

# Metropolitan Nashville and Davidson County

MS4 NPDES Permit No. TNS068047

## Annual Report Year 2 - Permit Cycle 2

November 2005



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## 1.0 Contact List

The following table lists the people who contributed to and are responsible for the data collection and/or preparation of the annual report.

**Table 1.1 Contact List**

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## 2.0 Stormwater Management Plan (SWMP) Evaluation

### 2.1 Objective of the Program

The objective of the SWMP is to maintain or improve the quality of Davidson County water resources and “Waters of the State of Tennessee” to the Maximum Extent Practicable (MEP). This leads to an overall goal of achieving water quality improvements in every Davidson County stream reach included on Tennessee Division of Environment and Conservation’s (TDEC) 303(d) impaired streams list to a level so the stream can be successfully removed from the list. To accomplish this overall goal, several smaller goals were established in the first permit cycle (1996 – 2001) as a basis for developing a variety of stormwater management programs that address specific issues. The following is a list of refined goals established to facilitate ongoing management program improvements and implementation:

- A. Emphasize public education, awareness, and reporting as the primary non-structural Best Management Practice (BMP).
- B. Minimize construction-related water quality impacts through developer and engineer education, continued improvement of the plans review process, and construction site inspections and monitoring.
- C. Minimize long-term water quality impacts through effective, fair, equitable, and feasible site-design requirements and guidance.
- D. Implement an effective, fair, equitable, and feasible enforcement program that reduces water quality impacts from accidental and/or intentional discharge of pollutants into the municipal separate storm sewer system (MS4).
- E. Gain a greater knowledge of water quality problems within Metro to be used as a decision-making tool in the Capital Improvement Program (CIP).
- F. Base programs on current stormwater management theory and acceptable practices.
- G. Prioritize efforts to solve the worst problems in the worst areas.
- H. Identify problems that can be corrected with reasonable effort and fiscal commitment.
- I. Establish and implement the financial, organizational, and legal foundations to support other program goals.
- J. Goals, as developed in the permit application process, resulted in the following program elements being used to achieve the objectives of the SWMP:
  - 1. Structural Stormwater Controls and Collection Systems;
  - 2. New Development and Significant Redevelopment;
  - 3. Roadways;
  - 4. Landfills and Other Waste Treatment, Storage, or Disposal Facilities;
  - 5. Pesticides, Herbicides, Fertilizers, Oils, and Other Toxic Materials;
  - 6. Illicit Discharges and Improper Disposal;



7. Industrial and High Risk Runoff;
8. Construction Site Runoff;
9. Habitat Improvement;
10. Monitoring;
11. Public Information and Education (PI&E); and
12. Reporting.

## 2.2 Major Findings

As MWS has continued to implement its stormwater program, fewer new major finds were discovered. However, the following projects are considered major findings and/or water quality improvements worth noting.

### 2.2.1 Car Wash Illicit Discharge

After observing discolored flow in an unnamed stream in North Nashville, MWS initiated an investigation to determine the source of this illicit discharge. The investigation was complicated by the fact that most of the headwater tributaries in this area were previously encapsulated. MWS began dye tracing several of the surrounding businesses and was able, through a process of elimination, to pinpoint the source of pollution to a local car wash. The site was issued a Notice of Violation for discharging detergents and waxes and was ordered to take corrective actions to stop the discharge. Figure 2.2.1.1 depicts the color of the creek prior to our enforcement and Figure 2.2.1.2 shows the improvement after our enforcement and the illicit discharge was eliminated.

**Figure 2.2.1.1 Color of tributary during illicit discharge**





**Figure 2.2.1.2 Creek Color after Illicit Discharge was Eliminated**



### **2.2.2 Industrial Illicit Discharge**

While conducting the annual thermograph investigations, MWS discovered an illicit discharge flowing into a tributary of Browns Creek. This tributary had a distinct sewage odor and MWS staff observed white filamentous bacterial growth and low dissolved oxygen levels (1.52 mg/L). Upon further field investigations, MWS was able to determine the source of the discharge to be an industry located in a Satellite City. Through coordination with the suspected industry, a dye trace was performed on the building's floor drains to determine the source. It was determined that some of the building's pipes were faulty, causing large amounts of corn syrup to leach into an underground storm drain. Upon our request, the industry took corrective measures to repair the faulty pipe and eliminate the discharge. Since correcting this problem, normal stream characteristics and dissolved oxygen levels have returned to the creek. Figure 2.2.2.1 shows the point at which the dye was leaching into the storm drain, while the Figure 2.2.2.2 and Figure 2.2.2.3 show conditions of the creek before and after NPDES involvement.



**Figure 2.2.2.1 Dye leaching through brick wall into the storm drain**



**Figure 2.2.2.2 Tributary color during illicit discharge**





**Figure 2.2.2.3 Tributary color after the illicit discharge was eliminated**



### **2.2.3 Construction Illicit Discharge**

While conducting routine construction inspections, MWS found a large site located in North Nashville allowing substantial amounts of sediment to leave the site and discharge into Little Creek, which is listed on the State 303(d) list as impaired by sedimentation. In order to document the amount of sediment loss occurring from this site, MWS sampled the site's main outfall. Turbidity readings of the discharge were recorded at 678 NTU, while the total suspended solid levels reached 320 mg/l. MWS proceeded with enforcement that resulted in the issuance of 4 Notices of Violation, 2 Stop Work Orders, and a total of \$3,500 worth of monetary penalties. Environmental court hearings and future MWS and TDEC enforcement actions are expected to achieve overall compliance.

### **2.3 Major Accomplishments**

MWS has continued to facilitate major accomplishments during the second permit year of the second permit cycle. These include:

1. The NPDES office has continued to work closely with MWS maintenance crews to improve erosion prevention and sediment control (EPSC) on Metro maintenance projects. MWS believes that Metro projects should be held to the same EPSC standards that the development community must meet.
2. In the past, MWS has not been staffed to handle inspections and maintenance issues on BMPs. The NPDES office has instituted a post-construction structural BMP inspection program and has begun enforcing BMP maintenance requirements.



3. MWS has continued the process of revising/updating key stormwater regulations to better address ever-changing issues. Numerous meetings have been held to receive input from stakeholders' groups and staff from other Metro departments. The intent of this process is to clarify standards, enforcement, and maintenance issues and to revise requirements for new development with respect to floodplain management and post-construction water quality BMPs. The new regulations will reflect and promote technology advances and low-impact development. It is anticipated that the new regulations will go into effect during the first quarter of 2006.
4. Metro performed the third annual thermograph investigation of the County's streams. Several illicit discharges were discovered through use of this technique.

## **2.4 Enforcement Documentation**

Enforcement documentation is an important component in the SWMP. MWS has a comprehensive enforcement program that includes the issuance of Notices of Violation (NOVs), Stop Work Orders (SWOs), and monetary penalties. MWS also reserves the right to subpoena noncompliant sites to environmental court if NOVs and SWOs fail to bring a site into compliance. Refer to Section 4.2 of this document for a detailed breakdown of documented enforcement statistics since the program's conception.

## **2.5 Overall Program Strengths**

Understanding the strengths and weaknesses is necessary in maintaining a successful SWMP. When strengths and weaknesses are identified, strong points can be featured as the program foundation and weaknesses can be addressed and improved upon each permit year.

One obvious strength of Metro's NPDES Program is the ongoing commitment from the Mayor and MWS officials to meet the requirements of the MS4 permit and improve Metro stormwater resources and waterways for future generations. This is demonstrated by MWS' efforts to make the NPDES program activities known throughout Metro. This continues to result in cross-departmental cooperation in the protection and improvement of stormwater quality. Interdepartmental communication within Metro concerning stormwater issues has increased each year of the NPDES Program's existence.

The commitment from the Mayor and officials of MWS has been further exemplified by the continued support of appropriate staffing levels to oversee development in the Metro area. The staffing levels for the past year have included 9 individuals in the Stormwater Development and Review section and 12 individuals in the NPDES office. MWS plans to add additional staff, as needed, to handle the growing development issues throughout the County. The goal of MWS is to staff at appropriate levels, so that certain staff will be designated to handling construction-related stormwater issues exclusively.

Despite staffing increase during the last few years, individual workloads have also increased. MWS staff has been working diligently to provide quality service in a timely manner and have continued to adopt priorities that ensure the most important stormwater concerns and permit requirements are being addressed first. In addition, MWS staff has pursued many training opportunities to keep up with growing technological advances. Over the past permit year, MWS staff have attended several training seminars or workshops. Table 2.5.1 presents the following training sessions that MWS staff have attended.



**Table 2.5.1 MWS Staff Training**

Training Session Names	Staff Attended	Training Location	Training Date
TDEC Level I TDEC Workshop	Kimberly Moore, Steve Mishu	Nashville, TN	March 3, 2005
TDEC Level II TDEC Workshop	Steve Mishu	Nashville, TN	August, 2005
Muddy Water Blues	Kimberly Moore, Michael Hunt	Franklin, TN	May 12, 2005
EPA Phase II Workshop	Dale Binder, Josh Hayes	Memphis, TN	May, 17-18, 2005
Low Impact Development Seminar	Rebecca Dohn, Lisa Sullivan	College Park, MY	September 21-23, 2004
AWRA Annual Conference	Mike Seremet, Rebecca Dohn, Michael Hunt, Preston Winesett	White Bluff, TN	April 14, 2005
TMDL National Conference	Preston Winesett	Philadelphia, PA	June 26-29, 2005
Tennessee Geographic Information Council	Anna Kuoppamaki	Franklin, TN	March 22-23, 2005
Conspan Bridge Systems Technical Presentation	Jennifer Knauf, Angie Foster, Mike Seremet, Josh Hayes, Dale Binder, Rebecca Dohn, Steve Mishu	Nashville, TN	December 10, 2004
Water Resources in Tennessee	Angela Foster, Jennifer Knauf, Steve Mishu	Nashville, TN	May, 5-6, 2005

During the first Permit year of Cycle 2, MWS began the process of revising and upgrading the stormwater regulations to provide an even higher level of water quality protection. During the revision process stakeholders made up of representatives from development communities, environmental groups, regulatory agencies and the general public have been included in the process. During this permit year, MWS facilitated 12 stakeholder meetings and has made the majority of changes and updates to the Stormwater Management Manual. At this time, the new regulations are anticipated to go into effect in late summer or early fall 2005.

## 2.6 Overall Program Weaknesses

As Metro has built its stormwater quality program over the last eight years, a continuous examination of how best to achieve both our permit objectives and community benefits has been a priority. In applying that consideration to the current state of our program, we would list the following items as areas where we are working toward making improvements:

Various elements of our Metro Stormwater Regulations have been shown to require modification to achieve a more effective program. Modifications to the regulations have been made on two occasions in the past few years to incorporate relatively small, focused changes. Metro convened a stakeholders' group that is explained further in other sections of the annual report. This group is charged with reviewing all components of the current stormwater regulations to recommend (based to some degree on staff input) programmatic changes to areas of the regulations where apparent modifications are warranted. Based on recommended changes from those stakeholders groups, MWS staff is currently working to finalize changes to the Stormwater Management Manual. Revisions to the Stormwater Management Manual should be completed by the end of 2005.

During the initial formation of the NPDES Section, three wet weather sampling sites were established/approved during the 1997-1998 period. Over time, given the logistics of these sites and the weather patterns in Middle Tennessee, it has proven difficult to consistently collect wet weather samples.



Metro continues to endeavor to secure meaningful wet weather samples according to our permit requirements, but in the meantime we are considering possible alternative sampling strategies that would provide more relevant, useful analytical data that may be submitted for consideration at some point in the future.

The scope of keeping nearly 500 square miles of MS4 infrastructure data up to date is a significant undertaking, especially in an area such as Davidson County that has experienced brisk development over the past few years. In 1999, Metro completed (at significant cost) an initial GIS-based MS4 inventory. Since that time, with the exception of one subsequent update in 2000, projects that served to create changes to the Metro MS4 have been logged and will be included in future updating of the MS4 GIS. During the last permit year, MWS hired a person solely dedicated to GIS-related responsibilities. Since this time, this person has been coordinating with a consultant to create a MS4 updating process for MWS Stormwater Capital Improvement maintenance projects and has created a process to update the MS4 for private development sites. MWS NPDES has also met with staff from the MWS mapping staff to determine if areas of the CSO are correctly mapped. From the meeting, it was determined that, as a whole the mapped CSO area is correct, but there are several areas around its fringe that would benefit from additional mapping. During the next permit year, MWS, while continuing to update the MS4 data for private development and stormwater projects, will begin to create MS4 infrastructure mapping along the CSO fringe areas.

MWS is currently required to inspect industrial activities classified as: municipal landfills, hazardous waste treatment, storage and disposal facilities, industries under SARA Title III, Section 313, and facilities that MWS deems as substantial loaders to the MS4. While inspection of these facilities has yielded several stormwater violations, MWS staff have observed numerous industrial facilities not classified in one of the above-mentioned categories that have larger stormwater violation issues. MWS will continue to inspect the industrial sites within the above mentioned categories, while also exploring options to expand industrial inspections without overburdening staff.

Metro Nashville has over 2000 detention/retention/water quality structures installed across the County. MWS performed a pilot survey on 100 previously installed detention/retention facilities to evaluate the maintenance issues. The vast majority of the sites inspected were in need of some type of maintenance to restore original design intentions of the structure. Based on these findings and the time spent by staff in getting the responsible parties to perform maintenance on the structures, MWS has determined that it is infeasible, at this time, to perform inspection and enforcement on all detention/retention facilities within Metro. Instead, MWS will commit staff to focus inspection and follow-up on more recently installed structures, while a public education campaign and a prioritization procedure will be developed for the older structures.

## **2.7 Future Direction Of The Program**

The MWS NPDES Program continues to define its role in the governmental/regulatory community of Metro Nashville. Several issues have become apparent in the early stages of implementing the MS4 permit. The most apparent of these is that stormwater solutions must be allowed a sufficient amount of time for implementation, so that a greater understanding of the system and the associated water quality issues develops within the community.

It is also apparent that improvements in stormwater quality can only come from open and direct communication among the various governmental agencies within Metro Nashville. In an effort to



improve communication between governmental agencies, MWS has begun exploring the possibility of establishing “Water Quality Partnerships” with various government agencies, such as the Parks and Public Works.

Metro's current NPDES program direction, as stated in previous annual reports, is to continuously gather information on the state of stormwater quality and trends. This understanding is being generated through various activities including: execution of inspections, investigations (including needed enforcement activities), monitoring, and master planning. This understanding will be further enhanced within Metro by proactive communication among different departments within Metro. Finally, public awareness will come from a robust education program with the goal of encouraging citizens to make a positive impact on the quality of Davidson County's water resources.

As the NPDES section begins to understand the trends in the various program aspects, it is refining those activities to maximize effectiveness. The NPDES section refines the program in order to focus and intensify attention to previously unidentified stormwater quality problems and reduce attention to issues that have yielded little, if any, protection or enhancement of stormwater quality.

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### 3.0 Summary Table

In the summary tables, the required activities that were accomplished during the permit year are denoted by a bullet (●), while those activities not required during a permit year are shown for reference but are shaded (■)

**Table 3.1 Summary Act. 1**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
<b>OPERATIONS AND MAINTENANCE OF STRUCTURAL CONTROLS</b>								
1a	Update Stormwater Inventory Geographic Information System (GIS)	Ongoing – by PY 4	●	●				
1b	Continue Existing System Maintenance	Ongoing	●	●				
1c	Inspections of Dry Creek Detention facility	1 / quarter	●	●				
1d	Train Inspection and Maintenance Staff	PY 2 and PY 4	■	●	■		■	
1e	Review Maintenance Procedures	PY 2 and PY 4	■	●	■		■	
1f	Housekeeping Programs	Ongoing	●	●				
1g	Stormwater Detention/Retention Facilities	PY 2	■	●	■	■	■	



**Table 3.2 Summary Act. 2**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
<b>CONTROL OF DISCHARGES FROM AREAS OF NEW DEVELOPMENT AND SIGNIFICANT REDEVELOPMENT</b>								
2a	Ordinances, Regulations, and Guidance	----						
	Enforce Existing Ordinances and Regulations intended to limit long-term water quality impacts	Ongoing	•	•				
	Evaluate and Update Guidance Materials	PY 2 and PY 5		•				
	Public Education	Ongoing	•	•				
2b	Report BMP Monitoring and Considerations	Annually	•	•				
2c	Master Planning	----		•				
	Report water quality issues to Planning Commission	PY 2		•				
	Report water quality evaluations performed as part of new water quantity master planning efforts	PY 2 and PY 5		•				
	Report regional water quality practices evaluations performed in any master planning activities	PY 2 and PY 5		•				
	Report watershed prioritization changes	PY 2 and PY 5		•				
	Report master planning performed per prioritized watersheds	PY 2 and PY 5		•				
2d	Training	Annually	•	•				



**Table 3.3 Summary Act. 3**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
<b>ROADWAYS</b>								
3a	Catch Basin Cleaning	----						
	Prioritize	PY 1	•					
	Report and record	Annually	•	•				
3b	Downtown Street Sweeping	Ongoing	•	•				
3c	Deicing Practices – Evaluate and Report	PY 1 and PY 3	•					
3d	Evaluate Herbicides, Pesticides, and Fertilizers application and storage practices	PY 1 and PY 3	•					
3e	Report on Spill Response Program	Annually	•	•				
3f	Report Modifications to Design and Construction	Each Compliance Report	•	•				



**Table 3.4 Summary Act. 4**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
<b>LANDFILLS AND OTHER WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES</b>								
4a	Monitor Activities, Report on Issues	Ongoing	•	•				

**Table 3.5 Summary Act. 5**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
<b>PESTICIDES, HERBICIDES, AND FERTILIZERS</b>								
5a	Operate Household Hazardous Waste Facility	At least 1/quarter	•	•				
5b	Commercial Distributors – Public Information	Ongoing	X	•				
5c	Evaluate Metro Facilities Practices	PY 2		•				



**Table 3.6 Summary Act. 6**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
<b>ILLCIT DISCHARGES AND IMPROPER DISPOSAL</b>								
6a	Refine Ordinances and Enforcement Measures	PY 1 and PY 3	•					
6b	Update and Prioritize Dry- Weather Field Screening	PY 5						
6c	Illicit Discharge Investigations	Ongoing	•	•				
6d	Distribute Public Information to Residential/Commercial Areas	Ongoing	•	•				
6e	Evaluate Reporting for Sanitary Sewer Seepage	PY 1 and PY 3	•					



**Table 3.7 Summary Act. 7**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
<b>INDUSTRIAL AND HIGH RISK RUNOFF</b>								
7a	Data Management – Update Industrial Site Databases	Annually	•	•				
7b	Inspections	---						
	Refine procedures/criteria to prioritize sites	PY 1, PY 3, and PY 5	•					
	Train Inspectors	PY 2 and PY 4		•				
	Inspect Facilities	Once by PY 5	•	•				Ongoing
	Coordinate inspection and enforcement activities with TDEC staff	Ongoing	•	•				
	Report Inspection Locations	Ongoing	•	•				
7c	Restaurant Impacts – Report activities that reduce water quality impacts	Annually	•	•				



**Table 3.8 Summary Act. 8**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
<b>CONSTRUCTION SITE RUNOFF</b>								
8a	Ordinances, Regulations, and Guidance	---						
	Enforce existing ordinances and regulations	Ongoing	•	•				
	Refine procedures to enhance enforcement	PY 1 and PY 3	•					
	Evaluate and Update guidance materials	PY 1 and PY 3	•					
	Public Education	Ongoing	•	•				
	Require proof of coverage under the state’s construction general permit	Ongoing	•	•				
8b	Train Plans Reviewers and Inspectors	Annually	•	•				
8c	Records Management - EP&SC inspections	Ongoing	•	•				
8d	Plan Review and Inspection Resources	Ongoing	•	•				
8e	Evaluate Metro Activities	PY 2		•				



**Table 3.9 Summary Act. 9**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
<b>STREAM HABITAT IMPROVEMENT REPORT</b>								
9a	Report habitat improvement activities/projects	Annually	•	•				



**Table 3.10 Summary Act 10**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
<b>PUBLIC INFORMATION AND EDUCATION (PI&amp;E)</b>								
10a	Inform Public – General Housekeeping Procedures	Ongoing – at least one activity per year	•	•				
	Inform Home Owner Associations – Detention Pond Maintenance	Ongoing – at least one activity per year	•	•				
	Educate Engineering and Development Community – Long Term WQ Impacts	Ongoing – at least one activity per year	•	•				
	Inform Public – Pesticides, Herbicides, and Fertilizers	Ongoing – at least one activity per year	•	•				
	Inform Public – Oils and Hazardous Chemicals	Ongoing – at least one activity per year	•	•				
	Inform Public – Illicit Connections / Discharges	Ongoing – at least one activity per year	•	•				
	Educate Engineering and Development Community – Construction WQ Impacts	Ongoing – at least one activity per year	•	•				
	Other Not Yet Identified Opportunities	Ongoing – at least one activity per year	•	•				
10b	World Wide Web Site	----						
	Enhance Stormwater Website <sup>1</sup>	Ongoing	•	•				
	Provide Reporting Mechanism	Ongoing	•	•				
	Establish an Area Dedicated to Recognition	PY 4						

<sup>1</sup> Note that since the Cycle 2 permit was issued, the NPDES Section, along with the rest of the Stormwater Division, has relocated to Metro Water Services from Metro Public Works.



**Table 3.11 Summary Act 11.**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
<b>REPORTING REQUIREMENTS</b>								
11a	Compliance Report	End of each PY (+ 6 months)	•	•				Annually
11b	Propose Third Permit Cycle Activities	End of PY 4 (+ 6 months)						



**Table 3.12 Monitoring Summary Act**

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
<b>MONITORING</b>								
A	Ambient – 8 or more in-stream locations Sample each site at least 6 times annually	6X Annually (Bi-monthly)	•	•				Ongoing
B	Wet Weather – 3 or more in-stream locations Sample each site at least 2 times annually	2X Annually	X	•				Completed as part of Sevenmile Creek Master Plan
C	Industrial – Sampling based on inspections	As needed	•	•				No sites identified.
D	Bioassessment – Perform RPB III at 2 designated sites Perform RPB III at 1 or more reference sites	Annually	•	•				As inspections increase, sampling more likely.
D	Bioassessment – Refine Procedures	PY 1	•					Ongoing
D	Bioassessment – Perform “quick assessments” as necessary	Annually	•	•				
E	Loadings Estimate – Report EMC changes	PY 5						Ongoing
E	Loadings Estimate – Report annual volume and loading changes	Complete by end of PY 3						

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## 4.0 Narrative Report

This section of the annual report presents a discussion of the items depicted in the aforementioned Summary Tables (Section 3.0), including descriptions of studies, analyses, and investigations performed. In addition, similar activities that are difficult to quantify in the summary table are described in this section. The narrative report is subdivided according to the eleven program elements of the permit as listed in Permit Part III B. For each program element, this section includes a discussion of each objective, activities in permit year two, and a discussion of future direction activities that the MWS NPDES Section proposes for the full permit cycle.

An abbreviated summary table is presented prior to the activity narrative to facilitate review. Unless otherwise noted, June 30, 2005 will be used as a “cutoff date” or “to date” in reporting quantity-based SWMP progress. In the summary table, the required activities that were accomplished during the permit year are denoted by a bullet (●), while those activities not required during a permit year are shown for reference but are shaded (■).

### 4.1 Operation and Maintenance of Structural Controls (Part III.B.1)

The objective of this program element is to maintain an understanding of the collection system and its performance as a basis for maintenance activities that are intended to benefit stormwater quality. This program element focuses on optimizing the water quality benefits generated through the proper operation, inspection, and maintenance of the existing storm drainage system under the public domain. The proposed program element activity only pertains to stormwater infrastructure that directly and significantly impacts public infrastructure.

#### 4.1.1 Update Stormwater Infrastructure Inventory GIS (Part III.B.1.a.)

Contact Name: Michael Hunt, Stormwater NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
1a	Update Stormwater Inventory Geographic Information System (GIS)	Ongoing – by PY 4	●	●				

The object of this activity is to maintain the stormwater GIS system developed in the first cycle of the permit. The GIS system will be updated to show areas of new development, significant redevelopment, CSO separated areas, and Metro drainage construction/modification activities performed since the initial infrastructure inventory.

At the end of permit year 1, a full-time GIS employee was hired to, among other things, perform the necessary MS4 updates. During Permit year 2, MWS worked with consultants and internal staff to create a process by which the MS4 updates would occur. From this coordination, processes have been created to update the MS4 infrastructure to show Metro drainage improvements/modifications, areas of new development and significant redevelopment, and CSO separated areas. Some of the MS4 updates have already begun and will be more aggressively pursued during permit year 3. It is anticipated that the GIS system updates will be completed by the end of Permit year 4, of the second permit cycle.



**4.1.2 Existing System Maintenance (Part III.B.1.b.)**

Contact Name: Denny Bone, MWS Maintenance Section, 615.862.4537

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
1b	Continue Existing System Maintenance	Ongoing	•	•				

MWS stormwater maintenance section continued to maintain the existing public stormwater drainage infrastructure during permit year 2. Maintenance activities were performed on public infrastructure and on private infrastructure that directly impacted public infrastructure. The determination of maintenance service on private infrastructure was made on a case-by-case basis with potential projects identified through customer complaints and otherwise noted through MWS and/or NPDES MS4 permit-related activities.

The MWS Stormwater Division currently employs eight maintenance crews. The crews are assigned to large ditch maintenance, stormwater inlet construction, stormwater inlet cleanout, and stormwater masonry work. Maintenance work completed during most of the second permit year 2 is presented in Table 4.1.2.1.

MWS’ stormwater consultant, AMEC, investigates citizen complaints. During permit year 2, AMEC field personnel investigated 530 complaints (See Figure 4.1.2.1). Of these complaints, 30 were resolved by design of a Capital Improvement Project and 117 were closed for a variety of reasons some of which include the following:

- ❖ Not a stormwater issue;
- ❖ Not an issue of functionality;
- ❖ Not a government responsibility;
- ❖ A problem that no longer exists;
- ❖ Referred to another agency; or
- ❖ Referred to major capital improvement projects

In addition, during the last permit year, 40 complaints that were received during previous years were resolved through design of a project. The complaints that have not been resolved or closed remain open, awaiting review by an engineer for status determination based upon a pre-determined priority matrix.



**Table 4.1.2.1 Existing System Maintenance Activity Summary**

		Total	FY2002	FY2003	FY2004	FY2005
<b>Ditch Maint.</b>	Routine	639	137	352	84	66
	Complaint	1,134	0	203	557	374
	Class C	40	0	0	1	39
		<b>1,813</b>	<b>137</b>	<b>555</b>	<b>642</b>	<b>479</b>
<b>Walls &amp; HW</b>	Routine	125	22	75	17	11
	Complaint	417	0	45	211	161
	Class C	0	0	0	0	0
		<b>542</b>	<b>22</b>	<b>120</b>	<b>228</b>	<b>172</b>
<b>DW Pipes</b>	Routine	420	151	115	106	48
	Complaint	667	0	139	249	279
	Class C	0	0	0	0	0
		<b>1,087</b>	<b>151</b>	<b>254</b>	<b>355</b>	<b>327</b>
<b>Cross Drains</b>	Routine	355	85	118	74	78
	Complaint	329	0	80	135	114
	Class C	10	0	0	0	10
		<b>694</b>	<b>85</b>	<b>198</b>	<b>209</b>	<b>202</b>
<b>Flooding</b>	Routine	73	14	45	4	10
	Complaint	31	0	2	14	15
	Class C	2	0	0	0	2
		<b>106</b>	<b>14</b>	<b>47</b>	<b>18</b>	<b>27</b>
<b>Debris Removal</b>	Routine	150	39	59	26	26
	Complaint	101	0	44	29	28
	Class C	2	0	0	1	1
		<b>253</b>	<b>39</b>	<b>103</b>	<b>56</b>	<b>55</b>
<b>Erosion</b>	Routine	4	0	1	2	1
	Complaint	13	0	0	7	6
	Class C	1	0	0	0	1
		<b>18</b>	<b>0</b>	<b>1</b>	<b>9</b>	<b>8</b>
<b>Mud Removal</b>	Routine	22	4	3	8	7
	Complaint	11	0	0	3	8
	Class C	0	0	0	0	0
		<b>33</b>	<b>4</b>	<b>3</b>	<b>11</b>	<b>15</b>
<b>Misc</b>	Routine	1,441	35	420	590	396
	Complaint	264	0	94	95	75
	Class C	3	0	0	0	3
		<b>1,708</b>	<b>35</b>	<b>514</b>	<b>685</b>	<b>474</b>
<b>Inlet Maint.</b>	Routine	78,246	177	7,278	33,495	37,296
	Complaint	1,029	0	260	416	353
	Class C	5	0	0	0	5
		<b>79,280</b>	<b>177</b>	<b>7,538</b>	<b>33,911</b>	<b>37,654</b>
		<b>Total</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>	<b>FY2005</b>
Routine		81,475	664	8,466	34,406	37,939
Complaint		3,996	0	867	1,716	1,413
Class C		63	0	0	2	61
		<b>85,534</b>	<b>664</b>	<b>9,333</b>	<b>36,124</b>	<b>39,413</b>



**Figure 4.1.2.1 Complaint Investigation Photograph**



**4.1.3 Inspections of Dry Creek Detention Facility (Part III.B.1.c.)**

Contact Name: Denny Bone, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
1c	Inspections of Dry Creek Detention Facility	1 / quarter	•	•				

During permit year 2, the NPDES section transferred responsibilities for inspection and necessary maintenance to the MWS stormwater maintenance division. The maintenance crews inspected the Dry Creek detention facility once per quarter in accordance with the permit requirements. Figure 4.1.4 is a typical photograph of the debris that routinely accumulates on the outfall structure of the Dry Creek Reservoir.



**Figure 4.1.3.1 Typical Maintenance Need at Dry Creek Reservoir**



**4.1.4 Training (Part III.B.1.d.)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
1d	Staff Training	PY 2 and 4		•				

Metro recognizes that periodic training is critical to the success of the water quality program. During permit year 2, MWS, NPDES office began a rigorous training program for key inspection and maintenance staff from MWS and other Metro departments. The training was intended to educate staff on proper maintenance activities that avoid impacts to water quality and how to recognize and report an illicit discharge when observed in the field. Table 4.1.4.1 depicts the Metro maintenance departments that trained and the estimated number of persons trained. Figure 4.1.4.1 illustrates how the trainings were conducted. During permit year 3, MWS plans to expand the maintenance staff training to include Public Works maintenance crews, Codes Department inspectors, and Health Department inspectors.



**Table 4.1.4.1 Maintenance Staff Water Quality Training**

Department/Entity Trained	Date of Training	Estimated Number of Persons Trained
Stormwater Remedial Maintenance Section	May 26, 2005	60
Sanitary Sewer System Services Department	June 22, 2005	30
Public Works Solid Waste Haulers	June 23, 2005	45
Hudgins Disposal (Public Works Contractor)	June 28, 2005	15
Red River Disposal (Public Works Contractor)	June 29, 2005	30
<b>Total</b>		<b>180</b>

**Figure 4.1.4.1 Typical Maintenance Staff Water Quality Training**





**4.1.5 Maintenance Procedures (Part III.B.1.e.)**

Contact Name: Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
1e	Maintenance Procedures	PY 2 and 4		•				

The NPDES office has reviewed many of the maintenance procedures of different departments and have conducted trainings, mentioned in Section 4.1.4, that were designed to educate maintenance staff on avoiding water quality impacts. NPDES office has been providing oversight and insight to the Stormwater Maintenance Department on such things as the appropriate State and Federal permits needed and proper Erosion Prevention and Sediment Control (EPSC) measures to implement on maintenance jobs. NPDES has promoted final stabilization through the use of erosion control matting within the stormwater maintenance staff. Over the last permit year, MWS Stormwater Maintenance Department has increased the use of erosion control matting for stabilization on redial maintenance jobs. The use of erosion control matting has improved final stabilization and has helped to prevent erosion and sediment loss from remedial maintenance jobs. Figure 4.1.5.1 depicts the vast inventory of erosion control matting stormwater maintenance staff have obtained for use on maintenance jobs. Figure 4.1.5.2 depicts examples of routine maintenance ditch cleanouts that have been stabilized with erosion control matting.

**Figure 4.1.5.1 Stormwater Maintenance Erosion Control Matting Inventory**



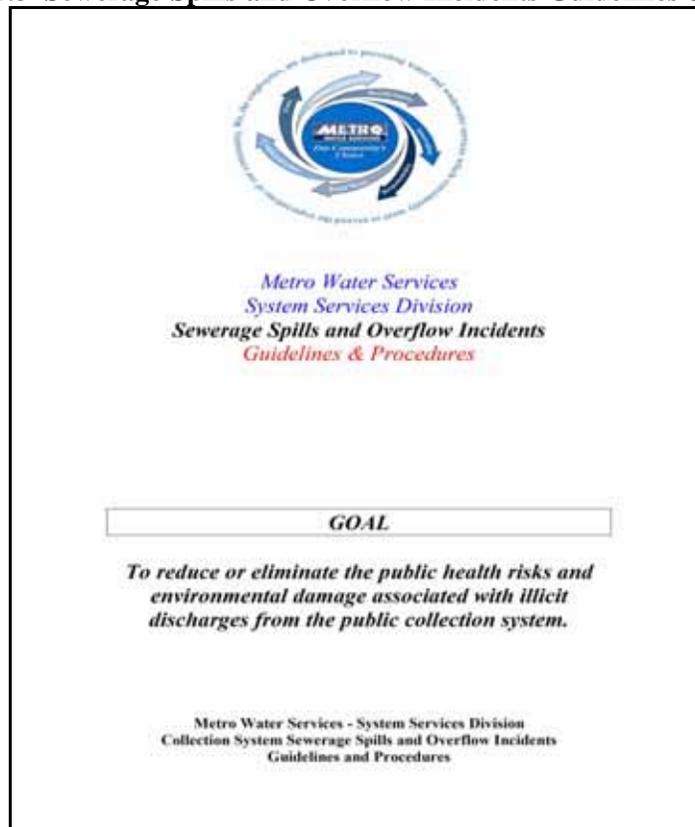


**Figure 4.1.5.2 Examples of Stormwater Routine Maintenance Jobs with Erosion Control Matting**



In addition, the NPDES office has been working closely with the MWS sanitary sewer systems services maintenance crews to create protocol that guides staff on the proper methods to remediate sanitary sewerage spills and overflows. Over Permit year 2, System Services and NPDES had developed the Sewerage Spills and Overflow Incidents Guidelines & Procedures technical document. Figure 4.1.5.3 depicts the cover page, while the complete guidance document is located in Appendix B.

**Figure 4.1.5.3 Sewerage Spills and Overflow Incidents Guidelines & Procedures**





In addition, MWS has begun a process to educate all Metro departments on proper land maintenance procedures that promote water quality-friendly practices. During the end of Permit year 2, NPDES created a brochure detailing proper land maintenance procedures for Metro departments. This brochure will be distributed to the appropriate Metro departments during Permit year 3. A copy of the brochure is attached in Appendix A.

**4.1.6 Housekeeping Programs (Part III.B.1.f.)**

Contact Name: Jenna Smith, Public Works Waste Management Division 615.862.8727

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
1f	Housekeeping Programs	Ongoing						

The Metro Nashville Waste Management Division (WMD) provides trash collection service to all residents in the Urban Service District (USD), all businesses in the USD and the Downtown Business District (DBD), and all apartments, public housing, and Metro government buildings within the USD. Monthly trash collection statistics for permit year 2 are presented in Table 4.1.6.1. The table represents WMD trash collection, contracted residential trash collection, and Convenience Center trash collection.

In an effort to promote waste reduction among residents and businesses in Nashville and Davidson County, DWM provides several opportunities for recycling. Metro has two convenience/recycling centers (941 Richard Adams Drive and 939 Anderson Lane) where residents can drop off waste and recyclables. During permit year 2, the convenience/recycle centers had approximately 102,353 citizens use the two centers producing 19,842.41 tons of garbage, 659.29 tons of scrap metal, and over 300 tons of recyclables. In addition, there are eight recycling drop-off centers located throughout the county:

- Bellevue MTA Park & Ride - Coley Davis Road & Highway 70 South
- Elysian Fields Kroger – 3955 Nolensville Road (9 AM ~ Noon Saturday ONLY)
- Hermitage Hobby Lobby – 4101 Lebanon Road
- Hillsboro High School – 3812 Hillsboro Pike
- Charlotte Center Strike & Spare – 3710 Annex Ave (corner of Charlotte Pike & Hillwood Blvd)
- Granbery Elementary School – 5501 Hill Road (9 AM ~ Noon Saturday ONLY)
- Joelton Middle School – 3500 Old Clarksville Highway
- Rivergate Recycling – 630 Myatt Drive

Brush collection service is provided by Metro Public Works. A route system is utilized to collect brush in the USD and General Services District. Residents of either area will have brush collected automatically at certain times every year. A collection map is available for residents to determine the dates of brush collection. Brush collection statistics are presented in Table 4.1.6.2.

The Household Hazardous Waste Center, discussed further in Section 4.5.1, allows residents to drop-off recyclable goods as well as refuse. The statistics of the waste and recyclables received are presented in Table 4.1.6.3.



During the permit year, most education within the WMD focused on the trash campaign. Metro replaced the old system of trash collection with an automated & semi-automated collection system, which included uniform 96 gallon trash carts (delivered to residences and small businesses in the USD). Staff worked on information packets that were placed on each trash cart, mailings, etc. Public information activities associated with Housekeeping Programs are also presented in Section 4.10.1.



