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**MUNICIPAL SEPARATE STORM
SEWER SYSTEM (MS4)
COMPLIANCE INSPECTION**

**FINAL REPORT DATE: September 24, 2009
EVALUATION CONDUCTED: April 7-9, 2009**

BALTIMORE CITY, MARYLAND

**Office of Compliance and Enforcement
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460**

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Section 1.0 Introduction

On April 7—9, 2009, the U.S. Environmental Protection Agency (EPA), representatives from the Maryland Department of the Environment (MDE), and EPA's contractor, PG Environmental, LLC, (hereafter, the EPA Inspection Team), conducted an inspection of Baltimore City's Municipal Separate Storm Sewer System (MS4) Program. Discharges from Baltimore City's MS4 are regulated under the MDE National Pollutant Discharge Elimination System (NPDES) MS4 Permit Number MD0068292, effective January 3, 2005 (hereafter, the Permit). Baltimore City (hereafter, City or permittee) was first issued an NPDES MS4 permit on November 18, 1994 and is currently in its third permit term.

Baltimore City is the largest city in the state of Maryland. The City is located in central Maryland along the tidal portion of the Patapsco River, an arm of the Chesapeake Bay. Baltimore is sometimes referred to as Baltimore City in order to distinguish it from surrounding Baltimore County. Baltimore is a major U.S. seaport and is situated closer to major Midwestern markets than any other major seaport on the East Coast. As of 2007, the population of Baltimore was 637,455 people.

The purpose of the inspection was to assess the City's compliance with the requirements of the Permit. The EPA Inspection Team also assessed the implementation status of the City's current MS4 Program. The inspection schedule is presented in Appendix A. A copy of the Permit is presented in Appendix B.

Specifically, the inspection included an evaluation of the City's compliance with Parts III.E.1, III.E.2, III.E.3, III.E.4, III.E.5, III.E.6, III.F, and III.G of the Permit, which include requirements for the following program areas or elements:

- Part III.E.1 Stormwater Management
- Part III.E.2 Stormwater Management BMP Inspections
- Part III.E.3 Erosion and Sediment Control
- Part III.E.4 Illicit Discharge Detection and Elimination
- Part III.E.5 City Property Management
- Part III.E.6 Road Construction and Maintenance
- Part III.F Watershed Assessment and Planning
- Part III.G Watershed Restoration

The EPA Inspection Team evaluated compliance through a series of interviews, documentation reviews and site visits with representatives from multiple City Departments. The City's Water Quality Management Section (WQMS) is responsible for the coordination of activities for compliance with the Permit. A City organizational chart is presented in Appendix C. The EPA Inspection Team also conducted a series of records reviews and field verification inspections. A sign-in sheet for the April 7, 2009, kickoff

meeting and daily activities is presented in Appendix D, Exhibit 1. The primary representatives¹ involved in the inspection were the following:

Baltimore City Bureau of Water and Wastewater Representatives:	William Stack, WQMS Chief Van Sturtevant, Pollution Control Analyst Joan White, Pollution Control Analyst
Baltimore City Bureau of General Services Representatives:	Joseph Kostow, Engineering Sup., SWM Section Tracy Moffatt, SWM Program Engineer Michael Savage, Development Center Engineer Ignacio Ablola, Development Center Engineer Kenneth Church, Erosion and Sediment Inspector Bruce Blinco, SWM BMP Inspector
Baltimore City Special Projects of Pollution Control Section, Environmental Services Division	Dave Eick, Pollution Control Analyst III
MDE Representative:	Ray Bahr, MDE
EPA Region 3 Representatives:	Andrew Dinsmore, EPA Region 3 Allison Graham, EPA Region 3
EPA Contractors:	Max Kuker, PG Environmental, LLC Scott Coulson, PG Environmental, LLC

The weather on April 6, 2009, consisted of rain showers and periods of heavy rain. Similar weather conditions, including moderate rainfall, were reported for several days preceding the inspection. The EPA Inspection began on April 7, 2009 and dry conditions were experienced for the duration of the inspection activities.

¹ Numerous additional City staff participated throughout the inspection.

Section 2.0 Permit Compliance Review

The EPA Inspection Team conducted an evaluation of the City's MS4 Program to assess compliance with the requirements of the Permit. The Permit has an effective date of January 3, 2005, and will expire January 3, 2010.

The EPA Inspection Team identified several deficiencies (hereafter, inspection findings) regarding the City's compliance with the Permit. The presentation of inspection findings in this report does not constitute a formal compliance determination or violation. Additionally, this section of the report provides recommendations for how the City might improve the design and implementation of its current Stormwater Management Programs and also identifies program deficiencies that represent areas of concern for successful program implementation. All referenced documentation used as supporting evidence is provided in Appendix D, and photo documentation is provided in Appendix E. For emphasis and clarity, items that require the City's response are underlined while recommendations are presented in *italic*.

Section 2.1 Stormwater Management

Part III.E.1 of the Permit requires the City to "maintain a stormwater management program in accordance with the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland." The Code of Maryland Regulations (COMAR) 26.17.02 specifies regulations that govern stormwater management for the development or redevelopment of land with the goal of maintaining predevelopment runoff characteristics and reducing stream channel erosion, pollution, siltation, sedimentation, and local flooding. Specifically, COMAR 26.17.02.11 requires the City to inspect all Stormwater Management Best Management Practices (SWM-BMPs) "during the first year of operation and then at least once every three years after that." Pursuant to these requirements, the City has developed the *Baltimore City Stormwater Management Manual*, dated February 2003, (hereafter, City Stormwater Management Manual) to present and document the procedures the City uses in association with its Stormwater Management Program.

The EPA Inspection Team conducted documentation and field verification exercises in making the programmatic conclusions presented in Sections 2.1.1 through 2.1.2 of this report. Specifically, the EPA Inspection Team investigated project sites with greater than 5,000 square feet of disturbed area, where the project site is served by the City's MS4 and where the Stormwater Management (SWM) requirements in Parts III.E.1 and III.E.2 of the Permit would therefore apply. Observations pertaining to the investigated sites are presented below in a series of individual SWM site assessments. Following the individual assessments, inspection findings are presented which directly pertain to the City's oversight obligations under the Permit. The investigated sites include the following:

Private Site: United Iron and Metal, LLC located at 909 Millington Avenue in Baltimore, MD 21223. The United Iron and Metal, LLC project site (SWM No. 085) was first inspected by the City on April 1, 1999 (refer to [Exhibit 2](#)), at which time the inspector could not identify SWM-BMPs at the site. During the ten years that had elapsed prior to the EPA Inspection, the City had not taken measures to identify that a SWM-BMP had been installed and had not adequately referenced the as-built plans to determine whether there should be a SWM-BMP onsite. The City maintenance inspector conducted another inspection of the site on September 6, 2007, but could also not identify an “underground” SWM-BMP onsite (refer to [Exhibits 2 and 3](#)). During the course of the inspection the EPA Inspection Team reviewed the as-built plans for this site and determined that a SWM pond should be located onsite, not an “underground” SWM-BMP. Therefore, the City maintenance inspectors may have been trying to locate the wrong SWM-BMP or suite of BMPs during their prior inspections.

The City’s Year 4 Annual Report dated June 10, 2008, which covers the 2007 reporting period (hereafter, Year 4 Annual Report), summarizes a number of similar issues with SWM-BMP tracking and identification. Section D.1.b of the Year 4 Annual Report states “the inspector toured 6 sites, *but could not find the stormwater management facilities that are supposed to be there.* In addition, the inspector noted that 11 other facilities were never built [emphasis added].” These issues indicate that the City does not have an effective mechanism to inventory SWM-BMPs, and therefore cannot ensure that all SWM-BMPs are adequately inspected and maintained as required by Part III.E.2.c of the Permit and specified in COMAR 26.17.02.11.

Private Site: Penn Pontiac located at 61 Kane Street in Baltimore, MD 21205. The Penn Pontiac project site (SWM No. 199) was first inspected in 2002 by KCI, a City consultant. The SWM Program engineer’s inventory indicates that the KCI inspector field verified the implementation of a sand filter SWM-BMP and took photographs (refer to [Exhibit 4](#)). The City maintenance inspector conducted an inspection on November 27, 2007, but could not identify a sand filter SWM-BMP onsite (refer to [Exhibit 5](#)). It is unclear whether the City maintenance inspector referenced the KCI photographs to help locate the SWM-BMP in the field. Based on the City maintenance inspector’s report, it is possible that the inspector was not at the correct address. The EPA Inspection Team requested the as-built plans, but the City could not produce these records at the time of the EPA Inspection.

COMAR 26.17.02.11 requires the City to inspect all SWM-BMPs “during the first year of operation and then at least once every three years after that.” Due to the City maintenance inspector’s inability to locate the sand filter SWM-BMP, the City has not inspected this BMP since the KCI inspector field verified and photographed the BMP in 2002 (refer to [Exhibits 4 and 5](#)). As a result, the sand filter SWM-BMP has not been inspected at the frequency required by Part III.E.2.c of the Permit and specified in COMAR 26.17.02.11. The City must inspect all SWM-BMPs during the first year of operation and then at a frequency of once every three years.

Private Site: Rite Aid located at York Road and Gittings Avenue in Baltimore, MD 21212. This project is a completed private development project consisting of a convenience and drugstore with associated parking (refer to Photograph 1). The EPA Inspection Team accompanied City SWM Program staff to the site to view an inlet filter BMP near the intersection of York Road and Gittings Avenue (refer to Photograph 2). City representatives voluntarily suggested that the EPA Inspection Team visit this site because of its known SWM-BMPs. As a component of the visit it was determined that the project had not been assigned a SWM number and was not listed on the SWM Program engineer's inventory nor the tracking spreadsheet used by the City maintenance inspector. The reason(s) for these omissions was unclear. However, the project site plans include a trench drain at this location (refer to Exhibit 6). The EPA Inspection Team requested the as-built plans and a design detail for the trench drain to verify the installation of an inlet filter BMP, but the City could not produce these records at the time of the inspection. As a result, there may be an inlet filter BMP at the project site that has not been inspected at the frequency required by Part III.E.2.c of the Permit and specified in COMAR 26.17.02.11. Additionally, given the projects absence from both the SWM Program engineer's inventory and the tracking spreadsheet used by the City maintenance inspector, it was unclear how the City would ensure ongoing inspection and maintenance for the SWM-BMP in the future. The City must submit the following to EPA: the requested as-built plans; verification that the SWM-BMP has been assigned a SWM tracking number and has been included on SWM Program engineer's inventory and the tracking spreadsheet used by the City maintenance inspector; a statement clarifying whether the inlet filter SWM-BMP has been inspected; and any inspection records that document inspections conducted.

2.1.1. Failure to Develop Procedures for Tracking of all New BMPs. Part III.E.2.a.ii of the Permit requires the City to “develop and implement specific written procedures for tracking of all new BMPs to ensure a seamless transition for future maintenance inspections.” The purpose of the City Stormwater Management Manual is to present and document the procedures the City uses in association with its Stormwater Management Program, but it does not specify written procedures for tracking of all new BMPs. City Public Works staff explained that they have developed a method of tracking, but stated that they have not documented specific written procedures for tracking. As a result, the City has not developed or implemented specific written procedures for tracking of all new BMPs as required by Part III.E.2.a.ii of the Permit.

Furthermore, the City's current tracking methods do not ensure adequate long-term maintenance of BMPs. Individual BMPs are not tracked using a unique identifier. Instead, the SWM Program engineer from the City Public Works Development Center assigns a SWM number to the entire project. The City SWM Program engineer explained that mapping of the storm drain system and SWM-BMPs is conducted with the use of a geographic information system (GIS). However, the City is not using precise locational data (e.g., coordinates) for mapping of individual SWM-BMPs. Instead, the City SWM Program engineer manually inserts SWM-BMPs in the GIS by placing them in the center of the parcel, thereby generating the Maryland Coordinate System northing

and easting values shown in the City SWM Program Engineer's list of SWM-BMPs (refer to Exhibit 7).

Additionally, the City maintenance inspector is not using an effective set of SWM-BMP tracking tools for conducting the BMP maintenance inspections required by Part III.E.2.b of the Permit. The City maintenance inspector stated that he has not attempted to reference the GIS or the as-built plans to locate SWM-BMPs in the field or to follow-up when the SWM-BMPs cannot be identified during the inspection. Additionally, the City's SWM Program engineer and maintenance inspector did not appear to be engaged in effective communication to resolve issues regarding the SWM-BMPs that cannot be identified during inspections. For example, the United Iron and Metal, LLC project site (SWM No. 085) was first inspected on April 1, 1999 (refer to Exhibit 2), at which time the inspector could not identify the SWM-BMPs. During the ten years that had elapsed prior to the EPA Inspection, the City had not adequately referenced the as-built plans to determine whether there should be a SWM-BMP onsite. Refer to the individual SWM site assessment for additional details and documentation pertaining to the United Iron and Metal, LLC project site.

Also, the tracking spreadsheet used by the City maintenance inspector does not clearly identify the number of SWM-BMPs located at a particular project (refer to Exhibit 2). As a result, the City maintenance inspector is not informed with the precise location and number of SWM-BMPs that have been implemented at a particular project site. The EPA Inspection Team views this as a significant impediment to the City maintenance inspector, particularly when faced with identifying and inspecting environmental site design, subsurface or non-visible SWM-BMPs that conceivably could be located anywhere on a project site. This is compounded by the fact that the City has approved 213 projects with SWM-BMPs within its jurisdiction that require periodic inspection.

The City's Year 4 Annual Report summarizes a number of issues that are indicative of inadequate tracking and inspection procedures which are exemplified by the lack of adequate tracking for the SWM-BMP located at the Rite Aid at York Road and Gittings Avenue. Based on these issues and the individual SWM site assessments, the City did not demonstrate that SWM BMPs are effectively tracked, identified onsite, and inspected. Without effective tracking and inspection procedures, the City cannot ensure that adequate long-term maintenance is performed as required by Part III.E.2.c of the Permit and specified in COMAR 26.17.02.11. The City must develop and implement specific written procedures for tracking of all new BMPs to ensure effective construction and maintenance inspections as required by Part III.E.2 of the Permit.

2.1.2. Need for Adequate Training of SWM BMP Inspection Staff. Section D.1.b of the Year 4 Annual Report states "during 2007, City staff conducted maintenance inspections of 186 stormwater management BMPs and assessed them to be in *satisfactory condition*. One extended detention pond- Rock Glen Town Homes, designated in the City's system as SWM #116- was found in unsatisfactory condition. However, the owner has filed for bankruptcy, and it is unclear from the inspector's report how this facility will be brought up to standards [emphasis added]." The fact that City staff conducted nearly

two hundred SWM BMP maintenance inspections without identifying operation and maintenance issues indicates that City staff are not adequately trained to identify maintenance needs and operational issues that can impact BMP performance. The City maintenance inspector stated that he did not know what to look for when inspecting an oil-grit separator BMP. Other City Public Works staff stated that they had never found the need to conduct maintenance of pond structures using heavy equipment or other means of excavation. *The City is reminded that it must ensure that preventive maintenance is performed in accordance with the approved maintenance schedules printed on the SWM plans (remove sediment buildup obstructing inflows, restore original cross-section in pond structures, etc.).*

The EPA Inspection Team visited a number of new development and redevelopment projects of varying age to observe SWM BMP selection, placement, operation, and maintenance. During these site visits, instances of unsatisfactory maintenance were observed, including the potential for prolonged water storage (refer to Photograph 3) at the Good Samaritan Nursing Center (SWM Nos. 077, 191, 035), and fugitive trash and fine debris accumulation in SWM BMPs (for example, refer to Photographs 4 and 5). The EPA Inspection Team conducted a review of the as-built plans for the Good Samaritan Nursing Center and concluded that the riser pipe outlet structure should have included a discharge outlet lower on the riser pipe than the observed water level. The as-built plans also indicated that the top of the outlet structure should have included a trash rack which was not implemented in the field. Moreover, the City maintenance inspector had not adequately referenced the as-built plans to determine whether the pond was functioning according to the design. These site conditions further suggest that City staff are not adequately trained to identify operation and maintenance issues.

