

APPENDIX 1

MARYLAND DEPARTMENT OF THE ENVIRONMENT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT APPLICATION SUMMARY HOWARD 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 medium municipal separate storm sewer systems. A medium municipal separate storm sewer system is defined in the CWA as serving a population of 100,000 or more. Howard County, according to the United States Department of Commerce's 1990 Census, has a total population of 187,328 and is therefore considered a medium municipality. As a result, the County was required to submit a two-part NPDES permit application. Howard County has submitted an NPDES stormwater application that was prepared to satisfy the EPA's regulations for permitting stormwater discharges from municipal separate storm sewer systems. 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-HO-95-008 and in 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. The 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 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 medium 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 the 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

Howard County is located in the central part of Maryland. It is bound on the east by Anne Arundel and Prince George's Counties. The Patapsco River forms the County's border to the north and separates it from Baltimore and Carroll Counties. The Patuxent River forms the southern border of the County and separates it from Montgomery County. According to the *Soil Survey of Howard County, Maryland (United States Department of Agriculture, 1968)*, the County's total land area encompasses approximately 250 square miles (160,000 acres). More than 90% of Howard County is located in the physiographic region known as the Piedmont Plateau. The eastern section of the County along the Anne Arundel County border is located in the Atlantic Coastal Plain. The topography of the County is mainly rolling with elevation ranging from 20 feet in the southeastern section to 875 feet in the extreme western part.

According to the 1990 Census, Howard County has an estimated population of 187,328. The Maryland Office of Planning (MdOP) estimates an annual growth rate of 2.31% between 1990 and 2000. This results in a projected population of 240,825 by the end of the permit term in 2000. The highest urban concentrations are in the eastern one-third of the County. This area includes the Route 29 corridor, the Columbia Town Center, and the Interstate 95 corridor. The remainder of the County consists primarily of low density residential and agricultural land uses. The County's population projections indicate that urbanization will continue to increase steadily in the eastern one third of the County. There are no separate incorporated municipalities within Howard County.

2. Hydrologic Information

Howard County is located on the drainage divide between the Patuxent and Patapsco River basins. The County's stream network can be divided into four major watersheds. These watersheds include the Patuxent River, Middle Patuxent River, Little Patuxent River, and Patapsco River. A large percentage of the County drains to the Patuxent River basin with the northern fringes located in the Patapsco River basin. In its permit application, Howard County has further divided the Patapsco River basin to include the Deep Run watershed as it is highly developed.

The County's climate is humid, semi-continental with mild winters and warm, moist summers. According to the County's permit application, the average annual precipitation from 1950 through 1988 at Baltimore-Washington International (BWI) Airport was approximately 41 inches. Precipitation during the fall and winter months is typically extended in duration due to low pressure systems moving northeast along the Atlantic coast. Short duration, high intensity storm events are typical during the spring and summer months due to showers and thunderstorms. Thunderstorms occur an average of 31 days annually at BWI Airport. Average annual snowfall depths are approximately 21 inches 7 inches occurring during February. The highest average monthly rainfall usually occurs in August with the lowest occurring in January.

Howard County has a long history of flooding, especially the Ellicott City area which is located in a valley where the Patapsco and Tiber Rivers meet. Tropical Storm Agnes in June 1972 was

the biggest natural disaster in the County's history. At one point during Agnes, the Patapsco River rose 10 feet in one hour to inundate Ellicott City and the Hollofield gauge, just upstream of Ellicott City, reported a flood volume of 80,600 cubic feet per second. Other storms that have caused major flooding in Howard County include Tropical Storm Eloise in 1975 and the Great Flood of 1868 where 18 inches of rain fell on the western valley of the Patapsco River.

According to Maryland's *Nonpoint Source Pollution Assessment Report for Section 319, April 1989*, all watersheds in Howard County are impacted by nonpoint source pollution. The Patapsco River water quality ranges from good in the upper tributaries to poor in the lower urban and industrial areas. These lower areas are affected by urban runoff which results in high bacterial and nutrient levels. The *Maryland Water Quality Inventory (1985-1987)* for Section 305(b) reported that total nitrogen had increased from historical levels. The Patapsco River basin has water quality impacts from nonpoint source pollution that can be attributed to agriculture, construction, urban runoff, mining, and waste disposal. Furthermore, segments of the Patapsco were shown by the *Maryland Water Quality Inventory (1987-1989)* for Section 304(l) to be impaired by toxic substances caused by both point and nonpoint sources.

