses the authority to perform the activities described in 40 CFR 122.26(d)(2)(i) and the County's NPDES permit.

Source Identification

During 2005, Frederick County continued to make progress in enhancing its Geographic Information System (GIS) capabilities and in compiling source identification data about stormwater management and storm drainage infrastructure. In January 2005, Frederick County awarded a major contract to collect orthophotography at a mapping scale of 1:120, which will update aerial photography obtained in 2000 at a smaller mapping scale. It will provide two-foot contour data and higher resolution of ground features, enabling change detection and more contemporary ground feature interpretations.

Stream Corridor Assessment (SCA) data for the Upper and Lower Monocacy Watershed Restoration Action Strategy (WRAS) are now available in GIS format. Additional SCA stream walk data in Ballenger Creek, Upper Linganore, and Lower Linganore are also available in GIS format. The data gathered from the SCAs have been used to supplement the efforts of the County's Watershed Restoration and Retrofit Assessments as well as grant-funded community restoration projects.

County staff continued to make extensive improvements to the County's GIS system in 2005, and specific progress related to NPDES requirements is documented. The ArcReader map application is installed on staff laptop computers allowing field and desktop use of the GIS information, including stormwater system structures and pipes, aerial photography, soils group data, fire station locations, Maryland state watershed delineations, hydrography, County roadways, and other spatial data. The data are especially useful for spill response and other watershed protection activities. A successful pilot project was conducted in 2005 that collected

roadway asset information. Water and Sewer planning areas were completed in 2004 but the official data will not be released to the public until the ordinance changes and parcels data are available. The pilot parcel project for Frederick County was awarded in 2004. The Department continues its extensive quality control review of the vectorized parcels as they are completed by Planning Region. A copy of the Frederick County Division of Public Works (DPW) GIS Strategic Plan is included in the report as an Appendix. Frederick County continues to share its storm drain system data structure with Phase II municipalities within the County to assist in their NPDES stormwater system data collection.

At present, all SWM facilities have been entered into Frederick County's urban BMP database. There are 541 entries in the database, including 30 new facilities completed on or after January 1, 2005. New facilities are entered into the database upon approval of the as-built survey. During the past year, the County continued to improve the entire database by updating and editing where necessary to ensure database integrity.

Discharge Characterization

Long-term chemical monitoring has continued at the Peter Pan Run instream monitoring station since May 1999. Since December 2002, the outfall at Pond R has been monitored as a land use-specific stormwater management structure. Monthly baseflow and storm samples are analyzed for 13 constituents. Physical and biological data are collected from four permanent stream monitoring stations on Peter Pan Run and its tributaries. Quality assurance project plans have been completed for the County's water chemistry and biological and physical monitoring.

Between October 1, 2004 and September 30, 2005 (Water Year [WY] 2005), 8 of the targeted 12 storm events were monitored at both the Peter Pan Run instream and Pond R outfall stations. Drought conditions were prevalent during the latter part of the summer and several storms were not monitored due to onset and movement unpredictability and the requirement that 72 hours of dry pre-storm conditions be maintained. Field staff also attempted during this time to increase the complement of storm events for which first flush samples could be taken (*i.e.*, avoiding events that began between midnight and dawn) and to sample larger rain events.

At the instream station, annual average event mean concentrations (EMCs) of several analytes increased in WY 2005 in comparison to WY 2004. The annual average EMC for TSS was 214% higher than WY 2004. The phosphorus EMC was 177% higher than last year, likely a consequence of higher TSS. At the instream station during WY2005, the annual average EMC for zinc was similar to that noted in WY2004. The EMC for lead increased by 139%. Elevated concentrations of fecal coliform included a result of over 240,000 organisms/100 mL at Pond R outfall during the November 5, 2004 storm event.

All annual average storm event EMCs at the Pond R outfall site, except for phenols and oil and grease, were less than the previous year. All storm event EMCs at the Pond R outfall site were less than the average EMCs at the instream Peter Pan Run site. Percent differences between outfall and instream EMCs ranged from 3% (BOD) to 98% (TSS).

Total annual loadings of all analytes in Peter Pan Run increased during the current monitoring year in comparison to WY 2004, except for BOD (decreased 14%), TPH (decreased 53%), phosphorus (decreased 2%), zinc (decreased 6%), and nitrate and nitrite (decreased 36%).