**Table 4.1.6.1 Monthly Trash Collection Statistics**

<b>Program Type</b>	<b>Tons of Waste Collected</b>												
<i>Month</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<i>November</i>	<i>December</i>	<i>January</i>	<i>February</i>	<i>March</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>YTD</i>
Compost Program	6.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.24
Contracted Collection	6,717.65	6,291.34	6,036.96	5,969.76	6,335.92	7,302.48	6,780.17	5,585.43	7,319.58	7,284.78	7,383.33	7,705.73	80,713.13
Convenience/Recycling Centers	1,949.72	1,903.34	2,040.99	2,019.69	1,668.94	1,248.09	1,414.49	1,446.44	1,696.82	1,719.35	1,410.32	1,324.22	19,842.41
Downtown Business Collection	206.23	215.85	198.78	201.73	197.60	178.89	203.48	185.92	235.08	231.27	226.76	262.67	2,544.26
Front Loader Collection	2,556.35	2,472.53	2,490.41	2,379.68	2,446.34	2,676.44	2,245.17	2,208.98	2,615.65	2,380.53	2,377.08	2,565.62	29,414.78
Metro Collection	2,485.79	2,327.69	2,410.80	2,249.57	2,297.61	2,613.66	2,067.92	1,733.19	1,556.26	1,212.24	1,264.31	1,330.66	23,549.70
Trash Disposal	96.11	159.57	153.74	148.86	169.78	94.52	159.70	185.58	128.54	113.19	54.66	88.22	1,552.47
<b>Total Trash Tons</b>	<b>14,018.09</b>	<b>13,370.32</b>	<b>13,331.68</b>	<b>12,969.29</b>	<b>13,116.19</b>	<b>14,114.08</b>	<b>12,870.93</b>	<b>11,345.54</b>	<b>13,551.93</b>	<b>12,941.36</b>	<b>12,716.46</b>	<b>13,277.12</b>	<b>157,622.99</b>

**Table 4.1.6.2 Monthly Brush Collection Statistics**

<b>Program Type</b>	<b>Tons of Brush Collected</b>												
<i>Month</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<i>November</i>	<i>December</i>	<i>January</i>	<i>February</i>	<i>March</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>Grand Total</i>
Ungrounded Grapple Hook	1946.34	2102.55	1446.99	1432.5	1481.79	1383.05	983.45	1,129.97	1,516.26	571.52	512.90	652.53	<b>15159.85</b>
Ungrounded Rear Loaders	562.62	537.92	392.29	426.95	332.06	188.73	159.94	171.51	46.44	0.00	0.00	0.00	<b>2818.46</b>
Ungrounded Dropped Off	1201.78	670.66	487.38	464.21	388.37	385.31	427.60	98.99	611.58	563.25	819.71	595.88	<b>6714.72</b>
Ungrounded Contractor	-	-	-	-	-	-	-	-	-	1,303.52	1,491.17	1,736.55	<b>4,531.24</b>
Ground -- Dropped Off	258.01	204.91	187.01	151.87	114.71	115.95	105.91	438.91	178.55	140.90	134.34	183.48	<b>2214.55</b>
Leaves -- Metro	0.00	0.00	0.00	0.00	35.12	24.41	0.00	0.00	0.00	0.00	0.00	0.00	<b>59.53</b>
Leaves -- Dropped Off	0.00	0.00	0.14	3.53	74.22	79.43	27.98	5.16	4.95	4.55	2.12	2.35	<b>204.43</b>
<b>Total Brush</b>	<b>3,968.75</b>	<b>3,516.04</b>	<b>2,513.81</b>	<b>2,479.06</b>	<b>2,426.27</b>	<b>2,176.88</b>	<b>1,704.88</b>	<b>1,844.54</b>	<b>2,357.78</b>	<b>2,583.74</b>	<b>2,960.24</b>	<b>3,170.79</b>	<b>31,702.78</b>



**Table 4.1.6.3 Recycling Statistics in Tons**

MATERIAL	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	YTD
Convenience/Recycling Centers													
Aluminum & Tin	0.74	0.75	-	0.79	-	-	0.97	0.96	-	-	0.80	-	5.01
Glass	8.03	6.35	6.46	9.74	7.45	3.86	6.21	12.38	5.85	4.26	10.63	6.72	87.94
Mixed Paper	6.91	7.15	9.76	2.96	9.66	4.20	9.80	9.99	4.43	6.69	3.62	9.21	84.38
Mixed Paper & Aluminum	2.69	-	-	-	-	-	-	4.13	2.16	3.28	4.42	2.95	19.63
OCC	12.32	13.83	14.50	8.13	7.18	11.48	1.51	12.04	7.26	9.07	13.77	12.42	123.51
Plastic	1.70	2.09	2.16	1.75	2.05	2.03	1.61	2.10	1.71	1.45	2.57	1.07	22.29
Refuse	1,324.22	1,949.72	1,903.34	2,040.99	2,019.69	1,668.94	1,248.09	1,414.49	1,446.44	1,696.82	1,719.35	1,410.32	19,842.41
Scrap Metal	75.02	96.64	103.19	51.28	53.88	53.11	30.95	49.02	25.79	31.31	35.15	53.95	659.29
<b>Total Recyclables</b>													<b>1,002.05</b>
Household Hazardous Waste													
Antifreeze	0.30	-	-	-	-	-	-	-	-	1.00	0.40	-	1.70
Car Batteries	3.14	-	-	-	-	-	-	1.25	1.09	2.58	3.36	2.69	14.11
Consumer Batteries	-	-	-	-	-	-	-	0.04	-	-	0.03	-	0.07
Electronics	2.39	-	-	-	-	-	-	1.59	-	-	1.98	-	5.96
Other HHW	6.82	-	-	-	-	-	-	21.34	-	-	-	18.49	46.65
Paints and Paint Thinners	21.92	30.59	14.51	-	-	-	72.13	-	-	53.28	-	23.13	215.56
Tanks	0.37	-	-	-	-	-	-	-	-	0.74	0.33	0.37	1.81
Used Motor Oil	2.50	-	-	-	-	-	-	1.20	0.90	1.00	2.40	1.10	9.10
<b>Total</b>													<b>294.96</b>
Drop Off Recycling Centers													
Aluminum & Tin	7.80	5.30	8.91	7.92	9.96	9.68	8.91	10.33	8.85	8.44	8.46	8.15	102.71
Glass	82.22	87.22	72.98	74.05	91.12	73.85	64.43	94.09	72.66	82.66	84.79	84.69	964.76
Mixed Paper	215.80	185.58	183.46	179.35	215.34	217.55	202.49	229.95	187.02	202.29	200.84	232.97	2,452.64
Newspaper	-	17.19	-	-	-	-	-	-	-	-	-	-	17.19
OCC	78.34	-	-	0.21	0.28	6.38	72.75	90.01	67.68	78.06	74.46	84.87	553.04
Plastic	19.76	21.08	24.40	25.74	26.00	21.87	22.09	32.06	19.78	22.87	20.43	22.05	278.13
Plastic Bottles & Metal Cans	7.47	-	-	1.51	4.75	4.86	9.57	11.54	8.60	10.51	9.83	9.26	77.90
<b>Total</b>													<b>4,446.37</b>



**4.1.7 Stormwater Detention/Retention Facilities (Part III.B.1.g.)**

Contact Name: Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
1g	Stormwater Detention / Retention Facilities	PY 2		•				

Metro recognizes that planning and acting upon an understanding of location and function of stormwater detention/retention facilities is important to managing water quantity and quality concerns. Metro intends to adopt a long-term operation and maintenance strategy for detention/retention facilities, which will include educating the public on proper maintenance procedures/schedules for privately owned facilities as well as inspecting and enforcing on improperly functioning detention/retention structures. During Permit year 2, MWS conducted a Pilot Best Management Practices (BMP) inspection/enforcement study on detention/retention devices. Currently, Metro Nashville has nearly 2,000 BMPs that were constructed across the county from the 1970's to the current. MWS implemented the pilot study to determine how many BMPs would be expected to have maintenance issues and the type of maintenance required to bring the structures back into compliance so they are functioning properly. MWS inspected 100 BMPs and found that the overwhelming majority of structures were out of compliance to the point of needing maintenance to function as they were originally designed. In addition, follow-up coordination/enforcement with the parties responsible for structure maintenance proved to be very time-consuming. Based on these findings, MWS is currently reassessing the BMP inspection program. MWS will likely develop a strategy to focus inspection and coordination on more recently installed BMPs. The older BMPs will likely be addressed through public education and a prioritization procedure.

In addition, due to the recent increase of West Nile Virus cases resulting from mosquito bites, the NPDES office along with the Metro Health Department and the Mayor's Office developed a task force in 2002 to regulate and inspect structures that could provide mosquito breeding grounds. NPDES involvement in this initiative has mainly related to the maintenance of stormwater detention facilities. The NPDES program is currently addressing mosquito breeding in detention structures through inspection, engineering, and education.

**4.1.8 Future Direction of Element 1 - Operations and Maintenance of Structural Controls**

Update Stormwater Infrastructure Inventory (GIS format)

The GIS system will be updated to represent areas of new development, significant redevelopment and Metro drainage construction/modification activities performed since the initial infrastructure inventory. The NPDES office will make every effort to update the MS4 entirely by the end of permit year 4.

Existing System Maintenance

The MWS stormwater maintenance section will continue to maintain the existing public stormwater drainage infrastructure throughout the third permit year, in accordance with the decision matrix developed by MWS. It was originally anticipated that all maintenance activities will be reincorporated into Metro Water Services from AMEC Earth & Environmental during Permit year 2. However, due to MWS staff



needs, AMEC Earth and Environmental will continue to provide project design and construction oversight to some stormwater maintenance projects during Permit year 3.

#### Inspections

Metro will continue to inspect the Dry Creek Detention Facility at least once per quarter. Any other detention/retention facilities that come under Metro ownership will be inspected and maintained accordingly.

#### Training

The NPDES will expand upon the comprehensive training program within MWS and other Metro departments so that maintenance crews have a complete understanding in water quality issues as they relate to maintenance procedures, as well as identifying and reporting illicit discharges.

#### Maintenance Procedures

The NPDES Section will continue to look for opportunities to promote changes to maintenance procedures for all Metro departments that provide benefit to water quality.

#### Housekeeping Programs

The Department of Public Works will continue the existing housekeeping programs as a part of its ongoing waste management program.

#### Stormwater Detention/Retention Facilities

MWS will continue to utilize and update the GIS based database that has been created of all stormwater detention/retention facilities. Due to the findings of the Pilot BMP, MWS is currently reassessing the inspection and compliance program. Staff resources and future inspections/enforcements on detention/retention facilities will likely be focused on more recently installed structures. A public education strategy will be implemented with hopes of bringing the older structures into compliance.



## 4.2 Control of Discharges from Areas of New Development and Significant Redevelopment (Part III.B.2.)

The goal of this portion of the SWMP is to satisfy the requirements of Permit Part III.B.2. This section was designed to minimize the long-term impacts of new development and significant redevelopment on water quality. Specific activities include enforcing ordinances and regulations that are supported by guidance materials for the proper placement of BMPs and educating local stakeholders about their roles in minimizing long-term water quality impacts.

### 4.2.1 Ordinances, Regulations and Guidance (Part III.B.2.a.)

Contact Name: Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
2a	Ordinances, Regulations, and Guidance	----						
	Enforce Existing Ordinances and Regulations intended to limit long-term water quality impacts	Ongoing	•	•				
	Public Education	Ongoing	•	•				

### Ordinances, Regulations, and Guidance

During the last permit year, MWS continued the process of identifying needed changes to the stormwater ordinance and design manual. Some of the changes MWS is recommending and hopes to include in the revised Stormwater Management Plan included:

- Tightening buffer requirements;
- Streamlining enforcement;
- Promoting Low Impact Development;
- Redefining stormwater quality program goals and requirements;
- Examining floodplain management and detention policies; and
- Better defining program responsibilities.

### Enforce Existing Ordinances and Regulations

The NPDES office has continued to enforce the provisions of the existing stormwater regulations. Table 4.2.1.1 presents the documented enforcements conducted since 2002, while table 4.2.1.2 depicts the administrative penalties issued in the program's history. It is important to note that SWOs and NOV's are issued on the same enforcement letter. SWOs are reserved for sites with more significant stormwater issues, in which an on-going activity is causing an illicit discharge or other stormwater violation. There were a total of 197 enforcements issued and \$43,550 of administrative penalties issued in permit year 2.



**Table 4.2.1.1 NPDES Enforcement Cases**

Time Frame	Notices of Violation	Stop Work Orders
April 2002 – June 2002	11	1
July 2002 - June 2003	47	23
July 2003 - June 2004	132	96
July 2004 - June 2005	151	46
<b>Totals</b>	<b>341</b>	<b>166</b>

**Table 4.2.1.2 Enforcement Penalties Issued**

Month	NOV	SWO	Monthly Total
Dec-03	\$2,900	\$2,000	\$4,900
Jan-04	\$3,500	\$1,600	\$5,100
Feb-04	\$1,650	\$3,100	\$4,750
Mar-04	\$2,850	\$4,00	\$3,250
Apr-04	\$2,800	\$4,450	\$7,250
May-04	\$2,450	\$2,000	\$4,450
Jun-04	\$3,700	\$4,400	\$8,100
Jul-04	\$3,300	\$1,800	\$5,100
Aug-04	\$3,500	\$3,300	\$6,800
Sep-04	\$2,350	\$1,000	\$3,350
Oct-04	\$3,450	\$1,800	\$5,250
Nov-04	\$7,200	\$1,200	\$8,400
Dec-04	\$200	\$400	\$600
Jan-05	\$1,000	\$1,100	\$2,100
Feb-05	\$1,100	\$1,400	\$2,500
Mar-05	\$3,900	\$0	\$3,900
Apr-05	\$1,100	\$300	\$1,400
May-05	\$1,000	\$1,600	\$2,600
Jun-05	\$750	\$800	\$1,550
<b>PY 2 Total</b>	<b>\$28,850</b>	<b>\$14,700</b>	<b>\$43,550</b>
<b>Grand Total</b>	<b>\$48,700</b>	<b>\$32,650</b>	<b>\$81,350</b>



**Public Education**

Metro believes that in order to have a successful stormwater program, the public, as a whole, should be supportive of the program. Metro believes program support can be gained by providing an opportunity for the public to be involved in policy decisions. During Permit year 2, MWS completed a series of meetings with the Stakeholders Group for purposes of revising stormwater management regulations. The Stormwater Regulation Review Committee (SR2C) includes representatives from the following community sectors:

- Elected officials (Council members);
- Development community;
- Engineering community;
- Environmental community; and
- General public.

A total of 13 SR2C meetings were held for purposes of educating the stakeholders on proposed changes to the grading permit process as well as to receive input on the regulations revisions process. Twelve of the meetings were held during Permit year 2. MWS is currently in the process of incorporating stakeholder feedback into regulation revisions.

**4.2.2 Stormwater Best Management Practices (Part IILB.2.b.)**

Contact Name: Danny Smith; Dale Binder MWS Engineering Section, 615.862.4799; 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
2b	Report BMP Monitoring and Considerations	Annually	•	•				

During Permit year 2, MWS began monitoring a few different types of BMPs to determine their effectiveness. Table 4.2.2.1 presents the data that was collected two different facilities. The two BMPs that were monitored received similar type of stormwater runoff from commercial parking lots. One of the BMPs was a typical detention pond, while the other consisted of an underground oil skimmer box. The data indicated that the detention pond was effective in reducing Total Suspended Solids (TSS) as well as oil and grease. The underground detention/oil skimmer box did not show a reduction in TSS, while the data was inconclusive on oil and grease.

**Table 4.2.2.1 BMP Monitoring Data**

Sample Location/Type	Sample Date	Inflow/Outflow	Volatiles	Oil & Grease	TSS
Commercial Parking Lot Detention Pond	4/22/05	Inflow	<0.0005mg/L	8mg/L	12mg/L
	4/22/05	Outflow	<0.0005mg/L	<5mg/L	7mg/L
Commercial Parking Lot Oil Skimmer Box	4/28/05	Inflow	<0.0005mg/L	<5mg/L	36mg/L
	4/28/05	Outflow	<0.0005mg/L	<5mg/L	36mg/L



MWS also recognizes that regional facilities and the facilities retrofitted to improve pollutant capture efficiencies are important to the long-term success of an MS4 program.

**4.2.3 Master Planning (Part III.B.2.c.)**

Contact Name: Danny Smith, MWS Engineering Section, 615.862.4799

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
2c	Master Planning	PY 2 and 5		•				

Master planning is essential to the long-term success of a water quality management program. NPDES understands that the Metro Planning Department is a critical facilitator in this area and in related processes. Therefore, NPDES intends to work closely with Metro Planning Department staff in the upcoming permit years to help facilitate this process as well initiate internal Master Planning activities within the Stormwater Division as it relates to overall Stormwater quality and quantity considerations. During Permit year 2, MWS staff met with the Planning Commission and members of the Planning Department for purposes of educating staff on the overall Stormwater NPDES program and to promote the consideration of Low Impact Development LID techniques. Toward the end of permit year 2, an environmental engineer from the NPDES section was appointed to serve as a liaison to the Planning Department. The specific duty of the liaison will be to promote the importance and inclusion of LID techniques for future development requirements. In June of 2005, the liaison held a seminar promoting the use of LID to different members of varying departments within Metro government.

In an effort to increase master planning of stormwater quality and quantity considerations, Metro is coordinating efforts with the U.S. Army Corps of Engineers to perform a Mill Creek watershed study. The product of the study should include a model that could be applied across the county to determine the type of water quality treatment for purposes of filtering first flush events. The model would aid Metro in determining different watershed prioritizations across the County that could be referenced in planning development.

**4.2.4 Training (Part III.B.2.d.)**

Contact Name: Danny Smith, MWS Engineering Section, 615.862.4799

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
2d	Training	Annually	•	•				



MWS believes firmly in technical training of stormwater plan review and inspector staff on latest techniques and management practices to address long-term water quality. Table 2.5.1 in Section 2 of this document depicts the technical training that MWS stormwater staff received during permit year 2.

MWS stormwater inspectors and engineers have received Level 1 EPSC training from TDEC. Level 1 training is a foundation-building course intended for individuals involved in land-disturbing activities covered by TDEC's Construction General Permit, including inspection and enforcement personnel from all levels of government, plan preparers and reviewers, designers, and engineers. The course gives participants a solid working knowledge of erosion and sedimentation processes and practices. Most of the MWS stormwater plan review engineers have received the Level 2 EPSC training is an advanced two-day course that is specifically designed for engineers, environmental designers, and plan preparers and reviewers. In the Level 2 course, detailed instruction is given on the engineering technologies needed to control stormwater on a construction site. Workshop participants obtain the tools needed to develop an acceptable, working erosion and sediment control plan as described in TDEC's Tennessee Erosion & Sediment Control Handbook and required by the Tennessee General Construction Stormwater Permit.

#### **4.2.5 Future Direction of Element 2** **Ordinances, Regulations, and Guidance**

MWS will continue to take steps toward more effective enforcement of local regulatory mechanisms in order to enhance water quality. The revisions to the Stormwater Management Manual devised through the SR2C process should go into effect during permit year 3. Even after the implementation of the revised regulations, MWS will continue to review the effectiveness of the regulations and reserve the right to provide updates when deficient areas are encountered.

#### **Best Management Practices (BMPs)**

MWS recognizes that regional BMP facilities and the facilities retrofitted to improve pollutant capture efficiencies are important to the long-term success of an MS4 program. The MWS Stormwater Division Maintenance Staff will continue to inspect stormwater BMP structures in the upcoming permit years. MWS intends to perform more monitoring so that the more effective BMPs can be recognized and promoted. Any such monitoring data will be included in future annual reports.

#### **Master Planning**

MWS recognizes that master planning is essential to the long-term success of a water quality management program. MWS also understands that the Metro Planning Department is a critical facilitator in this area and related processes. Therefore, MWS intends to work closely with Metro Planning Department staff in the upcoming permit years to help facilitate the long-term planning process that promotes development responsible to stormwater quality.

#### **Training**

MWS will continue to train the plan review and inspection staff on revisions and changes resulting from the regulations revision process with the SR2C. Additionally, MWS will continue to look for opportunities to train grading permit plan reviewers on the latest techniques and management practices to address long-term water quality issues. MWS will also provide training for the development community on stormwater program changes, such as those resulting from the regulations revision process.



**4.3 Roadway Maintenance (Part III.B.3.)**

The objective of this section is to satisfy Part III.B.3 by reducing impacts to stormwater runoff from roadways. This objective is accomplished by examining several programs including catch basin cleaning, downtown street sweeping, management practices for the use of deicing chemicals, stormwater controls at salt storage areas, management practices in the use of herbicides, and spill response. Furthermore, roadway design criteria, construction requirements, and street maintenance responsibilities were explored.

**4.3.1 Catch Basin Cleaning (Part III.B.3.a.)**

Contact Name: Denny Bone, MWS Maintenance Section, 615.862.4537

	Activity	SWMP Schedule	1	2	3	4	5	Comment for PY 2
3a	Prioritize catch basin cleaning activities	PY 1	•					
	Report catch basin cleaning activities	Annually	•	•				

MWS Stormwater Maintenance Section has continued the basic program of catch basin cleaning into the second year of the Cycle 2 permit. The Stormwater Maintenance Section has added additional staff to facilitate cleaning of more inlets and other stormwater structures. The Stormwater Maintenance Section cleaned out over 37,000 catch basins during the permit year 2, which is more than 3,500 than Permit year 2. Table 4.3.1.1 presents the statistics on catch basin cleaning from year 4 of the first NPDES permit cycle through year 2 of the second permit cycle. The increase in the number of catch basins routinely cleaned as well as the number cleaned in response to complaints can be noted.

**Table 4.3.1.1 Catch Basin Cleaning**

Type of Maintenance	Permit year 4 Cycle 1	Permit year 5 Cycle 1	Permit year 1 Cycle 2	Permit year 2 Cycle 2	Total Since Tracking Began
Routine	177	7,278	33,495	37,296	78,246
Complaint	0	260	416	353	1,029
Class C	0	0	0	5	5
<b>Total</b>	177	7,538	33,911	37,654	79,280

The Stormwater Maintenance Section uses two trucks mounted with a pressure wash and vacuum system to clean catch basins. They are used daily to clean storm inlets and pipes that are clogged. Maintenance crews perform inspections for required cleanings and are on call to address other reports of clogged inlets as they are received.



**Figure 4.3.1.1 Vactor Truck**



**4.3.2 Downtown Street Sweeping (Part III.B.3.b.)**

Contact Name: David Himes, MDPW Streets Services Division, 615.862.8716

	Activity	SWMP Schedule	1	2	3	4	5	Comment for PY 2
3b	Downtown street sweeping	Ongoing	•	•				

The Department of Public Works is responsible for downtown street sweeping and has set a goal of sweeping approximately 1,400 miles of street a month. During permit year 2, Public Works exceeded their goal by sweeping approximately 18,140 miles of street, which averages over 1,500 miles of streets swept per month. Public Works collected and disposed of approximately 4,071 tons of debris that had collected on the street and would have otherwise drained to the storm drains. Public Works policy also strides to sweep every curbed and guttered street once per month. Metro will continue to review the procedures associated with these programs to benefit stormwater runoff quality.

**4.3.3 Deicing Practices (Part III.B.3c.)**

Contact Name: David Himes, MDPW Streets Services Division, 615.862.8716

	Activity	SWMP Schedule	1	2	3	4	5	Comment for PY 2
3c	Evaluate Metro application and storage practices and Report modifications	PY 1 and 3	•					

The management practices for deicing chemicals storage and application practices were first addressed in the 1992 Part 2 Application. Since then, many initiatives have been undertaken that have minimized the water quality impacts of roadway salt application, which is required, on occasion, during the winter months to create safer driving conditions in Davidson County. Specific aspects of this program are summarized below.

Prior to the formation of the NPDES Program, Public Works conducted a series of studies to determine the safest, most effective, and most economical roadway deicing agent available. These studies



concluded that salt was the best deicing agent alternative for Metropolitan Nashville and Davidson County. MDPW has since initiated Brine De-Icing of the roadways prior to winter storms to prevent ice from binding to the roadway. This preventative measure has resulted in a reduction of the total amount of salt applied directly to the roads. Brine de-icing can be applied at a much lower rate with successful results, thus reducing chlorides in stormwater runoff and cutting salt usage costs.

### MDPW Maintenance Section Salt Usage

Salt costs Metro approximately \$33 per ton. Metro prepares for each winter season with approximately 8,000 tons of salt in storage, with any unused salt held until the next year. Metro Public Works currently receives its salt in 1,500-ton barge loads, which is transferred to three strategically located, covered bins. During the 2004-2005 winter season, approximately 25,561 gallons of brine solution and 2,032 tons of salt were applied to the roadways in Davidson County. Icy weather conditions have occurred infrequently in Davidson County over the past few years, and consequently MDPW has abundant salt reserves that must be stored. Closer attention has been given to management practices applied at salt storage bins.

### Salt Storage Facilities

Metro currently has three salt storage facilities. They are located at Public Works East Center, Public Works West Center, and at the Smith Springs Facility. Brine solution is created at the South 5<sup>th</sup> facility and then stored in sealed units at each of the sites. All three sites have concrete bins in which the salt is stored, making impacts to stormwater runoff non-existent if salt is not tracked outside of the bin areas. Each site has operating procedures aimed at eliminating and/or cleaning up salt tracked from the bins. MWS NPDES Section personnel periodically inspect the three bin sites, using the form presented in Figure 4.3.3.1 to monitor the effectiveness of these procedures. Any observed deficiencies are reported to the proper MDPW officials. Results of inspections performed during Permit year 2 are found in Table 4.3.3.1.

Figure 4.3.3.1 Example Salt Bin Inspection Form

ID	Date of Inspections	Inspection Represented	Inspector(s)
		Public Works East Center	
		Public Works West Center	
		at I-24/Briley Parkway (old Everett Rock Quarry)	
		EC Re-inspection needed	
		EC-If yes, notify David Himes:	
		EC-Reinspection Date	
		EC-Reinspection notes	
		WC-Re-inspection needed:	
		WC-If yes, notify David Himes:	
		WC-Reinspection Date	
		WC-Reinspection notes	
		I-24-Re-inspection needed:	
		I-24-If yes, notify David Himes:	
		I-24-Reinspection Date	
		I-24-Reinspection notes	



**Table 4.3.3.1 Salt Bin Inspections Results**

Date of Inspections	Public Works East Center	Public Works West Center	I-24/Briley Parkway old Everett Rock Quarry	Public Works Smith Springs
19-Jun-03	Bin 1/4 full, no sign of discharge or loss. Salt completely covered.	Bin 1/2 full, no sign of discharge or loss. Salt completely covered.	Bin empty of salt. Being used as storage of Averitt equipment and supplies. No signs of discharge.	
22-Oct-03	Bin 1/4 full, no sign of discharge or loss. Salt completely covered	Bin 1/2 full, no sign of discharge or loss. Salt completely covered.	Will not be used this year per David Himes.	Bin 3/4 full, no sign of discharge or loss. Salt completely covered. (added this bin this fall)
19-Dec-03	Bin full. Trace of salt exposed. No evidence of discharge.	Bin full. Trace of salt exposed. No evidence of discharge.	Not in use.	Bin full. Trace of salt exposed. No evidence of discharge.
15-Jan-04	Bin full. No evidence of discharge.	Bin full. Trace of salt exposed. No evidence of discharge.	Not in use.	Bin full. Trace of salt exposed. No evidence of discharge.
20-Feb-04	Bin full. No exposed salt.	Bin full, some exposed salt. Salt spilled at parking and drive.	Not in use.	Bin full, some exposed salt. Signs of salt being washed away.
24-Mar-04	Bin full. No exposed salt.	Bin full. No exposed salt.	Not in use.	Bin full. No exposed salt.
21-May-04	Bin full. No exposed salt.	Bin full. No exposed salt.	Not in use.	Bin full, some exposed salt. Signs of salt being washed away.
30-Jul-04	Bin full. No exposed salt.	Bin full. No exposed salt.	Not in use.	Bin full. Minor exposed salt. No signs of washing away.
28-Oct-04	Bin full. No exposed salt.	Bin full. No exposed salt.	Not in use.	Bin full. No exposed salt.
27-Apr-05	No exposed salt.	No exposed salt.	Not in use.	Exposed salt.
25-Jul-05	No exposed salt.	No exposed salt.	Not in use.	Small amount of exposed salt.

**Salt and Brine Application Control**

In 1996, spreader control systems were installed on all Public Works spreader trucks. These systems consist of a computer that dictates the salt spread rate based on a pre-set application rate (determined by the severity of weather conditions) that corresponds to truck speed. This means that as the trucks slow down or stops the salt spreader slows or stops correspondingly, reducing the amount of salt that is wasted or over-applied. The spread rates used follow nationally recognized spread rates. This computer-aided system has resulted in a 25% annual reduction in salt use. It is reasonable to assume that these reductions are realized each salt application season. In addition, MDPW has added additional trucks to apply a brine solution at a continuous rate on the roadways of predetermined routes in anticipation of possible icy



conditions. This further reduces the need to apply salt directly to roadways. Reducing direct salt application also helps prevent road damage due to salt application, and creates a reduction in the possible consequences of water quality.

**Automated Road Data**

Metro can access automated data from five roadway sensor-sampling sites that supply real-time data (road surface temperature, moisture, subsurface sensor at 18 inches, salt brine percentage, and weather conditions including: temperature, wind speed, dew point, percent humidity) to the main Public Works office. Metro uses this information to determine when salt or brine application needs to begin (road surface temperature registers at or near 32° F) or when salt needs to be reapplied to roads that have already been salted (roadway salt solution percentage drops below the known level needed to prevent ice from forming/reforming). Additionally, Metro subscribes to a real-time weather radar service that allows officials to be more accurate in predicting when and if frozen precipitation is to begin. This prevents the unnecessary application of salt in cases where expected snow or ice does not develop or move into Davidson County as predicted.

Salt and brine application controls and real-time road data have been instrumental in allowing Metro to better manage salt application in areas where water quality can be greatly affected by careless deicing practices, such as bridges located in close proximity to water bodies, waterways, or conveyances. Metro coordinates with the Corps of Engineers on icy roadway conditions on the Bell Road bridge over Percy Priest dam. The Corps of Engineers does not want salt applied to the section of road over the dam. Instead, this section of road is closed during hazardous driving conditions.

**Metro’s Salt Application Area**

The State of Tennessee’s Department of Transportation (TDOT) is responsible for both the Interstate and State Highway systems. In actuality, the State only has the resources to salt the Interstate system and approximately one-half of the State Highway system within Davidson County. Therefore, Public Works currently salts the other half of the State Highway system and all major Metro roads. Public Works has formulated a list of roads within Davidson County that are the most problematic during icy conditions. These roads are the first to receive salt with other roads being salted as deemed necessary by Public Works, based on information received from the Police Department, other Metro Departments, citizens, etc.

**4.3.4 Herbicides, Pesticides, and Fertilizers (Part III.B.3.d.)**

Contact Name: Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
3d	Evaluate Herbicides, Pesticides, and Fertilizers application and storage practices	PY 1 and PY 3	•					

During the formative stages of Metro's MS4 NPDES permit program, evaluations of the applications and storage practices of herbicides, pesticides, and fertilizers were focused on Metro Public Works, where



NPDES Office staff initially served. During the investigation of usage practices there, it was determined that little, if any, routine usage of these substances occurred. The same situation is also true for Metro Water Services, where NPDES Office staff currently serves. During permit year 2, the NPDES Section decided to focus on educating all Metro departments (not just road maintenance crews) on the proper application of pesticides and herbicides. As mentioned in Section 4.1.5, the NPDES office put together a brochure that details appropriate chemical application processes. In the course of permit year 3, the NPDES office will work on distributing this brochure to various Metro departments. A copy of the brochure is attached to Appendix B.

**4.3.5 Spill Response Program (Part III.B.3.e.)**

Contact Name: Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
3e	Report on Spill Response Program	Annually	•	•				

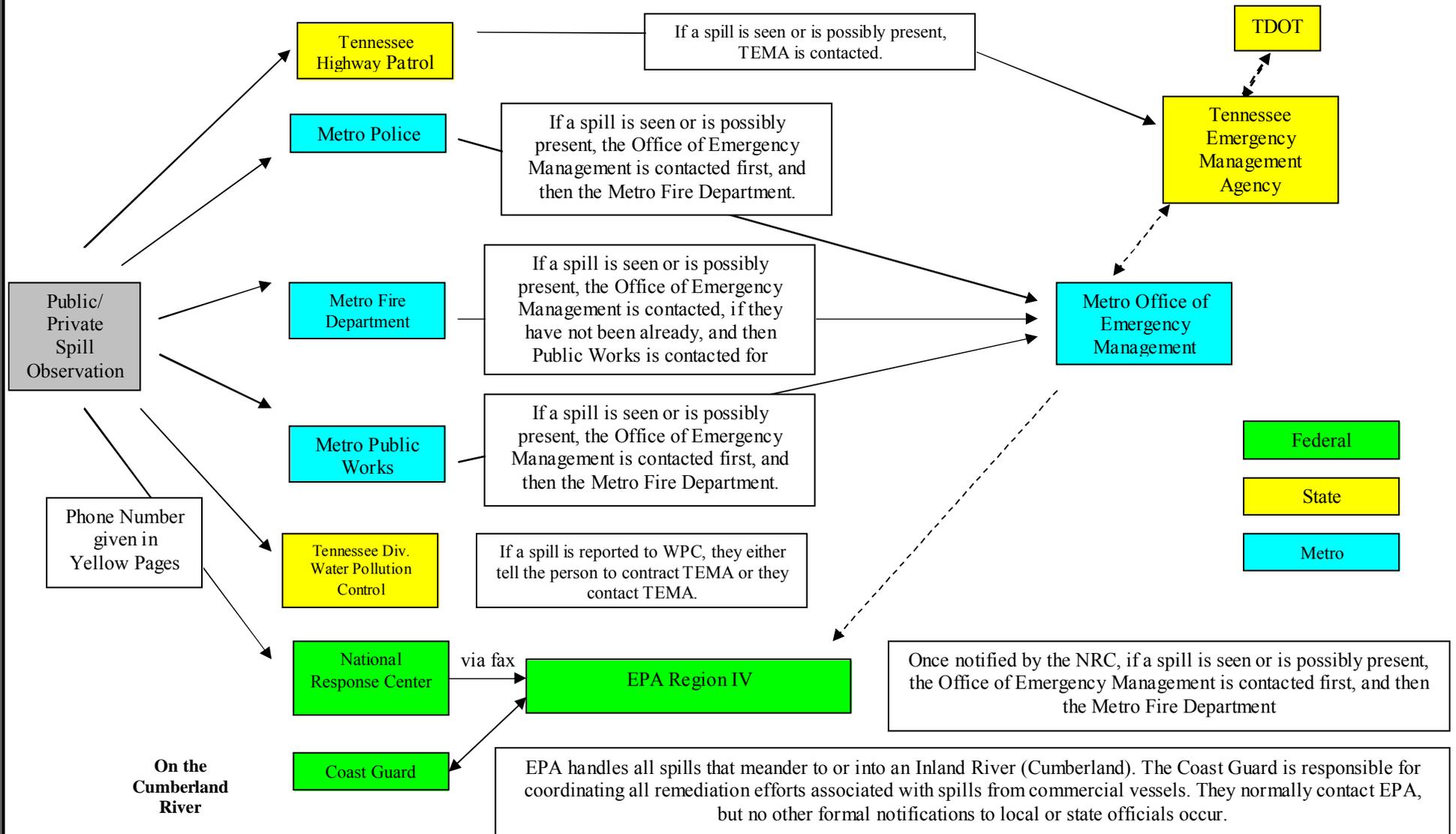
The Metropolitan Nashville and Davidson County Emergency Management Plan (EMP) has developed policies and procedures to coordinate multi-departmental response and recovery from spill incidents. In the Nashville-Davidson County area, small-scale emergencies are typically managed on the scene. Primary responsibility varies among the different agencies depending upon the type of incident. The principal agency should be responsible for taking control of the on-the-scene management of the incident by directing rescue, recovery, and control. The primary HAZ-MAT responsibilities fall to the Fire Department (Hazard 12 unit) with Public Works contributing two HAZ-MAT teams and Water Services contributing one HAZ-MAT team. Principal agency assignments are explained in detail within the EMP. If more than one Metro agency is involved, coordination of overall emergency management related activities is done through the Office of Emergency Management (OEM).

Figure 4.3.5.1 illustrates the order of response and communication protocol. The EMP calls for the Fire Department to be the first contact in the event of a spill. The Fire Department responds, assesses the situation, notifies OEM, and calls Public Works HAZ-MAT to either perform the cleanup or to notify remediation contractors if the scope of the spill is greater than Public Works can address. The response times for all Fire Department locations in the county are estimated to be less than four minutes. The HAZ-MAT team is able to respond throughout the county within six to ten minutes. The NPDES office has someone on call 24 hours a day, 7 days a week, to respond to spills from internal notifications or from OEM that are believed to involve stormwater. During permit year 2, the NPDES office had to respond to approximately 18 spill calls during non-business hours. Spill calls that are received and responded to during normal business hours are treated as water quality complaints/illicit discharge investigations.

In addressing spill areas, the policy for the Fire Department is to no longer wash spills into the MS4. Instead, bag absorbents are used to capture and/or stabilize the spill material. Public Works HAZ-MAT teams are notified that an absorbent has been applied. Public Works HAZ-MAT team then removes and disposes of the absorbent material in a timely manner. If the party responsible for the spill can be identified, Metro seeks compensation for the remedial activities. If identification of the responsible party is impossible, the costs of remedial services are borne by the Public Works.



Figure 4.3.5.1 Metro EMP Order of Response and Communication Protocol for Spills





Spills that occur at locations allowing rapid migration into waterways or conveyances would represent a potentially severe threat to water quality in Davidson County. Such spill locations would include sites in the proximity of creeks or streams, sites from which closed impervious stormwater sewer systems route directly to creeks or streams, spills from mobile vehicles on or near waterway bridges, and spills from vessels on waterways. In looking at specific industry types that have the greatest likelihood of having an impact on water quality, companies that transport large volumes of chemicals on a routine basis such as railroad, trucking, and barge companies would be considered to present the greatest threat of an impacting spill. Any companies that handle or utilize chemicals and/or compounds that are extremely poisonous, hazardous, toxic, etc. would also be considered to pose a threat to water quality and should have sophisticated spill prevention measures in place. The NPDES Program gives special attention to these and all industries during inspections and complaint investigations to ensure that necessary precautions are taken at each site to prevent spills from impacting water quality.

Historical spill data for Davidson County indicates that the majority of spills do not generally pose an immediate threat to “Waters of the State”. Most spills did not reach waterways or conveyances such that water quality impacts to “Waters of the State” occurred. However, the NPDES Program will continue to monitor spill trends within the county and will remain ready to take necessary actions to address pertinent spill issues. Figure 4.3.5.2 depicts some photos of typical spills the NPDES office staff have responded to.

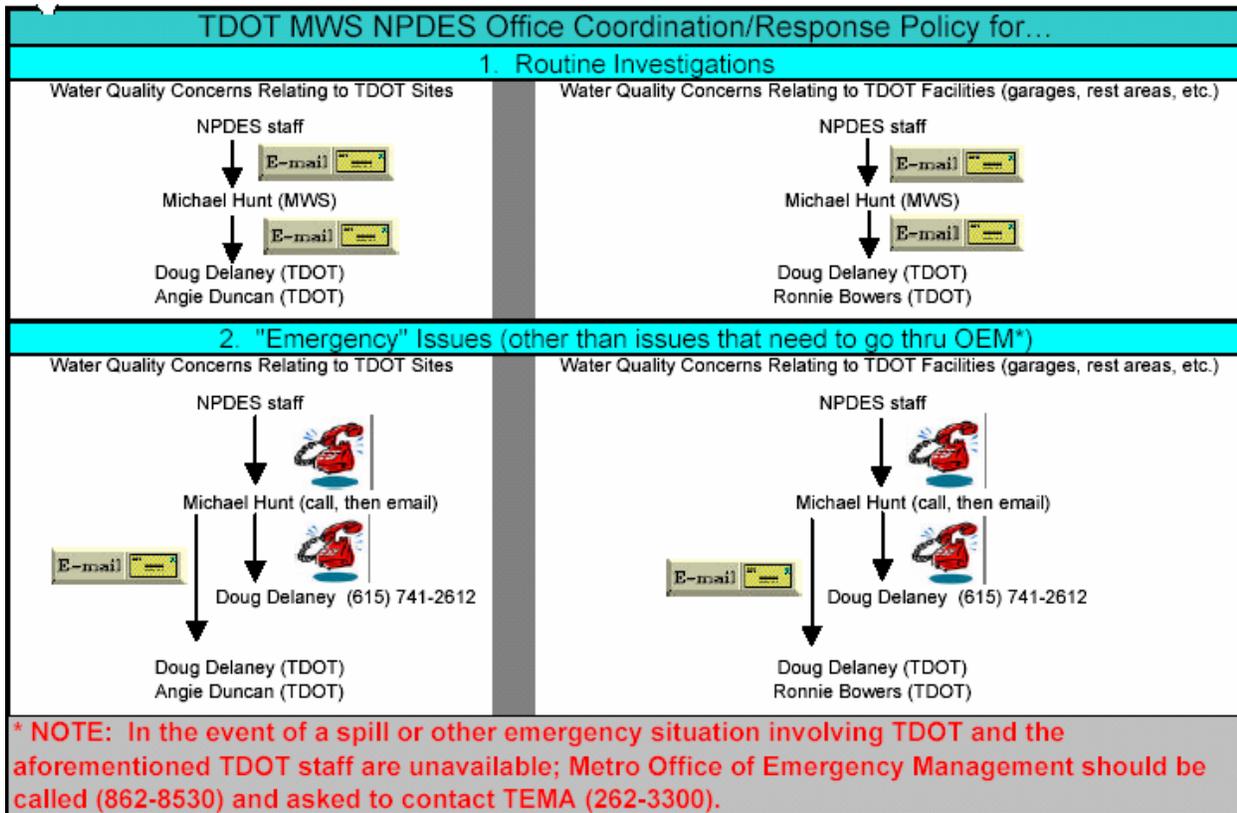
**Figure 4.3.5.2 Examples of Spills and Cleanup Activities During Permit Year 2**





MWS NPDES Section has also entered into an agreement with the Tennessee Department of Transportation (TDOT) to better address spill issues on State roadways/Interstates (from which spill might otherwise route into the Metro MS4). Figure 4.4.5.3 depicts the specific NPDES/TDOT agreement schematic.

**Figure 4.3.5.3 TDOT NPDES Office Coordination Agreement**



**4.3.6 Design and Construction (Part III.B.3.f.)**

**Contact Name:** Danny Smith, MWS Engineering Section, 615.862.4799

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
3f	Report Modifications to Design and Construction	Each Compliance Report	•	•				

Roadway design criteria and construction requirements have been reviewed by Metro. The following design considerations were recommended for reducing the impact of roadways on stormwater pollution:

1. Consider use of permanent treatment control BMPs for all new roads and extension of roads in newly developed areas.
2. Consider use of permanent treatment control BMPs for projects involving rehabilitation of existing roads if roadway runoff impacts a sensitive water body.
3. Use swales and buffer strips whenever possible.



4. Consider the use of vegetated or bio-engineered drainage ditches in lieu of rip rap whenever possible.
5. Integrate permanent treatment BMPs with temporary construction BMPs whenever possible.
6. Develop design guidelines for permanent treatment BMPs on the basis of specific hydrologic characteristics of the Metro area.

MWS has been able to incorporate most of these recommendations in roadway designs under the control of Metro. One example is the Holt Road repairs. Holt Road is a heavily traveled, two-lane roadway with no shoulder and is subject to flooding during heavy rain. During the first permit year Metro designed the project to decrease the likelihood of flooding by increasing the size of nine cross drains in a span of approximately one mile. Six of these cross drains being replaced and improved with slab bridges. A slab bridge is a 3-sided (bottomless) box culvert. These can be installed more quickly than regular box culverts and cause less disruption to Holt Road traffic and less impact to the stream, both during construction and after construction. Approximately 2,100 square yards of erosion control matting, instead of rip-rap, will be used on the upstream and downstream sides of the cross drain installations. Construction on this project began during permit year 2 and is expected to be completed in early permit year 3.

