

US EPA ARCHIVE DOCUMENT

**Municipal Separate Storm Sewer System (MS4) Audit  
New Castle County Department of Special Services,  
Delaware Department of Transportation,  
Delaware City, Town of Middletown, and Town of Newport  
(NPDES Permit No. DE 0051071)**

**April 4 - 6, 2006**

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## GLOSSARY

BMP	Best Management Practice
CFE	Commercial Food Establishment
CCR	Certified Construction Reviewer
DNREC	Delaware Department of Natural Resources and Environmental Control
EPA	United States Environmental Protection Agency
FOG	Fats, Oil, and Grease
GIS	Geographic Information System
GTBMP	Green Technology Best Management Practice
IPM	Integrated Pest Management
LEPC	Local Emergency Planning Committee
MS4	Municipal Separate Storm Sewer System
NCCD	New Castle Conservation District
NOI	Notice of Intent
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
PCS	Pollution Control Strategy
PHF	Pesticides, Herbicides, and Fertilizers
SOP	Standard Operating Procedure
SSO	Sanitary Sewer Overflow
SWPP&MP	Storm Water Pollution Prevention and Management Program
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load

Definitions which apply to the terms used in this report (e.g., catch basin, drainage inlet, municipal separate storm sewer system, significant development) can be found in Part VI of National Pollutant Discharge Elimination System Permit No. DE 0051071 in Appendix F and Part I.7 of Consent Decree (Civil No. 01-586) in Appendix G.

## EXECUTIVE SUMMARY

Detailed findings from the Municipal Separate Storm Sewer System (MS4) audit conducted at New Castle County (County), the Delaware Department of Transportation (DelDOT), Delaware City, Town of Middletown (Middletown), and Town of Newport (Newport) on April 4 - 6, 2006 are presented in this report. The major general findings from the MS4 audit are as follows:

Construction site programs had several areas that need improvement.

- The County must have a process to ensure that all County construction sites have erosion control measures properly installed, maintained, and inspected.
- DelDOT must implement a program for the appropriate education and training of construction site operators. DelDOT requires operators to have Certified Construction Reviewer (CCR) training, but the field visit indicated that the CCR training may not be sufficient. Inspectors and operators should know the overall goal of the construction site program which is to protect water quality.
- Co-permittees whose programs are implemented by the New Castle Conservation District (i.e., Delaware City, New Castle, Elsmere, Odessa, and Newport) must ensure that sites are inspected and appropriate enforcement actions taken and that all sites have a responsible person certified by the Delaware Department of Natural Resources and Environmental Control (DNREC) on the site (where required by DNREC regulations).
- Middletown must ensure that it has adequate legal authority to require the use and maintenance of appropriate structural and nonstructural best management practices to reduce pollutant discharges to the MS4 during construction as well as implement other aspects of the construction site runoff program. The Town can incorporate the Delaware Sediment and Stormwater Regulations as part of its legal authority.

The County, DelDOT, and other co-permittees should consolidate all documents that address their current Storm Water Pollution Prevention and Management Program (SWPP&MP) activities. Each co-permittee's SWPP&MP documents should clearly and specifically describe which program components are being implemented by the permittee, another co-permittee with whom responsibility is being shared or to whom responsibility has been transferred (if applicable), DNREC, or other agencies (e.g., Local Emergency Planning Committee for New Castle County). In cases where co-permittees share responsibility with or have transferred responsibility for implementing program components to another co-permittee or agency, the co-permittees must ensure that they have legally binding agreements (i.e., interjurisdictional agreements) in place.

None of the co-permittees have conducted activities to encourage reductions in the discharge of pollutants associated with the commercial application and distribution of pesticides, herbicides, and fertilizers (PHFs). The co-permittees must develop and conduct these activities in accordance with Permit Section II.A.5.

The County and DelDOT must carefully review and assess the wet weather/storm event monitoring collected under the current Permit and initiate discussions with DNREC on proposed changes to this program based on the data evaluation. In addition, the County and DelDOT should evaluate the stormwater program activities to assess other methods for collecting data that can illustrate effectiveness of controls in reducing pollutant loadings to receiving streams (e.g., calculate and track the amount of solids reduced when retrofitting structures).

The County and DelDOT have been participating and providing comments and input into Total Maximum Daily Loads (TMDL) and/or Pollution Control Strategy (PCS) development and implementation. However, no PCSs for the watersheds in the County have been approved yet. The County and DelDOT should continue to participate in the TMDL and/or PCS development and as soon as requirements are imposed from the TMDLs and/or PCSs, ensure that all structural BMPs in new projects are implemented to comply with the requirements and develop maintenance or retrofit schedules for their existing BMPs.

All five co-permittees had maintenance programs in place for their structural controls. The County, Delaware City, Middletown, and Newport were not reviewing their inspection and maintenance activities on an annual basis and assessing their effectiveness in accordance with Permit Section II.A.1.c. DelDOT was assessing its inspection and maintenance activities, but should document and keep records related to that assessment and any resulting changes to its activities. In addition, Delaware City and Middletown were not maintaining an internal log for documenting their inspection and maintenance activities in accordance with Permit Section II.A.1.b.

The County's industrial and high risk runoff program has areas that need improvement (e.g., the industrial inventory must be updated regularly, procedures by the two County inspectors need to be consistent, and deficiencies found during inspections need to be communicated to the industry in a timely manner and followed-up if necessary). In addition, the County must ensure that it has the legal authority to require and enforce control measures and monitoring at industrial facilities. Similarly, Middletown and Newport must prepare a list of industries within their jurisdictions and determine whether these industries are considered high risk. If necessary, these two towns may need to develop and implement an industrial program. However, Middletown and Newport should contact and coordinate these activities with Ms. Amber Moore, DNREC, who has been working with the County's industrial and high risk runoff program.

The County, Delaware City, Middletown, and Newport must review and revise as appropriate their ordinances to ensure that they effectively prohibit the discharge of any materials other than stormwater to the MS4.

**Municipal Separate Storm Sewer System (MS4) Audit**  
**New Castle County, Delaware**  
**April 4 - 6, 2006**

**1 INTRODUCTION**

At the request of the United States Environmental Protection Agency (EPA) Region 3, a Municipal Separate Storm Sewer System (MS4) Audit was conducted on April 4 - 6, 2006, at New Castle County, Delaware. The audit team included Jennifer Legge, Jesse Salter, and Carol Winston of Science Applications International Corporation and Paula Estornell, Garrison Miller, and Lisa Trakis of EPA Region 3. Ms. Laura Boyer, Mr. Lyle Jones, and Ms. Amber Moore, of the Delaware Department of Natural Resources and Environmental Control (DNREC) attended audit interview sessions. Mr. David Twing and Mr. Paul Evans of DNREC attended the Delaware City interview sessions while Mr. Paul Evans participated in the Middletown and New Castle Conservation District audit field activities.

New Castle County (County), Delaware Department of Transportation (DelDOT), Village of Arden, Village of Ardentown, Village of Ardencroft, Town of Bellefonte, Delaware City, Town of Elsmere, Town of Middletown, Town of Newport, City of New Castle, Town of Odessa, Town of Townsend, and City of Wilmington were issued National Pollutant Discharge Elimination System (NPDES) Permit No. DE 0051071, effective from May 1, 2001 to April 30, 2006 (2001 Permit). The 2001 Permit is included in Appendix F.

Part I.C of the 2001 Permit describes the responsibilities for each co-permittee as:

- Complying with permit conditions for those parts of the MS4 that the permittee operates or maintains;
- Implementing the Stormwater Pollution Prevention and Management Program for those parts of the MS4 that the permittee operates or maintains;
- Complying with the annual reporting requirements
- Collecting wet weather monitoring data according to agreements as may have been established between or among co-permittees and
- Having a plan of action to assume responsibility for implementing the stormwater management and monitoring programs on their portions of the MS4 should inter-jurisdictional agreements allocating responsibility between or among co-permittees be dissolved.

In addition, co-permittees are jointly responsible for complying with permit conditions for discharges from the MS4 where operation and maintenance of the system are shared, where implementing the stormwater management program is shared, or where responsibility for the system operation and maintenance or stormwater management program is transferred from one co-permittee to another with legally binding agreements. Part II of the 2001 Permit requires each permittee to contribute to the implementation of a comprehensive Storm Water Pollution Prevention and Management Program (SWPP&MP).

A Consent Decree (Civil No. 01-586), which was effective on December 19, 2001, also applies to the New Castle County MS4. The Consent Decree is included in Appendix G. The Defendants in this Consent Decree were the County and DelDOT. In addition, the State of Delaware was included as a Defendant (Reference: Introduction, Subsection E). No other co-permittees were included as Defendants. The stated purpose of the Consent Decree was to ensure that the Defendants achieve and maintain full compliance with the Clean Water Act, including compliance with the terms and conditions of the applicable NPDES Permit (i.e., NPDES Permit No. DE 0051071) and all provisions of any other applicable Federal and state laws and regulations. In many cases, the requirements found in Section II of the Consent Decree (i.e., Injunctive Relief) match or add to the requirements in Permit No. DE 0051071. Thus, the Consent Decree and the 2001 Permit establish the framework for the New Castle County MS4 SWPP&MP.

This audit involved review of the SWPP&MP for the following five co-permittees: County, DelDOT, Delaware City, Town of Middletown, and Town of Newport.

The remainder of this report summarizes the findings of the MS4 audit and is in the same order and format as the 2001 NPDES permit. When applicable, the associated Consent Decree provisions are also specified in the section headings. As mentioned above, because Delaware City, Middletown, and Newport were not Defendants in the Consent Decree, no report sections related to Total Maximum Daily Loads (Sections 3.12 and 4.12 for the County and DelDOT respectively or Training (Sections 3.13 and 4.14 for the County and DelDOT respectively) are included in this report, since these specific program activities are required only in the Consent Decree and not the 2001 Permit. Each program component section contains a summary of the findings for that program component and associated required and recommended actions for the co-permittee which was audited. Findings which apply to all co-permittees for Permit No. DE 0051071 are found in Section 2, Program-wide General Findings.

## **2 PROGRAM-WIDE GENERAL FINDINGS**

Co-permittees have no single document or compilation of documents that describe their current SWPP&MP. This makes it potentially difficult for the various parts of their organizations (i.e., divisions and departments) that implement the SWPP&MP to understand all the permit requirements and their roles in implementing the program.

Some SWPP&MP components or activities are actually implemented by DNREC, rather than the co-permittees. The shared implementation of these program components by DNREC is sometimes documented (e.g., the industrial facility program in New Castle County), but not always documented (e.g., spill response program for DelDOT). In some cases, responsibility for implementing program components has been transferred from one co-permittee to another co-permittee. For example, the County and DelDOT are responsible for the monitoring programs described in the 2001 Permit. Although the County and DelDOT have an interjurisdictional agreement that addresses the dry weather screening and wet weather monitoring program, other co-permittees are not included in this interjurisdictional agreement.

County and DelDOT staff do not always have the documents relevant to implementing the SWPP&MP activities for which they are responsible. For example, County staff who are responsible for the planning and analysis of flood management projects did not have a copy of the Flood Mitigation Plan prepared in response to Permit Part III and Consent Decree Section II.20. Also, County staff did not have a copy of the Hazardous Substances Response Plan, which is the document used as the spill response plan. Likewise, DelDOT did not have a copy of the DNREC document which is being used for its spill response plan.

With respect to mapping of the MS4, the County has included all stormwater management structures in its Geographic Information System (GIS) database. A DelDOT contractor has been mapping the storm sewer system including pipes, inlets, and catch basins. Duffield Associates (Duffield), contractor for the County and DelDOT, has been mapping the outfalls as part of the dry weather screening program. The County indicated that the goal is to overlay all of the information/data from these mapping projects on one GIS map. DelDOT indicated that they are responsible for producing the complete map with all overlays and to resolve any inconsistencies in the collected data.

Permit Section II.H requires the Annual Report to include the listed sections. Several of the required items were not being reported by the co-permittees. For example, Delaware City, Middletown, and Newport did not include the annual expenditures and budget for the upcoming year or a summary of the number and nature of enforcement actions and inspections. In addition, a review of the 2004 Annual Report indicated that several co-permittees, which were not included in this audit, did not submit the required items listed in Permit Section II.H.

**Required actions:** (1) *In accordance with Section I.C.2 of Permit No. DE 0051071, all co-permittees must ensure that they have interjurisdictional agreements for the program components for which they are sharing responsibility or for which they have transferred responsibility to another co-permittee or agency.*

(2) *In accordance with Section II.H of Permit No. DE 0051071, the co-permittees must include all items listed in the Annual Report that are applicable to their programs.*

**Recommended actions:**

(1) *All co-permittees should consolidate all documents that address their current SWPP&MP activities.*

(2) *Each co-permittee's SWPP&MP documents should clearly and specifically describe which program components are being implemented by the permittee, another co-permittee with whom responsibility is being shared or to whom responsibility has been transferred (if applicable), DNREC, or other agencies (e.g., Local Emergency Planning Committee for New Castle County).*

(3) *DelDOT and the County should ensure that all staff have the documents relevant to implementing the stormwater program activities for which they are responsible.*

(4) *DelDOT, the County, and their contractors should continue to coordinate these mapping activities to ensure that all data are combined on a single GIS map.*

### 3 NEW CASTLE COUNTY FINDINGS

#### 3.1 *Structural Controls and Operation of the Storm Water Collection System (Permit Section II.A.1 and Consent Decree Sections II.17, II.18.b, and II.18.c)*

##### *Storm Sewer Utility Maintenance*

According to the Interjurisdictional Agreement for Stormwater NPDES Requirements between the County and DeIDOT dated May 11, 2001 (2001 Interjurisdictional Agreement), the County and DeIDOT share responsibility for the storm drains and MS4 in New Castle County. During the MS4 audit, County staff indicated that the County is responsible for open conveyances (i.e., open ditches, stream channels) associated with the MS4 and that DeIDOT is responsible for the closed system including storm drain inlets, catch basins, manholes and associated piping, and storm sewer lines (see also Section 4.1). In addition, there are some privately-owned open ditches called tax ditches, which represent about 5% of the open ditches within the County. Each tax ditch has an organization that comprises all owners in the tax ditch watershed. Each organization appoints a tax ditch manager who coordinates with the DNREC Drainage Section and the New Castle Conservation District (NCCD) to maintain the ditches when they lose capacity. There is no set schedule for this maintenance. The NCCD conducts the maintenance, then places spoils along the sides of the ditches and stabilizes the area. These tax ditches connect with ditches maintained by the County, but the County does not have agreements with the responsible parties regarding maintenance of these ditches.

Section A2 of the 2001 Interjurisdictional Agreement indicates that the County must compile an inventory of, inspect, and maintain all County-owned stormwater conveyance systems. The County has compiled an inventory of its County-owned stormwater conveyance systems, which is maintained in the County's computer system. In addition, the County has compiled an inventory of its residential, commercial/industrial, and publicly-owned stormwater management basins and ponds. These basins and ponds are included on a map maintained by DeIDOT. The outfall inventory is discussed in Section 3.6.

##### *Stormwater Management Basins and Ponds - Inspection and Maintenance Program*

Section II.17.d of the Consent Decree requires that the County compile an inventory and inspect all pre-1991 residential and commercial/industrial basins (i.e., basins constructed prior to July 1, 1991) no less than once every five years and all post-1991 residential and commercial/industrial basins annually. County staff stated that they inspect all residential and commercial/industrial basins (i.e., both pre-1991 and post-1991) annually.

The County uses inspection checklists when conducting its stormwater management basin inspections. When the County identifies deficiencies in residential or commercial/industrial basins, they send a letter notifying the responsible party that corrective actions should be taken. In 2004, the County sent 210 letters notifying the responsible parties of deficiencies in residential and commercial/industrial stormwater management basins. A copy of *Five Simple Steps to*

*Maintaining and Enhancing Community Open Space and Stormwater Management Areas* prepared by DNREC is included with the notification letters.

In instances where corrective actions have not been taken, County staff indicated that they have sent Notices of Violation (NOVs), giving the responsible party 30 days to correct the deficiencies. The County provided the MS4 audit team with an example NOV and Correction Order sent to Agilent Technologies in January 2006 that required the company to submit a plan to repair its stormwater management ponds and make repairs according to the submitted plan.

#### *Privately-Owned Residential Stormwater Management Basins and Ponds*

In response to Sections II.17.d.2, II.18.b, and II.18.c of the Consent Decree, the County assessed the condition and potential for water quality retrofits of the residential pre-1991 basins and identified approximately 50 to 100 basins with retrofit potential. County staff narrowed the list down to 17 basins for retrofit and hired a consultant who performed a detailed evaluation of these 17 basins. The County provided a copy of the evaluation titled *New Castle County Conceptual Stormwater Management* dated January 2006. The evaluation included technical feasibility, hydraulic proximity to sensitive waters, wasteload allocations, integration with other scheduled activities, and cost opinions. The County budgeted \$100,000 in each of the three years after the Consent Decree, but has not spent all of these funds. One project was chosen for immediate retrofit, but was delayed because it required United States Army Corps of Engineer permits. The County developed conceptual designs for a second project, but needs permission from homeowners to move forward. Section II.17.d.2 requires that the County spend the budgeted amount within five years of the Date of Entry of the Consent Decree, which will be in December 2006.

Inspections conducted in 2004 identified major repairs needed at eleven residential stormwater management structures belonging to registered maintenance corporations and 18 belonging to non-registered or nonexistent maintenance corporations. To address this problem, the County enacted an ordinance effective September 2005 which established an amnesty program through June 30, 2006, to address the major repairs required for residential stormwater management structures. In this program, the County agreed to take on major repair and maintenance of residential stormwater management structures if the maintenance corporations agree to conduct routine maintenance on a long term basis at their own expense. The amnesty program budget for the 2006 fiscal year (July 1, 2005 to June 30, 2006) includes \$3.9 million (\$600,000 from the County and \$3.3 million from the State). The County has already allocated an additional \$600,000 in its budget for next fiscal year and has requested an additional \$3.3 million from the State. County Ordinance 05-081 enacts the amnesty program and County Ordinance 05-082 describes the specific responsibilities for inspection and maintenance activities for stormwater management structures and the use of Green Technology Best Management Practices (GTBMPs).