Annual loadings of all pollutants at Pond R were less in WY 2005 than in WY 2004 by at least 93% except for oil and grease (6.5 times more). Cadmium and lead loadings were zero in the current year after having been non-zero in WY 2004. The pronounced decline in loadings between the past two water years is most likely due to the reduction in annual rainfall (and consequent runoff volume). Just 18 acre-feet of storm runoff was recorded at the Pond R station in the current year in contrast to 333 acre-feet in WY 2004.

In 2005, all benthic IBI scores for Peter Pan Run sites were either Fair or Poor, consistent with previous results. The score for site PPAN-03 dropped into the Poor category in 2003 after a record-breaking drought caused the stream to completely dry up in 2002. Fish IBI scores have remained consistent since sampling began in 1999, with each site usually scoring in the same category each year. The number of taxa at each site has fluctuated.

In situ water quality values for temperature, pH and conductivity were consistent with those of previous years, and all were within a normal range. Physical stream conditions within Peter Pan Run were generally similar to those in years past, though certain stream parameters are beginning to show a pattern of slow change over time. PPAN-04 showed an increase in embeddedness (from 45% in both 2003 and 2004 to 75% in 2005) and a corresponding decrease in epifaunal substrate quality.

The cross sectional survey at PPAN-01 shows that the channel has widened (by approximately 1.8 feet more to the right since 2003) as a large gravel bar has filled in the center and the left half of the channel. At PPAN-02, the cross sectional profile shows that material scoured downward during 2004 has been partially replaced in 2005, possibly because of slumping of the right bank. Changes in the cross sectional profiles of PPAN-03 and PPAN-04 suggested only minor alterations within their channels.

Wolman pebble count data indicate that, in 2001, much finer sediments began to appear at the four stations, a shift in substrate size that coincided with increased land clearing and development upstream. Results for 2005 were comparable to 2004 at all stations, with medium or coarse gravel being the median particle size.

The third annual field survey to assess the effectiveness of the *2000 Maryland Stormwater Design Manual* for stream channel protection was conducted during October and November 2005. Cross-section profiles indicate that for the most part, differences between the three surveys in 2003-2005 were minimal. Change in 2005 was most evident at sites XS-03 and XS-04A. Erosional forces were concentrated at the outside bends of stream channels, and a moderate rate of lateral channel erosion was evident in the outside bend profiles, particularly at OB-2.

Results of Bank Erosion Hazard Index (BEHI) and Near-bank Shear Stress Ratings analyses indicate that there were significant erosive forces acting on banks of each reach.

An initial analysis has been completed for three cross-sections, each at the downstream end of a tributary, that are assumed to reflect the overall impacts of stormwater management and other factors influencing hydrology and fluvial geomorphology within each catchment. These analyses of bed stability and sediment competence should be considered as preliminary findings only. Continued monitoring over additional years will help characterize the rate of change during development.

A steady-state HEC-RAS hydraulic model was constructed for Peter Pan Run Tributary 1 and its tributary streams. Both pre-settlement and agricultural conditions were modeled for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year recurrence interval flows. In subsequent phases of the project, developed scenarios will be constructed and compared with these baselines.

Management Programs

Frederick County maintains its current Stormwater Management Program in compliance with Environmental Article, Title 4, Subtitle 2, Annotated Code of Maryland. The County will continue to do so through plan review and inspection of all developer projects and through implementation of the *2000 Maryland Stormwater Design Manual*.

The Environmental Compliance Section (ECS) of the Frederick County Division of Public Works continues to conduct a regular program of preventative maintenance inspections of all stormwater management facilities built, approved, and operating within the County. Required triennial inspections of all facilities Countywide are completed on a rotating basis. The County continues to maintain an acceptable stormwater management program in accordance with State stormwater management laws, including implementation of appropriate County ordinances. The County remains committed to implementing the latest stormwater management technologies while addressing the concerns of the development community. County inspections in 2005 met the requirements for triennial inspections in its inspection of more than 150 facilities. During the period from January 1, 2005 to December 31, 2005, County SWM maintenance inspections included wet/dry screenings of 169 facilities with visual inspections for illicit connections.

Frederick County has been implementing the stormwater management design policies, principles, methods, and practices of the *2000 Maryland Stormwater Design Manual* and subsequent changes to the Code of Maryland Regulations through the County's Stormwater Management Ordinance and its Design Manual, both of which were revised in 2001.