#### **4.3.7 Future Direction of Element 3 - Roadways:**

##### **Catch Basin Cleaning and Downtown Street Sweeping**

Stormwater Maintenance Section will continue the ongoing program of catch basin cleaning throughout the permit cycle. The number of catch basins cleaned due to complaints as well as the routine maintenance program is anticipated to increase. The Department of Public Works will continue the ongoing program of sweeping the streets on a monthly basis in the downtown Metropolitan area.

##### **Deicing Chemicals**

The Department of Public Works will continue to utilize a combination of either salt or a brine solution as deicing agents for Metropolitan Nashville and Davidson County. The NPDES Section will continue to evaluate deicing application and storage practices to determine if any additional or alternative measures might benefit water quality from roadway runoff and salt bin storage locations.

##### **Herbicides, Pesticides and Fertilizers**

The NPDES Section will continue to educate all Metro departments on proper techniques of land maintenance, including the application of chemicals.

##### **Spills**

The NPDES Section and Mayor's Office of Emergency Management will continue to respond to and document spill calls for any resulting stormwater pollution.

##### **Design and Construction**

Any modifications to the standards and procedures applied to reviewing roadways proposed by developers and/or Metro road construction projects will be reported in order to demonstrate modifications that are found to be necessary to benefit water quality. The NPDES program will work with the Public Works to try to promote the use of bottomless bridges as a first option for either replacing existing road crossings or installing new road crossings over streams.



**4.4 Landfills and Other Waste Treatment, Storage, or Disposal Facilities (Part III.B.4)**

The objective of this program element of the SWMP is to satisfy Part III.B.4, which will minimize the impacts of municipal facilities on stormwater quality. This includes the investigation of closed and open municipal landfills and other treatment, storage or disposal facilities for municipal waste, such as transfer stations, maintenance and storage yards for waste transportation fleets, and sludge application sites. These investigations are to be used as a basis for establishing procedures and prioritization of control measures for reducing pollution in stormwater discharges at these sites.

**4.4.1 Monitor Water Quality-Related Activities (Part III.B.4.a)**

Contact Name: Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
4a	Monitor Activities, Report on Issues	Ongoing	•	•				

**Active Landfills**

During a meeting with Public Works, Solid Waste Division, NPDES office learned that there are only two active landfills located within Davidson County: Southern Services Landfill and the Odell Binkley Landfill. Both of these landfills are privately owned and operated and receive demolition materials only. There are no active landfills within Davidson County that receive household hazardous waste. The NPDES office intends to inspect these two facilities periodically to ensure that there are no stormwater runoff issues resulting from the land filling activities. Initial field-review of these facilities did not reveal any stormwater runoff issues.

**Inactive Landfills**

Currently there are no active Metro-operated landfills located within Davidson County. The most recent Metro-operated landfill to close was the Thermal Ash Monofill located in North Nashville. The capping and stabilization of this landfill was completed during permit year 2.

During Permit year 2, NPDES staff met with Public Works to get a better understanding of monitoring that takes place on the closed municipal landfills. From the meeting, it was determined that Metro is currently required to monitor 5 inactive landfills, which include the Bordeaux Landfill, Thermal Ash Monofill, Due West Landfill, Lebanon Landfill, and River Hills Monofill. Only two of the landfills (Thermal Ash Monofill and River Hills Monofill) are required to be monitored per requirements of the Tennessee Multi-Sector Industrial Stormwater Permit. Consultants have been hired by Public Works to perform required sampling and necessary follow-up. Photographs of the Metro-monitored landfills are depicted in Figure 4.4.1.1.



**Figure 4.4.1.1 Municipally-Operated Landfills (Inactive)**



**Bordeaux Landfill**



**River Hills Landfill**



**Due West Landfill**

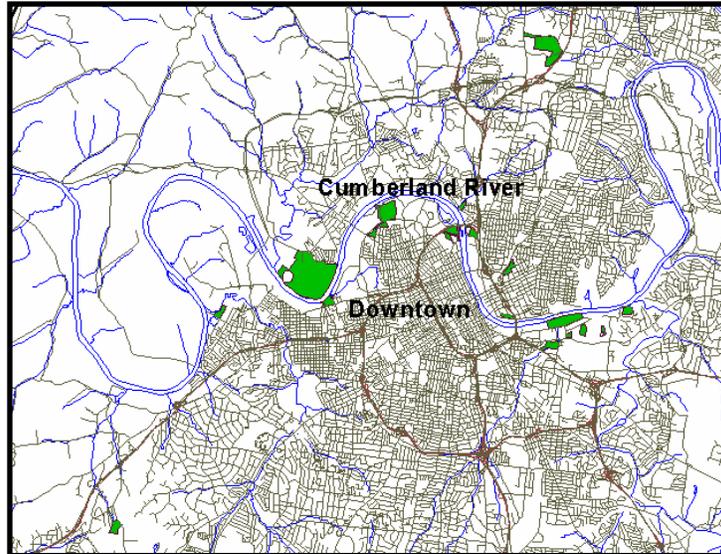


**Lebanon Road Landfill**

The NPDES program has been made aware of several other inactive landfills that Metro Public Works Division of Solid Waste has not been required to monitor. The NPDES Section has secured the locations of all the closed/inactive landfills in Davidson County as recognized and provided by the Public Works Division of Solid Waste. As the NPDES Section inspections began during previous permit years, it was quickly realized that the majority of the sites had been developed to the point that there was little or no remaining evidence that the sites were once landfills. At that point, it was decided that surveying these areas would be better handled under the field-screening program. As a result, the NPDES Section has converted the closed/inactive landfill information into a GIS shape file (see Figure 4.4.1.2) that will allow the NPDES Section to consider these sites as the field screening is performed in those respective areas. Based on preliminary investigations, it is believed that these sites do not impact dry weather water quality or stormwater runoff quality. However, this supposition shall be verified during the field screening of these areas.



**Figure 4.4.1.2 Closed Landfills**



(Closed landfills are shaded in green.)

**Treatment, Storage, or Disposal Facilities Investigation**

In addition to active and inactive landfills located within Davidson County, there are three privately-operated waste transfer stations that receive and temporarily store household hazardous waste. The transfer stations and their locations are as follows: BFI Transfer Station on Omohundro Drive; Waste Management Transfer Station on Antioch Pike; and the Tennessee Waste Open Transfer Site located on Franklin Limestone Road. The NPDES program intends to inspect these sites for stormwater runoff issues routinely over the future permit years.

According to the EPA there are only two recognized Treatment, Storage and Disposal (TSD) sites located within Davidson County:

Clean Harbors Antioch Llc  
 Handler Id: Tnd000772277  
 Street: 1640 Antioch Pike  
 Zip Code: 37013

And

Safety Kleen Systems Incorporated  
 Handler Id: Tnd981474125  
 Street: 215 Whitsett Rd  
 Zip Code: 37210

The TSD sites have been included as part of the industrial monitoring program of the NPDES office and inspections of these two facilities are scheduled during permit year 3.

**Solid Waste Haulers**

The Public Works Waste Management Division issues licenses to haulers of municipal waste in Davidson County. The NPDES Section inspected most of the licensed haulers’ home office sites for the purpose of determining whether stormwater runoff quality is impacted by their vehicle locales and/or fleet maintenance operations. At the time of the inspections, none of these sites were impacting water quality.



**Metropolitan Nashville – Davidson County  
NPDES-MS4 Permit No. TNS068047  
Cycle 2, Year 2  
November 2005**

NPDES Section and the Waste Management Division previously agreed to implement, as a condition of receiving the annual solid waste haulers license, a certification statement to be signed by a designated representative of the licensee that stipulates the fact that the operations permitted by the license shall not serve to contribute to either illicit discharges or stormwater runoff pollution. Figure 4.4.1.3 is a copy of this new certification statement. Following the statement is a list of all Metro solid waste haulers who have signed this certification statement (Table 4.4.1.1).



**Figure 4.4.1.3 Certification Statement**

**Stormwater Quality Certification Statement for  
 Metro Division of Solid Waste Licensees**

On July 1, 1996, the Metropolitan Government of Nashville & Davidson County (Metro) was issued an NPDES Permit from the Tennessee Division of Water Pollution Control in accordance with the Federal Water Quality Act of 1987. This permit requires Metro to initiate various programs and activities aimed at eliminating both illicit and contaminated stormwater discharges within Nashville/Davidson County. Due to these permit responsibilities; henceforth, any entity wishing to secure and maintain a Solid Waste Hauler’s License from the Metro Public Works Division of Solid Waste Management must sign and abide by the certification statement below.

**I hereby certify, as a duly designated representative of \_\_\_\_\_ (the licensee), that \_\_\_\_\_ (the licensee) shall maintain and conduct its entire operation so as to not create or contribute to water pollution within Davidson County. \_\_\_\_\_ (the licensee) further understands that failure to meet this requirement can result in a revocation of its Metro Solid Waste haulers license and may additionally lead to other enforcement actions on the part of Metro’s NPDES Program.**

**Note: Water Pollution is considered to include, but is not limited to; illicit discharges (to storm drains, ditches, or creeks) and/or contaminated stormwater runoff and discharges. This stipulation applies to locations utilized by the Solid Waste license holder on a routine basis to conduct its business such as; fleet maintenance/storage sites, transfer stations, and any other location that might be impacted by the license holder’s operations. This stipulation shall also extend to any other operational activities related to the exercising of rights granted by the Metro Solid Waste Hauler’s License. If you have any questions as to what would create or constitute a water pollution issue, please contact Metro’s NPDES/Water Quality Program at (615) 880-2420.**

\_\_\_\_\_  
**Signature** \_\_\_\_\_ **Date**  
 \_\_\_\_\_  
**Title**

**Disclaimer: This certification represents no additional requirements to the licensee as it pertains to State and Federal environmental regulations.**



**Table 4.4.1.1 Solid Waste Haulers Investigations**

Certificate Number	Issued to	Address	Date issued	Renewal date	Type of Operation
05-001	Gray's Disposal	522 Thompson Lane, Nashville, TN 37204	01-Jul-04	30-Jun-05	Collector
05-002	Waste Removal Services, LLC	164-B Old Carters Creek Pike, Franklin, TN 37064	01-Jul-04	30-Jun-05	Collector
05-003	Clean Earth Sanitation, Inc.	320 Century Court, Franklin, TN 37064	01-Jul-04	30-Jun-05	Collector
05-004	Crick Disposal Services, Inc.	2635 Hart Street, Nashville, TN 37207	01-Jul-04	30-Jun-05	Collector
05-006	Welsh Disposal	325 Hillcrest Drive, Madison TN 37115	01-Jul-04	30-Jun-05	Collector
05-007	Hudgins Disposal Service	400 Crutcher Street, Nashville, TN 37206	01-Jul-04	30-Jun-05	Collector
05-008	Waste Management, Inc.	1428 Antioch Pike, Antioch, TN 37013	01-Jul-04	30-Jun-05	Operator
05-009	Waste Management, Inc.	1428 Antioch Pike, Antioch, TN 37013	01-Jul-04	30-Jun-05	Collector
05-010	J. E. McMurtry	103 Donald Street, Nashville, TN 37207	01-Jul-04	30-Jun-05	Collector
05-011	TRI STAR Waste Systems, Inc.	701 41st Avenue N. Nashville TN 37209	01-Jul-04	30-Jun-05	Collector
05-012	Red River Service Corp.	120 Ewing Drive, Nashville TN 37207	01-Jul-04	30-Jun-05	Collector
05-014	Mercie Threadkill	4571 Clarksville Hwy., Nashville, TN 37202-4153	01-Jul-04	30-Jun-05	Hauler
05-015	MS-COT SERVICES LLC	3516 Central Pike, Hermitage, TN 37076	01-Jul-04	30-Jun-05	Operator
05-016	Action Waste Industries, LLC	3826 Whites Creek Pike, Whites Creek, TN 37189	01-Jul-04	30-Jun-05	Collector
05-017	Landscape Services, Inc.	204 River Hills Drive, Nashville TN 37210	01-Jul-04	30-Jun-05	Landscaper
05-018	Southeastern Recycling	1029 3rd Avenue South, Nashville, TN 37210	01-Jul-04	30-Jun-05	Collector
05-019	H. E. Parmer Co., Inc.	1635 County Hospital Rd, Nashville, TN 37218	01-Jul-04	30-Jun-05	Collector
05-020	Waste Management, Southern Services Landfill	4561 Amy Lynn Drive, Nashville TN 37218	01-Jul-04	30-Jun-05	Operator
05-021	City of Goodlettsville	215 Cartwright Street, Goodlettsville, TN 37072	01-Jul-04	30-Jun-05	Collector
05-022	Crick Disposal, Inc.	2635 Hart Street, Nashville, TN 37207	01-Jul-04	30-Jun-05	Collector
05-026	Spurlock Disposal Company	2625 Hart Street, Nashville, TN 37207	01-Jul-04	30-Jun-05	Collector
05-027	Trash Express	4016 Brick Church Pike, Nashville, TN 37207	01-Jul-04	30-Jun-05	Collector
05-028	BFI Waste Services, LLC	700 Murfreesboro Road, Nashville, TN 37210	01-Jul-04	30-Jun-05	Collector
05-031	Cordell Johnson	315 Hickory Street, Madison, TN 37116	01-Jul-04	30-Jun-05	Collector
05-034	Clarksville Disposal	714 Red River Street, Clarksville, TN 37040	01-Jul-04	30-Jun-05	Hauler
05-039	Olympic Disposal, INC.	148 Volunteer Drive, Hendersonville, TN 37075	01-Jul-04	30-Jun-05	Collector
05-041	Seventh Transport, Inc.	3620 Hwy 641 South, Camden, TN 38320	01-Jul-04	30-Jun-05	Hauler



Certificate Number	Issued to	Address	Date issued	Renewal date	Type of Operation
05-042	PDQ Disposal, Inc.	625 Hamilton Avenue, Nashville, TN 37203	01-Jul-04	30-Jun-05	Collector
05-043	Burnice Winfrey Disposal, Inc.	1600 Emerald Drive, Nashville, TN 37128	01-Jul-04	30-Jun-05	Collector
05-044	Waste Industries, Inc.	7320 Centennial Blvd, Nashville, TN 37209	01-Jul-04	30-Jun-05	Collector
05-045	MLT Disposal	4571 Clarksville Hwy., Nashville, TN 37218	01-Jul-04	30-Jun-05	Collector
05-054	Sweeping Corp of America, Inc.	713 Mel Park Dr, Nashville, TN 37204	01-Jul-04	30-Jun-05	Hauler
05-055	Roger Newland	164 Scaff Drive, Madison, TN 37115	01-Jul-04	30-Jun-05	Collector
05-059	BFI/AAA Transfer Station	7320 Centennial Blvd, Nashville, TN 37210	01-Jul-04	30-Jun-05	Operator
05-060	BFI/AAA Transfer Station	1160 Freightliner Drive, Nashville TN 37210	01-Jul-04	30-Jun-05	Operator
05-061	American Disposal Service, LLC	340 Rockland Road, Hendersonville, TN 37075	01-Jul-04	30-Jun-05	Collector

**4.4.2 Future Direction of Element 4**

Metro will continue routine inspections of all active and inactive municipally-owned or privately-owned landfills within Davidson County. Treatment, storage, and disposal facilities as well as solid waste haulers will continue to be monitored as necessary.



**4.5 Use of Pesticides, Herbicides, Fertilizers, Oils, and Other Toxic Materials (Part III.B.5)**

The objective of this section of the SWMP is to satisfy Part III.B.5 regarding the education of the public on the proper use, handling, storage, and disposal of pesticides, herbicides, fertilizers and other household hazardous wastes. This public education element is an ongoing effort.

**4.5.1 Operate Household Hazardous Waste Facility (Part III.B.5.a.)**

**Contact Name:** Chace Anderson, Public Works Waste Management Division 615.862.8727

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
5a	Operate Household Hazardous Waste Facility	At least 1/quarter	•	•				

Metro’s Waste Management Division of Public Works operates a Household Hazardous Waste (HHW) facility. The HHW facility or East Recycling Convenience Center is located at 941 Richard Adams Road. The HHW facility, open to all residents of Nashville and Davidson County 361 days a year.

A full-time hazardous waste technician assists customers with unloading waste and then packages the material and finds receptacles for the collected material. Items accepted at the facility include newspaper, mixed paper, paper board, cardboard, aluminum, tin, glass containers, plastic bottles, tires, appliances, furniture, other bulk items, used oil, antifreeze, batteries, cleaners/solvents, insecticides, and lawn and pool chemicals. Items not accepted include tires, trash, ammunition, business and industrial waste, explosives/fireworks, medical waste, flares, smoke detectors, radioactive material, and gas cylinders. Commercial vehicles, rental trucks, and vans are not allowed at the site.

Information on hazardous waste is provided to the public on both the Public Works website and in an educational pamphlet (See Figure 4.5.1.1). The Division of Waste Management’s website is: <http://www.nashville.gov/Recycle/>. Information is provided on identifying hazardous wastes, finding alternatives to hazardous products, and disposing of waste properly.



**Figure 4.5.1.1.**  
**Household Hazardous**  
**Waste Pamphlet**  
**(front)**



**4.5.2 Commercial Distributors (Part III.B.5.b.)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
5b	Commercial Distributors – Public Information	Ongoing	X	•				

During permit year 2, the NPDES program began an educational campaign directed toward commercial distributors, as well as landscaping companies who are involved in the application of such chemicals. Metro first obtained a list of Davidson County commercial distributors and landscaping companies through the yellow pages. Once a list was obtained, Metro created and sent a brochure detailing the proper chemical application methods and guidelines to each business on the list. A copy of this brochure is included in Appendix B. For more information, refer to Section 4.10.

**4.5.3 Metro Facilities (Part III.B.5.c.)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
5c	Metro Facilities	Permit year 2		•				

Metro recognizes the importance of preventing stormwater pollution from occurring on Metro properties. The Metropolitan Government of Nashville owns approximately 13,752 acres of land, making it one of the largest landowners in the County. While the majority of the Metro land is owned by the Parks Department and has been left in its natural wooded state, there are many other Metro properties that receive routine land maintenance activities. During permit year 2, the NPDES Section developed a campaign to educate all Metro departments that perform land maintenance activities. The NPDES Section created a brochure that details all of the guidelines for performing land maintenance activities, such as applying herbicides, pesticides, and fertilizers. This brochure will be distributed to the appropriate departments during permit year 3. The brochure is attached in Appendix B.

Metro has an extensive fleet maintenance program that provides maintenance to all Metro equipment and vehicles and recognizes the potential of chemical runoff from these facilities. NPDES inspected these facilities during permit year 2 and issues found are noted in Table 4.5.3.1.



**Table 4.5.3.1 Fleet Maintenance Inspections**

Facility Name	Facility Location	Findings
Peabody - Light Vehicle Maintenance	33 Peabody Street	Used oil stored outside, etc.
East Service Center - Large Vehicle Maintenance	941 Dr. Richard Adams Drive	Used oil stored outside, etc.
Metro Parks - Equipment Maintenance	511 Oman Street	Used oil stored outside, etc.
Metro Housing Authority - Equipment Maintenance	701 South 6th Street	Dumpster w/out plug

**4.5.4 Future Direction of Element 5**

**Operate Household Hazardous Waste Facility**

The East Recycling Convenience Center (HHW facility) is anticipated to remain open 361 days a year to all residents of Davidson County.

**Commercial Distributors**

The NPDES educational program aimed at commercial distributors of pesticides, herbicides, fertilizers, oils, and other toxic materials will bring attention to water quality impacts created by the retail distribution impacts of such products. This program will stimulate these distributors to implement measures that would lessen water quality impacts. This education activity is an ongoing process to be addressed each year of the permit. All public education and information activities are detailed in Section 4.10.

**Metro Facilities**

The NPDES Section will continue its educational campaign to instruct all Metro departments on the proper handling and use of chemicals and hazardous substances. The NPDES section will also continue to inspect Metro facilities that store large volumes of potentially hazardous substances.



**4.6 Illicit Discharges and Improper Disposal (Part III.B.6)**

This element is designed to meet Part III.B.6 by facilitating an ongoing program to detect and stop illicit discharges and improper disposal of wastewater or solid wastes into the municipal separate storm sewer system (MS4). Components of the ongoing program include inspections, ordinances, enforcement procedures, field screening and investigations, spill response procedures, public information, management and disposal of oil and toxic materials, and limiting sanitary sewer seepage.

**4.6.1 Ordinances and Enforcement Measures (Part III.B.6.a)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
6a	Refine Ordinances and Enforcement Measures	PY 1 and PY 3	•					

In the first year of the permit cycle, Metro began a process to enhance local regulatory mechanisms designed to improve water quality by revising the stormwater ordinance, manual and program. The process began by reviewing regulations, policies, enforcement measures and other information that supports the stormwater program, including enforcement measures that affect illicit discharges. During permit year 2, Metro staff met on 12 separate occasions with the Stormwater Regulations Review Committee (SR2C). The changes that were recommended by the SR2C should go into effect during Permit year 3. These changes will benefit water quality, especially in regards to illicit discharges caused by construction site runoff.

**4.6.2 Dry Weather Field Screening (Part III.B.6.b)**

**Contact Name:** Mike Seremet, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
6b	Update and Prioritize Dry-Weather Field Screening	PY 5						

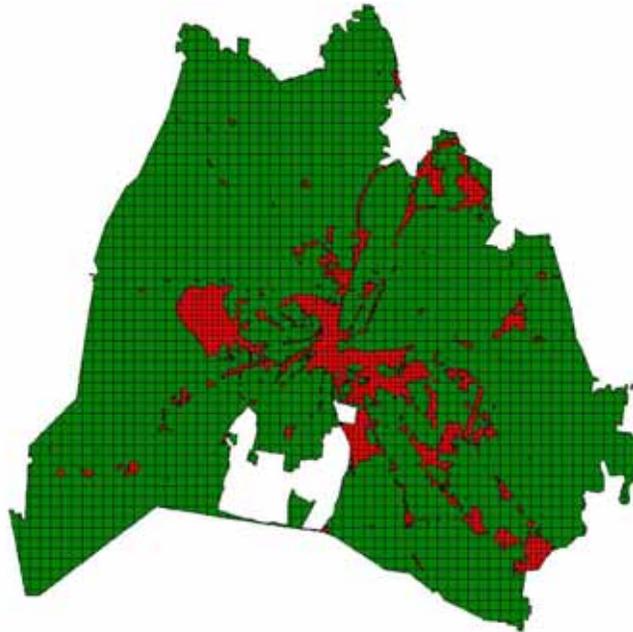
Metro made a significant effort in the first permit cycle in dry weather field screening, inspecting 4,274 sites. For the second permit cycle, revised dry-weather field screening procedures are planned so as to maximize the effectiveness and efficiency of field efforts. Field screening in a predominantly residential or agricultural land use found very few, if any, illicit discharges during the first permit cycle, as required by our permit. Therefore, dry-weather field screening will be focused more on non-residential land uses for the second permit cycle. Any needed illicit discharge identifications and reporting in residential or agricultural areas will be conducted in response to citizen complaints.

Field screening will be conducted in non-residential zoned areas using a ¼ mile grid. The ¼ mile grid has been created from updated GIS-based land use/zoning data, developed by the Metro Planning Commission, to guide and monitor dry-weather field screening activities (See Figure 4.6.2.1). Field screening was initiated during permit year



2 and will continue through future permit years until all non-residential areas are adequately screened. Illicit discharges to the MS4 found during this screening will be investigated and rectified.

**Figure 4.6.2.1 Field Screening Grid**



Non-residential areas are designated in Red.

**4.6.3 Illicit Discharge Investigations (Part III.B.6.c)**

Contact Name: Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
6c	Illicit Discharge Investigations	Ongoing	•	•				

MWS has a comprehensive illicit discharge investigation program in place. Illicit discharges are detected through a variety of methods that include field screening, citizen complaints, thermograph investigations, and staff observations. Once a potential illicit discharge is detected, a comprehensive investigation is initiated and tracked. All illicit discharge investigations are treated as water quality complaints and are logged into databases that track the investigation status. During permit year 2, NPDES began a transition from an internal database within the NPDES office to a Metro-wide database (KIVA). Figure 4.6.3.1 shows a screen capture of the old NPDES database, while Figure 4.6.3.2 shows a screen capture of the new KIVA database. The KIVA database will assist illicit discharge investigations by increasing communication among different Metro departments such as the Stormwater, Codes, and the Health Department. It will, at some point, be expected to interface with a Geographic Information System (GIS) that will further assist investigations by mapping potential illicit discharges more quickly and easily.



Illicit discharge investigations for the first half of the year were tracked in the NPDES database, while investigations for the second half were tracked in the Metro-wide KIVA database. In the NPDES database, complaints were kept in an “open” database until the issue had been resolved. Once resolved, it was moved to the “addressed” database until full compliance was verified by NPDES staff. Once the NPDES staff was certain the complaint issue posed no further water quality issues, the complaint was moved from the “addressed” to “closed” database. Since its inception, there have been approximately 1,274 total water quality complaints logged into the NPDES database. It is important to note that there have been many more citizen water quality complaints received by the NPDES office over the years. These complaints were only logged, if they warranted an official illicit discharge investigation. Of the 1,274 complaints tracked within the NPDES database 19 “open” and 23 “addressed” were converted and logged into KIVA. For purposes of reporting illicit discharge investigations in this document, there were approximately 250 water quality complaint investigations conducted during permit year 2. Of the 250 complaints, 213 were new complaint investigations initiated during permit year 2, while 37 complaint investigations were carried over from previous permit years. There were approximately 199 complaint investigations closed during the last permit year, which include some complaint investigations initiated in previous permit years. The remaining open sites will continue to be investigated in future permit years until the inspector is confident that further stormwater violations will not continue.

**Figure 4.6.3.1 NPDES (Old) Water Quality Complaints Database**

The screenshot shows a web-based interface for the Metro NPDES "Complaints-Closed" Database. The main window is titled "Complaints" and contains a form for a specific complaint record. The form is divided into several sections:

- Header:** Metro NPDES "Complaints-Closed" Database
- Complaint Details:**
  - Incident #: 200
  - Date of Complaint: 10/16/2000
  - Inspector: S. Wall
  - Date/Time of Inspection: 10/16/2000
  - Watershed: 23 Stones River
  - Receiving Conveyance: (blank)
  - Complainant: MHH
  - Complainant Name: Hugh Garrison
  - Business Contact: (blank)
  - Business Phone #: (blank)
  - Office Address (if different): (blank)
  - Latitude: (blank)
  - Longitude: (blank)
  - Site Address: Brandau Rd. & Frogem
  - Zip Code: 37076
  - Complaint Type: PFI
  - Hardy Map #: 60J
- Complaint Description:** Hugh Garrison called and said there was a fire at a paint manufacturing business on Brandau Rd. Firefighting measures may have discharged contaminants into Stones Creek, and/or Stone River.
- Observations:** Hugh called back later and said both Stones Creek and Stones River looked ok.
- Action Required at Site:** none -close Area. 11/5/00 site can be closed.
- Post Inspection Notes:**
  - Put on Windshield Inspector List: No
  - Forwarded Complaint/Notified: No
  - File(s) Location/Name(s): (blank)
  - Send Inspection Letter to Site: No
  - Date Sent: (blank)
  - Is a Revisit Necessary: No
  - NOV Document: (blank)
  - Extraordinary Measures Taken?: (blank)
  - Revisit Date: (blank)
- State Notification subform:** TDEC Notifications by the Metro NPDES Program
- Footer:** Record: 1 of 928



Figure 4.6.3.2 KIVA (New) Water Quality Complaints Database

- KIVA REQUEST - 08-SEP-2005- VER - 7.2

File Actions Query Request Insp Land Help Window

RFS ACTIONS

Entry Action Fee Calc Payments Summary People Reports Related Docs

Req #. 05-1000005 Date: 05-APR-2004 08:15 AM Need: Prit: By: JBHAYES Grade

APN: 10301005500 Loc: 321 BALMY AVE Add Addr: Status: DONE JUR: NASH

Reqstr: SHOPE, MIKE Phone: Memo: Oil draining from Global Motorsports park

Permit Name Project Permit Detail

Problem	Description	Insp	Cont	Status	Insp	Viol	Enter By	
SWWQ	SW WATER QUALITY PROBLEM REPORTED			DONE	DONE	DONE	JBHAYES	Inspection

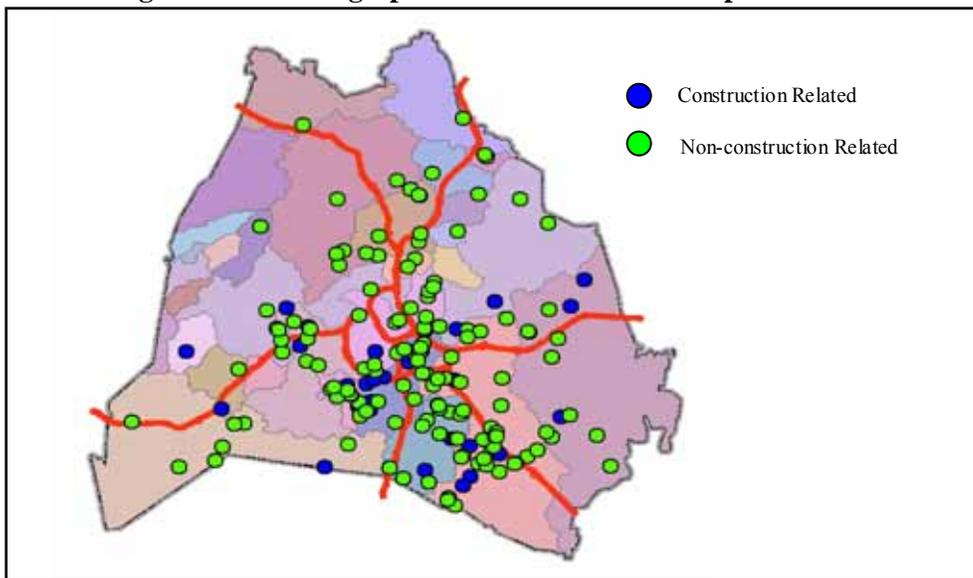
Action	Date Required	Date Scheduled	Svc	Ltd	C	Completed	Total	Code	Comm		
Service	By	Empl	Dys	Dur	W	A	By	Date	Time	Code	A
SWWQ		04-MAR-2	AUTO	1	1	W	Y	JBHAYE	03-MAR-2		R
SWWQ		08-MAR-2	JBHAYE	1	1	W	Y	JBHAYE	18-JUL-20		R

Comments: Stop illicit discharge immediately.

Buttons: Cts Problem Add Svc Group Create Document Work Order Communication Address Service Detail

In permit year 2, the NPDES section began to analyze illicit discharge (water quality complaint) investigations to determine if any trends were present that could affect policy decisions on public education, enforcement, etc. Figure 4.6.3.3 depicts the geographical distribution of water quality investigations that were initiated during the last permit year. Table 4.6.3.1 breaks down permit year 2 water quality investigations by watershed.

Figure 4.6.3.3 Geographical Distribution of Complaints for PY 2





**Table 4.6.3.1 Permit Year 2 Water Quality Investigations per Watershed**

Watershed Name	Number of Investigated Complaints
Mill Creek	44
Browns	31
Sevenmile	16
Stones	14
Combinded Sewer Overflow	13
Cumberland	12
Richland	12
Sugartree	12
Harpeth	10
Whites	8
Ewing	7
Pages Branch	6
Gizzard Branch	2
Sulphur	2
Sycamore	2
Dry	1
Gibson	1
Indian	1
Loves Branch	1
Mansker	1
Overall	1
Sandy	1

Note: Some of the complaints/investigations could not be geo-coded for purposes of mapping to watersheds.

The ultimate goal of an illicit discharge investigation is to eliminate the source of a discharge. The process for achieving elimination is different for each scenario and is handled on a case by case basis. Upon discovery of an accidental illicit discharge, MWS NPDES Section contacts the discharger to resolve the problem. If the discharge is considered a recurring or negligent event and depending of the type of discharge, the TDEC Division of Water Pollution Control (DWPC) may be contacted. The illicit discharge investigations involve sampling and other water quality field tests depending on the type and severity of the discharge. In some cases, sampling becomes very important in documentation of illicit discharges, especially in cases that involve enforcement. Whenever possible, the NPDES section attempts to use public education to achieve compliance, however, in some cases, enforcement is necessary.



**4.6.4 Public Information in Residential/Commercial Areas (Part III.B.6.d)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
6d	Distribute Public Information to Residential/Commercial Areas	Ongoing	•	•				

Public information activities associated with illicit discharges and improper disposals in residential and commercial areas are detailed in Section 4.10.1.

**4.6.5 Sanitary Sewer Seepage (Part III.B.6.e)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
6e	Evaluate Reporting for Sanitary Sewer Seepage	PY 1 and PY 3	•					

The NPDES Section periodically evaluates the protocols for reporting potential sanitary sewer seepage into the MS4 or “Waters of the State”. NPDES staff participates in monthly Overflow Abatement Program (OAP) meetings to discuss current investigations related to possible sewage seeps and proposed courses of action. The Overflow Abatement Program is an on-going effort to improve the water quality of the Cumberland River and its tributaries in Middle Tennessee. Significant progress has been made over the last decade in the reduction of combined sewer overflows (CSO) and sanitary sewer overflow (SSO) points.

Rehabilitation and replacement of defective sanitary sewer lines has been an integral part of Metro Water Services’ Overflow Abatement Program since it’s inception in 1990. In comparison with projects which increase the capacity to transmit and treat flow, such as parallel sewer lines, upsized pumping stations, flow equalization basins and treatment plant expansions, the rehabilitated or replaced lines restore the capacity originally constructed, which was reduced due to deterioration and leakage of both storm water and ground water into the sewer lines. Flows are actually reduced with rehabilitation to normal design levels, particularly in wet weather by this exclusion of stormwater infiltration. Eliminating hydraulic overloading brought about by inflow and infiltration reduces overflows and bypasses of wastewater from the collection system, thereby improving the quality of stream water in our community.

There were approximately 18 miles of sewer lines replaced or rehabilitated during permit year 2 representing approximately 1% of the collection system. Since the inception of OAP in 1990, 236 miles of sanitary sewer lines have been rehabilitated or replaced. This represents 10 % of the collection system. Additional information on OAP is available to the public at the following website: [www.nashvilleoap.com/home.html](http://www.nashvilleoap.com/home.html).

Focus was also given in permit year 2 to proper remediation of sanitary seeps or overflows once discovered. As mentioned in Section 4.1.5, the NPDES office and MWS System Services worked together to develop a Standard Operating Procedure (SOP) to remediate sanitary sewer spills, overflows, and/or seeps. On June 22, 2005, NPDES held a training session with the system services staff on Sewerage Spills and Overflows SOP. The complete SOP is



included in Attachment A. In permit year 2, there were 110 dry weather and 270 wet weather overflow/spill incidents, 113 of which required remediation.

Sanitary sewer seeps are identified through the OAP ambient monitoring program, citizen complaints, and the MWS Thermograph Investigation Program. During the winter of 2004, Metro Water Services conducted the third annual aerial infrared or “thermographic” sewer and stormwater line inspection. The investigation enables staff to identify leaking sanitary sewers and other illicit discharges based on elevated temperatures of illicit flows compared to ambient stream temperatures. The thermographic study was expanded from four creeks in 2003 to ten creeks in 2004 that includes Richland, Mill, Sevenmile, Manskers, Pages, McCrory, Gibson, Stoners, Browns, and the Stones River. The NPDES office, through cooperation with the Police Department, took thermographic video the selected creeks during winter 2004. The thermographic videos were analyzed immediately after flights to identify thermal anomalies. Once the anomalies were transcribed onto field maps, NPDES staff performed field reconnaissance and subsequent sampling. The anomalies were classified, through investigations, into the following categories: no-flow, unidentified flow, spring/seep, stream, water line leak, sanitary sewer leak, and illicit discharges. The overwhelming majority of the thermal anomalies were classified as springs or seeps, however, a small percentage were found to be water quality related issues. For example, one anomaly was found to be sanitary sewer discharge at an industrial facility. Both issues were resolved. Several other anomalies are still under investigation.

**Figure 4.6.5.1 Video Imagery Showing Thermal Anomalies**





#### **4.6.6 Future Direction of Element 6 – Illicit Discharges and Improper Disposal**

##### **Ordinances and Enforcement Measures**

Revisions to the Stormwater Management Manual will go into effect during permit year 3. MWS will continue to update ordinance and enforcement measures on a routine basis, as issues arise.

##### **Dry-weather Field Screening**

Field screening will continue to be conducted within land uses that are predominantly non-residential, using the newly developed ¼ mile grid. Field screening in residential areas will occur as citizen complaints arise.

##### **Illicit Discharge Investigations**

The illicit discharge investigation program is an ongoing program to identify discharge sources, educate responsible parties, and implement enforcement measures as appropriate. The program will continue through the second permit cycle with modifications to the investigation procedures as technology develops.

##### **Public Information in Residential/Commercial Areas**

Public information activities associated with illicit discharges and improper disposal in residential and commercial areas are presented in Section 4.10.1.

##### **Sanitary Sewer Seepage**

Metro will continue to evaluate protocols for reporting potential sanitary sewer seepage into the MS4 and/or “Waters of the State”. NPDES staff will work more closely with the System Services Department on proper remediation of sanitary sewer spills and overflows. In addition, MWS will use lessons learned from the 2004 aerial infrared flight to improve the process of identifying leaks and illicit discharges by making it more efficient, more routine, expanding the scope of flights, and creating quicker responses to illicit discharges. Many of the springs and seeps identified in previous thermograph investigations will not require future sampling, therefore, allowing more time to be spent on other thermal anomalies.



**4.7 Industrial and High Risk Runoff (Part III.B.7)**

The objective of this element is to satisfy Part III.B.7 of the permit, which requires Metro to minimize the impact of high-risk stormwater runoff from industrial facilities, municipal facilities and restaurants. This objective is to be accomplished through inspecting industrial, landfill and waste disposal, transfer and storage facilities, researching problems associated with restaurant stormwater runoff and monitoring selected industries.

**4.7.1 Data Management (Part III.B.7.a)**

Contact Name: Josh Hayes, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
7a	Data Management – Update Industrial Site Databases	Annually	•	•				

Metro is required to monitor and control pollutant runoff from the following types of industries and activities:

- o Municipal landfills (see Section 4.4 of this report);
- o Hazardous waste treatment, storage and disposal facilities (see Section 4.4 of this report);
- o Industries subject to SARA Title III Section 313; and
- o Industrial facilities that the municipal permit applicant determines are contributing a substantial loading of pollutants to the municipal storm sewer system.

The database for tracking industrial inspections of these facilities was created during permit year 1. In the beginning of permit year 2, the NPDES office emailed a copy of the database to TDEC-Division of Water Pollution Control (DWPC) for review. Throughout the second permit year the database was updated with inspection results and site follow-up. Several industrial facilities were also added to the inspection list as the NPDES office deemed them substantial loaders. Toward the end of permit year 2, the NPDES office performed updates to the database based on the EPA SARA Title 3, Section 313 Toxic Release Inventory (TRI) website’s latest listings.

**4.7.2 Inspections (Part III.B.7.b)**

Contact Name: Josh Hayes, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
7b	Inspections	---						
	Refine Procedures/Criteria to Prioritize Sites	PY 1, PY 3, and PY 5	•					
	Train Inspectors	PY 2 and PY 4		•				
	Inspect Facilities	Once by PY 5	•	•				Ongoing
	Coordinate Inspection and Enforcement Activities with TDEC Staff	Ongoing	•	•				
	Report Inspection Locations	Ongoing	•	•				



On August 3, 2004, NPDES staff met with TDEC-DWPC personnel to discuss industrial stormwater inspection procedures and necessary coordination between the two departments. It was determined that MWS-NPDES would continue inspections of industrial facilities regardless of the facility's state permit status and that follow-up documentation would be provided to TDEC-DWPC for each site.

#### **Refine Procedures/Criteria to Prioritize Sites**

During the first and second permit year, inspection prioritization was given to those sites the NPDES office had previous involvement with pollutant runoff, facilities located in direct proximity of water bodies, and sites discovered to have pollutant runoff through field screening and complaint investigations. In the third permit year, inspection prioritization will be given to facilities TDEC-DWPC listed as "priority 1" on their industrial inspection database.

#### **Train Inspectors**

In permit year 1, NPDES staff attended industrial inspection training in Memphis that was sponsored by the University of Tennessee. During permit year 2, NPDES staff sought additional training by observing an industrial inspection performed by TDEC-DWPC staff. Currently, there are three inspectors in the NPDES program that are trained in the proper industrial stormwater inspection procedures.

#### **Inspect Facilities**

The NPDES office inspected 26 industrial facilities during permit year 2. The inspections have resulted in the discovery of numerous stormwater violations. The inspections also yielded the discovery of several facilities lacking State stormwater permit coverage. Inspection result letters were sent to each of the facilities outlining specific site remediation required by the NPDES office. Most of the facilities, with the exception of a few, have performed the required site remediation to correct stormwater runoff violations. As it currently stands, there are 34 industrial facilities on the list that have yet to be inspected by the NPDES program. This list may grow as "substantial loaders" are identified and EPA listed updates are obtained.