The Patuxent River basin has been designated by the Maryland General Assembly as a State Scenic River. Water quality in the Patuxent River basin is judged to be fair, however, the Section 319 report designates the lower Patuxent as being impacted by high levels of bacteria. In Howard County, the main tributary of the Patuxent River is the Little Patuxent River. Maryland's 304 report indicated that the Little Patuxent River is impaired by conventional and toxic substances caused by point and nonpoint sources. Water quality impacts from nonpoint sources include agriculture, construction, urban runoff, and mining. The four recreational lakes in the Little Patuxent River segment include Centennial Park Lake, Lake Elkhorn, Lake Kittamaqundi, and Wilde Lake and all were classified by Maryland's 304 report as eutrophic.

According to the Section 319 report, the Upper Patuxent River basin showed no trend in suspended solids. However, fecal coliform levels increased due to expanded urbanization. MDE's 304 list indicated this basin is impaired by conventional substances caused by either point or nonpoint sources. Water quality impacts from nonpoint sources include agriculture, construction, urban runoff, waste disposal, and hydrologic conditions.

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 medium 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 Howard County's application.

1. Legal Authority

A summary of Howard County's NPDES stormwater application submittal, specific to the regulatory requirements for adequate legal authority, is as follows:

§122.26(d)(2)(i) "(A) Control...the contribution of pollutants...associated with industrial activity...;"

Pursuant to the Environment Article, Title 4, Annotated Code of Maryland, Howard County has adopted ordinance changes necessary to implement a stormwater management program. The County has been delegated erosion and sediment enforcement authority since 1985 and is required to enforce sediment control on all construction sites. In addition, stormwater management must be provided upon completion of each site. As a result, Howard County has legal authority to control the quality of runoff during and following the completion of new industrial development or redevelopment. However, the County indicated that its legal authority to require stormwater management on sites developed prior to the adoption of Maryland's Stormwater Law in 1982 is limited.

§122.26(d)(2)(i) "(B) Prohibit...illicit discharges...;"

The Howard County Code provides the opportunity to prevent illicit connections to the storm sewer system. Title 16 of the County Code requires approved plans for the development of land for residential, commercial, industrial, and institutional uses. During the development approval process, the County would disapprove any proposed illicit connections to the storm sewer system. In addition, under Title 18, stormwater management facilities are required to be inspected and the opportunity exists during these inspections to check for illicit connections.

Title 18, Subtitle 5, "Private Storm Drainage Systems" provides the authority to require repairs or replace drainage facilities that constitute a threat to public health or safety. The "Health Code" section of the County Code provides legal authority to enter private property and allow connections of a property with public water supply or sewerage system under certain conditions. These regulations can be broadly interpreted, however, the County Health Department has not often used its authority for illicit connection purposes.

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

Howard County relies mainly on the State's Oil Pollution and Tank Management Regulations to control the dumping of waste oil from vehicles into storm sewers. Nineteen used oil collection centers, usually located at service stations, are available.

The Howard County Code has regulations that can be applied to the control of spills and dumping of non-stormwater materials. The County's Animal Waste Management Law provides a means for the control of illegal dumping. Under this law, feces from domesticated animals must be discarded in a sanitary manner. In addition, the County's Public Health Code contains right of entry to private property, inspection of property connections with public water supply, permits for proper on-site disposal, and control of air pollution. Similar to illicit connections, these authorities rarely are applied to the control of spills and dumping.

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

Howard County has authority over all public storm drain systems except for State and federal property. MDE will issue an NPDES general permit for State (other than the State Highway Administration (SHA)) and federal facilities located within Howard County. Regarding neighboring jurisdictions, Anne Arundel and Prince George's Counties have been issued NPDES permits for their storm sewer systems and Baltimore, Carroll, and Montgomery Counties have applied for NPDES permits for their respective storm sewer systems. As stated above, there are no separate incorporated municipalities located within the County. Final permit conditions have, and will continue to be included in all NPDES municipal stormwater permits to address interjurisdictional issues.