Frederick County continues to improve its Illicit Connection Detection and Enforcement Program. As part of this program, the County worked with the Center for Watershed Protection (CWP) to create a training manual and a training program for responsible personnel. CWP developed a technical manual, *Illicit Discharge Detection and Elimination – A Guidance Manual for Program Development and Technical Assessments* in October 2004. Once the manual was developed, the County worked with CWP to provide training for employees of Phase I & II municipalities in Frederick County, held on April 28, 2005. The County intends to implement the reconnaissance inventory protocol detailed in CWP's IDDE manual.

As part of the Watershed Restoration Action Strategy (WRAS) process for both the Lower and Upper Monocacy River watersheds, approximately 466 miles of stream have already been walked in the County using the Stream Corridor Assessment (SCA) process. The County intends to use the SCA-collected pipe outfall data to generate a list of questionable outfalls, conduct further SCA surveys on additional miles of priority watersheds, and incorporate IDDE inventory data into future SCA data collection.

Over the past three years, all SWM structures were inspected for illicit connections or discharges through the County's ongoing maintenance inspection program. During the period from January 1, 2005 to December 31, 2005, the County conducted inspections at 169 sites. Field screening results are recorded in the County's facilities database to ensure proper tracking and to follow up when potential problems are detected. Chemical results from wet/dry screenings did not indicate any illicit discharges, largely because many outfalls were dry due to frozen conditions.

All County-owned properties requiring an NPDES industrial discharge permit must be identified and the County must submit documentation that a permit has been applied for or obtained. Consultation by County staff with various County agencies and MDE in 2004 identified County-owned properties that were required to apply for either an Industrial Stormwater permit or a No Exposure Certification for Exclusion. All permit applications have been submitted and are on record with MDE. Permitted facilities are now required to develop pollution prevention plans. The County intends to provide guidance on how to prepare these plans.

Frederick County has maintained an active program to respond to illegal dumping and spills, including expanding its procedures for public reporting and responding to citizen complaints. In addition, DPW's coordination with the Office of Emergency Response to develop procedures for addressing spills, provide HAZ-MAT training, and track permit information will further augment the County's capabilities for spill response. The County did not have any spill responses in 2005.

Frederick County's Erosion and Sediment Control program is well established and the County's delegation was under review at the end of the reporting period. The County strives not only to maintain an acceptable program, but also to excel at site compliance and minimum inspection guidelines. County agents work closely and cooperatively with the SCD and the NRCS, including regular meetings. Program staff have regular contact with the building community. The County's QA/QC site evaluations are a strong component of the program, as are improved record-keeping and mobile access to project files.

Frederick County continues to implement a successful and effective series of Responsible Personnel Certification classes to educate construction site operators regarding erosion and sediment control requirements. Over the past year, 50 individuals successfully completed the certification during the four classes held by the County. Frederick County plans to continue to implement this successful training program in the coming years. In addition, the County has met requirements for reporting of earth disturbances in 2005 despite database incompatibilities. Staff are seeking ways to improve efficiency and timeliness of quarterly reporting.

In 2005, NPDES Program staff made diverse and far-reaching impacts through its public outreach and education program. The County hosted five public community meetings related to its WRAS planning and outreach process during 2005. Citizens learned about the WRAS findings, expressed their priorities and concerns, and helped identify priority restoration sites in their watersheds. The County continued to enhance its Landowner Tracking Database to target specific outreach initiatives.

Through the WRAS, staff partnered with a number of outside groups. For example, the County partnered with the Potomac Conservancy in its Bennett Creek Restoration Initiative and with Frederick County Master Gardeners in the Libertytown Stewards project. In addition, staff mapped and communicated assessments of trash dumping sites identified during the Stream Corridor Assessments and provided resulting information on accessibility and feasibility to Volunteer Frederick for use by area nonprofits during the Big Sweep trash collection effort. As in 2004, the County sponsored Greener Lifestyle workshops with Community Commons and, jointly with Alliance partners, hosted a booth at the Frederick County Fair in September.

County staff worked with the Monocacy & Catoctin Watershed Alliance, which will play a significant role in the implementation of the Upper and Lower Monocacy WRAS plans.

Other County programs successfully implemented public outreach related to NPDES. Both the Frederick County Recycling Program and the TransIT Services of Frederick County expanded their services in 2005; the Transportation Authority of Maryland (TAM) selected TransIT services as the 2005 "Best Fixed Route System" in the State. The Frederick County Health Department provides citizen education and outreach materials on proper septic system maintenance and well testing and protection. Monocacy & Catoctin Watershed Alliance partners worked in cooperation with staff of the Town of Thurmont to plan and offer a Wastewater 101 workshop at ThorpeWood on November 16, 2005, addressing decentralized wastewater treatment.