MDE has developed a draft *Stormwater Management Construction and Maintenance Inspection Manual*, dated October 2005. MDE staff present during the EPA Inspection offered to provide compliance assistance to the City in the form of a training exercise using the draft inspection manual. *The EPA Inspection Team recommends that the City work closely with MDE during the training exercise. Beyond the training exercise, the City should provide continuing education to its inspection staff to ensure that inspections result in adequate preventive maintenance of SWM BMPs. The City should also consider including the City maintenance inspector in BMP construction and infrastructure inspections to provide hands-on observations of BMP deployment/function and otherwise facilitate training.*

Section 2.2 Erosion and Sediment Control

Part III.E.3 of the Permit requires the City to maintain an acceptable erosion and sediment control program in accordance with the Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland.” COMAR 26.17.01 specifies regulations that govern erosion and sediment control to reduce pollutants in storm water runoff from construction sites.

2.2.1. Need for an Improved Scope of Inspection. The Baltimore City Code includes Ordinance No. 78-869 which pertains to soil erosion and sediment control. A review of this City ordinance indicates that it grants the City with broad authority to require compliance with the standards set forth in “Baltimore City’s latest edition of its Erosion and Sediment Control Manual.” City Public Works staff explained that these design details and standards become part of an approved erosion and sediment control (ESC) plan for each project.

COMAR 26.17.01.09 requires the City to “ensure that every active site having a designed erosion and sediment control plan is inspected for compliance with the approved plan.” However, the City ESC inspectors do not appear to be using the approved plans as a basis for their inspections. As a result, the City is not holding the development community accountable for the overall ESC plan or the installation and maintenance of BMPs in accordance with proven specifications and design criteria meeting good engineering practice requirements.

The Cylburn Arboretum, for example, is a City-sponsored (Department of Recreation and Parks) construction project which is located at 4915 Greenspring Avenue in Baltimore, MD 21209. It was observed during the EPA Inspection that BMPs were not implemented to prevent down-gradient BMP failure at the City’s Cylburn Arboretum construction site, which may be attributed to an inspection scope which does not ensure compliance with the approved plan. Specifically, the approved ESC plan specified the implementation of culvert outlet protection, but flow dissipation BMPs were not in place below the culvert outlets, nor were there control devices wrapping up and around the outlets (refer to Photographs 6 and 7). Furthermore, silt fence BMPs had been improperly selected and implemented in an area of concentrated flow down-gradient of the culvert outlets. As a result, there was a potential for failure of the silt fence BMP and the subsequent discharge of sediment beyond the construction site boundary. BMPs must be properly selected, installed, and maintained to prevent the discharge of sediment from the site. As evidenced by this and other discrepancies between ESC plans and site conditions, collectively the City’s inspection scope does not ensure compliance with the approved plan.

Using the approved plans as a basis for inspection, the City ESC inspectors would be provided with a more enforceable and consistent measure in making inspection determinations. Furthermore, when sites are inspected for compliance with the approved plan it may help to deliver a clear message to the development community on the City’s expectations for BMP implementation. *It is strongly recommended that the City utilize the broad authority granted under its ordinance to inspect each construction site within its jurisdiction for compliance with the approved ESC plan.*

Section 2.3 Illicit Discharge Detection and Elimination

Part III.E. 4 of the Permit requires the City to “maintain its illicit connection detection and elimination program to ensure that all discharges to and from the municipal separate storm sewer system that are not composed entirely of stormwater are either permitted by

MDE or eliminated.” To satisfy this requirement, the City is required, at a minimum, to (1) conduct monthly chemical screening downstream of all major storm sewer outfalls; (2) conduct routine surveys of commercial and industrial watersheds; (3) maintain a program to address illegal dumping and spills; (4) use appropriate enforcement procedures; and (5) report on activities annually.

The EPA Inspection Team conducted document and field verification exercises. Specifically, the EPA Inspection Team accompanied City personnel to two locations. One location had been identified as having a past cross connection with the sanitary sewer and the second had been identified as an industrial discharge to the City’s MS4. The site visits included a physical review of the sites, a review of field-screening activities, and a review of the documentation associated with the activities. Observations pertaining to the investigated sites are presented below in a series of individual site assessments. Following the individual assessments, an inspection finding is presented which directly pertains to the City’s oversight obligations under the Permit. The investigated sites include the following:

Site: Clipper Mill Monitoring Location, Clipper Road, Baltimore, 21211. The Clipper Mill location is a weekly Ammonia Screening (AS) and stream impact sampling (SIS) location in the Jones Falls Watershed. The City detected ammonia in the outfall discharge during a dry weather sampling event and initiated a Pollutant Source Tracking (PST) investigation. The EPA Inspection Team requested that the City personnel describe the PST procedures used to identify the cause of the suspected illicit discharge. The City personnel demonstrated the procedures used to track the discharge up the storm sewer line until they identified the approximate location of the flow approximately 500 feet from the outfall. According to City representatives, upon discovery of the approximate location of the flow, the City performed dye testing and televised the sanitary line. The investigation resulted in the detection of cross connection via infiltration between the sanitary and storm sewers and subsequently a discharge of sewage into the Jones Falls River.

During the site visit to the outfall, the EPA Inspection Team noted that a significant amount of sediment was entering the storm drain from a random pile of dirt next to the storm drain on the edge of the road (refer to Photographs 8 and 9). A significant amount of trash was also noted along the stream bank. During the trip up the storm sewer line the EPA Inspection Team noted what appeared to be an employee of JK Technologies, an automobile repair and service facility, using an unknown detergent to wash a wheel outside on an impervious surface. The City personnel accompanying the EPA Inspection Team, two Pollution Control Analysts (PCAs), did not identify the noted issues and stated that they typically did not actively try to identify those types of issues.

The procedures used to track the suspected illicit discharge appeared to be appropriate and resulted in the identification of cross connection between the sanitary sewer and storm sewer. At the time of the EPA Inspection, the cross connection had been repaired resulting in a termination of the illicit discharge of sewage although several other possible illicit discharges were discovered.

Site: S & G Concrete – 3001 Grantley Avenue, Baltimore, MD, 21215. S & G Concrete is a ready-mix concrete plant. City personnel discovered a large plume of a white powdery substance on bottom of Pecks Branch River during SIS sampling activities. City personnel stated that they initiated a PST investigation using the same procedures as the Clipper Mill cross connection investigation to identify the source. City personnel stated that the investigation led to S & G Concrete’s ready-mix concrete plant. City personnel noted poor housekeeping resulting in a white powdery substance on the ground and blowing around the site, and concrete truck washing activities resulting in a discharge of concrete materials to an off-site storm drain. City personnel referred the facility to MDE for follow-up. The City provided documentation that MDE conducted an investigation and corrective action was taken by the facility.

The EPA Inspection Team noted that the storm drain was covered with rock and City representatives stated that a silt fabric had been placed under the rock to prevent a discharge of concrete materials to the storm drain. The procedures used to track the suspected illicit discharge appeared to be appropriate and resulted in the identification of the illicit discharge to the storm sewer. At the time of the EPA Inspection, no evidence of an illicit discharge was observed.

2.3.1. Failure to Maintain an Adequate Program to Address Illicit Discharges, Illegal Dumping and Spills. Part III.E.4 of the Permit requires the City to maintain an illicit detection and elimination program to ensure that all discharges to and from the municipal separate storm sewer system that are not comprised entirely of stormwater are either permitted by MDE or eliminated. The City could not demonstrate, through documentation or otherwise, that the City has an adequate program to address reported illicit discharges, illegal dumping or spills that result in a discharge to the City’s MS4.

City personnel stated that reports of illicit discharges, illegal dumping and spills are typically received by the City’s 311 phone hotline and that the calls are then routed to the appropriate department for follow-up. City personnel also indicated that they were not aware if formal or informal procedures had been developed to direct the 311 operators to the appropriate City department or State agency to notify upon receipt of a report or what information needed to be collected during the call. Based upon conversations with City personnel, a report of illicit discharge, illegal dumping or a spill could, and has been, routed to several different City departments and State agencies for follow-up.

In addition, the City’s Year 4 Annual Report did not contain information regarding illegal dumping and spills, nor could the City provide a log of illicit discharges (other than lead based paint violations), illegal dumping or spills reported by the public or City staff. City personnel stated that a majority of PST investigations triggered by AS and SIS monitoring are sewage related and that in the 5 years prior to the inspection, a total of approximately 12 non-sewage related PSTs had occurred. The EPA Inspection Team noted that this is a very low number of events for a city with more than half a million residents.

A representative from the City's Special Project Division of the Pollution Control, one of the several departments responsible for responding to complaints, stated that documentation of illicit discharges, illegal dumping and spills is not recorded or tracked by the Division unless an enforcement action is necessary.

City representatives stated that the spills occurring on roadways are typically handled by the City fire department and that the State Office of Emergency Management is contacted in the event of large-scale spills. According to City representatives, reports of roadway spills that enter the City's MS4 are not provided to the WQMS by either agency for reporting purposes under the Permit.

The City must maintain an illicit detection and elimination program to ensure that all discharges to and from the municipal separate storm sewer system that are not comprised entirely of stormwater are either permitted by MDE or eliminated. Furthermore, the City must develop and implement City wide procedures to ensure that reports of illicit discharges, illegal dumping and spills that result in a discharge to the City's MS4 are routed from 311 to the correct department, are documented and that the initial response and subsequent follow-up (i.e., enforcement action if applicable) is tracked.

The EPA Inspection Team recommends that the City implement a procedure to ensure adequate response time, resolution, and tracking of reported illicit discharges, illegal dumping and spills reported by citizens and County staff. The procedure should be made available to all staff having a direct role in the Illicit Discharges and Improper Disposal Program, and it should be implemented with the use of adequate training.

The EPA Inspection Team further recommends that the City's WQMS coordinate with the City's Special Project Division of Pollution Control, the City fire department and State Office of Emergency Management to ensure that all reports of spills that enter the City's MS4 are provided to the WQMS for tracking, analysis and reporting purposes. The reports should, at a minimum, include the size, type, and amount of material that entered the MS4 during the incidents. The EPA inspection team also recommends that WQMS review the City fire department's spill response procedures and training topics on a biennial basis (possibly coinciding with the firefighter training) to ensure adequate protection of the MS4.

2.3.2. Failure to Conduct Follow up of Potential Pollutant Sources Identified During Routine Surveys of Commercial and Industrial Watersheds.

Part III.E.4.b of the Permit requires the City to conduct routine surveys of commercial and industrial watersheds for discovering and eliminating pollutant sources. The City initiated field screening in the early 1990s, but ceased their field screening activities in 1995 based upon the belief that the program was "an ineffective use of resources". A City representative stated that the City expended 1,000 man hours and identified only 12 localized issues during the initial survey. In order to satisfy the permit requirement, MDE allowed the City to use their PST program as their primary illicit discharge

identification mechanism as it allowed the City to identify and investigate larger scale illicit discharges.

In the fall of 2007, the City stated they re-initiated the permit-required comprehensive field screening of outfalls and commercial/industrial surveys by contracting the services of the Center for Watershed Protection (CWP) utilizing revised survey procedures based on the CWP's "Hot Spot" surveys. The revised procedures allow the City to focus on the identification of smaller and more localized illicit discharges. CWP provides the City with documentation of suspected illicit discharges and evidence of illegal activities or storage. WQMS is responsible for reviewing the documentation provided by CWP and conducts the associated follow up activities.

At the time of the EPA Inspection, the City and CWP had completed two Watershed Surveys and had developed Watershed Action Plans. The Watershed Survey's contain a commercial and industrial survey component for the identification of suspected illicit discharges and evidence of illegal activities or storage. According to City personnel, the Watershed Surveys and associated Watershed Action Plans for the two watersheds represent approximately 50% of the City's drainage area.

CWP identified a total of 33 possible hotspot candidates in their Upper Back River Characterization Report, Section 4.3 Hotspot Site Investigations (HSI) dated November 2008 (refer to Exhibit 8). Twenty three of the hotspots identified were commercial establishments. Of the 33 potential hotspots identified, CWP designated zero as severe, 18 as confirmed and 13 as potential. The remaining four were designated as not hotspots and determined to have no apparent stormwater pollution potential.

CWP identified a total of 25 possible hotspot candidates in their Lower Jones Falls Watershed Characterization Report, Section 4.3 Hotspot Site Investigations (HSI) dated November 2008 (refer to Exhibit 11). Twenty one of the hotspots identified were commercial establishments. Of the 25 potential hotspots identified, CWP designated one as severe, six as confirmed, twelve as potential. The remaining six potential hotspots were designated as not having the potential for apparent stormwater pollution.

At the time of the EPA Inspection, the City had not conducted a review of the draft reports, developed a plan to address the hotspots, including prioritization of the HSI's to verify the results or take action to eliminate possible illicit discharges.

The City must conduct a review of the draft and final reports, prioritize identified hotspots, and initiate follow-up activities. Follow-up activities must include investigation of the potential sources of pollution to determine the severity of the source and ensure that the sources are eliminated. The City must also continue the HSI Program for the remaining 50% of the City's drainage area.

2.3.3. Failure to Report Results of Routine Surveys of Commercial and Industrial Watersheds. Part IV.1.a of the Permit requires the City to report annually on the status of implementing the components of the stormwater management program that are

established as permit conditions. The City did not provide information regarding routine surveys of commercial and industrial watersheds (Watershed Surveys and Watershed Action Plans) in their Year 4 Annual Report for activities conducted during the 2007 reporting period. The CWP HSI surveys, completed on behalf of the City, were not reported to MDE in the Year 4 Annual report. The City must report activities relating to the implementation of their stormwater management program.

