APPENDIX 1

MARYLAND DEPARTMENT OF THE ENVIRONMENT

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT APPLICATION SUMMARY

MONTGOMERY COUNTY

PART I. STATEMENT OF AUTHORITY

A. United States Environmental Protection Agency

Section 402 of the Clean Water Act (CWA) prohibits the discharge of any pollutant to waters of the United States from a point source, unless that discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. Under the provisions of the NPDES regulations, stormwater discharges from municipal separate storm sewer systems are considered point sources that require an NPDES permit.

B. State of Maryland

The Maryland Department of the Environment (MDE) has been granted authority by the United States Environmental Protection Agency (EPA) to issue NPDES permits in accordance with statutory requirements promulgated by the CWA. The Environment Article, Title 9, Subtitle 3, Part IV, Annotated Code of Maryland requires a discharge permit for any activity that could cause or increase the discharge of pollutants into waters of the State. Additionally, Code of Maryland Regulations (COMAR) 26.08.04 requires MDE to administer the NPDES program as part of the State's own discharge permit system. These regulations also define municipal separate storm sewer systems as point sources of pollution subject to NPDES permit requirements.

C. Permittee Responsibilities

Section 402(p) of the CWA, as amended by the Water Quality Act of 1987, requires NPDES permits for stormwater discharges from large municipal separate storm sewer systems. A large municipal separate storm sewer system is defined in the CWA as serving a population of 250,000 or more. Montgomery County, according to the United States Department of Commerce's 1990 Census, has a total population of 757,027 and is therefore considered a large municipality. As a result, the County was required to submit a two-part NPDES permit application. Montgomery County submitted partial Part 1 and Part 2 applications within the timeframe established by the NPDES regulations which resulted in the issuance of a Consent Order by MDE on August 5, 1993. On November 30, 1994, Montgomery County submitted an NPDES stormwater application that was prepared to satisfy MDE's Consent Order and the EPA's regulations for permitting stormwater discharges from municipal separate storm sewer systems. Appendix 1 summarizes the County's NPDES stormwater application. NPDES regulations require permit conditions that effectively prohibit non-stormwater discharges and reduce the discharge of pollutants to the "maximum extent practicable." Specific permit conditions are summarized in Permit #MS-MO-95-006 and Appendix 2. Appendix 3 outlines MDE's long-term monitoring database and a spreadsheet for the reporting and tracking of NPDES data is included as Appendix

4. Additionally, NPDES regulatory requirements can be found in Appendix 5.

PART II. BACKGROUND

A. Problems Associated with Stormwater Pollutants

Pollutants in stormwater discharges from many sources are largely uncontrolled. The *National Water Quality Inventory, 1990 Report to Congress* provides a general assessment of water quality based on biennial reports submitted by the States under Section 305(b) of the CWA. This report indicates that roughly 30% of identified cases of water quality impairment are attributable to stormwater discharges. During rain events that produce runoff, numerous pollutants including sediment, nutrients, bacteria, oil, metals, and pesticides are washed into storm sewer systems from diffuse sources such as construction sites, residential neighborhoods, commercial areas, parking lots, roads, and industrial facilities. Additionally, illegal dumping, sanitary sewer system leaks, and illicit connections to storm sewer systems can be significant sources of pollutants. Some of the more serious effects to receiving waters are the contamination of drinking water supplies, restrictions on water contact recreation, loss of wildlife habitat, decreases in the number and variety of aquatic organisms, and fish kills.

B. History of NPDES Stormwater Program

Efforts to improve water quality under the NPDES program have traditionally focused on reducing pollutants in point source discharges from industrial facilities and municipal sewage treatment plants. In response to the need for controlling stormwater discharges, Congress amended the CWA in 1987 requiring the EPA to establish NPDES requirements for stormwater discharges. In November 1990, EPA issued final stormwater regulations for eleven categories of industry and certain municipal separate storm sewer systems. As part of the municipal stormwater program, jurisdictions in Maryland operating large municipal storm sewer systems must submit a two-part application to MDE outlining programs for monitoring and controlling stormwater discharges. Required information includes Legal Authority, Source Identification, Discharge Characterization, Management Programs, Assessment of Controls, and Fiscal Resources.

C. Maryland's Perspective

Maryland's efforts to reduce stormwater pollution have focused on protecting and restoring the water quality of Chesapeake Bay. The Maryland General Assembly passed the Erosion and Sediment Control Law in 1970 to control runoff from construction sites and in 1982 passed the Stormwater Management Act which requires that appropriate Best Management Practices (BMP) be used in order to maintain after development, as nearly as possible, the pre-development runoff conditions. Additionally, the Chesapeake Bay Program, a cooperative effort among the major Bay states and the federal government, has elevated the importance of stormwater management programs in Maryland by establishing a 40% nutrient reduction goal to the Chesapeake Bay and, more recently, by focusing cleanup efforts on the Bay's

tributaries. Although Maryland's existing programs will aid local jurisdictions in satisfying NPDES stormwater requirements, additional stormwater control measures will be needed for full compliance with the federal program.

PART III. APPLICATION SUMMARY

A. Jurisdiction Description

1. Physical Data

Montgomery County is located in the south-central part of Maryland and encompasses approximately 494 square miles (316,160 acres) of land. The Potomac River forms the County's southwestern boundary while Washington, D.C. and Prince George's County define its southeastern boundary. The County's northwest boundary is defined by Frederick County and its northeast boundary by Howard County. Montgomery County lies primarily in the physiographic region known as the Piedmont Province.