#### **Coordinate Inspection and Enforcement Activities with TDEC Staff**

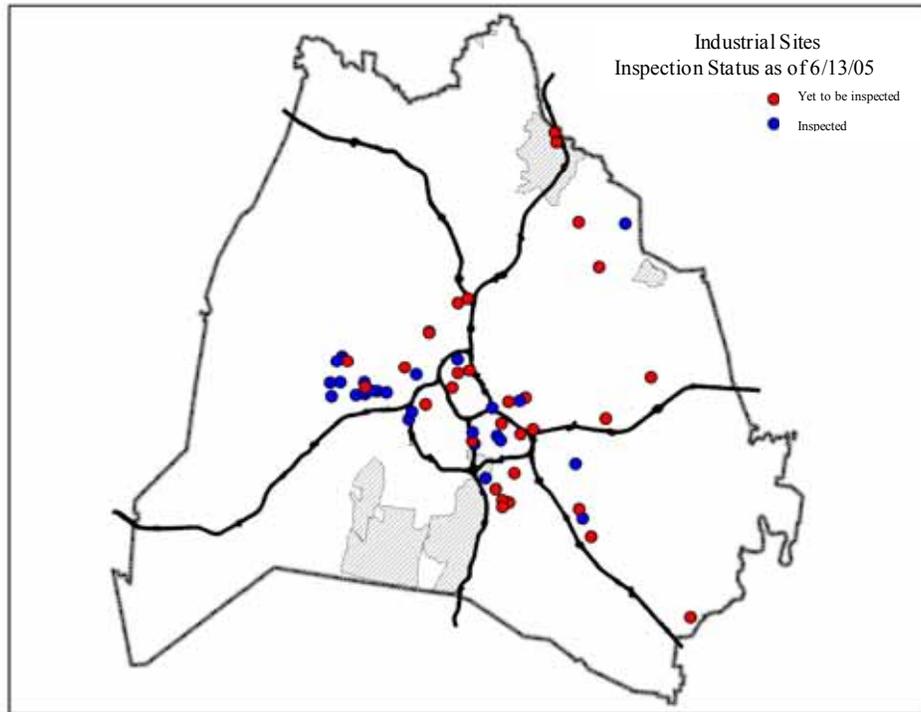
As mentioned above, the NPDES program and TDEC-DWPC made an effort to coordinate inspections on industrial facilities, but it was decided that NPDES would perform inspections independent of TDEC-DWPC, unless extraneous circumstances were encountered that required coordination. The NPDES program coordinates all enforcement/follow-up activities with TDEC-DWPC by copying them on all correspondence relating to industrial inspections.

#### **Report Inspection Locations**

At the end of permit year 2, NPDES sent a map to TDEC-DWPC that illustrates the inspection status of industrial sites. Figure 4.7.2.1 illustrates the sites that were inspected during permit year 2. NPDES has also sent a list of the priority sites to DWPC that will be inspected during permit year 3. This list is attached in Appendix A.



**Figure 4.7.2.1 Industrial Sites Inspected in Permit Year 2**



**4.7.3 Restaurant Impacts (Part III.B.7.c)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420  
 Hugh Garrison, MWS Operations Division - FOG, 615.862.4590

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
7c	Restaurant Impacts – Report activities that reduce water quality impacts	Annually	•	•				

MWS has a focused grease management program known as the Fats, Oils, and Grease (FOG) Program to address overflows and blockages of the sanitary sewer system caused by improper disposal of these substances. Overflow or backflow discharges caused by blockages affect ambient water quality. The objectives of this program include:

1. Operation and Maintenance cost reduction,
2. Collection system improvement,
3. Policy development on grease control equipment, and
4. Better tracking of collection system maintenance responses.

The FOG program issues permits to Food Services Establishments (FSE) including restaurants, schools, prisons, entertainment venues, and other food-servicing programs. Through cooperation with and participation by the Metro Health Department, the FOG staff and subcontractor staff, the goal is to inspect every restaurant within



Davidson County annually. During permit year 2, approximately 1,426 Food Service Establishments (FSE) were inspected through the FOG program. There were approximately 62 stormwater deficiencies noted in the inspections. During permit year 2 there were only six known sanitary sewer overflows caused by fats, oils, and grease from FSE.

The permit program requires FSEs to have their (Grease Control Equipment) GCE certified annually. Items examined during the certification process includes that no holes are present causing the leaking of grease into the restaurant or the ground, baffles are in place, tees are present on inlet and outlet of grease interceptors, and access to each chamber of the grease interceptor is provided for proper maintenance/inspection. Since the implementation of this requirement, approximately 10 interceptors/traps have been required to be replaced.

A copy of a field inspection sheet is depicted in Figure 4.7.3.1. In subsequent investigations, grease found on walls of the trap results in the issuance of a warning, and grease found in the sanitary sewer results in a Notice of Violation (NOV), a copy of which can be found in Figure 4.7.3.2.

NPDES Section staff also investigates various restaurant-related complaints as part of its illicit discharge investigation program. See Section 4.6 for more information on Metro's illicit discharge detection and elimination program.

Efforts were made in previous years to establish permit requirements for the subject establishments that occasionally have water quality impact issues. A policy is now included in regulations for Mobile Food Units that states "No material (solid or liquid waste) shall be discharged to the MS4 (or to a locale where such material may be washed via stormwater runoff into the MS4) as it relates to the operation of a mobile food unit per Metro 15.64.205." All requirements for Mobile Food Units can be found in Appendix A.

#### **4.7.4 Future Direction of Element 7 – Industrial and High Risk Runoff**

##### **Data Management**

The industrial inspection database will be routinely updated in future permit years to include inspection results, site follow-up/remediation, and the EPA updates to the SARA Title III, Section 313 sites.

##### **Inspections**

Metro proposes that it will periodically refine procedures to prioritize sites for inspection based on SIC code, State industrial stormwater data, and other pertinent information. Inspections for all of the industrial sites on the list will continue over future permit years. NPDES will continue to coordinate all inspection results and enforcement actions with TDEC-DWPC. At the end of each permit year, NPDES will provide a map to TDEC-DWPC depicting the locations and inspection status of industrial sites and a list of industrial sites that will be inspected in the following permit year.

##### **Restaurant Impacts**

Through the FOG program and in coordination with its subcontractors and the Health Department, MWS plans to inspect every FSEs each year. Inspection priority will be based on emergencies and hotspots, while program emphasis will be placed on continued education and enforcement. FOG plans to continue partnerships with the Metro Health Department, the Fire Marshall's Office, Codes Division, and the Department of Education with hopes to develop relationships with other Metro entities in the future. In addition, the NPDES program intends, over the next permit year, to begin educating (through enforcement and brochures) various restaurants on proper disposal of mop wash water and other waste.



Figure 4.7.3.1 FSE Grease Control Inspection Form

<b>FOOD SERVICE ESTABLISHMENT GREASE CONTROL INSPECTION FORM</b>	
Facility Name: _____	Inspection Date: _____
Facility Representative: <u>Mr. / Ms.</u> _____	Title: _____
Phone: _____	Owner/Regional Manager Name: _____
Facility Address: _____	Mail Address: _____ (if different)
Handy Map ID: _____	Sewer Plat ID: _____
GPS ID: _____	
1. Grease Interceptor? <input type="checkbox"/> Yes <input type="checkbox"/> No      2. Interceptor Size (gallons) <input type="checkbox"/> 500 <input type="checkbox"/> 750 <input type="checkbox"/> 1000 <input type="checkbox"/> 1500 <input type="checkbox"/> 2000 <i>(For #1, if "NO" then go to # 14)</i> <input type="checkbox"/> 3000 <input type="checkbox"/> Two Interceptors in series other: _____	
3. Manhole Access to Interceptor: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4      4. Estimated Grease Layer Depth: _____	
5. Effluent T visible? <input type="checkbox"/> Yes <input type="checkbox"/> No      6. Effluent T attached & in good condition: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <i>(inspector can see the T)</i>	
7. Grease Interceptor Hauler used: _____	9. Bacteria/Enzymes used: <input type="checkbox"/> Yes <input type="checkbox"/> No Product Name: _____
10. Frequency Interceptor Cleaned? _____      11. Complete Contents Pumped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
12. Records of Maintenance/Cleaning Available? <input type="checkbox"/> Yes <input type="checkbox"/> No      13. Last date cleaned: _____	
<b>Grease Trap</b> 14. Grease Trap? <input type="checkbox"/> Yes <input type="checkbox"/> No      15. Location: <input type="checkbox"/> Under sink trap <input type="checkbox"/> Floor trap <input type="checkbox"/> Outside "floor" trap <i>(For # 14, if "NO" then go to #20)</i>	
16. Grease Trap flow-through rating / grease capacity Estimate: <input type="checkbox"/> 5 gpm/ 10 lb <input type="checkbox"/> 10 gpm/ 20 lb <input type="checkbox"/> 15gpm/30lb <input type="checkbox"/> 20 gpm / 40 lb <input type="checkbox"/> 35 gpm / 70 lb <input type="checkbox"/> 50 gpm / 100 lb <input type="checkbox"/> Other: _____	
17. Frequency Trap is cleaned: _____      18. Maintenance/Cleaning Records: <input type="checkbox"/> Yes <input type="checkbox"/> No	
19. Grease Trap comments/location disposed of waste: _____ <small>BMPs &amp; outside conditions, other than grease interceptor or trap</small>	
20. Best Management Practices Implemented <input type="checkbox"/> Yes <input type="checkbox"/> No      21. Grease Recycle Bin <input type="checkbox"/> Yes <input type="checkbox"/> No	
22. Cleanout Covers missing or damaged? <input type="checkbox"/> Yes <input type="checkbox"/> No (# Cleanout covers missing: _____ damaged: _____) <small>(Facility needs to repair missing or damaged cleanout covers immediately)</small>	
23. FOG impact at dumpster or around recycle bin? <input type="checkbox"/> Yes <input type="checkbox"/> No (if Yes give explanation below)	
24. DOWNSTREAM MANHOLE: _____ Evidence of Grease in Manhole ( <input type="checkbox"/> slight <input type="checkbox"/> moderate <input type="checkbox"/> heavy)	
Comments: _____	
25. SAMPLE POINT Access? <input type="checkbox"/> Yes <input type="checkbox"/> No      Effluent Temp: _____      Effluent pH: _____	
26. Sample point ID: <input type="checkbox"/> Interceptor Effluent T <input type="checkbox"/> Downstream MH <input type="checkbox"/> Cleanout <input type="checkbox"/> Sample drop box	
27. Picture ID: _____ // _____ of Interceptor _____ of downstream MH _____ other: _____	
<b>Visual inspection results, comments:</b> _____	
Inspector Name: _____ Signature: _____	
<b>Facility Representative Signature:</b> _____	
<small>Inspection form copy provided to facility? <input type="checkbox"/> Yes</small>	



**Figure 4.7.3.2 FOG Notice of Violation**



Department of Water & Sewerage Services, Environmental Compliance  
**Noncompliance Notification**

**DATE ISSUED:** \_\_\_\_\_ **Issued by:** \_\_\_\_\_ **DATE RESPONSE DUE:** \_\_\_\_\_

**Facility:** \_\_\_\_\_ **Address:** \_\_\_\_\_

The following marked box(es)  indicate deficiencies or areas of concern that need to be addressed.

- Grease Interceptor Effluent T not attached or not acceptable, allowing fats, oils and grease to be discharged. (replace effluent T and make sure length of T is adequate, to within 18" of bottom of interceptor tank).
- Grease Interceptor Effluent T not visible or accessible for inspection. (need to verify during pumping of interceptor if effluent T is attached and in good condition, or will have to take action to install access opening over effluent T to ensure it is attached to prevent fats, oils and grease from being discharge. Also you need access to outlet compartment so it can be cleaned properly).
- Grease Interceptor mid baffle wall or side walls indicates deterioration of concrete. (inspect grease interceptor at the time the grease interceptor is completely pumped, check to ensure deterioration of concrete is not going to cause the mid baffle wall or outside walls to collapse or cause tank contents to leak out of the interceptor. Normally, the concrete thickness on most interceptors is 4", it is recommended that if deterioration of concrete is greater than 50% then the interceptor needs to be repaired or replaced.)
- Grease Interceptor fats, oils and grease layer and food solids layer are greater than 25% of the capacity of the interceptor tank. (interceptor needs to be pumped immediately, provide record of pumping to Metro; get interceptor on regular schedule to be pumped, minimum of every 3 months but some larger facilities may have to pump monthly to ensure grease does not cause problems).
- Fats, oils and grease evident in downstream manhole from facility, immediate action needs to be taken. (this could include installing new grease interceptor, controlling flows through the interceptor to prevent washout of grease to the sewer, implementing strict BMPs for all personnel to control grease discharges or other action)
- Facility has no grease control equipment installed. (if large facility you will need to install an appropriate sized interceptor or trap refer to Metro Water Services' brochure on minimum size of grease control equipment).
- No Records of interceptor or trap maintenance available at the facility for inspection review. (keep copy of all grease waste hauler manifests and records at the facility location, if the traps are cleaned by facility personnel then keep written record onsite of cleaning date, person doing cleaning and location the grease and food waste was disposed)
- Sewer cleanout covers need to be replaced, allowing rainfall inflow to sewer system.
- Fats, oils and grease on ground around recycle bin or dumpster, causing stormwater impact.

RESPONSE FROM FACILITY (attach additional information if necessary): Mail Response to:

**Metro Water Services, ATTN: FOG Program, 1607 County Hospital Rd., Nashville, TN 37218**

Facility Contact Name furnishing response: \_\_\_\_\_ Title: \_\_\_\_\_

(White copy: Metro; Yellow Copy: Facility to submit with response; Pink Copy: For Facility's records)



**4.8 Construction Site Runoff (Part III.B.8)**

This section of the program is designed to satisfy Part III.B.8 of the permit, which is intended to limit the impact of stormwater runoff from construction sites through the establishment of procedures enforced through ordinances for site planning. The procedures will be implemented by plan reviewers, inspectors, as well as through an extensive public education program.

**4.8.1 Ordinances, Regulations, and Guidance (Part III.B.8.a)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
8a	Ordinances, Regulations, and Guidance	---						
	Enforce existing ordinances and regulations	Ongoing	•	•				
	Refine procedures to enhance enforcement	PY 1 and PY 3	•					
	Evaluate and Update guidance materials	PY 1 and PY 3	•					
	Public Education	Ongoing	•	•				
	Require proof of coverage under the state’s construction general permit	Ongoing	•	•				

Metro took significant steps in the first and second permit year to enhance local regulatory mechanisms designed to improve water quality by beginning to revise the stormwater ordinance, manual, and program. During the Permit year 1, MWS focused on identifying inadequacies in the stormwater regulations. Throughout the second permit year, MWS conducted an extensive regulations revision process that involved numerous meetings and discussions with stakeholders group that consisted of members from Metro Council, the Metro Stormwater Management Committee, the development and engineering community, state and local organizations, and the general public.

Revisions to the Stormwater Management Manual were decided on toward the end of the second permit year. These revisions are expected to go into effect during permit year 3. Once in effect, Metro will provide training to staff and the development community on key program changes. Given the importance of the regulations to be as up to date as possible, NPDES has devoted a staff member to continually tracking and looking for opportunities to revise the stormwater regulations. In addition, NPDES staff meet periodically to discuss site inspection and enforcement experiences. These meetings allow staff opportunities to refine inspection procedures and enforcement mechanisms.

Metro recognizes the importance of a sound public education program in preventing polluted construction site runoff. During permit year 2, NPDES increased the public education geared toward construction site run-off. One particular method initiated in permit year 2 was the distribution of the Demolition BMP Reference Guide. Since many construction sites begin with a demolition phase that can be equally impacting to water quality, NPDES realized that public education on pollutant runoff prevention was needed in this area. So, in permit year 2, MWS created the BMP guidelines that are handed out to every site that obtains a demolition permit. There are many other areas of the NPDES public education program that address construction site runoff. The public education program is explained in more detail in Section 4.10.



Metro currently requires grading permit applicants to submit a copy of their Notice of Coverage (NOC) for a Tennessee Construction General Permit (CGP) prior to receiving approval for grading plans. This policy insures that a permittee is aware of the CGP requirement. In addition, MWS plan review engineers require all other applicable State and federal permits, such as State Aquatic Resource Alteration Permits (ARAP) and U.S. Army Corps of Engineers Section 404 Permits, to be obtained prior to plan approval.

**4.8.2 Training (Part III.B.8.b)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
8b	Train Plans Reviewers and Inspectors	Annually	•	•				

MWS recognizes the importance seeking technical training for stormwater plan reviewers and inspectors. Refer to Section 4.2.4 for the training received by MWS stormwater staff in Permit year 2.

**4.8.3 Records Management (Part III.B.8.c)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
8c	Records Management - EP&SC inspections	Ongoing	•	•				

The MWS NPDES Section records inspections and enforcement activities in a local database. Tallies for inspections are updated monthly. In permit year 2, NPDES staff conducted over 2,500 water quality inspections, averaging over 200 inspections each month (see Table 4.8.3.1). These inspection numbers were achieved despite losing two key inspectors during permit year 1. The number of water quality inspections decreased from permit year 1 to permit year 2 mostly due to staff attrition/transitions.



**Table 4.8.3.1 Annual Compliance Inspection Tally**

	Michael Hunt	Steve Wall	Mike Seremet	Rebecca Dohn	Ann Morbitt	Silas Mathis	Valerie Williams	Josh Hayes	Dale Binder	Sonia Harvat	Kimberly Moore	Preston Winesett	TOTAL
<b>Total FY02</b>	8	57	103	0	0	0	0	0	0	46	0	0	<b>214</b>
<b>Total FY03</b>	8	138	710	825	661	509	140	0	91	0	0	0	<b>3,082</b>
<b>Total FY04</b>	9	0	735	684	269	444	105	394	1,222	0	0	162	<b>4,024</b>
<b>Total FY05</b>	14	186	393	406	0	0	0	459	669	0	4	430	<b>2,561</b>
<b>Total</b>	<b>39</b>	<b>381</b>	<b>1,941</b>	<b>1,915</b>	<b>930</b>	<b>953</b>	<b>245</b>	<b>853</b>	<b>1,982</b>	<b>46</b>	<b>4</b>	<b>592</b>	<b>9,881</b>

**4.8.4 Plan Review and Inspection Resources (Part III.B.8.d)**

**Contact Name:** Danny Smith, MWS Engineering Section, 615.862.4799

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
8d	Plan Review and Inspection Resources	Ongoing	•	•				

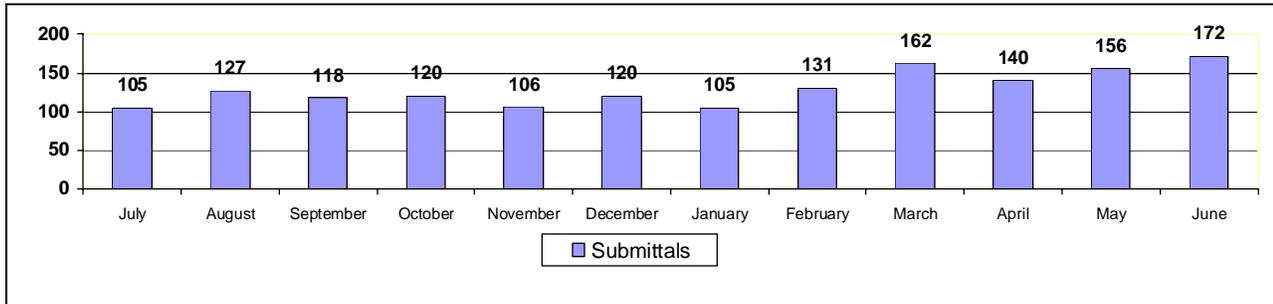
The MWS NPDES section experienced several changes within its staff in permit year 1 that carried over into permit year 2. For most of permit year 2, the NPDES section had only 5 water quality inspectors that inspected water quality issues at construction sites and non-constructions sites. Towards the end of permit year 2, another water quality inspector was hired to fill a void. It was determined during the middle of permit year 2, that the necessary inspection and coordination required of construction sites began to overwhelm water quality inspectors, therefore, limiting the amount of time spent on other non-construction water quality issues. In order for NPDES to assure better permit compliance, a redirection of work duties had to occur. During permit year 2, responsibility for inspection of construction site runoff was transferred to the stormwater infrastructure inspectors. Stormwater infrastructure inspectors were already inspecting construction sites for proper infrastructure installation and began to combine inspections of stormwater infrastructure with Erosion Prevention and Sediment Control (EPSC) inspections. Currently, there are five stormwater infrastructure inspectors, all of which have received the Level 1 Erosion and Sediment Control Workshop training. MWS is expecting to hire two more stormwater infrastructure inspectors during permit year 3. This repositioning of duties within the NPDES division will create more efficient inspection of constructions sites and will free up water quality inspectors to better handle other permit requirement duties. The data presented in Table 4.8.3.1 does not include water quality inspections performed by stormwater infrastructure inspectors, which explains, in part, the reduction of inspections from permit year 1 and 2. Water quality inspections performed by infrastructure inspectors will be tracked and reported for permit year 3.

The Plan Review Section experienced some small changes, but overall, resources for permit year 2 remained consistent with permit year 1. During permit year 2, MWS plan review section continued to provide oversight to construction site development throughout the county. There were approximately 1,562 sets of plans submitted to the Plan Review Section in the last permit year. These submittals include, among other things, grading plans initial



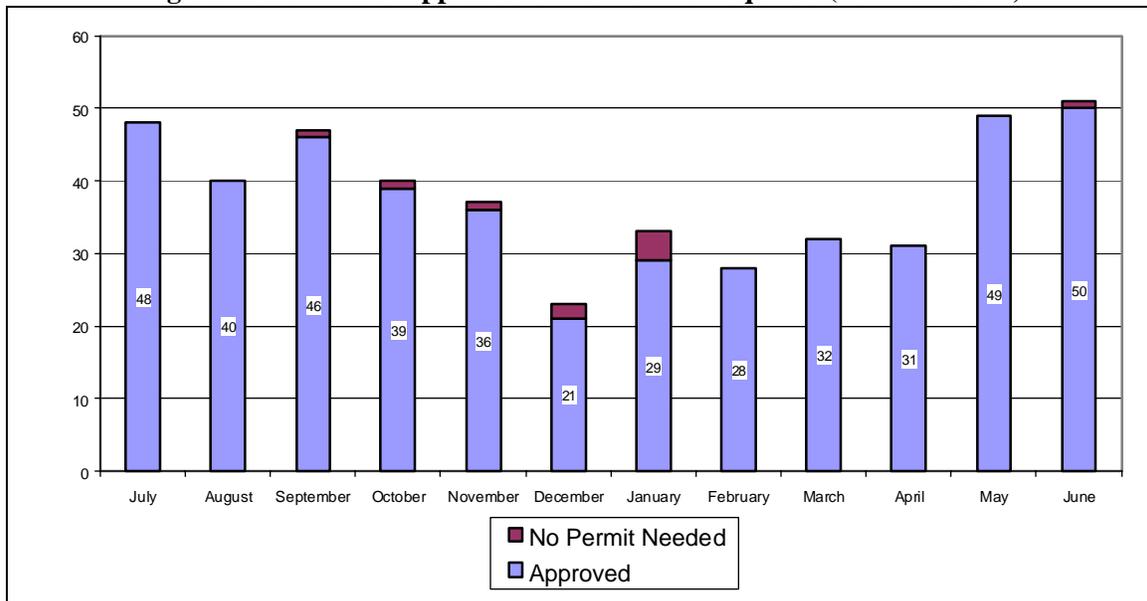
submittals, submittals of additional information, re-submittals, as-built submittals, and critical lots. Overall, there were 449 plans that were approved by the plan review section during permit year 2.

**Figure 4.8.4.1 Plans Submitted for Review**



\*\*\*Note: Submittals includes initial and re-submittal of grading plans, as-builts, critical lots, LOMA/LOMR requests and/or Preliminary PUDS.

**Figure 4.8.4.2 Plans Approved or No Permit Required (Permit Year 2)**



\*\*\*Note: Approvals include grading plans, as-builts, critical lots, LOMA/LOMR requests and/or Preliminary PUDS.

The actual issuance of grading permits is performed by inspectors within the NPDES section. Once the grading, drainage and erosion control plans are approved by the Plan Review Section, the NPDES section facilitates a pre-construction meeting with the developer, contractor, and erosion prevention and sediment control (EPSC) specialist. After the pre-construction meeting, a temporary grading permit is issued to install only the EPSC measures as discussed during the pre-construction meeting. Once the EPSC measures are installed correctly and verified by NPDES staff, the grading permit is issued for complete site grading per the approved site plans. During permit year 2, the NPDES section facilitated 284 pre-construction meetings and issued approximately 271 grading permits. The NPDES section was also responsible during the last permit year for inspection of all the active construction sites within the county. At the end of permit year 2, there were nearly 600 active grading permit sites that required NPDES inspection.



**4.8.5 Metro Activities (Part III.B.8.e)**

Contact Name: Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
8e	Evaluate Metro Activities	PY 2		•				

During permit year 2, the NPDES section began to evaluate construction site runoff originating from Metro activities. It was determined that there are several different departments within Metro that perform land disturbance activities that could contribute to polluted stormwater runoff. Some of the land disturbance activities that are performed by various Metro departments include MWS utility construction and rehabilitation, MWS stormwater maintenance projects, Public Works road and sidewalk construction/repairs, Parks Department construction and land maintenance, and Real Properties construction/renovations. Most of the large projects are contracted out to private companies that perform the actual site grade work. Currently, utility projects such as water line and road construction are exempt from obtaining grading permits through the NPDES office per Volume 1 of the Storm Water Management Manual. A concerted effort was initiated during permit year 2 to educate various Metro departments and contractors on proper Erosion Prevention and Sediment Control (EPSC) practices, especially on those projects, not requiring grading permits. NPDES staff have been providing input to major water, sewer, and stormwater maintenance projects. Most of three smaller projects that involve repairs and rehabilitations are performed by Metro work crews. During permit year 2, the NPDES program began training Metro crews on the proper EPSC measures.

**4.8.6 Future Direction of Element 8 – Construction Site Runoff**

**Ordinances, Regulations and Guidance**

The Stormwater Regulations Review Committee completed the review and suggested revisions to the Stormwater Management Manual during permit year 2. The revisions are expected to go into effect during permit year 3.

Existing ordinances and regulations will continue to be enforced until new regulations are implemented. An NPDES staff member will be devoted to continuously reviewing stormwater regulations and ordinance for potential updates.

**Training**

Plan reviewers and construction site inspectors will continue to be informed of and educated on the latest and most effective management practices. Meetings between these two groups are ongoing and will continue throughout the permit cycle.

**Records Management**

Inspections and any enforcement actions will continue at a steady rate through the second year of the permit. These inspections will be documented in the NPDES database and tallies will be updated monthly.

**Plan Review and Inspection Resources**

Staffing is expected to remain constant after the additional infrastructure inspectors in the NPDES section are hired.

**Metro Activities**

The NPDES office will continue to manage construction site runoff from Metro activities. In order to accomplish this task, NPDES will have to take a two-prong approach to manage the runoff from activities requiring a grading



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permit and those not requiring a grading permit. Metro activities requiring a grading permit allow NPDES to have adequate oversight to prevent pollutant runoff. For the activities not requiring grading permits, NPDES will work to continue the education of different departments on proper EPSC measures.



**4.9 Habitat Improvement (Part III.B.9)**

The objective of Part III.B.9 of the permit is for MWS to investigate and report potential areas of stream habitat improvement within Davidson County.

**4.9.1 Report Habitat Improvement Activities/Projects (Part III.B.9.a)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
9a	Report habitat improvement activities/projects	Annually	•	•				

Metro recognizes the benefits stream habitat improvements can bring to the water quality of Davidson County streams. Many of Metro’s activities, while designed to benefit the social environment, also provide improvement to aquatic habitat that provide direct benefits to water quality. One example is the many projects conducted by the Metro Parks Department that are designed to provide recreational opportunities. These activities may ultimately provide long-term habitat improvement and increased water quality. One particular effort within the Parks Department has been the establishment by the Metropolitan Council of the Greenways Commission of Metro Parks and its Citizens Advisory Committee (CAC). The Commission and the CAC oversee the community’s public/private greenways effort. Several greenways, featuring hiking, biking, horseback riding trails, and walking/running paths have been established along streams in Nashville. MWS presently has a staff member on the greenway committee to promote and enhance habitat and water quality improvements of the program. Overall, greenway projects have improved habitat and water quality across the county by preserving, through a conservation easement, many miles of stream corridor that would, otherwise, be subject to potential development. Metro added approximately 7 miles of greenway during permit year 2. To date, Metro manages approximately 28.5 miles of total greenway within Davidson County. Presented below are some of the more recent greenways and other Park projects/activities.

- Adoption of the 2002 Parks & Greenways Master Plan that identifies conservation of Davidson County’s seven main water corridors as greenways.
- Completion of 23 miles of greenway trails and conservation of over 3800 acres of land, including:
- Shelby Bottoms Greenway and Nature Park on Cumberland River (800 acres);
- Downtown Greenway (connects Riverfront Park to the Bicentennial Mall);
- Metro Center Levee Greenway;
- Mill Creek Greenway – Ezell Park;
- Mill Creek Greenway – Blue Hole Road;
- Harpeth River Greenway;
- Stones River Greenway – Two Rivers Park to Heartland Park;
- Stones River Greenway – YMCA to Percy Priest Dam;
- Richland Creek Greenway – Phase I;
- Brookmeade Park Cumberland River Greenway;
- Beaman Park – Phase I;
- Bells Bend Greenway — Master Plan completed; and
- Bellevue Greenway



The Stormwater Maintenance Program is another department within Metro that strides to incorporate habitat improvement measures. As the majority of the maintenance projects are designed to relieve residential or public right-of-way flooding, some of the larger stormwater Capital Improvement Projects (CIP) allow flexibility to incorporate some aspect of habitat improvement. A good example of this is the Antioch High School (Project #03-SD-0416) Capital Improvement Project (CIP). An intermittent stream originating on the Antioch High School property currently drains straight into a subdivision street where the water collects roadway pollutants before being routed to the stormwater infrastructure. The stream is causing erosion of the curb and gutter at point where it enters the street, and major flooding to the streets and residences during heavy rains. Figure 4.9.1.1 depicts photographs of the stormwater problems that are persistent in the residential area downstream of Antioch High School.

**Figure 4.9.1.1 Antioch High School Project**



During permit year 1 and 2, MWS staff and AMEC engineers collaborated on a design to relocate this intermittent stream to drain around the subdivision, bypassing the road all together. The design of the relocated channel incorporated habitat and water quality improvements, such as native riparian plantings, erosion control matting, low-flow channel, and hand-placed river cobble. The design of the relocated channel will add more than 1,600 linear feet of open channel intermittent stream, which will directly improve stream aquatic habitat. During permit year 2, applicable state and federal permits were obtained and a contractor was hired to construct the project. The project is expected to be completed sometime in the third permit year. Figure 4.9.1.2 depicts the latest design of the project.





MWS stormwater maintenance program also conducts routine cleanouts of ditches and streams. The maintenance staff removes trash and other debris that impede flow. The removal of the trash and debris benefits aquatic habitat and water quality.

MWS is currently partnering with the Tennessee Department of Agriculture and several other State and local agencies in the Sevenmile Creek Watershed Community Project. This Project is an initiative to improve or preserve water quality in healthy streams and to restore and de-list polluted streams within the Sevenmile Creek Watershed. The project is funded through 319 Grant monies and the goals are to restore riparian areas; improve in-stream habitat; install BMPs specific to pollution sources of the watershed; promote public/community interest, awareness, and cooperation in maintaining and improving water quality; and engage developers, regulators, and planners in smart development techniques and practices for water quality. In the next year, the project will implement wider stream buffers on public lands, implement model stream buffers in a private residential community, implement in-stream habitat improvements for the Nashville Crayfish, and develop an educational greenway trail along the stream in the Ellington Agricultural Center property.

#### **4.9.2 Future Direction of Element 9 – Habitat Improvement**

This program element's objective is to make TDEC Water Pollution Control aware of habitat improvement activities in the permit area. In satisfying this permit element, Metro takes the opportunity to search for other areas within different departments where habitat improvement could be integrated into normal department tasks.

MWS recognizes that the Parks Department provides the most opportunity to promote habitat improvement within its normal processes. In fact, many of their normal processes already include a component of habitat improvement. MWS will continue to have a staff member participate on the greenway committee and stormwater CIP design to promote wildlife habitat improvement. To further expand on this area, MWS has begun to lay the groundwork for a "water quality partnership" between the NPDES section and the Parks Department. The partnership would include a coordinated effort to promote water quality/habitat-friendly land maintenance and to search for potential areas on Park properties where habitat improvements and public education can be performed. MWS will also explore a "water quality partnership" with other Metro departments.

MWS has also recognized an opportunity to promote habitat improvement in the grading permit process. Once the new regulation revisions mentioned in Section 4.2 go into effect, MWS will promote the use of "low impact development" (LID) versus the standard structural BMPs. By providing incentive to incorporate LID for future projects, MWS will promote the preservation of trees, green areas, riparian buffers, and other natural areas.



**4.10 Public Information and Education (Part III.B.10)**

This element is designed to meet Part III.B.10 of the permit by facilitating an ongoing program of public education and outreach efforts. Areas of education include general housekeeping procedures; use, storage, and disposal of pesticides, herbicides, fertilizers, used oils, and other hazardous chemicals; identification and prevention of illicit connections and discharges and long-term water quality impacts; responsible construction that prevents erosion and sediment loss; and detention pond maintenance. These topics are presented to audiences ranging from school children to homeowners’ associations to developers and engineers.

The NPDES Program is committed to addressing the public education requirements of the permit. The public education program involves a joint effort between NPDES staff and the MWS Public Information Officer (PIO), Sonia Harvat.

**4.10.1 Public Education of Other Elements (Part III.B.10.a)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420  
 Sonia Harvat, MWS Public Information Officer, 615.862.4494

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
10a	Inform Public – General Housekeeping Procedures	Ongoing – at least one activity per year						See Activity 1F
	Inform Home Owner Associations – Detention Pond Maintenance							See Activity 1G
	Educate Engineering and Development Community – Long Term WQ Impacts							See Activity 2A / 2D
	Inform Public – Pesticides, Herbicides, and Fertilizers		•	•				See Activity 5B
	Inform Public – Oils and Hazardous Chemicals							See Activity 5B
	Inform Public – Illicit Connections / Discharges							See Activity 6D
	Educate Engineering and Development Community – Construction WQ Impacts							See Activity 8A
	Other Not Yet Identified Opportunities							

**Inform Public - General Housekeeping Procedures**

The following components of the public education program are geared toward educating the general public on proper housekeeping measures:

- The NPDES Section and the PIO held several public education events throughout the year. Representative photographs of events are presented in Figure 10.1.1. Some of the events are designed to be a hands-on training, while others are designed to present stormwater quality information to the public. During permit year 2, the NPDES section ordered public education



material such as magnets, pens, cups with water quality logos, that will be given out at future events.

**Figure 4.10.1.1 Typical Public Education Events**



- In previous permit years, the NPDES Section developed a general brochure that summarizes the NPDES Program and explains ways for the general public to prevent stormwater pollution. This brochure, titled “Water – Protect It With Your Lifestyle”, is given out at presentations and events where NPDES staff are present and is available for pick up at several Metro offices (See Appendix B).
- The NPDES Program provides a Stormwater Pollution Hotline (313-PURE) for reports related to any discharge or activity that is contributing to water pollution. The hotline functions 24-hours a day, 7-days a week and is managed through the NPDES Program office. This hotline number is included on all of NPDES educational materials. The NPDES section has also created a website that also provides the public a forum for reporting stormwater quality problems via email. The address to the website is:  
[www.nashville.gov/stormwater/](http://www.nashville.gov/stormwater/).
- Metro runs a video on Channel 3 (public access channel) throughout different times of the year that specifically addresses construction site stormwater runoff and the grading permit process.
- The NPDES Program has a logo and slogan (Pure Nashville...Right as Rain) that is extensively promoted on program materials such as vehicles, website, etc.
- NPDES staff and the MWS PIO give numerous presentations to educate the general public on what stormwater pollution is and how the public can help to reduce pollution. A list of the presentations provided by NPDES staff and the PIO are attached in Appendix A. Many of these presentations are also available on the Metro website.
- An NPDES program video has also been developed in previous permit years as a public education tool.
- NPDES staff uses government-issued vehicles in performing its functions of sampling, complaint investigation, and construction inspection. In an effort to promote its program and public awareness, the NPDES Section displays the NPDES logo and hotline phone number on the nine (9) NPDES Section fleet vehicles (see Figure 4.10.2).



**Figure 4.10.2 NPDES Truck and Van**



- Water Works! is a pilot public education program through the Middle Tennessee State University (MTSU) Center for Environmental Education designed to promote clean water in Tennessee through a series of public service announcements, both video and audio, promoting water quality through responsible action. Water Works! is partnering with the Phase I and II MS4 municipalities in Tennessee to complete their required public education mandate. MWS is participating the public education campaign as well by providing money to buy airtime for the public service announcements. During permit year 2, MWS contributed approximately \$1,650 to the Water Works program to receive airplay in the Middle Tennessee area.
- MWS sends annual notices to all properties located in the special flood hazard area, approximately 10,000 properties. The pamphlet, found in Appendix B, is individualized to show a map of the owner's property and floodplain. The pamphlet also includes general information about flood hazard areas, flood insurance, safety, permitting requirements, drainage system maintenance, and illicit discharges.

#### **Inform Homeowner Associations - Detention Pond Maintenance**

During permit year 2, NPDES Section began a pilot BMP inspection program. The program was initiated to identify compliance issues with detention ponds and the best available methods to bring a site into compliance. It was determined from the pilot inspection program that there are many compliance issues associated with existing detention ponds. During permit year 3, NPDES will embark on a public education campaign with homeowners associations to promote proper maintenance of BMP structures. NPDES has created a brochure on detention pond maintenance and has obtained a list of Homeowners Associations to determine if the brochure can be incorporated into their newsletter.

#### **Educate Engineering and Development Community – Long Term Water Quality/Construction Water Quality Impacts**

MWS works along with TDEC and the University of Tennessee in presenting the TDEC Erosion Prevention and Sediment Control Training and Certification Workshops in the Nashville area. This class is a foundation-building course open to the public, but intended for all levels of government, plan preparers and reviewers, and designers and engineers. The course aims to build a solid working knowledge of erosion and sedimentation processes and practices and hydrologic cycles. It provides a better understanding of the impact of erosion on Tennessee's natural resources and of Best Management Practices for erosion prevention and sediment control on construction sites.



In Year Two of the Permit, six of these workshops were offered in the Nashville area – three Level I workshops and three Level II workshops. Tom Palko with MWS gave a 45-minute presentation at the three Level I workshops outlining Metro Grading Permits and EPSC requirements. Additionally, a number of people from the Nashville area have attended the workshop in other areas of Tennessee.

MWS NPDES staff also gave a presentation at a separate workshop in June that focused on the current issues in stormwater regulations in Tennessee. This workshop was designed to educate engineers, public works and utility directors, project managers, business administrators, developers, planners, surveyors, property owners, architects, and attorneys. Michael Hunt, with the NPDES Section of MWS, presented on the Phase I MS4 Program and as part of his presentation, promoted the benefits to long-term water quality, when the incorporation of LID is included in the project design.

NPDES staff also held a separate workshop at the end of permit year 2 that was specifically designed to educate local government officials and engineers on the benefits LID can bring to water quality and the social environment. Kimberly Moore of the NPDES section presented examples of different LID techniques that could be incorporated into Nashville development.

In a continuing effort to educate the development and construction community, MWS periodically sends out notices via email to provide further information on Metro permit issues. The email distribution list has been compiled from attendees at Pre-Con Meetings and Grading Permittees.

A short Microsoft PowerPoint® presentation ran for several months on Metro's cable channel that educated the public, but was of particular interest to developers, about the need for grading permits and providing the proper contact to receive more information.

### **Oils and Hazardous Materials – Education for the General Public**

In the past year, Public Works has focused on school based recycling education making presentations at elementary schools throughout Nashville. In addition, Public Works has provided outreach to the public through events such as Earth Day and other festivals using display boards, the Kiosk, and brochures to educate the public on recycling and waste management. One special Household Hazardous Waste (HHW) collection event was held in partnership with TDEC where citizens were allowed to bring mercury thermometers and exchange them for digital thermometers. HHW educational material was handed out to the public at this event as well. All mercury thermometers were brought to Public Works' permanent HHW facility for disposal.