2.3.4 Need for Improved Training of County Personnel and Field Staff for Detecting and Eliminating Illicit Discharges and Improper Disposal. City personnel who have a direct role in the Illicit Discharge Detection and Elimination Program have not received training in how to identify and report conditions in the stormwater facilities that might indicate the presence of illicit discharges to the MS4. During the course of the inspection activities, City staff displayed a general lack of awareness regarding their role in preventing stormwater pollution and detecting and eliminating illicit discharges. Specifically, during illicit discharge site visits with two City PCAs, several illicit discharges were noted by the EPA Inspectors that were not noted by the PCAs. The PCAs had not received training or specific direction to identify illicit discharges outside of their primary sampling duties (i.e., AS and SIS sampling). *The EPA Inspection team recommends that the City provide periodic training courses to educate appropriate personnel to identify and report conditions in the stormwater facilities that may indicate the presence of illicit discharges to the MS4. It is further recommended that the City leverage its field staff, particularly those who have direct contact with the MS4, in detecting and eliminating illicit discharges through the development and implementation of adequate training and reporting processes for City personnel.*

2.3.5 Need for Continued Interdepartmental Communication Regarding Sanitary Sewer Overflows (SSOs) and Sanitary Discharges of Unknown Origin (SDUOs). The WQMS and Department of Public Works (DPW), Environmental Services Division, Bureau of Water and Wastewater need to continue interdepartmental communication regarding the discovery of sewage or other indicators of sewage (e.g., ammonia) in the municipal storm sewer system. WQMS personnel stated that sewage or indicators of sewage are regularly discovered through the City's outfall ammonia screening program, closed caption televising of the City's storm sewer system, and through reports from environmental advocacy groups and general public.

WQMS personnel further stated that upon discovery of sewage or other indicators, a pollution control analyst will perform a visual inspection of the site and may sample for ammonia, chlorine and surfactants, or sediment. If ammonia is detected in the municipal separate storm sewer system WQMS then designates the issue as either a Sanitary Sewer Overflow (SSO) or Sanitary Discharge of Unknown Origin (SDUO) based upon observed conditions. Upon designation of an SSO or SDUO WQMS personnel create a record in their tracking database and forward the information to the sanitary group for follow-up action. WQMS personnel can perform a query on the database to determine those sites that require follow-up action. In addition, WQMS coordinates with the sanitary group at monthly meetings regarding follow-up activities and progress at these sites. City

personnel stated that initially, there were twenty-seven SDUO sites that required follow-up action, but at the time of the inspection the number had increased.

The EPA Inspection Team strongly recommends that the City's WQMS and the Bureau of Water and Wastewater continue to communicate regarding the discovery and corrective actions (including method of correction and time frame for correction) of SSOs and SDUOs. It is further recommended that the City leverage its resources to implement corrective actions to eliminate SSOs and SDUOs as soon as possible after discovery to limit the amount of sewage discharged from and through its storm sewer system.

Section 2.4 City Property Management

Part III.E.5 of the Permit requires the City to “identify all City-owned facilities requiring NPDES stormwater general permit coverage and submit Notices of Intent (NOI) to MDE for each.” Pursuant to that requirement, the City has identified two wastewater treatment plants, six landfills and nine sub-stations and a new Central Repair Garage that require coverage under the State’s NPDES Industrial Stormwater Permit (Discharge Permit No. 02-SW). The individual City Bureaus within the Department of Public Works responsible for the different types of facilities are also responsible for obtaining permit coverage and maintaining compliance with permit conditions. Specifically, the City’s wastewater treatment plants are managed by the Bureau of Water and Wastewater, landfills are managed by the Bureau of Solid Waste, and the sub-stations and Central Repair Garage are managed by the Bureau of General Services.

The EPA Inspection Team conducted documentation and field verification exercises in making the programmatic conclusions presented in Sections 2.4.1 through 2.4.3 of this report. Specifically, the EPA Inspection Team visited the Central Garage and the Northwest Transfer Station to review permit coverage status, Storm Water Pollution Prevention Plan (SWPPP) implementation and housekeeping. Observations pertaining to the facilities visited and deficiencies with items required in the Permit are detailed below in Sections 2.4.1 through 2.4.3.

Site: Central Repair Garage: 3800 East Biddle Street, Baltimore, MD 21213. The Central Repair Garage (garage) serves as the City’s main vehicle maintenance repair facility. The facility was recently built and obtained a certificate of occupancy on October 1, 2008. According to City representatives, the facility combined staff and equipment from two sub-stations and an old Central Maintenance Garage, which were subsequently closed upon the opening of the new garage. The garage is the City’s primary repair and salvage facility and is used for the repair and maintenance of approximately 5,000 pieces of equipment ranging from lawn equipment to heavy equipment (e.g., dump trucks, street sweepers, etc.) and houses approximately 100 City employees. The garage consists of a fueling station, one wash bay, indoor and outdoor storage areas, vehicle storage lots, oil/water separators, and an extended detention micro pool storm water management pond. The entire site, with the exception of the fueling station, appeared to drain to the storm water management pond which includes a pretreatment forebay. According to the garage’s SWPPP, there are three outfalls from

the facility—one from the storm water management pond to what appears to be a storm water ditch that runs along the northern border of the facility and two from the fueling area located along East Biddle Street.

At the time of the site visit, the City had not submitted a Notice of Intent (NOI) for coverage under Discharger Permit No. 02-SW for the facility and therefore had not obtained permit coverage as required by the Permit. According to a City representative, the facility's SWPPP was prepared during the facility's design phase, well in advance of the City occupying the facility, but was officially still undergoing review to ensure its adequacy and had not been signed/certified by a responsible official. Based upon review of the facility's SWPPP, it appeared that the SWPPP did not meet the requirements of Discharge Permit No. 02-SW, did not adequately represent current facility operations and had not been fully implemented.

The SWPPP provided to the EPA Inspection Team for the Central Maintenance Garage appeared generic (e.g., not facility specific) and did not include all the sections required by Discharge Permit No. 02-SW. In addition, it did not appear that the SWPPP had been fully implemented as BMPs listed in the SWPPP were not in place, several physical deficiencies were noted during the site visit and several worksheets contained within the SWPPP had not been completed.

The EPA Inspection Team noted several physical issues throughout the facility, including excessive staining and small spills/vehicle fluid leaks on paved areas throughout the facility, a failure to implement BMPs (i.e., good housekeeping and proper storage of fluids and equipment) resulting in significant staining throughout the facility and an oil sheen on the surface of the water and around the edges of the facility's extended detention micro pool storm water management pond's pretreatment forebay (refer to Photographs 15 through 44). The EPA Inspection Team also noted that the impervious area of the garage's fueling station was not designed to direct spills and potentially contaminated runoff from the area to the garage's stormwater management pond as it would flow directly to the City's MS4 via unprotected storm drain inlets along the roadway (refer to Photographs 44 through 46).

Site: Northwest Transfer Station: 5030 Reisterstown Road, Baltimore, MD 21215.

The Northwest Transfer Station (facility) serves as recycling drop off and sorting facility and has obtained permit coverage under Discharge Permit No. 02-SW-1307. The facility accepts tires, scrap metal, electronics and waste oil for recycling and has two dumpsters for general trash and debris. According to City personnel, the facility is open for public drop off Tuesday through Saturday on the second and fourth weeks of the month. From approximately November 2003 through May 1, 2008, facility operation was contracted out to Office Paper Systems based in Gaithersburg, MD. On May 1, 2008 the City resumed operation of the facility. At the time of the EPA Inspection, approximately three staff members operated the facility, one supervisor, one operator, and one laborer. The facility supervisor stated that the facility was short two operators.

The facility consists of roll-off dumpsters and totes for the storage of recyclable materials and trash and debris, three waste oil above ground storage tanks (each approximately 250-gallons), an indoor sorting area, a loading dock area, and three above ground storage tanks (capacity not discovered). According to the facility supervisor, the three above ground storage tanks for diesel and gasoline, located near the loading dock, were not in use and were empty. Several storm drains were located throughout the facility including a trench drain that ran the length of the loading dock area.

The EPA Inspection Team requested a SWPPP for the facility, but was notified after the inspection that a SWPPP had not been prepared.

The EPA Inspection Team noted several physical deficiencies throughout the facility. The physical issues included a petroleum spill resulting in a sheen on flowing water in a downstream storm drain; a second smaller spill for which an employee had attempted to clean up with deicing salt; a failure to implement BMPs, especially good housekeeping (e.g., sediment and debris from the tire, metal and electronics recycling area) resulting in sediment and debris in storm drains; a failure to maintain adequate secondary containment for three waste oil tanks resulting in stormwater containing oily substances to overtop the berm and flow to on-site storm drains (refer to Photographs 47 through 69).

In addition, the facility has a pad intended for the storage of street sweepers and dumpsters which are to be used for storing street sweeping tailings. The pad appeared to drain directly to a stormwater inlet in the area. However, according to the facility representative, the pad was not being used as intended at the time of the EPA Inspection and thus no tailings were present in the dumpsters. *It should be noted that if the pad is placed into use, runoff from this area would result in a direct discharge to the MS4.*

2.4.1. Failure to Track, Obtain and Terminate NPDES Industrial Stormwater Permit Coverage at City Facilities. Part III.E.5 of the Permit requires the City to “identify all City-owned facilities requiring NPDES stormwater general permit coverage and submit Notices of Intent (NOI) to MDE for each.” The City failed to obtain permit coverage for at least one City owned and operated facilities and terminate coverage for at least three City owned facilities. The City’s new Central Maintenance Garage appeared to meet the requirements for the need to obtain coverage under Discharge Permit No. 02-SW for stormwater discharges from industrial facilities. In addition, the City failed to terminate permit coverage under Discharge Permit No. 02-SW for at least the three facilities the new garage replaced. The City stated that they still held permit coverage for the Old Central Repair Garage, Key Highway Substation, and Eastern Substation even though industrial activities regulated under Discharge Permit No. 02-SW had ceased and the properties had been sold or were scheduled to be sold.

The Bureau of General Services is responsible for obtaining and terminating permit coverage under Discharge Permit No. 02-SW for the Central Garage and all sub-stations. Representatives from the Bureau of General Services stated that permit coverage had not been obtained for the new Central Maintenance Garage because they were waiting for

requested information from facility representatives in order to fully complete the NOI. The Central Garage had been officially in operation since October 1, 2008 and therefore had been operating without permit coverage for 189 days at the time of the EPA Inspection. The City must submit a complete NOI to obtain permit coverage under Discharge Permit No. 02-SW for the new Central Maintenance Garage.

The Bureau of General Services failed to terminate coverage under Discharge Permit Coverage for the Old Central Repair Garage (Discharge Permit No. 02-SW-1018), Key Highway Substation (Discharge Permit No. 02-SW-0709), and Eastern Substation (Discharge Permit No. 02-SW-0706), even though industrial activities had ceased and the properties had been sold or were scheduled to be sold. As mentioned previously, the activities at these three facilities were combined into operations conducted at the new Central Maintenance Garage. The City must submit Notices of Termination (NOTs) to MDE to terminate permit coverage for those facilities.

The City also must prepare and fully implement a SWPPP for the Northwest Transfer facility in accordance with Discharge Permit No. 02-SW.

2.4.2. Failure to Track the status of SWPPP Development and Implementation.

Part III.E.5 of the Permit requires the City to annually report the status of pollution prevention plan development and implementation. The City reported in their Year 4 Annual Report that an NOI and SWPPP would be completed for the new Central Maintenance Garage after construction was completed in 2008. At the time of the EPA Inspection, the City had failed to develop an adequate SWPPP for its Central Maintenance Garage and was not able to provide a SWPPP for its Northwest Transfer facility. In addition, based upon a cursory review of SWPPPs provided for the facilities managed by the General Services Department, the SWPPPs appeared to be generic (e.g., did not adequately identify facility specific BMPs), did not contain certification statements with signatures, were prepared in April 2002 and appeared to have been revised only one time (April 1, 2009), and lacked training documentation and other required records, and topographic maps. The facilities include the following:

Facility Name

BALTIMORE CITY DPW - CENTRAL GARAGE
BALTIMORE CITY DPW - EASTERN SUBSTATION
BALTIMORE CITY DPW - FALLSWAY SUBSTATION
BALTIMORE CITY DPW - FIRE MAINTENANCE
BALTIMORE CITY DPW - MECHANIC SHOP
BALTIMORE CITY DPW - MIDDLETOWN FUELING STATION
BALTIMORE CITY DPW - NORTHEASTERN SUBSTATION
BALTIMORE CITY DPW - NORTHWESTERN SUBSTATION
BALTIMORE CITY DPW - WESTERN SUBSTATION

The City must review and revise the SWPPPs developed for each facility covered under Discharge Permit No. 02-SW to ensure that the SWPPPs meet the requirements of the

permit. Specifically, the City must revise each SWPPP to reflect current conditions at the facility, include facility specific BMPs, provide a certification statement with applicable signature, and complete all worksheets with the applicable current information. Further, the City must ensure that the updated SWPPPs are implemented at the facilities with the intention of reducing pollutants entering the MS4.

2.4.3 Need for Oversight for City Property Management. Part III.E.5 of the Permit requires the City to “identify all City-owned facilities requiring NPDES stormwater general permit coverage and submit Notices of Intent (NOI) to MDE for each” and requires the City to report the status of pollution prevention plan development and implementation annually. It appears that the City needs to evaluate the current delegation of duties in regards to NPDES Permit coverage responsibilities and SWPPP Development and implementation. At the time of the EPA Inspection, duties were delegated to the bureau responsible for the individual facilities. The Central Maintenance Garage and substations were managed by the Bureau of General Services, transfer stations and landfills were managed by the Bureau of Solid Waste, and wastewater treatment plants were managed by the Bureau of Water and Wastewater. Based upon conversations with City personnel, the failure to obtain and terminate coverage under Discharge Permit 02-SW, the failure to prepare and/or maintain adequate SWPPPs, and the failure to implement SWPPPs, it appeared that there was a lack of training and understanding by City Staff of MDE’s industrial stormwater permit. *The EPA Inspection Team recommends that the City designate one staff member within the City’s Department of Public Works or other applicable department, with familiarity with the requirements of Discharge Permit 02-SW and NPDES requirements, to provide oversight and training of NPDES Stormwater responsibilities for staff within the three bureaus having NPDES responsibilities to ensure compliance with Discharge Permit 02-SW and the City’s MS4 Permit.*

Section 2.5 Road Construction and Maintenance

Part III.E.6 of the Permit requires the City to develop and implement a plan to reduce stormwater pollutants associated with road construction and maintenance. Due to time constraints, the EPA Inspection Team was unable to complete a comprehensive review of road construction and maintenance activities. Therefore, the EPA Inspection Team focused on street sweeping activities.

2.5.1 Need to Ensure Adequate Street Sweeping Capabilities. The City heavily relies upon street sweeping activities as a BMP used for calculating the City’s imperviousness goal. The City reported in their Year 4 Annual Report (Section D.5.a) that the number of street sweepers available can affect operations. Specifically they reported that “On May 29, 2008, only 17 out of 30 sweepers were available. In the current fleet, 10 out of 30 sweepers are 2007 models; and on May 29, 2008, 4 out of 10 of those 2007 model sweepers were unavailable.” The City further reported that “It is obvious what benefit would be derived from increasing the productivity of the street sweeping fleet back to the levels of production accomplished during 1999-2001.” *The*

City should continue to ensure that adequate staffing and equipment are available to reduce stormwater pollutants associated with roadways.

Section 2.6 Watershed Assessment, Planning, and Restoration

Part III.F of the Permit requires the City to conduct a “systematic assessment of water quality within all of its watersheds. These assessments shall include detailed water quality analyses, the identification of water quality improvement opportunities, and the development of plans to control stormwater discharges to the maximum extent practicable.”

2.6.1. Failure to Restore or Treat 20 Percent of the City’s Impervious Area. Part III.G of the Permit requires the City to “implement those practices identified in Part III.F above to control stormwater discharges to the maximum extent practicable.”

