

MARYLAND DEPARTMENT OF THE ENVIRONMENT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

PART I. IDENTIFICATION

A. **Permit Number:** MS-SH-99-011

B. **Permit Area:**

This permit covers stormwater discharges from the Maryland State Highway Administration's (SHA) municipal separate storm sewer system in Anne Arundel, Baltimore, Carroll, Charles, Frederick, Harford, Howard, Montgomery, and Prince George's counties. Discharges from SHA owned storm drain systems in additional Maryland jurisdictions that may be subject to future National Pollutant Discharge Elimination System (NPDES) stormwater program requirements may be added to this permit at the discretion of the Maryland Department of the Environment (MDE).

C. **Effective Date:** January 8, 1999

D. **Expiration Date:** January 8, 2004

PART II. STANDARD PERMIT CONDITIONS

A. **Administration of Permit:**

1. The Maryland SHA's NPDES permit shall be administered by the Highway Hydraulics Division (HHD). By 1/10/2000, an NPDES coordinator shall be appointed and an organizational chart provided detailing personnel and groups responsible for major NPDES program tasks. MDE shall be notified promptly and in subsequent annual reports of any changes in personnel or organization of program tasks.

B. **Legal Authority**

1. The SHA shall maintain adequate legal authority, in accordance with NPDES regulations, 40 Code of Federal Regulations (CFR) 122.26(d)(2)(i), throughout the term of this permit. In the event that any provisions of its legal authority are found to be invalid, the SHA shall make the necessary changes to maintain adequate legal authority.

C. **Source Identification**

1. The SHA shall collect source identification data regarding its municipal separate storm sewer system within the jurisdictions specified in Part I.B. of this permit. These data shall include highways and access ramps, average annual daily traffic designations for mainline of highways, highway support facilities (e.g., park and

rides, rest stops, vehicle maintenance facilities, salt and pesticide storage facilities, weigh stations, offices) storm drain systems (drains, swales, culverts, outfalls, and best management practices), topographic features, SHA NPDES industrial permits, and connections with other storm drain systems (e.g, municipality, industry, and access permits).

2. The SHA shall continue the development of its geographic information system (GIS) for the purpose of collecting and analyzing source identification data. The SHA shall develop its GIS according to the following schedule:
 - a. Record source identification data available on as-built plans in Howard County by 7/1/99;
 - b. Record source identification data available on as-built plans in Montgomery County by 1/10/2000;
 - c. Record all source identification data in Howard County by 7/3/2000;
 - d. Propose a schedule for collecting all source identification in Montgomery County by 1/10/2000; and
 - e. Identify procedures for recording newly constructed highway projects for entire permit area by 1/10/2000.
3. By 1/10/2000, the SHA shall submit to MDE a schedule for completing source identification data collection in the remaining jurisdictions specified in Part I.B. of this permit. At a minimum, the schedule shall include completing as-built plan collection in at least one jurisdiction every eighteen months. When as-built plan data collection is completed for each jurisdiction, the SHA shall propose a schedule for collecting all of its source identification data for that jurisdiction.
4. The SHA shall coordinate source identification data collection activities with the jurisdictions specified in PART I.B. of this permit and MDE. Data shall be organized and stored in formats compatible with those established by MDE.
5. The SHA shall continually update and improve its source identification data through information gathered during routine inspection and repair of its municipal separate storm sewer system in the jurisdictions where GIS has been developed through as-built plan processing.
6. By 1/10/2000, SHA shall submit an example of its GIS capabilities. This shall include an identification of all data layers and stage of development and a description of how the data are stored, accessed, and used. The example shall include the best available digital data containing the following information for a SHA chosen highway segment in Howard County:
 - a) Geologic features: topography and steep slopes;
 - b) Land use: highway footprint;

c) Resources: streams, floodplains, wetlands, forests, and areas of special interest (e.g., endangered species habitat);

d) Infrastructure: storm drain systems (including major outfalls, inlets, appurtenant conveyances, and associated drainage areas), and stormwater management facilities;

e) Access Permits: note where all access permits have been issued; and

f) Land treatment: highway sections treated by stormwater management facilities and highway sections without treatment.

D. Discharge Characterization

The SHA will contribute to Maryland's understanding of stormwater runoff and its effect on water resources by conducting a monitoring program. This program will consist of three elements: a best management practice (BMP) performance study; long-term discharge characterization of an outfall and associated in-stream monitoring station; and comparison of SHA monitoring data with national studies.

1. By 1/10/2000, the SHA shall propose a BMP monitoring study for its Pindell School Road site. This study shall provide an analysis of pollutant removal rates associated with BMP design, performance over time, maintenance intervals, and any other relevant issues specific to performance. Monitoring shall begin immediately upon MDE's approval of the study design.
2. By 7/1/99, the SHA shall begin long-term discharge characterization monitoring for an outfall and associated in-stream monitoring station using the following minimum criteria for chemical, biological, and physical monitoring:

a) For Chemical Monitoring:

i) Monitoring shall be performed at the SHA drainage swale northeast of the Interstate 695 (Baltimore Beltway) and Dulaney Valley Road interchange and an associated in-stream monitoring station in a tributary to Hampton Branch for characterizing runoff from highway land use;

ii) Continuous flow measurements shall be recorded at the in-stream monitoring station. Data collected shall be used to estimate annual and seasonal pollutant loads from the Interstate 695 and Dulaney Valley Road interchange;

iii) Twelve (12) storm events shall be monitored per year at the outfall and in-stream monitoring locations with at least three occurring per quarter. Quarters shall be based on calendar year. If extended dry weather periods occur, baseflow samples shall be taken at least once per month at the in-stream monitoring station and, if flow is observed, at the outfall;

iv) Discrete samples of stormwater flow shall be collected at the outfall and in-stream monitoring stations using automated or manual sampling methods. Measurements of pH and water temperature shall be taken; and

v) At least three (3) samples determined to be representative of the storm event shall be submitted to a laboratory for analysis according to methods listed under 40 CFR Part 136 and event mean concentrations (EMC) shall be calculated for the following parameters:

∇ Biochemical Oxygen Demand (BOD ₅)	∇ Nitrate plus Nitrite
∇ Total Kjeldahl Nitrogen (TKN)	∇ Total Phenols
∇ Total Phosphorus	∇ Total Copper
∇ Total Petroleum Hydrocarbons (TPH)	∇ Total Zinc
∇ Total Cadmium	∇ Total Lead
∇ Total Suspended Solids (TSS)	∇ Fecal Coliform*
∇ Total Chlorides	∇ Oil and Grease*
∇ Conductivity	(*Optional).

b. For Biological Monitoring:

- i. Monitoring shall commence with chemical monitoring; and
- ii. The stream reach above and below the confluence of SHA's outfall and the Hampton Branch shall be monitored each Spring and Fall using the Environmental Protection Agency's (EPA) Rapid Bioassessment Protocol III or other method approved by MDE.

c. For Physical Stream Assessment:

- i. A geomorphologic stream assessment shall be conducted for a reasonable distance above and below the confluence of SHA's outfall and the Hampton Branch. This assessment shall include, at a minimum, an annual comparison of permanently monumented stream channel cross-sections, an annual comparison of the stream profile, and a stream habitat assessment using techniques as defined by the EPA's "Rapid Bioassessment Protocol for use in Streams and Rivers," or other similar method approved by MDE; and
- ii. A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-2, HSPF, SWMM, etc.) to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.