*Privately-Owned Commercial/Industrial Stormwater Management Basins and Ponds*

The County has not done an assessment of potential water quality retrofits for commercial/industrial pre-1991 ponds, as required in Part III of Permit No. DE 0051071 and Section II.17.d.3 of the Consent Decree.

*Publicly-Owned Stormwater Management Basins and Ponds*

In response to Section II.17.e of the Consent Decree, the County inspects and maintains all publicly-owned basins on an annual basis. The County inspected 51 publicly-owned basins in 2004. Details of the maintenance activities performed and the associated costs are included in the 2004 Annual Report.

*Best Management Practice (BMP) Devices - Inspection and Maintenance Program*

In response to Section II.17.e of the Consent Decree, the County inspects and maintains all BMP devices on an annual basis. The County inspected 213 BMP devices in 2004. The County uses inspection checklists for the BMP devices. An example inspection checklist for a biofiltration swale was provided to the MS4 audit team.

Maintenance activities performed by the County are tracked using the Hansen database system. The County provided the MS4 audit team with a copy of the *Procedures for the Hansen Work Order System* used to respond to complaints and requests for service associated with the County's open channels and stormwater management basins. These procedures are very detailed and include all steps such as generating and closing out service requests and work orders. Emergencies or problems designated as high priorities are taken care of immediately. Example response times for non-emergency repairs and maintenance are 30 days for mowing, 45 days for removal and disposal of invasive plants and litter, 90 days for clogged structures, and 120 days for broken structures.

The County does not monitor the performance of and discharge from its existing structural controls. In addition, the County does not assess the effectiveness of its scheduled inspection and maintenance activities in meeting the objectives outlined in the 2001 Permit. In the 2004 Annual Report, the County indicated that it is still too early in the program to assess the effectiveness of the current inspection program.

***Required actions:***

- (1) In accordance with Section II.17.d.3 of the Consent Decree, the County must spend the budgeted amount of \$300,000 within five years of the Date of Entry of the Consent Decree, (i.e., December 2006). Thus, the County must move forward as quickly as possible in implementing the retrofits. If the County wants to consider the funding of retrofits under the amnesty program as part of these expenditures, the County should discuss this with EPA as soon as possible.*
- (2) In accordance with Part III of Permit No. DE 0051071 and Section II.17.d.3 of the Consent Decree, the County must either conduct an assessment of any retrofits of commercial/industrial stormwater management basins necessary to protect water quality or notify the responsible*

parties for these basins that such an assessment must be done and the results, including a plan for implementing the retrofits, must be provided to the County.

(3) In accordance with Section II.A.1.c of Permit No. DE 0051071, the County must monitor the performance of and discharge from its existing controls and assess the effectiveness of its scheduled inspection and maintenance activities in meeting the objectives outlined in the 2001 Permit.

**Recommended actions:** The County should:

(1) consider developing agreements with the party(ies) responsible for the tax ditches to ensure that adequate maintenance activities are performed.

(2) assess all watersheds for urban stormwater impairment, prioritize needs, and identify remedies; prepare an appropriate implementation schedule; and implement the remedies according to the schedule.

(3) consider documenting estimated amounts of pollutants reduced through retrofits of existing stormwater management basins in its spreadsheet/database of stormwater management projects.

### **3.2 Areas of New Development and Significant Redevelopment Assessment and Planning, Assessment (Permit Section II.A.2 and Consent Decree Sections II.18.a.1 and 2)**

#### *Assessment and Planning - Total Maximum Daily Loads (TMDLs)*

The County has been providing input/comments and participating as appropriate in the TMDL development and implementation process. However, the State is still in the process of developing and adopting TMDLs and associated Pollution Control Strategies (PCSs) for the watersheds in the County. (See additional discussion in Section 3.12.) As noted in Section 3.1, the County did consider wasteload allocations in its evaluation of 17 residential stormwater management basins for retrofit. However, no PCSs for the watersheds in the County have been approved yet. Thus, the County has not yet developed any maintenance or retrofit schedules for its structural controls specifically based on relevant wasteload allocations, TMDLs, or PCSs.

#### *Assessment and Planning - County Master Planning Process and Ordinances*

Section II.A.2 of the 2001 Permit requires the County to utilize a comprehensive master planning process which involves public participation and intergovernmental coordination to develop, implement, and enforce controls to reduce the discharge of pollutants from areas of new development and significant redevelopment.

The New Castle County Comprehensive Development Plan, which was last updated in 2002 (2002 Master Plan), focuses on the preservation and enhancement of the County's natural and environmental resources, including BMPs for stormwater. The County primarily implements the goals of the Master Plan using the ordinances for development and redevelopment project review and approval described below.

**Unified Development Code (as amended through July 31, 2003)** - The Unified Development Code (UDC) contains all the application and plan requirements for land development and redevelopment in New Castle County. Chapter 40 of the UDC requires the preservation of a minimum amount of resource as open space during development and that the discharge velocity

from a stormwater outfall must not exceed two feet per second for the two-year frequency storm. In addition, GTBMPs must be used to convert concentrated flow to uniform, shallow sheet flow, filter sediments, and control erosion.

**Drainage Code for New Castle County, Delaware dated June 1998** - The Drainage Code contains the requirement that drainage systems must be designed such that the peak flow runoff rate after development does not exceed the pre-development peak flow runoff rate for the design storm frequencies required by the *Delaware Sediment and Stormwater Regulations*. The County is in the process of updating its Drainage Code and provided the MS4 audit team with an Executive Summary describing the proposed changes to the Drainage Code. The Executive Summary states that the Drainage Code is deficient in evaluating and addressing impacts from a watershed perspective and in assessing and preserving the infiltration volume of rain that enters the soil for aquifer recharge. In addition, the Drainage Code does not mirror the new stormwater technologies included in the Environmental First Ordinance (see next bullet). The draft Drainage Code (titled the Water Management Code) will institute new standards in several areas including:

- Management of the hydrology (stormwater runoff and groundwater infiltration) of a developing site to volumes consistent with, or improved upon, the pre-development volume.
- Assessment of stormwater project design in the watershed context.

**Environmental First Ordinance** - In July 2003, the County adopted the Environmental First (Conservation Design) Ordinance to meet the goals of the 2002 Master Plan. The Environment First Ordinance amended provisions in the County's Article 23 (Landscaping, Trees, and Erosion), Article 27 (Maintenance Corporations, Open Space, and Common Facilities), and Article 31 (Administration and Procedures) regarding the Transfer of Open Space and Common Facilities. Some key features of the Environmental First Ordinance are:

- Residential subdivisions are required to have designated open space areas. These areas must be interconnected with open areas or greenways on abutting parcels whenever possible, can be used for stormwater management, and must be substantially free of buildings (except for recreation activities). Open space areas were observed when the MS4 audit team conducted a site visit of the Red Lion Chase residential development site (see Appendix A.3).
- Applicants for development sites must utilize GTBMPs to the maximum extent feasible as part of overall conservation design. The ordinance describes GTBMPs as those practices that incorporate (1) stormwater management to maximize infiltration potential, maximize filtration potential, and maintain non-erosive velocities of stormwater runoff; (2) strategies that disconnect long reaches of stormwater flowing over impervious areas including addition of landscape corridors; (3) implementation of GTBMPs at the source of the contributing runoff that mimic or improve the pre-development hydrologic water balance on the project site.
- Maintenance corporations are required to maintain and manage the open space.

The County is in the process of updating its 2002 Master Plan, which must be completed by 2007 as required by the State. For the updating process, the County uses focus groups which comprise

a broad base of members such as professionals, builders, members of the community who have a specialty in the topic areas, general public, and staff. There is a bulletin board on the Internet to place messages/comments related to the Master Plan. The County's schedule for the updating process is as follows:

- Input from the focus groups will be completed in the next two to three months.
- The County will use the input from the focus groups to prepare a draft updated Master Plan.
- In the Fall 2006, the County will release the draft Master Plan to the public and have public meetings.
- The County will then provide the draft Master Plan to the State for review and comment with the hope of receiving State comments by early 2007.
- The County will address State comments and finalize the document in early 2007.

Mr. David Culver, Planning Manager in the County Department of Land Use, described the site development review and approval process. He indicated that developers often come in with several conceptual designs for discussion; in these discussions, the staff discuss how the developers can promote wildlife habitats. Staff promote the goals of preservation of stream corridors, wildlife, reforestation, and enjoyment of space in the development plans.

Copies of submitted plans (e.g., exploratory and the preliminary plat) go to the County Department of Special Services (County Special Services). County Special Services primarily reviews the Open Space Plan, while the planning engineers review the stormwater management structure design. The review team prepares a uniform letter with all comments on the plan. When the applicant has addressed all comments and the County approves the plan, it is recorded. Most County plan reviewers and engineers have attended the EPA wetlands training course.

As mentioned above, the County requires open space in developments. The Open Space Plan becomes part of the subdivision plan. County staff work with the homeowners after the development is complete to ensure long-term implementation of the Open Space Plan. The County provided the MS4 audit team with a sheet from an Open Space Plan which contained the County's standard notes and conditions. The sheet indicates that upon transfer of the open space to the community, the community is responsible for maintaining all items in the Open Space Plan. Specific maintenance instructions for the community are included on this sheet. For example, the community must maintain, repair, and inspect as needed stormwater management controls. For biofiltration areas, the community must cut vegetation to a 12" height and remove clippings in the spring, inspect for proper grass type and growth in the summer, and inspect for damage following a storm event.

***Required action:*** *In accordance with Section II.18.a.1 of the Consent Decree, as soon as requirements are imposed from the TMDLs and/or PCSs for the receiving streams into which the MS4 discharges, the County must review these requirements, ensure that all structural BMPs in new projects are constructed and implemented to comply with these requirements, and develop maintenance or retrofit schedules for its existing structural BMPs as necessary.*

**Recommended actions:** *The County should:*

- (1) continue to participate and provide comments and input in TMDL and/or PCS development and implementation.*
- (2) in implementing its retrofit program, review and consider relevant watershed assessments, wasteload allocations, TMDLs, and PCSs as they are being developed.*
- (3) until such time that requirements based on a TMDL and/or PCS are included in the MS4 permit, identify or develop a list of BMPs and design criteria which are chosen to prevent/minimize stream degradation that is typical for urban stormwater discharges.*

### **3.3 Roadways (Permit Section II.A.3 and Consent Decree Section II.19)**

According to the 2001 Interjurisdictional Agreement, DelDOT is responsible for all requirements for State-owned roads, and the County is responsible for all requirements for County-owned roads. The 2004 Annual Report states that there are no roadways under the County's jurisdiction. During the MS4 audit, County staff confirmed that the County has no roads under its jurisdiction. (See Section 4.3 for information on Roadways within New Castle County.)

**Required actions:** *None.*

**Recommended actions:** *None.*

### **3.4 Flood Control Projects (Permit Section II.A.4 and Consent Decree Section II.20)**

Permit Section II.A.4 requires the County to assess and minimize to the maximum extent practicable, the impacts of any flood control projects on receiving water quality. Part III of the 2001 Permit and Section II.20 of the Consent Decree require that the County prepare a Flood Mitigation Plan that incorporates consideration of water quality measures. The Flood Mitigation Plan, dated January 2001, was included in the 2001 Annual Report. Neither Mr. Anthony Schiavi, Assistant County Engineer, nor Mr. Michael Harmer Civil Engineer II, who were interviewed regarding the County's flood management projects, had seen a copy of this Flood Mitigation Plan. The 2001 Annual Report also included the County's *Capital Program and Budget for Fiscal Years 2003 - 2008, Recommended*. No specific projects were identified under the line item called "Countywide Drainage Problems."

Mr. Schiavi and Mr. Harmer indicated that because of flooding from severe storms in New Castle County, the County passed an ordinance in 2004 to budget funds for flood management projects. Approximately \$17 million was budgeted, which came from County bond funds for other projects. The funded flood management projects list includes 30 projects with their original

ordinance descriptions (e.g., debris removal and stabilization study, potential buyouts of homes), project status/recommendations, ordinance budgets, any budget amendments, and the current estimated costs. Although the County's list did not include the estimated construction schedules for these 30 projects, County staff stated that it is anticipated that the \$17 million will be spent by the end of 2008. In preparing the list, the County grouped the projects together on a watershed basis and considered water quality impacts. The County provided examples of the drainage studies for the White Clay Creek and Calf Run watersheds. These two studies assess the reasons for flooding and provide recommendations to address the flooding such as construction of detention ponds with water quality features and stream stabilization.

County staff also stated that the NCCD assists with the County's flood management projects. NCCD sometimes reviews the projects for potential water quality benefits or takes the lead in project management.

**Required actions:** *None.*

**Recommended actions:** *The County should:*

*(1) ensure that all staff responsible for flood management projects have a copy of the County's Flood Mitigation Plan.*

*(2) document the description of the water quality measures in existing or proposed flood control projects to specifically note what constitutes the water quality features (e.g., reduction in total suspended solids) and illustrate how it was determined whether the project was feasible or not feasible (both technically and economically).*

*(3) to the extent possible, prepare estimated construction schedules for its flood management projects.*

### **3.5 Pesticide, Herbicide, and Fertilizer (PHF) Application (Permit Section II.A.5 and Consent Decree Section II.21)**

#### *Pesticides and Herbicides*

The MS4 audit team interviewed Mr. Joseph Dougherty, Property Maintenance Manager, and Mr. Paul Johnson, Property Maintenance Technician, Internal Services Division in County Special Services. The County maintains approximately 8,000 acres of land at County-owned facilities. Herbicides applications are done two to three times per year, as needed. The County does not use Restricted Use Pesticides. According to the 2004 Annual Report, the County employees applied approximately 150 gallons of Roundup and 25 gallons of Surflan.

The County currently has four certified applicators. County staff noted that at one time, they had more certified applicators (approximately 12 -20 employees), but these staff let their certification

lapse. The County tries to use certified applicators, but because the County has 8,000 acres on which they apply pesticides, they will use County staff that are not certified when necessary.

The County purchases only the amounts of pesticides which they need and minimizes the amounts in storage. Pesticides application is tracked on work orders. An example work order was provided to the MS4 audit team. County staff do not document the amounts of pesticides applied on the work order.

The County does not currently have formal Standard Operating Procedures (SOPs) for pesticides handling, application, use, storage, and disposal. County staff noted that they have some operating procedures, mostly in the form of memorandums; any formal SOPs must be reviewed by their employee union before the SOPs could be adopted.

Pesticides are currently stored in a separate chemical storage area of the County warehouse. The warehouse is undergoing renovation; when the renovation is complete, the warehouse will have a separate room for the pesticides storage. Detailed drawings of this storage room showed a sloped floor so that in the event of a spill, the spilled chemicals would remain inside the storage room. County staff indicated that there will be no drains in this storage room.

The County uses contractors to mow and apply pesticides. An example contract provided to the MS4 audit team requires (1) that the contractor submit proof of its Delaware State Pesticide applicator license; (2) any chemicals to be used must be approved by the County Property Maintenance Division; and (3) that a County employee be present when the contractor is applying pesticides. Although the contract also states that there will be no exceptions to these conditions, County staff may allow a contractor to apply without a County employee present, if the County is confident that the contractor is correctly applying pesticides. The contract does not include any language requiring the contractor to incorporate appropriate stormwater BMPs into their activities.

#### *Fertilizers*

The County applies fertilizers on athletic fields and around buildings such as the Government Center, libraries, and museums. Fertilizers applied around the buildings are typically under a landscape contract. The County conducts soil sampling to determine the amount of fertilizer to apply. An example soil test report for the Bechtel soccer field was provided to the MS4 audit team. The report contained specific fertilizer instructions for the field based on soil results. County staff stated that fertilizer application is also tracked through work orders.

Mr. Johnson is certified by the State as a private nutrient handler. The County is currently collecting data needed to develop a Nutrient Management Plan for its fertilizer application and expects to have it completed by 2007, as required by the State.

### *Commercial application of PHFs*

The County does not conduct specific activities to encourage reductions in the discharge of pollutants associated with PHF application by commercial applicators. County staff stated that commercial applicators are required to be licensed by the State and that because Delaware is a small state, the State takes responsibility for these types of program activities. (Also see Section 3.10.)

***Required action:*** *In accordance with Section II.A.5 of Permit No. DE 0051071, the County must conduct activities to encourage reductions in the discharge of pollutants associated with the commercial application and distribution of PHFs. To comply with this requirement, the County should consider activities such as developing and distributing public education materials regarding PHF application to commercial applicators and lawn care providers. If the County believes that the State has responsibility for this program activity, then the County must develop an agreement documenting this situation similar to the agreement with DNREC covering implementation of the industrial and high risk runoff program (see Section 3.8).*

***Recommended actions:*** *The County should:*

- (1) ensure that all County staff who apply pesticides are certified or are trained on an annual basis. Annual training should be documented.*
- (2) document the amounts of pesticides applied in the comments section of work orders.*
- (3) consider developing and implementing formal SOPs for the handling, use, application, storage, and disposal of pesticides*
- (4) when developing the SOPs, include procedures for application rates (i.e., maximum rates per acre) and correlation to weather and ground conditions.*
- (5) develop a menu of alternative landscaping options that will result in the reduction of PHFs applied annually.*
- (6) include contract language that requires County contractors to incorporate stormwater BMPs into their pesticides application activities.*
- (7) be present at pesticides applications by contractors as required in the County contract.*
- (8) consider using available information, such as County and contractor material purchase data and the size of areas maintained by the County, to track trends in pesticide and fertilizer usage. Further, the County can use this information to identify anomalous increases in usage that may indicate overuse and to document declines in usage due to better planning and more careful use.*

### 3.6 *Illicit Discharges and Improper Disposal (Permit Section II.A.6 and Consent Decree Sections II.22, II.24, and II.25)*

#### *Prevention of Illicit Discharges and Improper Disposal [Permit Sections II.A.6.a and 6.b]*

Section 12-151 of the Drainage Code prohibits the discharge of:

- sewage, industrial wastes, or other wastes into the storm sewer system, any component of the storm sewer system, onto driveways, sidewalks, or other areas that drain to the storm sewer system; or
- stormwater associated with industrial activity into the storm sewer system or any component of the storm sewer system.