The list developed by TDEC of used motor oil recycling centers within Davidson County, along with addresses, phone numbers, and information about proper disposal of used oil, is provided through a link from the NPDES stormwater quality website at <http://www.state.tn.us/environment/dca/oil/site11.php>. Toward the end of permit year 2, NPDES staff began visiting some of the facilities within Davidson County that use or store oils and other hazardous materials and left some public education material on the proper use, storage, and disposal. The NPDES section office intends to continue this public education effort during the next permit year. In addition, the NPDES office intends to incorporate an inspection of oil change facilities, salvage yards, etc. into the future industrial inspection program.

As mentioned in Section 4.5, the NPDES office initiated a campaign in permit year 2 to educate commercial distributors of herbicides, pesticides, and fertilizers, as well as landscaping companies that routinely apply these chemicals. NPDES obtained a list of these businesses through the yellow pages and created a "Lawn and Garden" brochure that was mailed out to each business on the list. The brochure discussed the proper techniques to follow when applying such chemicals. A copy of the brochure is attached in Appendix B.



### Illicit Connections/Discharges – Education for the General Public

MWS NPDES Section continued the ongoing process of educating the public on reporting spills, illegal dumping, illicit connections, and other water quality problems through several types of media, including the use of the telephone hotline, distributing educational brochures, public service announcements, educational events, etc.

The newest and most prevalent form of public education and notification was developed in permit year 1. In 2003, MWS personnel conceived a cartoon character, “Toxic Dude”, who is consumer-friendly and approachable. A graphic designer was engaged to bring the staff’s concept to life. The cartoon includes a sign that mirrors the design of the catch basin markers used on storm drains. “Toxic Dude” is reminded by fish “What You Dump in a Storm Drain Ends Up in My Home!” and encourages readers “Don’t Dump On Us!” (See Figure 4.10.1.2). The stormwater website and hotline numbers are included in the graphic for additional information. In permit year 2, the “Toxic Dude” public education campaign was continued through cooperation with the Metro Transit Authority (MTA). MWS contracted with MTA to place the “Toxic Dude” logo in strategic areas located throughout the county. The areas were chosen, based on an analysis of previous years’ confirmed illicit discharges. MWS contracted the placement of the “toxic dude” logo on 20 bus stop benches, 40 interior bus signs, and 6 external bus posters during its promotional campaign. At the end of the campaign, many of the bus benches were salvaged for future public education use and MTA decided to leave the interior bus signs up.

Figure 4.10.1.2 Toxic Dude



One method the NPDES section uses to judge the success of the public education campaign in reducing the number of illicit discharges is to track the number of water quality complaints that are received. As mentioned in Section 4.6, all water quality-related complaints received by or routed to the NPDES Section are logged into databases that track the status of all stormwater quality complaints that are investigated by NPDES Section personnel. In a careful analysis of the databases over the last couple of years, it is apparent that the amount of stormwater quality complaints that the NPDES section receives from the general public is increasing. We believe that part of the reason for this increase is the comprehensive public education program that was put in place by the NPDES section with help from the PIO. The NPDES section also analyses the illicit discharge investigation database to determine if there are any trends present within the county. If in analyzing the data regional trends are noted, public education efforts such as the “Toxic Dude” campaign will be more heavily focused in those regions.



**4.10.2 World Wide Web Site (Part III.B.10.b)**

**Contact Name:** Anna Kuoppamaki, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
10b	World Wide Web Site	----						
	Enhance Public Works Website	Ongoing	•	•				
	Provide Reporting Mechanism	Ongoing	•	•				
	Establish an Area Dedicated to Recognition	PY 4						

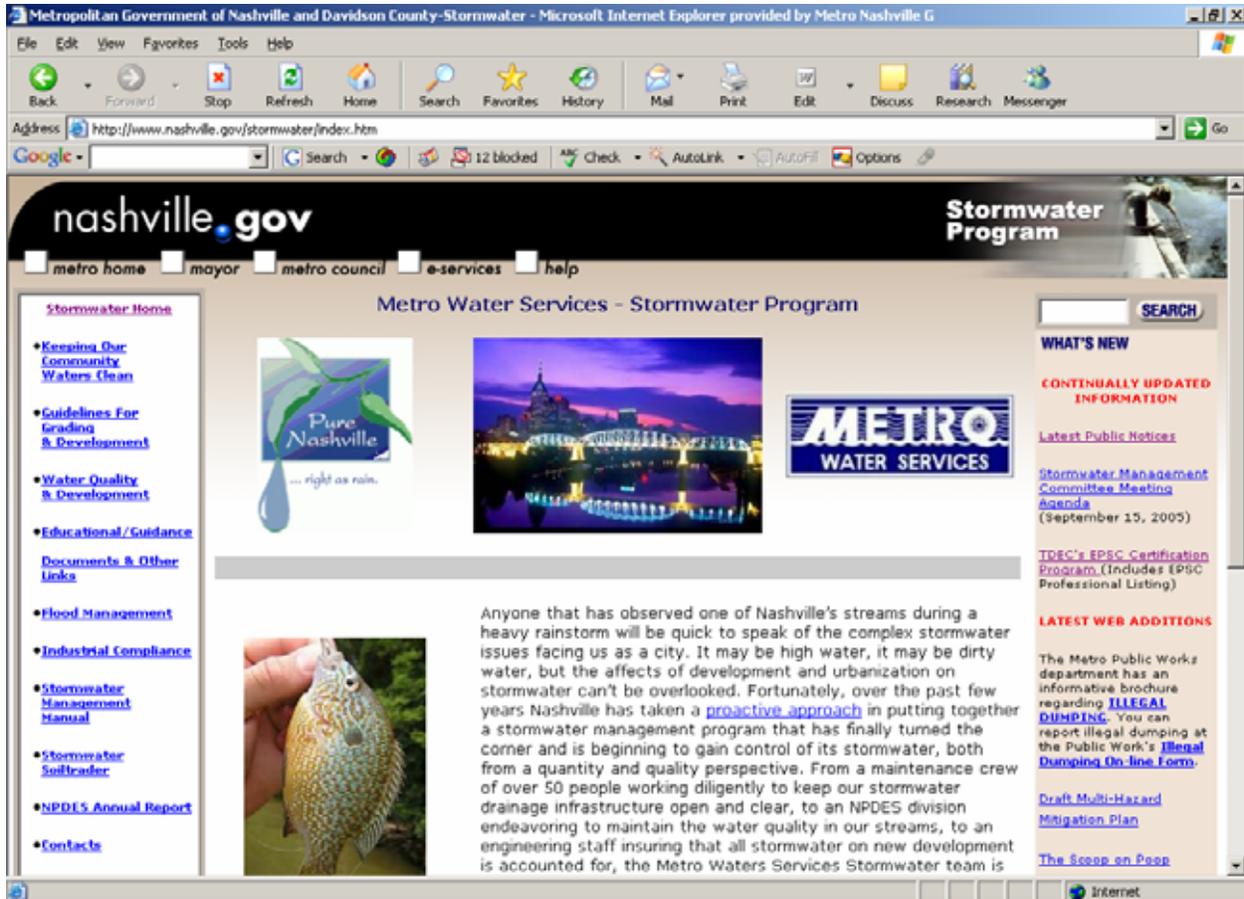
Metro’s Cycle 2 NPDES permit contains references to Metro Public Works as the Department that oversees the NPDES permit implementation. However, in April 2002, the Stormwater Program moved from Metro Public Works to Metro Water Services. The NPDES Section and permit management is now located within Metro Water Services. Therefore, the NPDES section website can be found on the World Wide Web at [www.nashville.gov/stormwater](http://www.nashville.gov/stormwater) (see Figure 4.10.2.1). This site contains an enormous amount of information including summaries about the NPDES MS4 program activities, documents pertaining to NPDES requirements, informative articles to educate the public about water quality impacts and preventative measures, and links to many websites that provide further information about water quality friendly activities and programs in Nashville.

In permit year 2, the MWS NPDES Section redesigned the Stormwater website to be more user-friendly and to include the most up to date information. In previous permit years, the NPDES section relied on Metro’s Information Technology department to conduct revisions to the website. Due to their workload and other demands, revisions to the website often took an extended period of time. During the redesign of the website in permit year 2, NPDES obtained specific software to perform the website renovations themselves. By obtaining this software, NPDES will be able to keep the website up to date throughout the year.

Visits to the Metro Nashville Stormwater web page more than doubled in permit year 2 from permit year 1. There were 33,819 visits made to this website from July 2004 through June 2005, averaging 92 hits per day. A complete report showing the web trends is available in Appendix B.



Figure 4.10.2.1 Metro Stormwater Webpage



### 4.10.3 Future Direction of Element 10 – Public Information and Education

#### Public Education of Other Elements

Over the next couple of permit years, the NPDES Section, with cooperation with the PIO, looks to significantly boost the public education program. Metro believes that public education will play, perhaps, the largest role in improving the water quality of the Davidson County streams on a long-term basis. The NPDES section will continue to formulate and distribute educational materials that will promote a better awareness of stormwater pollution prevention that should be followed in Davidson County. The NPDES Section is also committed to pursuing various other educational mechanisms/opportunities within the community. One particular area that the NPDES section and PIO will look to step-up is the education of Metro school students. NPDES is hopeful that the Davidson County Board of Education will adopt the program to be included as a part of the Davidson County Public Schools science core curriculum. It is the intent of the NPDES Section to facilitate similar programs at any of the various private schools in Davidson County that would like to cover such topics.

#### World Wide Web Site

As new presentations and revisions to the stormwater program are developed, information will be included on the webpage. It is the desire of MWS to keep the development community and the general public up to date with program changes and/or additions.



**4.11 Reporting**

This section is designed to meet Part III.B.11 of the permit by summarizing program elements and revisions each permit year and by quantitative and qualitative controls assessment when appropriate. Components of this ongoing element include ongoing data collection, data compilation, and creating the annual report.

**4.11.1 Compliance Report (Part III.B.11.a)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
11a	Compliance Report	End of each PY (+ 6 months)	•	•				Annually

During permit year 2, Metro recorded and assessed program activities for the year and compiled the annual compliance report. For year two of the second permit cycle the annual activities have been reported in a concise form.

**4.11.2 Propose Third Permit Term Cycle Activities (Part III.B.11.b)**

**Contact Name:** Michael Hunt, MWS NPDES Section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY2
			1	2	3	4	5	
11b	Propose Third Permit Cycle Activities	End of PY 4 (+ 6 months)						

Metro proposes that it prepare a brief narrative rationale to support its intent for the third permit term activities (July 1, 2008 through June 20, 2013) six months after year four of the second permit term (December 31, 2012).

**4.11.3 Future Direction of Program Element 11 – Reporting**

Metro will continue to track pertinent components of its stormwater management program to aid in the development of the annual report. Databases will be maintained and updated as an ongoing effort. Also, Metro will investigate the development of management tools to facilitate more efficient data collection and report generation for future annual reports.

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## 5.0 Monitoring Programs

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 2
			1	2	3	4	5	
A	Ambient – 8 or more in-stream locations Sample each site at least 6 times annually	6X Annually (Bi-monthly)	•	•				Ongoing
B	Wet Weather – 3 or more in-stream locations Sample each site at least 2 times annually	2X Annually	•	•				Completed as part of Sevenmile Creek Master Plan
C	Industrial – Sampling based on inspections	As needed	•	•				
D	Bioassessment – Perform RPB III at 2 designated sites Perform RPB III at 1 or more reference sites	Annually	•	•				
D	Bioassessment – Refine Procedures	PY 1	•					Ongoing
D	Bioassessment – Perform “quick assessments” as necessary	Annually	•	•				
E	Loadings Estimate – Report EMC changes	PY 5						Ongoing
E	Loadings Estimate – Report annual volume and loading changes	Complete by end of PY 3						

### 5.1 Wet Weather Sampling

The NPDES Section has adopted a wet weather characterization approach that focuses on stream monitoring to quantify the status and trends of water quality. The data collected is intended to assist the section in ranking stormwater management program resources and practices, and to establish goals for the waterways. The NPDES Section has developed a stream monitoring approach based on the assessment of three watersheds with mixed land uses. The watersheds selected, their land use mixes, their expected future development, and potential monitoring locations are as follows and presented in Figure 5.1.

- Ewing Creek is a tributary to Whites Creek that has been moderately developed for residential and commercial use with a high potential for future development. The monitoring site is located at the Knight Drive bridge crossing.
- Sugartree Creek is a tributary of Richland Creek, located southwest of Nashville’s central business district. It is considered fully developed with residential and commercial land use resulting in a low potential for future development. The monitoring site is located on Estes Lane off of Woodmont Boulevard.

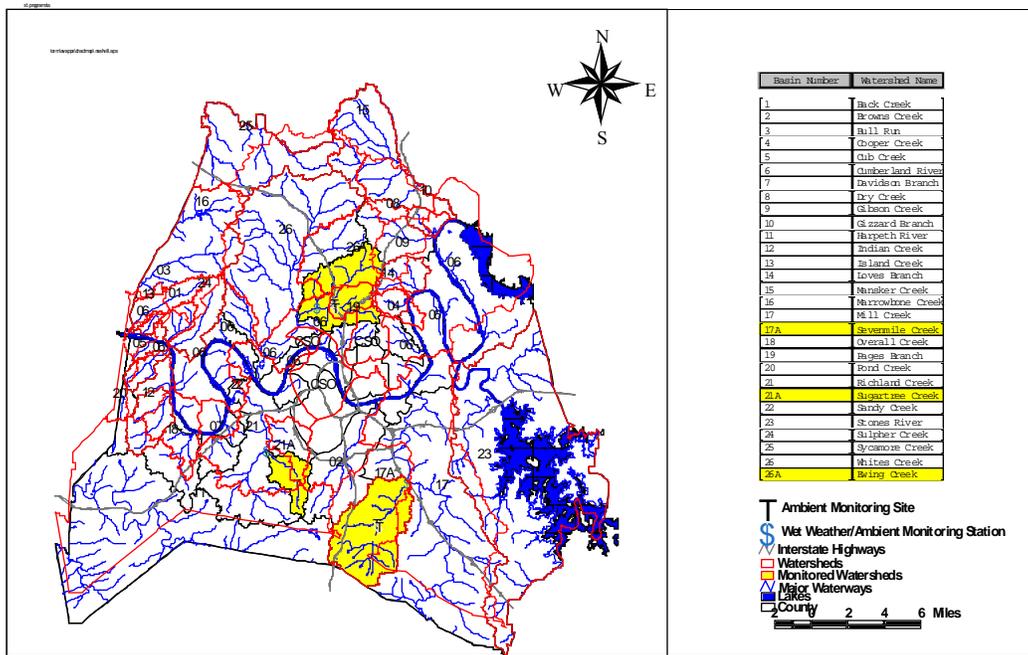


- Sevenmile Creek is a tributary of Mill Creek, located in the southeastern corner of Davidson County. It contains partially rural, residential, and commercial use areas and has a high potential for future development. The monitoring site is located at the bridge crossing of McCall Street and Antioch Pike.

Metro is directed by the permit to obtain samples from an optimum event, and it strives to sample events where qualifying amounts occur at all three sites for more useful comparative data analysis. During permit year 1, the equipment that had been installed at monitoring stations in cycle 1, permit year 5 failed. Metro staff returned to manual sampling at each of the three locations. Because of the equipment failure, Metro only collected one sample in permit year 1, cycle 2 (March 29, 2004) rather than the two sampling events that had been planned. In the previous annual report, the NPDES Section stated that an extra sampling event would be conducted during permit year 2. Unfortunately, due to weather patterns, a third (additional) sample was not performed. NPDES did perform the two required wet weather samples during permit year 2.

Trained NPDES staff members perform all sample collection and handling. EPA-certified laboratories using EPA-approved, standard methods conduct all sample analyses.

**Figure 5.1.1 Wet and Ambient Weather Monitoring Locations**



The wet weather monitoring data and other observations are stored in a database illustrated in Figure 5.2.1 Appendix C presents detailed records of the wet-weather sampling activities.



Figure 5.1.2 Wet-Weather Monitoring Database

The screenshot shows a Microsoft Access form titled "Wet Weather Monitoring". The form is divided into several sections for data entry:

- Incident #**: [Text box]
- Watershed**: Mill Creek (dropdown)
- Site ID**: 7-Mile (dropdown)
- Background (pre-rain event) or Rain Event**: [Text box]
- Rain Event**: [Text box]
- Date**: 11/2005 (dropdown)
- Time**: 12:00 (dropdown)
- Personnel**: [Text box]
- Total Time of Event**: 0 hrs (text box)
- Velocity**: 0 (text box)
- Rainfall**: 4 (text box)
- Visual Observations**: [Text box]

On the right side, there are two columns of monitoring parameters with corresponding values:

Temp		TSS	21
pH		TDS	270
Chromium	0	Total Ammonia Nitrogen	0.15
Copper	0	Nitrate-Nitrite Nitrogen	1.9
Lead	0.0084	TKN	0
Nickel	0	Total Nitrogen	1.9
Zinc	0.034	Total Phosphorus	0.29
BOD5	0	Dissolved Phosphorus	0.24
COD	0	Fluoride	0
Cyanide	0		

Below these is a section for "Analysis for Rain Event Only":

Fecal Coliform	1000
Fecal Strept	0
Oil, Grease	0
E. coli	0

At the bottom, it shows "Record: 14 of 73" and "Form View".

## 5.2 Ambient Monitoring Program

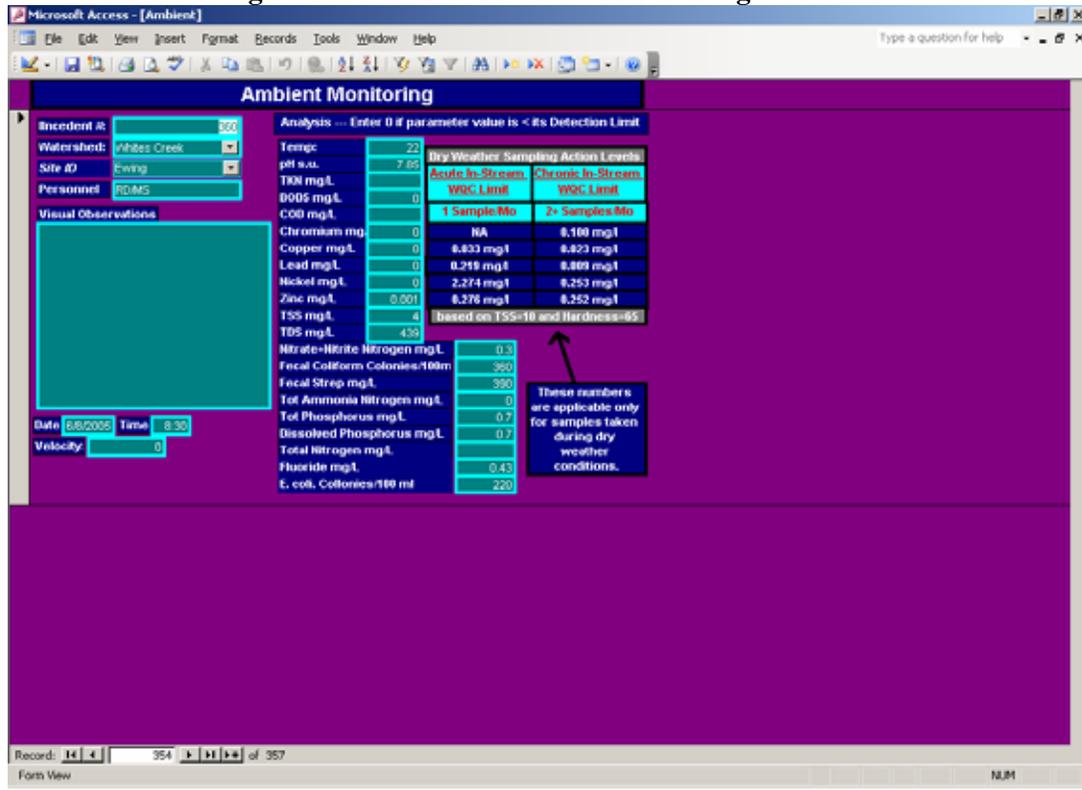
Ambient stream monitoring includes two fundamental components: (1) regular grab samples from established points in the streams and (2) the assessment of the biology and stability of selected streams. Ambient stream monitoring includes the bimonthly collection of a grab sample from the downstream station (two sites have two upstream ambient sampling locations) and from a site approximately two-thirds of the way up the stream length. The locations by watershed are as follows and presented in Figure 5.2.1.

- **Ewing Creek:** The three monitoring sites are the bridge crossing at Knight Drive, close to Ewing Lane, and Brick Church Pike.
- **Sugartree Creek:** The two monitoring sites include a site adjacent to the Kroger on Harding Place, and a site at the bridge crossing on Hobbs Road.
- **Sevenmile Creek:** The three monitoring sites are the bridge crossing of McCall Street and Antioch Pike and two sites on separate tributaries close to the bridge crossing at the entrance of the Players Club apartment complex, south of the Ellington Agriculture Center.

Ambient monitoring is conducted on the same day of each month every two months, regardless of weather conditions, within the limits of safety. All stream samples are analyzed for the parameters listed in the permit. The ambient monitoring data and other observations are stored in a database illustrated in Figure 5.2.1. The ambient-weather monitoring data is presented in Appendix C.



Figure 5.2.1 Ambient Weather Monitoring Database



### 5.3 Industrial Inspections

Industrial inspections were conducted in fulfillment of program element 7. During permit year 2, there was no necessary sampling required of the industrial facilities that was collected. When stormwater problems were noted, they were visually obvious and did not require sampling. Any future sampling required for industrial facilities will be reported in future Annual Reports.

### 5.4 Biological Assessment

Metro conducted its program of periodic biological assessment of two urban streams and one reference stream during permit year 2. Early in April of 1999, the NPDES Section submitted its chosen bioassessment sampling sites and protocols to TDEC. The Director of Water Pollution Control subsequently approved the submittal. The NPDES Section originally chose Sevenmile Creek and Sugartree Creek as the two stream bioassessment locations. These sites were chosen because they allowed the NPDES Section to combine new biological data with sampling data that has been and will be gathered. This enabled the NPDES Section to gain a better understanding of the streams' conditions and how activities and situations affect watersheds. Although Sevenmile Creek wasn't actually listed as a currently impacted stream, it was anticipated that it would be designated by TDEC in the 2004 303(d) list. In addition, the "endangered" Nashville crayfish (*Orconectes shoupi*) are present in Sevenmile Creek, and it was decided that this stream should be monitored carefully and improved to ensure the well being of the species. Subsequently, in cycle 1, permit year 5, the NPDES Section determined that Sugartree did not have the base flow necessary to collect adequate biological data. The NPDES Section consulted with TDEC staff and chose Browns Creek as the second stream for biological assessments. It is anticipated that Browns Creek will maintain the base flow necessary to support biological monitoring and was sampled in permit year 1 and 2.



Metro's Standard Operating Procedure (SOP) of the Rapid Bioassessment Protocol (RBP) III, developed in September of 1999, was refined during the first permit cycle. Figures 5.4.1 through 5.4.3 depict samples of stream survey forms that are used in the field.

For the past 3 years, the NPDES Section has more consistently applied the scoring system for the habitat assessments. Instead of having multiple people performing assessments on the same stream, one person handles the assessment. Since the habitat assessment scoring is mostly subjective, keeping staff consistency in conducting the assessment removes some of the variability. Since one staff member has conducted the scoring, that staff member can conduct a quick check for noticeable changes in the field, instead of re-assessing the stream at each visit. In the future, if no changes are noted, a new habitat assessment will not be conducted.

For permit year 2, biological assessments were completed in the fall and the spring for the reference (Whites Creek) and test streams (Browns Creek and Sevenmile Creek). The basic habitat for each creek has not changed from previous permit years. Browns Creek and Sevenmile Creek still retain approximately 87% and 78%, respectively, of the reference stream habitat.

The biological survey of the streams yielded the following results. Browns Creek scored, out of 100 possible points, a 62 in the Fall of 2004 and a 33 in the Spring 2005. Sevenmile Creek scored 86 in Fall of 2004 and 62 in the Spring of 2005. Overall, the two test streams scored a slightly higher value during permit year 2 in compared to permit year 1.



Figure 5.4.1 Sample Stream Survey

Stream Survey Information		Storet #		Physical Stream Characteristics (cont.)																																							
Stream: <u>Browns Creek</u>				<table border="1"> <thead> <tr> <th></th> <th>Riffle</th> <th>Run</th> <th>Pool</th> </tr> </thead> <tbody> <tr> <td>Depth (m)</td> <td>3"</td> <td>8"</td> <td>18"</td> </tr> <tr> <td>Width (m)</td> <td>3</td> <td>3</td> <td>4</td> </tr> <tr> <td>Reach Length (m)</td> <td>40</td> <td>40</td> <td>20</td> </tr> </tbody> </table>				Riffle	Run	Pool	Depth (m)	3"	8"	18"	Width (m)	3	3	4	Reach Length (m)	40	40	20	Staff Gauge/Bench Ht.																				
	Riffle	Run	Pool																																								
Depth (m)	3"	8"	18"																																								
Width (m)	3	3	4																																								
Reach Length (m)	40	40	20																																								
Stream Location: _____							Velocity (CFS)																																				
County Code:(FIPS) _____		Field # _____					Flow (CFS)																																				
Major Basin: _____		Assessors: <u>MS</u>					Habitat Assessment Score																																				
WBID#HUC: _____		Date: <u>05/10/2004</u>					RR# _____																																				
WBID Name: _____		Time: <u>11:00 AM</u>																																									
Lat/Long Deg: _____		Stream mile: _____																																									
Lat/Long Dec: _____		Stream Order: _____																																									
USGS Quad: _____		Reach file: _____																																									
Drains to: _____		3Q20: _____																																									
Ecological Subregion: _____		Elevation (ft): _____																																									
Objectives: _____																																											
<b>Samples Collected</b>		<b>Meters used:</b>		<b>Substrate (%) (Visual estimates)</b>																																							
Chemicals Y or N _____		Life Assessed? _____		<table border="1"> <thead> <tr> <th></th> <th>Riffle</th> <th>Run</th> <th>Pool</th> <th></th> <th>Riffle</th> </tr> </thead> <tbody> <tr> <td>Boulder (&gt;10")</td> <td>45%</td> <td>25%</td> <td>10%</td> <td>Clay (slick)</td> <td>1%</td> </tr> <tr> <td>Cobble (2.5-10")</td> <td>20%</td> <td>25%</td> <td>15%</td> <td>Silt</td> <td>5%</td> </tr> <tr> <td>Gravel (0.1-2.5")</td> <td>15%</td> <td>15%</td> <td>5%</td> <td>Detritus (CPOM)</td> <td>3%</td> </tr> <tr> <td>Bedrock</td> <td>5%</td> <td>10%</td> <td>60%</td> <td>Muck-Mud (FPOM)</td> <td>1%</td> </tr> <tr> <td>Sand</td> <td>5%</td> <td>10%</td> <td>5%</td> <td>MARL (shell frag.)</td> <td>%</td> </tr> </tbody> </table>					Riffle	Run	Pool		Riffle	Boulder (>10")	45%	25%	10%	Clay (slick)	1%	Cobble (2.5-10")	20%	25%	15%	Silt	5%	Gravel (0.1-2.5")	15%	15%	5%	Detritus (CPOM)	3%	Bedrock	5%	10%	60%	Muck-Mud (FPOM)	1%	Sand	5%	10%	5%	MARL (shell frag.)	%
	Riffle	Run	Pool		Riffle																																						
Boulder (>10")	45%	25%	10%	Clay (slick)	1%																																						
Cobble (2.5-10")	20%	25%	15%	Silt	5%																																						
Gravel (0.1-2.5")	15%	15%	5%	Detritus (CPOM)	3%																																						
Bedrock	5%	10%	60%	Muck-Mud (FPOM)	1%																																						
Sand	5%	10%	5%	MARL (shell frag.)	%																																						
Additional List Attached? Yes / No _____		Samples Returned? Yes or No _____		<b>Biological Assessment</b> List Log Numbers of Samples _____ <b>Relative Abundance of Taxa</b> Dominant (>50): _____ Very Abundant (30-40): _____ Abundant (10-29): _____ Common (3-9): _____ Rare (<3): _____																																							
Sampling Method: _____				<b>Stream Use Support: Specifically Classified for: (circle)</b> Dom. H2O Supply _____ Ind. H2O Supply _____ Navigation _____ Tier II/ Tier III _____ Trout> _____ N Water Withdrawal noted _____ Is stream posted? _____ Fish Tissue Advisory: _____ Do Not Consume _____ Precaut Bacteriological Advisory _____ Based on Observations and Data, stream is: (circle) Fully Supporting (FS) _____ Supporting, but Threatened (TH) _____ Partially Supporting (PS) _____ Nonsup Comments: Photos Y or N _____ Roll # _____ Photo # _____ <u>8 Crayfish</u>																																							
<b>Field Analysis:</b>		Dissolved Oxygen																																									
pH <u>8.2</u> SU		<u>99.90</u> %																																									
Conductivity <u>UMHOS</u>		Time <u>11:45 AM</u>																																									
Temperature <u>17.5</u> C		Others _____																																									
Previous 48 hours Precip: UNKNOWN _____ NONE _____ LITTLE _____ MODERATE _____ HEAVY _____ FLOODING _____		Ambient Weather: SUNNY _____ CLOUDY _____ BREEZY _____ RAIN _____ SNOW _____																																									
<b>Watershed Characteristics</b>		App. % of watershed observed:																																									
Upstream Surrounding Land Use: (estimated %)		Pasture <u>15</u>		Residential <u>15</u>																																							
Urban _____		Industry <u>70</u>		Other _____																																							
Crops _____		Mining _____																																									
Forest _____																																											
<b>Impacts: rated S(light), (Moderate), (High) magnitude. Blank = not observed</b>																																											
<b>Causes</b>		<b>Sources</b>																																									
Flow Alter. (1500) _____		Unknown (9000) _____																																									
Pesticides (0200) _____		Habitat Alt. (1600) _____		Point Source: Indust (0100) S _____		Municipal (2000) _____																																					
Metals (0500) _____		Thermal Alt. (1400) _____		Logging (2000) _____		Mining (5000) _____																																					
Ammonia (0600) _____		Pathogens (1700) _____		Construction: Land Dev. (3200) _____		Road/Bridge (3100) _____																																					
Chlorine (0700) _____		Oil & Grease (1900) _____		US Dam (8900) _____		Urban Runoff (3100) _____																																					
Nutrients (0900) S _____		Unknown (0000) _____		Riparian Loss (7600) _____		Bank Destabilization (7700) _____																																					
pH (1000) _____		Siltation (1100) _____		Agriculture: Row Crop (1000) _____		Intensive Feedlot (1800) _____																																					
Organic Enrichment / Low D.O. (1200) _____		Livestock grazing-timber (1410) _____		Dredging (7200) _____																																							
Other: _____		Other: _____																																									
<b>Physical Stream Characteristics</b>		Length of stream area assessed (m):																																									
Surrounding Land Use (facing downstream):		Estimate %		RDB		LDB																																					
Pasture _____		Urban _____		Residential _____		Other _____																																					
Crops _____		Industry _____																																									
Forest <u>15</u>		Mining <u>15</u>																																									
% Canopy Cover: _____		Open (0-10) _____		Partly shaded (11-45) _____		Mostly shaded (46-80) _____																																					
Bank Height (m): <u>5</u>		High water mark (m): _____																																									
Sediment Deposits: _____		Type: _____																																									
None _____		Slight _____		Moderate _____		Excessive _____																																					
Sludge _____		Mud _____		Sand _____		Silt _____																																					
Blanket _____		Contaminated _____																																									
Turbidity _____		Type _____																																									
Clear _____		Slight _____		Moderate _____		High _____																																					
Excessive Algae Present? _____		None _____		Slight _____		Moderate _____																																					
Aquatic Vegetation _____		Rotted _____		Floating _____		Type _____																																					
Additional Comments: (Oil sheen, Odr, Cdor) _____		Strong Vomit Odor _____																																									
				<b>Stream Sketch</b>																																							



Figure 5.4.2 Sample Habitat Assessment Field Data Sheet (Front)

HABITAT ASSESSMENT FIELD DATA SHEET -- LOW GRADIENT STREAMS

STREAM NAME	Browns	LOCATION	
STATION	RIVERMILE	STREAM CLASS	
LAT.	LONG.	RIVER BASIN	
STORET #		AGENCY	
INVESTIGATORS			
FORM COMPLETED BY		DATE 5/11/04 TIME 11:00 AM PM	REASONS FOR SURVEY

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
<b>1. Epifaunal Substrate/ Available Cover</b>  SCORE 20	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat ; lack of habitat is obvious; substrate unstable or lacking.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>2. Pool Substrate Characteristics</b>  SCORE 10	Mixture of substrate materials with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>3. Pool Variability</b>  SCORE 8	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large deep, very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>4. Sediment Deposition</b>  SCORE 16	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>5. Channel Flow Status</b>  SCORE 18	Water reaches base of both lower bank, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Parameters to be evaluated in sampling reach



Figure 5.4.3 Sample Habitat Assessment Field Data Sheet (Back)

HABITAT ASSESSMENT FIELD DATA SHEET -- LOW GRADIENT STREAMS

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
<b>6. Channel Alteration</b>  Channelization or dredging absent or minimal; stream with normal pattern.		Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
<b>SCORE</b> 19	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>7. Channel Sinuosity</b>  The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.		The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
<b>SCORE</b> 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>8. Bank Stability</b> (score each bank)  Note: determine left or right side by facing downstream.		Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank had erosional scars.
<b>Score (LB)</b> 8	Left Bank 10 9	8 7	5 4	2 1 0
<b>Score (RB)</b> 8	Right Bank 10 9	8 7	5 4	2 1 0
<b>9. Vegetative Protection</b> (score each bank)		70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<b>Score (LB)</b> 7	Left Bank 10 9	8 7	5 4	2 1 0
<b>Score (RB)</b> 7	Right Bank 10 9	8 7	5 4	2 1 0
<b>10. Riparian Vegetative Zone Width</b> (score each bank riparian zone)		Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
<b>Score (LB)</b> 10	Left Bank 10 9	8 7	5 4	2 1 0
<b>Score (RB)</b> 7	Right Bank 10 9	8 7	5 4	2 1 0

Parameters to be evaluated in sampling reach

Total Score= 144



**Figure 5.4.4 Example Biological Assessment Calculation Sheet**  
 (Note: this presents only a portion of the assessment data sheet)

Reference Stream		Whites 5/11/04		
Test Stream		7-Mile		
Date		05/11/2004		

Phylum	Tolerance Value	Functional Feeding Group	Reference Stream Abundance	Test Stream Abundance
Class	(TV)	(FFG)	(a)	(b)
<b>Platyhelminthes</b>				
Turbellaria				
Planariidae	6.1	2		2
<b>Annelida</b>				
Oligochaeta				
Lumbriculidae	7.03	7	1	4
Naididae	6.10	4		
<b>Mollusca</b>				
<b>Gastropoda</b>				
Ancylidae	7.02	4		
Physidae	8.80	4		
Ptanoiridae	6.30	4		
Pleuroceridae	3.40	4	17	11
<b>Pelecypoda</b>				
Corbiculidae	6.10	2		
Sphaeriidae	6.60	2		
<b>Arthropoda</b>				
<b>Crustacea</b>				
<b>Amphipoda</b>				
Gammaridae	6.60			
Crangonyx	7.87	3		2
Gammarus	9.10	3		
Hyalellidae				
Hyalella	7.75	3		
<b>Decapoda</b>				
	7.50	6	1	9
<b>Isopoda</b>				
Asellidae				
Asellus	9.11	3		
Lirceus	7.85	3	58	7
<b>Arachnoidea</b>				
Hydracarina	5.53	5		
<b>Insecta</b>				
<b>Ephemeroptera</b>				
Baetidae	6.10	3	49	102
Caenidae				
Caenis	7.41	3		
Ephemeriidae				
Hexagenia	4.90	3		
Ephemereillidae				
Eurylophella	4.34	3	1	
Serratella	1.57	3		
Heptageniidae				
Stenacron	3.58	4		

Reference Site =	a
Test Site =	b
Ttl. Organisms - a	202
Ttl. Organisms - b	200
Taxa Richness - a	16
Taxa Richness - b	14

<b>Comparative Taxa Richness</b>	%	<b>88</b>
<b>North Carolina Biotic Index Comparative NCBI</b>	%	<b>104</b>
<b>Functional Feeding Group % Similarity - FFGPS</b>	%	<b>79</b>
<b>Indicator Assemblage Index (IAI)</b>		<b>0.67</b>
<b>Dominants in Common</b>		<b>2</b>
<b>Percent EPT Index</b>	%	<b>43</b>
<b>Community Loss Index</b>		<b>0.50</b>

Metric	Scoring Criteria			
	6	4	2	0
1. Taxa Richness	6	---	---	---
2. NCBI	6	---	---	---
3. FFGPS	---	4	---	---
4. IAI	---	4	---	---
5. DIC	---	---	2	---
6. EPT Index	---	---	---	0
7. CLI	6	---	---	---
<b>BIOLOGICAL CONDITION</b>				
<b>0.67</b>				
<b>Habitat Percent Comparability</b>	%	<b>78</b>		

NCBI = $\frac{\sum x_i \cdot i}{n}$		Comparative Biotic Index = $\frac{NCBI_{sample a} \times 100}{NCBI_{sample b}}$	
Ref. 5.98	Test 5.77		
Calculation		Column	Column
tv*a/n	tv*b/n		
0.00	0.06	Sab = $\sum \min(P_{ia}, P_{ib})$	
0.00	0.00	Number of Individuals in each FFG	
0.00	0.00	FFG	# A
0.00	0.00	0	0
0.03	0.14	1	1
0.00	0.00	2	37
0.00	0.00	3	117
0.00	0.00	4	32
0.00	0.00	5	9
0.00	0.00	6	1
0.00	0.00	7	1
Relative Abundance Each FFG (%)		FFG	# A / P <sub>ia</sub>
0.00	0.00	0	0.000
0.00	0.00	1	0.005
0.00	0.00	2	0.183
0.00	0.00	3	0.579
0.00	0.00	4	0.158
0.00	0.00	5	0.045
0.00	0.08	6	0.005
0.00	0.00	7	0.005
Min (P <sub>ia</sub> , P <sub>ib</sub> )			
0.00	0.00	0	0.000
0.00	0.00	1	0.000
0.04	0.34	2	0.075
0.00	0.00	3	0.555
0.00	0.00	4	0.135
0.00	0.00	5	0.010
2.25	0.27	6	0.005
0.00	0.00	7	0.005
QSI / Sab =		0.79	
FFGPS =		79	



Figures 5.4.5 and 5.4.6 depict typical photographs of Whites Creek, the reference stream, which was assessed in fall and spring of the permit year.

**Figure 5.4.5 Whites Creek (Reference Stream) Bioassessment**



**Figure 5.4.6 Whites Creek (Reference Stream) Bioassessment**



Table 5-1 summarizes the bioassessment findings for both the reference stream and the test streams. This data is derived through biometric calculations, generated through procedures outlined in Tennessee's Biological Standard Operating Procedure Manual.



**Table 5.1 Bioassessment Findings**

Test Stream	Reference Stream	Biological Score
<b>Whites Creek</b>		
5/4/2000	N/A	---
11/20/2000	"too dry, not done"	---
5/11/2001	Whites 5/4/00	76
10/10/2001	Whites 5/11/01	86
6/4/2002	Whites 5/11/01	76
10/28/2002	Whites 10/10/01	71
5/13/2003	Whites 6/4/02	71
10/22/2003	Whites 10/21/02	76
5/11/2004	Whites 5/13/03	67
10/15/2004	Whites 10/22/03	67
5/11/2005	Whites 5/11/04	81
<b>7-Mile</b>		
5/3/2000	Whites 5/4/00	52
11/20/2000	"too dry, not done"	---
5/7/2001	Whites 5/11/01	90
10/9/2001	Whites 10/10/01	57
5/3/2002	Whites 6/4/02	52
10/21/2002	Whites 10/21/02	52
5/13/2003	Whites 5/13/03	57
10/21/2003	Whites 10/22/03	52
5/11/2004	Whites 5/11/04	67
10/14/2004	Whites 10/15/04	86
5/10/2005	Whites 5/11/05	62
<b>Browns</b>		
5/29/2001	Whites 5/11/01	52
10/9/2001	Whites 10/10/01	38
5/30/2002	Whites 6/4/02	48
10/23/2002	Whites 10/21/02	33
5/13/2003	Whites 5/13/03	29
10/23/2003	Whites 10/22/03	38
5/10/2004	Whites 5/11/04	24
10/13/2004	Whites 10/15/04	62
5/11/2005	Whites 5/11/05	33
<b>Sugartree</b>		
Spring 2000	Whites 5/4/00	24
Fall 2000	"too dry, not done"	---



### **5.5 Future Direction**

Metro will continue to meet its monitoring requirements throughout the remainder of permit cycle 2. Throughout the remaining permit cycle, Metro will analyze the benefits received from the monitoring programs. At the end of the permit cycle, Metro will likely petition within the permit rationale to discontinue wet weather sampling as the data, thus far, has not proven to be helpful to the program. It is Metro's belief that department resources could be better utilized in other sampling protocols.