§122.26(d)(2)(i) "(E) Require compliance..."

All sections of the County Code have language that requires compliance with specific regulations. Some examples are the stop work order for erosion and sediment control and stormwater management. The County can require that all maintenance costs for private stormwater management facilities be incurred by the owner. The County's Health Code allows for civil and criminal penalties as well as court action to enforce compliance. The County's "Parkland, Open Space, and Natural Resource Regulations" subject violators to a Class A offense which constitutes a civil fine that ranges from a minimum of \$500 to a maximum of \$1,000.

Howard County included with its application its Department of Public Work's (DPW) Civil Penalties Procedures Manual. This manual outlines procedures for enforcement actions involving notices of violation and civil penalties. In addition, it requires that each Bureau within the DPW implement a system to track all notices of violation and citations issued.

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

Howard County has adequate legal authority in its County Code for inspections, surveillance, and monitoring. The County has the authority and responsibility for inspecting erosion and sediment control and stormwater management facilities during and after construction. Under its Health Code, the County has the right to enter private property to inspect connections of property with the public water supply or sewer systems and permits for on-site sewage disposal. As a result, the County can require repairs to drainage facilities that constitute a threat to public health or safety. As with above legal authority, these powers can be broadly interpreted and are only occasionally used for these purposes.

Summary

Howard County has general legal authority to control discharges to its storm sewer system. The County Solicitor has certified that adequate legal authority exists to implement NPDES programs.

Emphasis during the permit term will be placed on incorporating more detailed language in the County Code to ensure that complete authority exists and will be used to control discharges to its storm sewer system.

2. Source Identification

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

§122.26(d)(1)(iii) "(A) A description of the historic use of ordinances..."

Howard County's primary ordinance for the control of discharges to Publicly Owned Treatment Works (POTWs) is its Pretreatment Ordinance. Enacted in 1987 and entitled the "Regulation of Discharges to the Public Sewerage System," this Pretreatment Ordinance regulates the discharge of wastes into the public sewerage system. Specifically, the Ordinance prohibits the discharge of certain substances in wastewater, authorizes the development of standards for substances allowed in limited concentrations, and authorizes the development of procedures to implement the pretreatment program. In addition, it requires reporting, monitoring, sampling, and inspection of industrial discharges.

§122.26(d)(1)(iii) "(B) A USGS 7.5 minute topographic map..."

Howard County is developing a Geographic Information System (GIS) to store and help analyze the required NPDES source identification information which includes land use, population projections, outfall locations and their drainage areas, stormwater management facility locations, and runoff coefficients. All of these data are in the process of being digitized on base maps with scales that include 1 inch = 2,000 feet, 1 inch = 600 feet, and 1 inch = 200 feet. To enable the County to digitize locational information as accurately as possible, it is using a Global Positioning System (GPS). This system will allow the identification, within inches, of all NPDES locational attributes and allow the County to easily transfer the data to its GIS.

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

Howard County used existing records of its storm drain system, as well as field investigations, to plot 250 "major outfalls" on its base maps. Information regarding the storm drain system will include outfalls, cross culverts, and inlets and is being digitized on the County's GIS. The identification of additional storm drain outfalls is ongoing with the goal of identifying 750 outfalls.

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

Howard County provided land use and estimated population densities for the entire County for 1990 and projections for 2010. Currently, population records are updated four times per year. Coinciding with GIS development, outfall identification, and outfall drainage area delineation, population and growth estimates will be derived for each drainage area.

Runoff coefficients were estimated by using monitoring data from the Nationwide Urban Runoff Protection (NURP) study in the Baltimore-Washington area. The County provided a list of runoff coefficient estimates for residential, commercial, industrial, and institutional land uses. These coefficients will be revised as information on the County's land use characteristics is updated.