During 2005, Frederick County continued to implement recommendations from its 2002 assessment of road maintenance practices. The County's Office of Highways and Transportation continues to implement the recommendations of the Road Maintenance Report and experiment with new technology to reduce its activities' impacts on water quality. Improvements were made in street sweeping; litter control; deicing materials; inlet cleaning; data collection; and reducing the use of pesticides, herbicides, fertilizers and other pollutants. Significant improvements were made in reporting practices in 2005.

Frederick County continues to implement responsible use of herbicides, pesticides, and fertilizers. Agencies strive to minimize use of these materials to the lowest rate required for effectiveness. Applicators have proper certification. Integrated Pest Management programs are in place. Earlier evaluations of herbicide use along roadsides led to a shift away from one potentially harmful herbicide to a more environmentally friendly alternative.

Frederick County continues to build upon and strengthen the various components of its NPDES stormwater management programs. As detailed throughout this report, the past year brought progress in many areas. Frederick County government has been particularly effective in leading

well-coordinated efforts involving multiple agencies and organizations working toward common goals for water quality improvements and better management of the County's watersheds. The County has capitalized on opportunities to leverage substantial funding for outreach and restoration. Frederick County has supported NPDES Phase II municipalities with execution of their permits.

Watershed Restoration

During the last year, Frederick County continued to build upon its previous efforts to identify and evaluate water quality problems in its priority watersheds by conducting biological and physical stream monitoring. Currently, monitoring is being conducted approximately every two to three years in the County's three highest priority watersheds: Lower Bush Creek, Ballenger Creek, and Lower Linganore Creek (one of these is monitored each year on a rotating basis). In 2005, the County continued its annual stream monitoring program in the Peter Pan Run tributary to Bush Creek. The County also continued its long-term monitoring by revisiting eight of the ten stations in Lower Linganore Creek watershed established in the 2001 watershed assessment study. Additional monitoring took place at two previously established stations in Ballenger Creek and at two new stations in Bennett Creek in support of on-going restoration and community outreach efforts.

Frederick County Government has focused its restoration tracking reductions in nutrients, sediments, and impervious area and in tracking BMP statistics (*e.g.*, area treated or linear feet of stream restored). Frederick County Government has taken a role in a wide variety of watershed restoration efforts. Projects are sorted according to funding source (County CIP, NPDES community projects, Non-NPDES community projects, and Monocacy & Catoctin Watershed Alliance (MCWA)/NPDES Partnerships Projects). Based on BMP pollutant efficiency numbers from the Bay Program and other sources, it is estimated that upon completion of NPDES projects, nitrogen will be reduced by 684.3 lbs/yr, phosphorus by 153.3 lbs/yr, sediment by 51,479.5 lbs/yr, and the total treated impervious area will equal 171.8 acres. Frederick County continues to work towards restoration and BMP implementation in an effort to decrease the amount of nutrients leaving the landscape.

Frederick County completed a baseline watershed assessment for Lower Bush Creek in 2001. A number of recommendations to improve water quality were made in this report and the County continues its efforts to implement these recommendations, and other initiatives, to improve watershed conditions in Lower Bush Creek. DPW is using County General Funds from the Capital Improvement Program (CIP) budget for the Lower Bush Creek watershed to design and install a Low-Impact Development (LID) retrofit project at the Urbana High School.

Frederick County continues to implement recommendations from the previously completed Watershed Assessment of Ballenger Creek. A restoration and retrofit assessment, a study begun in 2004 to identify and evaluate specific opportunities for improved stormwater management controls and stream restoration in Ballenger Creek watershed, was completed in August 2005. Elements of this study included a review of existing watershed information (including recent SCA stream walk data), map review to target efforts and solutions to the most promising areas, field investigations to refine proposed concepts for solutions, an April 2005 public workshop to

solicit input from local stakeholders on problem areas and solution types, prioritization of opportunities, and development of a report containing recommendations and conceptual plans for the best watershed restoration opportunities. The assessment identified 74 candidate project sites that could be used to improve watershed conditions. Prioritization of these candidate projects identified 15 “Tier I” sites that presented the best opportunities for the County’s CIP program.