3. By 7/2/2001, the SHA shall use data gathered in Part II.D.1. and 2. above to develop a report comparing Maryland highway runoff with national highway runoff studies.

4. Annually, SHA shall describe in detail its monitoring activities for the previous year and include the following:
 - a. A detailed description of weather conditions and any equipment failures;
 - b. A detailed description of field data collection methods and documentation of any variations to the minimum requirements for chemical, biological, or physical monitoring;
 - c. Chemical, biological, and physical monitoring results recorded on MDE's long-term monitoring databases;
 - d. An analysis of monitoring data integrating the field results from the chemical, biological, and physical monitoring;
 - e. Annual and seasonal pollutant load estimates using the long-term monitoring data; and
 - f. Any requests and accompanying justifications for proposed modifications to the monitoring program.

E. Management Program

The Maryland SHA shall implement a management program to control the quality of stormwater runoff to the maximum extent practicable. This management program shall consist of 5 elements. Element 1 incorporates SHA's existing programs for erosion and sediment control and stormwater management. Element 2 is comprised of an illicit connection, spill, and dumping response program. Element 3 is designed to educate personnel and citizens about stormwater. Element 4 will require the development of an environmental design guidance document and a maintenance guidance document. Element 5 will be based on SHA's source identification data and will require watershed management in coordination with surrounding NPDES municipalities.

1. SHA shall continue to implement effective erosion and sediment control and stormwater management programs in accordance with State law (Environment Article, Title 4, Subtitle 1 and Subtitle 2, Annotated Code of Maryland). As part of these programs, SHA shall:
 - a) Use MDE's 1994 Standards and Specifications for Soil Erosion and Sediment Control, or any subsequent revisions;
 - b) Perform "responsible personnel" certification classes to educate highway construction contractors regarding erosion and sediment control requirements and report newly certified persons to MDE;
 - c) By 1/10/2000, the SHA shall implement a BMP inspection and maintenance program to inspect all stormwater management facilities at least once every three years and perform all routine maintenance (e.g., mowing, debris, and trash removal, etc.) within one year of the inspection;

d) Significant repair work requiring engineering design, permitting, funding, and facility reconstruction shall be documented and reported to MDE. The SHA shall provide in annual reports a schedule for performing all significant BMP repair work;

e) Within one year of Code of Maryland Regulations (COMAR) promulgation for stormwater management, modify its administrative procedures to accommodate the implementation of the *Maryland Stormwater Design Manual*;

f) Implement the stormwater management design policies, principles, methods, and practices found in the *Maryland Stormwater Design Manual* and COMAR immediately upon satisfying 1.e) above;

g) Track the progress toward satisfying 1.f) above; and

h) Report annually the modifications needed to address problems associated with implementing the *Maryland Stormwater Design Manual*.

2. By 1/10/2000, the SHA shall implement procedures for the detection and control of illicit connections, spills, and dumping to its storm drain system. As part of this program, SHA shall:

a) Conduct an analysis of Howard County dry weather field screening data to determine the nature and extent of illicit connections to highway storm drain systems;

b) Based on the Howard County analysis, establish procedures for screening outfalls during the routine maintenance inspections of its storm sewer system as specified in E.1.c. above (add illicit connection, spills, and dumping category to its BMP maintenance inspection and storm sewer field screening forms);

c) Promote the public reporting of illicit connections, spills, and dumping;

d) Develop investigation procedures for outfalls suspected of having illicit connections. Tracking procedures should include visual observations, chemical monitoring, use of GIS storm drain maps, and coordination with surrounding jurisdictions when illicit connections originate from beyond SHA's rights-of-way;

e) Ensure that all SHA facilities identified by the Clean Water Act (CWA) as being industrial activities have NPDES industrial general permit coverage; and

f) Make highway access permits contingent upon proof of NPDES industrial stormwater permit coverage and pollution prevention plan implementation, if required by the CWA. In instances where no permits have been issued or pollution prevention plans implemented, SHA shall

notify MDE of the name and location of the facility for permitting and enforcement requirements.

3. By 7/2/2001, SHA shall implement a comprehensive educational outreach program that includes:
 - a) Personnel Environmental Awareness Training: This program shall be geared toward SHA personnel and should establish an awareness of highway stormwater runoff and its effect on the environment. Examples of training that will satisfy this requirement include: classes regarding stormwater management and erosion and sediment control; field trips which demonstrate links between highway runoff and stream, river and Chesapeake Bay health; requiring environmental design and maintenance as a training module for all engineers; providing pollution prevention training for maintenance personnel; and integrated pest management (IPM) instruction and certification for personnel responsible for roadside vegetation maintenance.
 - b) Environmental Outreach to Citizens: This program shall educate citizens regarding the effect of highway runoff on the environment and promote ways to help improve water quality. This program can be performed in conjunction with local municipal public education programs. Examples of activities that will fulfill this permit condition include: creating volunteer opportunities for roadside litter control and tree plantings; informing citizens on the hazards of spills and illicit connections; promoting combined vehicle trips, carpooling, mass transit, compressed work weeks, tele-commuting, bicycling, and walking to reduce vehicle miles traveled for cleaner air and a healthier Chesapeake Bay.
 - c) Signs for the Environment: This program shall be geared toward motorists and encourage environmental stewardship while traveling Maryland's highways. This program can be performed in conjunction with local municipal public education programs. Examples of signs that will fulfill this permit condition include: name signs for streams, rivers, lakes, and estuaries at highway crossings; roadside identification of sensitive watersheds (e.g. drinking water area, Chesapeake Bay watershed, etc.); pollution prevention signs (e.g., "don't litter," "open truck haulers must cover loads," and "share the road with bikes and pedestrians").
4. The SHA is considered Maryland's leader in environmental highway design and maintenance. As part of this responsibility, by 1/8/2003, the SHA shall complete two guidance documents. The first shall detail effective environmental planning and design considerations for highway construction. The second shall detail maintenance procedures for environmental stewardship of existing highways. These documents shall be adopted as official SHA operating procedures for each district and copies of guidance documents shall be distributed to local highway departments by 7/1/2003.