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

The Alpha Ridge Landfill is the only active municipal waste facility in Howard County and is located in the Patuxent River basin. In addition, the County has two closed landfills. The Carrs Mill landfill was closed in 1977 and the New Cut Road landfill was closed in 1980. These closed landfills are located in the Patuxent River basin and the Patapsco River basin, respectively.

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

Howard County provided a list of 22 municipal wastewater treatment plants and commercial/industrial dischargers. The County also noted that ten of these sites are required under their industrial NPDES discharge permits to control stormwater. Information provided for these NPDES permitted facilities included locations, permit numbers, and watershed codes.

§122.26(d)(1)(iii)(B) "(5) The location of major structural controls..."

Howard County provided an inventory of stormwater management facilities and identified them based on those built before and after the enactment of the Maryland's Stormwater Law in 1982. These facilities are being recorded on a database and digitized on GIS base maps. Overall, 600 existing public and private stormwater management facilities and 652 facilities that currently are under construction were identified. County-owned facilities are inspected annually and private facilities once every two years. Additionally, the Columbia Parks and Recreation Association owns approximately 3,000 acres of land in Columbia. There are 17 man-made ponds in this area and the Association is responsible for their maintenance.

§122.26(d)(1)(iii)(B) "(6) The identification of publicly owned parks..."

Howard County has mapped each park facility and divided them into seven categories. These categories include recreation, County, State, and WSSC owned parks, Columbia open space, and private clubs. Information on facility names, owners, addresses, and descriptions are being entered into a database. Use of park land and open spaces for potential retrofits will be addressed as well.

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

As stated above, Howard County provided a list of 22 NPDES permitted discharges that included commercial and industrial dischargers. Information provided for these NPDES permitted facilities included locations, permit numbers, and watershed codes.

Summary

Howard County collected adequate data to satisfy source identification requirements. Emphasis during the permit term will be placed on continuing to update its GIS and the identification of storm drain systems on State and federal property.

3. Discharge Characterization

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

§122.26(d)(1)(iv) "(A) Monthly mean rain and snow fall estimates..."

Howard County provided a list of rainfall averages for the period 1950 through 1988 at BWI Airport. The average annual rainfall depth is 41.35 inches with approximately 113 days receiving more than .01 inches. The monthly average number of days with more than .01 inches of rainfall ranges from 7.3 days in September to 11 days in May. The average rainfall duration is six hours with an average of 82 hours between storms.

The County began a rainfall gauging network in 1972 after the enormous flooding caused by Tropical Storm Agnes. However, the data, collected from ten gauges at firehouses throughout the County, are in paper files and have not been compiled. In addition to this network, the County DPW has begun a rainfall collection network program for flood management purposes.

§122.26(d)(1)(iv) "(B) Existing quantitative data..."

According to Howard County's permit application, there are no existing quality or quantity monitoring data from storm drain outfalls in the County. However, stream monitoring has been performed by State and Federal agencies in the Patuxent River basin. The United States Geological Survey (USGS) operates one stream gauging station on the Patapsco River and five others on the Patuxent River. In addition, the Columbia Parks and Recreation Association performs monitoring in Lake Kittamaquundi.

The Howard County Department of Recreation and Parks began a stream monitoring program in the fall of 1989. More than 200 volunteers have been trained to perform monitoring in three major watersheds including the Patapsco, Middle Patuxent, and Little Patuxent.

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

Howard County is located on the drainage divide between sections of the Patapsco and Patuxent River basin. The Patuxent River basin drains most of the County's land area. There are two large water supply reservoirs located in the County along its border with Prince George's and Montgomery Counties. The Triadelphia and T. Howard Duckett are owned and operated by the Washington Suburban Sanitary Commission (WSSC).

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

The County completed field screening at 252 major outfalls which satisfies the federal regulations. Hache Test Kits were used to perform chemical analyses of several required parameters including copper, phenols, detergents, chlorine, water temperature, and pH. All of this information was recorded on MDE's field screening database. An analysis of the data collected indicated that 44 outfalls had dry weather flow. Areas along the Route 1 corridor had the highest occurrence of dry weather flows. This area is highly commercial and will be targeted for the County's illicit connection detection program.