Furthermore, the Permit requires the City to restore or treat 20 percent of the City’s impervious area, which amounts to 4,675 acres of the total city area of 23,373 acres. City representatives stated that they had implemented several stream restoration projects within their jurisdiction and the EPA Inspection Team toured several of these sites (refer to Photographs 70 – 74). However, the City had not adequately implemented restoration efforts in a watershed, or combination of watersheds, to restore twenty percent of the City’s impervious surface area. City representatives stated that they estimate that by the end of the Permit term in 2010 they will have only restored or provided treatment for approximately 2,804 acres or 12 percent of the City’s impervious surface area.

2.6.2. Opportunities for an Integrated Approach to Watershed Restoration.

Through the course of the inspection, the EPA Inspection Team explored the idea of better integrating the implementation of two intrinsically linked program elements, Stormwater Management and Watershed Restoration. The EPA Inspection Team questions whether there may be opportunities to collectively address these programs’ common goals for addressing impervious surfaces (e.g., through redevelopment projects and BMP retrofit opportunities), and the downstream effects of impervious surfaces on urban streams. City personnel explained that streambank erosion has been identified as a major sediment and phosphorus pollutant source in the community. Therefore, the City’s watershed restoration efforts have emphasized instream restoration projects for urban stream systems. However, it may be possible to augment the success of urban stream restoration by more aggressively addressing the source of stream hydromodification (impervious surfaces) through the City’s Stormwater Management Program. *It is recommended that the City work closely with MDE staff to determine if there is an opportunity for better integration of the City’s Stormwater Management and Watershed Restoration Programs under the auspices of an overall watershed management plan.*

Section 2.7 Summary Recommendation Regarding Development and Implementation of the City’s Stormwater Management Programs

MS4 programs, by necessity, involve numerous divisions and personnel within an organization. Therefore, successful implementation of a comprehensive MS4 program

relies on strong interdepartmental coordination and cooperation by personnel. In recognition of this, the entire City, rather than a single department, is listed as a co-permittee in the Permit. It was apparent through the course of the EPA Inspection that interdepartmental coordination and cooperation was insufficient or at times absent. In addition, the City appeared to lack overall distribution of program responsibilities and program unification.

Currently, the Stormwater Management Program elements are managed by the City's WQMS, with primarily one staff member being tasked with NPDES administration and annual reporting duties. As a result, the City appeared to lack the staffing resources needed for successful implementation of a comprehensive MS4 program. *The EPA Inspection Team recommends that the City develop and implement a comprehensive MS4 program and unify the MS4 program through organizational control.*

Furthermore, it is recommended that the City pursue options to leverage the participation of other City staff and instill ownership of its Stormwater Management Programs. Options to leverage the participation of City staff could include the development of a City steering committee and holding workshops or meetings with staff who are delegated responsibilities for the Stormwater Management Programs.

Appendix A Inspection Schedule

Agenda for MS4 Inspection of Baltimore City (April 7—9, 2009)

Day	Time	Activity	
		Team 1	Team 2
Tuesday April 7, 2009	8:00 am – 9:00 am	Kick-off Meeting & Program Management Overview	
	9:00 am – 10:00am	Source Identification (Office) – Permit PART III.C	
	10:00 am – 11:00am	Illicit Discharge Detection and Elimination (IDDE)/ Industrial (Office) – Permit PART III.E.4 Commercial/Industrial Surveys – Permit PART III.E.4.b	Construction (Office) – Erosion and Sediment Control Permit PART III.E.3
	11:00 am – 12:00pm		BMP Construction Inspection – Permit PART III.E.2.a
	1:00 pm – 4:30 pm	Illicit Discharge Detection and Elimination (IDDE)/ Industrial (Field) – Permit PART III.E.4	Post Construction (Office) Stormwater Management – Permit PART III.E.1 BMP Maintenance Inspection – Permit PART III.E.2.b
	4:30 pm – 5:00 pm	Recap and Logistics Planning for Wednesday	
Wednesday April 8, 2009	8:00 am – 9:30 am	Municipal Operations (Office) – City Property Management – Permit PART III.E.5 Road/ Infrastructure Maintenance – Permit PART III.E.6	Post Construction (Field) BMP Maintenance Inspection – Permit PART III.E.2.b
	9:30 am – 10:30 am		Active Construction
	10:30 am – 11:30 am		
	12:30 pm – 4:30 pm	Municipal Operations (Field) – Municipal Facilities and Activities	
	4:30 pm – 5:00 pm	Recap and Logistics Planning for Thursday	
Thursday April 9, 2009	8:00 am – 11:00 am	Watershed Assessment, Planning, and Restoration (Office) Permit PART III.F and III.G Watershed Restoration Projects (Field)	
	12:00 pm – 3:00 pm	Reserved for additional discussion or field activities (as needed)	
	4:00 pm – 5:00 pm	Closing Conference	

Appendix B
MS4 PERMIT NUMBER MDE0068292

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

PART I. IDENTIFICATION

A. **Permit Number:** 99-DP-3315 MD0068292

B. **Permit Area**

This permit covers all stormwater discharges to and from the municipal separate storm sewer system owned and operated by Baltimore City, Maryland.

C. **Effective Date:** January 3, 2005

D. **Expiration Date:** January 3, 2010

PART II. DEFINITIONS

Terms used in this permit are defined in relevant chapters of the Code of Federal Regulations (CFR) or the Code of Maryland Regulations (COMAR). Terms not defined in CFR or COMAR shall have the meanings attributed by common use unless the context in which they are used clearly requires a different meaning.

PART III. STANDARD PERMIT CONDITIONS

A. **Permit Administration**

Baltimore City shall designate an individual to act as a liaison with the Maryland Department of the Environment (MDE) and provide the coordinator's name, title, address, phone number, and email address. Additionally, the City shall submit to MDE an organizational chart detailing personnel and groups responsible for major National Pollutant Discharge Elimination System (NPDES) program tasks. MDE shall be notified promptly and in subsequent annual reports of any changes in personnel or organization relative to NPDES program tasks.

B. **Legal Authority**

Adequate legal authority shall be maintained in accordance with NPDES regulations 40 CFR 122.26(d)(2)(i) throughout the term of this permit. In the event that any provision of its legal authority is found to be invalid, the City shall make the necessary changes to maintain adequate legal authority.

C. **Source Identification**

Sources of pollutants in stormwater runoff shall be identified and linked to specific water quality impacts on a watershed basis. This process shall be used to develop watershed restoration plans that effectively improve water quality. The following information shall be submitted in geographic information system (GIS) format with associated tables as required in PART IV of this permit:

1. Storm drain system: major outfalls, inlets, and associated drainage areas;
2. Urban best management practices (BMP): stormwater management facility data including locations and delineated drainage areas;
3. Impervious surfaces: delineated impervious areas;
4. Monitoring locations: locations established for chemical, biological, and physical monitoring of watershed restoration efforts and the *2000 Maryland Stormwater Design Manual* or other innovative stormwater management technologies approved by MDE; and
5. Watershed restoration: restoration project descriptions and locations.

D. **Discharge Characterization**

Baltimore City and 10 other municipalities in Maryland have been conducting discharge characterization monitoring since the early 1990's. From this expansive monitoring, a statewide database has been developed that includes hundreds of storms across numerous land uses. Summaries of this dataset and other research performed nationally effectively characterize stormwater runoff in Maryland for NPDES municipal stormwater purposes. These data shall be used by Baltimore City for guidance to improve stormwater management programs and develop watershed restoration projects. Monitoring required under this permit is now designed to assess the effectiveness of stormwater management programs and watershed restoration projects developed by the City. Details about this monitoring can be found in PART III. H.

E. **Management Programs**

The following management programs shall be implemented in all areas served by Baltimore City's municipal separate storm sewer system. These jurisdiction-wide programs are designed to control stormwater discharges to the maximum extent practicable and shall be maintained for the term of this permit. Additionally, these programs are to be integrated with other permit requirements to promote a comprehensive approach toward solving water quality problems. The City shall address any needed program improvements identified as a result of periodic evaluation by MDE and annual self-assessment.

1. Stormwater Management

An acceptable stormwater management program shall be maintained in accordance with the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland. At a minimum, the City shall:

- a. Implement the stormwater management design policies, principles, methods, and practices found in the *2000 Maryland Stormwater Design Manual* or other innovative stormwater management technologies approved by MDE;
- b. Track the progress toward implementing the *2000 Maryland Stormwater Design Manual* or other innovative stormwater management technologies approved by MDE and report annually the modifications needed to address any programmatic problems; and
- c. Maintain programmatic and implementation information according to the requirements established as part of MDE's triennial stormwater program review.

2. Stormwater Management BMP Inspections

- a. Within 6 months of this permit being issued, Baltimore City shall designate sufficient staff and resources to ensure that all new BMPs are properly constructed by performing inspections as specified in Article 7 of the Baltimore City Code and COMAR 26.17.02. At a minimum the City shall:
 - i. identify the specific individual(s) responsible for BMP construction inspections;
 - ii. develop and implement specific written procedures for pre-construction meetings, regular inspections during construction, inspection report preparation, as-built certification, enforcing requirements, and tracking of all new BMPs to ensure a seamless transition for future maintenance inspections; and
 - iii. submit copies of as-built certification inspection reports to MDE within 30 days of the completion of each BMP constructed in the City.
- b. Within 6 months of this permit being issued, Baltimore City shall designate sufficient staff and resources to ensure that maintenance inspections are performed for all stormwater management BMPs in the City. At a minimum, the City shall:
 - i. identify the specific individual(s) responsible for BMP maintenance inspections;
 - ii. develop and implement specific written procedures for conducting

- routine maintenance inspections, preparing inspection reports, enforcing requirements, and following up to ensure that specified maintenance is performed for all BMPs in Baltimore City;
- iii. perform routine maintenance inspections on all stormwater management BMPs in Baltimore City by May 31, 2006; and
 - iv. submit annually copies of all BMP maintenance inspection reports and a current database of all stormwater management BMPs in Baltimore City with each facility's maintenance status clearly described.

- c. In its first annual report, Baltimore City shall report the progress toward completing the BMP construction and maintenance inspections specified in Part III E.2.a. and Part III E.2.b. above. Based on Baltimore City's progress toward inspecting all BMPs, MDE will approve a maintenance inspection frequency for the remainder of this permit.

3. Erosion and Sediment Control

An acceptable erosion and sediment control program shall be maintained in accordance with the Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland. At a minimum, the City shall:

- a. Address any needed program improvements identified during MDE's evaluation of the City's application for the delegation of erosion and sediment control enforcement authority;
- b. At least two times per year, conduct "responsible personnel" certification classes to educate construction site operators regarding erosion and sediment control compliance. Program activity shall be recorded on MDE's "green card" database and submitted as required in PART IV of this permit; and
- c. Report quarterly, information regarding earth disturbances exceeding one acre or more. Quarters shall be based on calendar year and submittals shall be made within 30 days following each quarter. The information shall be specific to the permitting activity for the preceding three months.

4. Illicit Discharge Detection and Elimination

Baltimore City shall maintain its illicit connection detection and elimination program to ensure that all discharges to and from the municipal separate storm sewer system that are not composed entirely of stormwater are either permitted by MDE or eliminated. At a minimum, activities shall include:

- a. Conducting monthly chemical screening downstream of all major storm sewer outfalls during dry weather. Each outfall suspected of having an illicit discharge shall be sampled using a chemical test kit or laboratory;

- b. Conducting routine surveys of commercial and industrial watersheds for discovering and eliminating pollutant sources;
- c. Maintaining a program to address illegal dumping and spills;
- d. Using appropriate enforcement procedures for investigating and eliminating illicit discharges, illegal dumping, and spills. Significant discharges shall be reported to MDE for enforcement and/or permitting; and
- e. Reporting illicit discharge detection and elimination activities as specified in PART IV of this permit. Annual reports shall include any requests and accompanying justifications for proposed modifications to the illicit discharge detection and elimination program.

5. City Property Management

Baltimore City shall identify all City-owned facilities requiring NPDES stormwater general permit coverage and submit Notices of Intent (NOI) to MDE for each. The status of pollution prevention plan development and implementation shall be submitted annually.

6. Road Construction and Maintenance

Baltimore City shall develop and implement a plan to reduce stormwater pollutants associated with road construction and maintenance. At a minimum, the Baltimore City Department of Public Works (DPW) and the Department of Transportation (DOT) shall work together to:

- a. Sweep streets and clean storm drain inlets;
- b. Reduce the use of pesticides, herbicides, fertilizers, and other pollutants associated with roadside vegetation management through the use of integrated pest management (IPM);
- c. Control the overuse of winter weather deicing materials through continual product improvement and effective decision making;
- d. Ensure that all necessary steps are taken when planning, designing, and constructing road projects in order to avoid or minimize any adverse effects to the environment and adjacent communities;
- e. Engage the public and accept comments during road planning, design, and construction processes so that transportation needs can be met and reasonable provisions for safeguarding or improving the environment are implemented; and

- f. Develop watershed restoration plans and implement stormwater retrofits when road or highway rights-of-way traverse watersheds targeted for restoration.

7. Public Education

A public education and outreach program shall be implemented to reduce stormwater pollutants. As part of this program, Baltimore City shall develop material and make it available for distribution to the public by watershed associations and at community events. These efforts are to be documented and summarized in each annual report. At a minimum, the City shall:

- a. Establish and publicize a compliance hotline for the public reporting of suspected illicit discharges, illegal dumping, and spills.
- b. Provide information regarding the following water quality issues to the general public:
 - i. Water conservation;
 - ii. Stormwater management facility maintenance;
 - iii. Erosion and sediment control;
 - iv. Household hazardous waste;
 - v. Lawn care and landscape management (e.g., the proper use of herbicides, pesticides, and fertilizers, ice control and snow removal, cash for clippers, etc.);
 - vi. Litter control, recycling, and composting;
 - vii. Car care, mass transit, and alternative transportation;
 - viii. Pet waste management.
- c. Provide information regarding the following water quality issues to the regulated community:
 - i. NPDES permitting requirements;
 - ii. Pollution prevention plan development;
 - iii. Proper housekeeping; and
 - iv. Spill prevention and response.

F. Watershed Assessment and Planning

Baltimore City shall continue the systematic assessment of water quality within all of its watersheds. These watershed assessments shall include detailed water quality analyses, the identification of water quality improvement opportunities, and the development of plans to control stormwater discharges to the maximum extent practicable. The overall goal is to ensure that the entire City has been thoroughly evaluated for opportunities to maximize water quality improvements. Additionally, Baltimore City shall encourage the public to participate in the development and implementation of watershed restoration activities.