## 6.0 Assessment of Controls

The effectiveness of the SWMP is assessed for the following reasons:

- To determine whether the most cost-effective best management practices are included in the stormwater management program;
- To assist in design of ongoing monitoring, inspection, and surveillance programs that help refine estimates of program effectiveness;
- To serve as a baseline and ongoing measure of the program's progress; and
- To develop a strategy to evaluate progress toward achieving water quality goals.

Direct measurements of the effectiveness of the SWMP include:

- Expected pollutant load reductions (part 2 application);
- Removal efficiencies of BMPs;
- Reductions in the volume of stormwater discharged; and
- Reductions in event mean pollutant concentrations.

The permit requires the estimation of expected reductions of pollutants from discharges of the MS4 as the result of the municipal stormwater management program. This includes identifying known impacts of stormwater controls on groundwater quality. It is difficult to quantify the performance of controls, since no reasonable conclusions can be made on monitoring and other programs that have recently been initiated. It is recognized that the measures described in this annual report will provide a better definition of the problems and make a positive impact on Metro's contribution to the quality of the "Waters of the State" and groundwater. As more long-term monitoring information and other types of data become available, assessments of the controls operated or otherwise implemented by the NPDES Section will be conducted.

Generally speaking, the post-development BMP requirements for developed sites since 1998 have served to provide a 70 to 80 percent reduction in Total Suspended Solids (TSS) and other selected runoff pollutant parameters. The amount of acreage served by these measures, which serve to reduce stormwater pollutants, will obviously increase as time goes on. In addition, the NPDES Section's increased focus on EP&SC measures on construction sites over the past few years has undoubtedly kept hundreds of thousands (if not millions) of tons of sediment on sites as opposed to being washed into the MS4 and Community Waters. As Metro moves through its second permit cycle, it is anticipated that enhanced stormwater modeling capabilities will allow more technical considerations of pollutant load reductions.

One of the more practicable ways to measure the success of the SWMP is to use quantifiable indirect measurements. Some indirect measurements that can be used to assess the effectiveness of the SWMP include:

- Amount of recyclables performed by Metro (glass, oil, plastic, paper, etc.);
- Amount of waste collected by Metro;
- Number of education events/presentations;
- Number of water quality complaints received;
- Number of construction plans submitted for stormwater review;
- Number of construction plans approved through stormwater;
- Number of stormwater-related enforcements; and
- Number of stormwater-related inspections.



Table 6.1 depicts a comparison between permit years 1 and 2 of the evaluated categories. More categories may be added to the comparison in future permit years as the program develops. In addition, future control assessments may include a listing of projects implemented to improve State-listed 303(d) streams. In permit year 2, MWS hired a watershed/water quality manager whose sole job is to develop and oversee implementation of a Watershed Management Plan. The goal of the Watershed Management Plan will be to reduce/eliminate pollutant runoff into community waters with special focus given to State-listed 303(d) streams. Future annual reports will include a section devoted to reporting projects and/or specific activities that have been undertaken to improve the water quality of State-listed 303(d) streams.

**Table 6.1 Indirect Measurement Statistics for Permit Year 1 and 2**

Categories	Permit Year 1	Permit Year 2
Recycled Oil	16 tons	9.1 tons
Recycled Antifreeze	2 tons	1.7 tons
Recycled Plastic	266 tons	300.42 tons
Recycled Paper	4,477 tons	2,573.84 tons
Recycled Glass	1,798 tons	1,052.7 tons
Total Brush Collection	25,613.10 tons	31,702.78 tons
Total Waste Collected	159,595.04 tons	157,622.99 tons
#. of Education Events. Events/Presentations	50	87
# of Water Quality Complaints Received	161	213
# of Construction Plans Submitted to Stormwater	868	1,562
# of Construction Plans Approved or no Permit Needed	387	449
# of Stormwater Enforcements (NOVs and SWOs)	228	197
# of Stormwater Inspections	4,024	2,561*

\*This inspection tally does not include the 5 stormwater infrastructure inspectors, who, during Permit Year 2, began inspecting construction sites for stormwater runoff. Recordkeeping for permit year 3 has been modified to include EPSC-related inspections done by infrastructure inspectors.

It is impossible to analyze trends or draw conclusions from two years worth of data. At the end of permit year 5 the data from each permit year will be analyzed to determine if any trends are present that would indicate that the SWMP is or is not functioning as designed.



## **7.0 Summary of Modifications, Replacements, or Changes**

In the second year of the second permit cycle, there have been no major modifications to the permit requirements.

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## 8.0 Fiscal Analysis

Currently, the NPDES program is funded through the annual operating budget of MWS. The annual budgets propose that the expenditures be funded from MWS revenues and from ad valorem property taxes on property in the General Services District (countywide). MWS intends to evaluate other funding options during this permit cycle.

This annual report reflects the budget information for permit year 2. Table 8.1 shows the budgets for fiscal years 2005 and 2006.

**Table 8.1 Stormwater Budget**

<b>Metro Stormwater Division Expenditures for Fiscal Year 2005 and Projected 2006 (NPDES Permit Cycle 2 Year 2)</b>				
<b>Stormwater Division</b>	<b>Annual Expenditure FY2005</b>	<b>% of Total</b>	<b>Annual Expenditure "Projected" FY2006</b>	<b>% of Total</b>
<b>Administration</b>	\$424,387.54	3.82%	\$970,200	5.00%
<b>Engineering and Permits</b>	\$620,158.20	5.58%	\$868,500	4.48%
<b>NPDES Office</b>	\$851,156.30	7.66%	\$1,077,600	5.56%
<b>Remedial Maint.</b>	\$1,558,288.01	14.03%	\$2,076,800	10.71%
<b>Master Planning</b>	\$88,306.17	0.80%	\$153,200	0.79%
<b>Routine Maint.</b>	\$2,899,775.16	26.11%	\$3,541,200	18.27%
<b>Capital Projects</b>	\$4,663,529.87	42.00%	\$10,700,000	55.19%
<b>Total =</b>	<b>\$11,105,601.25</b>		<b>\$19,387,500</b>	

This table shows the program elements and their associated stormwater activities. These activities have a direct affect on water quality in Nashville and are further described below:

- Administration – manages programs, provides public with information, offers clerical and support staff;
- Engineering – reviews plans, serves development community, applies regulations;
- NPDES – oversees construction, protects viability of streams, ensures water quality;
- Remedial Maintenance – minor construction to restore existing drainage systems without major improvement or upgrades;
- Master Planning – capital construction projects that replace segments of the drainage system or improve its capacity;
- Routine Maintenance – restores function of the existing system through cleaning and stabilizing without major construction; and
- Capital Projects – improvements or upgrades to existing drainage systems or construction of needed drainage systems.



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Several other Metro Programs/Entities (which are not included in the referenced financial information) also benefit water quality in the Nashville area, such as the MWS FOG program, various Metro Parks' environmental-related programs/initiatives, solid waste disposal, recycling and litter control, Metro Beautification, various Metro Schools environmental programs, etc. It is often extremely difficult and somewhat subjective to attempt to quantify the resources expended by other staff and Metro Programs for water quality-related activities vs. what those same staff and Programs expend on their other non-water quality-related activities. Therefore, it should be noted that while our figures apply to the main office responsible for fulfilling Metro's Phase I MS4 NPDES permit obligations (MWS NPDES Office), there are various other Metro expenditures not included in this figure. Future annual reports will better attempt to quantify these expenditures to the extent possible.



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## Appendix A

### Supporting Storm Water Management Program Documents



## Industrial Inspections SOP

1. Determine the facility to inspect as specified in the “Inspect By” field on the Industrial Inspection form
2. Before Inspection:
  - a. Review Cycle 1 database to reference previous inspections and problems.
  - b. Review following links:
    - i. OSHA – search for any reported incidents for the site and to find site SIC code.
    - ii. TDEC Database – see if site has stormwater permit (multisector/individual)
  - c. Call ahead and make an appointment to inspect the facility (within a week of planned inspection).
    - i. Ask if they can provide us with a map of the facility upon inspection that shows the following:
      1. Structures,
      2. Paved Areas,
      3. Chemical Storage Processing Areas,
      4. Stormwater Flow,
      5. Facility Outflow locations, and
      6. Nearest Storm Drain Inlet Locations.
    - ii. If site refuses to allow inspection, contact TDEC [\(615\) 687-7000](tel:6156877000) for co-inspection.
  - d. Make sure you have the following information:
    - i. Metro Identification,
    - ii. Copy of permit section that requires our inspection, and right of entry from SWMM,
    - iii. List of Opening Meeting questions,
    - iv. “Opening Meeting Questions” and “Inspection Report”, and/or
    - v. Safety Equipment (hard hat, steel toed shoes, safety glasses, safety vest, and air meter).
  - e. Obtain copy of GIS map of site address that illustrates if the site drains into MS4, CSO, etc.
3. During Inspection:
  - a. Conduct opening meeting asking the prepared questions.
  - b. Obtain map of facility from personnel if indicated one would be available during the initial phone call.
  - c. Tour facility with the plant personnel.
  - d. Look for deficiencies, some of which include:
    - i. Chemical storage (inside vs. outside)
    - ii. Spill clean-up and response kits
    - iii. Exposed tanks - make sure valve’s in secondary containment are closed
    - iv. Exposed dumpster – make sure drain plug is shut
    - v. Drain plumbing – make sure that all drain pipes are connected to the proper destination (sanitary vs. storm sewer), and/or
    - vi. General illicit discharges

(Note: during inspection pay close attention to loading, cleaning, and storage areas)
  - e. Determine if sampling would be needed, if so follow sampling guidelines.
  - f. Educate personnel on areas where water quality could be improved.
  - g. Document inspection through comments/notes on inspection report and discuss comments with the operator. Discuss and try to agree to a timetable for any improvements that are to be implemented.
4. After inspection:
  - a. Within 10 days of the inspection, send a follow-up letter that contains noted deficiencies and suggested remedies. Always include hard deadline in letter. (Copy TDEC designated representative on letter via email)
  - b. Document notes in the database. Link follow-up letter.
    - i. If issues remain unresolved, leave record active in the database; however, if there are no issues click the archive button.
  - c. Follow-up with facility contact until site is in compliance. Coordinate with TDEC, if necessary.
  - d. If it is noted that stormwater runoff issues exist on the site and they do not have a TN Multisector Permit (TMSP), notify TDEC Division of Water Pollution Control.



**Industrial Inspection Opening Meeting Questions**

**Metropolitan Government of Nashville/Davidson County  
 Water Services – Storm Water Division  
 Industrial Facility Opening Meeting  
 Date: \_\_\_\_\_**

ATTENDEE NAME	COMPANY/TITLE	PHONE

**Opening Meeting Questions:**

1. Verify name, title and phone number of primary contact.
2. What does the facility do or produce?
3. What are the basic raw materials?
4. What are the major manufacturing processes?
5. How many shifts do they operate? How do they handle environmental issues on the 2<sup>nd</sup> and 3<sup>rd</sup> shifts?
6. How many storm water outfalls do they have? Where are they located?
7. How often are the outfalls inspected?



8. Are there any roof drains?
9. How often do they inspect/clean the roof?
10. How many dumpsters are on the site?
11. Are they covered? Plugged? Any materials on the ground around the dumpsters?
12. Is there a SWPPP for the site?
13. Where do they store the chemicals including fueling tanks?
14. Is storage area covered?
15. Are there any detention ponds?
16. Do they conduct any monitoring?
17. Where are the fleet management areas (oil changes, truck washing)?
18. Where are inside floor drains and do they connect to the sanitary sewer?
19. Are there any safety issues we need to know to take the plant tour?
20. Have there been any spills within the last 10 years? If so, when did it occur, what and how much spilled, did any material leave the site, and how was it cleaned?



## Industrial Inspection Report Checklist

Date: \_\_\_\_\_/Time: \_\_\_\_\_

Facility Name

Street Address

City

ZIP

Contact Name

Contact Phone

SIC

Watershed

Industrial Type

Storage Tanks/Barrels:

Equipment:

Loading

Drains Storm:

Roof:

Floor:

Dumpsters

Outfalls: Odor:

Color:

Foam:

Erosion

Pond

Other

Is Reinspection Necessary? Circle One: Yes No



**List of Industrial Sites That Will Be Inspected During Permit Year 3**

Facility Name	Address	Sic Code	Sic Description
Aladdin Temp-Rite	1124 Mezler Rd.	3089	Plastics Products, Not Elsewhere Classified
Ashland Distribution Co.	2315 Clifton Ave.	5169	Chemicals And Allied Products, Not Elsewhere Classified
Ergon Terminating Inc. Nashville	1114 Visco Dr.	2951	Asphalt Paving Mixtures And Blocks
Exxon Mobil Corp. Nashville Terminal	1741 Ed Temple Blvd.	5171	Petroleum Bulk Stations And Terminals
Ikg Inds	860 Visco Dr	3446	Architectural And Ornamental Metal Work
Kohl & Madden	414 Harding Ind. Dr.	2893	Printing Ink
Odom's Tennessee Pride Sausage Inc.	1201 Neely's Bend Rd.	2011	Meat Packing Plants
Perfection Moulders Inc.	213 Connell St.	3365	Aluminum Foundries
Purina Mills L.L.C.	3601 Trousdale Dr.	2048	Prepared Feeds And Feed Ingredients For Animals And Fowls, Except
Purity Dairies Inc.	360 Murfreesboro Rd.	2024	Ice Cream And Frozen Desserts
Safety-Kleen (Wt) Inc./Clean Harbors	1640 Antioch Pike	4953	Refuse Systems
Safety-Kleen Corp. 3-109- 01	215 Whitsett Rd	7399	Refuse Systems
Thomas Nelson Inc.	501 Nelson Pl.	2731	Books: Publishing, Or Publishing And Printing
Visteon Corp. Nashville Glass Plant	7200 Centennial Blvd.	3211	Flat Glass
Warren Paint & Color Co.	700 Wedgewood Ave.	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products
Whirlpool Corp.	1714 Heil Quaker Blvd.	3585	Air-Conditioning And Warm Air Heating Equipment And Commercial

Note: This list was sent to TDEC at the end of Permit Year 2 to coordinate future inspections in permit year 3.



**Fats, Oils, & Grease Control Permit**

**NO. FOG-XXXX**

**AUTHORIZATION TO DISCHARGE UNDER THE  
METROPOLITAN CODE OF LAWS TITLE 15.60**

In compliance with the provision of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq.; the “Act”), and with the provisions of Metropolitan Code of Laws Chapter 15.60:

**FACILITY NAME.....** is authorized to discharge Industrial/Commercial Wastewater, from facility’s food preparation and kitchen service area, to the Metro Nashville Department of Water & Sewerage Services’ Collection System, from the facility located at **FACILITY ADDRESS.....**, in accordance with monitoring requirements, maintenance requirements, effluent limitations, and other conditions set forth in this Grease Control Permit.

This permit shall become effective on **DATE.....**, and shall expire on **DATE.....**.

This permit shall not be reassigned, transferred, or sold to a new owner, new user, or for different premises, without, at a minimum, prior notification to the Department of Water & Sewerage Services and a provision of a copy of the existing control mechanism to the new owner or operator.

A violation of this permit constitutes a violation of Metropolitan Code of Laws Chapter 15.60 and shall subject the permittee to the applicable enforcement proceeding(s).

---

Hugh T. Garrison,  
Environmental Compliance  
Department of Water & Sewerage Services

**PART I – Limitations on Wastewater Strength**

A. Wastewater Pollutant Discharge Concentration Limit



Oil and Grease grab sample limitation of 100 mg/L, and all other wastewater pollutant maximum concentrations as listed under Metro Code of Laws 15.60.070.

B. Prohibited Discharges

1. Solid or viscous pollutants in amounts which cause obstruction to the flow of the sewers, or other interference with the operation of or which cause injury to the POTW, including waxy or other materials which tend to coat and clog a sewer line or other appurtenances thereto;
2. Wastewater containing any element or compound known to act as a lacrimator, known to cause nausea, or known to cause odors constituting a public nuisance;
3. Wastewater causing interference with the effluent or any other product of the treatment process, residues, sludge or scum causing them to be unsuitable for reclamation and reuse or causing interference with the reclamation process;
4. Pollutants which cause a corrosive structural damage to the sewage collection system, but in no case discharges with a pH lower than 5.0 or higher than 10.0;
5. Discharge into any sewer line or other appurtenance of the POTW wastewater with a temperature exceeding 65.5\* Celsius (150 \* F);
6. Pollutants which could create a fire or explosion hazard in the collection system or POTW;
7. Wastewater causing a discoloration or any other condition in the quality of Metro's treatment works' effluent such that receiving water quality requirements established by law cannot be met;
8. Wastewater causing conditions at or near Metro's treatment works which violate any statute, rule or regulation of any public agency of this state or the United States;
9. In addition, all other prohibitions and specific pollutants identified in Metro Code of Laws 15.60.060, 15.60.070, and 15.60.080.

C. Waste from Garbage Grinders and Food Grinders

As per Metro Code of Laws 15.60.120, waste from garbage grinders used for the grinding of plastic, paper products, inert materials or garden refuse shall not be discharged into a community sewer. For preparation of food consumed on the premises (food grinder), there is a "food" grinder exception but only where applicable fees are paid, and such grinders must shred the waste to a degree that all particles will be carried freely under normal flow conditions prevailing in the community sewers. At this time, the Department of Water & Sewerage Services is not charging fees for food grinder use. However, the department makes this facility aware that the department can charge these fees.

**PART II – Grease Control Equipment, Maintenance, and Records**

A. Construction and Maintenance of Grease Control Pretreatment Facilities

In accordance with Metro Code of Laws 15.60.040, this facility shall operate and maintain fats, oils, and grease wastewater pretreatment equipment whenever necessary to reduce or modify the user's wastewater constituency to achieve compliance with the limitations in wastewater strength or prohibition set forth in Sections 15.60.060, 15.60.070 and 15.60.080. The permittee is to be familiar with all grease control equipment operation and maintenance needs to prevent fats, oils, and grease from entering Metro's collection system.



B. Grease Interceptor Maintenance and Recording Keeping

A Grease Interceptor is an underground containment tank, usually with a capacity from 500 gallons to 2,000 gallons, that is designed to remove fats, oils, and grease. A well maintained grease interceptor is Metro's recommended pretreatment control equipment. The permittee has responsibility to see that the interceptor is maintained and working properly.

1. At a minimum, Metro recommends cleaning the interceptor every 90 days. For some larger facilities or those that generate a lot of grease, the grease interceptor should be cleaned monthly to prevent excess fats, oils & grease being discharged.
2. Approved grease waste haulers from Metro's "Permitted Grease Interceptor/Trap Haulers" list meet requirements for pumping an interceptor.
3. Grease Interceptors, when cleaned or pumped out, should have complete tank contents removed. Partial cleaning is not recommended due to not only the top grease layer impacting efficiency but also the solids in the bottom of the interceptor decrease efficiency. Any waste removed from Grease Interceptor or Trap must be discharged at designated discharge point {as per 40 CFR 403.5 (b) (8)}.
4. The permittee must maintain records of grease interceptor maintenance on the premises. Records include date, time, hauler/company that cleaned and volume removed, and any other repair or maintenance activities related to facility's grease control program.

C. Grease Trap Maintenance and Record Keeping

A Grease Trap is an "under the sink" device, usually with a capacity of 20 gallons to 50 gallons, that is designed to remove fats, oils, and grease. Metro Codes recommends that the minimum grease trap size have a total flow-through rating of 20 gpm and grease retention capacity of 40 pounds.

1. Grease traps should be cleaned at such a frequency to prevent fats, oils, & grease from entering the sewage collection system. Metro recommends cleaning grease traps one time every 2 weeks.
2. Disposal of grease trap waste should be in an approved receptacle. The permittee must maintain records of grease trap maintenance and cleaning, including date, time, individual that cleaned, and volume cleaned; and any other repair or maintenance activities related to the facility's grease control program.

D. Facilities With No Grease Control Equipment

Inspection and monitoring of facility will be conducted. All Food Service Establishments must have Grease Control Equipment installed. Enforcement action will proceed if the facility is found to be in non-compliance with Code of Laws 15.60.

- E. Bacteria or Enzyme use. The Dept. of Water & Sewerage Services does not recommend the use of bacteria or enzymes. Bacteria and enzymes may not be used as a substitute for regular maintenance of a grease interceptor if fats, oils and greases are being discharged from the facility.



### **PART III – Inspections and Monitoring**

Inspection and monitoring of facility will be conducted as per Metro Code of Laws 15.60.340. This includes but is not limited to the director requiring permittee to:

1. Establish and maintain Grease Management Program monitoring records for \_\_\_\_\_ facility. Including cleaning and maintenance activities for grease control equipment.
2. Demonstrate implementation of “Best Management Practices” for control of fats, oils, and grease.
3. Allow right of entry to director or authorized representative, to inspect food preparation and service area for fats, oils & grease discharge potential and sample or monitor any effluents from facility.
4. Sample such effluents, in accordance with such methods, at such locations, at such intervals and in such manner as the director shall prescribe.

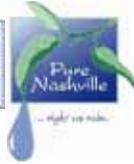
### **PART IV – Accidental Discharge-Safeguards**

Permittee shall provide such facilities and institute such procedures as are reasonably necessary to prevent or minimize the potential for accidental discharge of fats, oils, and grease into the sewage collection system. This includes implementation of “Best Management Practices” protocol.

### **PART V – Violations and Penalties**

Any person including, but not limited to industrial/commercial users, who does any of the following acts or omissions shall be subject to a civil penalty of up to ten thousand (\$10,000) per day for each day during which the act or omission continues or occurs, in accordance to T.C.A. 69-3-125:

- (a) Violates an effluent standard or limitation imposed by a pretreatment program;
- (b) Violate the terms and conditions of a permit issued pursuant to a pretreatment program;
- (c) Fails to complete a filing requirement of a pretreatment program;
- (d) Fails to allow or perform an entry, inspection, monitoring or reporting requirement of a pretreatment program;
- (e) Fails to pay user or cost recovery charges imposed by a pretreatment program; or
- (f) Violates a final determination or order of the local hearing authority or local administrative officer.



## Requirements For Mobile Food Service Establishments

REVISED: June 22, 2004

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- **GENERAL REQUIREMENTS**

1. **GENERAL**

Mobile food units shall comply with the requirements of the Tennessee Department of Health's Food Service Establishment Rules and Regulations, except as otherwise provided in this policy.

2. **FLOOR, WALLS, CEILING, AND LIGHTING**

The unit must be fully vermin proof by the means of floor, walls, and ceiling. Floor, walls and ceiling must be light-colored, smooth, nonabsorbent and easily cleanable with no exposed utility lines, piping conduits or wiring. Flooring must be constructed of smooth, durable, easily cleanable material. Shielding to protect against broken glass falling onto food shall be provided for all lighting fixtures.

3. **COUNTER/SHELVING SURFACES**

All surfaces must be easily cleanable, smooth and free of breaks, open seams, cracks, chips, pits and similar imperfections.

4. **HAND SINK**

A hand sink equipped with a mixing valve faucet must be installed at the same height as the food preparation surface. It must be accessible to the operator(s). The sink can be either a drop-in or a wall-attached style. Provide splashguards separating the sink if within the area of splash (approximately 18 inches) of food preparation, utensil washing, and food equipment areas.

5. **WAREWASHING SINK**

A three-compartment commercial sink with drain boards at each end is required for the proper washing of food contact utensils. This sink must be seamless with rounded corners and be sized deep and wide enough to accommodate the largest utensil or small ware to be washed.

6. **WATER SUPPLY**

Potable water must be supplied to each sink by means of a pressurized water system. At least a 30-gallon potable water tank must be installed. This tank is to be made of a food grade material. The tank's size requirement will be dependent on the menu, sink dimension, and operating hours. The tank must be installed at an angle that will permit complete drainage of the tank at the end of each day of operation. Due to the need to drain the tank, a ¾ inch outlet must be installed at the lowest section of the tank. Also this tank must be flushed and sanitized monthly. Log records must be retained in the unit for verification. The tank and water fill pipe must be a closed system, thus free from contamination. A ¾ inch water inlet/valve must be installed that is used for filling the potable water tank. This inlet/valve must be installed on the exterior of the unit at a height of not less than five feet off the ground. The water inlet/valve and outlet must be capped when not in use to protect the water supply from contamination.

7. **WATER HEATER**

A water heater must be installed that is sized large enough to supply at least 110° F water to the hand sink and three-compartment sink during all periods of operation.



#### 8. ELECTRICAL GENERATOR

An electrical generator must be permanently attached to the outside of the mobile food unit. The generator must be operating whenever the mobile unit is in operation or food is in the refrigerator, freezer, steam table, etc.

#### 9. WASTE WATER TANK

A wastewater tank must be installed and have a 15% larger capacity than the combined capacity of the potable water tank and the water heater. An atmospheric vent must be provided from the top of the wastewater tank. A ¾ inch wastewater outlet/valve must be installed on the exterior of the mobile unit that is equipped with a shut-off valve. The tank must be installed in a manner that facilitates proper drainage of the wastewater. **(Size of potable water tank in gallons + capacity of water heater in gallons) x 1.15 = Minimum size requirement for waste water tank**

#### 10. POTABLE WATER SUPPLY HOSE

Must provide an adequately sized food grade water hose, which will be used to fill the potable water tank. The hose must be connected to a supply outlet that is equipped with a back flow prevention device. This hose should be either white or clear in color to differentiate from the wastewater drainage hose. When not connected to the water supply and mobile unit, the hose must be completely drained in a manner that protects the cleanliness of the hose and capped at both ends. The hose must be stored in a sanitary manner within the approved, permitted commissary.

#### 11. WASTEWATER DISPOSAL

The method of disposal of liquid waste from the holding tank of the mobile food unit must be approved by the Metro Public Health Department and Metro Water Services. Metro Water Services requires proof of discharge agreement to be submitted to the Permits Office prior to operation. The wastewater tank must be emptied into an approved sanitary sewer at the end of each day of operation. An approved location, whether the commissary or commercial business must be approved for accepting liquid waste/gray water by both Metro departments. If the operator of the mobile food unit does not own the approved dumpsite, then a receipt of disposal from the owner/operator of the site must be retained in the mobile food unit for at least 30 days.

Note: No material (solid or liquid waste) shall be discharged to the Metro municipal storm sewer system (or to a locale where such material may be washed via stormwater runoff into the storm sewer system) as it relates to the operation of a mobile food unit per Metro 15.64.205.

#### 12. WASTEWATER DRAINAGE HOSE

Must provide an adequately sized hose to be used for emptying the wastewater tank at the end of each day of operation. The hose must be distinctly different in color than the potable water supply hose. The hose must be stored in an area that will not contaminate food, or food contact surfaces. Do not store with the potable water supply hose.

#### 13. GREASE TRAP

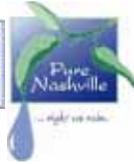
A 10-gallon per minute/20-pound capacity grease trap must be properly plumbed between the three-compartment sink and the wastewater tank. This trap must be cleaned out on a daily basis. The grease and solids are to be disposed as solid waste or recycled when applicable. Note: If operating from a single sales site, see ADDITIONAL REQUIREMENTS: #7.

#### 14. EXHAUST SYSTEM

Mechanical exhaust hood shall be provided over all cooking equipment, as required, to effectively remove cooking odors, smoke, steam, and grease-laden vapors. The hood must extend at least six inches beyond the front and sides of the cooking equipment, unless hood is installed against the side wall.

#### 15. OUTER OPENINGS

All openings to the outside, including serving windows and entrance doors must be screened, self-closing, or equipped with approved and effective air curtains. Screening material shall not be less than 16 mesh to each inch.



#### 16. SOLID WASTE

Solid waste shall be contained in an easily cleanable, covered trash receptacle.

#### 17. LEFTOVER FOODS

All prepared/cooked potentially hazardous foods (for example; meats, eggs, milk or milk products, rice or potatoes) must be disposed at the end of each day of operation.

#### 18. FOOD SUPPLIES

All food items must be purchased from an approved, permitted food service establishment. See “Commissary” for storage requirements.

#### 19. OPERATION LIMITATIONS

The operation of the mobile food unit is only limited to the interior of the unit. Therefore, the owner/operator can not attach, set up or use any other device or equipment intended to increase the selling, serving or display capacity of the establishment including, but not limited to, counter extensions, tables, ice chests, freezers or refrigerators. The only exception would be covered smokers/grills that is used for batch cooking and operated under the provisions of outdoor cooking in the Tennessee Department of Health’s Food Service Establishment Rules and Regulations. The operator of a mobile food unit shall not provide any seating for the customers, waitresses or carhops.

#### 20. FIRE PREVENTION

No less than 2 2A40BC rated portable fire extinguishers shall be provided in every mobile food service unit. All propane tank use and storage shall comply with NFPA 1 and 58.

#### 21. COMMISSARY

All foods and single service articles must be stored at an approved, permitted commissary. For a proposed commissary, its owner must submit floor plans to the Metro Code Administration and the Metro Public Health Department before operation of the commissary and mobile food unit operates. The owner/operator of the commissary must submit a notarized “**Mobile Unit/Commissary Agreement**” letter to the Food Protection Services Division. For the items that are purchased daily, the mobile food unit’s operator must retain receipts that identify the type of food or single service article purchased, amount, and the date received. Each receipt must be retained in the mobile food unit for a minimum of seven days for verification purposes.

#### 22. OPERATING FROM A SINGLE SITE

The operator/person-in-charge of the mobile food unit shall be required to physically move the unit from the sales site property at the end of each day of operation. The unit shall not return to the property until the next day of operation. It is the responsibility of the site’s property owner to bring the site in compliance with paragraphs 1. Site Plan Layout/Permit Required, 3. Clearance to Structures, and 7. Restroom Accessibility, which are listed in section, ADDITIONAL REQUIREMENTS. If the mobile food service establishment is found to be operating from a single location and not moved daily, then the unit will have to meet all the requirements for a “single sales site”.

#### 23. PRE-OPENING REQUIREMENTS

- A. Submittal of a floor plan, equipment layout, and equipment specifications is required before construction and/or pre-inspection of the mobile food unit is initiated.
- B. Pre-inspection and permitting for **conventional mobile food units** can be conducted between 8:30 a.m. and 10:00 a.m. Monday through Friday. The mobile food unit, commissary letter (if applicable) and waste water dumping letter (if applicable) must be brought to the Metro Public Health Department’s Food Protection Services Division. For mobile food units that will operate from a single site, all pre-inspections will be conducted at the sales site.



• **ADDITIONAL REQUIREMENTS: MOBILE FOOD UNITS THAT OPERATES FROM A SINGLE SALES SITE:**

**1. SITE PLAN LAYOUT/PERMIT REQUIRED**

A Use Permit for the site location must be obtained by the property owner from the Department of Codes Administration. A site plan must be submitted by the owner of the property to the Metro Codes Administration, Metro Public Health Department, Metro Water and Services and the Metro Fire Marshal's office prior to operating the mobile food unit. The plan must show available parking, signs, and the relationship of the mobile food unit to any structures and the property lines. The location to be used for food unit placement must be marked off on the property and must comply with zoning and the Fire Marshal set-back requirements.

**2. 90-DAY TEMPORARY PERMIT FROM FIRE MARSHAL**

Permits will be required from the Fire Marshal's office for mobile food units that operate from a single sales site. This permit allows the unit to sell from a designated site for up to 90 days. Further, the unit must be removed from the site for at least 7 days before re-applying for another 90-Day Temporary Permit. Units that are stationary for more than 90 days are considered permanent and shall meet the requirements of NFPA 1 and the Life Safety Code.

**3. CLEARANCE TO STRUCTURES**

The Fire Marshal's office requires a minimum of 20 feet clearance from any part of a mobile concession food unit to any structure built of combustible construction. There shall be a minimum of 10 feet clearance between any part of the mobile food unit and any structure built of non-combustible construction. This shall include any overhang, awning or projection from the building.

**4. WATER SUPPLY**

The mobile food unit must be connected to the public water supply. A plumbing permit must be obtained from the Department of Codes Administration and the connections must comply with the requirements of the Metro Water Services. The connection to the unit must be a quick connect system. Hoses and faucets equipped with these quick connections shall be deemed to meet the requirements of the Metro Codes Administration and the Metro Water and Sewerage Services. A water meter and backflow preventer must be in place prior to the mobile food unit's water service connection.

**5. ELECTRICAL SUPPLY**

The electrical supply is limited to a quick connect electrical service. An electrical permit must be obtained from the Department of Codes Administration. The electrical line from the mobile food unit must be ran overhead (at least five feet) to the electrical outlet. The use of a generator for electrical service is not approved.

The following is the list of requirements from the Codes Administration:

- A. Disconnecting means: each unit shall be provided with a fused or circuit breaker disconnect switch located within sight and within 6 feet of each portable unit to be plugged into.
- B. The disconnect shall not be less than 30 ampere rating at 125/230 volts and must be listed and approved for outside locations.
- C. Feeder conductors supplying power to this 30 ampere disconnect means shall originate from an approved distribution or branch circuit panel board located on the same property that the mobile unit is to be parked.



- D. The supply line or feeder assembly from the portable unit to the receptacle mounted at the disconnect shall not have more than one listed 30 ampere power supply cord with an integrally molded or securely attached cord cap.
- E. Cords with adapters and pigtail ends and standard extension cords shall not be permitted.
- F. All cords shall be listed type with three wire 120 volt or four wire 120/240 volt conductors one of which shall be identified by a continuous green color or a continuous green color with one or more yellow stripes for use as the grounded conductor.
- G. The attach plug on the cord from the unit shall plug into an approved 30 ampere 125/230 volt 3 wire grounding type receptacle mounted at the disconnecting means provided on location.
- H. Where the flexible cords are used as means of supplying power from the units to the disconnect shall be listed for extra hard usage and cannot be subjected to physical damage.
- I. All 125/230 volt 15, 20 & 30 ampere receptacle outlets mounted at the disconnect shall have a listed ground fault circuit-interrupter protection for personnel.
- J. All these disconnects that are provided for mobile food units shall be installed by a licensed electrician and shall have proper permits and inspections made on both the disconnect and the power supply at each unit location.

## **6. WASTEWATER CONNECTION**

On-site sewer connections complying with the requirements of Metro Water Services must be provided at the property site. All wastewater connections must connect to the public sewerage system and has a backflow protection devise, such as a “swing check value”. The pipe connection must be of a quick connect type that meets the requirements of the Metro Codes Administration and the Metro Water Services. A dedicated 20-gallon per minute/40 pound grease trap must be located within the service connection prior to introduction of sanitary waste. The maintenance of the grease trap, in a manner consistent with applicable codes, will be the responsibility of the property owner.

## **7. GREASE TRAP**

A dedicated 20-gallon per minute/40-pound capacity grease trap must be properly plumbed between the three-compartment sink and the wastewater tank. This trap must be cleaned out on a weekly basis.

## **8. RESTROOM ACCESSIBILITY**

The owner of the unit must obtained a signed agreement with the owner a building on the parcel, or an adjoining parcel, stating that employees have access to the restroom facilities during all periods of operations. The building in which the restroom for employees is provided must not be more than 500 feet, door to door, from the unit.

## **9. FAILURE TO OPERATE FROM A FIXED SITE**

If for any reason this “single/fixed site mobile food unit” ceases to operate from a single site and begins to move from site to site, then the unit will have to meet the requirements for a conventional mobile food service establishment.



## Standard Operating Procedure for Remediation of Sanitary Sewerage Spills/Overflows



*Metro Water Services  
System Services Division  
Sewerage Spills and Overflow Incidents  
Guidelines & Procedures*

### **GOAL**

***To reduce or eliminate the public health risks and environmental damage associated with illicit discharges from the public collection system.***



Metro Water Services - System Services Division

## **Collection System Sewerage Spills and Overflow Incidents Guidelines and Procedures**

System Services is staffed 24/7/365 to respond to any public health or environmental problem related to an illicit discharge of sanitary sewage. The following guidelines and procedures address the manner in which these incidences are to be handled by System Services' employees.

*Definition of Discharge Point: Any point in the public collection system where sewage is discharged on to roadways, public and private property, or directly or indirectly into creeks or rivers.*

### **GUIDELINES**

When notified of an overflow from the public collection system, remember the following:

**Containment**  
**Contact**  
**Cleanup**

#### **Containment**

Upon arriving at the discharge site, immediately proceed with measures to stop the discharge of sewage. If discharge cannot be stopped, notify supervisor for additional equipment/resources as required. Proceed to (b).

Barricade, flag, or hazard tape the affected area to minimize potential contact with the public.

#### **Contact**

Contact the SSD Dispatch to report the following information:  
exact location and condition of site  
public or private collection system  
all contractors or construction work observed in area

Document this information, as well as the cause of the blockage (roots, grease, etc.) on the Work Order.

If the public collection or private system overflow is near or in a creek or river, contact the on-duty supervisor. The on-duty supervisor will immediately contact the MWS NPDES division for remediation advice and guidance.

Mike Seremet (Days) DT# 82 Cell # 533-0334

Dale Binder (Nights & Weekends) Emergency Cleanup DT#409

The responding supervisor is also responsible for ensuring that an Overflow Notification Form is completed and faxed to the Division of Water Pollution Control (TDEC) and Metro Stormwater - NPDES Division within 24 hours.



State of Tennessee Water Quality Division

ATT: Ann Rochelle: .....Fax: 687-7078  
 Office Number: ..... 687-7123  
 Joey Holland .....687-7020

Metro Stormwater - NPDES Division

ATT: Michael Hunt .....Fax: 880-2425  
 Office Number ..... 880-2420

**Cleanup**

For inline sewer stoppage (grease, roots, or debris), clear blockage as soon as possible.

*(Note: If stoppage cannot be cleared quickly, pump crew shall connect a by-pass line either directly into a tanker truck or into public sanitary sewer until blockage has been cleared.)*

Make every effort to contain surface discharge drainage. Call dispatcher for any assistance needed. Sandbag or trench away from catch basins and drainage ditches and creeks or rivers. A construction repair crew with backhoe may be needed in large spills. Make every effort to isolate discharge to the site. If the discharge is in a CSO system, sewage can be washed into the collection system.

(Note: Notify affected property owners as soon as possible of incident and corrective action being taken.)

If possible, manually remove sewerage debris from discharge point and transport to compost lot for processing to landfill. This includes all solids that were discharged from our sewer system. This will decrease the aesthetic impact at the discharge point.

***If overflow has entered a creek or river (or has potential to) the on-duty supervisor shall consult with MWS NPDES personnel in order to collaboratively identify the scope of the cleanup effort.***

**Metro Stormwater - NPDES Division**

Mike Seremet	533-0334	Direct Talk #82 (Primary Contact)
Dale Binder		Direct Talk #409 (Emergency Contact)
Michael Hunt	880-2420	Direct Talk #81 (Emergency Contact)
Butch Bryant	566-3865	Direct Talk# 193 (WQ Sampling)

Do not wash down discharge that could drain into nearby catch basins, ditches or creek beds. Note: If spill is directly in creek or drainage bed, remove all sewerage debris from creek bed using a vacuum truck to recover as much as possible. Utilizing input from the TDEC and MWS NPDES Division, an on-site decision will determine if it is appropriate to flush streambed. If the damming of stream channel is required, only sandbagging for containment will be approved and complete removal of sandbags will be required. If in the event of a broken sandbag, all loose sand will be removed from stream channel. Note: Due to Federal regulations, do not use city water to clean creek bed. Non-chlorinated water can be brought in to use in the event of a large spill. Non-chlorinated water can be obtained at Central, Dry Creek and Whites Creek Wastewater Treatment Plants. The department is in the process of securing Chlorine Defusers for available public water use as needed. Never use high-pressure (jet) water for creek or drainage bed cleanup due to potential soil erosion or danger to aquatic life.



Metropolitan Nashville – Davidson County  
NPDES-MS4 Permit No. TNS068047  
Cycle 2, Year 2  
November 2005

If a creek, river or other water body has been impacted by sewerage, dissolved oxygen levels should be monitored and observations made to determine if fish or other aquatic life have been killed. Death of fish and aquatic life may not result until several hours or the next day following the discharge into the stream, after oxygen depletion occurs due to breakdown of the sewage through natural process. Monitoring results and any observations made should be included in the report submitted to the Division of Water Pollution Control describing the overflow incident. In the event that fish or other aquatic life have been killed, the Tennessee Division of Water Pollution Control should be notified as soon as possible, but no later than 24 hours following discovery of the incident. Division personnel can be contacted through the Tennessee Emergency Management Agency (TEMA) at 741-0001 if the fish kill occurs after regular business hours, on holidays, or on weekends.

NOTE: Water samples taken by Metro Water Services or other approved agencies above and below discharge point will determine whether the clean-up is complete or further action is required

Lime and disinfectant may be used around discharge points in isolated grass areas and under homes, if needed, upon agreement of property owner. Do not use lime or disinfectant in creek or drainage beds.