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

In its proposed characterization plan, Howard County selected several major outfalls

representing residential, industrial, and commercial land uses to be used for Part 2 stormwater monitoring. All of the proposed outfalls were reviewed in the field jointly by MDE and the County for potential problems. Several problems were identified including accessibility and backwater influence that would make sample collection difficult. As a result, alternative outfalls were selected and the County's characterization plan was subsequently approved. The five approved outfalls included two draining predominantly residential land uses (Murray Hill Road and Green Moon Way), two draining commercial land uses (Dobbin Center and Oakland Center), and one draining an industrial land use (Maryland Wholesale Food Market).

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

Howard County has completed sampling for all of the 15 required storm events. The County was able to collect samples during freezing rain, sleet, and snow which could be useful for estimating seasonal pollutant loads. The pollutants consistently recorded during each of the 15 storm events were total suspended solids, total dissolved solids, fecal coliform, total Kjeldahl nitrogen, phenols, and zinc. Some additional pollutants that occurred less frequently included flouranthene, nickel, cyanide, and cadmium.

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

For GIS and pollutant load analysis purposes, the County has been divided into five major watersheds: the Little Patuxent River, Middle Patuxent River, Patuxent River, Patapsco River, and Deep Run. Within these five major watersheds, the County is performing Level I and Level II pollutant load analyses using a variation of Schueler's "Simple Method." While the Level I analysis concentrates on estimating pollutant loads by watershed, the Level II analysis focuses on pollutant load estimates from each identified outfall.

The County provided results from both Level I and Level II analyses. Pollutant loadings in pounds for eleven land uses were reported by watershed. Totals for each watershed were calculated and event mean concentrations were derived. These estimates will be refined as more water quality data are collected during the permit term.

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

These County will provide seasonal pollutant load estimates in short and long-term phases. The Level II pollutant load model will be modified to calculate long-term seasonal loads. The long-term phase will involve the investigation of more complicated and accurate pollutant load models such as the Stormwater Management Model (SWMM). The County will analyze the tendency of specific pollutants to exhibit seasonal differences among land uses.

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

In its permit application, the County proposed three outfalls and an in-stream station in the Little

Patuxent watershed for long term monitoring. It was clear that the vast disparity between the drainage areas to the three representative outfalls and the ambient station would present a problem. With the ambient station's drainage area encompassing more than 15,000 acres and the combined representative outfall drainage areas totalling only about 67 acres, it was questionable whether this proposed long term monitoring arrangement would provide adequate water quality data. As a result, several alternative plans were discussed.

The County proposed alternative monitoring sites in the Plumtree Branch watershed. A monitoring scheme in this watershed will result in less disparity between the drainage areas to the outfalls and the in-stream station. It will allow the comparison of well-established, and, more recently developed residential areas. Furthermore, it will provide the opportunity to perform bio-assessments. The County currently is working to identify a suitable commercial outfall, determine the most appropriate older residential area outfall, locate a suitable outfall from a modern residential area, and find a suitable location for an ambient station.

Summary

Howard County completed its Part 2 monitoring requirements. The identification of an appropriate long term monitoring scheme and implementation of the long term monitoring program will be the County's primary concern.

4. Management Programs

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

§122.26(d)(2)(iv) "(A) A description of structural and source control measures..."

§122.26(d)(2)(iv)(A) "(1) A description of maintenance activities...for structural controls..."

Howard County is required by Environment Article 4, Subtitle 2 to inspect stormwater management facilities once every three years. The first priority for inspection and maintenance activities are County-owned structures. These facilities are inspected by the County's Bureau of Highways (BOH) on an annual basis. Maintenance on these public facilities includes mowing and major structural repairs.

Private stormwater management facilities are inspected biennially. Private facility owners are notified if maintenance is required. If the owner does not perform the required maintenance within 30 days of County notification, the County can perform the specified maintenance and bill the owner. The County has concerns about private owner's knowledge about maintenance of stormwater management facilities. As a result, the County plans to educate owners on the proper maintenance of their stormwater facilities. In addition, County staff will be educated on stormwater management facility maintenance as well as the identification of illicit discharges and water quality problems that could be encountered during the inspection process.