According to the 1990 Census, Montgomery County has an estimated population of 757,027. The Maryland Office of Planning (MdOP) estimates an annual growth rate between 1990 and 2000 of 1.15%. This results in a projected population of 858,491 within the next 5 years. The County is highly urbanized in its central and eastern areas. There remains extensive rural and agricultural areas in the western and northern portions of the County. The urbanized areas consist of mostly older communities, however, there are many fast growing suburban and light industrial areas to the northern and western area of the County. There are 21 separate incorporated municipalities within Montgomery County and the County has authority over all public storm drain systems found in these localities except for those located in the Cities of Gaithersburg, Rockville, and Takoma Park and the Town of Chevy Chase Village.

2. Hydrologic Information

Montgomery County's stream network can be divided into two major watersheds that are best described as rolling and moderately dissected by broad, shallow valleys. Elevation ranges from a little less than 200 feet to nearly 700 feet above sea level. Hydrologically, most of the County drains southward to the Potomac River, while approximately 12% of the total land area drains eastward to the Patuxent River.

According to the *Soil Survey of Montgomery County, Maryland (United States Department of Agriculture, October 1961),* the climate is "continental" and described as "humid and temperate with moderately severe winters and rather warm summers." Weather systems move predominantly from the west and southwest to the east. In its Part 1 NPDES stormwater application, the County estimated that the average annual precipitation, based on mean monthly precipitation, is 40.9 inches. Precipitation extremes of less than 20 inches to more than 56 inches have occurred. For the most part, precipitation is distributed evenly throughout the year. The average annual snowfall is 19.7 inches.

There are two major sub-basin watersheds in Montgomery County that are addressed in the *Maryland Water Quality Inventory, 1991-1993.* These basins include the Patuxent River and the Potomac River (Washington Metropolitan Area) watersheds. The inventory describes the surface water quality in Montgomery County as "fair to good." Urban runoff, construction, agriculture, mining activities, and municipal and industrial discharges contribute to the degradation of water quality with bacterial, suspended sediment, and nutrient levels most pronounced. Both sub-basin watersheds are listed as impaired by conventional pollutants in Maryland's *303(d) List of Waters Impaired by Coventional or Toxic Pollutants, December 1994.*

All watersheds within Montgomery County are listed as impacted by nonpoint source pollution in Maryland's *Nonpoint Source Pollution Assessment Report for Section 319, April 1989.* Lakes determined to be threatened by excessive nutrient enrichment, in *the Maryland Water Quality Inventory, 1991-1993,* include the T. Howard Duckett Reservoir, Lake Needwood, Lake Bernard Frank, Clopper Lake, and Little Seneca Lake. Lake Needwood and Lake Bernard Frank have also been classified as eutrophic. Water bodies of special interest include the Patuxent, Anacostia, and Potomac Rivers. These rivers have been designated as State Scenic Rivers by the Maryland General Assembly. The Patuxent River has also been designated as a National Estuarine Demonstration Project. This designation helps to support research opportunities in watershed restoration work.

Currently, Montgomery County conducts baseline and reference stream monitoring on a rotating watershed basis. The program includes habitat, physical, biological, and chemical monitoring at representative stations within each watershed. The County has also begun monitoring the effectiveness of enhanced site design and BMPs being implemented in Special Protection Areas (SPAs). Additionally, water quality monitoring by Montgomery County has included an automated sampling station at the Wheaton Branch stormwater retrofit pond and in-stream stations on Sligo and Seneca Creeks.

The Metropolitan Washington Council of Governments (MWCOG) is monitoring stream channel erosion and habitat conditions in the Rock Creek and Cabin John watersheds. MDE maintains ten benthic macroinvertebrate monitoring stations, four water quality monitoring stations, and two CORE sampling stations in Montgomery County. The Interstate Commission on the Potomac River Basin (ICPRB) maintains four intensive monitoring stations in Montgomery County.

B. Programmatic Components

The NPDES stormwater permit application process for municipal separate storm sewer systems is specified in 40 CFR 122.26(d). The two-part application process was devised to provide a basis for reducing and eliminating pollutants in stormwater discharges from large municipal separate storm sewer systems. Part 1 of the application process requires applicants to submit information regarding existing programs and legal authority, identify sources of pollutants, field screen major outfalls to detect illicit connections, and propose strategies to characterize discharges. The Part 2 application process requires the demonstration of adequate legal authority, additional information on pollutant source identification, characterization of discharges, a proposed stormwater management program, an estimate of the effectiveness of stormwater controls, and a fiscal analysis. The following sections (1 through 6) provide a summary of Montgomery County's application.

1. Legal Authority

A summary of Montgomery County's NPDES stormwater application submittal, specific to the regulatory requirements for adequate legal authority, is as follows:
э122.26(d)(2)(i) "(A) Control...the contribution of pollutants...associated with industrial activity...;"

Pursuant to the Environment Article, Title 4, Annotated Code of Maryland, Montgomery County has adopted ordinances necessary to implement a stormwater management program. Additionally, the County has been delegated erosion and sediment control enforcement authority since 1986. Compliance with the regulations contained in the Montgomery County Code,

Chapter 19, Erosion, Sediment Control, and Stormwater Management should adequately control the quantity and quality of stormwater that is discharged to Montgomery County's municipal separate storm sewer system from construction activities and new development.