- a) Topics in the environmental design guidance document shall address: coordination with County smart growth plans, limited access highways, impervious surfaces reduction strategies; encouragement of environmental design (e.g., sheet flow, grass swales, divided drainage patterns, etc.); least cost planning initiatives [e.g., commuter “tide lanes,” high occupancy vehicle (HOV) lanes, vehicle trip reduction strategies]; strict guidelines for limiting land disturbance during highway construction; wetlands and sensitive waterway avoidance and mitigation policies; pedestrian “friendly” designs (e.g., sidewalks, crosswalks, bridges, trails); and indigenous vegetation landscaping.
 - b) Topics in the maintenance manual shall address procedures for: controlling winter weather deicing chemicals; roadside vegetation management practices (e.g., integrated pest management techniques, indigenous vegetation landscaping); BMP and storm sewer system maintenance; inspecting, investigating, and eliminating illicit connections, spills, and dumping; street sweeping; and litter control.
5. The SHA shall begin providing MDE and permitted NPDES municipalities with available GIS stormwater data to aid in the development of watershed assessments. Additionally, SHA shall contribute to watershed restoration plans by performing stormwater retrofits on SHA property in watersheds targeted by NPDES municipalities. As part of this condition SHA shall:
- a) Provide available source identification data to participating NPDES municipalities and MDE (based on schedules established in Part II C. of this permit) for aiding in watershed assessments;
 - b) Perform detailed assessments of its highway system and opportunities for stormwater retrofits in NPDES municipalities where source identification is complete. These assessments shall focus in watersheds the NPDES municipalities have chosen for restoration;
 - c) Construct 10 structural BMP retrofits and implement 10 non-structural BMP retrofits during the course of its five year permit. A menu of structural and non-structural BMPs is provided below.

Menu of Structural Options

- i) BMP designs meeting the *Maryland Stormwater Design Manual* including grass swales; bioretention, sand filters, and infiltration practices; extended detention, retention, and wetland ponds; and retrofitting of existing facilities for quality control; or
- ii) Stream restoration and wetland creation projects designed to enhance water quality.

Menu of Non Structural Options

- i) Pollution prevention activities including volunteer litter control (e.g., “Adopt a Highway” program), storm drain

stenciling (e.g., “Chesapeake Bay Drainage, Don’t Dump”), and school education (“Don’t be a Litter Critter”).

ii) Vegetative: reforestation, “grow don’t mow”, and cloverleaf plantings.

Innovative Practices

The SHA is encouraged to experiment with implementing new practices for controlling highway runoff. Descriptions of any new practices shall be submitted to MDE for approval;

- d) Choose retrofit sites within watersheds targeted for restoration by NPDES municipalities, or, when opportunities in these watersheds have been exhausted, other areas may be selected; and
- e) Submit with annual reports, pertinent information on its retrofit program such as BMP retrofit project proposals, procurement and construction status, and reasonable schedules for completing its BMP retrofit requirements for MDE’s approval.

F. Program Funding

- 1. The SHA shall maintain adequate funding to comply with all conditions of this permit
- 2. Annually, the SHA shall provide a summary of costs associated with its NPDES stormwater program.

G. Assessment of Controls

- 1. In cooperation with MDE and surrounding NPDES municipalities, the SHA shall use its source identification and monitoring data for computing water quality impacts.
- 2. The SHA shall contribute to Maryland’s understanding of stormwater BMP performance by monitoring its Pindell School Road facility. Monitoring data collected according to Part II D. “Discharge Characterization” of this permit shall be used to assess pollutant removal rates associated with BMP design, performance over time, maintenance intervals, and any other relevant issues specific to performance.

PART III. SPECIAL PROGRAMMATIC CONDITIONS

Since the signing of the Chesapeake Bay Agreement in 1983, Maryland has been working toward meeting the goal of reducing by 40% the discharge of nutrients to the Chesapeake Bay by the year 2000. To achieve this nutrient goal, MDE has developed strategies to improve the water quality in the tributaries that drain to the Bay. The Bay watershed has been subdivided into ten major tributaries which have each been assigned a 40% nutrient reduction goal. Characterizations of specific tributaries have been made in terms of land use, nutrient loads, and water quality. Additionally, strategy options have been

developed based on identified problems in order to guide the restoration effort in each individual tributary.

The SHA's highway network traverses all ten tributaries in Maryland. This NPDES permit requires the SHA to assist with the implementation of strategies to meet nutrient reduction goals within the localities specified in Part I.B of this permit. Coordination between and among other jurisdictions is a major requirement and the identification of those appropriate jurisdictions will occur jointly with MDE. Additionally, deadlines, priorities, and scheduling to satisfy specific conditions will be determined in conjunction with MDE. In any case, progress toward meeting these conditions shall be reported to MDE.

PART IV. ANNUAL PROGRESS REPORTS

Annual progress reports required under 40 CFR 122.42(c) will facilitate the long-term assessment of the SHA's NPDES stormwater program. These reports shall include:

Administration of Permit: In its first annual report, the SHA shall indicate who its NPDES coordinator is and provide an organizational chart showing personnel responsible for major NPDES program tasks. Any changes in personnel shall be updated in subsequent annual reports.

Legal Authority: Annually, SHA shall summarize any instances in which legal authority was found to be insufficient for complying with this permit and outline steps necessary for correction.

Source Identification: In its first annual report, the SHA shall provide an example of its GIS capabilities in accordance with Part II C.6 of this permit. Annually, SHA shall summarize the status of data gathering efforts (e.g., Howard County 95% complete, Montgomery County 50%, etc.). Additionally, on an annual basis, SHA shall indicate which municipalities are selected for data collection in conjunction with the schedule required in Part II C. of this permit.

Discharge Characterization: Annually, SHA shall complete MDE's long-term discharge characterization database, analyze the data, and summarize results as stipulated in Part II.D.4 of this permit. By 1/10/2000, SHA shall submit a proposal for the Pindell School Road monitoring study and summarize results in subsequent annual reports.

Management Program:

Element 1: Annually, SHA shall provide MDE with a summary of its stormwater management inspection and maintenance program. Data shall be separated by district and include an inventory of known facilities, facilities inspected, facilities requiring routine maintenance and maintenance complete. Also, each district shall document facilities in need of significant repair work as described in Part II E.1.d. and a schedule for repair of these facilities. Additionally, the names of people certified under the erosion and sediment control training program shall be forwarded to MDE.