Proposed improvements to the County's stormwater management inspection and maintenance program include the development of a stormwater management maintenance procedures handbook and the use of improved maintenance equipment. The County has proposed to improve data collection by adding and updating stormwater management information on its GIS.

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

Howard County's planning procedures are guided by its General Land Use Plan, watershed planning, and other environmental planning programs. The Land Use Plan was adopted in 1990 as a 20 year guide for growth and development. For watershed planning, the County is involved with the Chesapeake Bay Tributary Strategies for the Patapsco and Patuxent River watersheds. The County has completed a Phase I study in the Little Patuxent River watershed and intends to investigate the effects of land use on water quality.

A Site Development Plan (SDP) is required for all major development and shows existing site conditions and proposed improvements. This plan must be prepared and approved prior to the issuance of grading or building permits. The SDP is distributed to the Subdivision Review Committee (SRC) which involves several departments including Planning and Zoning, Public Works, and Recreation and Parks. The SRC reviews the SDP to ensure it complies with local and State regulations. A written recommendation is made to the applicant within 60 days of the SDP submittal.

Other planning and review programs within the County include wetland protection, stream buffers which require as much as a 75 foot buffer along perennial streams in developed areas, steep slope protection, flood plain protection, forest conservation, and open space management. Howard County's Agricultural Land Preservation Program has a goal of preserving 30,000 acres of farmland and, to date, has preserved 14,000 acres.

Howard County is addressing significant redevelopment as well. The County will attempt to identify the types and characteristics of potential redevelopment projects. Recently, business and industrial redevelopment have been most prevalent. The County will look into changing the County Code to include requirements for stormwater management on proposed redevelopment projects indicated above.

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

The BOH is responsible for County-owned roadways. There are three operation zones and each has maintenance shops and storage facilities. Regarding snow removal, the County uses sodium chloride, calcium chloride, cinders, and stone dust. The County plans to install liquid calcium chloride tanks at each maintenance facility. Liquid calcium chloride may be beneficial as it can be added in much smaller quantities than salt and cinders and it lowers the freezing point of water to below 20 degrees fahrenheit.

Road shoulders are repaired once every three or four years. Road shoulders are the most significant source of road sediment. The County has proposed to use recycled material such as recycled asphalt for road repair. Street sweeping was discontinued in 1991 due to budget problems. However, one sweeper was retained in case of emergencies.

The County has a comprehensive tree management program. Under this program, 932 trees have been planted. The program includes activities such as trimming, removing dead trees, and chemical applications. Trees are injected, rather than sprayed, with pesticides. Public outreach

includes garden clubs and an Arbor Day celebration. A tree inventory is maintained on a computer database and the County proposes to include future tree management activities in watershed management efforts through its GIS.

§122.26(d)(2)(iv)(A) "(4) A description of procedures to assure that flood management projects assess the impacts on the water quality...;"

The County's existing flood management programs include flood plain acquisition activities and flood warning systems. Existing flood management facilities have been assessed for water quality retrofits. Additionally, the County has a State grant to retrofit five existing dry ponds. The evaluation of potential retrofits and cost-effective methods for their implementation will be ongoing.

The County has a floodplain acquisition program where it assesses properties, environmental value and, if necessary, will purchase them for protection. Furthermore, Federal Emergency Management Act (FEMA) structural and non-structural measures for preventing and protecting structures in the flood plain are implemented. The County has implemented a County-wide flood warning system that uses a series of rain and stream gauges that are linked to a central computer.

Several State and federal agencies share the responsibility for water quality impact assessment. Flood management structures located within wetlands must meet requirements under Section 404 of the CWA administered by MDE and the Army Corps of Engineers. If a proposed flood management structure's embankment exceeds three feet, the structure is subject to the Soil Conservation Service's (SCS) MD-378 criteria. Furthermore, all structures that discharge to streams or wetlands must have MDE Water Quality Certification.