If the discharge point is the result of a sewer segment failure by either natural causes or actions of others, start by-pass pumping to public sanitary sewer as soon as possible. If contractor on site is responsible and cannot start by-pass pumping in a timely manner, call dispatcher for MWS pump crew. Note: If caused by others, this work can be billed back to the responsible parties. If possible have jet-vacuum truck keep sewerage confined to collection system while this by-pass pumping is being put in place. Take every possible action to confine sewer discharge to site.

#### Air-Relief Valves on Sewerage Force-Mains Discharge

If the discharge point is the result of a faulty or broken air-relief valve, contact the System Services supervisor. The SSD shop is responsible for maintenance and repair of these valves. A jet-vacuum truck can, in most cases, keep sewerage confined to the air-relief valve manhole. Take every possible action to reduce discharge at site until repair personnel arrive on site.

#### Sewer Pumping Station Discharge

In the event the sewerage discharge point is from a MWS sewer pumping station, contact the Control Room at Omohundro Water Plant (862-4978) or Direct Talk #200.

#### CSO Regulator Manhole Discharge

System Services Division maintains CSO Regulators and in the event of a system failure should be handled as a collection system stoppage. Electronics at all facility are maintained by Operations. If you are at a CSO Regulator and were not dispatched by Operations, please notify them of your presence to clarify any electronic alarms they may receive for this site.

#### Private System Discharge

If the sewage discharge is located on a private system, make every effort to bring it to the owner's attention. Inform responsible party of the public health and environmental concerns and that Metro Stormwater - NPDES Division and Metro Public Health will be notified of discharge.



Metropolitan Nashville – Davidson County  
NPDES-MS4 Permit No. TNS068047  
Cycle 2, Year 2  
November 2005

## Appendix B

### Public Education



**Public Education/Outreach by NPDES Staff**

Date	Forum/Outreach Group	Title/Description of Outreach	Presenter
6/29/2005	Engineers, construction and project managers of the local development community	To discuss the overall Phase 1 program and specifics of grading permit requirements	Michael Hunt - NPDES
6/29/2005	Red River	Proper hauling techniques and how to report illicit discharges	Josh Hayes - NPDES
6/28/2005	Hudgins Disposal	Proper hauling techniques and how to report illicit discharges	Josh Hayes - NPDES
6/27/2005	Home Builder Ass. Office	Grading issues in Nashville, and low impact development.	Michael Hunt - NPDES
6/23/2005	Public Works	Proper hauling techniques and how to report illicit discharges	Josh Hayes - NPDES
6/22/2005	System Services	Sewer cleanup and how to report illicit discharges	Josh Hayes - NPDES
06/12/05	Metro Government Departments	Stormwater BMPs and Low Impact Development	Kimberly Moore - NPDES
5/18/2005	EPA Workshop for Phase 2 Cities MS4 programs	100 pilot BMP inspection program presented to other MS4 cities.	Dale Binder - NPDES
5/12/2005	IECA Muddy Water Blues Mid TN Conference	To educate local professionals on Metro's Grading Permit process	Michael Hunt - NPDES Program
4/23/2005	Earth Day water quality booth	Sampling Day	Preston Winesett/Rebecca Dohn - NPDES program
4/14/2005	AWRA Conference	Thermograph study	Preston Winesett - NPDES Program
4/14/2005	AWRA Conference	Basic Grading Permit Presentation	Michael Hunt - NPDES Program
4/12/2005	City of Murfreesboro Council	Thermograph study	Preston Winesett - NPDES Program
4/7/2005	Builders and Fire Codes Inspectors Conference	Stormwater 101	Michael Hunt - NPDES Program
4/1/2005	Metro School Board officials	Construction problems with schools.	Michael Hunt - NPDES Program
3/3/2005	TDEC Certified Training	Fundamentals of Erosion Prevention and Sediment Control Workshop	Tom Palko-Metro NPDES Program
2/24/2005	Water Quality Advisory Committee of the Cumberland River Compact.	Thermograph Study	Preston Winesett - NPDES Program
2/16/2005	Planning Department	Basic NPDES presentation	Michael Hunt - NPDES Program
12/2/2004	Public Meeting at McMurray Middle School	Discussion of flooding concerns, maintenance, and environmental components	Tom Palko-Metro NPDES Program
11/19/2004	M&M Mobile Carpet Cleaning Wash Water Discharge	Sent Brochures and Letter with Metro Illicit Discharge Ordinance	Dale Binder - NPDES
11/14/2004	Green Infrastructure and Storm Water Control	Green Infrastructure and Storm Water Control Workshop	Michael Hunt - NPDES Program
11/13/2004	Mayor's Office Neighborhood-Storm Water 101 Class	Mayor's Office Storm Water 101 Class	Tom Palko-Metro NPDES Program
11/10/2004	Middle Tennessee GIS Users Group	Middle Tennessee Forum On Geographic Information Systems	Michael Hunt-Metro NPDES Program
9/17/2004	Metro Planning Commission	Metro Storm Water Quality Presentation (NPDES Program, BMPs, etc.)	Michael Hunt-Metro NPDES Program
8/26/2004	TDEC Fundamentals of Erosion Prevention and Sediment Control Workshop	Metro Construction Permit Requirements	Michael Hunt-Metro NPDES Program
8/23/2004	MS4 Working Group	Metro NPDES Field Screening/Thermograph Presentation	Michael Hunt - NPDES
05/26/2005	Metro Water Services Stormwater Maintenance Crews	To educate maintenance crews on EPSC and Environmental permits	Josh Hayes - NPDES



**Public Education Events at Metro Schools by the Public Information Officer**

School	Grade	Date	Subject
Croft Middle School	7th	8/25/2004	Enviroscape
Wallace School	11th -12th	9/8/2004	Water Treatment Video
Pennington Elem.	4th	9/14/2004	Water Treatment Video
Pennington Elem.	4th	9/15/2004	Water Treatment Video
Pennington Elem.	4th	9/16/2004	Water Treatment Video
Gower Elementary	4th	9/22/2004	Water Treatment Video
Gower Elementary	4th	9/22/2004	Water Treatment Video
Percy Priest Elem.	3rd	10/8/2004	Water Treatment Video
Margaret Allen Elementary	7th	11/5/2004	Water Treatment Video
Margaret Allen Elem.	5th & 6th	11/5/2004	Water Treatment Video
Julia Green		11/12/2004	Water Treatment Video
John Early Career Fair	7th - 8th	11/19/2004	MWS
Dalewood Health Fair	4th	11/19/2004	Water
Julia Green		1/28/2005	Enviroscape
Maxwell Elementary	4th	2/10/2005	Enviroscape
Stratford H. S	11 & 12	3/3/2005	Enviroscape
Julia Green	2nd	4/11/2005	The Journey of Your Water
Christ the King	7th	4/19/2005	Stream Sampling & H2O Qual.
Inglewood Library	Pre-K	5/4/2005	<i>This is The Rain</i> reading
Hadley Park	Pre-K	5/11/2005	<i>This is The Rain</i> reading
Madison Library	Pre-K	5/25/2005	<i>This is The Rain</i> reading
Vanderbilt		6/27/2005	WWTP Tour
YWCA		6/27/2005	WTP Tour
Harpeth Hall		6/28/2005	WWTP Tour

Note: Many of the Water Treatment presentations/tours also include an environmental stormwater education component.



**Public Education Events conducted by the Public Information Officer**

Event	Date	Location
4th of July Celebration	7/4/2004	Riverfront
Water Week at the Zoo	7/10-11/04	Zoo at Grassmere
NHL Streetfest	7/16-18/04	Opry Mills Mall
Water Week at the Zoo	7/17-18/04	Zoo at Grassmere
AWWA Conference	7/21/2004	Opryland Hotel
International Mayor's Night Out	7/22/2004	Glencliff H.S.
SW Regs Presentation	7/28/2004	MWS CS
Germantown Meeting	8/2/2004	Germantown
MWS Golf Scramble & Picnic	8/5/2004	Two Rivers
Mayor's 1st Day of School Festival	8/15/2004	GEC
SW Plans Approval Seminar	8/20/2004	MWS CSC
State Fair	9/10-9/19	Fairgrounds
Mill Creek Clean Up	9/11/2004	McRedmond Farm
SW 101	9/13/2004	Hermitage Precinct
Bordeaux Sr & Community Fair	9/17/2004	Bordeaux Hosp.
Mayor' s Night Out	9/20/2004	
TN Environmental Educators Assoc. Conference	9/25-9/27	Paris Landing
MOON Celebrating Neighborhoods Conference	10/2/2004	Convention Center
Oktoberfest	10/9/2004	Germantown
TN Recycling Coalition	10/14/2004	Union Station Hotel
Mill Creek Watershed technical mtg	11/3/2004	Ellington Ag. Center
Mayor's Night Out	11/22/2004	North Precinct
Dist. 4 & 9 Town Mtg	11/23/2004	Madison Library
Nash. Gas Christmas Parade	12/3/2004	Downtown
Engineering Policies and Procedures Seminar	1/21/2005	2nd Floor CSC
Lake Chateau Comm. Mtg.	2/7/2005	Lake Chateau Clubhouse
Demonbreun St. Mtg	2/8/2005	1st Baptist Church
Sylvan Park Neighborhood		Cohn Adult Learning Center
D5 Homeland Security Conf.	2/22 - 2/24/2005	Convention Center
Master Composter Class	3/1/2005	Zoo at Grassmere
Lawn & Garden Show	3/3 - 3/6/2005	Fairgrounds
Powell Ave. Community Mtg		McMurray Middle School
H2O Quality Night at the Sounds	4/28/2005	Greer Stadium
Earth Day	5/23/2005	Centennial Park
Country Music Marathon	5/30/2005	Bi-Centennial Mall
Country Music Festival	6/9 - 6/12/2005	Riverfront
Catfish Rodeo	6/11/2005	Centennial Park

Note: Many of the Water Treatment presentations/tours also include an environmental stormwater education component.

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**METRO**  
WATER SERVICES



Metropolitan Nashville – Davidson County  
NPDES-MS4 Permit No. TNS068047  
Cycle 2, Year 2  
November 2005

**Brochure: Water – Protect it with your Lifestyle (Page 1)**

**Water** 

Protect it with  
your lifestyle

Pure Nashville  
*...right in rain.*

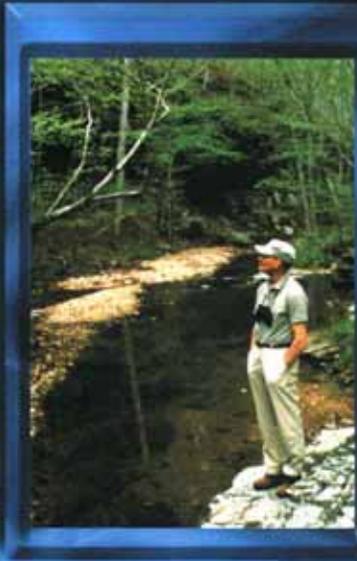
Metropolitan Government of Nashville and Davidson County  
Department of Public Utilities (NPDES Division)  
Bill Proctor, Mayor



**Brochure: Water – Protect it with your Lifestyle (Page 2)**

# THE CLEAN WATER CHALLENGE

According to the Environmental Protection Agency, the primary cause of water quality problems in the U.S. today is not from factories or wastewater treatment plants, but rather something called "nonpoint source pollution." Nonpoint source pollution is runoff from rainfall, snowmelt, or irrigation that picks up soil and contaminants as it runs over land or under ground, eventually depositing them into surface waters or introducing them into ground water.



To address specifically the problem of pollution from storm water runoff, industries and municipalities across the nation are being required to obtain National Pollutant Discharge Elimination System (NPDES) permits. The Tennessee Department of Environment and Conservation, under the direction of our nation's Clean Water Act, issued an NPDES permit to Davidson County, making us responsible for improving and protecting the quality of water allowed to enter the "Waters of the State." This means that any ditch, culvert, or conveyance that routes water to area streams and rivers must be kept free of pollutants.

# WHAT METRO IS DOING

In Metropolitan Nashville/Davidson County, storm water that flows into drainage ditches, gutters, and storm drains is not treated before it makes its way into our waterways. As a result, the products of our everyday activities - oil and gasoline, litter, pet wastes, pesticides, fertilizers, wash water, even soil and yard clippings - get swept up in storm water and become pollutants that can kill aquatic life, limit the use of our waters for recreational and other purposes, and create eyesores. More than half of the contamination in our waterways today is caused by storm water pollution.



The goal of the Metropolitan Government of Nashville and Davidson County (Metro) NPDES permit is to develop and implement storm water pollution controls that will make our waterways "fishable, swimmable, and environmentally safe." As part of this effort, the Department of Public Works has in place a multifaceted storm water management program that addresses:

**CONSTRUCTION:**  
 We encourage and enforce proper erosion control measures at construction sites.





**Brochure: Water – Protect it with your Lifestyle (Page 3)**

**NASHVILLE**



**SPILL RESPONSE:** Metro has an established hazardous materials spill response plan that minimizes damage to the environment.

**INDUSTRIAL INSPECTIONS:** We are providing ongoing inspection and/or monitoring of local industries for environmental compliance.

**MONITORING:** We regularly monitor the water quality of our local streams/watersheds.

**ROADWAYS:** We are increasing street sweeping efforts and are utilizing more efficient, environmentally friendly road salting methods.

**ILLICIT DISCHARGE AND DUMPING:** We are identifying illegal discharges to our storm water conveyances and enforcing discharge regulations.

**PUBLIC EDUCATION:** We are developing and carrying out programs and methods to educate the public and industries on storm water-related environmental issues.

**PUBLIC REPORTING:** We provide a storm water pollution telephone hotline (315-PURE) for reports related to any discharges or activity that is contributing to water pollution. An inspector follows up on all notifications.

**INFRASTRUCTURE:** We have inventoried and documented the location and condition of the county's storm water drainage system.

**DEVELOPMENT/ REDEVELOPMENT:** We consider, implement, and encourage best management practices to minimize negative environmental impacts from storm water runoff.

Healthy lakes, rivers, and streams directly impact property values and the quality of life we enjoy. Each of us has a responsibility to be a part of Metro's pollution solution by controlling what we purposefully and inadvertently put down our storm drains. This responsibility begins by understanding where pollutants come from. For example, many common household products – such as oven cleaners, paint and paint removers, cleaning fluids, and moth balls – and motor oil contain toxic ingredients that can become a threat to public health and the environment if not properly used or discarded. Wash water contains detergents, oil, grease, metals, dirt, and other pollutants released by the washing process. Fertilizers and pesticides washing off our lawns can deplete lakes and rivers of oxygen needed by aquatic life and wildlife. Even waste from the family pet can contain bacteria and viruses that contaminate waterways.

By following the suggestions on the back of this publication, you take an important step in helping to clean up our waterways and assist Metro in meeting its NPDES permit requirements.





**Brochure: Water – Protect it with your Lifestyle (Page 4)**

## MINIMIZING STORM WATER POLLUTION: WHAT YOU CAN DO

### AROUND THE HOME

- Use household cleaners that are labeled nontoxic and biodegradable, and use the smallest quantity possible.
- Properly use and store all toxic products, including cleaners, solvents, and paints. Clean up spills immediately. Follow label directions regarding container disposal or take to a local collection site.
- Recycle reusable materials, and throw litter into trash cans that are tightly covered.
- Dispose of paint in an environmentally friendly manner. For disposal methods, visit [www.nashville.org/pw/paint.html](http://www.nashville.org/pw/paint.html) or call 615-862-8620.

### IN THE YARD

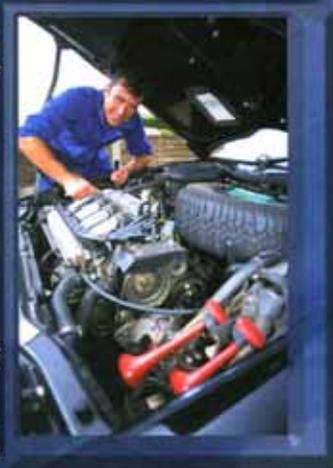
- Use pesticides, herbicides, and fertilizers sparingly and in accordance with label instructions. Do not apply if rain is expected or near ditches, gutters, or storm drains. Use products labeled nontoxic, biodegradable, or water-soluble when possible.



- "Go natural" by using natural fertilizers such as compost or bone meal and natural insect repellents, such as marigolds (for nematodes and white flies), soapy water from dishes (for flowers and roses), or spearmint gum (for moles).
- Do not over irrigate - this can cause sediment to wash into storm drains.
- Do not blow, sweep, or rake leaves or grass clippings into gutters or storm drains. Compost yard waste or bag and dispose using solid waste collection programs.
- Divert rainspouts and garden hoses from paved surfaces onto grass.
- Pick up animal wastes and dispose of in garbage cans or by flushing down toilets.

### VEHICLE- AND BOAT-RELATED ACTIVITIES

- Take used motor oil to a participating oil recycling center. For a list of centers and to find out how to dispose of antifreeze, transmission fluids, engine cleaners, and battery acid, call 615-862-8620 or visit our web site.
- Properly maintain your car or boat to reduce the leakage of oil and other fluids.
- Wash cars on lawns or ground rather than paved surfaces to minimize runoff, and use biodegradable, nonphosphate soap.
- Use marine sanitation devices or pump-out facilities to get rid of boat sewage.
- When spills occur, use kitty litter, sawdust, or wood chips to soak up fluid and dispose in garbage can.



### GENERAL

- Report illicit discharges or illegal dumping into storm drains by calling Metro's storm water pollution hotline at **615-313-PURE**.
- For more information about Metro's solid waste collection programs, please call 615-862-8620.

#### Metro Water Services NPDES Program



1607 County Hospital Road  
 Nashville, TN 37208  
 Stormwater Pollution Hotline: (615) 313-PURE  
[www.nashville.gov/stormwater](http://www.nashville.gov/stormwater)

Bill Purcell, Mayor



If you need any assistance or accommodations, please contact Mr. Joseph A. Fales, Sr., Metro Water Services, ADA Coordinator, 1607 2nd Avenue North, Nashville, TN 37208-3299, 615-862-4002.



## Metro Departments Land Management Brochure

### Did You Know?

- In order to apply pesticides and herbicides, the applicator may be required to complete a certification program from the Tennessee Department of Agriculture. For more information about the State's certification program, call (615) 837-5232 or visit their website at: <http://www.state.tn.us/agculture/regulate/aip/certific.html>
- The following activities represent an illicit discharge, which is in direct violation of Metro Code of Law:
  - \*Dumping used automotive fluids or any other type of chemicals into a storm drain, ditch, or creek.
  - \*Discharging soapy wash water directly into a storm drain, ditch, or creek.
  - \*Dumping concrete or rinsing out concrete mixer directly into a storm drain, ditch, or creek.
  - \*Allowing sediment to drain from graded or excavated areas.
  - \*Dumping leaves, limbs, grass clippings, and other debris into a storm drain, ditch, or creek.
  - \*Allowing a dumpster to leak fluids that discharge into a storm drain, ditch, or creek.
  - \*Spraying chemicals such as fertilizers, pesticides, and herbicides directly into a storm drain, ditch, or creek.



### NPDES

METRO Water Services  
 Stormwater Division  
 1007 County Hospital Road  
 Nashville, TN 37218  
 Phone: 615-880-2420  
 Fax: 615-880-2425

For more information about Stormwater visit our website: [www.nashville.gov/stormwater](http://www.nashville.gov/stormwater)

Thank you for recognizing the importance of our streams within Metro Nashville/Davidson County. Your help in the protection and improvement of the streams is greatly appreciated. This will help to make a better environment for everyone.



## GUIDELINES FOR ALL METRO DEPARTMENTS PERFORMING LAND MAINTENANCE ACTIVITIES

### "HELP US TO END WATER POLLUTION"

Simple lawn care maintenance may seem to have little to do with water pollution, especially when there are no streams or rivers located nearby. However, just one improper application of lawn care chemicals could result in detrimental, long lasting impacts to a creek. When it rains, chemicals such as fertilizers, pesticides, and herbicides that are improperly applied can be transported with the rainwater to a nearby storm drain or ditch that drains directly into a creek or river. These chemicals diminish the quality of water flowing through Nashville's streams, sometimes to the point of causing large algae blooms and subsequent fish and other aquatic life kills.

Metro Nashville has been issued a National Pollutant Discharge Elimination System (NPDES) permit from the Tennessee Department of Environment and Conservation. This NPDES permit requires Metro Nashville to implement programs aimed at reducing the amount of pollutants that discharge into creeks and rivers from the Municipal Separate Storm Sewer System (MS4). One of the biggest challenges Metro Nashville faces in accomplishing this goal is reducing the amount of pollutant runoff from all lawn-care maintenance activities, whether private or public.



Since the Metropolitan Government of Nashville is one of the largest land owners in Davidson County, it is imperative that we are "walking the walk" and not causing storm-water pollution. Good lawn-care/chemical application practices should be followed to prevent chemical wash off and other pollutants from entering storm drains, ditches, and streams.

It is important to note that all pollutant discharges into the MS4 and streams are deemed "illicit discharges" and are illegal in Davidson County under Metro Code of Laws (Metro Code) §§ 15.64.205. In addition, "illicit discharges" occurring on any Metro Nashville property would be a direct violation of the Metro's NPDES permit, so we ask that your staff please review the current lawn care maintenance policies and compare them to the following lists to determine if appropriate practices are being followed.



### GENERAL GUIDELINES FOR MAINTENANCE ON METRO PROPERTY

1. When possible use nontoxic, biodegradable, or water-soluble products.
2. Use pesticides, herbicides, fertilizers sparingly and in accordance with the label instructions.
3. Apply chemicals only when rain is not in the immediate forecast. If time is not allowed for the chemical to soak-in, rain will wash pollutants into streams and the chemical would be ineffective, requiring another application.
4. Never apply chemicals near bodies of water, streams, and/or discharge runoff water directly to streams.
5. Properly store products so they are not exposed to stormwater or stormwater runoff.
6. Materials such as trash, brush, household hazardous waste, construction and demolition waste, recyclable materials, bulk items, and dead animals should be disposed properly at approved Metro facilities. For a list of disposal facilities visit: <http://www.nashville.gov/recycle/>
7. Pick up all animal waste and dispose of properly into garbage cans or by flushing down toilets.
8. Make sure all trash and debris is picked up and disposed properly before mowing the grass.
9. Do not over irrigate—this may cause sediment, herbicides, pesticides, and fertilizers to wash into the MS4 and streams.
10. Do not sweep, rake, or blow accumulated clippings into the MS4 or streams. This represents an unwanted loading of organic material into the streams.
11. Do not disturb vegetation or soil in stream natural waterways.
12. Do not pressure wash parking lots with chemicals.
13. Do not wash out applicators into drainage ditches, catch basins, or streams.



**Brochure Sent to Chemical Distributors and Landscaping Companies**

**General Guidelines**  
*for lawn and garden care*  
(continued)

- Divert roof downspouts and other storm-water away from paved surfaces and onto grass or into "raingardens"  
<http://www.raingardennetwork.com>
- Pick up animal wastes and dispose of in garbage cans or by flushing down toilets.
- Do not place chipper pickup material in drainage ways or streams.
- Prevent areas of stagnant water on properties - prolific mosquito breeding sites, thereby increasing disease carrying mosquito populations. For tips on controlling and fighting mosquitoes, refer to:  
<http://www.epa.gov/petsticides/factsheets/mosquito/>

**METRO Nashville Public Works**  
 Department of Waste Management  
 939 Dr. Richard G. Adams Dr.  
 Nashville, TN 37207  
 615.880.1000

**NPDES**

**METRO Water Services**  
 Stormwater Division  
 1607 County Hospital Road  
 Nashville, TN 37218

Phone: 615-880-2420  
 Fax: 615-880-2425

[www.nashville.gov/stormwater](http://www.nashville.gov/stormwater)

Thank you very much for recognizing the importance of our streams as a valuable natural resource and your help in the protection and improvement of the streams within Metro Nashville/Davidson County.

**Lawn & Garden Maintenance Reference Guide**

**General Guidelines**  
*for lawn and garden care*  
(continued)

- Divert roof downspouts and other storm-water away from paved surfaces and onto grass or into "raingardens"  
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- Do not place chipper pickup material in drainage ways or streams.
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**Lawn & Garden Maintenance Reference Guide**



## Demolition Guidelines Handed Out with Demolition Permit



### Building Demolition Reference Guide

The following reference material is to be used when demolishing buildings or structures as a guide to facilitate compliance under the current Davidson County, **Metro Water Services (MWS) environmental regulations**. However, in order to insure compliance within Metro Nashville/Davidson County, persons conducting demolition activities must be aware of **all** pertinent Metro, State, and Federal regulations and not simply those contained within this document.

During every demolition project, numerous pollutants are liberated, both from the materials used to construct the building and from materials that may have been used or stored inside the building itself. These pollutants may include airborne materials such as asbestos, or water-soluble materials such as heavy metals, toxic organic compounds, and solids (dust). During a rain event, these pollutants dissolve or suspend in the stormwater and are transferred into Metro's Municipal Separate Storm Sewer System (MS4). This MS4 includes all storm drains, roads, ditches, culverts, and parking lots that are designed to route **clean stormwater only** safely into the streams of Metro Nashville/Davidson County.

The NPDES division of MWS has the specific task of monitoring all discharges into this MS4 for the purpose of maintaining the water quality of the streams within Davidson County. If not addressed properly on site, the pollutants produced by demolition activities will enter the MS4 and be routed to a nearby stream. **These pollutants will then damage this stream and the aquatic life within it.** Nearly all pollutant discharges into the MS4 and streams (including pollutants liberated and discharged during demolitions) are deemed "Illicit Discharges" and are illegal in Davidson County under Metro Code of Laws (Metro Code) §§ 15.64.205. If you have questions, contact the MWS NPDES office at (615) 880-2420.

Fortunately, the same Best Management Practices (BMPs) applied on general grading sites (such as those used to control sediment and dust) also work effectively in keeping demolition pollutants on site. Silt fence, storm drain covers, and storm drain insert filters are just a few of the BMPs that can be utilized to control these pollutants on site and prevent them from migrating into the MS4 or nearby streams.

It is also important to note that **demolition projects not exempted by section 3.4 of the MWS Stormwater Management Manual require a MWS grading permit** before the demolition work may take place. For additional information on who or what projects need a grading permit, go to [www.nashville.gov/stormwater/grading\\_permits.doc](http://www.nashville.gov/stormwater/grading_permits.doc).

Also, be sure to recycle or dispose of demolition debris properly. For additional information on Nashville's Construction and Demolition Material Recycling Program, go to [www.nashville.gov/recycle/Publications/Construction\\_Recycling\\_Directory.pdf](http://www.nashville.gov/recycle/Publications/Construction_Recycling_Directory.pdf).

Thank you very much for recognizing the importance of our streams as a valuable natural resource and your help in the protection and improvement of the streams within Metro Nashville/Davidson County.

This publication is a public service of:  
 Metro Water Services  
 NPDES Program  
 Storm Water Quality Control Team  
 1607 County Hospital Road  
 Nashville, TN 37218  
 Phone (615) 880-2420  
[www.nashville.gov/stormwater](http://www.nashville.gov/stormwater)



Metro Water Services is in the process of complying with all appropriate Americans with Disabilities Act Guidelines. For additional information contact Joseph A. Estes, Sr., 1600 2<sup>nd</sup> Avenue North, Nashville, TN 37208-2206; telephone 615-862-4862.



## Floodplain Mailing Page 1

### FLOOD INFORMATION

#### FLOOD HAZARD AREAS

The individualized map, presented on the previous page, shows the limits of the 100-year floodplain in your area. The 100-year floodplain is the area that will be flooded on the average of once every 100 years. It has a 1% chance of occurring in any given year. In other words, you have about a 30% chance of experiencing a 100-year flood during the life of a 30-year mortgage. Less severe floods have a greater chance of occurring in any year, but can still create a significant hazard to people and property.

Flood insurance rate maps provide more detailed information on the 100-year floodplain and are available at the Codes Administration Office. For assistance and information, please call 862-6038.

#### FLOOD WARNING

The National Weather Service will post flash flood warnings or watches when the conditions are present. Know the terms used to describe flooding: Flood Watch = flooding is possible; Flood Warning = flooding is occurring or will occur soon. Keep alert to rising waters in the streams in your area.

NOAA weather radios offer the best method of warning. They can be programmed to sound an alert tone whenever severe weather is approaching your area. This eliminates the need to listen to the radio, and the tones can wake you up if you are sleeping. The cost is minimal and the radios can be purchased at any store selling electronic equipment.

During periods of rain, tune to local television and radio stations, for example:

- WRNY - TV channel 2      WSM - Radio station AM 650
- WSM-TV - TV channel 4
- WTVF - TV channel 5
- WZLW - TV channel 17

#### FLOOD INSURANCE

Floods cause more damage in the United States than any other natural hazard. Each year, floods cause \$4 billion dollars in damage and kill 100 people. Many people do not realize that flood damage is NOT covered by standard homeowners insurance policies.

Since 1968, the National Flood Insurance Program (NFIP) has provided federally backed flood insurance to communities participating in the NFIP. Metropolitan Nashville and Davidson County joined the program in 1982, therefore, insurance is available for all properties in Davidson County. Flood insurance can be purchased through any licensed property insurance agent or broker. All agents must charge the same rates. Your rates will not change if you file a damage claim; the rates are set on a national basis. The purchase of flood insurance is mandatory as a condition of receiving any federally related financial assistance such as loans through the Federal Housing Administration, the Veterans Administration, or the Small Business Administration for properties in the floodplain.

It has been estimated that only one out of four properties susceptible to flooding is insured. Therefore, a large number of homes and businesses in Davidson County are not protected from the financially devastating effects of a flood. Just because your property has not flooded in the past does not mean that it will not flood in the future.

Don't wait for the next flood to buy insurance protection. Because you are in the 100-year floodplain, we encourage you to obtain flood insurance coverage for both your structure and its contents. There is a thirty (30) day waiting period before National Flood Insurance coverage takes effect. Contact your insurance agent for more information on rates and coverage.

#### FLOOD SAFETY

The following common sense guidelines can help protect you and your property from the dangers associated with flooding.

- **Do not drive through a flooded area.** Move people driven in their cars from any where else. This happened in 1984 in downtown Nashville. Do not drive around road barriers.



Do not drive through a flooded area.

- **Do not walk through flowing water.** Currents can be deceptive. Six inches of flowing water can knock you off your feet.
- **Stay away from power lines and electrical wiring.** Electrocuting is second to drowning in flood related deaths. Electrical current can travel through water. Report downed power lines to the Nashville Electrical Service at 736-6900.
- **If your house is about to be flooded, turn off the power** at the fuse box, if you can do so safely.
- **Keep children away from the flood gates, ditches, and storm drains.** Children have drowned in Davidson County by being swept away by flowing water.
- **Monitor the level of floodwaters** in the drainage way, especially at night. Be prepared to evacuate. Move your vehicles to high ground before it is too late.
- **Do not use electrical appliances** that have been wet without first getting them checked by a licensed electrician.
- **Be alert to gas leaks.** If you smell gas, report it to Nashville Gas at 734-1400. Do not use candles, lanterns, or open flames unless you are certain that the gas has been shut off and your house has been ventilated.
- **Do not use gas engines, such as generators, or charcoal free indoors during power outages.** Carbon monoxide exhaust could pose health hazards.
- **Clean everything that has been wet.** Flood waters will be contaminated with sewage and possibly other chemicals which could pose health hazards.
- **Look out for animals, especially snakes.** Small animals that may have been flooded out of their homes may seek shelter in yours.
- **Look before you step.** After a flood, the ground and floors are covered with debris that may include broken glass and nails. Floors and stairs that have been covered with mud can be very slippery.



#### PROPERTY PROTECTION MEASURES

If your property is susceptible to flooding, there are many flood damage reduction measures that can be used to protect yourself.

- **Watertight walls** can be applied to brick and block walls to keep out low level flooding.
- **Doors and windows** can be reinforced with permanent or manually installed closures.
- **Utilities** such as heating and air conditioning systems, water heaters, and other major appliances can be elevated to higher floors in the structure or on platforms on lower levels or outside.
- **Elevating or relocating** the entire structure may also be a feasible option.
- **Temporary measures** such as moving furniture and other valuables to higher floors or sandbagging exterior openings can also be employed in the event of a flood.

For more information on floodproofing or retrofitting structures visit the reference section of the Main Public Library, located at 615 Church Street, or your local branch library. For assistance and information, please call 862-6038.

#### FLOODPLAIN DEVELOPMENT PERMIT REQUIREMENTS

All developments in the 100-year floodplain (not just construction of buildings) require local permits.

- A grading permit issued by Metro Water Services is required for all land disturbing activities such as filling or excavating soil, the installation of inlets or digging ditches, and alterations to drainage channels.
- Building permits issued by the Codes Administration are required for all improvements or additions to existing structures as well as for any new structures.

Applications for grading and building permits must be made prior to the start of construction.

Metro's Stormwater Management Regulations require that all residential structures built in the floodplain must be constructed with the lowest finished floor elevation located four feet above the 100-year flood elevation. Commercial structures must be built one foot above the 100-year flood elevation. Additionally, any fill placed in the floodplain must be offset with an equal volume of cut removed from the floodplain.

We encourage you to contact the Stormwater Division of Metro Water Services at 862-4506 to inquire about permit requirements or to report any ongoing activity in the floodplain that may not be permitted. Improper development in the floodplain will make flooding worse and must be controlled.

#### SUMMATIVE SUBSTANTIAL IMPROVEMENT POLICY

The NFIP requires that if the cost of improvements to a building or the cost to repair damages to a building exceeds 50% of the market value of the building (excluding land value), the building must be brought up to current floodplain management standards as described in the previous section "Floodplain Development Permit Requirements." Building improvement projects include remodeling, rehabilitation, building additions, and repair and reconstruction projects.

Additionally, the cost of currently planned improvements will be added to the cost of previously made improvements and compared to the existing market value to determine if the improvements exceed 50% of the structure value. For more information on this policy, call 862-4506.

#### DRAINAGE SYSTEM MAINTENANCE

Natural stream channels are typically large enough to contain only the most frequent flooding events. Larger storms which occur on the average of once every 2 or 5 years will most likely cause the streams to flow out of their banks. For this reason, it is critical that the stream channels be kept clear of trash and debris. Do not dump trash, leaves, branches, Christmas trees, or other yard waste into or adjacent to a stream or drainage ditch. These materials will be washed away during rain events and will most likely be deposited in front of downstream culverts or bridges. Blocked or partially blocked culverts increase the potential for property flooding and may cause water to flow across roadways endangering motorists. Metro has a curbside drop-off service for collection of yard waste. Call 800-1000 for the collection schedule in your neighborhood or 862-4506 to report blocked culverts.



Example of landscape waste deposited in front of a driveway culvert.

#### NATURAL AND BENEFICIAL FUNCTIONS

Floodplains play a valuable role in providing natural and beneficial functions to the Metro area. Floodplains that are relatively undisturbed, or have been restored to a nearly natural state, provide a wide range of benefits to both human and natural systems. These benefits provide aesthetic pleasure as well as function to provide active processes such as filtering nutrients. Several of our floodplain areas are used for recreational purposes such as greenways and parks along the stream (Shelby Bottoms Park, for example). Natural and beneficial functions include:

- Provide flood water storage and conveyance
- Filter nutrients and impurities from runoff
- Provide open space for aesthetic pleasure
- Maintain bio-diversity and the integrity of ecosystem
- Contain historic and archaeological sites that provide opportunities for study
- Provide natural flood and erosion control and reduce flood velocities and peaks
- Create and enhance waterfowl, fish, and other wildlife habitats and provide breeding and feeding grounds.
- Enhance agricultural lands for the harvest of wild and cultivated products

#### LICIT DISCHARGES

Areas that naturally flood or where creeks and streams flow after rain events are very susceptible to the water pollution impacts caused by illegal dumping activities. Trash, Tires, Batteries, Cut Trees/Branch, Yard Clippings/Leaves, Chemicals, Washwater, etc. should NOT be dumped into or near storm sewers, catch basins, ditches, or streams. It is a violation of Metro Code §15.04.205 to dump or discharge these materials into either the storm sewer system or streams. Please call the Metro Storm Water Quality Office at (615) 860-2426 to report any such dumping or discharging activities.



## Floodplain Mailing Page 2

**Dear Resident,** 04/29/2004

In 1994, the Metropolitan Government of Nashville and Davidson County joined the Community Rating System which is a program administered by the National Flood Insurance Program (NFIP). Under this program, communities that exceed the minimum requirements of the Federal Emergency Management Agency (FEMA) will request to floodplain management are rewarded with lower flood insurance rates. Flood insurance policy holders in Davidson County have been receiving a 5% discount on their rates since we entered the program. This represents a combined savings of approximately \$30,000 each year.

As part of the NFIP program, floodplains and floodways on many local streams have been established and regulated by FEMA. The most recent Flood Insurance Study (FIS) for Metro Nashville was published by FEMA in 2001. The FIS includes Flood Insurance Rate Maps (FIRM) that present the adopted floodplains, floodways, and flood profiles for streams in Davidson County. This brochure has been advanced to properties located in or adjacent to the 100-year floodplain of Brentwood Creek. If you have received this brochure, then your property is located in or near the flood hazard area.

All streams within Metro Nashville are subject to flooding and backwater flooding may be significant. Flood-related Potential Disaster Declarations have been declared for Davidson County as recently as March 1997 and May 2000 for flood damage to property. During the reported 1997 storm event, six people were killed by tornadoes and subsequent flooding. Additionally, historical flood events of record have reportedly occurred on the Cumberland River (1927 and 1975), Mill Creek and Sawmill Creek (1955, 1969, 1962, 1976, 1999), Hickland Creek and Sawmill Creek (1979).

The primary effect of flooding on these streams appears to be inundation, although velocities will increase significantly to produce and structure under extreme flooding conditions. Calculated flooding velocities range from 1.0 to 5.0 feet per second, which is considered to be of dangerous magnitude. This brochure is intended to educate residents on such topics as flood hazards and flood safety.

If you have any questions concerning this brochure, please call the Stormwater Division of Metro Water Services at 615-242-1211.

**Elevation Certificate Information**

<p>Address: 109 Colony Ct          NASHVILLE, TN          37204</p> <p>100 Year Flood Elevation (base flood elevation): 505 feet          Top of Bottom Floor (including basement or enclosure) Elevation: 502.5 feet          Lowest Adjacent (finished) Grade Elevation: 501.9 feet</p>	<p>Parcel Number: 131080C0300000          NFIP Community Name: 470040 - Nashville          Map and Parcel Number: 47037C0333          Suffix: #          FIRM Panel Date: April 20, 2001</p>
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If you have any questions concerning the Elevation Certificate Information, please call 862-6038.

**109 Colony Ct - Flood Hazard Area**

Streams  
 Parcel Boundaries  
 Inhabiting Footprints  
 100 Year Floodplain  
 100 Year Backwater  
 100 Year Loss Area

0 100 200 300 400 feet

Brentwood Creek Watershed

Davidson County, TN

**METRO WATER SERVICES**  
 Contact Information

<http://www.nashville.gov/stormwater/>

<p>METRO WATER SERVICES: 615-242-1111</p> <p>To report whether a property is in the floodplain: 615-242-1111</p> <p>To report a water leak / water quality problem: 311-PEER (7373)</p> <p>To report a "new" drainage problem: 615-242-1111</p> <p>To learn more about the "water" department: 615-242-1111</p> <p>To learn about the water of our "water" department: 615-242-1111</p>	<p>Advanced Vehicle: 615-242-1111          Cable Franchising Info: 615-242-1111          Call for Public Info: 615-242-1111          Client Service Info: 615-242-1111          Commercial Recycling Info: 615-242-1111          Information for:          - Backflow: 615-242-1111          - Gas Turb: 615-242-1111          - City Maintenance: 615-242-1111          - Utility Customer: 615-242-1111          - Utility Franchising: 615-242-1111</p> <p>Construction Division: 615-242-1111          Customer Care: 615-242-1111          Meter Location: 615-242-1111          Trenching Location: 615-242-1111</p>	<p>AMERICAN RED CROSS: 228-4398          METRO PUBLIC WORKS: 615-242-1111          NASHVILLE ELECTRIC SERVICE: 726-2000          NASHVILLE GAS: 726-2000          NASHVILLE WATER: 726-2000          METRO EMERGENCY MANAGEMENT: 615-242-1111</p>
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37204  
 NASHVILLE, TN  
 Current Resident  
 109 Colony Ct



RETURN SERVICE REQUESTED

Metro Water Services  
 NPDES Section  
 1607 County Hospital Road  
 Nashville, TN 37218



Metro Waste Management Division Mailing (Page 1)

# GET READY, NASHVILLE!

A new trash collection program is coming soon to clean up Nashville's neighborhoods. Within the next few weeks, Metro Public Works will deliver your new 96-gallon, brown, rolling trash cart. Your new trash cart is part of an automated program to increase the cleanliness and efficiency of trash collection in your neighborhood. Keeping Nashville clean is everyone's responsibility. With your help, we can make Nashville a cleaner place to live, work and play.