Element 2: In its first annual report, SHA shall submit an analysis of its dry weather field screening program in Howard County and procedures for continuing the program for the remaining permit term. Annually thereafter, SHA shall submit data on the number of

outfalls screened for dry weather flow and the discovery of any illicit connections, spills or illegal dumping into its storm drain system. Summaries shall include the origin of discovery (SHA inspector, citizen complaint, etc.), the investigations conducted, any coordination with surrounding jurisdictions, the pollutant sources found, the discharges eliminated, and any referrals to MDE for NPDES permitting. Also, SHA shall provide MDE with a list of all SHA industrial facilities in each district requiring NPDES industrial stormwater permit coverage.

Element 3: Beginning with the 1/8/2002 annual report and annually thereafter, SHA shall provide MDE with summaries of its comprehensive environmental outreach program. SHA shall provide information on the number of personnel trained, the materials distributed to the public, the number of volunteers and citizen complaints, and the traffic signs created and posted.

Element 4: By 1/8/2003, the SHA shall complete two guidance documents. One shall detail effective environmental planning and design considerations for highway construction. The second shall detail maintenance procedures for environmental stewardship of existing highways. Additionally, by 7/1/2003, the SHA shall mail these guidance documents to local highway departments in Maryland.

Element 5: Beginning with the 1/8/2002 annual report and annually thereafter, SHA shall provide BMP retrofit plans and implementation schedules for each NPDES jurisdiction based on requirements in Part II E.5. Subsequent annual reports shall provide summaries of BMP retrofit plan implementation.

Program Funding: Annually, the SHA shall provide a summary of costs associated with the implementation of its NPDES stormwater program.

Assessment of Controls: In cooperation with MDE and surrounding NPDES municipalities, the SHA shall use its source identification and monitoring data for assessing water quality impacts.

PART V. ENFORCEMENT AND PENALTIES

A. Program Review

In order to assess the effectiveness of the permittee's NPDES program for eliminating non-stormwater discharges and reducing the discharge of pollutants to the maximum extent possible, MDE will review program implementation, annual reports, and periodic data submittals on an annual basis. Continuation or reissuance of this permit beyond January 8, 2004 will be subject to MDE's review of SHA's compliance and implementation of the conditions of this permit.

B. Discharge Prohibitions and Receiving Water Limitations

The permittee shall effectively prohibit non-stormwater discharges through its municipal separate storm sewer system. NPDES permitted non-stormwater discharges are exempt from this prohibition. Discharges from the following will not be considered a source of pollutants when properly managed: water line flushing; landscape irrigation; diverted stream flows; rising ground waters; uncontaminated ground water infiltration to separate storm sewers; uncontaminated pumped ground water; discharges from potable water

sources; foundation drains; air conditioning condensation; irrigation waters; springs; footing drains; lawn watering; individual residential car washing; flows from riparian habitats and wetlands; dechlorinated swimming pool discharges; street wash water; and fire fighting activities. The discharge of stormwater containing pollutants which have not been reduced to the maximum extent practicable is prohibited.

The permittee shall not cause the contamination or other alteration of the physical, chemical, or biological properties of any waters of the State, including a change in temperature, taste, color, turbidity, or odor of the waters or the discharge or deposit of any organic matter, harmful organism, or liquid, gaseous, solid, radioactive, or other substance into any waters of the State, that will render the waters harmful to:

- (1) Public health, safety, or welfare;
- (2) Domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses;
- (3) Livestock, wild animals, birds; or
- (4) Fish or other aquatic life.

C. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

D. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. The permittee shall comply at all times with the provisions of the Environment Article, Title 4, Subtitles 1, 2, and 4; Title 7, Subtitle 2; and Title 9, Subtitle 3 of the Annotated Code of Maryland.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

E. Sanctions

1. Penalties Under the CWA - Civil and Criminal

The CWA provides that any person who violates any permit condition is subject to a civil penalty not to exceed \$27,500 per day for each violation. Any person who negligently violates any permit condition is subject to criminal penalties of \$2,750 to \$27,500 per day

of violation, or imprisonment of not more than 1 year, or both. Any person who knowingly violates any permit condition is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than 3 years, or both.

2. Penalties Under the State's Environment Article - Civil and Criminal

Nothing in this permit shall be construed to preclude the institution of any legal action nor relieve the permittee from civil or criminal responsibilities and/or penalties for noncompliance with Title 4, Title 7, and Title 9 of the Environment Article, Annotated Code of Maryland, or any federal, local, or other State law or regulation.

The Environment Article, §9-342, Annotated Code of Maryland, provides that any person who violates a permit condition is subject to a civil penalty up to \$1,000 for each violation, but not exceeding \$50,000 total. The Environment Article, §9-343, Annotated Code of Maryland, provides that any person who willfully or negligently violates a permit condition is subject to a criminal penalty not exceeding \$25,000 or imprisonment not exceeding 1 year, or both.

The Environment Article, §9-343, Annotated Code of Maryland, provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or both.

The Environment Article, §9-343, Annotated Code of Maryland, provides that any person who knowingly makes any false statement, representation, or certification in any records or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or both.

F. Permit Revocation and Modification

1. Permit Actions

This permit may be modified, revoked, or terminated for cause. The filing of a request by the permittee for a permit modification, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. A permit may be modified by the Department upon written request by the permittee and after notice and opportunity for a public hearing in accordance with and for the reasons set forth in the Code of Maryland Regulations (COMAR) 26.08.04.10.

After notice and opportunity for a hearing and in accordance with COMAR 26.08.04.10., the Department may modify, suspend, or revoke and reissue this permit in whole or in part during its term for causes including, but not limited, to the following:

- a) Violation of any terms or conditions of this permit;
- b) Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

- c) A change in any condition that requires either a temporary reduction or elimination of the authorized discharge; or
- d) A determination that the permitted discharge poses a threat to human health or welfare or to the environment and can only be regulated to acceptable levels by permit modification or termination.

2. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit; or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

G. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, State, or local law or regulations.

H. Severability

The provisions of this permit are severable. If any provision of this permit shall be held invalid for any reason, the remaining provisions shall remain in full force and effect. If the application of any provision of this permit to any circumstance is held invalid, its application to other circumstances shall not be affected.

I. Signature of Authorized Administrator and Jurisdiction

All applications, reports, or information submitted to the Department shall be signed as required by COMAR 26.08.04.01-1. As in the case of municipal or other public facilities, signatories shall be either a principal executive officer, ranking elected official, or other duly authorized employee.