In order to obtain adequate legal authority to control the contribution of pollutants from other industrial activities or areas developed prior to implementation of its stormwater management program, the County has amended Chapter 19 of the County Code to include Article IV, Water Quality Control, which became effective November 7, 1994. Article IV established an administrative program for the prohibition of water pollution. Specifically, the discharge of any pollutant into waters of the State is subject to authorization by an NPDES discharge permit, plan of compliance, or the implementation of approved BMPs. Additionally, the County has the authority to impose more stringent stormwater management requirements for new development and regulate water quality in accordance with State standards and designated water uses.

э122.26(d)(2)(i) "(B) Prohibit...illicit discharges...;"

Montgomery County Code, Section 49-33, Standards and Specifications, empowers the County to adopt storm drain design standards. Since 1968, the Montgomery County Department of Transportation (DOT) has been responsible for the control, design, construction, and maintenance of the County's municipal separate storm sewer system. Construction of storm drain systems and connections are regulated through a permitting process.

э122.26(d)(2)(i) "(C) Control...spills, dumping or disposal of materials other than storm water;"

Montgomery County Code, Chapter 19, Article IV, Water Quality Control, Section 19-50 prohibits the discharge of any pollutant, connection of any apparatus discharging any pollutant, or the improper storage, handling, or application of any pollutant into waters of the State without an NPDES discharge permit, plan of compliance, or the implementation of approved BMPs.

э122.26(d)(2)(i) "(D) Control...pollutants from one portion of the municipal system to another portion of the municipal system;"

As stated above, there are 21 separate incorporated municipalities within Montgomery County and the County has authority over all public storm drain systems found in these localities except for those located in the Cities of Gaithersburg, Rockville, and Takoma Park and the Town of Chevy Chase Village. The County has authority to enter into agreements with these municipalities. For example, the County could draft an agreement with the City of Rockville that would allow for the identification of storm drain outfalls within the City's jurisdiction.
MDE will issue an NPDES general permit that will include the Cities of Gaithersburg, Rockville, and Takoma Park and the Town of Chevy Chase Village. Permit conditions will define specific municipal roles, responsibilities, and points of coordination that will control the contribution of pollutants from one portion of the storm sewer system to another. In addition, MDE will issue an NPDES general permit for State (other than the State Highway Administration) and an NPDES general permit for federal facilities located in Montgomery County. Neighboring jurisdictions, (Frederick, Howard, and Prince George's Counties) and the State Highway Administration (SHA) are required to apply to MDE for separate NPDES discharge permits for their respective storm sewer systems. Final permit conditions will be used to address inter-jurisdictional issues.

э122.26(d)(2)(i) "(E) Require compliance..."

Enforcement authority exists for the County's present erosion and sediment control and

stormwater management programs. Similarly, enforcement authority has been established for the prohibition of water pollution and control of water quality under Montgomery County Code, Chapter 19, Article IV, Water Quality Control, Section 19-53. Enforcement actions such as stop work orders, violation notices, civil citations, and injunctive relief may be utilized to promote compliance with associated regulations.

э122.26(d)(2)(i) "(F) Carry out all inspection, surveillance, and monitoring procedures..."

Montgomery has inspection authority for construction and maintenance of its municipal separate storm sewer system. Additionally, this authority includes provisions to enter, inspect, and monitor suspect facilities for the purpose of eliminating illicit discharges.

Summary

Montgomery County's Attorney has certified that, pursuant to 40 CFR 122.26(d)(2)(i), the laws of Montgomery County, Maryland provide adequate authority to enable the County to carry out an inspection and enforcement program that regulates the quality of water that is discharged through its storm drain system.

2. Source Identification

A summary of Montgomery County's NPDES stormwater application submittal, specific to the regulatory requirements for source identification, is as follows:

э122.26(d)(1)(iii) "(A) A description of the historic use of ordinances..."

In Montgomery County, the Washington Suburban Sanitary Commission (WSSC) has authority over the sanitary sewer system and uses Chapter 9 of its Code, *Industrial Waste Regulations of the Plumbing and Gas Fitting Regulations*, to control the discharge of pollutants to publicly owned treatment works. Chapter 9 requires permits for significant discharges. These permits require adherence to EPA pretreatment standards and establishes WSSC's authority to enforce and initiate penalties in cases of violation. WSSC has enforced its industrial waste regulations to prevent the introduction of pollutants that will interfere with the operation of the sewer system, contaminate waste sewage sludge, pass through the sewer system into receiving waters, or adversely affect the public health, safety and welfare.

э122.26(d)(1)(iii) "(B) A USGS 7.5 minute topographic map..."

Landfills, stormwater management facilities, industrial facilities, wetlands, and publicly owned parks, recreation areas, and other open lands were located on Geographic Information System (GIS) generated quad sheets. As part of the data layer development described below, the County will include topography and watershed delineations for these features. County owned facilities considered to have industrial discharges were also included on the quad sheets. Additionally, land use information based on 1990 data compiled by the MdOP was submitted on GIS generated quad sheets.

Fiscal Year 1994 budget allocations were secured for the development of a fully automated mapping and data management system of the County's storm drainage facilities. Additionally, on June 30, 1993, the County contracted the services of Greenhorne & O'Mara, Inc. to develop a complete inventory of all public and private storm drain systems within Montgomery County. Concurrently, the County is developing planimetric, topographic, and property data layers that

will be compatible with its GIS. The County submitted a schedule for the phased development of the inventory and supporting data layers indicating that completion of these tasks for all watersheds will occur by 1999.