This prohibition is not as stringent as the 2001 Permit requirement that the County prohibit the discharge of any materials other than stormwater to the storm sewer system.

#### *Dry Weather Screening and Investigation of Suspected Illicit Discharges [Permit Sections II.A.6 Introduction, II.A.6.f, and II.A.11.a and Consent Decree Section II.22.b]*

In accordance with the 2001 Interjurisdictional Agreement, the County and DelDOT jointly use a contractor [i.e., Duffield Associates (Duffield)] to conduct the dry weather screening program. Permit Sections II.A.6 Introduction and II.A.11.a and Consent Decree Section II.22.b require that all areas of the MS4 be screened at least once during the 2001 Permit term. Mr. David Diefenthaler, Project Manager for Duffield, stated that screening of the entire MS4 would not be completed by the end of the 2001 Permit term (i.e., April 30, 2006). The original database of approximately 3,500 outfalls, prepared as part of the permit application in 1996 (1996 outfall list), was used for the dry weather screening program. Duffield found many outfalls that didn't exist or that were different from the original information contained in the database. Thus, although the outfall screening will not be completed by April 30th, Duffield indicated that by that date, the number of outfalls screened would be approximately 4,500. In addition, Mr. Diefenthaler stated that while conducting its inventory of the storm sewer system, DelDOT is finding outfalls. DelDOT shares this information with Duffield, and then Duffield investigates to verify the information provided by DelDOT.

Duffield began the dry weather screening program using the 1996 outfall list and information on outfalls that had been documented as having dry weather flow. The inventory/screening is conducted on a watershed by watershed basis, and in the past two years Duffield has gone grid-by-grid across the County.

The dry weather screening procedures are included in the *Illicit Discharges and Connections Elimination Program*, originally submitted November 1, 2001 and revised and resubmitted on June 30, 2003 (Illicit Discharge Program document). This document also includes the field forms/checklists used for the screening. Mr. Diefenthaler noted that all the field parameters listed on the form are being tested except that ammonia has been added as a parameter and is not

currently on the form. Duffield tracks the dry weather inventory/screening activities in a database.

The Illicit Discharge Program document also contains the procedures for investigating and evaluating potential illicit discharges identified as part of the dry weather screening. When dry weather discharges are found, Duffield does an initial discharge evaluation which includes field analysis and review of the upstream watershed area. Duffield provided a copy of the screening criteria used to determine follow-up actions (e.g., pH less than 4.5 or greater than 8.5). Duffield reports this information to the entity responsible for the outfall (e.g., the County, DelDOT, or other co-permittees). If the illicit discharges are found to be contaminated and the source is not apparent, additional investigation is conducted as described in the Illicit Discharge Program document. Once the party responsible for the illicit discharge has been identified and with County or DelDOT concurrence, Duffield sends out a notification letter which details the incident and requests that the party evaluate the discharge and/or cease the illicit discharge immediately. If the illicit discharge is not corrected in the requested time frame, Duffield refers the situation back to the County. The County would then probably send an NOV, but has not yet done this. In some instances, the situation is referred to DNREC.

#### *Training*

County Special Services staff were trained in illegal dumping and illicit discharges in October 2003. Duffield has two teams with two staff each who perform the dry weather inventory/screening activities. Duffield staff are trained internally. Duffield staff did not attend the City training course in October 2003 (see Section 3.13).

#### *Public Notification of Illicit Discharges [Permit Section II.A.10.a and Consent Decree Section II.24.a]*

The County's hotline for illicit discharge reporting is in the phonebook and was also included in a brochure entitled "*What can YOU do to help protect our water?*" However, a page on the County's web site called "How to Report Problems" only includes phone numbers for DNREC and DelDOT, but not the County.

Central dispatch receives all illicit discharge reports as well as other calls such as maintenance complaints. Mr. Srivastava indicated that Central Dispatch keeps a log of all calls received. To his knowledge, the County has not received any illicit discharge reports within the past year, and was uncertain as to whether any reports have ever been received. Mr. Srivastava believes that the calls are going to DNREC, and DNREC just responds to them.

*Limit Infiltration of Seepage from Sanitary Sewers [Permit Section II.A.6.c and Consent Decree Section II.25]*

Permit Section II.A.6.c requires each co-permittee to implement procedures to limit infiltration of seepage from sanitary sewers and to prevent (or require the operator of the sanitary sewer system) to eliminate discharges of dry and wet weather overflows from sanitary sewers into the MS4.

Section II.25 in the Consent Decree requires the County to assess whether sanitary seepage is a significant problem and to report those findings to EPA in the annual report. Sanitary seepage is defined in the Consent Decree as infiltration of sanitary sewage (domestic, commercial, and/or industrial from the public sanitary sewer system into the MS4 due to, but not limited to, broken, cracked, or deteriorated pipes or manholes. The term does not include sanitary sewer overflows (SSOs).

The County uses the information from its dry weather screening program to determine if the discharges are sewage-related. In the 2004 Annual Report, the County reported that sanitary seepage could be a potential source of the observed dry weather discharges for 18 outfalls. Per an e-mail received from Mr. Srivastava dated June 21, 2006, five of these observed dry weather discharges were referred to County sewer operations for follow-up investigations, six had no triggers during follow-up evaluations, six had other apparent sources, and one is still being evaluated.

Other programs being implemented to evaluate potential sanitary seepage problems are:

- Review of sanitary sewer maps
- Sewer capacity modeling
- Televising and grouting program
- Industrial facilities inspections.

Ms. Elinor Blackwell, Sewer Management Engineer, Engineering and Environmental Services Division, stated that the County had 62 SSOs in 2005. Most calls reporting SSOs come from the public to Central Dispatch. Typically within one hour, a crew is sent out to verify the situation and to take care of the SSO. All SSOs are reported to DNREC as required. Per an e-mail received from Mr. Srivastava dated June 21, 2006, the County does not track information regarding the location to which the SSO discharges (e.g., storm sewer inlet) explicitly. The tracking documentation typically says “creek”, “pond”, etc. However, Mr. Srivastava thought that most SSOs find their way into the MS4.

The County is continuing to implement the following programs to address its SSOs:

- Grease Abatement program
- Grease Trap Inspection program
- Fats, Oil, and Grease (FOG) Management program.

Per an e-mail received from Mr. Srivastava dated June 21, 2006, the County submitted an updated FOG Management Program to DNREC on February 12, 2004, and it was approved by a letter dated May 10, 2004. Since then, the County is implementing the program as approved. On December 21, 2004, amendments to New Castle County Code that help implement the FOG Management Program were adopted by the New Castle County Council (i.e., Ordinance No. 04-171). An exception process for review of new Commercial Food Establishments (CFEs) not being able to install a 1000-gallon interceptor has been established to assure proper sizing and conditions for smaller interior traps to be installed.

On March 15, 2005, a questionnaire was mailed to about 1,600 CFEs to obtain pertinent data to help refine the comprehensive list of all CFEs. The County received about one-third of the surveys. Other CFEs not returning survey information are being inspected and added to the list of CFEs. A database is being established to track and monitor all eligible CFEs in New Castle County. New unlisted CFEs are being inspected and added to the CFE database; 1100 of 1600 CFEs are entered into the database. A new photo database was established to track conditions of grease traps and interceptors.

In addition, the County conducts a preventive maintenance program for its sanitary sewer system whereby every neighborhood in the entire system is maintained in a three- to five-year cycle. Ms. Blackwell indicated that the County is working on a Capacity, Maintenance, Operations, and Management Program.

*Proper Management and Disposal of Used Motor Vehicle Fluids, Household Hazardous Wastes, Grass Clippings, Leaf Litter, and Domestic Animal Wastes [Permit Section II.A.6.d and Consent Decree Section II.24.b]*

In 2002, the County sent 170,000 copies of a brochure titled “*What can YOU do to help protect our water?*” as a tax bill insert. The brochure covered practices to protect stormwater associated with the above topics as well as pesticides, fertilizers, and general stormwater runoff. According to the 2001 Interjurisdictional Agreement, the County was supposed to mail the brochure to all property owners in New Castle County with their tax bills on an annual basis. The County has not mailed the brochure since 2002, but continues to distribute these brochures at meetings.

The County maintains a stormwater web site which includes public education information and materials. One web page describing household chemicals advises the public to take unwanted household chemicals and vehicle fluids to hazardous wastes collection centers and to contact the Delaware Solid Waste Authority or visit their web site for information. The County does not coordinate its public education activities with the DNREC’s Division of Air and Waste Management or the Recycling Public Advisory Council (the County was not familiar with this group) as required by the 2001 Permit. In addition, the County has not explored opportunities to

facilitate existing recycling and household hazardous wastes programs and identified ways to promote more participation.

*Floatables [Permit Section II.A.6.e]*

The County's program to reduce the discharge of floatables is complaint-driven. County staff were not aware of specific source controls or structural controls for floatables.

*List of Dischargers with an NPDES Permit [Permit Section II.A.6.f]*

The County has a list of dischargers with an NPDES permit which is provided yearly by the State/EPA.

**Required actions:**

- (1) In accordance with Section II.A.6 Introductory Paragraph and Section II.A.11.a of Permit No. DE 0051071 and Section II.22.b of the Consent Decree, the County was required to screen the entire MS4 by April 30, 2006. Therefore, the County must proceed to complete the screening of the MS4 as soon as possible.*
- (2) In accordance with Section II.A.6.a of Permit No. DE 0051071, the County must effectively prohibit the discharge of materials other than stormwater to the MS4. Thus, the County must review and revise as appropriate its legal authority to ensure that the discharge of any materials other than stormwater to the MS4 is prohibited.*
- (3) In accordance with Section II.A.6.d of Permit No. DE 0051071, the County must coordinate its efforts with DNREC's Division of Air and Waste Management and the Public Recycling Advisory Council or discuss with DNREC proposed changes to this condition in the next permit.*
- (4) In accordance with Section II.A.6.d of Permit No. DE 0051071, the County must explore opportunities to facilitate existing recycling and household hazardous waste collection programs and identify ways to encourage participation.*
- (5) In accordance with Section II.24.a of the Consent Decree, the County must ensure that all public information activities (i.e., the web site) include the County's telephone number for reporting of illicit discharges.*

**Recommended actions:** *The County should:*

- (1) add ammonia to the field screening form.*
- (2) initiate discussions with DNREC and EPA to ensure that the County's activities to limit infiltration of sanitary sewer seepage meet both the 2001 Permit requirements as well as the Consent Decree requirements.*
- (3) develop procedures for cases where sanitary seepage is discovered to be infiltrating the MS4 that include the steps to be taken to eliminate the sanitary seepage, a schedule for implementing the corrective actions, and a method to track the corrective actions.*
- (4) document and track instances when SSOs have entered the MS4.*

(5) document procedures for notifying other co-permittees when an illicit discharge is found in an outfall for which another co-permittee is responsible. The procedures should also identify which entity is responsible for follow-up actions, and how the follow-up actions are documented and tracked.

(6) review its activities for floatables control to ensure that these activities include source controls and where necessary structural controls and that the activities are reducing the discharge of floatables to the maximum extent practicable.

(7) mail the brochure "What can YOU do to help protect our water?" as a tax bill insert on an annual basis or revise the 2001 Interjurisdictional Agreement as appropriate.

### **3.7 Spill Prevention and Response (Permit Section II.A.7 and Consent Decree Section II. 23)**

Mr. Srivastava indicated that County Special Services has no responsibility related to spill response and that the Local Emergency Planning Committee (LEPC) is responsible in New Castle County. The MS4 audit team interviewed Mr. William McCracken, Consultant, LEPC for New Castle County. Mr. McCracken described the LEPC Hazardous Substance Response Plan revised in May 2004 (2004 Plan) and provided a copy to the MS4 audit team. Mr. Srivastava did not have a copy of the plan. The 2004 Plan establishes the framework for a coordinated effort to manage various types of hazardous substance emergencies and spills. The 2004 Plan is applicable to State, County, and local governments and to agencies and plants engaged in or in support of emergency operations prior to, during, and/or after hazardous substance emergencies.

Mr. McCracken stated that the LEPC has the New Castle County Hazardous Material Tactical Decontamination Team consisting of volunteer firemen who meet minimum training requirements and the New Castle County Industrial Hazardous Material Response Alliance (NCCIHMRA), consisting of volunteers from established industrial hazardous material teams at their places of employment, who have had at least Hazardous Material Technician training and also includes doctors and research personnel.

Mr. McCracken described the following two spill response examples:

- A private citizen calls the fire company regarding a spill, who immediately contacts 911. The fire officer is in charge for Level 1 and Level 2 response. Delaware Emergency Management Agency is in charge for a Level 3 response, and Level 4 involves a Federal response team.
- For a 50-gallon gasoline spill, the responsible party calls 911, and the fire company is dispatched. The fire officer will probably designate the spill as a Level 1, and the firemen will clean it up. Although the 2004 Plan indicates that the 911 Center will call County Special Services for this spill incident, Mr. McCracken did not describe how they would be involved in response to this type of spill.

The fire department and DNREC call a contractor to clean up the spill. The LEPC has no enforcement responsibility regarding spills, so they work with DNREC.

Findings from a brief review of the 2004 Plan were as follows:

- In Section I, the incident response responsibilities for the County Special Services were listed as taking the necessary measures to prevent or minimize damage to the sewer system. Since sewer system is not defined in the document, it is uncertain whether this refers to both the sanitary and storm sewer systems or just the sanitary sewer system (see next bullet).
- Section II.B, Situation, indicates that the New Castle County Code requires users of the sanitary sewer system to notify the Director (or his designee) immediately upon accidental discharge of non-permitted wastes into the sewer system. Section II.D, Response Procedures, indicates that the 911 Center will notify the County Special Services Department when the sewer system is threatened by a hazardous substance emergency. Again it is unclear if this notification is referring to both the sanitary and storm sewer systems.
- In Sections III.C, Direction and Control and IV.C, Containment and Control, the County Special Services is listed as a participating agency. The roles and actions that County Special Services should take in direction, spill containment, and spill control are unclear.
- Section IX, Training and Exercises, indicates that a comprehensive program to ensure appropriate training and exercising of agency personnel and emergency staff in hazardous waste response and implementation of the 2004 Plan will be established. Mr. Srivastava was uncertain whether any County staff were trained in the 2004 Plan and thought that the County sewer staff may have been trained to the technician level.

**Required actions:** *In accordance with Section II.A.7 of Permit No. DE 0051071, County Special Services must:*

*(1) review the 2004 Plan and ensure that it covers spills to the storm sewer system and that the County Special Services roles and responsibilities are clearly defined in the 2004 Plan. If necessary, the 2004 Plan must be revised to clearly specify that it applies to the storm sewer system.*

*(2) ensure that the County Special Services staff responsible for implementing the 2004 Plan have a copy of the 2004 Plan, review the 2004 Plan, and clearly understand their responsibilities.*

*(3) ensure that responsible County staff participate in the training and exercising of the 2004 Plan as appropriate.*

**Recommended action:** *The County should ensure that all employees are adequately trained to implement spill prevention activities and that spill prevention BMPs are implemented at County-owned facilities.*

### **3.8 Industrial and High Risk Runoff (Permit Section II.A.8 and Consent Decree Section II. 26)**

The MS4 audit team interviewed Ms. Eli Mortazavi, Civil Engineer, and Mr. David Bowie, Environmental Engineer, Engineering and Environmental Services Division, in the County Special Services. Ms. Amber Moore, Environmental Scientist, in DNREC's Division of Water Resources also participated in the interview.

According to the Memorandum of Agreement between the County and DNREC dated May 30, 2001 (2001 MOA), the County was required to prepare an inventory and develop and implement a program for the following facilities: (1) municipal and hazardous waste landfills; (2) facilities on the Pretreatment List; and (3) facilities on the TRI List which are not subject to individual permits issued by DNREC. The County is required to update its list annually and as part of the update, add facilities that it determines are contributing substantial loads to the MS4. DNREC was responsible to create and maintain an inventory of facilities on the TRI List with individual NPDES permits and all facilities subject to the State General Permit.

A list of industrial facilities, provided to the MS4 audit team, included the following:

- Table I: Pretreatment Facilities, dated January 16, 2003
- Table II: TRI Facilities Not Listed on Pretreatment Facilities List, dated February 28, 2004
- Table III: Landfills, dated February 28, 2004
- More Landfills, dated February 28, 2004
- Table VII: No Exposure List, dated February 28, 2004.

No other recent lists were provided to the MS4 audit team. During the audit, several issues and inconsistencies were identified in these tables including:

- All "No Exposure Certification" facilities listed in Tables II and III do not match the facilities in Table VII. For example, Pine Tree Corners in Table III is not in Table VII and WL Gore - Otts Chapel is listed in Table II as "No longer operates in DE" but also as a "No Exposure facility" in Table VII.
- County staff stated that Chrome Deposit, which is listed as the County's responsibility in Table II is actually the City of Newark's responsibility.
- Tables I, II, and III include facilities which are the responsibility of the City of Newark, which is not a co-permittee in the County's MS4 permit.