J.L. Hearn, Director
Water Management Administration

Date

APPENDIX 1

DISCHARGE PERMIT APPLICATION SUMMARY

APPENDIX 1

MARYLAND DEPARTMENT OF THE ENVIRONMENT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT APPLICATION SUMMARY

MARYLAND STATE HIGHWAY ADMINISTRATION

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 and medium municipal separate storm sewer systems. Additionally, any operators of municipal storm sewer systems within these jurisdictions require permits as well. The Maryland State Highway Administration (SHA) operates a system of highways, including associated drainage systems, within 9 Maryland jurisdictions defined as large or medium municipalities that have existing NPDES stormwater permits. As a result, SHA was required to submit a two-part NPDES permit application to satisfy the EPA's regulations for permitting stormwater discharges from municipal separate storm sewer systems. Appendix 1 summarizes the SHA'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 outlined in Permit # MS-SH-99-011. Appendix 2 outlines MDE's long-term monitoring database and Appendix 3 includes a spreadsheet for the reporting and tracking of NPDES data. Additionally, NPDES regulatory requirements can be found in Appendix 4.

PART II. BACKGROUND

A. Problems Associated with Stormwater Pollutants

Pollutants in stormwater discharges from many sources are largely uncontrolled. The *National Water Quality Inventory, 1994 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 urban runoff is responsible for 6% of the nation's impaired wetlands, 12% of impaired rivers, 18% of impaired lakes and reservoirs, and 46% of impaired estuaries. 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, highways, and industrial facilities. Additionally, illegal dumping, sanitary sewer system leaks, accidental spills, 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 diversity 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 and medium municipal separate storm sewer systems must submit a two-part application to MDE outlining programs for monitoring and controlling stormwater discharges. Additionally, any operators of municipal separate storm sewer systems within large and medium jurisdictions are required to submit applications for permit coverage as well. 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 for new development in order to maintain, 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 by focusing cleanup efforts on the Bay's tributaries. Although Maryland's existing programs will aid the SHA 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

The SHA maintains all State roads and U.S. interstates within Maryland excluding those associated with toll facilities or located in Baltimore City. The State system includes approximately 6,000 centerline miles, 16,064 lane miles, and more than 2,400 bridges. This network of highways spans numerous physiographic regions and services urban, suburban, and rural jurisdictions. Headquartered in Baltimore, SHA's Administrative offices set statewide policies, conduct major traffic studies, and provide technical assistance to seven engineering districts which handle most of the day-to-day responsibilities.

All of Maryland's 23 counties fall into one of SHA's seven engineering districts. However, only those districts servicing Maryland's urban jurisdictions with populations greater than 100,000 come under the purview of the NPDES municipal stormwater program. For example, districts 1, 2, and 6 encompass Maryland's Eastern Shore and the western part of the State where populations are considered rural. Conversely, districts 3, 4, 5, and 7 are centrally located in Maryland and cover more urbanized areas. These urban districts will play a vital role in SHA's NPDES stormwater permit because they are within jurisdictions having populations greater than 100,000 and are required to have NPDES municipal stormwater permits. These districts service transportation goals unique to each region and are described below.

District 3 is located in the south central part of Maryland and includes Montgomery and Prince George's counties which are permitted currently under the NPDES municipal program. The Montgomery portion of the district is primarily in the physiographic region known as the Piedmont Province, characterized by gently rolling to steep hills with shallow soils. The Prince George's County portion, located further east and south, is almost entirely in the Atlantic Coastal Plain, characterized by little topographic relief and deep soils. The highways in this district are the gateway to the nation's capitol. Many residents commute daily to Washington D.C. on I-95, the Capitol Beltway (I-495), and I-270. Both counties have extensive urban areas and attract much growth and development. Highway expansion and maintenance in this district present major challenges because of the heavily traveled arteries.

District 4 located in north central Maryland encompasses Baltimore and Harford counties, both

permitted localities. Additionally, both counties are split by the Fall Line, which runs southwest to northeast. There are slightly greater portions of each county located in the Piedmont Province than the Atlantic Coastal Plain. This district includes both urban and rural areas. Maintenance and construction of highways radiating from the Baltimore Beltway (I-695) to suburban and rural areas, including I-95, I-70, I-795, and I-83, is the district's main focus.

The Southern Maryland counties of Anne Arundel, Calvert, Charles and St. Mary's comprise District 5 and lie entirely within the Atlantic Coastal Plain. Urban development is more concentrated in the northern portion of this region with only Anne Arundel and Charles counties requiring NPDES municipal stormwater permits. Annapolis, the State's capitol, is located in Anne Arundel County and is connected to all areas of the State via major arteries such as MD 2, MD 3, U.S. 50, U.S. 301, MD 100, and I-97. Major arteries in Charles County include MD 5 which is Southern Maryland's express route to Washington, D.C. and U.S. 301 which is a major North/South corridor.

District 7 located in north central Maryland just west of District 4, encompasses Carroll, Frederick, and Howard counties. Individual NPDES municipal stormwater permits cover all three of these jurisdictions. The majority of the land area in this district is in the Piedmont Province with a portion of Frederick County in the Blue Ridge Province, characterized by ancient mountain formations with bedrock outcroppings. These counties are among the fastest growing in the State, with agricultural areas burgeoning into suburban enclaves. Many of these counties' residents are Baltimore and Washington, D.C. commuters who travel major highways such as I-95, I-70, I-270, U.S. 29, and MD 140.

2. SHA as a Municipal Separate Storm Sewer System

Initially, there was some ambiguity regarding the SHA's participation in the NPDES stormwater program. While it was clear that activities like vehicle maintenance and salt storage dome required industrial permit coverage, the State-owned highway infrastructure presented numerous questions and complications related to the municipal separate storm sewer system process. Maryland's system of highways and appurtenant water conveyance systems do not easily correspond to EPA's definition of a "large" or "medium" storm drain system (e.g., populations over 250,000 constituting "large" municipalities and populations over 100,000 constituting "medium" municipalities). The only population associated with the SHA is the vehicular traffic using the State's road network. Additionally, many of the municipal permit application requirements such as forecasting population growth or decline; monitoring residential and commercial runoff; and mapping landfills and parks are not appropriate for the SHA to provide.