э122.26(d)(1)(iii)(B) "(1) The location of known municipal storm sewer system outfalls..."

Montgomery County submitted an inventory and mapped the location of 500 outfalls that were identified during its Part 1 field screening efforts. Additionally, mapping and inventory of all known municipal outfalls has been completed for the Paint Branch watershed. This accounts for one of 29 designated watersheds within the County.

э122.26(d)(1)(iii)(B) "(2) A description of the land use activities...population densities...average runoff coefficient..."

Land use information based on 1990 data compiled by the MdOP was submitted on GIS generated quad sheets. A tabular listing of the acreage for each specific type of land use has been submitted for the Paint Branch watershed. Existing and projected population densities that are based on designated planning areas within the County have been submitted. The County also submitted an example of the tabular data incorporated into its storm drain inventory. The data specific to outfalls include information regarding runoff coefficients and associated land use.

э122.26(d)(1)(iii)(B) "(3) The location...of each currently operating or closed municipal landfill..."

Montgomery County submitted information regarding one operating (Oaks) and one closed (Gude) municipal landfill. The County also submitted information regarding its waste transfer station and recycling center. Topographic maps indicating the location of these facilities have been submitted as well.

э122.26(d)(1)(iii)(B) "(4) The location and permit number of any known discharge...that has been issued a NPDES permit;"

Montgomery County obtained information on existing NPDES stormwater permits from MDE. Forty sites were identified and a database containing information on facility name, address, and permit number was submitted. Mapping of these facilities has been submitted.

э122.26(d)(1)(iii)(B) "(5) The location of major structural controls..."

Montgomery County submitted a tabular database describing 1,400 major structural stormwater management controls. The database includes information on structure name, location, type, size, drainage area, and land use. USGS 7.5 minute topographic mapping has been completed for 818 of these stormwater management structures. Additionally, mapping and inventory of structural stormwater controls has been completed for the Paint Branch watershed.

э122.26(d)(1)(iii)(B) "(6) The identification of publicly owned parks..."

Montgomery County submitted an inventory and mapped the location of Maryland-National Capital Park and Planning Commission (M-NCPPC), State, and federal recreational facilities within the County.

э122.26(d)(2) "(ii)...an inventory, organized by watershed...of each facility associated with industrial activity..."

Montgomery County submitted an inventory of 1,989 industrial and commercial facilities including information on company name, address, phone number, watershed location, and Standard Industrial Classification (SIC) codes. GIS generated quad sheets indicating the location of these facilities have been submitted as well.

Summary

Montgomery County has collected most of the data to satisfy source identification requirements with the exception of a complete storm drain inventory. The County has submitted a pilot study application of its GIS data for the Paint Branch watershed. A complete storm drain system inventory, as well as associated planimetric and property data layers were included. Implementation of the GIS and subsequent completion of topography based maps for the remaining watersheds will assist the County in establishing priorities to control nonpoint source pollutant contributions from its storm sewer system.

3. Discharge Characterization

A summary of Montgomery County's NPDES stormwater application submittal, specific to the regulatory requirements for discharge characterization, is as follows:

э122.26(d)(1)(iv) "(A) Monthly mean rain and snow fall estimates..."

Montgomery County submitted precipitation data that included monthly rainfall for the years 1981-1990. The mean monthly data were tabulated to present an average yearly total as well. The precipitation data reported by Montgomery County are contained in Part III.A.2. above.
э122.26(d)(1)(iv) "(B) Existing quantitative data..."

Historically, monitoring of in-stream conditions rather than discharges associated with the County's storm sewer system has occurred. Local, State, and federal agencies, and other organizations have conducted periodic stream sampling and monitoring in Montgomery County since the 1960's. Water quality samples have been collected for many reasons including one-time samples, routine or special government programs, special monitoring investigations, and emergency sampling. The number of samples collected and analyzed varies from a single sample to many years of data. The locations of sampling stations also varies widely among streams and watersheds in the County. The storage and management of sampling results also differ among the agencies and organizations responsible for data assimilation.

From 1969 to 1980, Montgomery County conducted its own stream monitoring program. The County summarized its past monitoring efforts in its Part 1 NPDES stormwater application. This summary included sampling station identification, location and watershed, parameters/constituents sampled, and sampling methodology. Most of the information has been recorded on EPA's STORET database.

э122.26(d)(1)(iv) "(C) A list of water bodies that receive discharges..."

Montgomery County has 29 recognized watersheds that receive drainage from the municipal separate storm sewer system. A narrative summary of the water bodies in Montgomery County that have been assessed by the State was submitted with the County's application. This assessment considered water bodies that were impaired by toxic or conventional substances, impacted by nonpoint source pollution, trophic, or threatened. Portions of the assessment, as well as other impacted water bodies in Montgomery County are contained in Part III.A.2. above.

э122.26(d)(1)(iv) "(D) Results of a field screening analysis for illicit connections..."

Montgomery County submitted an inventory comprised of data for the 500 major outfalls utilized for dry weather flow screening. This inventory included information regarding drainage area, predominant land use, and runoff coefficient for each outfall. The County completed field screening for 500 outfalls as specified in the NPDES regulations.