- The notes listed for the company Richards Apex state “Unable to Contact” with no follow-up noted.
- Table I listed two facilities which are the responsibility of Middletown, but Ms. Moore indicated that she inspects these facilities and that Middletown is probably not aware of this. (See also Section 6.8.)

Tables I, II, and III identify the surface waterbody, but not the outfall, to which stormwater from the facility drains, as required by Permit Section II.A.8.a.

Ms. Moore, Mr. Bowie, and Ms. Mortazavi meet once per year to update the industrial facility lists. The County has not added any facilities that are contributing substantial loads to the MS4 based on a review of available monitoring data.

The County has two industrial facility inspectors - Mr. Bowie, who inspects the Pretreatment Facilities, and Ms. Mortazavi, who inspects the TRI Facilities that are not pretreatment facilities as well as two landfills. The County inspects all industrial facilities for which it is responsible once per year. Both inspectors use the County’s Industrial Storm Water Compliance Evaluation Inspection Form. Example completed forms were provided to the MS4 audit team. Both inspectors indicated that a typical inspection takes about one to two hours. Ms. Moore accompanies Ms. Mortazavi on her inspections. During the inspections, the County inspectors review the Storm Water Pollution Prevention Plan (SWPPP) and walk the site to observe for housekeeping issues, any stormwater management structures and outfalls, and vehicle maintenance activities. Ms. Mortazavi sends a letter with the completed inspection form to the industry, while Mr. Bowie verbally informs the industrial facility of the inspection findings. The MS4 audit team observed both inspectors conducting an industrial facility stormwater inspection (see Appendix A.2). Findings included:

- One industrial facility inspector did not document his inspection with photographs because the facilities that he inspects are cooperative, and thus, he thinks that photographs are not necessary.
- The other industrial facility inspector conducted a thorough inspection of the areas viewed during the inspection, but did not walk the entire perimeter of the site to inspect additional outdoor material storage.

The MS4 audit team reviewed several industrial files. Results of the file reviews were as follows:

- Inspection findings (and completed checklists) for inspections conducted on August 29, 2005 at Clean Earth and Arlon, Inc. were sent to the facilities on December 20, 2005, and December 29, 2005 respectively (approximately four months later). The findings for Arlon, Inc. were that the stormwater management basin needed to be maintained (debris removed, etc.). The written reports for these deficiencies should be sent to the facility in a timely manner.

- At least one of the same deficiencies identified during an inspection conducted at American Minerals on June 22, 2004 was also identified during the inspection conducted more than one year later on August 29, 2005.
- Mr. Bowie documented his findings for an inspection conducted at Medal on May 27, 2005, as notes on the completed form for an inspection conducted on November 4, 2004, rather than a new inspection form.

Ms. Mortazavi stated that all industrial facilities that received letters noting deficiencies have responded, but if they didn't, she would inform DNREC, who would then send a NOV. Mr. Bowie stated that he checks the facility's deficiencies during the next inspection, which could be up to one year later, and if they haven't taken any corrective actions, he would also inform DNREC. The County does not have documented enforcement procedures or an enforcement response plan.

The County prioritizes sites for establishing and implementing control measures for the stormwater discharges by reviewing data on site during the inspection to determine if there is an issue. However, the County does not document this review on the inspection form.

Ms. Moore noted that she believes the County has the authority to require and enforce stormwater control measures through the 2001 MOA. In a letter to Clean Earth dated December 20, 2005, the County asserted that Part II.A.11.c of the County's MS4 permit required the facility to analyze its stormwater discharge for the listed parameters. Neither the 2001 MOA nor the County's MS4 permit issued by the State provides the County with the legal authority to control stormwater discharges from industrial sites. The County must have this authority through its own legal mechanism such as an ordinance.

#### *County-Owned Industrial Operations*

The MS4 audit team reviewed the SWPPP for New Castle County Base D, a County maintenance yard. The SWPPP was dated March 28, 2006, because the contact list was recently updated. The MS4 audit team also interviewed Mr. Mike Harris of the Environmental Compliance Section about the SWPPP and the facility. Mr. Harris was not aware of the status of several actions or improvements set out in the SWPPP. He did not know whether a Notice of Intent (NOI) had been filed for the facility, was not sure if quarterly training had been conducted, and did not know if vehicle fluid storage containers had been moved inside as recommended. He had not found annual inspection reports or monthly erosion and sediment inspection reports that a previous employee may have conducted, but he believed these reports existed.

**Required actions:**

(1) In accordance with Section II.A.8.a of Permit No. DE 0051071 and Section II.26.a of the Consent Decree, the County's inventory of high risk facilities must identify the outfall(s) to which stormwater from the facility drains.

(2) In accordance with Section II.A.8.d of Permit No. DE 0051071, the County must update its list of industrial stormwater sources discharging to the MS4 and keep it current. The County must meet with the State as soon as possible to resolve the inconsistencies in its industrial inventory.

(3) In accordance with Sections II.A.8.c and II.E.1 of Permit No. DE 0051071, the County must ensure adequate legal authority to control the contribution of pollutants to the MS4 by stormwater discharges associated with industrial activity and the quality of stormwater discharged from sites of industrial activity. This can be through a combination of statute, ordinance, permit, contract, or other means adopted by the County. Thus, the County should review its current ordinances for implementing its industrial and high risk runoff program (e.g., Section 12-151 of the County code) to ensure that it has the legal authority to require and enforce control measures and monitoring at industrial facilities.

**Recommended actions:** The County should:

(1) prepare SOPs for conducting industrial inspections to ensure consistency by both County inspectors. These SOPs should ensure both inspectors are following the same protocol for evaluating activities and areas during the inspection, preparing inspection forms for each inspection conducted addressing deficiencies identified during the inspections, and conducting enforcement follow-up actions.

(2) develop procedures to verify that a facility has addressed the deficiencies identified during inspections rather than waiting until the next annual inspection is conducted.

(3) ensure that all deficiencies identified during the inspections are communicated to the industrial facility in written documentation rather than verbally, and in a timely manner.

(4) develop enforcement procedures or an enforcement response plan which includes guidelines for follow-up enforcement actions and the instances in which such actions should be escalated.

(5) document the process by which the County is prioritizing sites for establishing and implementing control measures at industrial facilities. This can be done by adding an item to the checklist which documents the monitoring data being reviewed and the results of the data review.

(6) consider taking photographs as part of industrial facility inspections.

(7) ensure that the County inspectors walk the entire perimeter of the site to inspect additional outdoor material storage during the annual inspections.

(8) fully implement procedures and recommendations in SWPPPs for County-operated facilities, including conducting training and inspections as set out in the SWPPP.

### 3.9 Construction Site Runoff (Permit Section II.A.9 and Consent Decree Section II.27)

#### *Requirements for structural and nonstructural BMPs*

The State of Delaware delegated the sediment and erosion control program to the County Department of Land Use (County Land Use). The MS4 audit team interviewed Mr. John Gysling, Civil Engineer, County Land Use. Mr. Gysling stated that the County requires compliance with the *Delaware Sediment and Stormwater Regulations*. Section 12.05.004 of the Drainage Code states that the Department of Land Use will approve a sediment and stormwater plan if it determines that the plan meets the applicable standards and if the person responsible for carrying out the plan certifies that the sediment and stormwater control measures included in the plan will be implemented and that the provisions of the *Delaware Sediment and Stormwater Regulations* will be followed.

#### *Site Planning*

During the plan review process (described in Section 3.2), the Engineering Section identifies opportunities for conservation design (e.g., forest protection, open space, groundwater recharge). This is typically done as early as the exploratory sketch phase. Mr. Gysling indicated that the Engineering Section reviewers use checklists for all reviews to ensure consistency in plan preparation and the review process. All checklists are posted on the County's web site. The County uses the Hansen database to track review comments. The Engineering Section reviewers post their comments on this database, and all comments are combined.

The County has a list of 26 standard notes which they use as appropriate on submitted plans. Mr. Gysling noted that these standard notes do not address measures for materials storage and waste disposal, because these are currently not required in the Delaware regulations. However, these types of measures have been incorporated into DNREC's handbook, which was released in 2005. The County has adopted all the new details, but has not updated their checklists to include these items. The County does require that a project applicant provide a copy of the NOI for coverage under the State General Permit for construction sites before signing off on the plan.

The Engineering section plan reviewers all have engineering degrees. Mr. Gysling indicated that they attend various types of training courses and have attended training classes provided by DNREC.

#### *Site Inspections*

The County has two full time and one half-time inspector, who are located in the Engineering Section. According to the 2004 Annual Report, the Department of Land Use performed 965 sediment and stormwater inspections. The County's policy is to conduct weekly inspections at Certified Construction Reviewer (CCR) sites. They prepare a weekly inspection schedule which they adhere to unless a specific issue arises at a site or a complaint is received. The County

supplements its in-house inspections with a CCR program. Under the CCR program, all non-residential sites and selected residential sites conduct inspections (about 2,500 private inspections) and submit reports to the County.

During an inspection, the County inspectors typically observe soil stabilization, swales, trackout, the stormwater management facility, silt fence, and inlet and outlet protection. All three County inspectors have CCR certification and are seeking National Stormwater certification.

The MS4 audit team accompanied County inspectors on inspections of a County construction project and a residential construction site. Details of these site visits are included in Appendix A.3. During the site visit to the residential construction site, structural and nonstructural BMPs were in place including:

- Rolloff trash bins were located beside each site.
- All graded areas were surrounded by silt fence.
- Open space areas had new trees.
- There was no trackout observed onto the main public road outside the development.

Findings at the Public Safety Building construction site included:

- Poor housekeeping throughout the site
- Trackout problems
- changes to stormwater management practices without County approval (piping Stormwater from the parking lot into the sedimentation basin)
- Washout of the outlet from the sedimentation basin and major erosion on the sides of the basin.

The County has four project managers who oversee County construction projects. For the County Public Safety Building construction site, Galbane, the General Manager, schedules inspections. The Remington Group is responsible for signing off on invoices. It is unclear who was responsible for appropriately installing and maintaining erosion and sediment controls. A review of the Public Safety Building files indicated that there have been ongoing noncompliance issues at this site.

#### *Enforcement*

Enforcement authority for the construction site program is contained in Section 12-152 of the County Drainage Code and includes NOVs, Stop Work Orders, administrative enforcement (Show Cause Hearings/imposition of fines), civil enforcement (Injunctive Relief), and criminal enforcement.

The County does not have written enforcement procedures. Mr. Gysling described the County's enforcement process. After identifying noncompliance, the County typically sends a letter with the inspection report which contains a time frame for taking corrective action. The letter is

always sent to the site owner (because the permit is issued to the owner) and is also copied to the homebuilder/contractor causing the noncompliance. If corrective actions are not taken within the specified time frame, the County will then send a NOV by certified mail. The NOV gives one extra day to implement correct action. If corrective action is still not taken, the County will schedule a Show Cause Hearing. The County has the ability to issue fines of \$200 to \$1000 per day. The County can issue a Stop Work and indicated that a Stop Work had been issued the day of the MS4 audit. A copy of the procedures for preparing Violation Notices and Stop Work Orders and a Violation Notice Example were provided to the MS4 audit team.

#### *Appropriate Education and Training Measures for Construction Site Operators*

County construction personnel have attended all the training sessions held by the County (see also Section 3.13). No specific sessions were held by the County for contractors. However, all site contractors are required to take a "blue card" course conducted by DNREC on sediment and stormwater management.

#### *Notification of all Construction Permit Applicants of Potential Responsibilities under the NPDES Program*

The County requires that a construction permit applicant provide a copy of the NOI for coverage under the State General Permit for construction sites before the County approves the plan.

#### **Required actions:**

- (1) In accordance with Section II.A.9 of Permit No. DE 0051071, the County must have a process in place to ensure that County construction sites have all erosion control measures properly installed, maintained, and inspected.*
- (2) In accordance with Section II.A.9.d of Permit No. DE 0051071, the County must implement a program that includes appropriate education and training measures for construction site operators. The County must develop a program which specifically addresses education and training for construction site operators, implement that program, and document the implementation. For example, if the County decides to hold training sessions, the County should document the date of the training, topics covered, and the attendees.*

#### **Recommended actions:** *The County should:*

- (1) update the erosion and sediment control plan review checklist and standard notes to be consistent with the DNREC handbook, including adding provisions for materials storage and waste disposal.*
- (2) develop guidelines or procedures for inspecting County construction sites which describe what actions should be taken when problems are identified.*
- (3) correct all deficiencies/problems identified at the Public Safety Building construction site as soon as possible.*

*(4) develop enforcement procedures or an enforcement response plan which includes guidelines for follow-up enforcement actions and the instances in which such actions should be escalated.*

### **3.10 Public Education (Permit Section II.A.10 and Consent Decree Section II.24)**

The 2001 Permit requires the County to implement public education activities in several areas as specified in Section II.A.10.a-d. The County has not developed and implemented individual programs to cover the specified areas, but conducts public education activities that cover some of the areas.

The County provided a list of public education activities conducted over the past several years. The list included meetings and a web site for its stormwater program, which includes public information and education materials such as:

- Descriptions of problems associated with stormwater pollution from residential developments, streets and highways, construction sites, industries, stores and offices, and farms and agriculture.
- Descriptions of the stormwater program being implemented.
- How citizens can help.
- How to report problems.

These topics generally cover programs listed in Permit Sections II.A.10.a, b, and c. (For additional information on the program related to public reporting of illicit discharges, see Section 3.6.) However, the County does not specifically have activities for a program to promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by commercial and private applicators and distributors as specified in Permit Section II.A.10.d (also see Section 3.5 of this report).

***Required action:*** *In accordance with Section II.A.10.d of Permit No. DE 0051071 and as stated in the required action for Permit Section II.A.5 (Section 3.5), the County must implement a program to promote, publicize, and facilitate the proper use, application, and disposal of PHFs by commercial and private applicators and distributors.*

***Recommended actions:*** *The County should:*

- (1) review its current public education activities to ensure that they are effective in reaching the appropriate audiences and meeting the goals of the stormwater program.*
- (2) coordinate public education activities and share public education materials with other co-permittees.*

**3.11 Monitoring Program (Permit Sections II.A.11 and IV)**

*Dry Weather Screening*

The County’s dry weather screening program is described in Section 3.6 of this report.

*Wet Weather Monitoring*

The 2001 Permit contains the following requirements for wet weather monitoring:

- Permit Section II.A.11.b requires that a wet weather screening program be implemented to identify, investigate, and address areas that may be contributing excessive pollutant levels to the MS4 and that the monitoring program shall include screening the system.
- Permit Section IV.A requires storm event monitoring to obtain the data necessary to assess the items listed in 1. through 5. of this section.
- Permit Section IV.B requires a wet weather screening program for the presence of illicit connections and improper discharges.

In accordance with the 2001 Interjurisdictional Agreement, the County and DelDOT jointly use a contractor, Duffield, to conduct the wet weather monitoring program. Five wet weather monitoring sites were selected: two in residential areas (Valano and Banning Park), one in an industrial area (Baltimore Pike), one in a commercial area (Christiana Mall), and one along a highway (I-95). Samples are collected twice a year (summer and winter) during representative rain events. The stormwater sample results are used to estimate the amounts of pollutants being discharged to waterbodies in New Castle County annually. It appears that the County and DelDOT’s program is primarily storm event monitoring and not a wet weather screening program as specified in Permit Sections II.A.11.b and IV.B.

Duffield provided the documentation for a storm event sampling conducted on April 4, 2004. The cover page, which contained the chronology of the sampling event, noted that there was a steady rain at 10:00 a.m., the first sample was taken at 10:30 a.m., and samples were taken until about 2:30 p.m. According to the attached Field Data Log, the first sample was taken at 11:10 a.m., and the last sample was taken at 2:10 p.m.

The 2004 Annual Report included the following estimated loadings in 2004 from developed land uses in New Castle County:

<b>Pollutant</b>	<b>Loading (lbs)</b>	<b>Pollutant</b>	<b>Loading (lbs)</b>
Cadmium	242	Ammonia Nitrogen	177,000
Copper	9,610	Total Phosphorus as P	42,900

Pollutant	Loading (lbs)	Pollutant	Loading (lbs)
Lead	5,470	Soluble Phosphorus	38,000
Zinc	73,300	Biochemical Oxygen Demand	3,560,000
Total Suspended Solids	16,500,000	Chemical Oxygen Demand	27,300,000
Total Dissolved Solids	63,900,000	Oil and Grease	1,980,000
Total Kjeldahl Nitrogen	425,000	-----	-----

When the wet weather/storm event monitoring has been completed under the 2001 Permit, the County and DelDOT are uncertain as to how they will use the data to determine the sampling program for the next permit term.

*Industrial and High Risk Runoff*

The County’s industrial and high risk runoff program is discussed in Section 3.8 of this report.

**Required action:** *In accordance with Sections II.A.11.b and IV.B of Permit No. DE 0051071, the County and DelDOT must implement a wet weather screening program. Since this Permit has expired and is in the renewal stage, the County and DelDOT should discuss with the State how to modify its wet weather monitoring program to comply with these conditions or request that these conditions be changed or eliminated to be consistent with the current wet weather monitoring program. See also Recommended actions below.*

**Recommended actions:** *The County and DelDOT should:*

- (1) ensure that all sampling documentation is accurate.*
- (2) carefully review and assess the wet weather/storm event monitoring data collected under the 2001 Permit.*
- (3) discuss with DNREC proposed changes to this program based on the data evaluation.*
- (4) develop a wet weather monitoring program which will continue to collect the necessary data to assess the items identified in Permit Section IV.A.*
- (5) evaluate the stormwater program activities to assess other methods for collecting data that can illustrate effectiveness of controls in reducing pollutant loadings to receiving streams (e.g., calculate and track the amount of solids reduced when retrofitting structures).*

**3.12 Total Maximum Daily Loads (Consent Decree Section II.28)**

Section II.28 of the Consent Decree requires that the County comply with any MS4 NPDES permit requirement developed in accordance with any wasteload allocation in a final TMDL

developed for the receiving streams into which the MS4 discharges (e.g., Brandywine Creek, Christina River-including Red and White Clay Creeks, Naamans Creek, etc.) or with any Pollution Control Strategy developed to implement the TMDL. Permit No. DE 0051071 does not currently have any requirements related to TMDLs.