Using County General Funds from the CIP budget, DPW is currently working on a stream restoration project behind the Ballenger Creek Elementary School. The project site is located on a section of Ballenger Creek that runs through County property adjacent to the school. The goal of the project is to improve the condition of approximately 450 linear feet of stream to improve watershed water quality, in-stream and riparian habitat, and aesthetic conditions. Also in the vicinity of Ballenger Creek, the Maryland State Highway Administration (SHA) has received funds from the Transportation Enhancement Program (TEP) to restore a small, unnamed tributary to Tuscarora Creek.

Frederick County completed an assessment of Lower Linganore Creek watershed in June 2002. Versar, Inc. is currently working on a stormwater retrofit/stream restoration assessment for the Upper and Lower Linganore Creek Watersheds. This assessment is scheduled for completion in April 2006. The results of the Assessment will be used to identify CIP project(s) that will reduce untreated urban impervious surfaces and improve water quality and habitat. Special emphasis will be placed on the reductions of sediment and phosphorus to Lake Linganore, which has TMDLs for these pollutants.

Frederick County is actively working on other restoration efforts in Linganore Creek watershed. It secured \$25,000 in grant funding from the Chesapeake Bay Trust (CBT) for three or more community restoration projects in Libertytown, including rain garden establishment and riparian buffer restoration. The National Fish and Wildlife Foundation (NFWF) is providing \$40,000 in funding to improve water quality in the Linganore Creek watershed by facilitating installation of five miles of riparian buffer and to support educational initiatives targeted to increase stewardship ethics among watershed citizens. Pre-visit analysis, mapping, and on-site “House Calls” will analyze a minimum of 750 acres of riparian properties, roughly divided in half between developed and agricultural areas. The County is in the final period of negotiation with MDE for a \$216,237 grant for its Linganore Creek TMDL - Urban Demonstration Project under the EPA 319 (h) program. In this project, key landowners will be targeted and offered increased technical assistance in the design and installation of BMPs for sediment and phosphorus control.

Frederick County continues to work towards its watershed restoration goals by working with the Monocacy & Catoctin Watershed Alliance and other local partnerships.

Program Funding

Frederick County’s NPDES program has consistently maintained adequate funding to support the requirements of the program. The FY 2006 budget restored previous funding levels and included an additional Project Manager I position to support NPDES permit activities. The Fiscal Year 2006 budget included \$420,186 for the NPDES program operating funds, plus \$144,583 in salary and fringe funds for the program manager and staff, for a total of \$564,769.

In FY 2006, Frederick County received \$9,800 from the Potomac Conservancy for landowner outreach and map creation in the Fahrney and Pleasant Branches of the Bennett Creek Watershed as pass-through funds from the Chesapeake Bay Trust (CBT). The Division of Public Works is in the process of acquiring funds for FY 2007 that meet the budget needs for NPDES. The request maintains consistent funding from the previous year.

In FY 2006, Frederick County received \$9,800 from the Potomac Conservancy for landowner outreach and map creation in the Fahrney and Pleasant Branches of the Bennett Creek Watershed. These funds were passed through from the Chesapeake Bay Trust (CBT). Frederick County DPW also secured its own \$25K CBT grant for the Libertytown Stewards project in the Linganore Watershed. DPW won several other grants that will begin in the 2006 portion of FY 2006 and continue into future fiscal years. The National Fish and Wildlife Foundation awarded DPW \$40K for outreach in the Linganore Watershed using EPA 319 funds. DPW also applied, through MDE, for \$216K in 319(h) Incremental Funds to be used for restoration projects in the Linganore Watershed.

Capital Improvement Program (CIP) funding has been approved for four projects to date. A design engineering RFP was issued in spring 2005 and three teams were selected. The first task awarded was a stream restoration project at Ballenger Creek Elementary School. A second task, to design stormwater retrofits at Urbana High School, was also awarded. The NPDES Storm Sewer System CIP funding for FY 2005-6 reflects the permit-defined goal to "maximize water quality benefits in priority subwatersheds using efforts that are definable and the effects of which are measurable." The FY 2007 CIP budget request contains several items (Monitoring Equipment for Bush Creek Watershed Restoration Project, Assessment funds for Bennett Creek Watershed, and engineering and construction costs for the Upper and Lower Linganore Creek Watershed).

A Conceptual Budget Plan was presented to the Board of County Commissioners to address CIP funding needs to fulfill NPDES permit requirements anticipated for 6 years (FY 2007-2012). The 6-year CIP plan, which defines specific projects and funding requirements, will continue to be refined annually as the scope of these capital projects is better defined. Future funding requests include funds to construct Linganore Creek Watershed Projects, to design and construct projects in Bennett Creek Watershed, and to initiate the process in the Catocin and Tuscarora Creek Watersheds.