CHEMetrics Chemical Test Kits were used to perform the required chemical analyses for total copper, phenols, total residual chlorine, detergents, and pH. In addition to collecting chemical parameter data, visual observations were performed to provide further information regarding illicit discharges. Results of the County's field screening efforts were recorded on a database to enable a detailed analysis and future targeting of potential illicit connections. An examination of these data indicates that 31% of the major outfalls screened had dry weather flow. The County reported that only 25% percent of the outfalls that exhibited dry weather flow warranted further investigation due to elevated pollutant concentrations.

э122.26(d)(1)(iv) "(E)...the location of outfalls or field screening points appropriate for representative data collection..."

In its proposed characterization plan, Montgomery County selected five major outfalls to be used for Part 2 stormwater monitoring purposes. These five outfalls were located within 5 separate watersheds. The criteria used for selecting the sampling stations included land use considerations, hydraulic factors, accessibility, and safety. Of the five outfalls selected for representative sampling, one represented industrial land use, two represented residential land use, and two represented commercial land use.

The industrial outfall drains a relatively uniform heavy industrial land use bounded by a narrow fringe of commercial development. This industrial area is comprised of two concrete plants, construction yards, scrap recycling yards, a fuel and feed depot, an asphalt/paving contractor, and equipment storage. The two residential outfalls drain well-established communities, one area representing low density single-family detached dwellings and the other high density multi-family dwellings. The commercial sites are representative of retail shopping centers that are comprised of parking lots and several large buildings. The proposed characterization plan was reviewed and approved by MDE.

э122.26(d)(2)(iii) "(A) Quantitative data from...between five and ten outfalls representative of commercial, industrial, and residential..."

Montgomery County is required to monitor three storm events at five land use specific outfalls for a total of 15 samples. The County completed monitoring of two storms at three outfalls and one storm at each of the remaining two outfalls for a total of eight samples. Montgomery County will need to submit storm event monitoring data and analysis as the remaining seven samples are

obtained.

э122.26(d)(2)(iii) "(B) Estimates of annual pollutant loads...and the event mean concentration..."

The County used the "Simple Method," (Schueler, 1987) and default EMC values to calculate annual pollutant load estimates. Pollutant load estimates were provided for the Paint Branch watershed and were based on the percentage of imperviousness for each land use within the watershed. The County reports that it will estimate pollutant loads for individual outfalls as it completes the inventory and mapping of all storm drain outfalls.

э122.26(d)(2)(iii) "(C) A proposed schedule to provide estimates...of the seasonal pollutant load..."

The County stated it will initially use the "Simple Method" and default event mean concentration (EMC) values to calculate pollutant load estimates. Annual and seasonal pollutant loads will be calculated and refined as additional water quality data are collected from the remaining Part 2 storm event monitoring efforts and during the permit term. Montgomery County reported that an initial submission of seasonal pollutant loads and EMC estimates was planned for November 1995 with subsequent submissions as the GIS data layers and monitoring of representative storm events are completed.

э122.26(d)(2)(iii) "(D) A proposed monitoring program...for the term of the permit..."

Montgomery County has proposed an "integrated monitoring approach to identify the full range of biological, chemical, and physical water quality impacts" on a watershed by watershed basis. The County's proposed program will determine impaired stream segments by using biological survey and biocriteria (BS&C). An assessment will follow to determine if the impairment is due to habitat degradation. If habitat degradation is not the determining factor for impairment, then whole effluent toxicity testing (WET) or chemical specific testing (CSC) will be performed to determine the specific nature of impairment. The County is currently working with MDE to identify suitable outfall and in-stream automated chemical monitoring stations within the Paint Branch watershed to carry out the water quality monitoring specified in the NPDES regulations.

Summary

Montgomery County needs to complete its Part 2 monitoring requirements for characterizing the discharges from its five outfalls representing residential, commercial, and industrial land uses. The identification of an appropriate long-term integrated monitoring scheme and implementation of the monitoring program will be the County's primary concern. Additionally, as GIS data layer development occurs and data become available from its long-term monitoring program, the County will need to refine its pollutant load estimates.

4. Management Programs

A summary of Montgomery County's NPDES stormwater application submittal, specific to the regulatory requirements for management programs, is as follows:

э122.26(d)(2)(iv) "(A) A description of structural and source control measures..."

In 1991, the Montgomery County Council's Office of Legislative Oversight issued a report on the County's sediment control and stormwater management programs. This report indicated that

deficiencies existed in the areas of erosion and sediment control, stormwater management, and water quality. To address these concerns, the County prepared a draft Water Quality Plan, dated October 29, 1992. The proposed Water Quality Plan was submitted as part of the County's Part 1 stormwater application and included a schedule for implementing program improvements, assuming that the necessary funding materializes. Since the submittal of the County's Part 2 application, the Water Quality Plan has been revised and retitled as the Montgomery County Strategic Plan for Water Quality Protection. The plan has been submitted to the County Council but has yet to be adopted.

Components of the proposed Strategic Plan for Water Quality Protection include a complete inventory of water resources, stormwater management facilities, and pollution control measures; watershed planning that integrates watershed studies with land-use master plans; and resource protection and restoration of streams, stream valleys, water supply reservoirs, wetlands, groundwater resources, and flood plains. Additional components of the plan include strengthening the criteria for stormwater management waivers, adopting a grading ordinance to control lot-to-lot drainage, providing facility inspection and maintenance, and requiring stormwater management and pollution control for agricultural uses. The County has initiated many of the recommended program improvements described in the plan.