EPA Region 3 has a Consent Decree with Delaware that all TMDLs must be established by the end of 2006. Ms. Laura Boyer and Mr. Lyle Jones from DNREC were interviewed regarding the status of TMDLs. The State is in various stages of TMDL development and implementation for the receiving waters into which the MS4 discharges. For example, according to DNREC's web site, final TMDL regulations have been enacted for the Red Clay and White Clay creeks. For the Naamans Creek watershed, the TMDL was adopted in 2005, but the final TMDL regulation has not been enacted. Mr. Jones and Ms. Boyer indicated that they are working in the Christina, Inland Bay, and Nanticoke watersheds, collecting data and tracking activities. The County and DeIDOT have been providing their data to the State.

DNREC staff indicated that once the TMDLs are adopted, the State develops PCSs for implementing the TMDLs. The State is using Tributary Action Teams, which provide input in developing the formal PCS. In developing the PCS, they assess all the BMPs that they can find or identify in the watershed. The State currently has five PCSs, which it is trying to get approved as regulations. Ms. Sara L. Woznak, Watershed Coordinator, Appoquinimink River Association, who worked on the watershed assessment for the Appoquinimink River, was present at the MS4 audit. Ms. Woznak indicated that they gave recommendations to DNREC for the PCS. They have been working with the County, DeIDOT, and all the towns in New Castle County. DeIDOT and the County helped fund the watershed assessment work.

***Required action:*** *As soon as requirements are imposed from the TMDLs and/or PCSs for the receiving streams into which the MS4 discharges, the County must review the requirements and ensure that all MS4 activities (e.g., new development projects, retrofit schedules for existing BMPs) are in compliance with the requirements.*

***Recommended actions:*** *The County should:*

- (1) continue to participate and provide comments and input in TMDL and/or PCS development and implementation.*
- (2) share relevant data and information with the State.*
- (3) review its current retrofit program and schedule for existing BMPs to ensure that they are consistent with the existing and proposed TMDLs/PCSs.*
- (4) until such time that requirements based on a TMDL and/or PCS are included in the MS4 permit, identify or develop a list of BMPs and design criteria which are chosen to prevent/minimize stream degradation that is typical for urban stormwater discharges.*

### 3.13 Training (Consent Decree Section II.29)

Section II.29 of the Consent Decree requires the County to initiate training for its respective and appropriate personnel, including contractors on stormwater controls, on the stormwater management measures established under the MS4, and on specific requirements for implementing all relevant aspects of the Consent Decree including but not limited to the topics listed in this section of the Consent Decree. The County conducted a two-hour training course in October 2003, which covered the topics listed in the Consent Decree. According to the 2004 Annual Report, 262 County Special Services personnel attended the training. Duffield staff (County contractor for the illicit discharge program) did not attend the training course in October 2003. In addition, the County provided a list of its training activities for 2005, which included one engineer attending a stormwater conference and one inspector attending two courses and becoming a CCR. (Discussions of related training activities for County personnel are included in various sections of this report.) The County does not have an ongoing coordinated comprehensive training program for the various County staff responsible for implementing the various components of the stormwater management program.

**Required action:** *Per Section 29 of the Consent Decree, the County must train all staff, including contractors. Therefore, the County must ensure that all staff and contractors (e.g., Duffield staff) are adequately trained to implement the stormwater program.*

**Recommended actions:** *The County should:*

*(1) review and evaluate its current training activities for personnel responsible for implementing the stormwater program and ensure that all staff have the appropriate and adequate training on an ongoing basis.*

*(2) ensure that training for personnel at County-owned facilities (e.g., maintenance yards) is conducted as specified in the SWPPPs.*

## 4 DELAWARE DEPARTMENT OF TRANSPORTATION FINDINGS

### 4.1 Structural Controls and Operation of the Storm Water Collection System (Permit Section II.A.1 and Consent Decree Section II.17)

#### *Storm Sewer Structural Controls Inventory and Inspection*

DelDOT contracted with URS to conduct an inventory of its stormwater system, including storm drain inlets, catch basins, manholes and associated piping, stream channels, ditches, storm sewer lines, outfalls, and BMPs. URS first researched archived construction plans to determine ownership of the structures, and then inspects the structures in accordance with its field manual. URS inspects the structures and takes photographs during the in-field survey. The inventory of DelDOT's approximately 44,000 structures is 90% complete and should be completed by April

30, 2006. URS' final deliverable is due in late August 2006. At that point, the GIS database will be populated with the inventory and inspection data. Sixty percent of the data is already in the GIS database. URS performed the inventory by watershed. Once all watersheds are complete, URS will inventory and inspect developments that were constructed since the inventory began.

In accordance with Consent Decree Section II.17.b.2, DelDOT analyzed not only its catch basin inventory, but the entire stormwater system inventory to determine appropriate inspection frequency. The results of this analysis were submitted to DNREC in a letter dated January 18, 2006. The inspection schedule uses a priority system based on age, material, areas with high traffic, condition, etc. DelDOT staff also noted that the Consent Decree defines a *catch basin* as an inlet with storage capacity, and most DelDOT inlets do not have storage capacity.

#### *Storm Sewer Structural Controls Maintenance*

MAXIMO is DelDOT's maintenance management system. It is used to record labor, materials, and tools. Work orders, based on inspections and citizen complaints, are entered into the system and assigned a priority number of one (lowest priority) to five (highest priority). The first Work Order on a particular structure creates an asset in the system, so that the maintenance history of the particular structure is recorded. URS work orders are entered into MAXIMO when the final annual deliverable is submitted to DelDOT. If URS discovers an urgent need (e.g., a broken grate), they will call DelDOT, and an immediate action item will be entered into MAXIMO.

MAXIMO was developed in August 2002, and DelDOT is continuing to increase the ways it can use the system. MAXIMO is connected to the GIS system, but additional linking features are scheduled to be added. For example, the systems will be changed so that the GIS system will show completed work orders. Repair of stormwater structures during construction projects is not recorded in the database. DelDOT is encouraging its staff to develop work orders for these structures prior to construction, so the repairs can be recorded. Staff are also encouraged to record contract work in MAXIMO.

Questions of responsibility are usually between DelDOT and the County. If a problem is found that is the County's responsibility, DelDOT sends the work order to the County. DelDOT will often maintain County property five feet beyond the end of pipe.

#### *Citizen Complaints*

DelDOT has a published complaint line and an online "Report a Road Condition." Citizen complaints are entered into MAXIMO. Site inspectors conduct a field visit to determine who is responsible for addressing the complaint. If the issue is not DelDOT's responsibility, the complaint is referred to the County. Citizen complaints are given a priority number like other work orders. For example, a sink hole in a subdivision would be assigned a priority number of three; while a sink hole on a highway would be assigned a priority number of five.

### *Bridge Inspection and Maintenance*

DelDOT inspects its bridges, including the stability of associated bank and/or channel, once every two years for bridges more than 20 feet in length, and once every one to five years for bridges shorter than 20 feet, depending on their condition. The inspection process includes observing the banks and stream channel and performing soundings in the stream to monitor the erosion of the substructure. The inspectors are required to take the National Highway Institute course and follow the written procedures of the Federal Highway Administration (FHWA) in 23 CFR 650.3. Inspections are tracked in the PONTIS database and reported to the FHWA. If a problem is found, bridge management generates a work order in MAXIMO. In 2005, 591 bridges were inspected in New Castle County. Delaware has almost 1,500 bridges statewide, including culverts.

### *Best Management Practices*

In New Castle County, DelDOT owns approximately 170 stormwater management structures, including stormwater ponds, sand filters, infiltration basins and trenches, check dams, biofiltration practices, and bioretention practices. URS inspects these structures annually. The two-man inspection team looks at the slope, animal burrows, clogged pipes, excess sedimentation, invasive species, etc. Inspection forms have been developed for each type of stormwater management structure.

DelDOT performs all necessary repairs and maintenance of its stormwater management basins and ponds in accordance with the *Delaware Sediment and Stormwater Regulations*. DelDOT no longer uses its *Maintenance Plan for Storm Water Management Ponds*, which may have been used in the early stages of developing a maintenance program.

DelDOT has an extensive BMP performance monitoring program. In the I-95 service plaza in Newark, DelDOT is monitoring the performance of several retrofits, including bioretention, sand filter, and catch basin inserts. DelDOT is also conducting comprehensive stream monitoring to determine the impact of the discharges from the retrofits on the stream. DNREC is helping DelDOT perform microbial source tracking to evaluate the effectiveness of the pet waste management program on Pike Creek.

For one and one-half years, DelDOT monitored water quality on two similar streams, one with and one without catch basin inserts. No water quality benefit was found, so DelDOT removed the inserts, which may have failed because contaminated water could still flow along the curb and into an unprotected curb cutout behind the catch basin grate. DelDOT is also evaluating the performance of different types of sand filters. The study is looking at different ages of sand filters in different runoff situations in attempts to determine an appropriate maintenance cycle.

DelDOT is studying the effectiveness of reduced mowing on water quality. Crews no longer mow the entire median, leaving a six-foot “beauty strip.” The reduced mowing saves maintenance cost, but may also benefit water quality.

DelDOT does not document its inspection and maintenance program on an annual basis and the effectiveness of its scheduled activities in meeting the objectives outlined in the Permit. However, in a letter dated January 18, 2006, DelDOT proposed changes to the Permit requirements related to the storm sewer system inventory and inspection. DelDOT requested a long-term “Inspection and Maintenance Plan” for the storm drainage system that will ensure long-term functionality and minimization of pollutant discharges. URS recommended that DelDOT inventory and inspect any new structures accepted by DelDOT, inspect high priority systems on a five-year cycle based on prioritization parameters, and inspect low priority systems on a ten-year cycle based on prioritization parameters. In addition to the prioritization parameters developed by URS, DelDOT recommends further prioritization based on priority watersheds that may include TMDL limitations or special designations.

**Required actions:** *None.*

**Recommended actions:** *DelDOT should:*

- (1) document the review and assessment of its inspection and maintenance program on an annual basis done in accordance with Section II.A.I.c of Permit No. DE 0051071.*
- (2) assess all watersheds for urban stormwater impairment, prioritize needs, and identify remedies within one year; prepare an appropriate implementation schedule within two years; and implement the remedies according to the schedule.*

#### **4.2 Areas of New Development and Significant Redevelopment (Permit Section II.A.2 and Consent Decree Sections II.18)**

##### *Assessment and Planning — Total Maximum Daily Loads (TMDLs)*

DelDOT has been providing input and comments and participating as appropriate in the TMDL development and implementation process. However, the State is still in the process of developing and adopting TMDLs and associated PCSs for the watersheds in the County. No PCSs have been approved. (See additional discussion in Section 3.12.) Thus, DelDOT has not yet developed any maintenance or retrofit schedules for its structural controls specifically based on relevant wasteload allocations, TMDLs, or PCSs.

DelDOT participated in the assessment of Leatherman’s Run, which is part of the Christina Watershed. Leatherman’s Run is highly impacted by DelDOT’s service plaza and maintenance yard. The assessment included geomorphic studies, water quality studies, fish sampling, and recommended potential projects, including retrofits. Twenty projects were identified, such as

repair of eroding banks and outfall pipes. A full report prioritizing these twenty projects, including a cost/benefit analysis, should be finalized in April 2006. DeIDOT plans to partner with DNREC and apply for 319 funds to complete the recommended projects. DeIDOT also helped fund the Appoquinimink Watershed Assessment and the development of a TMDL implementation plan. The Center for Watershed Protection identified retrofit opportunities, which DeIDOT is using to develop its retrofit plan.

Many watersheds in New Castle County are impaired for bacteria. As a result, DeIDOT has a project to compare a stream protected by catch basin inserts with antimicrobial-coated filters to a similar stream protected by catch basin inserts with untreated filters. DNREC is also conducting laboratory studies to evaluate the impact of outreach regarding cleaning up pet waste.

#### *Planning Process*

As a result of DeIDOT's assessment of its planning process, DeIDOT added water quality as a planning consideration in its long-range transportation plan, effective 2002. DeIDOT also follows the State requirement to consider green technologies first when designing construction projects.

During the project planning and development phase, DeIDOT gathers information on the proposed location, including the presence of wetlands or historic preservation areas, and uses this information to identify the project area and develop alternatives. The Maintenance Division is responsible for design of smaller projects; Transportation Solutions is responsible for larger projects. A conceptual plan, including 20% of the design, is developed and reviewed for approval to move forward. The design goes through preliminary, semi-final, and final plan review processes. Before being finalized, the design is distributed department-wide and reviewed by up to 30 people. The review procedures are documented in the Design Process Checklist. Environmental Studies staff, who will see a design multiple times throughout the process, need to sign off on an environmental compliance statement before the project can be advertised. DeIDOT involves the public throughout the process with public notices, advertisements, or series of workshops depending on the size and location of the proposed project.

DeIDOT follows DNREC regulations for erosion and sediment control. The Stormwater Management Division reviews the erosion and sediment control plan and must approve the plan before the project can be advertised. DeIDOT focuses primarily on total suspended solids removal and may only use BMPs on an approved list for erosion and sediment control.

The staff involved in project review do not have a list of pollutants of concern in specific areas. DeIDOT is waiting for research results and the finalization of PCSs to address TMDL requirements for other pollutants in its planning process.

### *Training*

DelDOT does not have required training for its staff responsible for plan review and approval. Funding is available for DelDOT staff to be trained in the Delaware Urban Runoff Management Model (DURMM). DelDOT staff have also taken a Federal Highway Administration Urban Drainage Design Course. The course is offered by the Technology Transfer Center every other year and is open to any department staff. DelDOT is also sending supervisors in planning to training regarding the new green technology requirements.

### *Retrofits*

DelDOT's retrofit projects include a sand filter at the State Road (SR) 273/SR 7 Park and Ride; bioretention, sand filter, StormFilter, and Baysaver at the I-95 Service Plaza; storm drain inserts; Appoquinimink River retrofit inventory; and Magnolia Maintenance Yard stormwater pond construction. DelDOT considered all criteria listed in Section II.18.c of the Consent Decree to select its retrofit projects. DelDOT was required to budget \$150,000 per year for stormwater management retrofit projects. In the past five years, DelDOT has spent almost \$1.2 million on design and construction of retrofits, or approximately \$450,000 more than the Consent Decree required to be budgeted.

***Required action:*** *In accordance with Section II.18.a.1 of the Consent Decree, as soon as requirements are imposed from the TMDLs and/or PCSs for the receiving streams into which the MS4 discharges, DelDOT must review the requirements, ensure that all structural BMPs in new projects are constructed and implemented to comply with these requirements, and develop maintenance or retrofit schedules for its existing structural BMPs as necessary.*

***Recommended actions:*** *DelDOT should:*

- (1) continue to participate and provide comments and input in TMDL and/or PCS development and implementation.*
- (2) in implementing its retrofit program, review and consider relevant watershed assessments, wasteload allocations, TMDLs, and PCSs as they are being developed.*
- (3) until such time that requirements based on a TMDL and/or PCS are included in the MS4 permit, identify or develop a list BMPs and design criteria which are chosen to prevent/minimize stream degradation that is typical for urban stormwater discharges.*

## **4.3 Roadways (Permit Section II.A.3 and Consent Decree Section II.19)**

### *Snow and Ice Management*

DelDOT has a salt management plan. During snow or ice events, DelDOT uses almost all salt and no sand on the roads in New Castle County. DelDOT has a bare pavement policy, so they apply prior to the storm and plow and apply during the storm. DelDOT stores all salt under roofs at four locations in Canal District and six locations in North District. The salt trucks have

ground speed controllers that control the rate of application. DelDOT aims to apply 200 pounds per lane mile and uses the computer to analyze how the salt is actually applied. Two days to two hours before a storm, DelDOT uses 100% by weight salt brine to pretreat SR-1. The pretreatment prevents a black ice effect, and the salt brine is formulated so that very little chemical is wasted.

#### *Litter Control*

In 1990, DelDOT established its Adopt-a-Highway program, in which groups volunteer to clean up a two-mile segment of roadway three times per year. Companies can also sponsor segments of I-95 and SR-1, but volunteers do not clean these roads due to safety concerns. DelDOT provides signs at the beginning and end of each adopted road segment. DelDOT disposes of most materials collected at the Delaware Solid Waste Authority Landfill, but does encourage recycling of materials by noting that volunteer groups could use profits from recycling to pay for trips or uniforms.

Each district also has a litter pick-up vehicle, and DelDOT uses prison crews for litter control. DelDOT provides manpower and vehicles to pick up litter from DNREC-sponsored river clean-ups.

Each district submits a weekly report regarding the amount of disposed trash and number of disposed appliances, tires, etc. This amount includes trash picked up by DelDOT crews, Adopt-A-Highway volunteers, and prison crews. The amount does not include trash collected at river clean-ups.

#### *Street Sweeping*

DelDOT classifies its roads as primary, secondary, or tertiary based on the average annual daily traffic and sweeps primary roads four times per year, secondary roads two times per year, and tertiary roads one time per year. DelDOT sweeps the I-95 highway daily and completes a cycle in approximately two weeks. It completes the sweeping cycle on SR-1 once per month. DelDOT uses regenerative air sweepers, which pick up small particles.

DelDOT does not have the equipment or manpower to pick up leaves in the fall. DelDOT also does not schedule sweeping after snowstorms to remove the salt. Communities sometimes request sweepings, but DelDOT usually maintains its regular schedule and does not react to these complaints. The sweeping schedule was developed based on a capacity analysis of the volume of sweepers and personnel available.