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

The Carrs Mill and the New Cut road landfills were closed in 1980 and 1977, respectively. The only operating landfill is the Alpha Ridge landfill. All active and closed landfills are monitored for several chemicals. Howard County has monitored surface and groundwater at each of these sites to determine the effects of the landfills on water quality. This monitoring is required by an NPDES permit and includes analyses of volatile organic compounds (VOCs). The Alpha Ridge Landfill monitoring program is included as part of the integrated watershed monitoring strategy in the Upper Little Patuxent River watershed. Currently, there are no plans to build a new landfill.

Other monitoring efforts include groundwater remediation at the Mayfield Maintenance Shop and Scaggsville DPW Annex. A "pump and treat" method is used to remove chemicals that previously had been used at the facilities. The other operating municipal waste treatment, storage, and disposal facility is the Little Patuxent Water Reclamation Plant. The County currently is in the process of obtaining an NPDES permit and completing a stormwater pollution prevention plan for this facility.

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

Howard County has existing programs to control pesticides which include public education. The Maryland Department of Agriculture (MDA) implements laws that regulate pesticides and requires that pesticide applicators or consultants obtain proper certification.

The County's BOH, Department of Recreation and Parks, and School Board apply pesticides in a limited manner. The Columbia Association, the largest non-governmental land manager in the County owning approximately 3,000 acres, has an aggressive water quality protection program that includes pest management methods.

An assessment of pesticide programs in the County revealed that some improvements are needed. For example, tighter coordination between the County and State would be beneficial. Furthermore, methods to educate private urban land owners in the proper assessment, selection, and application of pesticides, herbicides, and fertilizers could be improved.

The County should develop an inventory of major pesticide and fertilizer users. Public outreach could be expanded and include making pamphlets and other information available in public places where pesticides are sold. The County feels that one activity that needs further definition is the use of commercial companies by residential and commercial land owners for pesticide and fertilizer applications.

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

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

The County has proposed a detailed program to detect and remove illicit connections. Prevention of illicit discharges is a priority with public education being one method of prevention. Another method is to review for illicit connections during the plan review and approval process and the construction inspection program for new development.

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

Targeting of potential areas for illicit connections will be done through investigating Part 1 field screening data, County Pretreatment program files, and implementing a pilot watershed study. Part 1 field screening resulted in 44 outfalls suspected of having illicit discharges. Initially, the Deep Run watershed will be targeted for screening. If a potential illicit discharge is identified, a tracking survey of its drainage area will be performed. The source will then be investigated to determine any existing permits, eligibility for an NPDES industrial permit, and alternative control methods.

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

Initial field screening methods will be those used for the Part 1 application. However, these may be modified in the future if necessary. The proposed drainage area tracking survey is intended to further investigate and confirm the existence of an illicit discharge. A downstream to upstream approach will be used and automated samplers will be installed if necessary. Results of this survey will be recorded on the illicit discharge database. Outfalls will be re-evaluated to determine if corrective action occurred.

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

The County Department of Fire and Rescue Services has the primary responsibility for managing spills to the storm drain system. Under a Hazardous Materials Plan, responsibilities are assigned to the Fire Department, Police Department, and the County Office of Emergency Management and Civil Defense. The Health Department and the Department of Public Works are also included. MDE is involved as well by enforcing State regulations.

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

Howard County will emphasize spill response coordination among its agencies. The County proposes to form a Public Outreach and Education work group as part of a Surface Water Quality Committee. This committee will be responsible for establishing and maintaining communication among all government and non-government organizations. This committee's activities will include public brochures and advertisements, public and private school curricula, and storm drain inlet stenciling.

§122.26(d)(2)(iv)(B) "(6) A description of educational activities...;"

Howard County has proposed several educational activities including modifying existing literature about County streams to include information on illicit discharges. Further efforts will include the use of radio and television, use of utility bills, advertising oil and anti-freeze recycling locations, and field demonstrations presented to County businesses.

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

The Bureau of Utilities (BOU) has direct responsibility for operation and maintenance of the County's sanitary sewer system for existing development. The Bureau of Construction Inspection (BCI) is responsible for new development and significant redevelopment. The County Health Department responds to complaints of suspected or known septic system malfunctions or failures. The County proposes to coordinate existing procedures for eliminating sanitary or septic discharges with the illicit connection detection program.