Additionally, the County has proposed to develop Watershed Restoration Action Plans to identify potential stormwater management retrofit sites and non-structural controls that address stormwater impacts. As a pilot study, the County will develop a plan for the Little Falls watershed during the first year of the permit term. Physical and biological monitoring in the watershed have documented adverse water quality impacts from both stormwater and illicit discharges. Due to a limited potential for structural stormwater retrofits within this intensely

developed watershed, the County will develop management recommendations based on non-structural controls. The status and findings of the pilot study will be reported in annual reports and successful components will be expanded to other targeted watersheds.

The County has a stormwater management retrofit and stream restoration program for highly developed areas which were established prior to stormwater management requirements. Retrofit and stream restoration opportunities have been identified for the Sligo Creek, Northwest Branch, Paint Branch, and Little Paint Branch watersheds. Thus far, three retrofit projects have been constructed and five are in the design stage. Identification of retrofit opportunities is underway in the Rock Creek, Cabin John Creek, and Little Falls Branch watershed. Retrofit and stream restoration opportunities are also being identified in subwatersheds of the Upper Paint Branch and Piney Branch watersheds.

э122.26(d)(2)(iv)(A) "(1) A description of maintenance activities...for structural controls...;"

Montgomery County is required by the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland, to inspect stormwater management facilities once every three years. Additionally, the County is required to perform, or cause to be performed, maintenance on existing stormwater management facilities. Montgomery County Code requires the inspection of public stormwater facilities at least twice each year and private facilities at least once each year. Agreements requiring perpetual maintenance exist for private stormwater facilities. Information submitted in the County's NPDES permit application indicates that inspection and maintenance of most stormwater management facilities have been inadequate. In response to recommendations found in the Draft Water Quality Plan, the County is improving its frequency of maintenance inspections by dedicating one full-time inspector for this function.

ə122.26(d)(2)(iv)(A) "(2) A description of planning procedures...to reduce...pollutants...from areas of new development and significant redevelopment...;"

County laws and regulations require that applications for subdivision plan review include provisions for stormwater management and the protection of downstream water quality, wetlands, and stream habitat conditions. Additionally, existing tree stands must be protected and stream buffer areas provided. Submission of preliminary plans must describe, in concept, the manner in which water quality will be maintained or improved and the manner in which the quantity of runoff is controlled to pre-development levels. Montgomery County has an extensive planning and development review process that, in part, addresses the reduction of pollutant discharges from areas of new development and significant redevelopment.

The County's existing stormwater management program requires the pre-development discharge for the two-year frequency storm event to be maintained after development. However, control of the pre-development discharge for the ten-year frequency storm event has not been required by the County. The County restricts new development activities within the 100-year flood plain and, therefore, believes that control of the 10-year storm is unwarranted.
On-site control requirements may be waived by the County if the controls are determined to be infeasible or unwarranted. When waivers are granted, the County collects "in lieu fees" for construction of regional stormwater controls which may also benefit previously developed areas that lack control. Concerns have been expressed that the waiver provisions have been overused without a thorough evaluation of their impact on the watershed. As a result, the County has proposed to strengthen the criteria for evaluating requests for stormwater management waivers and establish a computer database for tracking and evaluating the impacts of waiver issuance in each watershed. The County has also proposed to provide additional opportunity for public input through implementation of a hearing process for waiver requests.

On November 29, 1994, the Montgomery County Council adopted Article V for Chapter 19 of the Montgomery County Code entitled Water Quality Review - Special Protection Areas. The law establishes a process for enhanced water quality review for development in designated SPAs. The SPAs are geographic areas identified as having high quality or sensitive water resources where proposed land uses would threaten the quality or preservation of these resources. As part of the development approval process for SPAs, a water quality plan will be required when the proposed impervious area exceeds specific limits established for various land uses and total project area. Elements of the water quality plan include the establishment of water quality performance goals and measures for erosion and sediment control, stormwater management, documentation of avoidance or minimization of impacts, minimization of imperviousness, and BMP monitoring.

ə122.26(d)(2)(iv)(A) "(3) A description of practices for operating and maintaining public streets...;"

The Montgomery County DOT performs road maintenance including trash and debris cleanup, pesticide application, and street sweeping. Trash and debris removal has been facilitated through an "Adopt-A-Road" program. However, the County reports that it will no longer be able to fund it. Herbicide used for vegetation control is limited to "RODEO" and street sweeping is reported to be periodic and limited to the Central Business Districts only. Montgomery County reported that salt and sand used for deicing roads are stored in dome-type structures.

ə122.26(d)(2)(iv)(A) "(4) A description of procedures to assure that flood management projects

assess the impacts on the water quality...;"

The Federal Emergency Management Agency and the State of Maryland require the County to have a comprehensive flood management plan. Montgomery County has a flood plain management ordinance that prohibits development within the 100 year flood plain. The State requires a waterway construction permit for construction in nontidal waters and flood plains. Additionally, the U.S. Army Corps of Engineers and MDE require wetland permits and MDE requires Water Quality Certification for structural control projects.