The sweeper operators haul sweeper waste to their district yards. Once a significant pile is at the yard, they haul the waste to the landfill. Sweeper waste is removed from the maintenance yards approximately once per month. DelDOT explored the use of sweeper waste as clean landfill

cover. However, analysis of the sweeper waste showed that polycyclic aromatic hydrocarbon (PAH) levels were too high for the waste to be used as landfill cover, so DelDOT is advertising a contract for treatment of the sweeper wastes. Disposal of the waste currently costs DelDOT \$65 to \$68 per ton, and treatment could cost only \$35 per ton. Treatment of the wastes could save money and be beneficial to the environment.

DelDOT can track the volume of waste collected from street sweeping from the invoices it receives from the Delaware Solid Waste Authority. DelDOT does not analyze where waste is collected, but knows that the majority is collected from I-95.

#### *Road and Bridge Maintenance*

DelDOT performs asphalt patching, curb and gutter repair, street striping, and maintenance of right of ways. Signs are manufactured in the DelDOT sign shop. DelDOT field crews use several BMPs to minimize stormwater impacts during road maintenance and repair activities. Erosion and sediment BMPs are used if ground disturbance is necessary. Field crews are trained in spill prevention. Every large truck has a spill kit with oil dry. Dump trucks do not have spill kits because there is not enough room in the trucks. Trucks used to transport materials are covered with tarps. All crews have been trained or advised to not dump materials down any storm drains. The crews also follow Section 110 of the DelDOT Standard Specifications for Road and Bridge Construction.

**Required actions:** *None.*

**Recommended actions:** *None.*

#### **4.4 Flood Control Projects (Permit Section II.A.4 and Consent Decree Section II.20)**

DelDOT is not specifically involved in the design or construction of any flood control projects. DelDOT helps to reduce flooding by educating the public regarding the importance of reducing impervious surfaces and by funding stream restoration projects.

**Required actions:** *None.*

**Recommended actions:** *None.*

#### **4.5 Pesticide, Herbicide, and Fertilizer (PHF) Application (Permit Section II.A.5 and Consent Decree Section II.21)**

The MS4 audit team interviewed Mr. Chip Rosan from DelDOT's Roadside Environmental Department. Mr. Rosan deals with PHF application by DelDOT's contractors, which accounts

for 95 percent of DelDOT's application. DelDOT requires all applicators, whether contract applicators or DelDOT staff, to be certified and relies on the certification requirements for training. DelDOT only applies fertilizer at new installations, and the application rates are included in the standard specifications.

The contractors choose the chemicals they will use. Neither DelDOT nor their contractors use any Restricted Use Pesticides. The contract language specifies that pesticides and herbicides must be applied in accordance with the label instructions, but DelDOT does not require contractors to incorporate stormwater BMPs into their activities. The contractors are paid based on successful elimination of weeds or invasive species. While excessive applications may cost the contractors additional money, so would the need to return to a site if the first application was not successful in eliminating the problem. The contract applicators must call DelDOT daily to report where they are applying. DelDOT occasionally goes to these locations to inspect the application. Contractors must also submit the amounts and types of pesticides applied to be paid for the application.

Some pesticide and herbicide application is handled at the DelDOT district level. District employees primarily apply Roundup in reaction to complaints. The districts store five to ten one-gallon containers at one time. The Canal District stores pesticides and herbicides in a specially-made shed. The North District stores pesticides and herbicides in a spill-proof cabinet.

DelDOT has begun placing additional asphalt under guard rails to reduce the amount of weeds and consequently the need for applying herbicides. DelDOT staff have also gone to PennDOT's training program, which teaches them to apply according to the label and use pesticides and herbicides that have lower toxicity levels.

DelDOT uses low volume and low use rate herbicides as much as possible. It also promotes the planting of native vegetation, but has found that the practice is not applicable everywhere. The "Enhancing Delaware Highways" program encourages allowing the vegetation in the medians to grow high. The program is also developing a manual, including SOPs, for Integrated Pest Management (IPM) that will be implemented state-wide. The manual is expected to be completed in July 2007.

#### *Commercial application of PHFs*

DelDOT does not conduct any specific activities to encourage reductions in the discharge of pollutants associated with PHF application by commercial applicators. DelDOT's public education program related to pesticides focuses on the general public that would be applying PHFs to their lawns.

**Required action:** *In accordance with Section II.A.5 of Permit No. DE 0051071, DelDOT must conduct activities to encourage reductions in the discharge of pollutants associated with the commercial application and distribution of PHFs. To comply with this requirement, DelDOT should consider activities such as providing public education materials regarding PHF application to commercial applicators and lawn care providers.*

**Recommended actions:** *DelDOT should:*

- (1) develop and implement formal SOPs for the handling, use, application, storage, and disposal of pesticides.*
- (2) when developing the SOPs, include procedures for application rates (i.e., maximum rates per acre) and correlation to weather and ground conditions.*
- (3) develop a menu of alternative landscaping options that will result in the reduction of PHFs applied annually.*
- (4) develop training specific to water quality protection during pesticide application and ensure contract and DelDOT staff are familiar with BMPs to protect water quality.*
- (5) include contract language that requires contractors to incorporate stormwater BMPs into their pesticides application activities.*
- (6) use available information, such as DelDOT and contractor material purchase data and the size of areas maintained, to track trends in pesticide usage. DelDOT can also use this information to identify anomalous increases in usage that may indicate overuse and document declines in usage due to better planning, more careful use, or the implementation of IPM.*

#### **4.6 Illicit Discharges and Improper Disposal (Permit Section II.A.6 and Consent Decree Sections II.22, II.24, and II.25)**

DelDOT primarily works with the Delaware Solid Waste Authority and DNREC's Division of Air and Waste Management regarding disposal of sweeper wastes. The staff interviewed had never heard of the Recycling Public Advisory Council that is referred to in Permit Section II.A.6.d. DelDOT publicizes the Solid Waste Authority hazardous waste collection centers at events and has areas on DelDOT properties where residents can drop off hazardous wastes.

##### *Floatables Control*

All DelDOT's public education brochures discuss floatables. DelDOT is also evaluating BMPs for floatables control, including hydrodynamic separators, swirl separators, cartridge filters with sediment traps, and catch basin inserts. KCI, DelDOT's contractor, analyzed material collected in catch basin inserts. DelDOT is not tracking floatables collected in its larger BMPs, but instead measures influent and effluent water quality.

### *Stenciling*

URS placed inlet markings on existing drainage inlets as it performed the inventory of the stormwater system. New storm drains have not been marked because the marks are used to help the contractor and DelDOT identify an inlet where the initial inspection has been completed. The mark instructs “Only Rain Down the Storm Drain.”

### *Dry Weather Screening and Investigation of Suspected Illicit Discharges [Permit Sections II.A.6 Introduction, II.A.6.f, and II.A.11.a]*

In accordance with the 2001 Interjurisdictional Agreement, the County and DelDOT jointly use the contractor Duffield to conduct the dry weather screening program. (See Section 3.6 for details of this program.)

***Required actions:*** None.

***Recommended actions:*** None.

### ***4.7 Spill Prevention and Response (Permit Section II.A.7 and Consent Decree Section II.23)***

DelDOT’s spill notification and documentation procedures are in the *Transportation Management Center (TMC) Operations Room Standard Operating Procedures (SOPs)*, approved by the TMC Board of Directors (June 27, 2001). The TMC is a 24-hour central communication point used to report and manage traffic incidents, including spills. DelDOT staff have spill containment supplies in their vehicles. All staff have viewed the required videos, and supervisors have additional training in how to use the spill kits and respond to incidents. A supervisor or assistant supervisor is always on site. The fire chief is usually in charge of spill response. MAXIMO is used to track expenses related to spill response.

Mr. Randy Cole, DelDOT’s NPDES Program Manager, noted that DelDOT is usually not the lead agency for a spill on the roadway, but he could not identify the agencies responsible for the various aspects of spill response. The MS4 audit team conducted a teleconference with Mr. Matthew Higgins, Environmental Scientist, and Ms. Ellen Malenfant, Program Manager, both in DNREC’s Division of Air and Waste Management. Mr. Higgins and Ms. Malenfant noted that the Oil and Hazardous Substance Incident Contingency Plan (Contingency Plan), signed by the governor, describes which agencies are responsible for the various aspects of incident response. DNREC is the delegated authority for HAZMAT response. The Contingency Plan is activated when a spill of a reportable quantity occurs. Spill response focuses primarily on public safety and secondarily on preventing pollution. The Contingency Plan does indicate that waterways should be protected and response personnel are trained accordingly. For example, firemen are

trained in diking to protect waterways. Delaware agencies that respond to emergencies hold a monthly meeting to discuss issues. DelDOT usually focuses on detouring traffic.

**Required actions:** *In accordance with Section II.A.7 of Permit No. DE 0051071, DelDOT must implement a spill prevention and response program. Therefore, DelDOT must:*

*(1) ensure that DelDOT staff responsible for implementing the Contingency Plan have a copy of the Contingency Plan, review the Contingency Plan, and clearly understand their responsibilities.*

*(2) ensure that DelDOT staff are aware of their responsibility for protection of waterways in addition to traffic control.*

*(3) ensure that responsible DelDOT staff participate in the training and exercising of the Contingency Plan as appropriate.*

**Recommended action:** *DelDOT should ensure that all employees are adequately trained to implement spill prevention activities.*

#### **4.8 Industrial and High Risk Runoff (Permit Section II.A.8 and Consent Decree Section II.26)**

According to the 2001 Interjurisdictional Agreement, DelDOT is responsible for reporting new industrial activities initiated by DelDOT to DNREC. DelDOT's fleet maintenance facilities have NPDES State General Permits for stormwater and SWPPPs. DelDOT inspects the facilities annually and requires the maintenance staff to conduct a wet and dry inspection quarterly. Each inspection requires the completion of an inspection form. Ms. Wendy Polasko, NPDES Engineer, coordinates the inspections.

**Required actions:** *None.*

**Recommended actions:** *None.*

#### **4.9 Construction Site Runoff (Permit Section II.A.9 and Consent Decree Section II.27)**

##### *Structural and Non-Structural Best Management Practices*

DelDOT's minimum BMPs for construction sites are in Section 102 of the Standard Specifications. DelDOT has an Erosion and Sediment Storm Water Management (ES2M) Manual and a field guide for inspectors. The Standard Specifications include maintenance requirements for BMPs. The guidance indicates that disturbance should be minimized and construction must be phased. Phased construction is often planned, but not practiced. On-site personnel permit the phasing to be ignored because the construction will be cheaper and quicker. The contractors argue that the ground will be disturbed for less time.

### *Site Planning*

DelDOT obtains coverage under the State General Permit for sites greater than 5,000 square feet. DelDOT does not require its designers or contractors to create a narrative SWPPP. According to DelDOT, the erosion and sediment control plans, standard specifications, standard construction details, and the stormwater management report, which is applicable only if a permanent structure or BMP is being installed, would comprise a complete SWPPP. Pollution prevention measures and measures to address materials storage and waste disposal are not included on the plans.

### *Site Inspections*

Mr. Dan Diehl is DelDOT's dedicated construction site inspector. He visits each site once per week and documents each visit with an inspection report. DelDOT has approximately 15-20 active projects at one time. During an inspection, Mr. Diehl typically observes soil stabilization, swales, trackout, the stormwater management facility, silt fence, and inlet and outlet protection. If the site has numerous problems or the contractor is inexperienced, Mr. Diehl may visit the site more often than once per week.

Most construction sites also have a DelDOT inspector on the site who verifies progress and materials to authorize payment. This inspector is usually a CCR, but his or her main focus is not stormwater management. Between 60 and 70 DelDOT employees have taken the three-day DNREC CCR course and passed the final exam. Approximately 20 employees, including Mr. Diehl, are in the field.

The MS4 audit team accompanied Mr. Diehl on an inspection of a utility relocation project needed prior to the widening of SR-141. Details of the site visit are included in Appendix B.2. Findings from the site visit include:

- On-site personnel were unaware that the site was subject to a State Stormwater General Permit.
- Stormwater BMPs were present on the site, but were not adequate along the banks of Little Mill Creek.
- Some BMPs (e.g., silt fence, construction entrances) were in very poor condition.
- The inspector reviewed the condition of all on-site BMPs, but did not effectively communicate the overall goals of the stormwater program to on-site personnel responsible for protecting waterways from polluted runoff.

The MS4 audit team also reviewed the inspection file for the utility relocation project. Inspection reports were dated January 26, 2006, February 9, 2006, March 6, 2006, and March 16, 2006, indicating that the inspections were not conducted weekly. Actions needed included installation of silt fence, seed and mulch of unstabilized surfaces, and reshaping of an outlet to include a weir. Many of the actions needed were repeated on multiple inspection reports.

### *Enforcement*

Mr. Diehl has the authority to prohibit additional land disturbance, stop work, and stop payment, but does not have the authority to issue a fine. DelDOT can also hire another contractor to fix a problem and charge the original contractor for the work. There have been a few instances when DelDOT has needed to stop work.

***Required action:*** *Per Section II.A.9.d of Permit No. DE 0051071, DelDOT must implement a program for the appropriate education and training of construction site operators. DelDOT requires operators to have CCR training, but the field visit indicates that the CCR training may not be sufficient. Inspectors and operators should know the overall goal of the program, which is to protect water quality.*

***Recommended actions:*** *DelDOT should:*

- (1) ensure that its field staff are aware of their responsibilities under the NPDES Stormwater General Permit for construction site runoff.*
- (2) inspect sites to ensure that water quality is protected in addition to looking at the structural integrity of various BMPs.*
- (3) conduct weekly inspections and enforce the regulations if violations are not addressed promptly.*
- (4) track compliance rates at DelDOT construction sites to identify any improvements as contractor staff are trained and become more aware of the goals of the program. If necessary, develop a plan to improve compliance rates at these sites.*

#### ***4.10 Public Education (Permit Section II.A.10 and Consent Decree Section II.24)***

The 2001 Permit requires DelDOT to implement public education activities in several areas as specified in Section II.A.10.a-d. DelDOT promotes, publicizes, and facilitates public reporting of illicit discharges or improper disposal by including reporting information in its brochures and on its web site. DelDOT also has brochures related to the proper management and disposal of used motor vehicle fluids, household hazardous wastes, grass clippings, leaf litter, and domestic animal wastes, and brochures regarding proper use, application, and disposal of PHFs. All publications and information are geared toward the general public. They are distributed during at least four events per year, including the Delaware State Fair. URS also distributes brochures when it is marking inlets in a subdivision.

DelDOT participates in programs geared at informing children of stormwater quality issues, including an anti-litter elementary school presentation, a watershed curriculum for 4th grade students, and an annual drawing contest for students in Kindergarten through 12th grade. The winning pictures are published in a calendar and placed on signs on DART buses. DelDOT also

distributed 15,000 place mats to eleven area restaurants with information on pollution prevention and stormwater quality.

DelDOT participates in Nonpoint Education for Municipal Officials, which educates local land use decision makers about the impacts of land use on natural resources. DelDOT has funded printing of materials, including a manual with a chapter regarding stormwater management.

DelDOT helped to fund an extensive behavior survey of the population by the Appoquinimink River Association program. The survey results could be used to improve DelDOT's public education program.

DelDOT does not specifically have activities for a program to promote, publicize, and facilitate the proper use, application, and disposal of PHFs by commercial and private applicators and distributors as specified in Permit Section II.A.10.d (also see Section 4.5 of this report).

**Required actions:** *For required actions, please refer to Section 4.5.*

**Recommended actions:** *DelDOT should:*

- (1) evaluate and improve its current public education activities using the results of the Appoquinimink River Association survey and other data gathering efforts.*
- (2) coordinate public education activities and share public education materials with other co-permittees.*

#### **4.11 Monitoring Program (Permit Section II.A.11)**

Findings, required actions, and recommended actions for the dry weather and wet weather monitoring programs are discussed in Section 3.11.

#### **4.12 Total Maximum Daily Loads (Consent Decree Section II.28)**

Findings, required actions, and recommended actions for TMDLs are discussed in Section 3.12.

#### **4.13 Training (Consent Decree Section II.29)**

Section II.29 of the Consent Decree requires DelDOT to initiate training for appropriate personnel, including contractors, on stormwater controls, on the stormwater management measures established under the MS4, and on specific requirements for implementing all relevant aspects of the Consent Decree including, but not limited to the topics, listed in this section of the Consent Decree. DelDOT conducted training courses in October 2001 and January 2002, which covered the topics listed in the Consent Decree. DelDOT has held several other stormwater

courses and workshops for its employees since the beginning of 2001. It has also sent representatives to approximately ten national stormwater workshops and conferences. DelDOT requires road maintenance staff to annually view three training videos related to stormwater management: stormwater contamination and spill prevention, vegetative control and pollution prevention, and facility and vehicle maintenance. DelDOT also produces quarterly stormwater pollution prevention bulletins that are posted at all DelDOT maintenance yards. Except for the CCR training required of construction contractors, DelDOT does not monitor the training of contractor employees. The companies under contract are responsible for the training of personnel who inventory and inspect stormwater structural controls and monitor retrofit BMPs.

**Required action:** *In accordance with Section II.29 of the Consent Decree, training is required for all staff, including contractors. DelDOT must ensure that its contractors are trained appropriately, especially contractors at construction sites (see Section 4.9).*

**Recommended action:** *DelDOT has several training resources, including its videos and stormwater pollution prevention bulletins. DelDOT should consider sharing these training resources with its co-permittees.*

## 5 DELAWARE CITY FINDINGS

### 5.1 *Structural Controls and Operation of the Storm Water Collection System (Permit Section II.A.1)*

The City does not have a list or map of structural controls. Mapping may be done through a State Forester grant, but this has not been initiated. Most storm sewer outfalls are through tide gates to the Delaware River or adjoining canals. There are two ponds near the City shop and four privately-controlled ponds at other locations. The City has constructed two bioretention facilities at the City parking area (see Appendix C for photographs). The City contracts with the Cutting Edge of Delaware, Inc. (Cutting Edge) for its maintenance needs. Upgrades to a portion of the storm sewer mentioned in the 2004 Annual Report are now complete, including new catch basins and piping.