1. By the end of this permit term, Baltimore City shall complete watershed management plans for the Gwynns Falls, the Jones Falls, the Herring Run, and the Baltimore Harbor drainage. These plans shall be similar in format to the Gwynns Falls watershed management plan currently under development and, at a minimum, the City shall:
 - a. Use the source identification information specified in Part III.C. of this permit for plan development;
 - b. Determine current water quality conditions;
 - c. Identify and rank water quality problems;
 - d. Include the results of a visual watershed inspection;
 - e. Identify all structural and non-structural water quality improvement opportunities; and
 - f. Specify overall watershed restoration goals;
2. By 5/01/2006, the City shall complete the prioritization process of selecting sub-watersheds for restoration started during the previous permit term. These watersheds shall contain at least 20% of the City's impervious cover. Restoration efforts resulting from this prioritization process shall be in addition to typical stormwater management facility maintenance.
3. By 5/01/2006, the City shall provide cost estimates and a detailed implementation schedule for proposed restoration activity. Included shall be an account of total City impervious acres, those impervious acres controlled by stormwater management, and those impervious acres proposed for restoration as specified in PART IV of this permit; and
4. By the end of this permit term, the City shall propose for restoration sub-watersheds containing another 10% of the City's impervious surface area with poor or no stormwater management. These sub-watersheds shall be in addition to the 20% already proposed under requirements Part III.F.2. above.

G. Watershed Restoration

The City shall implement those practices identified in PART III. F. above to control stormwater discharges to the maximum extent practicable. The overall goal is to maximize the water quality in a single watershed, or combination of watersheds, using efforts that are definable and the effects of which are measurable. At a minimum, the City shall:

1. Provide an updated schedule for completing all restoration activity proposed during the previous permit term to restore 20% percent of the City's impervious surface area.

In order to meet this goal, annually, the City shall have at least two restoration projects in study, two in design, and two under construction;

2. Monitor, according to PART III. H, the watershed or combination of watersheds where the restoration efforts are being implemented to determine effectiveness toward improving water quality; and
3. Report annually:
 - a. The status of all watershed restoration activity being implemented. Total Baltimore City impervious acres, impervious acres controlled by stormwater management, impervious acres controlled by restoration activity, and impervious acres proposed for restoration shall be included;
 - b. The estimated cost and the actual expenditures for all watershed restoration activity; and
 - c. The progress toward meeting the overall watershed restoration goals established in PART III. F. above.

H. Assessment of Controls

Assessment of controls is critical for determining the effectiveness of the NPDES stormwater management program and progress toward improving water quality. Therefore, the City shall use chemical, biological, and physical monitoring to document work toward meeting the watershed restoration goals identified in PART III. G. above. Additionally, the City shall continue physical stream monitoring in the Stony Run to assess the implementation of the *2000 Maryland Stormwater Design Manual* or other innovative stormwater management technologies approved by MDE. Specific monitoring requirements are described below.

1. Watershed Restoration Assessment

The City shall continue monitoring the Moores Run, or, select and submit for MDE’s approval a new watershed restoration project for monitoring. Ample time shall be provided so that pre-restoration monitoring, or characterization monitoring can take place. Priority will be given to new practices where little monitoring data exist or where the cumulative effects of watershed restoration activities can be assessed. An outfall and associated in-stream station, or other locations based on an approved study design shall be monitored. The minimum criteria for chemical, biological, and physical monitoring are as follows:

- a. Chemical Monitoring:
 - i. Twelve (12) storm events shall be monitored per year at each monitoring location with at least three occurring per quarter. Quarters shall be based on the calendar year. If extended dry

weather periods occur, base flow samples shall be taken at least once per month at the monitoring stations if flow is observed;

- ii. Discrete samples of stormwater flow shall be collected at the monitoring stations using automated or manual sampling methods. Measurements of pH and water temperature shall be taken;
- iii. At least three (3) samples determined to be representative of each storm event shall be submitted to a laboratory for analysis according to methods listed under 40 CFR Part 136 and event mean concentrations (EMC) shall be calculated for:

Biochemical Oxygen Demand (BOD ₅)	Total Lead
Total Kjeldahl Nitrogen (TKN)	Total Copper
Nitrate plus Nitrite	Total Zinc
Total Suspended Solids	Total Phosphorus
Total Petroleum Hydrocarbons (TPH)	Oil and Grease*
Fecal Coliform or E. coli	(*Optional).

- iv. Continuous flow measurements shall be recorded at the in-stream monitoring station or other practical locations based on an approved study design. Data collected shall be used to estimate annual and seasonal pollutant loads and for the calibration of watershed assessment models.

b. Biological Monitoring:

- i. Benthic macroinvertebrate samples shall be gathered each Spring between the outfall and in stream stations or other practical locations based on an approved study design; and
- ii. The County shall use the U.S. Environmental Protection Agency's (EPA) Rapid Bioassessment Protocols (RBP), Maryland Biological Stream Survey (MBSS), or other similar method approved by MDE.

c. Physical Monitoring:

- i. A geomorphologic stream assessment shall be conducted between the outfall and in stream monitoring locations or in a reasonable area based on an approved study design. This assessment shall include an annual comparison of permanently monumented stream channel cross-sections and the stream profile;
- ii. A stream habitat assessment shall be conducted using techniques defined by the EPA's RBP, MBSS, or other similar method approved by MDE; and
- iii. A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-2, HSPF, SWMM, etc.) to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.

- d. Annual Data Submittal: The City shall describe in detail its monitoring activities for the previous year and include the following:
- i. EMCs submitted on MDE's long-term monitoring database as specified in PART IV below;
 - ii. Chemical, biological, and physical monitoring results and a combined analysis for the Moores Run or other approved monitoring locations; and
 - iii. Any requests and accompanying justifications for proposed modifications to the monitoring program.

2. Stormwater Management Assessment

The City shall continue monitoring the Stony Run for determining the effectiveness of a stream restoration project for stream channel protection. Physical stream monitoring protocols shall include:

- a. An annual stream profile and survey of permanently monumented cross-sections in the Stony Run to evaluate channel stability in conjunction with the implementation of a stream restoration project;
- b. A comparison of the annual stream profile and survey of the permanently monumented cross-sections with baseline conditions for assessing areas of aggradation and degradation; and
- c. A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-2, HEC-RAS, HSPF, SWMM, etc.) to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.

I. Program Funding

1. Annually, a fiscal analysis of the capital, operation, and maintenance expenditures necessary to comply with all conditions of this permit shall be submitted as required in PART IV below.
2. Adequate program funding to comply with all conditions of this permit shall be maintained.

J. Total Maximum Daily Loads

Stormwater BMPs and programs implemented as a result of this permit must be consistent with available waste load allocations (WLA's) [see 40 CFR 122.44(d)(1)(vii)(B)] developed under a Total Maximum Daily Load (TMDL). MDE has determined that owners of storm drain systems that implement the requirements of this permit will be controlling stormwater pollution to the maximum extent practicable.

Therefore, satisfying the conditions of this permit will meet WLA's specified in TMDL's developed for impaired water bodies. If assessment of the stormwater management program indicates TMDL WLAs are not being met, additional or alternative stormwater controls must be implemented to achieve WLAs.

PART IV. PROGRAM REVIEW AND ANNUAL PROGRESS REPORTING

A. Annual Reporting

1. Annual progress reports, required under 40 CFR 122.42(c), will facilitate the long-term assessment of Baltimore City's NPDES stormwater program. The City shall submit annual reports on or before May 1st of each year that include:
 - a. The status of implementing the components of the stormwater management program that are established as permit conditions;
 - b. A narrative summary describing the results and analyses of data, including monitoring data that is accumulated throughout the reporting year;
 - c. Expenditures for the reporting period and the proposed budget for the upcoming year;
 - d. A summary describing the number and nature of enforcement actions, inspections, and public education programs; and
 - e. The identification of water quality improvements or degradation.
2. To further judge the effectiveness and progress of implementing this permit, the following information shall be submitted on databases (in a format) consistent with Attachment A. Annually, except where noted, the following shall be submitted:
 - a. Storm drain system mapping (PART III. C.1.);
 - b. Urban BMP locations (PART III. C.2.);
 - c. Impervious surfaces (PART III. C.3.);
 - d. Watershed restoration project locations (PART III. C.5.);
 - e. Chemical monitoring (PART III. C.4. and PART III. H.1.);
 - f. Illicit Discharge Detection and Elimination activities (PART III. E.3.);
 - g. Responsible personnel certification information (PART III. E.2.);

- h. Grading permit information – quarterly (PART III. E.2.); and
- i. Fiscal analyses -- cost for NPDES related implementation (PART III. I.).

B. Program Review

In order to assess the effectiveness of the City's NPDES program for eliminating non-stormwater discharges and reducing the discharge of pollutants to the maximum extent practicable, MDE will review program implementation, annual reports, and periodic data submittal on an annual basis. Procedures for the review of local erosion and sediment control and stormwater management programs exist in Maryland's Sediment Control and Stormwater Management Laws. Additional periodic evaluations will be conducted to determine compliance with permit conditions.

C. Reapplication for NPDES Stormwater Discharge Permit

Continuation or reissuance of this permit beyond January 3, 2010 will require the City to reapply for NPDES stormwater discharge permit coverage in its fourth year annual report. As part of this application process, Baltimore City shall submit to MDE an executive summary of its NPDES stormwater management program that specifically describes how water quality goals set by the City are being achieved. This application shall be used to gauge the effectiveness of the City's NPDES stormwater program and will provide guidance for developing future permit conditions. At a minimum, the application summary shall include:

1. Baltimore City's NPDES stormwater program goals;
2. Program summaries for the permit term regarding:
 - a. Illicit connection detection and elimination results;
 - b. Watershed restoration status: including City totals for impervious acres, impervious acres controlled by stormwater management, and the current status of watershed restoration projects and acres managed;
 - c. Pollutant load reductions as a result of this permit; and
 - d. Other relevant data and information for describing City programs;
3. Program operation and capital improvement costs for the permit term; and
4. Descriptions of any proposed permit condition changes based on analyses of the successes and failures of the City's efforts to comply with the conditions of this permit.

PART V. SPECIAL PROGRAMMATIC CONDITIONS

Since the signing of the Chesapeake Bay Agreement in 1983, Maryland has been working toward reducing the discharge of nutrients and sediments to Chesapeake Bay. Baltimore City lies within the Patapsco/Back River tributary, one of the Bay's ten major tributaries. This NPDES permit encourages Baltimore City to assist with the implementation of the strategies designed to meet the nutrient and sediment reduction goals for the Patapsco/Back River tributary.

PART VI. ENFORCEMENT AND PENALTIES

A. Discharge Prohibitions and Receiving Water Limitations

The City shall effectively prohibit non-stormwater discharges through its municipal separate storm sewer system. NPDES permitted non-stormwater discharges are exempt from this prohibition. Discharges from the following will not be considered a source of pollutants when properly managed: water line flushing; landscape irrigation; diverted stream flows; rising ground waters; uncontaminated ground water infiltration to separate storm sewers; uncontaminated pumped ground water; discharges from potable water sources; foundation drains; air conditioning condensation; irrigation waters; springs; footing drains; lawn watering; individual residential car washing; flows from riparian habitats and wetlands; dechlorinated swimming pool discharges; street wash water; and fire fighting activities. The discharge of stormwater containing pollutants, which have not been reduced to the maximum extent practicable, is prohibited. The City shall not cause the contamination or other alteration of the physical, chemical, or biological properties of any waters of the State, including a change in temperature, taste, color, turbidity, or odor of the waters or the discharge or deposit of any organic matter, harmful organism, or liquid, gaseous, solid, radioactive, or other substance into any waters of the State, that will render the waters harmful to:

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

B. Duty to Mitigate

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

C. Duty to Comply

The City must comply with all conditions of this permit. Any permit noncompliance

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

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

D. Sanctions

1. Penalties Under the CWA - Civil and Criminal

The CWA provides that any person who violates any permit condition is subject to a civil penalty not to exceed \$27,500 per day for each violation. Any person who negligently violates any permit condition is subject to criminal penalties of \$2,750 to \$27,500 per day of violation, or imprisonment of not more than 1 year, or both. Any person who knowingly violates any permit condition is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than 3 years, or both.

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

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the City from civil or criminal responsibilities and/or penalties for noncompliance with Title 4, Title 7, and Title 9 of the Environment Article, Annotated Code of Maryland, or any federal, local, or other State law or regulation. The Environment Article, §9-342, Annotated Code of Maryland, provides that any person who violates a permit condition is subject to a civil penalty up to \$1,000 for each violation, but not exceeding \$50,000 total. The Environment Article, §9-343, Annotated Code of Maryland, provides that any person who willfully or negligently violates a permit condition is subject to a criminal penalty not exceeding \$25,000 or imprisonment not exceeding 1 year, or both.

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

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

more than six months per violation, or both.

E. Permit Revocation and Modification

1. Permit Actions

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

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

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. A change in any condition that requires either a temporary reduction or elimination of the authorized discharge; or
- d. A determination that the permitted discharge poses a threat to human health or welfare or to the environment and can only be regulated to acceptable levels by permit modification or termination.

2. Duty to Provide Information

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

F. Property Rights

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

G. Severability

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

H. Signature of Authorized Administrator and Jurisdiction

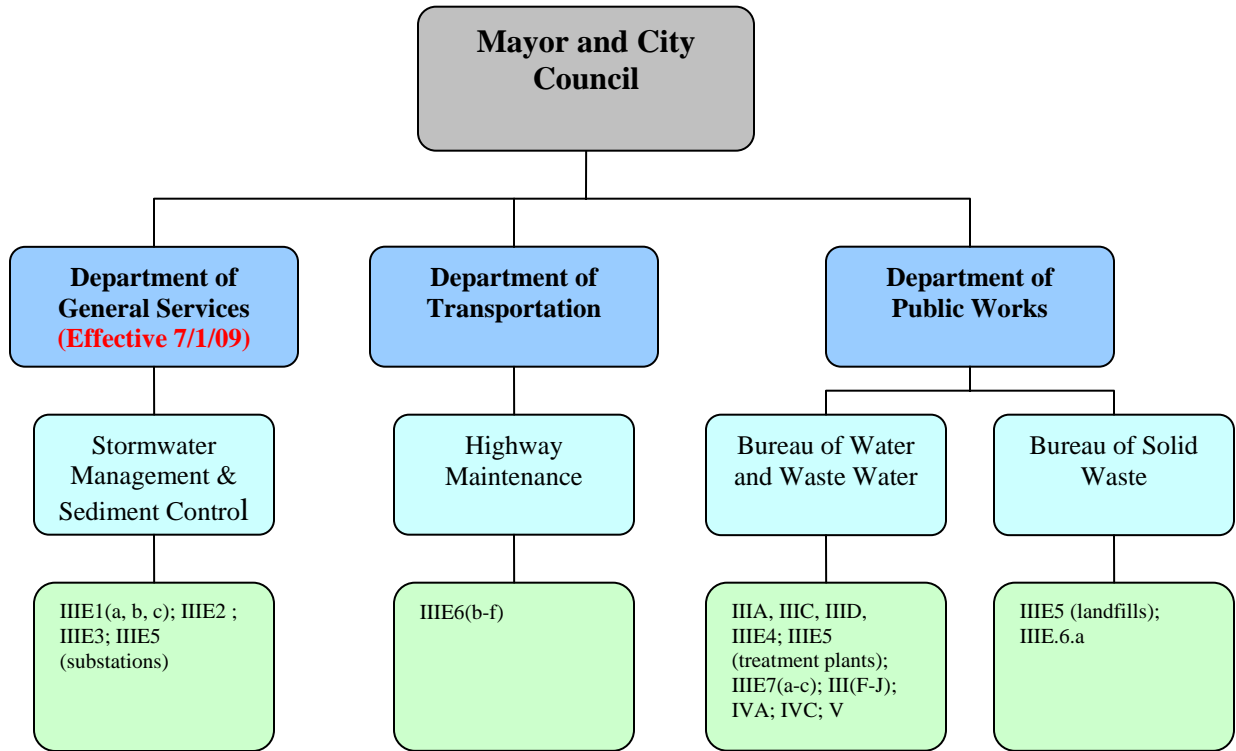
All applications, reports, or information submitted to MDE shall be signed as required by COMAR 26.08.04.01-1. As in the case of municipal or other public facilities, signatories shall be a principal executive officer, ranking elected official, or other duly authorized employee.