Pollutant Loadings and Removals

Annual stormwater loadings from municipal outfalls in Frederick County were calculated using the Simple Method for each pollutant of interest. An overall summary of pollutant removals at outfalls in Frederick County, by associated management practices, shows that 40% of total suspended solids are removed by these facilities, with only 27% to 24% of total phosphorus and nitrogen being removed, respectively, and about 20% each of BOD and COD being removed. Removal of metals ranged from 27% to 42%.

Special Programmatic Conditions

Frederick County continues to work toward meeting the Chesapeake Bay 2000 Agreement and updates. In 2005, Frederick County continued the efforts that earned it recognition in the previous year. Additionally, the County participated in many activities, including attending Tributary Team meetings; sponsoring the Potomac Sojourn; preparing a brief for the Board of County Commissioners on the Chesapeake Bay Financing Authority Recommendations and continuing to inform leadership about upcoming Bay initiatives; co-sponsoring and attending the Frederick County Agricultural BMP forum and Farm Tour with the Upper Potomac Tributary Team, Council of Governments Bay Policy Committee, and participating in Bay-related meetings and workshops, including presentations.

NPDES Permit Renewal Application

Frederick County is preparing its application for NPDES permit renewal. Materials will be provided to MDE once approved by the Board of County Commissioners.

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LIST OF ACRONYMS

BMP	best management practice
BOD	5-day biological oxygen demand
BOE	Board of Education
C2K	Chesapeake Bay 2000 Agreement
CBT	Chesapeake Bay Trust
CFR	Code of Federal Regulations
CIP	Capital Improvements Program
CN	curve number
COMAR	Code of Maryland Regulations
CREP	Conservation Reserve Enhancement Program
CWP	Center for Watershed Protection
DEP	Montgomery County Department of Environmental Protection
DNR	Maryland Department of Natural Resources
DO	dissolved oxygen
DOHO	Department of Highway Operations
DP	dry pond
DPW	Division of Public Works
ECS	(Frederick County) Environmental Compliance Section
EDSD	extended dry detention pond
EDSW	extended wet detention pond
EMC	event mean concentration
EPSC	Environmental Permits Service Center
ESRI	Environmental Systems Research Institute, Inc.
FCDPZ	Frederick County Department of Planning and Zoning
FEMA	Federal Emergency Management Agency
GIS	geographic information system
GPS	global positioning system
IB	infiltration basin
IBI	Index of Biotic Integrity
ICPRB	Interstate Commission on the Potomac River Basin
IDDE	Illicit Discharge Detection and Elimination
IPM	integrated pest management
IT	infiltration trench
LID	Low Impact Development
MBSS	Maryland Biological Stream Survey
MC	mean concentration
MCWA	Monocacy and Catoctin Watershed Alliance

LIST OF ACRONYMS (Continued)

MDA	Maryland Department of Agriculture
MDE	Maryland Department of Environment
MDP	Maryland Department of Planning
MGD	million gallons per day
MPN	most probable number
MS4	Municipal Separate Storm Sewer System
NFWF	National Fish and Wildlife Foundation
NOAA	National Oceanic Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	(U.S. Department of Agriculture) Natural Resources Conservation Service
OGS	oil/grit separator
PTSA	Parent Teacher Student Association
PUD	planned unit development
PWP	Potomac Watershed Partnership
QAPP	quality assurance project plan
QA/QC	quality assurance and quality control
RBP	Rapid Bioassessment Protocols
RFP	request for proposal
R/R	restoration/retrofit
SCA	stream corridor assessment
SCD	Soil Conservation District
SF	sand filter
SHA	State Highway Administration
SM	shallow marsh
SW	swale
SWM	stormwater management
TAM	Transportation Association of Maryland
TDS	total dissolved solids
TEP	Transportation Enhancement Program
TKN	total Kjeldahl nitrogen
TMDL	Total Maximum Daily Load
TN	total nitrogen
TP	total phosphorus
TPH	total petroleum hydrocarbons
TSAC	Transportation Services Advisory Council
TSS	total suspended solids

LIST OF ACRONYMS (Continued)

USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WLA	Waste Load Allocation
WP	wet pond
WRAS	Watershed Restoration Action Strategy
WWTP	wastewater treatment plant
WY	water year