Stormwater management structures (including ponds and catch basins) are inspected weekly for maintenance needs. Maintenance generally consists of mowing and trash removal. Neither Cutting Edge nor the City keeps maintenance records. Maintenance complaints from citizens are communicated verbally to Cutting Edge staff. The MS4 audit team visited the ponds near the City shop; some maintenance needs were noted at the ponds (see Appendix C).

The City does not monitor the performance of and discharge from its existing structural controls. In addition, the City does not assess the effectiveness of its scheduled inspection and maintenance activities in meeting the objectives outlined in the 2001 Permit.

**Required actions:**

- (1) In accordance with Section II.A.1.b of Permit No. DE 0051071, the City must maintain an internal log or reporting mechanism to document inspection and maintenance activities of its stormwater collection and conveyance system, including all components and structural controls. This log or reporting mechanism must include a list or map of the City's structural controls.*
- (2) In accordance with Section II.A.1.c of Permit No. DE 0051071, the City must monitor the performance of and discharge from its existing controls and assess the effectiveness of its scheduled inspection and maintenance activities in meeting the objectives outlined in the 2001 Permit.*

**Recommended action:** *The City should repair the geotextile sock over the pipe outfall at the pond near the City shop.*

**5.2 Areas of New Development and Significant Redevelopment (Permit Section II.A.2)**

NCCD is the agency designated by DNREC to perform stormwater reviews of new development and significant redevelopment for Delaware City. Redevelopment in Delaware City usually encompasses individual, single-home sites exempt from the DNREC program. Since NCCD is delegated for several other co-permittees under the permit, including the City of New Castle, Elsmere, Odessa, and Newport, the MS4 audit team discussed the NCCD program with DNREC representatives. The NCCD covers all development reviews and construction site inspections with one part-time, volunteer staff member who works one day per week. Since this person was unavailable, the MS4 audit team interviewed Mr. Paul Evans, Environmental Program Manager, and Mr. David Twing, Division Engineer, DNREC representatives familiar with the NCCD program.

If a development is within the boundaries of one of the subject municipalities, the developer must submit, per DNREC regulations, plans regarding permanent stormwater controls to NCCD for review. NCCD also receives an \$80 per acre fee. The part-time, volunteer staff member reviews these submittals using the DNREC review form and following DNREC regulations. Post-construction BMPs are required where development increases the quantity of runoff in 2- or 10-year storm events, or if north of the Chesapeake and Delaware Canal, in 2-, 10-, and 100-year events. Almost every site must provide essentially 80% Total Suspended Solids removal. There are some exceptions in the DNREC regulations; for example, a discharge to tidal water does not need to have quantity control. The requirement for quality control can be waived on a hardship basis, but this is extremely rare. NCCD prepares comments on the development plan if necessary. When all comments have been resolved, NCCD issues an approval letter. The developer's engineer must rule out GTBMPs like bioretention areas before being allowed to use wet ponds. Dry ponds are allowed only downstream of appropriate water quality controls.

Section 15 of the DNREC regulations requires maintenance of private controls. Plans should designate the entity to be responsible for maintenance. The agency delegated by DNREC (i.e., NCCD) inspects these controls on an annual basis and reports to the entity responsible for maintenance. The DNREC representatives did not know where these records were at the NCCD office and would need to contact the part-time inspector to find them. DNREC, rather than NCCD, would take enforcement action if BMPs were not maintained. Regulations allow \$200 to \$2,000 per day per offense. DNREC has not taken an enforcement action for BMP maintenance in the subject municipalities.

The voluntary employee is a Professional Engineer and has also attended DNREC's CCR training course.

**Required action:** *In accordance with Section V.I of Permit No. DE 0051071, the co-permittees for whom NCCD is implementing the new development and significant redevelopment program activities (i.e., Delaware City, New Castle, Elsmere, Odessa, and Newport) must ensure that the NCCD records can be accessed by DNREC, EPA, and their authorized representatives.*

**Recommended actions:** *The co-permittees for whom NCCD is implementing the new development and significant redevelopment program activities (i.e., Delaware City, New Castle, Elsmere, Odessa, and Newport) should:*

- (1) evaluate whether the one part-time volunteer working for NCCD can adequately implement the new development and significant redevelopment program activities to meet the 2001 Permit requirements*
- (2) determine whether NCCD is conducting annual inspections of private stormwater controls.*

### **5.3 Roadways (Permit Section II.A.3)**

Cutting Edge conducts road deicing for the City using salt obtained via the DelDOT contract. Calcium chloride is used on concrete surfaces where required. There are no written procedures for road deicing. While the City does not specifically track salt use, it has purchased and used less over time to save money. Salt is stored at the City shop in an open bin with a tarp cover (see Appendix C). Cutting Edge tries to manage the salt so that the least amount possible remains after winter to minimize pollution problems of long-term storage.

Cutting Edge picks up litter in parks and in the downtown area, but not in residential areas. Cutting Edge sweeps the downtown area by hand daily. The City's street sweeper broke down, so the City is considering hiring a company for street sweeping a few times per year at \$1,000 per trip.

Cutting Edge provides asphalt patching and sign painting services to the City. Other contractors are used when necessary for other maintenance activities such as curb and gutter repair. No specific BMPs are used other than good professional judgment.

**Required actions:** *None.*

**Recommended actions:** *The City should:*

*(1) implement periodic street sweeping to remove potential pollutants before they enter the storm sewer and discharge into waterways.*

*(2) ensure that Cutting Edge and other City contractors implement stormwater BMPs when conducting road and street maintenance.*

#### **5.4 Flood Control Projects (Permit Section II.A.4)**

A flood mitigation plan was developed in 2000. The City has a map showing flood control structures, which are designed to protect the downtown area from a 100-year storm event. These structures include flood barriers along the Chesapeake and Delaware Canal and at the park on the Delaware River, as well as a berm along Dragon Run. There are also approximately 14 tide gates on the storm sewer outfalls to the river and canals, which prevent flooding by backflow through the storm sewer. Most tide gates have been replaced recently and are less than five years old, but a few are approximately 30 years old. The City Manager did not know if pollutant removal was considered when the tide gates were replaced. Tide gates are equipped with trash racks to keep trash from the River from fouling the tide gate or entering the storm sewer (see Appendix C). The City is working with NCCD to consider replacement of the remaining 30-year old tide gates. The City is also considering additional flood control measures along Dragon Run and near the Canal. Cutting Edge checks the tide gates for maintenance needs every two weeks.

**Required action:** *In accordance with Section II.A.4 of Permit No. DE 0051071, if flood control projects are updated or added, the City must assess and minimize the impacts on receiving water quality.*

**Recommended actions:** *None.*

#### **5.5 Pesticide, Herbicide, and Fertilizer (PHF) Application (Permit Section II.A.5)**

The City is currently not using PHFs due to cost concerns. Weed control is done by mechanical means. Cutting Edge is currently not applying PHF materials, but Mr. Sean Johnston of Cutting Edge is currently seeking State pesticide/fertilizer certification as part of his private lawn care business. The City is not implementing a program to encourage reductions in the discharge of pollutants associated with the commercial application and distribution of PHFs.

**Required action:** *In accordance with Section II.A.5 of Permit No. DE 0051071, the City must conduct activities to encourage reductions in the discharge of pollutants associated with the commercial application and distribution of PHFs. To comply with this requirement, the City should consider activities such as providing public education materials regarding PHF application to commercial applicators and lawn care providers.*

**Recommended actions:** *None.*

### **5.6 Illicit Discharges and Improper Disposal (Permit Section II.A.6)**

The City has no ordinance that specifically prohibits discharges to the storm sewer system. Chapter 8, Article II, Section 8-6 of the City Code requires owners and occupants to keep the sidewalk and right-of-way near their properties clean and free of debris, and sets penalties for violations. Chapter 21 empowers a Board of Health to abate “nuisances injurious to the public health or dangerous to the inhabitants of Delaware City.” The City Manager said the Board of Health is seldom convened, but could be convened to handle illicit discharges or improper disposal. The City has not had to use these provisions.

New Castle County maintains the sanitary sewer. The storm sewer and sanitary sewer are not built in the same trench. The City Manager knew of no case where sanitary sewage (such as from an SSO) reached the storm sewer.

The City conducts regular cleaning of its stormwater controls as the primary defense against floatables. The City Manager believed permanent floatables control structures at outfalls would be difficult to use because of the tide gates.

**Required action:** *In accordance with Section II.A.6.a of Permit No. DE 0051071, the City must effectively prohibit the discharge of materials other than stormwater to the MS4. Thus, the City must review and revise as appropriate its legal authority to ensure that the discharges of any materials other than stormwater to the MS4 are prohibited.*

**Recommended actions:** *None.*

### **5.7 Spill Prevention and Response (Permit Section II.A.7)**

The City relies on the Volunteer Fire Department, which is not part of the City government, and DNREC’s Community Emergency Response Team to respond to spills. The Fire Department has spill containment supplies.

A secondary containment structure at the City shop holds fuel and waste oil tanks. The MS4 audit team found that the secondary containment structure had a drainage hole without a valve (see Appendix C).

**Required action:** *In accordance with Section II.A.7 of Permit No. DE 0051071, the City must implement spill prevention activities, such as spill prevention training for Town employees and contractors, who use materials that could potentially be spilled to the MS4.*

**Recommended action:** *The City should prevent uncontrolled drainage from the secondary containment structure at the City shop.*

### **5.8 Industrial and High Risk Runoff (Permit Section II.A.8)**

The City Manager said that there are no industrial facilities within City limits. The dock facility for the nearby refinery is within City limits, but it does not discharge to the MS4 because it is on located on the river. The City has a few restaurants but has not had grease trap problems with them.

**Required actions:** *None.*

**Recommended actions:** *None.*

### **5.9 Construction Site Runoff (Permit Section II.A.9)**

As noted under Section 5.2, NCCD is the agency designated by DNREC to conduct construction site runoff inspections for Delaware City and several other co-permittees, including the City of New Castle, Elsmere, Odessa, and Newport. The MS4 audit team discussed the NCCD program with DNREC representatives, Mr. Paul Evans and Mr. David Twing.

One part-time, volunteer staff member, who works one day per week, conducts all construction site inspections for NCCD. In accordance with the DNREC program, NCCD reviews plans for construction erosion and sediment controls at the same time as plans for permanent stormwater controls following DNREC checklists and regulations. The developer must send a copy of the NOI to NCCD. DNREC also has a database that NCCD can search to see if there are any developments that did not send the copy of the NOI to NCCD. NPDES coverage is required for approval. However, the checklist obtained by the MS4 audit team does not include this criterion. Developers must also certify at the time of application that a responsible person on site will hold a certification of training from DNREC. The DNREC representatives estimate that the part-time inspector has six sites to inspect at any given time. The inspector generally visits each site once

per week. The DNREC representatives believe NCCD requires developers to turn in CCR reports where CCRs are required. DNREC is the enforcement authority for any violations.

The MS4 audit team reviewed the available NCCD files for the Family Foundation Academy Charter School, a three-acre development in the City of New Castle. The Plan Review Application prepared by the developer, Daystar Sills, and its engineer does not designate a certified person trained by DNREC. It also does not list an NPDES permit number. The DNREC representatives could not find the NCCD inspection files for this site. See Appendix C for details of the site inspection conducted by Mr. Evans.

**Required actions:** *In accordance with Section II.A.9 of Permit No. DE 0051071, the co-permittees must ensure that NCCD is implementing a construction site runoff program including:*

- (1) ensuring that sites are inspected and appropriate enforcement actions taken (it is unclear whether the Family Foundation Academy Charter School site was inspected).*
- (2) ensuring that all sites have a certified person in charge ("blue card" holder).*

**Recommended actions:** *The co-permittees for whom NCCD is implementing the new development and significant redevelopment program activities (i.e., Delaware City, New Castle, Elsmere, Odessa, and Newport) should:*

- (1) include in evaluation forms a notation regarding whether the site has obtained NPDES permit coverage.*
- (2) evaluate whether the one part-time volunteer working for NCCD can adequately implement the construction site program activities to meet the 2001 Permit requirements.*

#### **5.10 Public Education (Permit Section II.A.10)**

The City has not promoted public reporting of illicit discharge and illegal dumping. The City has obtained inlet markers from DelDOT and plans to install them this year. For disposal of vehicle fluids and household hazardous wastes, the City listed the Delaware Solid Waste Authority telephone number in its August 2003 City newsletter, which goes to all residents. For yard waste management, the City provided some prizes for signing up for voluntary curbside recycling, including one backyard composter unit. For proper use of PHFs, the City has a related DNREC brochure available at City Hall. The City does not have a program regarding PHFs for commercial applicators and distributors.

**Required actions:** *In accordance with Section II.A.10 of Permit No. DE 0051071, the City must implement a public education program that includes:*

- (1) a program to promote, publicize, and facilitate public reporting of illicit discharges and illegal dumping.*

(2) a program to promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by commercial and private applicators and distributors (also see Section 5.5).

**Recommended actions:** The City should:

- (1) expand elements of its public education program using available media, such as the City newsletter, and available materials, such as those at <http://cfpub.epa.gov/npdes/stormwatermonth.cfm>.
- (2) implement its inlet marking program as a public education measure.
- (3) coordinate and share public education materials with the other co-permittees.

### **5.11 Monitoring Program (Permit Section II.A.11)**

The dry weather and wet weather monitoring programs are discussed in Section 3.11.

## **6 TOWN OF MIDDLETOWN FINDINGS**

### **6.1 Structural Controls and Operation of the Storm Water Collection System (Permit Section II.A.1)**

The Town of Middletown does not have a list or inventory of storm sewer components, structures, and BMPs. It is developing an inventory database as a result of findings from DNREC's audit of the Town's MS4 program. The Town does not have a maintenance schedule for the storm sewer. Currently, there is no tracking system for maintenance activities. The Town plans to implement a tracking system along with the development of the storm sewer system inventory database.

The Town does not take possession/responsibility for stormwater management ponds in commercial areas. There are a number of stormwater management ponds in residential areas not yet turned over to the Town for maintenance. Newer residential stormwater management ponds already turned over to the Town often require only mowing. There are approximately eight older (five to seven years old) residential stormwater management ponds in the Town's control. The Town has conducted maintenance recently on two of these ponds; the Town has not conducted maintenance on the other ponds. The MS4 audit team viewed one older pond for which no maintenance had been conducted (see Longmeadow Stormwater Control in Appendix D).

**Required actions:**

- (1) In accordance with Section II.A.1.a of Permit No. DE 0051071, the Town must inspect at least once during the term of the permit all components and structural controls in its storm sewer system, and conduct needed maintenance and repairs.

(2) In accordance with Section II.A.1.b of Permit No. DE 0051071, the Town must maintain an internal log or reporting mechanism to document all inspection and maintenance activities.

(3) In accordance with Section II.A.1.c of Permit No. DE 0051071, the Town must monitor the performance of and discharge from its existing controls and assess the effectiveness of its scheduled inspection and maintenance activities in meeting the objectives outlined in the 2001 Permit.

**Recommended actions:** None.

## **6.2 Areas of New Development and Significant Redevelopment (Permit Section II.A.2)**

The Town uses a contractor, KCI, to conduct all review of areas of new development and significant redevelopment. The Town Manager said KCI follows established DNREC procedures for these reviews. Representatives of KCI were not available during the MS4 audit to provide more information on the program.

The Town's Inspection Department handles inspection of permanent stormwater controls. Construction site operators often use permanent structures as temporary sediment controls, then convert them to permanent control after the site is stabilized. Town inspectors inspect the controls at several stages, and also require as-built engineering plans for controls to ensure that they meet requirements. The inspectors meet with site representatives to resolve problems with controls. If the site representatives do not cooperate, the Town can issue a stop work order until the problems are resolved. The Town has had to threaten issuing a stop work order, but has not yet had to issue one.

**Required actions:** None.

**Recommended actions:** None.

## **6.3 Roadways (Permit Section II.A.3)**

For snow and ice, the Town uses a mix of sand and salt ordered through the state-wide DeIDOT contract. The Town knows the amount of this mix purchased each year, but does not specifically track its use. The Town's Salt Storage Structure keeps the mix under cover (see Salt Storage Structure in Appendix D).

The Town has no litter control program other than street sweeping. Two street sweepers run through Middletown every day on a schedule such that each street is swept every week. The collected material goes to the landfill. While the Town does not track the amount of material disposed, it does have records from the Solid Waste Authority of the tonnage dumped.

The Town performs all maintenance activities on roads under its control, but contracts out large projects. The Town noted no BMPs to reduce contaminated runoff from its own small-scale maintenance activities. For larger jobs, a Town inspector would visit the site periodically to ensure erosion and sediment controls were in place.

**Required action:** *In accordance with Section II.A.3 of Permit No. DE 0051071, the Town must implement a litter control program.*

**Recommended action:** *The Town should implement stormwater BMPs to address spill prevention, material management, and good housekeeping for all roadway maintenance activities, whether conducted by the Town or by its contractors.*

#### **6.4 Flood Control Projects (Permit Section II.A.4)**

The Town has no existing flood control projects, and none are planned.