Robert M. Summers
Robert M. Summers, Director
Water Management Administration

1/9/05
Date

Appendix C
MS4 Permit Tasks Organization Chart

Baltimore City MS4 Permit Tasks Organization Chart



This chart shows which agencies within the city are responsible for the different sections (green boxes) of the City's MS4 Permit. The Department of General Services is currently a Bureau within the Department of Public Works; the chart indicates that it will become a separate department at the start of the new fiscal year.

Further details are provided below.

Part III Standard Permit Conditions

A. Permit Administration

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

B. Legal Authority

George Nilson, City Solicitor
410-396-7359
Law Department

C. Source Identification

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

D. Discharge Characterization

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

E. Management Programs

1. Stormwater Management (a, b, c)
Joseph Kostow, Engineering Supervisor
410-396-4650
Department of Public Works
Bureau of General Services
Environmental Engineering Division
Stormwater Management Section

2. Stormwater Management BMP Inspections

Joseph Kostow, Engineering Supervisor

410-396-4650

Department of Public Works

Bureau of General Services

Environmental Engineering Division

Stormwater Management Section

3. Erosion and Sediment Control

Joseph Kostow, Engineering Supervisor

410-396-4650

Department of Public Works

Bureau of General Services

Environmental Engineering Division

Stormwater Management Section

4. Illicit Discharge Detection and Elimination

William Stack, Section Chief

410-396-0732

Department of Public Works

Bureau of Water and Wastewater

Environmental Services Division

Water Quality Management Section

5. City Property Management

Substations

Joseph Kostow, Engineering Supervisor

410-396-4650

Department of Public Works

Bureau of General Services

Environmental Engineering Division

Stormwater Management Section

Landfills

Mark Wick, Section Chief

410-396-8450

Department of Public Works

Bureau of Solid Waste

Environmental Services Division

Wastewater Treatment Plants

Robert Mohr, Division Chief

410-396-9806

Department of Public Works (DPW)
Bureau of Water and Wastewater (W&WW)
Wastewater Facilities Division

6. Road Construction and Maintenance

a. Street Sweeping

Charles McMillion, Assistant Chief

410-396-7063

Department of Public Works

Bureau of Solid Waste

Solid Waste Collection Division, Special Services

b, c, Roadside Vegetation Management, deicing materials, planning, public info.

Anthony Wallnofer , Chief

410-396-1686

Maintenance Division

Department of Transportation

d, e, Planning and public info.

Richard Chen, Acting Chief

410-396-6930

Engineering & Construction Division

Department of Transportation

f, Develop watershed restoration plans

Richard Chen, Acting Chief

410-396-6930

Engineering & Construction Division

Department of Transportation

7. Public Education (a, b, c)

William Stack, Section Chief

410-396-0732

Department of Public Works

Bureau of Water and Wastewater

Environmental Services Division

Water Quality Management Section

F. Watershed Assessment and Planning

William Stack, Section Chief

410-396-0732

Department of Public Works

Bureau of Water and Wastewater

Environmental Services Division

Water Quality Management Section

G. Watershed Restoration

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

H. Assessment of Controls

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

I. Program Funding

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

J. Total Maximum Daily Loads

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

Part IV. Program Review and Annual Progress Reporting**A. Annual Reporting**

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

B. Program Review

MDE

C. Reapplication for NPDES Stormwater Discharge Permit

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

V. Special Programmatic Conditions

William Stack, Section Chief
410-396-0732
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Water Quality Management Section

Appendix D
Exhibit Log

MS4 PROGRAM EVALUATION SIGN-IN SHEET (PLEASE PRINT)				
Permittee: Baltimore City MS4		Date conducted: 04/07/09		
Permit No. MD0068292				
Name	Title	Company	Department	Phone
Joe Kostow	Eng Sup	City of Balt.	DPW	410-396-4650
Tim Knight	Project Supervisor	City of Baltimore (DPW)	DPW	410-396-1675
Bull Stack	Section Chief	"	DPW	410-396-0732
Allison Graham	Env Engineer	EPA	Water Protection Division	215-814-2573
Andy Dinsmore	SW Team Leader Env Scientist	EPA	EPA - WPD	215-814-2788
Kenneth Church	Inspector Sediment erosion	DPW	General Services	410-396-4059
Van Sturtevant	POLLUTION ANALYST Pollution Control	CITY OF BALTO. DPW	DPW	410-396-0732
Juan White	Analyst Supervisor	City of Baltimore DPW	DPW	410-396-0732
Scott Coulson	Water Resource Planner	EPA Contractor	NPOES	303-299-1778
Max Kucker	Env. Scientist	EPA Contractor	NPOES	703-707-8258

Exhibit 1. Sign-in sheet for the April 7, 2009, Team 2 daily activities.

BLINCOS STORM WATER MAINTANANCE SHEET.XIS

4/9/09 SL

SWM#	PLAN#	SITE NAME	LOCATION	TYPE OF FACILITY	DESIGN ENGINEER	PLAN APPR.	CONTACT	DATE COMP.	1st INSP.	2nd INSP.	3rd INSP.	last Insp	STATUS	INSPECTOR
85		United Inn & Motel L.L.C.	909 Millington Avenue	Underground S. W. M. Facility	K. L. S. 410-338-1441	9/13/1991	Ken L. Pfa 410-647-8006 ext 133	4/1/99	7/23/04	8/6/07		See Report	B. Blinco	
86	688	Sun Paper Distribution Center	3400 Carfins Park Drive	Detention Pond	Land Survey & Design 410-788-4445	10/8/1991	James M. McWilliams 410-332-6478	8/1/99	10/24/03	8/30/04	9/7/07	Satisfactory	B. Blinco	
87	379	Jenkins Senior Community Center	1000 S. Cabin Avenue	Exc. Embankment Detention Pond	L.P.J. Inc 410-648-6595	10/8/1991	Ernie Satterfield 410-648-6595	11/12/98	11/26/02	9/2/04	9/6/07	Satisfactory	B. Blinco	
88		Helen Park and Playground	Chryms Falls Pkwy & Longwood Street	Underground S. W. M. Facility	410-366-7800		Maurice Collins 410-396-0070			8/30/04	9/7/07	Satisfactory	B. Blinco	
89		E. Steward Michell Asphalt Company Inc	1400 Ceddox Street	Stormwater Basin and Check Dams and Water Quality Inlets			Betsy Leonard Joseph Becraft 410-396-7931	1/20/1992	8/25/00	11/29/04	9/14/07	Satisfactory	B. Blinco	
90		Staples The Office Supersure No. 111	5825 York Road	2-60" Underground Storage Pipes	K.C.M. Consultants 410-494-0963	11/29/1991	Nyrene Wilson 410-323-8235	10/7/1992	10/23/00	8/31/04	9/17/07	Satisfactory	B. Blinco	
91		Alco Rubber Products Incorporated	1900 Portal Street	Water Quality Ext. Detention Pond	STV/Lyn Assoc 410-944-9112	6/16/1992	Don Lisau 410-633-9400			10/25/04	8/24/07	Satisfactory	B. Blinco	
92	820R 820	Stericycle Compost Facility	5800 Chemical Road	Wet Pond, Grass Swale & Sheet Flow	Phenix Engineering 410-247-8633	11/19/1991	Steve Disenberg 410-350-0325	5/8/01	10/3/02	10/25/04	8/24/07	Satisfactory	B. Blinco	
93		Reddy Ice Corporation	2730 Whinnico Avenue	Infiltration Basin	Kordine Engineering 410-329-6546	2/11/1992	Eric Collins 410-728-4383	4/1/1998	8/6/02	10/21/04	11/2/07	Satisfactory	B. Blinco	
94		Alice Manor Nursing Home	2095 Rockrose Avenue	Pipe Storage Detention Facility	Farnad & English 410-435-4300	10/21/1991	Holy A. Blenki 410-889-9700	5/23/01		11/29/04	9/17/07	Satisfactory	B. Blinco	
95		Lochen / Frankford Nursing Home	5009 Frankford Avenue	Extended Detention Pond	L.P.J. Inc 410-366-7800	8/12/1992	J. Wayne Brannock 410-325-4000 ext 1063			8/31/04	9/14/07	Satisfactory	B. Blinco	
96R		Lochen / Frankford Nursing Home	5009 Frankford Avenue	Same as Above & Increased Volume 6-infiltration	L.P.J. Inc 410-366-7800	7/14/1997	J. Wayne Brannock 410-325-4000 ext 1063	9/11/97	5/2/01	8/31/04	9/14/07	Satisfactory	B. Blinco	
97	739	Back River Treatment Plant	8201 Eastern Avenue	Trenches Infiltration			Guy L. Isella 410-399-3815			8/31/04		Never Built	B. Blinco	
98		Back River Treatment Plant	8201 Eastern Avenue	Infiltration Basin			Guy L. Isella 410-399-3815			8/31/04		Never Built	B. Blinco	
99		Millennium Inorganic Chemicals	3901 Fort Amishear Road	2-Retention Basins	Haley & Welch Inc. 410-907-9100	5/18/1992	Frank Mathis 410-354-7723	5/16/01		8/25/04	8/30/07	Satisfactory	B. Blinco	
100		Family Health Center of Baltimore	631 Cherry Hill Road	Pipe Storage Detention Facility	Farwad & English 410-435-4300	10/17/1992	Gwendolyn Young 410-354-2000	9/1/99	10/24/03	11/29/04	9/20/07	Satisfactory	B. Blinco	
101		Loyola College in Md.	4501 N. Charles Street	Underground Storage 8-54" Detention Pipes	Whitney Bailey Cox 419-252-6060	11/10/1992	Les Pely 419-517-2421	4/1/1993	10/3/00	11/19/04	6/12/07	Satisfactory	B. Blinco	
176		Humanitas Building												

Exhibit 2. The tracking spreadsheet used by the City maintenance inspector does not clearly identify the number of SWM-BMPs located at a particular project.

4/8/09 SK

CITY OF BALTIMORE
 DEPARTMENT OF PUBLIC WORKS

SWM# 085

OPERATION & MAINTENANCE INSPECTION RECORD

UNITED IRON & METAL

Name of project ILC
909

Type of inspection MAINTENANCE CHECK

Project location HILLINGTON AVENUE
UNDERGROUND

Date of inspection SEPTEMBER 06, 2007

Type of facility S.W.M. FACILITY

Weather conditions SUNNY HIGH 76°

Anticipated facility operation

Satisfactory Unsatisfactory

CONDITION

ITEM	ACCEPTABLE	UNACCEPTABLE	MAINTENANCE NEEDED	DATE REPAIR TO BE COMPLETE
Reservoir area				
Vegetation				
Fences				
Berms				
Slopes				
Pilot channels				
Principal spillway				
Control structure				
Diversion structure				
Pipe outlet				
Outlet channels				
Earth channels				
Line channels				
Structure drainage sys.				

09-06-07 ACCORDING TO THE 2001 & 2004 FIELD REPORTS THE SWM FACILITY WAS NEVER BUILT & THEY IS NO DOCUMENTATION TO STATE THAT IT WAS EVER BUILT.

Last action taken 07-23-04

INSPECTOR: BRUCE BLINCO

Exhibit 3. The City maintenance inspector conducted an inspection on September 6, 2007, but could not find the "underground" SWM-BMP onsite.

US EPA ARCHIVE DOCUMENT

4/8/09
 SC

CITY OF BALTIMORE
 DEPARTMENT OF PUBLIC WORKS

SWM # 199

OPERATION & MAINTENANCE INSPECTION RECORD

Name of project POW/TA/C/GHC/SUBARO Type of inspection MAINTENANCE CHECK
 Project location ONE KANE STREET Date of inspection NOVEMBER 27 2007
 Type of facility SAND FILTER Weather conditions CLOUDY / HIGH 68

Anticipated facility operation

Satisfactory Unsatisfactory

CONDITION

ITEM	ACCEPTABLE	UNACCEPTABLE	MAINTENANCE NEEDED	DATE REPAIR TO BE COMPLETE
Reservoir area				
Vegetation				
Fences				
Berms				
Slopes				
Pilot channels				
Principal spillway				
Control structure				
Diversion structure				
Pipe outlet				
Outlet channels				
Earth channels				
Line channels				
Structure drainage sys.				

11-27-07 ACCORDING TO THE 2004 REPORT THE SAND FILTER WAS NEVER BUILT & THERE IS NO SIGN THAT ANY FACILITY WAS EVER BUILT

Last action taken 12-08-04

INSPECTOR: BRUCE BLINCO

Exhibit 5. The City has not inspected this BMP since the KCI inspector field verified and photographed the BMP in 2002.

US EPA ARCHIVE DOCUMENT

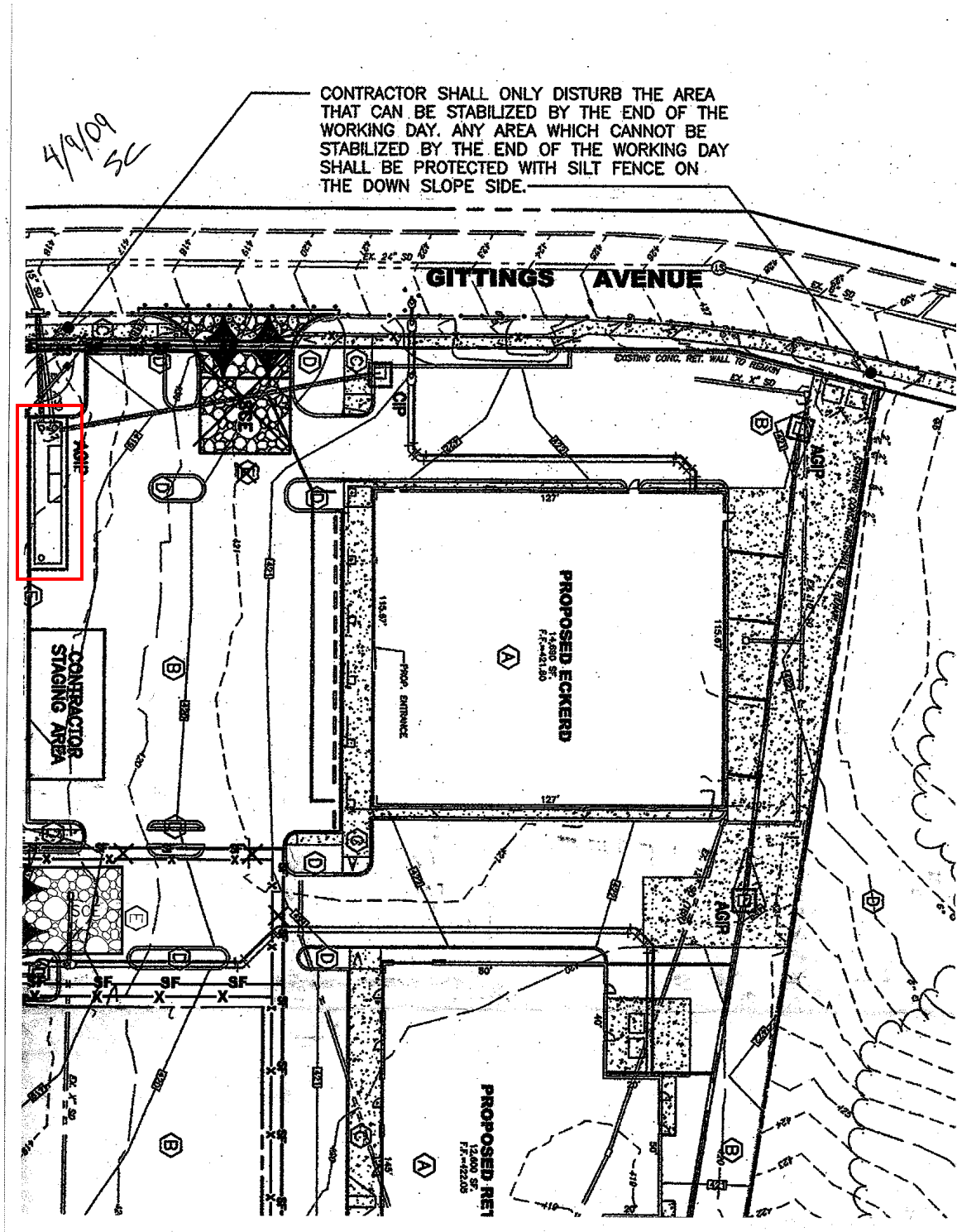


Exhibit 6. The Rite Aid project site plans include a trench drain at this location.