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

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

State and federal regulations require that discharges be controlled from landfills and hazardous waste facilities. Controls that are used include the diversion of runoff away from waste materials, the collection of any runoff and seepage as leachate, and, subsequently, the treatment and discharge of leachate under an NPDES point source permit. COMAR requires that various containment structures such as liners and berms be visually inspected to detect leaks. Facility owners are required to correct any problems by implementing controls to contain leaks.

§122.26(d)(2)(iv)(C) "(2) Describe a monitoring program...."

Monitoring downstream of landfills, hazardous waste sites, and industrial facilities is required by MDE through industrial NPDES permits. Quarterly testing is performed and results are compared to background data. If any pollutants are detected above the background data, further monitoring is required to identify specific pollutant quantities.

Howard County's monitoring program addresses stormwater discharges from municipal landfills, hazardous waste treatment, disposal, and recovery facilities, and industrial facilities subject to the Superfund Amendments and Reauthorization Act of 1986 (SARA). Howard County proposes to help MDE and EPA identify priority industrial site discharges, review stormwater pollution prevention plans, develop and implement controls, and support compliance efforts.

All proposed industrial facilities are subject to the County review processes. Proposed improvements include requesting MDE's list of NPDES permitted industrial facilities at six month intervals and comparing this list to the County's list of all industries organized by watershed.

§122.26(d)(2)(iv) "(D) A description of a program to implement and maintain structural and non-structural best management practices to reduce pollutants in stormwater runoff from construction sites...which shall include:"

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

Howard County has been delegated erosion and sediment control enforcement authority since March 1985. Erosion and sediment control inspection and enforcement is the responsibility of the Sediment Control Division of the Department of Licenses and Permits (DILP). New development plans are reviewed and approved for erosion and sediment control by the Howard Soil Conservation District.

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

The County requires land developers to plan, apply, and maintain both non-structural and structural control measures on construction sites. These control measures adhere to the Maryland Standards and Specifications for Soil Erosion and Sediment Control.

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

Inspection and enforcement of erosion and sediment control is performed by the Sediment Control Division with a manager and five inspectors. Inspections are performed bi-weekly. If a site is not in compliance with the approved erosion and sediment control plans, the inspector can issue a violation notice or stop work order.

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

Maryland law requires "responsible personnel" to obtain certification by completing an approved training class. The County intends to develop its own responsible personnel training course. This course will provide continuing training for contractors and will update them on new or improved erosion and sediment control methods. A separate training course could be investigated for engineers, planners, and others involved in the plan development, review, and approval processes.

Summary

Howard County has adequate stormwater management and erosion and sediment control programs in place. Emphasis during the permit term will be on the identification of illicit connections, analysis of road maintenance activities, and the development of public outreach and educational activities.

5. Program Funding

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

§122.26(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..."

Howard County estimates that \$1,520,800 will be necessary to implement new NPDES activities. The two primary components of the County budget are the operating and capital budgets. The operating budget consists of General Funds and Restricted Funds. The Capital Budget includes bonds, storm drainage funds, and grants. The County believes this funding will be adequate, however, alternative funding methods will be studied.

Summary

Howard County appears to have adequate funding for the permit term. Costs throughout the permit term will need to be monitored to ensure that NPDES management programs can be implemented and maintained.

6. Assessment of Controls

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

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

Howard County has satisfied its application requirements for assessment of controls. The effectiveness of structural and non-structural controls in improving water quality was emphasized. Surrogate parameters were proposed for determining the effectiveness of non-structural controls and they include, for example, the number of citizens enrolled in pesticide and herbicide application training courses and the number of illicit connections detected. A detailed discussion of existing and potential information on the effects of stormwater management facilities on groundwater was also included.

The County highlighted public outreach by including proposals such as a "Water Quality Index." This index should be helpful with providing an easily understood water quality measure for public awareness.

Summary

Howard County will refine pollutant load estimates during the permit term as more water quality data are collected and public education programs are implemented. As the County progresses further into the NPDES permit term, methods of determining effectiveness can be assessed and modified.