The compelling evidence that brings Maryland's SHA into the NPDES municipal stormwater program is in 40 CFR 122.26 (a)(3)(i) which states that "[p]ermits must be obtained for all discharges from large and medium municipal separate storm sewer systems..." SHA's network of roads and drainage systems are located within 10 Maryland municipalities that EPA defines as either a large or medium municipal storm sewer system. Moreover, 40 CFR 122.26 (b)(8) defines a municipal separate storm sewer system as "...a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains)...(o)wned or operated by a state, city, town, borough, county, parish, district, association, or other public body..." From this regulatory language comes the

supposition that any public highway department operating within large or medium municipalities and responsible for water conveyances must participate in the NPDES municipal stormwater program. This includes Maryland's SHA. Programmatically, because the SHA owns storm drain systems that are interconnected with those that are permitted currently, it makes sense that the SHA have an obligation to join Maryland's NPDES municipal stormwater efforts.

B. Programmatic Components

Aside from the difficulty of determining participation is the challenge of choosing the appropriate NPDES permitting option for the SHA. Several permitting options were provided by EPA for entities such as the SHA who owned significant storm sewer systems within large or medium NPDES municipalities. 40 CFR 122.26 (a)(3)(iii) states that, "[t]he operator of a discharge from a municipal separate storm sewer system which is part of a large or medium municipal separate storm sewer system must either: (A) Participate in a permit application (to be a permittee or a co-permittee)...(B) Submit a distinct permit application which only covers discharges from the municipal separate storm sewers for which the operator is responsible; or (C) A regional authority may be responsible for submitting a permit application..." Beyond this broad guidance, little specific information was provided regarding how and when transportation agencies were to apply for NPDES permit coverage.

When Maryland's first NPDES municipal stormwater permits were issued, the tenets of issuing one regional permit versus individual permits were discussed. Maryland's NPDES jurisdictions opted for exclusive permits because they owned a majority of their storm sewers and wanted to maintain control. Hence, for responsive stormwater management programs, it made sense to issue NPDES permits at a jurisdictional level. Regional issues were handled through special conditions in each permit requiring cooperation among municipal operators. MDE decided to handle SHA in the same manner and issue them a distinct permit with special conditions for interjurisdictional cooperation.

To provide SHA with the necessary guidance, MDE reviewed the NPDES municipal stormwater application regulations and purged requirements which did not make sense for a transportation authority. While tasks such as providing population estimates and monitoring of residential land use are not appropriate, other tasks are, such as mapping storm sewer outfalls and their drainage areas. MDE compiled a list of all relevant tasks and negotiated a schedule with SHA for submittal (please refer to Appendix 5 for a complete task list). This task list was to act as an NPDES permit application. These materials are now sufficiently complete for MDE to write an NPDES municipal stormwater permit for Maryland's SHA. The following sections 1 through 6 provide a summary of SHA's application submitted in response to MDE's guidance (*provided in italics*) and correspond to EPA's major categories of legal authority, source identification, discharge characterization, management programs, program funding and assessment of controls.

1. Legal Authority

Task 1. The SHA shall provide a description, prepared by legal counsel, documenting the authority that SHA intends to rely on to control stormwater discharges in accordance with 40 CFR 122.26.

The only legal manner in which a person may discharge or increase stormwater runoff into SHA's municipal storm sewer system is via access control permits issued in accordance with COMAR 11.04.05.06 C and D (commercial access) and 11.04.06.02.G (residential access). SHA assures that these permits limit stormwater volume and pollutants contributed from adjacent properties. If violated, SHA may suspend or terminate an access permit. For construction activity, SHA may issue stop work orders, which require contractors to cease and desist until violations are corrected. Discharges by persons other than permit holders or contractors (e.g., vehicles or pedestrians using the highway system) are prohibited by the Environment Article, Sections 4-410 through 4-413, Annotated Code of Maryland and the Maryland Transportation Code Section 21-1111(d) (dumping trash and oil into the storm sewer). Compliance with permit conditions are determined routinely through inspections by SHA employees or consultants. Additionally, SHA may sue for injunctive relief to assure compliance in accordance with the Maryland Transportation Code Section 8-625 (b).

Summary

The SHA's Attorney General's Office, in consultation with MDE's Attorney General, provided the documentation above regarding various laws and codes controlling stormwater discharges from SHA's municipal storm sewer system. If in any instance these laws should prove insufficient for controlling stormwater discharges in accordance with 40 CFR §122.26(d)(2), additional authority shall be required.

2. Source Identification

Task 1. SHA shall provide, within Maryland's NPDES jurisdictions, a priority list of watersheds where data collection will progress.

SHA generated a priority list, by NPDES jurisdiction, for data collection. Because of the intricacies of working with different geographic information system (GIS) formats and databases, SHA proposed that data should be collected on a county basis as opposed to watersheds. From a data gathering perspective, it is much easier to work with one entity, solve data compatibility issues, complete all data gathering, and move on to other jurisdictions. MDE supported this approach and recommended that SHA select contiguous jurisdictions with common watersheds as they progressed so that watershed data would become complete. SHA's data collection priority list by county is as follows: Howard, Montgomery, Prince George's, Anne Arundel, Baltimore, Harford, Charles, Carroll, and Frederick counties.

Task 2. SHA shall provide, within a mutually agreed upon pilot watershed study area, the location of: all known storm drain outfalls and conveyance structures including pipes, pipe sizes, swales, inlets, etc...; drainage area of each identified outfall; all SHA interconnections with locally owned storm drain systems; all SHA properties including maintenance facilities, office complexes, salt storage domes, borrow and spoil areas, stockpile areas, etc.; and all stormwater management facilities.

The SHA and MDE agreed upon Howard County as a pilot study area. Howard County was a logical choice because of GIS compatibility and availability of base maps from the County. Starting with base maps, SHA researched available records and overlaid pertinent stormwater

information including SHA rights-of way, storm sewer conveyances and outfalls, stormwater management facilities, drainage areas, and locations in which their system interconnects with Howard County's. SHA provided MDE with a hard copy example of this work. MDE has requested that future data submittals be provided in digital format for GIS logging and use.

Task 3. SHA shall provide a schedule to expand data collection activities in other priority watersheds.

Based upon its experience in Howard County, SHA anticipates that source identification mapping of their storm sewer system in each county will take approximately 18 months to complete. Working through the priority list of counties enumerated above, SHA anticipates completing data collection requirements on a schedule of one jurisdiction every 18 months.

Task 4. SHA shall write a report regarding the compatibility of its GIS with those of local NPDES jurisdictions.

SHA circulated a survey to all NPDES jurisdictions in Maryland to assess GIS use and compatibility with the SHA's system. Data were compiled in an SHA report entitled "Priority List for Data Collection: County Questionnaire" (June 30, 1994) and submitted to MDE. The report was ostensibly used by SHA to develop its priority list of counties for future data collection activities.