э122.26(d)(2)(iv)(A) "(5) A description of a program to monitor pollutants from operating or closed municipal landfills...;"

Montgomery County has one active municipal landfill (Oaks) and this facility has stormwater management controls implemented according to a landfill permit issued by MDE's Waste Management Administration. Landfills are also subject to the County's erosion and sediment control and stormwater management plan review processes and implementation requirements. The County reports that it conducts monthly monitoring for groundwater contamination at the Oaks landfill and semi-annual monitoring at the closed landfill (Gude). Additionally, the County's Dickerson Composting Facility is operated under an NPDES Permit that specifies effluent limitations for discharges from three outfalls. The Montgomery

County Transfer Station and Recycling Center is reported to be operating under a permit issued by MDE in 1991. Information was not submitted regarding treatment facilities at the Transfer Station and Recycling Center.

э122.26(d)(2)(iv)(A) "(6) A description of a program to reduce...pollutants...associated with the application of pesticides...;"

The University of Maryland, Montgomery County, and U.S. Department of Agriculture jointly sponsor an educational program for reducing the discharge of pollutants to the County's storm drain system associated with the application of pesticides, herbicides, and fertilizer. The County reports that the Cooperative Extension Service manages the program and offers a variety of handbooks, manuals, and bulletins. The Maryland Department of Agriculture's Pesticide Application Law requires certification and licensing of restricted use pesticide applicators. The County also reports that its public outreach efforts have included the distribution of brochures regarding herbicide and pesticides use, excessive fertilizer application, proper disposal of hazardous waste, and general water quality issues.

э122.26(d)(2)(iv) "(B) A description of a program...to detect and remove...illicit discharges...The program shall include:"

э122.26(d)(2)(iv)(B) "(1) A description of a program...to prevent illicit discharges...;"

WSSC has a program to detect and remove illicit connections to the sewage system in Montgomery County. The County proposes to continue dry weather flow analysis at outfalls in the Paint Branch and Little Falls watersheds as a pilot project. Visual and olfactory observation and chemical analysis similar to the Part I application requirements will continue. Outfalls from industrial and commercial land uses will be targeted for inspection by local volunteers. This volunteer program, known as the "Pipe Detectives," includes training regarding proper monitoring and sampling protocols and a dedicated "hot-line" for citizen reporting of alleged illicit discharges.

Additionally, the County has targeted the Little Falls Watershed for its "Pollution Prevention Partners" program. The program encourages local business owners and operators to develop and implement operating and housekeeping practices to control adverse water quality impacts to receiving streams.

э122.26(d)(2)(iv)(B) "(2) A description of...on-going field screening activities...;"

Montgomery County proposes to conduct field screening of outfalls in the Paint Branch and Little Falls watersheds. Discharges from older developments, automobile related operations, industrial, commercial, and institutional land uses will be targeted. Additional outfalls will be selected for field screening based on the interpretation of stream baseline water quality and habitat monitoring data. Field screening will continue as part of the County's pilot study and successful components of the program will be expanded to other watersheds. The County will attempt to screen 100 outfalls in these two watersheds each year.

э122.26(d)(2)(iv)(B) "(3) A description of procedures...to investigate portions of the separate storm sewer system...;"

Illicit connection investigations will be conducted in response to citizen complaints and the County's field screening efforts. Visual and olfactory observation, chemical testing, and macroinvertebrate sampling will be utilized as investigative measures.

э122.26(d)(2)(iv)(B) "(4) A description of procedures to prevent, contain, and respond to spills...;"

The County is responsible for the detection, monitoring, sampling, and analysis of hazardous material releases under the its Emergency Operations Plan. The County maintains a Spill Response Unit and larger incidents require assistance from the Department of Fire and Rescue Service (DFRS). The DFRS maintains a Hazardous Incident Response Team for initial response and interacts with MDE to contain spills. Reporting spills can be accomplished by the use of the "911" emergency response system. The County's Emergency Communications Center initiates local spill response in the event of hazardous material release.

э122.26(d)(2)(iv)(B) "(5) A description of a program to promote...public reporting of...illicit discharges...;"

Public education initiatives coupled with aggressive monitoring and enforcement of discharges represents the mainstay of the County's public reporting efforts. As reported above, the County will also establish a dedicated "hot-line" for citizen reporting of alleged illicit discharges.

э122.26(d)(2)(iv)(B) "(6) A description of educational activities...;"

The County is developing an educational outreach program for private industry. This outreach will include pollution prevention workshops that provide technical assistance and guidance, on-site surveys to assist with the evaluation of nonpoint source pollution problems, the development

of pollution prevention plans, and promoting industrial pollution prevention success stories.

The County has distributed a fact sheet that provides guidance to swimming pool owners/operators regarding the impacts of chlorine and the requirements to discharge backwash water to the sanitary sewer system. Outreach efforts will also include the development and distribution of brochures and videos that address water quality issues such as stormwater management pond maintenance, impacts of stormwater on water quality, and pollution reduction strategies for targeted businesses.

As part of its proposed education program, the County has entered into an agreement with the Board of Education and individual public and private schools to establish "Stream Teams." The "Stream Team" program focuses on students monitoring streams to assess pollution impacts or performing stream restoration activities. Additionally, a progressive water quality oriented curricula has been developed and initiated for grades 4 through 12.

The County has developed a volunteer mini-grant program to support volunteer initiatives that promote education and involvement in County water quality issues. The grants expand on the County's efforts by creating opportunities for public participation initiatives that address water resource management. The County will also continue its program for stenciling inlets to inform the public that the ultimate discharge of stormwater is to the Chesapeake Bay.