Upper Back River Characterization Report

mk 4/7/09

A. Vehicle Operations: If there are vehicles stored, maintained, washed or fueled on the premises it must be noted here. Any and all vehicle activity from long-term parking to commercial fueling stations should be investigated. Staining and proximity of operations to storm drains are of particular interest here. Auto repair facilities prove to be the most likely hot spots.

B. Outdoor Materials: Many sites will require the storage of outdoor materials. Uncovered loading docks, rusting storage barrels and any exposed storage areas could be contributing to stormwater pollution. Again, stains leading from these areas to storm drains are of particular concern and can provide visual documentation of an observed pollution source.

C. Waste Management: Check for the type of waste generated, dumpster conditions and possible stains leading to storm drains.

D. Physical Plant: This section asks to check the condition of the building(s) and parking lot(s). Downspout discharge is noted here and a check for stains leading to storm drains indicating poor erosion/sediment control, cleaning & material storage practices is necessary.

E. Turf/Landscaping: Check here for treated lawns and possibility of landscape areas that drain to storm system.

F. Storm Water Infrastructure: Any on-site storm water management practices are indicated here along with gutter conditions if there are private storm drains on the property.

The overall pollution potential for each hotspot site was tallied based on observed sources of pollution and the potential of the site to generate pollutants that would likely enter the storm drain network. The hotspot designation criteria as set forth in *Wright et al.* (2004) was used to determine the status of each site based on field crew observations. Sites were classified into four initial hotspot status categories:

- Not a hotspot – no observed pollutant; few to no potential sources
- Potential hotspot – no observed pollution; some potential sources present
- Confirmed hotspot – pollution observed; many potential sources
- Severe hotspot – multiple polluting activities directly observed

Prior to going out in the field, potential hotspot locations were identified using GIS data from NAICS or North American Industry Classification System. Most of the potential hotspots were located along main roads where commercial and industrial zoning districts are planned. These road corridors tend to run as radials out from Baltimore City's core.

4.3.2 Summary of Sites Investigated

A total of 33 hotspot candidates were investigated, 23 of which were commercial establishments. Of these 33, the initial hotspot statuses were designated as follows: zero severe, 16 confirmed and 13 potential hotspots. The remaining four were designated as not hotspots and determined to have no apparent stormwater pollution potential. Tables 4-6 through 4-8 show hot spot site status, facility type and pollution sources respectively. Figure 4-6 shows the locations of the investigations. Figure 4-7 shows the hot spot investigation pollution sources and locations.

Exhibit 8. Excerpt from the City's Upper Back River Characterization Report dated November 2008

Upper Back River Characterization Report

Table 4-6 Hotspot Site Status

Subwatershed	# Severe Hotspots	# Confirmed Hotspots	# Potential Hotspots	# Not Hotspots
Armistead Run	0	2	0	0
Biddison Run	0	0	0	0
Briens Run	0	0	0	0
Chinquapin Run	0	0	0	0
East Branch Herring Run	0	1	0	0
Herring Run Mainstem	0	3	0	0
Lower Herring Run	0	2	0	0
Moore's Run	0	1	1	0
Northeast Creek	0	0	0	0
Redhouse Run	0	9	10	2
Stemmer's Run	0	0	1	1
Tiffany Run	0	0	0	0
Unnamed Tributary	0	0	0	0
West Branch Herring Run	0	0	1	1
Total	0	18	13	4

Table 4-7 Hotspot Site Type of Facility

Subwatershed	# Commercial	# Industrial	# Municipal	# Institutional
Armistead Run	1	1	0	0
Biddison Run	0	0	0	0
Briens Run	0	0	0	0
Chinquapin Run	0	0	0	0
East Branch Herring Run	1	0	0	0
Herring Run Mainstem	3	0	0	0
Lower Herring Run	1	0	0	0
Moore's Run	2	0	0	0
Northeast Creek	0	0	0	0
Redhouse Run	12	6	2	1
Stemmer's Run	2	0	0	0
Tiffany Run	0	0	0	0
Unnamed Tributary	0	0	0	0
Total	22	7	2	1
	2	0	0	0

Exhibit 9. Excerpt from the City's Upper Back River Characterization Report dated November 2008 (Continued)

Upper Back River Characterization Report

West Branch Herring Run				
Total	24	1	2	1

Table 4-8 Hotspot Site Source of Pollution

Subwatershed	Outdoor Storage	Waste Management	Physical Plant	Turf/Landscaping	Vehicle Operations
Armistead Run	2	2	2	0	1
Biddison Run	0	0	0	0	0
Briens Run	0	0	0	0	0
Chinquapin Run	0	0	0	0	0
East Branch Herring	1	1	1	0	1
Herring Run Mainstem	3	3	3	0	3
Lower Herring Run	0	0	0	0	0
Moore's Run	1	1	1	0	1
Northeast Creek	0	0	0	0	0
Redhouse Run	16	17	17	4	14
Stemmer's Run	0	1	0	0	0
Tiffany Run	0	0	0	0	0
Unnamed Tributary	0	0	0	0	0
West Branch Herring	0	1	1	1	0
Total	23	25	25	5	20



These storage drums at HSI L-601 are properly labeled but do not have secondary containment



HSI site L-502, an auto shop where vehicles are stored and repaired outside

4-17

Exhibit 10. Excerpt from the City's Upper Back River Characterization Report dated November 2008 (Continued)

MK 4/7/09

Lower Jones Falls Watershed Characterization Report

Table 4-5 Number of Street Trees to be Planted.

Subwatershed	Number of Neighborhoods with Street Trees Recommended	Number of Trees That Could be Planted
Jones Falls A	0	0
Lower Jones Falls	4	139
Moores Branch	2	49
Slaughterhouse	1	75
Stony Run	5	170
Western Run	7	375

See appendix 4-1 for a comprehensive summary of NSA results

4.3 Hotspot Site Investigations (HSI)

Stormwater "hot spots" are commercial or industrial operations that produce higher levels of storm water pollutants, and/or present a higher potential risk for spills, leaks or illicit discharges into the storm water system. Identifying potential hotspots using the HSI can help the appropriate local government agencies target follow-up investigations and enforcement efforts.

4.3.1 Assessment Protocol

The Hot Spot Investigation primarily followed the protocols outlined in the Unified Subwatershed and Site Reconnaissance (USSR) (Wright *et. al.* 2004). This manual is one in a series developed by the Center for Watershed Protection. Stormwater hotspots are classified into four types of operations: commercial, industrial, municipal and transport-related. The Hot Spot Investigation is used to evaluate the potential of these types of facilities to contribute contaminated runoff to the storm drain system or directly to receiving waters.

At hotspot sites, field crews looked specifically at vehicle operations, outdoor materials storage, waste management, building conditions, turf and landscaping, and stormwater infrastructure to evaluate potential pollution sources. Based on observation at the site, the field crew may recommend enforcement measures, follow-up inspections, illicit discharge investigations, retrofits, or pollution prevention planning and awareness. The HSI data sheet was used to complete the investigation, the contents of which are outlined below:

A. Vehicle Operations: If there are vehicles stored, maintained, washed or fueled on the premises it must be noted here. Any and all vehicle activity from long-term parking to commercial fueling stations should be investigated. Staining and proximity of operations to storm drains are of particular interest here.

B. Outdoor Materials: Many sites will require the storage of outdoor materials. Uncovered loading docks, rusting storage barrels and any exposed storage areas could be contributing to stormwater pollution. Again, stains leading from these areas to storm drains are of particular concern and provide visual documentation of an observed pollution source.

C. Waste Management: Check for the type of waste generated, dumpster conditions and possible stains leading to storm drains.

Exhibit 11. Excerpt from the City's Lower Jones Falls Watershed Characterization Report dated November 2008

US EPA ARCHIVE DOCUMENT

Lower Jones Falls Watershed Characterization Report

D. Physical Plant: This section asks to check the condition of the building(s) and parking lot(s). Downspout discharge is noted here and a check for stains leading to storm drains indicating poor erosion/sediment control, cleaning & material storage practices is necessary.

E. Turf/Landscaping: Check here for treated lawns and possibility of landscape areas to drain to storm system.

F. Storm Water Infrastructure: Any on-site storm water management practices were indicated here along with gutter conditions if there were private storm drains on the property.

The overall pollution potential for each hotspot site was tallied based on observed sources of pollution and the potential of the site to generate pollutants that would likely enter the storm drain network. The hotspot designation criteria as set forth in *Wright et al. (2004)* was used to determine the status of each site based on field crew observations. Sites were classified into four initial hotspot status categories:

- Not a hotspot – no observed pollutant: few to no potential sources
- Potential hotspot – no observed pollution; some potential sources present
- Confirmed hotspot – pollution observed; many potential sources
- Severe hotspot – multiple polluting activities directly observed

Prior to going out in the field, potential hotspot locations were identified using GIS data from NAICS or North American Industry Classification System. Most of the potential hotspots were located along main roads where commercial and industrial zoning districts are planned. These road corridors tend to run as radials out from Baltimore City's core.

4.3.2 Summary of Sites Investigated

A total of 25 hotspot candidates were investigated, 21 of which were commercial establishments. Of these 25, the initial hotspot statuses were designated as follows: one severe, six confirmed and 12 potential hotspots. The remaining six were found to have no apparent stormwater pollution potential. Tables 4-6 through 4-8 show hot spot site status, facility type and pollution sources respectively. Figure 4-6 shows the locations of the investigations. Figure 4-7 shows the hot spot investigation pollution sources and locations.

Table 4-6 Hotspot Site Status

Subwatershed	# Severe Hotspots	# Confirmed Hotspots	# Potential Hotspots	# Not Hotspots
Jones Falls A	0	0	0	0
Lower Jones Falls	0	3	6	5
Moore's Branch	0	0	0	0
Slaughterhouse	0	0	0	0
Stony Run	0	1	1	0
Western Run	1	2	5	1

Exhibit 12. Excerpt from the City's Lower Jones Falls Watershed Characterization Report dated November 2008 (Continued)

Lower Jones Falls Watershed Characterization Report

Table 4-7 Hotspot Site Type of Facility

Subwatershed	# Commercial	# Industrial	# Municipal	# Transportation Related
Jones Falls A	0	0	0	0
Lower Jones Falls	10	0	2	2
Moores Branch	0	0	0	0
Slaughterhouse	0	0	0	0
Stony Run	2	0	0	0
Western Run	9	0	0	0

Table 4-8 Hotspot Site Source of Pollution

Subwatershed	Outdoor Storage	Waste Management	Physical Plant	Turf/Landscaping
Jones Falls A	0	0	0	0
Lower Jones Falls	10	7	2	0
Moores Branch	0	0	0	0
Slaughterhouse	0	0	0	0
Stony Run	0	1	0	0
Western Run	5	5	5	3



“Dumpster juice” has direct access to the storm drain



HSI site H-401, an auto shop where vehicles are repaired and stored outside

4-15

Exhibit 13. Excerpt from the City’s Lower Jones Falls Watershed Characterization Report dated November 2008 (Continued)

Appendix E
Photograph Log



Photograph 1. Rite Aid – View of completed development project.



Photograph 2. Rite Aid – Location where City SWM Program staff believed an inlet filter BMP was installed.



Photograph 3. Good Samaritan Nursing Center – Review of as-built plans indicated the potential for prolonged water storage.



Photograph 4. American Red Cross (SWM No. 32) – View of fugitive trash and fine debris accumulation at inlet.



Photograph 5. Girl Scouts of America (SWM Nos. 56 and 180) – View of trash and debris accumulation at inlet structure appurtenant to detention facility.



Photograph 6. Cylburn Arboretum – The approved ESC plan specified the implementation of culvert outlet protection, but flow dissipation BMPs were not in place below the culvert outlets.



Photograph 7. Cylburn Arboretum – Silt fence BMPs had been improperly selected and implemented in an area of concentrated flow down-gradient of the culvert outlets.



Photograph 8. Clipper Mill Monitoring Location – Location of a previously identified storm sewer/sanitary sewer cross connection identified through monitoring efforts. (NOTE: Debris and dirt around storm drain)



Photograph 9. Clipper Mill Monitoring Location – View of sediment in outfall pipe and channel leading to stream bank. Sediment could be a result of dirt and debris near storm drain in previous photo.



Photograph 10. Clipper Mill Monitoring Location – View of trash and debris along stream bank.



Photograph 11. JK Technologies – Potential illicit discharge of washwater.



Photograph 12. S&G Concrete – Drain covered with filter fabric and stone.



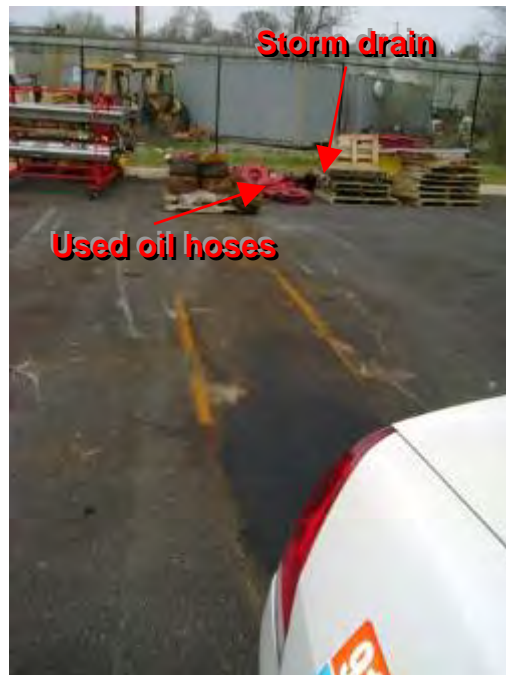
Photograph 13. S&G Concrete – Another view of drain covered with filter fabric and stone.