Task 5. A description of procedures to collect all of the above described data for new SHA projects.

SHA has written a "Standard Procedures" (June 30, 1994) manual for recording SHA municipal storm sewer system information in GIS format. SHA's goal is to compile a complete data set of all drainage system components necessary for hydrologic analyses, the preparation of pollutant load estimates, and the ability to model changes in management practices. SHA has not yet implemented these procedures for recording new road system data.

Summary

SHA has used Howard County as a pilot study area to gather source identification information. Using this experience, SHA will expand its data collection efforts for all NPDES permitted municipal storm sewer systems in Maryland. SHA's NPDES permit will require the timely completion of source identification data, including a BMP inventory, necessary for assessing its storm sewer system and computing pollutant load estimates. Additionally, SHA's permit will require that its GIS be used to record data on all new road projects undertaken in the State.

3. Discharge Characterization

Task 1. SHA shall provide documentation of visual field screening of all major outfalls for illicit connections in the pilot study watershed.

SHA recently completed field screening of all major outfalls in Howard County for illicit

connections. SHA is currently in the process of analyzing and generating a report for dry weather flow field screening in Howard County.

Task 2. SHA shall provide MDE's database for dry weather flow screening documenting physical outfall characteristics.

SHA has completed its field screening of all major outfalls in Howard County and databases have been submitted to MDE.

Task 3. SHA shall provide a report describing the magnitude of dry weather flow in the pilot watershed.

SHA has not completed its field screening activity, precluding it from generating a report on the magnitude of dry weather flows through their storm sewer system in Howard County.

Task 4. SHA shall provide a description of existing water quality studies for highway runoff.

On August 5, 1997, SHA provided MDE with a spreadsheet that contains highway runoff sampling data from a variety of sources including highway authorities in Delaware, Florida, Colorado, and the Nationwide Urban Runoff Program (NURP). Additionally, the United States Geological Survey (USGS) is conducting a nationwide study on highway runoff sampling for the Federal Highway Administration (FHWA). The SHA's spreadsheet and report will be finalized in several months when the research gathered by USGS is available and can be incorporated.

Task 5. SHA shall provide storm flow monitoring, in accordance with 40 CFR 122.26, of two major outfalls draining primarily highway drainage.

The SHA is in the process of monitoring two major storm sewer system outfalls. Site number one is an outfall from a stormwater management facility located on Pindell School Road at the interchange with MD 32. This site was field surveyed by MDE and subsequently approved. Although no data have been submitted to MDE, monitoring is currently underway. In addition to the application requirements, SHA has proposed to perform a BMP monitoring study at the Pindell School Road site during the term of its permit. Relevant BMP efficiency study topics envisioned for this site include monitoring pollutant removal rates, changes in pollutant removal rates over time, and pollutant rates after maintenance cycles.

The SHA selected a second site at the Dulaney Valley Road and 695 Baltimore Beltway interchange to conduct stormwater monitoring. The site was selected based on MDE's current permit monitoring protocols as summarized in "*Maryland's National Pollutant Discharge Elimination System Municipal Stormwater Monitoring*" (MDE, 1997). Initially, MDE required each NPDES municipality to provide chemical sampling and analysis to support Chesapeake Bay Programs. Data on nutrients, sediment, and metals are used for calibrating Bay models and for assessing the Program's goal of 40% nutrient reduction by 2000. However, local governments that were conducting the monitoring, found the data to be of little use in assessing stream health. They argued that biological and physical monitoring would be more useful. As a result, MDE

has pared extensive chemical monitoring requirements and added biological and physical monitoring in current permits. The selection of an outfall amenable to this comprehensive monitoring scheme is more rigorous than for chemical monitoring alone. The SHA, by choosing an appropriate site now during the application monitoring process, will be able to use the same site for monitoring during its permit term. SHA's District 4 office is working with Baltimore County staff to select an appropriate site.

Task 6. SHA shall provide a report comparing SHA monitoring data results with existing water quality studies for highway runoff.

A majority of the research on existing water quality studies has been completed by SHA. Stormwater monitoring by SHA is currently being done and once complete, a comparison report will be written. This work will aid in the determination of future SHA monitoring efforts.

Summary

SHA is currently analysing field screening data on dry weather flows for Howard County. Experience gained from this screening effort will be used to develop monitoring procedures for discovering illicit connections in the future. SHA has also begun the monitoring of storm flows at its Pindell School Road site in compliance with application requirements. Data collected will be compared to highway monitoring data gathered from around the country. This site along with one other currently being selected will be used for stormwater monitoring during the course of SHA's permit. Data generated will be used for developing storm sewer system pollutant load estimates for highway runoff and watershed assessments being coordinated with surrounding jurisdictions.

4. Management Programs

Task 1. SHA shall provide a description of all SHA programs related to the control of stormwater runoff including procedures for fertilizer, pesticide, herbicide, and salt applications.

The SHA's environmental goal is to avoid impacts where feasible, minimize impacts wherever possible, and finally, mitigate for unavoidable impacts. The highway development process includes the following phases: planning, design, construction, and maintenance. During each phase, SHA has developed policies and procedures to address applicable environmental regulations. Additionally, SHA looks for opportunities to provide environmental enhancements during the highway development process. The primary programs designed to control stormwater quantity and quality are described below.

Planning Phase

The SHA's Planning Office follows numerous federal and State requirements to minimize the impact of highway construction and, subsequently, stormwater runoff. The National Environmental Policy Act and the Maryland Environmental Policy Act ensure that applicable federal and State environmental agencies are apprised of highway projects and possible impacts.

The State's Economic Growth, Resource Protection, and Planning Act helps to guide development into suitable areas, protect sensitive land, and increase transportation efficiency while reducing trips and mileage. Nationally, the Intermodal Surface Transportation Efficiency Act and the National Trail Systems Act provide funding for alternative transportation and commuting options. The Maryland Critical Area Commission regulates land use immediately adjacent to the Chesapeake Bay and numerous federal and State regulations limit the use of wetlands for development and stipulate strict mitigation requirements for impacted areas.

Design and Construction Phases

Realizing the need to coordinate environmental issues organization-wide, the SHA established the Office of Environmental Design (OED). Its main role is to incorporate environmental considerations as a fundamental and integral component of highway planning and design. The OED also functions to increase awareness, sensitivity, and skills concerning environmental resources and design issues with SHA. These issues include wetlands, stream restoration, historic resources, urban design, reforestation, landscaping, and pedestrian and community issues. OED works closely with other SHA offices to ensure that environmental and urban design issues are given adequate consideration. Other responsibilities include tracking all environmental permits, assisting in resolving permit issues, and ensuring that permit related commitments made during project development are met.