**Required actions:** *None.*

**Recommended actions:** *None.*

#### **6.5 Pesticide, Herbicide, and Fertilizer (PHF) Application (Permit Section II.A.5)**

DNREC provides mosquito control at the Town's request, either by aerial or truck spraying. The Town's Parks Department is responsible for 60 total acres. The Parks Department uses herbicides for roadway curbs and traffic islands but not in parks. It uses fertilizers to repair damage or in a newly seeded area. No Restricted Use Pesticides are used. Application procedures follow the Delaware Department of Agriculture guidelines; the Town keeps copies of these procedures for its use. The Department of Agriculture requires that applicators of both herbicides and fertilizers obtain training and certification. Parks employees hold these certifications. The Parks Department conducts soil tests every three years and obtains application rate recommendations from the cooperative extension. The Town actually applies only the spring recommendation, so that less fertilizer than the recommended amount is being applied. The Parks Department maintains plans and records of applications required by the Department of Agriculture. Herbicides are stored in Hazmat cabinets at the Public Works Yard. The Parks Department buys fertilizers as needed and uses them within one or two days.

The Town has conducted no activities to encourage reductions in the discharge of pollutants associated with PHF application by commercial applicators.

**Required action:** *In accordance with Section II.A.5 of Permit No. DE 0051071, the Town must conduct activities to encourage reductions in the discharge of pollutants associated with the commercial application and distribution of PHFs. To comply with this requirement, the City should consider activities such as providing public education materials regarding PHF application to commercial applicators and lawn care providers.*

**Recommended actions:** *None.*

## **6.6 Illicit Discharges and Improper Disposal (Permit Section II.A.6)**

Town representatives stated that Chapter 177-1 of Town ordinances stipulates a fine from \$1,000 to \$5,000 for an illicit discharge. The ordinance does not indicate what constitutes an illicit discharge. The Town recently found its only incident of illicit discharge as a result of a citizen complaint. A resident was draining a five-gallon bucket of oil from an HVAC system into an inlet. The Town is in the process of fining the resident. A Town compliance officer drives around the Town looking for problems, including improper disposal to the MS4.

The Town relies on New Castle County field screening to help detect illicit connections. No instances of illicit connections have been found. The Town has camera capabilities to find the source of illicit connection, if any are suspected based on the field screening.

A camera survey of the entire existing sanitary sewer was performed about five years ago; no cross connections to the storm sewer were found. Sewers built for new construction are also surveyed by the Town. If a cross connection were found, the Town would fix the connection rather than rely on legal action to force the developer to fix it. Town representatives stated that there have been no sanitary SSOs so far this year. They knew of no cases of overflows in previous years reaching the MS4.

Storm drain inlets do not have floatables controls, but all stormwater ponds have skimmers or trash racks to retain floatables. The maintenance program includes removal of floatables from ponds.

The Town has no list of dischargers to the MS4 that hold an NPDES permit. Based on information from Town representatives, there are at least six industrial facilities in the Town. The Johnson Controls facility may periodically discharge from its lined pond to the MS4.

**Required actions:**

*(1) In accordance with Section II.A.6.a of Permit No. DE 0051071, the Town must effectively prohibit the discharge of materials other than stormwater to the MS4. Thus, the Town must*

review and revise as appropriate its ordinance to define illicit discharge as the discharge of any materials other than stormwater to the MS4 and prohibit such discharges.

(2) In accordance with Section II.A.6.g of Permit No. DE 0051071, the Town must maintain and update a list of dischargers holding an NPDES permit.

**Recommended action:** The Town should consider floatables source controls such as public education materials focused on litter control.

#### 6.7 Spill Prevention and Response (Permit Section II.A.7)

The Town has standing contracts with contractors to provide spill response services. There are no written spill response procedures. If a spill were found, the appropriate Town official would contact the contractors. The Town would expect to be able to recoup spill response costs from the responsible party but would not use a particular ordinance to do this. It would just bill the responsible party.

Town workers do not carry spill containment supplies on their vehicles; these are available at the Town maintenance shop.

**Required action:** In accordance with Section II.A.7 of Permit No. DE 0051071, the Town must implement spill prevention activities, such as spill prevention training for Town employees, who use materials that could potentially be spilled to the MS4.

**Recommended action:** The Town should consider what actions it can take if a responsible party refuses to pay for spill response costs, and develop legal authority if necessary.

#### 6.8 Industrial and High Risk Runoff (Permit Section II.A.8)

The Town has not implemented a program to identify, monitor, and control pollutants in stormwater discharges to the MS4 from industrial and high risk facilities. Town representatives were aware of six industrial facilities in the Town, but did not know whether these facilities had NPDES industrial stormwater permits. They noted that the Johnson Controls site had a lined pond that had periodic discharges to the MS4. The County provided the MS4 audit team with lists of industrial facilities; one list contained two facilities (Johnson Controls and MacDermid Imaging) and noted Middletown as the responsible agency. During the County's MS4 audit interview, Ms. Moore, DNREC, stated that she inspects these facilities and that Middletown is probably not aware of this (see Section 3.8).

**Required actions:** In accordance with Section II.A.8 of Permit No. DE 0051071, the Town must implement an industrial and high risk runoff program. Thus, the Town must:

- (1) identify and prepare an inventory of “high risk facilities” discharging to the MS4. The items listed in Permit Section II.A.8.a must be included in the inventory.*
- (2) prioritize these industries for scheduling and conducting inspections.*
- (3) prioritize these industries for establishing and implementing controls.*
- (4) implement a monitoring program.*
- (5) develop and implement procedures for maintaining and updating the list of all industrial dischargers to the MS4.*

*Regarding the above activities, the Town should contact and coordinate with Ms. Amber Moore, DNREC. When the Town and DNREC agree to which activities each entity will be responsible for, they must develop and sign an interjurisdictional agreement (similar to the interjurisdictional agreement between the County and DNREC for its industrial program).*

***Recommended actions:*** *None.*

#### **6.9 Construction Site Runoff (Permit Section II.A.9)**

The Town does not use an ordinance to require construction site runoff controls. Town inspectors require compliance with the *Delaware Sediment and Storm Water Regulations*. Erosion and sediment site plan review is conducted using DNREC’s requirements and checklist. The Town does not notify construction permit applicants of their responsibilities under NPDES, but can access DNREC’s NOI database to ensure an NPDES permit has been obtained. When a developer changes the construction sequence, the Town requires the developer’s engineer to revise the erosion and sediment control plan accordingly (i.e., “on the fly” changes to erosion and sediment controls by the developer/general contractor are not allowed). The engineer must review all changes.

The Town has four construction inspectors, but three housing code inspectors are also trained to note erosion and sediment control problems at the individual home sites. Housing code inspectors will not conduct the required home inspection if erosion and sediment controls are not in place. Town representatives estimated approximately 300 erosion and sediment control inspections per month; the Town submits monthly reports to DNREC showing the number of inspections. Sites are inspected generally one to several times per week. Sites undergoing grading or storm drain installation are usually inspected every day. Sites are inspected within one day of significant precipitation. Inspectors are certified under DNREC’s program, participate in DNREC’s annual training opportunities, and use DNREC checklists. The Town also requires developers to submit copies of their CCR weekly reports. The Town checks that developers have someone on site who has completed DNREC’s “blue card” training program for construction site operators.

The Town requires construction bonds that are released only after erosion and sediment concerns are addressed. This procedure includes a mailing to residents asking for comments and problems; any identified items are added to a punch list for the developer. Developers must also certify lines and grades at each home lot because there were earlier problems with grading not being done to plan, causing changes in drainage patterns.

The Town's construction site inspection tracking sheets showed that most construction sites were inspected at least weekly and usually daily. Temporarily inactive sites may not be inspected; the Town relies on CCR reports for these sites. The MS4 audit team reviewed construction site files for two developments, Parkside (an active site) and Middletown Corporate Center Pad #201 (an inactive site). Weekly CCR reports were available for Parkside, but there was a gap in reports for the Middletown Corporate Center from February 10, 2006 to March 7, 2006. The Town's Parkside inspection reports noted problems with erosion and sediment controls at several lots. The inspectors said that they checked for corrections to these problems on subsequent inspections, but did not record this. See also Appendix D for details of site visits to these two developments with the Town inspectors.

It should be noted that the Town's construction site runoff program contains several strong elements, such as the frequency of inspections for most sites, tying occupancy permits and other approvals to erosion and sediment compliance, and seeking residents' comments on runoff controls.

**Required action:** *In accordance with Section II.A.9 of Permit No. DE 0051071, the Town must ensure adequate legal authority to require the use and maintenance of appropriate structural and nonstructural BMPs to reduce pollutant discharges to the MS4 during construction as well as implement other aspects of the construction site runoff program. The Town can incorporate the Delaware Sediment and Stormwater Regulations as part of its legal authority.*

**Recommended actions:** *The Town should:*

- (1) inspect temporarily inactive construction sites, since some areas are not stabilized and damage to erosion and sediment controls can occur (see Appendix D for conditions at Middletown Corporate Center Pad #201).*
- (2) consistently identify problems at construction sites and require CCR reports.*
- (3) request that construction site operators locate portable toilets away from storm drain inlets.*

#### **6.10 Public Education (Permit Section II.A.10)**

The Town mails a schedule of yard waste collections to residents. Each part of the Town has a specified collection day each week. The mailing includes a contact number if the resident is interested in composting, but does not inform residents that yard wastes should not be disposed

of in storm drains. The Town includes its complaint number in utility bills, but does not conduct any other public education activities related to stormwater concerns. The Delaware Solid Waste Authority operates vehicle fluid/household hazardous waste drop-off centers in the area, but the Town does not promote these.

**Required actions:** *In accordance with Section II.A.10 of Permit No. DE 0051071, the Town must implement a public education program that includes:*

- (1) a program to promote, publicize, and facilitate public reporting of illicit discharges and illegal dumping.*
- (2) a program to promote, publicize, and facilitate proper management and disposal of vehicle fluids, hazardous waste, and domestic animal wastes.*
- (2) a program to promote, publicize, and facilitate the proper use, application, and disposal of PHFs by commercial and private applicators and distributors (also see Section 6.5).*

**Recommended actions:** *The Town should:*

- (1) include information about the problems with improper disposal of yard waste in its yard waste program mailing.*
- (2) coordinate and share public education materials with the other co-permittees.*

#### **6.11 Monitoring Program (Permit Section II.A.11)**

The dry weather and wet weather monitoring programs are discussed in Section 3.11.

## **7 TOWN OF NEWPORT FINDINGS**

### **7.1 Structural Controls and Operation of the Storm Water Collection System (Permit Section II.A.1)**

The Town has a paper map showing storm sewer structural controls. There are no stormwater management ponds in the Town. About 15 catch basins are within the Town's jurisdiction. Most other catch basins are located on DeIDOT roads, and a few are located on private property. The Town is aware of one outfall near the industrial park. It flows to wetlands near the Christiana River. Town representatives thought there may be other outfalls. The Town's Chief of Property and Maintenance keeps a detailed maintenance log, copies of which were provided to the MS4 audit team. The Town Manager and Town Council periodically review these logs to ensure necessary activities are completed.

Catch basins are inspected every spring and again after major storms. Basins are usually cleaned as a result of the inspections.

**Required action:** *In accordance with Section II.A.1.c of Permit No. DE 0051071, the Town must assess the effectiveness of its scheduled inspection and maintenance activities in meeting the objectives outlined in the 2001 Permit.*

**Recommended action:** *The Town should communicate with the County to obtain information on outfalls from its MS4.*

### **7.2 Areas of New Development and Significant Redevelopment (Permit Section II.A.2)**

The Town has a land use regulation, but has not had a land development application in the past three years. The Town requires that applicants have an NPDES permit and approval from NCCD. The Town's engineering contractor would review any applications, following DNREC regulations for stormwater controls. The Town Manager serves as the zoning reviewer. Any requested variances must go before the Board of Adjustment for approval. Any new controls would be inspected by the Town's engineering contractor prior to acceptance.

The Town has agreements with landowners requiring maintenance of the two catch basins on private property. While there have been no problems with maintenance, a violating landowner could be taken to Alderman Court and fined.

**Required actions:** *None.*

**Recommended actions:** *None.*

### **7.3 Roadways (Permit Section II.A.3)**

The Town maintains about two miles of streets. The Town purchases salt through the state-wide DelDOT contract. The salt is stored under a tarp in the maintenance yard. The Town keeps one ton on hand and replenishes as needed, sometimes purchasing as much as two tons per year.

The Town sweeps streets on a set schedule and also on an as-needed basis. Street sweeping is recorded in the maintenance logs. The Town conducts some litter pick-up in addition to street sweeping. Material collected during sweeping is hauled to a landfill.

The Town conducts asphalt patching, street striping, and sign painting. There are no procedures to reduce transport of pollutants from these activities other than the best professional judgment of the Chief of Property and Maintenance.

**Required actions:** *None.*

**Recommended action:** *The Town should implement stormwater BMPs to address spill prevention, material management, and good housekeeping for all roadway maintenance activities.*

#### **7.4 Flood Control Projects (Permit Section II.A.4)**

The Town has no flood control structures, and none are planned.

**Required actions:** *None.*

**Recommended actions:** *None.*

#### **7.5 Pesticide, Herbicide, and Fertilizer (PHF) Application (Permit Section II.A.5)**

The Town does not use herbicides or fertilizers in its activities. Only limited green space is under the Town's control. The Town has reviewed and accepted DNREC's proposal to provide pesticides application for mosquito control.

The Town has conducted no activities to encourage reductions in the discharge of pollutants associated with PHF application by commercial applicators.

**Required action:** *In accordance with Section II.A.5 of Permit No. DE 0051071, the Town must conduct activities to encourage reductions in the discharge of pollutants associated with the commercial application and distribution of PHFs. To comply with this requirement, the Town should consider activities such as providing public education materials regarding PHF application to commercial applicators and lawn care providers.*

**Recommended actions:** *None.*

#### **7.6 Illicit Discharges and Improper Disposal (Permit Section II.A.6)**

Town representatives indicated there is an ordinance preventing connection to the storm sewer without permission, but could not produce a copy for review. The Town's code enforcement officer knows to check for illicit discharges and improper disposal during weekly drivethroughs. The Town has not had a case of suspected illicit discharge referred by New Castle County from its monitoring program (see Section 3.6). The sanitary sewer is operated by New Castle County and lies in a separate trench. No cross-connections have been found. There have been no SSOs in the past three years (the length of the Town Manager's tenure).

For floatables control, catch basins have grates and screens. Town representatives said the one known outfall does not have floatables control.

The Town has a list of industrial facilities but does not know which have NPDES permits.

**Required actions:**

(1) *In accordance with Section II.A.6.a of Permit No. DE 0051071, the Town must effectively prohibit the discharge of materials other than stormwater to the MS4. Thus, the Town must review and revise as appropriate its legal authority to ensure that discharges of any materials other than stormwater to the MS4 are prohibited.*

(2) *In accordance with Section II.A.6.g of Permit No. DE 0051071, the Town must maintain and update a list of dischargers holding an NPDES permit.*

**Recommended action:** *The Town should evaluate all outfalls to determine whether floatables controls are necessary.*

**7.7 Spill Prevention and Response (Permit Section II.A.7)**

The Town would contact the Fire Department in the event of a spill. The Town has an agreement with the County to provide emergency services. The Town expects it would bill the responsible party for any costs incurred for spill clean-up. This approach was used to recover costs incurred from a major apartment fire.

**Required action:** *In accordance with Section II.A.7 of Permit No. DE 0051071, the Town must implement spill prevention activities, such as spill prevention training for Town employees, who use materials that could potentially be spilled to the MS4.*

**Recommended actions:** *None.*

**7.8 Industrial and High Risk Runoff (Permit Section II.A.8)**

Town staff stated that within the Town limits there are a chemical manufacturer and an industrial park. The Town knows the names of the companies located within the industrial park because they were required to get business licenses, but has not assessed these facilities or the chemical manufacturer to determine if they should be monitored under the industrial and high risk runoff program.

**Required actions:** *In accordance with Section II.A.8 of Permit No. DE 0051071, the Town must implement an industrial and high risk runoff program if it has industries that fall into these categories. Thus, the Town must assess whether the industrial facilities in the industrial park*

are “high risk facilities” discharging to the Town MS4. The items listed in Permit Section II.A.8.a must be included in the inventory. If the industries are “high risk”, the Town must prioritize the industries for scheduling and conducting inspections; prioritize the industries for establishing and implementing controls; and implement a monitoring program. In addition, the Town must develop and implement procedures for maintaining the list of all industrial dischargers to the MS4 and updating the list.

Regarding the above activities, the Town should contact and coordinate with Ms. Amber Moore, DNREC. When the Town and DNREC agree to which activities each entity will be responsible for, they should develop and sign an interjurisdictional agreement (similar to the interjurisdictional agreement between the County and DNREC for its industrial program).

**Recommended actions:** None.

### **7.9 Construction Site Runoff (Permit Section II.A.9)**

As noted above, no construction sites have been active in recent years. If there were an active construction site, the Town’s engineering contractor, which has several CCRs, would inspect the sites. NCCD may also inspect. If a site were noncompliant, the Town could prevent issuance of Certificates of Occupancy.

**Required actions:** None.

**Recommended actions:** None.

### **7.10 Public Education (Permit Section II.A.10)**

The Town has a newsletter for residents and has just started a business newsletter. The residential newsletter has featured items related to stormwater protection including:

- Proper yard waste procedures, such as details on the Town’s wood chipper and mulching (January 2004), Town Code prohibits blowing clippings onto streets (June 2004), and other items in May and November 2005
- Clean up after your pets (March 2006).

**Required actions:** In accordance with Section II.A.10 of Permit No. DE 0051071, the Town must implement a public education program that includes:

(1) a program to promote, publicize, and facilitate public reporting of illicit discharges and illegal dumping

(2) a program to promote, publicize, and facilitate proper management and disposal of vehicle fluids, hazardous waste, and domestic animal wastes

(2) a program to promote, publicize, and facilitate the proper use, application, and disposal of

*pesticides, herbicides, and fertilizers by commercial and private applicators and distributors (also see Section 7.5).*

***Recommended actions:*** *None.*

### **7.11 Monitoring Program (Permit Section II.A.11)**

The dry weather and wet weather monitoring programs are discussed in Section 3.11.