Photograph 14. S&G Concrete – View of facility from storm drain.



Photograph 15. Central Garage – Example of staining on paved area.



Photograph 16. Central Garage – Staining on paved area throughout facility and used oil hoses stored near and on top of storm drain.



Photograph 17. Central Garage – Close up of used oil hoses near and on top of storm drain (NOTE: Staining around storm drain).



Photograph 18. Another close up view of oil hose on top of storm drain. Also note used paint funnel, paint stir stick and trash.



Photograph 19. Central Garage – Parts washers full of parts washing solvent located outdoors and close proximity to storm drain



Photograph 20. Central Garage – Example view of the interior portion of the parts washer. (NOTE: Rags and parts still contained within parts washer)



Photograph 21. Central Garage – View of small dumpster containing paint waste and other materials stored in close proximity to storm drain.



Photograph 22. Central Garage – Close up view of small dumpster in previous photo.



Photograph 23. Central Garage – View of trash and debris along the northern boundary of the facility.



Photograph 24. Central Garage – View of a paint funnel on the ground along the northern boundary of the facility.



Photograph 25. Central Garage – Example of staining on paved area.



Photograph 26. Central Garage – Staining underneath vehicle indicates a lack of BMP implementation.



Photograph 27. Central Garage – Example of staining on paved area and absorbent left on spill.



Photograph 28. Central Garage – Example of staining on paved area.



Photograph 29. Central Garage – Example of staining on paved area.



Photograph 30. Central Garage – Example of staining on paved area.



Photograph 31. Central Garage – Example of staining on paved area.



Photograph 32. Central Garage – Example of staining on paved area with stains evident into storm drain.



Photograph 33. Central Garage – New materials stored outdoors (Ride-On – Tire Protection).



Photograph 34. Central Garage – Close up of Ride-On label.



Photograph 35. Central Garage – View of oil absorbent placed on pavement to clean up a small spill.



Photograph 36. Central Garage – Example of staining on paved area.



Photograph 37. Central Garage – View of debris around around storm drain.



Photograph 38. Central Garage – View of stormwater pond and outfall. (NOTE: Oil stains around pretreatment forebay)



Photograph 39. Central Garage – View of stormwater pond and outfall (NOTE: General trash and debris around outfall area)



Photograph 40. Central Garage – View of storm water pond and pretreatment forebay.



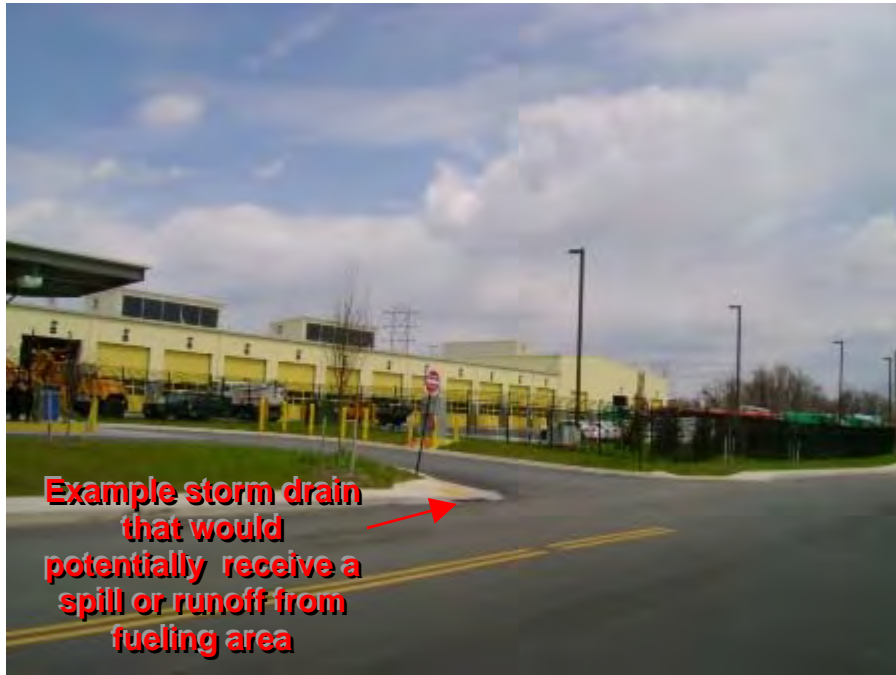
Photograph 41. Central Garage – View of pretreatment forebay with staining noted around the perimeter and a sheen on top of the water.



Photograph 42. Central Garage – Close up of sheen on water in pretreatment forebay.



Photograph 43. Central Garage – Close up of sheen on water in pretreatment forebay.



Photograph 44. Central Garage – View of drainage area from fueling station.
(NOTE: Spills resulting from fueling activities and runoff from the area will flow to one of several City storm drains along East Biddle Street)



Photograph 45. Central Garage – View of new City vehicle fueling facility located outside of facility fenceline.



Photograph 46. Central Garage – View of new City vehicle fueling facility located outside of facility fenceline.



Photograph 47. Northwest Transfer Station – View of waste oil tanks with small berm to contain a spill and there are no BMPs to prevent stormwater contact with the tanks. It appears that a good sized rain event would result in stormwater overtopping the berm as evidenced in next photo.



Photograph 48. Northwest Transfer Station – View of staining on and around outside of berm indicating that oil-laden stormwater had overtopped the berm.



Photograph 49. Northwest Transfer Station – View of recyclable drop off area. Dumpsters contain metals, cardboard, and tires while totes contained electronics. Poor housekeeping was noted as well as a failure to provide BMPs such as inlet protection for storm drains.



Photograph 50. Northwest Transfer Station – View of drainage area for storm drain. (NOTE: Poor housekeeping and lack of BMPs to protect storm drain)



Photograph 51. Northwest Transfer Station – View of drainage area for storm drain.
NOTE: Poor housekeeping and lack of BMPs to protect storm drain.



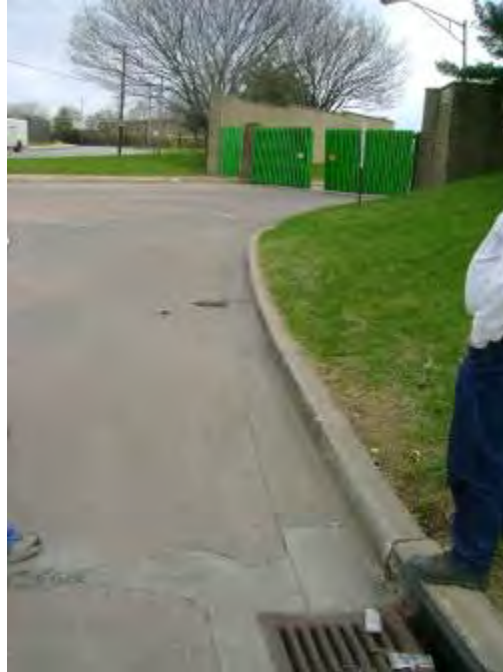
Photograph 52. Northwest Transfer Station – View of drainage area for another storm drain. (NOTE: Poor housekeeping and lack of BMPs to protect storm drain)



Photograph 53. Northwest Transfer Station – Close up of storm drain with no inlet protection from previous photo.



Photograph 54. Northwest Transfer Station – View of recycling area from facility entrance.



Photograph 55. Northwest Transfer Station – Facility entrance. (NOTE: Debris and sediment within storm drains)



Photograph 56. Northwest Transfer Station – Facility entrance. (NOTE: Debris and sediment within storm drains)



Photograph 57. Northwest Transfer Station – Facility entrance. (NOTE: Debris and sediment within storm drain)



Photograph 58. Northwest Transfer Station – Close up of storm drain in previous photo. (NOTE: Debris and sediment within storm drain)



Photograph 59. Northwest Transfer Station – Facility exit.



Northwest Transfer Station – View of recycling processing building exit. Storm drain in lower right is approximately 75% full of debris and sediment.



Northwest Transfer Station – Close up of storm drain in previous photo approximately 75% full of debris and sediment.



Photograph 60. Northwest Transfer Station – View of an apparent petroleum spill at the loading dock. The inspectors noted that deicer had been placed on the spill in an apparent attempt to clean up the spill.



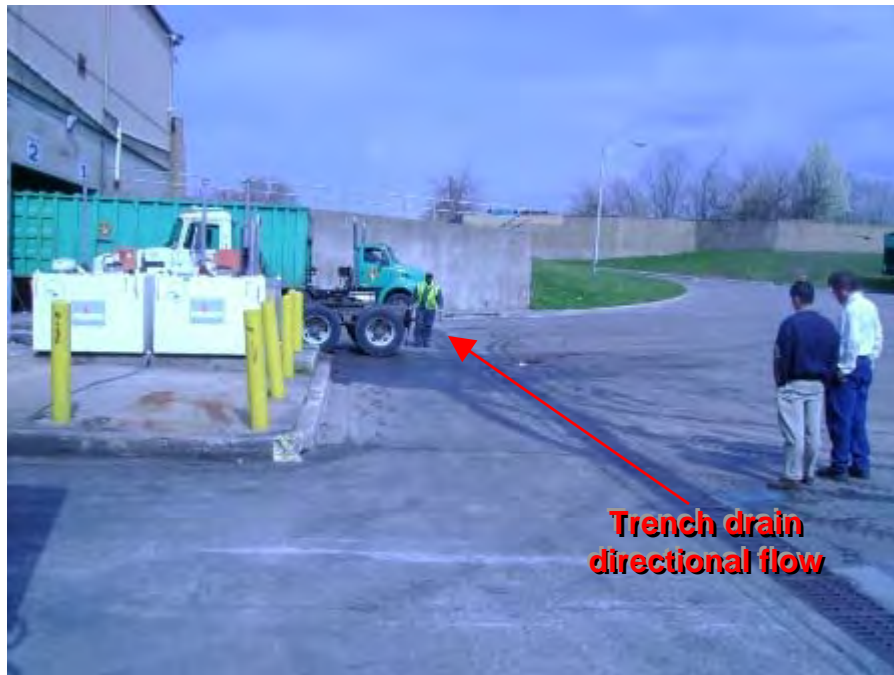
Photograph 61. Northwest Transfer Station – View of deicing material used for petroleum spill control/cleanup in previous photo.



Photograph 62. Northwest Transfer Station – View of a large spill in the loading dock area (separate from spill with deicing material) to a trench drain. The facility representative stated that he was not aware of the cause of the spill, but did state that the three above ground storage tanks were not in use.



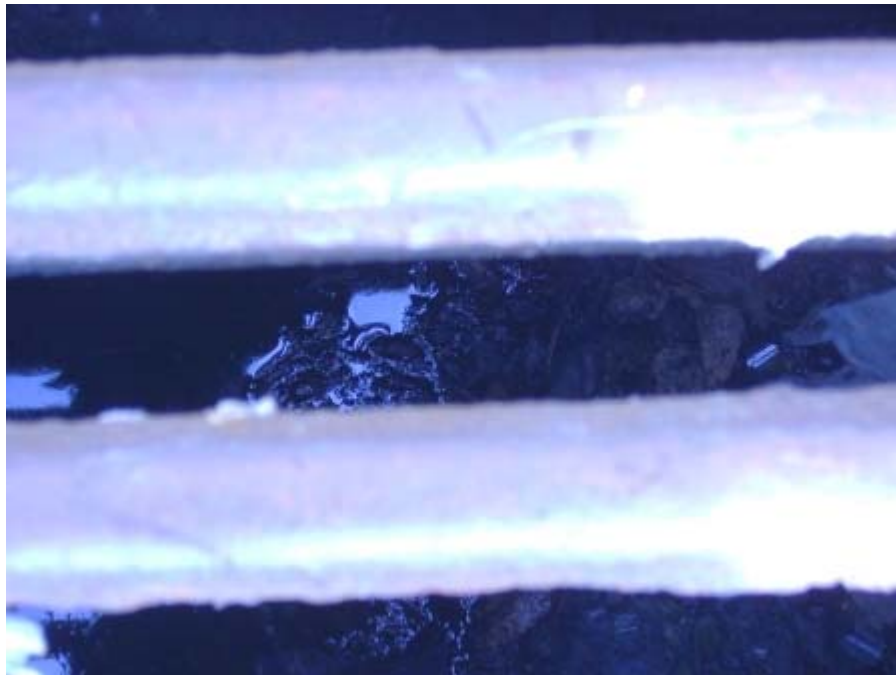
Photograph 63. Northwest Transfer Station – Another view of the larger spill to a trench drain.



Photograph 64. Northwest Transfer Station – Another view of the larger spill to a trench drain.



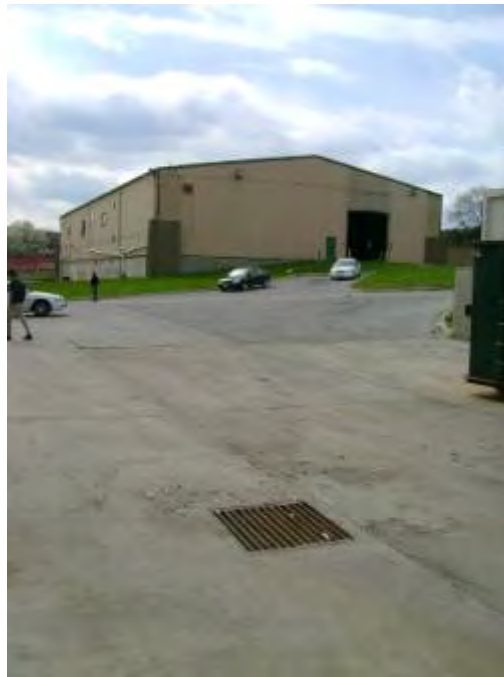
Photograph 65. Northwest Transfer Station – View of the trench drain and trench drain outlet.



Photograph 66. Northwest Transfer Station – View into the trench drain outlet.
(NOTE: Oily substance inside drain)



Photograph 67. Northwest Transfer Station – View of sheen on flowing water inside storm drain downstream of larger spill.



Photograph 68. Northwest Transfer Station – View of storm drain from previous photo noted downstream of larger spill.



Photograph 69. Northwest Transfer Station – Another view of storm drain from previous photos noted downstream of larger spill. According to City personnel, the dumpster to left was previously used for the collection of tailings from street sweepers which would potentially result in an illicit discharge to the City’s storm sewer system.
No street sweeping storage was noted during the visit.



Photograph 70. Stony Run Stream Restoration – View of results from Phase II activities.



Photograph 71. Stony Run Stream Restoration – View of results from Phase II activities.



Photograph 72. Stony Run Stream Restoration – View of results from Phase I activities.



Photograph 73. Stony Run Stream Restoration – Wetland created during Phase I activities.



Photograph 74. Franklin Square Elementary/Middle School – View of parking lot “greening” project results.



Photograph 75. Maiden's Choice Stream Restoration Project – View of silt fence along stream restoration project.



Photograph 76. Maiden's Choice Stream Restoration Project – View of stream restoration activities. (NOTE: Boulders and vegetation along bank)



Photograph 77. Maiden's Choice Stream Restoration Project – View of stream restoration activities. (NOTE: Retaining wall and new outfall along bank)