The State Erosion and Sediment Control and Stormwater Management regulations are integral for stream protection during the highway design and construction phases. All disturbances greater than 5,000 square feet are required to have an approved erosion and sediment control plan. SHA's Chief Engineer's Office administers a program to instruct design, construction, and maintenance personnel in the State's *Erosion and Sediment Control Guidelines*. Each participant who fulfills the class requirements receives State certification. Maryland's Stormwater Management regulations require that post development runoff mimic pre-development characteristics as close as possible. Training for planners and designers is provided periodically to ensure the use of the latest design techniques.

For areas of road construction where stormwater management measures are not feasible, the SHA has signed an agreement with MDE for a water quality banking program. The agreement allows SHA to provide water quality treatment at alternative locations in the same watershed. To meet the requirements of the agreement, water quality measures must be investigated in the following order of preference; 1) within the same drainage area, 2) within the same project, and 3) within the same watershed.

Maryland's Reforestation law requires that any State-funded highway construction project that clears one or more acres of forest must replace an equal amount in the county and watershed where the clearing occurred. The construction agency is responsible for locating reforestation sites and bearing the cost of reforestation. If sites cannot be located for reforestation, the construction agency may pay a fee into the Reforestation Fund at 10 cents per square foot of forest cleared, which is then used to locate and plant suitable sites.

Maintenance Phase

To ensure that stormwater management practices are maintained after completion, the SHA has developed a comprehensive stormwater management facilities inspection program. SHA's procedures for maintaining stormwater management facilities include routine inspections of each facility once every three years and initiating repair work where necessary. Additionally, locations for stormwater management retrofits are continually examined and systematically selected for implementation.

SHA's Office of Maintenance sponsors a winter maintenance training program for the control of deicing materials. Salt domes are required for storage and spreaders are calibrated to ensure proper application rates. Managers and team leaders supervise truck operators and continually inform them of the negative effects excessive salt use can have on the environment. A pilot program was initiated by the SHA for pre-wetting salt with magnesium chloride. This procedure supposedly increases the effectiveness of the salt and therefore decreases the quantity introduced to the environment. Results from the winter of 1993-1994 were encouraging and SHA expanded this program in 1994-1995 to five maintenance facilities. In 1995, a report was produced summarizing the effectiveness of these procedures with recommendations for statewide use. MDE has not received this report or SHA's plans for further use of magnesium chloride.

SHA's Cloverleaf Program is a multifaceted approach to beautifying highways and improving air and water quality. The program, which has four components, is implemented by each maintenance district and works to involve citizens. Reforestation enhances the appearance of rights-of-way while offering numerous ecological benefits such as erosion control, reduction of stormwater runoff, improved air quality, and increased wildlife habitat. "Maryland Blooms" aims to beautify open highway spaces while promoting awareness of the natural environment. The "Grow Don't Mow" program reduces highway maintenance costs, conserves energy, and allows for natural reforestation. Finally, SHA is participating in the State's Tree-Mendous Maryland program that seeks to plant more trees each year than we lose.

Task 2. SHA shall provide a description of procedures to coordinate the identification and elimination of illicit storm drain connections with local jurisdictions.

SHA is currently conducting illicit connection inspections of all major storm sewer system outfalls in Howard County. No procedures for continued illicit connection field screening or efforts to coordinate with surrounding jurisdictions have been proposed.

Task 3. SHA shall provide a description and implementation schedule of a program to promote public education regarding water quality. This program shall include prominent identification of stream crossings, maintenance crew education, and salt application training.

SHA has numerous programs aimed at educating the public and Administration personnel. The Cooperative Planting Program works with garden clubs and civic organizations for planting rights-of-way. Citizen groups agree to pay for the wholesale cost of the plant materials. SHA

will design the planting project and purchase, install, and maintain the plant material. The Adopt-A-Highway program provides safety training and the necessary equipment for groups to collect litter along roadways in one to three mile segments at least four times a year. This successful program reduces the risk of litter and other roadside debris from reaching local waterways.

In an effort to coordinate and standardize training concerning environmental awareness organization-wide, SHA established the Environmental Training Task Force. The task force's mission is to develop a core group of environmental awareness courses for each SHA employee. The goal is to ensure that all employees understand how their daily activities affect the environment. As part of this program, SHA employees participate in Chesapeake Bay field trips which provide a first hand look at the connection between the Bay and its tributaries, including the creeks, streams, and wetlands that highway projects often must cross.

Summary

SHA has implemented numerous programs that aid in reducing excessive stormwater flow and controlling stormwater pollutants. The SHA's permit will require the continuation of these programs. Additionally, SHA is proactive in experimenting and implementing new programs for the protection of the environment. SHA's NPDES permit will encourage these efforts by requiring further enhancement of stormwater management programs such as design requirements, maintenance procedures, education of staff and the public, vegetative plantings, mitigation requirements, and retrofit assessment and implementation. The SHA's permit will also establish new requirements for SHA to effectively eliminate illicit connections from its storm sewer system. Because of the linear nature of SHA's road system, part of this strategy will be to cooperate with surrounding jurisdictions and their illicit connection detection and elimination programs. Successful watershed management will also demand cooperation between SHA and other NPDES jurisdictions.

5. Program Funding

A summary of SHA'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..."

SHA provided MDE with copies of two contracts they awarded for the work outlined above to be completed. Each contract was for \$750,000 and are open ended until all work required for the NPDES stormwater permit application is complete. SHA will provide adequate funding to comply with ongoing requirements stipulated in SHA's NPDES municipal separate storm sewer system permit.

Summary

SHA's program funding should be adequate to implement the NPDES stormwater program.

Permit conditions will stipulate that SHA estimate the costs of its stormwater programs and maintain adequate funding to implement these programs.

6. Assessment of Controls

A summary of SHA'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..."

The SHA is in the process of gathering the necessary information for conducting assessments of its municipal storm sewer system. The “*Standard Procedures*” (June 30, 1994) manual details how the SHA will compile municipal storm sewer system information in GIS format. Ultimately, SHA should have a complete data set of all drainage system components necessary for hydrologic analysis, the preparation of pollutant load estimates, and assessment of management practices.

Summary

The SHA's NPDES municipal separate storm sewer system permit will require the Administration to either, 1) provide MDE with annual assessments of reductions expected as a result of stormwater management programs, or 2) cooperate with MDE and surrounding jurisdictions by providing them with the necessary information for computing pollutant loads. Additionally, these assessments will need to be refined as data is obtained from SHA's long-term monitoring program.