э122.26(d)(2)(iv)(B) "(7) A description of controls to limit infiltration of seepage...;"

The WSSC has design requirements for new sewer construction that limits the potential for infiltration or exfiltration problems. The WSSC also has a regular sewer inspection and maintenance program to control leaking sewers and infiltration into the sewer system.

э122.26(d)(2)(iv) "(C) A description of a program to monitor and control pollutants...from municipal landfills...The program shall:"

э122.26(d)(2)(iv)(C) "(1) Identify priorities and procedures for inspections...;"

Montgomery County reports that it will respond, on a case-by-case basis, to water pollution incidents and inquiries associated with industrial operations. Enforcement authority has been established for the prohibition of water pollution and the control of water quality under Montgomery County Code, Chapter 19, Article IV, Water Quality Control, Section 19-53.

э122.26(d)(2)(iv)(C) "(2) Describe a monitoring program...."

The County proposed to coordinate efforts with MDE to assure that unpermitted non-stormwater dischargers acquire permits. Permit issuance, inspection, enforcement, and monitoring will remain MDE's responsibility. However, nothing should preclude Montgomery County from bringing an enforcement action against a source of pollution from either an illicit connection or an industrial activity.

э122.26(d)(2)(iv) "(D) A description of a program to implement and maintain structural and non-

structural best management practices to reduce pollutants in storm water runoff from construction sites...which shall include:"

ə122.26(d)(2)(iv)(D) "(1) A description of procedures for site planning...;"

MDE has delegated erosion and sediment control enforcement authority to Montgomery County since 1986. In addition to erosion and sediment control inspections, the County also performs erosion and sediment control plan review and approval. As stated above, Montgomery County has an extensive planning and development review process that, in part, addresses the reduction of pollutants being discharged from areas of new development and significant redevelopment.

ə122.26(d)(2)(iv)(D) "(2) A description of requirements for non-structural and structural best management practices;"

Erosion and sediment control plan approval is required prior to initiating any earth disturbance greater than 5,000 square feet or 100 cubic yards. As stated in Section III.B.1.b., Montgomery County has adopted ordinances necessary to implement a stormwater management program. Compliance with the regulations contained in Chapter 19 of the County Code, Erosion, Sediment Control, and Stormwater Management should adequately control the quality of stormwater that is discharged to Montgomery County's municipal separate storm sewer system from construction activities.

ə122.26(d)(2)(iv)(D) "(3) A description of procedures for inspecting sites...;"

Erosion and sediment control inspections are performed at construction sites once every two weeks as required by State law to ensure compliance with approved erosion and sediment control plans. A detailed description of inspection procedures is contained in MDE's October 1993 review of the County's erosion and sediment control program.

ə122.26(d)(2)(iv)(D) "(4) A description of appropriate educational and training measures for construction site operators."

Maryland law requires persons in charge of on-site clearing and grading operations or sediment control to obtain "responsible personnel" certification by completing an approved training class. Montgomery County did not submit any information pertaining to the education of construction site operators regarding erosion and sediment control requirements.

Summary

Comprehensive management programs for erosion and sediment control and stormwater management currently exist in Montgomery County. Program deficiencies and needed improvements have been identified. Identified areas of concern, in part, include a lack of inspection and maintenance of stormwater management facilities, lack of integrated watershed planning and land use master plans, and ineffective assessment of the cumulative impacts associated with the issuance of stormwater waivers. Proposals for implementation of improvements and new programs have been conditional on securing adequate funding. However, the County has initiated many of the recommended program improvements described in the Water Quality Plan.

5. Program Funding

A summary of Montgomery County's NPDES application submittal, specific to the regulatory requirements for program funding, is as follows:

ə122.26(d)(2) "(vi) For each fiscal year to be covered by the permit, a fiscal analysis...shall include a description of the source of funds...to meet the necessary expenditures..."

Montgomery County submitted present and estimated future capital and operating budgets for its NPDES stormwater program for fiscal years 1996-2000. Resource allocations were included for staff, operating budget support for the County's Department of Environmental Protection (DEP) management section, and capital improvements. Funding support is by use of County General funds, grants, stormwater management waiver fees, and County bonds. Recognizing that substantial allocations are necessary which must compete with other County programs, draft legislation for a stormwater user fee and a stormwater ad valorem tax was prepared but never advanced. The County reports that it will continue to explore a variety of funding mechanisms to augment or possible supplant its present NPDES funding base.

Summary

As stated above, proposals for implementing improvements and new programs have been conditional on securing adequate funding. Costs throughout the permit term will need to be monitored to ensure that NPDES stormwater programs can be implemented and maintained. Permit conditions will stipulate that the County maintain adequate funding to implement these programs.

6. Assessment of Controls

A summary of Montgomery County's NPDES application submittal, specific to the regulatory requirements for assessment of controls, is as follows:

ə122.26(d)(2) "(v) Estimated reductions in loadings...expected as a result of the... management program..."

Montgomery County reported that its stormwater management facility inventory is incomplete and that estimates would be conducted after completion of the inventory. The County anticipates that the inventory will be complete by June 1997. The County will also utilize the data obtained from BMP monitoring, as part of it SPA requirements, to provide estimates of effectiveness of structural controls. Additionally, data obtained as a result of monitoring stormwater retrofits and stream restoration projects will be used. The County did not provide a proposal for estimating the effectiveness of nonstructural controls such as public education efforts.

Summary

Montgomery County will need to estimate the expected reductions in pollutant loads as a result of its proposed management programs.