Carts will be distributed approximately one week before your first collection. All carts will be delivered by summer, and residents may request a second cart once all carts have been delivered.

Your trash pick-up day may also change with the new program. Trash collection will occur on the same day of the week as the monthly curbside recycling pick-up. Trash will still be picked up weekly, and there will be a sticker under the lid of the new cart listing the pick-up day.

Eligible elderly residents and persons with disabilities will continue to receive back-door pick-up.

This newsletter contains everything you need to know about the new trash program. If you have additional questions, visit our Web site at [www.nashville.gov/trash](http://www.nashville.gov/trash) or call 880-1000.

**DAVID**  
**Routes:** Belmont, North Nashville and East Nashville  
**Bio:** David has been with Metro Public Works for 25 years. He has four children, one cat and one dog. He loves basketball, comedies and drawing.  
**Tips for using the new program:** Make sure your trash is bagged and placed inside the cart with the lid closed on your pick-up day.



Metro Waste Management Division Mailing (Page 2)

NEW PROGRAM INFO	RULES OF USE	You've got questions? N
<p><b>Automated Trash Pick-up Next Step in City's Waste Management Plan</b></p> <p>The automated trash pick-up program is the next step in the waste management plan adopted by Metro Council in 2002.</p> <p>The Curby curbside recycling program and the closing and demolition of the thermal plant were two important parts of the plan which have already been implemented. The new trash program will mean significant savings for taxpayers.</p> <p>With the new trash program, all homes will have uniform-looking carts, and trash bags will no longer be scattered throughout neighborhoods. The new rolling trash carts will also help keep rodents from getting into trash.</p> <p>Trash collectors will also benefit from the program because their employees will face fewer injuries on the job. Mechanical arms on the trucks will empty the trash carts. The automated program will make trash day faster and more efficient for everyone.</p> <p>Help your trash professionals and do your part to help our city achieve the goal of making Nashville a cleaner place to live.</p>	<ul style="list-style-type: none"> <li>• Look under your cart lid for your pick-up day.</li> <li>• When your trash cart is delivered, it will be placed where it should be positioned on pick-up day.</li> <li>• On your pick-up day, place your cart where it was delivered with the arrow on the lid pointing toward the street or alley. Your trash will be picked up between the hours of 7 a.m. and 5 p.m.</li> <li>• Do not place the cart within 3 feet of any stationary object such as a car, mailbox, utility pole, Curby cart, etc.</li> <li>• Do not place the cart under wires, tree limbs, building overhangs or other items that could be damaged. Please make sure there is 15 feet of clearance.</li> <li>• Items that are placed outside the trash cart will not be picked up.</li> <li>• Please remove your cart from the street by 7 p.m. on pick-up day.</li> </ul>	<p><b>When will I get my new cart?</b></p> <p>Your new cart will be delivered within a few weeks of receiving this newsletter. The transition for all residents should be complete by summer. Carts will be delivered about one week before the first trash collection.</p> <p><b>How should I use my new trash cart?</b></p> <p>Place your bagged trash inside your cart and on your pick-up day, place the cart at the curb or in the alley, 3 feet from any stationary object. Make sure to place the cart so the arrow on the lid opening faces the street or alley.</p> <p><b>Will my trash pick-up day change?</b></p> <p>Trash pick-up days will change for some residents. Your weekly trash pick-up day will be the same day as your monthly curbside recycling pick-up day.</p> <p><b>How will I know when my pick-up day is?</b></p> <p>When Metro delivers your new trash cart, look for the sticker under the cart lid to find out your pick-up day and a number to call if you have questions or need help.</p>
<div> <p><b>KEITH</b></p> <p><b>Routes:</b> Belmont and East Nashville</p> <p><b>Bio:</b> Keith has been with Metro Public Works for 30 years. He loves to watch EBPN.</p> <p><b>Tips for using the new program:</b> Call 880-1000 or visit <a href="http://www.nashville.gov/trash">www.nashville.gov/trash</a> for a free reminder of your pick-up day.</p> </div> <div> <p><b>CRAIG</b></p> <p><b>Routes:</b> Belmont, North Nashville and East Nashville</p> <p><b>Bio:</b> Craig has been with Metro Public Works for 35 years. His favorite television show is Navy CSI.</p> <p><b>Tips for using the new program:</b> Look under your cart lid for your pick-up day.</p> </div>		



Metro Waste Management Division Mailing (Page 3)

**Nashville's trash professionals have the answers.**

**Can Metro remind me of my trash, recycling and holiday pick-up days?**  
 Yes. You may sign up for a free e-mail or phone reminder to be notified of your trash, recycling or holiday pick-up days. Visit [www.nashville.gov/trash](http://www.nashville.gov/trash) or call **880-1000** to sign up.

**Will I have to pay for my new cart?**  
 No. One 96-gallon cart will be delivered to each household in the Urban Services District free of charge.

**What if I need more than one cart?**  
 After all trash carts have been delivered, you can request a second cart or a smaller cart at no charge by calling **880-1000** or at [www.nashville.gov/trash](http://www.nashville.gov/trash). A third cart will cost approximately \$40.

**What should I do with my old trash cans?**  
 On the first day of collection with the new cart, residents can place their old empty trash cans at the curb to be disposed of with their trash. You can also bring your old trash cans to Metro's East recycling/convenience center to be recycled. For directions visit [www.nashville.gov/recycle](http://www.nashville.gov/recycle).

**Will my back-door waiver be affected by this transition?**  
 No. Residents who are elderly or have disabilities and subscribe to a back-door waiver will continue to receive this service. To apply for a back-door waiver, call **880-1000**.

**What happens if I place items outside my trash cart?**  
 All trash must be placed in carts for collection. If you place trash outside of the cart, you will receive a warning. An additional cart will be delivered to you if the problem occurs twice. After that, trash will not be picked up if it is outside the cart.

**Why is this transition necessary?**  
 Using the new trash carts will eliminate trash on Nashville's streets, and reduce disease and rodents. Most important, the new program will mean significant savings for taxpayers while reducing injuries for Metro's waste management and contractor employees.

**HELPFUL HINTS**

**Wondering what to do with your old trash cans?**  
 Your old trash cans may be placed on the curb or alley on the first pick-up day for disposal. Or, they may also be taken to Metro's East recycling/convenience center to be recycled. Here are a few alternative suggestions:

- Make it into a compost bin (visit [www.nashville.gov/recycle](http://www.nashville.gov/recycle) for instructions).
- Collect glass and plastic recyclables in it before you take them to your local drop-off site or convenience center.
- Organize your garage by using it as a storage container.

**Need a reminder about your trash, recycling or holiday pick-up day?**  
 Metro Public Works offers phone and e-mail reminders for trash, recycling and holiday pick-up at no charge to Nashville residents. Simply sign up by visiting [www.nashville.gov/trash](http://www.nashville.gov/trash) or by calling **880-1000** to enroll in this free service. You will receive a reminder a few days prior to your pick-up day.

**THANKS FOR HELPING KEEP NASHVILLE CLEAN!**

**880-1000 • [www.nashville.gov/trash](http://www.nashville.gov/trash)**

**ROBERT**  
**Routes:** Belmont, South Nashville and East Nashville  
**Bio:** Robert has been with Metro Public Works for three years.  
**Tips for using the new program:** Please place your cart 3 feet from all other objects on your pick-up day.



## Metro Waste Management Division Mailing (Page 4)

**Do your part! Help keep Nashville clean and green!**

The success of beautifying Nashville depends on each resident's commitment to keeping the city clean and green. Here are a few ways you can help:

- **Recycle!** Forty-eight percent of household waste can be recycled. As you place items in your trash cart, ask yourself if they can be recycled in Metro's curbside program. Mixed paper, newspaper, cardboard, aluminum cans, metal food cans and tin cans can be placed in your recycling cart. Visit [www.nashville.gov/recycle](http://www.nashville.gov/recycle) for Metro's recycling drop-offs for glass and plastic. By recycling more and throwing away less, you'll reduce the amount of trash going into the landfills.
- **Keep the sidewalk and street in front of your home clean.** Don't sweep trash, leaves, or lawn clippings into the street or storm drains.
- **Backyard Composting.** Turn organic materials into fertilizer for your plants.
- **Set an example and just say no to litter.** When you go on a walk, take a trash bag along. If you see trash, pick it up. By doing this you'll set a great example for your neighbors, especially the children in your neighborhood.
- **Reduce litter from your vehicles.** Keep a trash bag inside your car. Secure loose debris in truck beds to keep it from blowing out.
- **Alert authorities to problem areas.** If litter is repeatedly dumped in certain areas, notify the police and the Metro Health Department and provide them with information about the problem.

**Questions?** Call Metro Public Works at **880-1000** or visit the Web site at [www.nashville.gov/recycle](http://www.nashville.gov/recycle)  
Para recibir esta información en español, por favor llame al teléfono **880-1000**

If you need any assistance or accommodation, please contact Kristen Detrick, ADA Coordinator, Metro Public Works, 939 Dr. Richard Adams Drive, Nashville, TN 37207, Telephone (615) 862-4962.

Metro Public Works,  
Division of Waste Management  
939 Dr. Richard Adams Drive  
Nashville, TN 37207

Please keep this newsletter in a handy place.

**Make sure to look under the cart lid  
to find out your trash pick-up day!**



**System Services Information Card Kept in Each Truck (Page 1)**

The image shows a blue information card with white text and logos. At the top left is the Metropolitan Government seal, in the center is the METRO WATER SERVICES logo, and on the right is the Pure Nashville logo. The title reads "Metro Water Services, System Service Division 'Making a Difference in Water Quality' Sewerage Spills and Overflow Incidents Guidelines & Procedures:". Below this are three numbered sections: 1. Containment, 2. Contact/Notification, and 3. Clean-up, each with detailed sub-points (A-H). At the bottom is a "Contact Information:" section listing various Metro and TDEC contacts with their phone numbers.

**Metro Water Services, System Service Division**  
**"Making a Difference in Water Quality"**  
 Sewerage Spills and Overflow Incidents Guidelines & Procedures:

- 1. Containment**
  - (A) Immediately proceed with measures to stop the discharge of sewage. If discharge cannot be stopped, notify supervisor for additional equipment/resources as required.
  - (B) Barricade, flag, or hazard tape the affected area to minimize potential contact with the public.
- 2. Contact/Notification**
  - (A) Contact the SSD Dispatch to report:
    - i. Exact location and condition of site;
    - ii. Public or private collection system; and
    - iii. All contractors or construction work observed in area
  - (B) Document the cause of the blockage (roots, grease, etc.) on the Work Order.
  - (C) If the sewerage spill/overflow is near a creek, river, or conveyance to a creek, contact the on-duty supervisor to notify NPDES.
  - (D) The responding supervisor will complete an Overflow Notification Form and fax it to the TDEC Division of Water Pollution Control and Metro Stormwater - NPDES Division within 24 hours.
- 3. Clean-up**
  - (A) Inline sewer stoppage should be cleared as soon as possible.
    - i. Bypassing the line to a tanker truck or public sanitary may be necessary if stoppage cannot be cleared quickly.
  - (B) A construction repair crew may be needed for large spills. If excavation is required for clean-up, proper Erosion Prevention and Sediment Control devices should be implemented. If discharge is located in CSO, sewage can be washed into drain. (Supervisor will determine if site is located within the CSO)
  - (C) If possible, manually remove sewerage debris and transfer to compost lot.
  - (D) If discharge has entered the creek or has the potential to enter the creek, MWS NPDES should be consulted for clean-up.
  - (E) For non-CSO areas, never wash down the discharge until NPDES/TDEC can be consulted. If flushing is allowed, it should be done with non-chlorinated water, unless otherwise specified. Sewage in creeks should be vacuumed out to recover as much as possible. If damming of a stream is necessary, only sandbags can be used. It is better to wrap the sandbags with plastic. Never use high-pressure (jet) water for creek or drainage bed cleanup due to potential soil erosion or danger to aquatic life.
  - (F) If a creek has been impacted by sewerage, Dissolved Oxygen levels should be monitored and observations for fish kills should be made. In the event that fish or other aquatic life have been killed, TDEC should be notified as soon as possible.
  - (G) Lime and disinfectant may be used at discharge points if property owner agrees. Can not use lime or disinfectant in creek or drainage ways.
  - (H) If discharge is result of sewer segment failure, start by-passing to public sanitary sewer as soon as possible. Damage caused by others can be billed back to responsible parties. Make sure by-passing is completely confined and not resulting in an illicit discharge.

**Contact Information:**

Metro NPDES Daytime Primary Contact (Mike Seremet).....	Direct Talk# 82, Cell# 533-0334
Metro NPDES Nights & Weekends Emergency Contact (Dale Binder).....	Direct Talk# 409, Cell# 566-4263
Metro NPDES Other Emergency Contact (Michael Hunt).....	Direct Talk# 81, Cell# 533-0324
Metro NPDES General.....	Office# 880-2420, Fax# 687-7078
Metro Water & Sewer Sampling (Butch Bryant).....	Direct Talk# 193, Cell# 566-3865
TDEC Primary Contact (Ann Rochelle).....	Office# 687-7123
TDEC General Fax#.....	Office# 687-7078
TDEC Manager Water Pollution Control.....	Joey Holland Office# 687-7020
Omohundro Water Plant.....	Office# 862-4978



**System Services Information Card Kept in Each Truck (Page 2)**

**Metro Water Services, System Service Division**  
**"Making a Difference in Water Quality"**  
 Recognizing and Reporting Illicit Discharges:

**Illicit Discharge:**  
 Any non-stormwater substance disposed, deposited, spilled, poured, injected, seeped, dumped, leaked, or placed by any means, intentionally or unintentionally, into community waters, the waters of the state, or any area draining directly or indirectly into the municipal stormwater system of the metropolitan government.

**Examples:**  
 Dumping used automotive fluids (oils, etc);  
 Concrete rinse water;  
 Soapy wash water;  
 Sediment draining from construction site; and  
 Sanitary Sewer Overflow/Spill.

Illicit discharges observed in the field should be reported to MWS NPDES Office: 880-2420. Some things to look for, while you are in the field, include:

**Staining of Storm Water Catch Basins**



**Discoloration**



**Dumping in Streams**



**Oil & Grease**



Note: This page of the handout was also given to the Solid Waste Haulers.



## Fats, Oils, and Grease Program Handout (Page 1)

**Sewer Cleanouts:** Regularly check all sewer cleanouts on your facility's property to make sure the covers are solid and secure. Replace damaged or missing cleanout covers immediately to prevent rainwater inflow and problems.



Damaged cleanout cover



Missing cleanout cover

### STORMWATER...

#### MINIMIZE YOUR RESTAURANT'S STORMWATER IMPACTS

1. **Maintain clean area around the grease recycle bin.** Make employees aware to be careful not to spill any fats, oils and grease. If there is a spill, clean it immediately.



Stormwater impact from recycle bin spill

2. **Do NOT pour oils or grease down storm grates, storm drains, sewer drains or on the ground.**



Grease evidence at storm gate. Grease was discharged into stream. Enforcement action was taken.

3. **Clean vent hoods regularly** to prevent fats, oils and grease discharge to the roof of your facility or on ground near your facility.
4. **Design and locate dumpsters and outdoor wash areas** to minimize stormwater impacts.

### Restaurants & Food Service

Establishments need to make sure they:

1. Have proper grease control equipment **installed**.
2. **Maintain** (routinely clean or pump out) grease control equipment. Check interceptor regularly to make sure it has outlet Ts, and the structure is in good operating condition.
3. **Keep records on-site** of grease control equipment pumping/cleaning and maintenance to provide to Metro inspectors.
4. **Implement Best Management Practices,**

#### BEST MANAGEMENT PRACTICES (BMPs)

- Recycle waste cooking oil. Do NOT pour down sinks or any drains. Do NOT pour into any storm grate or on ground.
- "Dry wipe" all pots, pans, & plates prior to dishwashing. Dry wiping and scraping pots, pans, & plates' food particles and grease residue into the trash helps prevent grease buildup in your sewer lines and Metro's sewer lines.
- Use strainers in sink drains to catch food scraps and other solids, and empty strainer contents into trash.
- Post "NO GREASE" signs above sinks.
- Food grinders are allowed but the use is discouraged since these will contribute to grease discharge and decrease efficiency of interceptors and traps.
- Educate and train kitchen staff that grease control is important and inform them how they can work to provide a positive impact on the environment and your plumbing system.



Metro Department of Water & Sewerage Services

## GREASE CONTROL EQUIPMENT

Policy for

### New Food Service Establishments and Upgrade to Existing Food Service Establishments



Grease Interceptor Installation

As per Metro Code of Laws all food service establishments need to control fats, oils and grease discharges from their facility. This brochure is provided as guidance for new restaurants and existing facilities that are upgrading, or have change of ownership.



## Fats, Oils, and Grease Program Handout (Page 2)

### Why is Grease Control Equipment Installation Required?

Fats, oils and grease can cause serious problems in the sewer system and in a restaurant or food service establishment. Problems include raw sewage overflows due to blocked sewer lines, rancid odors, potential contact with microorganisms that can cause hepatitis and gastroenteritis, expensive cleanup, repair and replacement of damaged property. Sewer line blockages due to fats, oils and grease from food service establishments have increased cost to the Metro Department of Water & Sewerage Services and increased reporting of sanitary sewer overflows to the Tennessee Department of Environment & Conservation and the EPA.

### What is a food service establishment?

Any facility or business engaged in preparing, serving or making food available for consumption.

There are 5 classifications for food service establishments with **minimum** grease control equipment requirements.

**Class 1:** Deli, mobile food vendors, defined by NAICS\* 72213 & 722330 (minimum 20 gallon per minute/40 pound capacity grease trap)

**Class 2:** Limited Service Restaurants/Caterers, defined by NAICS 722211 & 722320 (minimum 500 gallon grease interceptor)

**Class 3:** Full Service Restaurants, defined by NAICS 722110 (minimum 1000 gallon grease interceptor)

**Class 4:** Buffet and Cafeteria Facilities, defined by NAICS 72212 (minimum 1500 gallon grease interceptor)

**Class 5:** Institutions-schools, hospitals, prisons, defined by NAICS 722310 (minimum 2000 gallon grease interceptor)

\*NAICS: North American Industry Classification System

1. What must a new food service establishment, or upgrade to existing food service establishment, or change in ownership of an existing food service establishment do?

Submit a Fats, Oils & Grease (FOG) Control Plan to:

**Metro Water Services  
 Environmental Compliance  
 FOG Control Plan  
 1607 County Hospital Road  
 Nashville, TN 37218**

2. What needs to be included in the FOG Control Plan?

- Identification and number of all cooking and food preparation equipment (i.e. fryers, grills, woks, etc...)
- The number and size of dishwashers, sinks, floor drains, mop sinks and other plumbing fixtures
- Type of Food Service Establishment classification (see inside left of brochure)
- Type of food to be served
- Plans for the grease interceptor, including dimensions and location

3. What does Metro Water Services do when the FOG Control Plan is received?

Metro Water Services will review the FOG Control Plan, grease interceptor sizing and approve, or make changes as necessary to aid in the protection of a FOG discharge from the food service establishment. Remember, the 3 compartment sink is NOT the only source of grease.

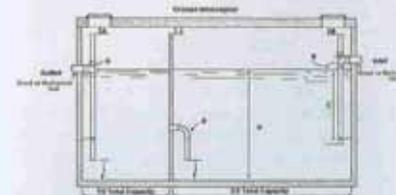
### Grease Control Equipment Specifications

Grease Control Equipment must remove fats, oils & grease at or below the Metro Code of Laws Title 15.60.70 limit of 100 mg/L. Failure to comply, will require enforcement action in accordance with the Enforcement Response Plan as required in Metro Code of Laws Title 15.60.390.

### GREASE CONTROL EQUIPMENT

#### GREASE INTERCEPTOR..

Is an underground tank with usual capacities ranging from 500 gallons to 2000 gallons. Interceptors need to be cleaned (pumped out) of complete contents at a recommended minimum frequency of every 90 days. Some facilities will need to pump interceptors more frequently (i.e. monthly). Class 2 through Class 5 food service establishments need to have grease interceptors installed.



- A.) Minimum 6", but not less than pipe diameter
- B.) Inlet pipe invert to be 2 1/2" above liquid surface.
- C.) Inlet pipe to terminate 2/3 depth of water level.
- D.) 90 degree Sweep, minimum size- 6"
- E.) 12" from floor to end of sweep.
- F.) 12" from floor to end of outlet pipe
- G.) Outlet pipe no smaller than inlet pipe, minimum- 4"
- H.) Minimum depth of liquid capacity- 42"
- I.) Maximum distance from ceiling- 6"

#### GREASE TRAP..

Is an indoor, "under the sink" unit with **minimum size requirement of 20 gallon per minute / 40 pound capacity trap**. Traps are for **Class 1** facilities only. Traps must have flow restrictor installed and be vented. Traps should be cleaned regularly (every 2 weeks) to prevent grease discharge from the food service establishment.





Local Stormwater News Article 1 (Page 1)

Nashville City Paper – July 7, 2004

**to work**

reun Street Bridge has shut down to all cause of concern over its condition. Detour

**oses  
barrier**

trade practices, merce Depart- d import duties of cent on shrimp d Vietnam. r to **page 11.**



**She's definitely got the pipes**

Local jazz singer Liz Johnson heads to Switzerland to challenge other singers an international vocal competi- tion, **page 16.**

**CITYSCOPE**



Recognize it? Win. Details **PAGE 2.**

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- 15
- 18
- 7-8
- 19
- 32
- 22

**TONIGHT**  
**65° partly cloudy**

**TOMORROW**  
**85° partly sunny**

nessee 43rd in the country when it comes to child well-being.

— which is more than o nessee's school children the free and reduced-pri

**Taxpayers subsidize Stormwater**

By **Craig Boerner**  
 cboerner@nashvillecitypaper.com

Metro Water users will find themselves subsidizing the city's storm water program through rate revenues this fiscal year but Finance Director David Manning said he doesn't anticipate a rate increase will be necessary because of the change.

Metro's Stormwater Division was transferred from Public Works to Metro Water Services (MWS) and funded for one of the first times in Metro history two years ago. Mayor Bill Purcell said at the time that his citywide storm water plan with increased funding hoped to address nearly 50 years of unmet needs.

Concerns about storm water solidified after a 1999 report exposed Metro's deteriorating drainage system, lack of funding for the storm water system, and an increasing number of residences being built in flood plains.

Purcell's plan provided \$7 million in funding in its first year from the city's general fund and water fund revenues; that number was scheduled to increase annually up to \$21 million by 2007.

Due to budget constraints, the program did not receive any funding in this year's operating budget.

"There was money up until this  
**CONTINUED ON PAGE 6 >**



Democratic presidential candidate crowd during a rally in downtown

**GOP on attack  
Kerry pic**

WASHINGTON — Democr chose youthful energy over seance in tapping John Edwards a mate on Tuesday, hoping the fre rookie can broaden the ticket's reach out to swing voters.

Kerry passed up veterans like House Democratic Leader Rich and Florida Sen. Bob Graham to first-term North Carolina senato his debut on the national stage in ratic primaries earlier this year.



## Local Stormwater News Article 1 (Page 2)

Nashville City Paper – July 7, 2004

6 THE CITY PAPER ■ WEDNESDAY  
JULY 7, 2004

News CITY

### Water bill

## Stormwater costing more

• FROM PAGE 1

fiscal year coming from the General Fund," Manning said. "And we made the decision as a result of the budget reduction this year to go ahead and ask the Water Department to fund the entire program."

"I think the rates are adequate to deal with it, we don't expect a rate increase as a result of this," he said. "I think it probably will be funded through the Water Department exclusively and basically the Legal Department has reviewed it and indicated that there is nothing inappropriate with that. It is consistent with both the laws and the bond resolutions."

MWS spokesperson Sonia Harvat said Stormwater was funded last year at \$14 million, which included capital and operation and maintenance expenses. This year it was scheduled to receive \$16 million, she said.

"Last year \$2.8 million came from the General Fund, the rest of it, as it all will this year, will be made through rate revenues and retained earnings," she said.

Likewise, she doesn't see a water rate increase due to the decrease in funding.

"As far as rate increases, we examine our rate structure annually and this year no increase is needed," Harvat said. "We can't make any conclusions without an analysis so, as far as next year, an analysis hasn't been done and we wouldn't want to speculate on that."

An Oct. 4, 2002 memo from Metro Legal's Thomas Cross to

*"Water and Sewer is taking on a burden of the government, a big burden."*

PARKER TOLER

Manning states that, according to state law and the Metro Charter, "it appears that revenues generated by the operations of (MWS) can be used to fund system improvements that exclude or divert storm water from the sanitary transportation and treatment system or help to minimize the rates charged for services rendered to all customers."

"We have reviewed it pretty carefully and my understanding is that, first of all, all water has to do with the water system because, even if it is storm water it gets into the wastewater system," Manning said. District 31 Councilman Parker Toler had studied the issue and came to a different conclusion.

"Water and Sewer is taking on a burden of the government, a big burden," Toler said. "They are funding the storm water totally, they are funding these employees [shifted from other departments] and they are funding \$4 million for the stadium. It is probably \$18 million."

"All of that is coming out of rate

payer money. They are paying that payment of \$4 million in lieu of taxes because they use police protection, use the roads and that kind of thing. They are paying \$4 million for their part of the service so that is something Water and Sewer had not done until the time of The Coliseum."

Manning said Metro Water Director Scott Potter and his team have continued to bring about efficiencies in the operations of the Water Department and he is confident that they will continue to do so and that "we will continue to have some very reasonable water rates in this community."

Harvat said her department had 31 retirees this year and hired back 20 people to fill those positions.

Eight of the new hires were transfers from other Metro departments that were either losing their positions or going to have to be shifted due to budgets.

"Our goal is to keep the current staffing level that we have at the conclusion of retirements and filling of necessary operation positions," Harvat said.

"We've got to operate the plants, the collection system, the distribution — we have to have people to do that. Our goal is to keep the present staffing level or decrease it but we won't be increasing it."

The water and wastewater departments have reduced their overall headcount from more than 1,000 to 638 since 1991.

### Let's motor



Ashli Head from Clarksville runs up her roller blades to keep up with her 5-year-old daughter, Cora, at Centennial Park.

## Child needs unmet

• FROM PAGE 1

were referred to juvenile court during any of these years. In Davidson County alone 34,959 children under 17 went through juvenile court during that three-year period.

"Other TCCY data indicate a higher percentage of the children referred to juvenile court are members of minority groups," O'Neal said.

The KIDS COUNT data is used to determine where the state needs to set its policy priorities, and O'Neal said she is pleased that the legislature's Select Committee on Children and Youth is joining the TCCY Disproportionate Minority Contact Task Force to look at the causes of this problem over the next few months.

"The task force will work with the Select Committee and other commissions to identify

## Drug czar to visit court

WASHINGTON — John P. Walters, director of National Drug Control Policy for the Bush administration, will visit Nashville's drug court and a drug rehab center Thursday.

Following the drug court session, Walters and Criminal Court Judge Seth Norman will hold a press conference.

The Davidson County Drug Court has received national recognition for referring non-violent drug offenders to treatment instead of jail. The residential treatment facility for 100 non-violent felony offenders has been in operation for seven years and is the only residential drug court in the country. Graduates from the program have a recidivism rate of only 15-17 percent.

Metro Council recently approved funding to continue the program. Walters will also deliver the keynote address to the

"The Best Picture Of The Year"

WIN  
a copy of  
**COLD MOUNTAIN**  
which is in stores now,  
on DVD from  
BUENA VISTA HOME ENTERTAINMENT.  
All you have to do is be a  
winner in the daily  
CITYSCOPE CONTEST!

Walters will also deliver the keynote address to the



Local Stormwater News Article 2

The Tennessean – Unknown Date

GROWTH & DEVELOPMENT PLANNING COMMISSION ACTIONS

# Flood-plain amendment helps developers

By REBECCA DENTON  
 Staff Writer

Real estate developers and property owners, including Saint Thomas Health Services, raised a fuss recently when Metro Council tightened restrictions on flood-plain development.

Now those interest groups are a step closer to getting what they want: a way to bypass those limitations in certain situations.

Metro planning commissioners unanimously endorsed an amendment to its flood-plain bill Thursday that increases the development potential of low-lying lands known as flood plains — areas prone to flooding in the wake of heavy rains — when several conditions are met.

“It tries to address complaints raised by some community real-estate property owners that the new ordinance was too restrictive,” said Councilman John Summers, who filed the amendment. “This gives some greater flexibility in particular situations, but there are safeguards built in.”

Construction in flood plains, which often leads to costly drainage and flooding problems, generally is frowned upon by local and federal government officials and is a growing source of concern to residents throughout the county.

The current legislation, which went into effect in April, allows for residential and nonresidential development in flood plains so long as at least 50% of the flood plain is left in its natural state. Property owners can exceed the 50% limitation by an additional 20% through variances that are permitted under certain conditions.

The proposed amendment would

“It tries to address complaints raised by some community real-estate property owners that the new ordinance was too restrictive. This gives some greater flexibility in particular situations, but there are safeguards built in.”



— Councilman John Summers, who filed the amendment

allow even more of the land to be developed if certain additional criteria were met.

“It liberalizes the scope of development to a certain extent, but it puts a great deal of review” in place, said Councilman James Bruce Stanley, who has worked for several years to give more teeth to flood-plain regulations.

Development in flood plains beyond the extra 20% would not be allowed if property owners wanted to change the base zoning, planners said.

To develop more land in the flood plain, the property owner would have to prepare a planned unit development or an urban design overlay district — plans that set out exactly how a property is going to be developed — and get Metro Council’s approval.

Developers would have to show that

the project wouldn’t create a downstream flooding problem or jeopardize Metro’s flood-insurance protections and funding — which is not necessarily easy to do, said Jennifer Regen, a planning manager with the Metro Planning Department.

The amendment also requires that any change to a council-approved plan related to the flood plain, no matter how small, would have to go back through Metro Council, instead of relying on a government-appointed body such as the Board of Zoning Appeals or the Planning Commission.

Stanley said he thinks the amendment represents a reasonable compromise between developers and those who want to leave the flood plains undisturbed.

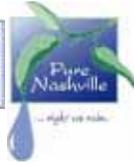
“There are certain areas within Davidson County where companies or industries are invested, and we need to give them some kind of relief from regulations governing this kind of development,” he said. “This amendment doesn’t change (the current law) too much.”

The amendment would allow Saint Thomas to develop a \$6 million piece of property it owns behind the hospital on Harding Road, said Rebecca Climer, vice president of marketing and strategy for Saint Thomas Health Services.

“This amendment, if passed, would satisfy all our concerns or requirements and meet our needs,” she said.

The hospital does not have specific plans at the moment for the land, she said.

Now the issue will move to Metro Council for a public hearing in the fall, Regen said. ■



Metropolitan Nashville – Davidson County  
NPDES-MS4 Permit No. TNS068047  
Cycle 2, Year 2  
November 2005

## Permit Year 2 Internet Services Report

WebTrends®

WebTrends 7

# Stormwater

<http://www.nashville.gov/stormwater>

Custom Report: 7/1/04 - 6/30/05

July 1, 2004 12:00:00 AM – June 30, 2005 11:59:59 PM



## Table of Contents

Visitors Dashboard..... 161

## Visitors Dashboard

This displays key graphs and tables that provide an overview of the Visitors chapter. Click on the title of a graph or table to navigate to the corresponding page.



### Active Visits Trend



Visitor Summary	
Visitors	10,871
Visitors Who Visited Once	8,237
Visitors Who Visited More Than Once	2,634
Average Visits per Visitor	3.11

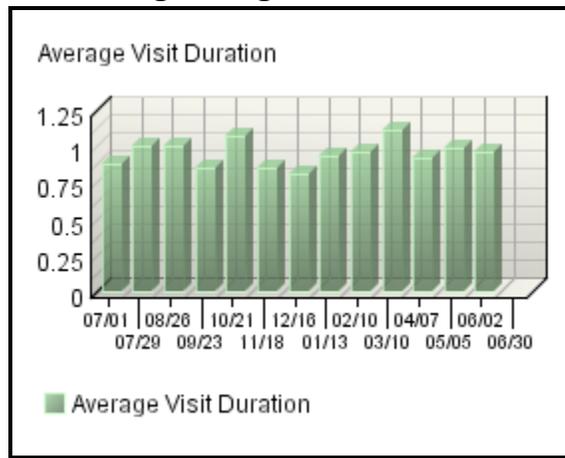
Visit Summary	
Visits	33,819
Average per Day	92
Average Visit Duration	00:03:21
Median Visit Duration	00:01:26
International Visits	0.00%
Visits of Unknown Origin	100.00%
Visits from Your Country: United States (US)	0.00%



### Visitor Minutes Trend



### Average Length of Visit Trend



### New Visitors Trend

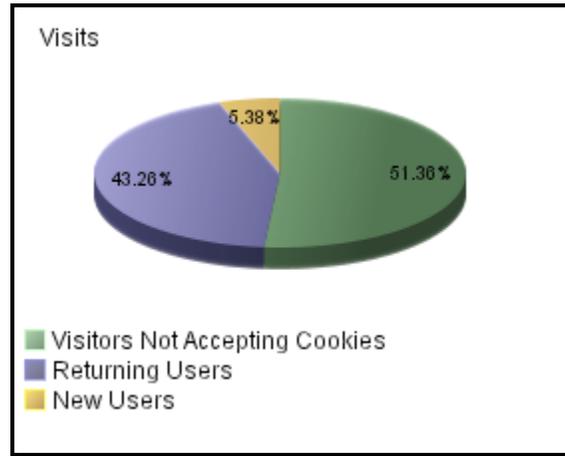




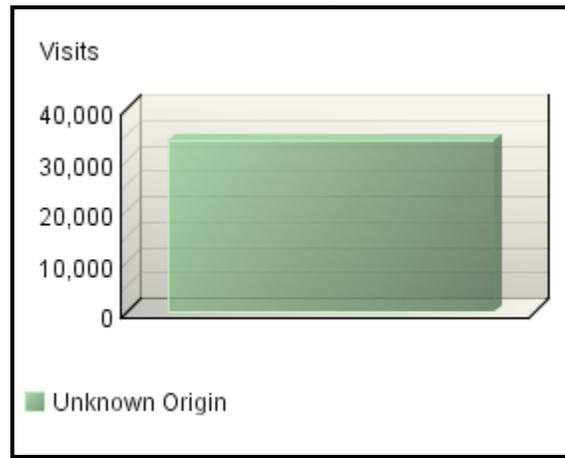
### Organizations by Visits

No data is available for this graph.

### New vs. Return Visits



### Countries by Visits

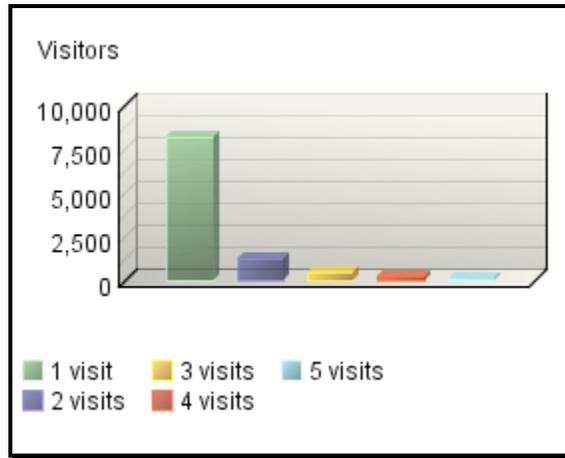


### Authenticated Usernames by Visits

No data is available for this graph.



### Visitors by Number of Visits



This report was generated by WebTrends 7 - Professional, Version: 7.0d, Build: 13917 .  
Wednesday, July 27, 2005 10:10:19 AM  
Final report conversion by WebTrends Report Exporter, Version 7.0d (build 13916)

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Metropolitan Nashville – Davidson County  
NPDES-MS4 Permit No. TNS068047  
Cycle 2, Year 2  
November 2005

## Appendix C

### Monitoring Program Data



Wet Weather Sampling Data from Program Conception

Incident #	Date	Watershed	Site ID	Background (pre-rain event) or Rain Event	Time	Personnel	Total Time of Event	Velocity	Rainfall	Visual Observations	Temp	pH	TSS	TDS	Tot Ammonia Nitrogen	TKN	Tot Phosphorus	Dissolved Phosphorus	Chromium	Copper	Lead	Nickel	Zinc	Fecal Coliform	BOD5	COD	Fluoride	Nitrate+Nitrite Nitrogen	Fecal Strep	Oil & Grease	Total Nitrogen	E coli	Cyanide
1	5/21/1998	Mill Creek	7-Mile	Rain Event	8:00	Phil	3	0	.1	analysis	24	7.65	15	353	0	1.9	0.43	0.34	0	0.0064	0	0	0.017	0	7.2	0		1.39	0		3.29		
2	5/21/1998	Whites Creek	Ewing	Background	9:30	Phil	3	0	.1	No bacteria samples taken		8.44	6	116	0	1.5	0.27	0.24	0	0.0046	0	0	0.0071		4.6	0		0.15			1.65		
3	8/16/1998	Mill Creek	7-mile	Background	4:00	Phil	3	0	.1	No samples were taken for fecal coliform or fecal strep (only during rain event).	26	8.6	278	300	0	1.3	1.21	0.4	0	0.0094	0.095	0	0.15		37	107		1.28			2.58		
4	8/16/1998	Mill Creek	7-mile	Rain Event	4:00	Phil	3	0	.1	Fecal coliform is actually greater than 200,000	26	8.4	54	148	0	1.2	0.25	0.23	0	0.0023	0.07	0	0.012	200000	6.4	0		0.6	46000	0	1.8		
5	10/3/1998	Mill Creek	7-mile	Background	10:30	Phil/Steve	3	0	.1	No bacteria samples taken	20	7.8	5	337	1.1	0	0.46	0.38	0	0.0057	0	0.026	0.0015		9.3	18		0.46			0.46		
6	10/3/1998	Mill Creek	7-mile	Rain Event	10:30	Phil/Steve	3	0	.1		22	7.7	53	216	0.68	1.8	0.66	0.19	0	0.01	0	0.026	0.031	37000	15	37		0.65	67000	0	2.45		
12	10/3/1998	Mill Creek	7-mile	Rain Event	10:30	Phil	3	0	.1		21	8	53	216	0.68	1.8	0.66	0.19	0	0.01	0	0.026	0.031	37000	15	37		0.65	67000		2.45		
13	10/3/1998	Mill Creek	7-mile	Background	10:30	Phil	3	0	.1		20	8.1	5	337	1.1	0	0.46	0.38	0	0.0057	0	0.026	0.0015		9.3	18		0.46			0.46		
11	10/7/1998	Richland Creek	Ewing	Rain Event	15:00	Phil/Steve	3	0	.1		18	7.8	48	335	0.41	0	0.49	0.2	0	0.0089	0.0079	0	0.025	9820	0	25		0.2	11300	0	0.2		
8	11/10/1998	Mill Creek	7-mile	Background	13:45	Phil/Steve	3	0	.1	No bacteria samples taken			5	312	0	0	0.39	0.39	0	0.0046	0.075	0.024	0.019		5.2	20		0.19			0.19		
9	11/10/1998	Mill Creek	7-mile	Rain Event	13:45	Phil/Steve	3	0	.1				43	229	0.3	1.1	0.83	0.39	0.025	0.0075	0.09	0.021	0.024	24000	9.8	29		0.4	89000	10			
10	11/10/1998	Richland Creek	Ewing	Rain Event	14:20	Phil/Steve	3	0	.1				178	373	0.3	2.2	1.33	0.26	0.025	0.0092	0.072	0.02	0.46	9360	8.4	41		0.2	16000	10			
14	1/29/1999	Mill Creek	7-mile	Background	10:00	Phil	3	0	.1	No bacteria samples taken	11	7.7	36	0	0	0	0.73	0.2	0.014	0.0058	0	0	0		0	19		1.2			1.2		
15	1/29/1999	Mill Creek	7-mile	Rain Event	10:00	Phil	3	0	.1		11	8	6	366	0	0	0.28	0.25	0.017	0.0051	0	0	0	250	0	11		1	450	0	1		
16	2/7/1999	Mill Creek	7-mile	Rain Event	7:15	Phil	3	0	.1		15	8	20	308	0	0	0.51	0.34	0.026	0.011	0	0	0.042	910	8	11	0.33	2.22	655	0	2.22		
17	2/7/1999	Mill Creek	7-mile	Background	7:15	Phil	3	0	.1	No bacteria samples taken	15	7.5	17	317	0	0	0.4	0.34	0.022	0.0066	0	0	0.006		11	0	0.33	2.32			2.32		
18	2/7/1999	Richland Creek	Sugartree	Background	7:50	Phil	3	0	.1	No bacteria samples taken	15	7.8	81	166	0	0.95	0.66	0.14	0.027	0.011	0.011	0	0.083		29	53	0.21	0.8			1.75		
19	2/7/1999	Richland Creek	Sugartree	Rain Event	7:50	Phil	3	0	.1		15.3	7.8	64	164	0	0	0.57	0.15	0.025	0.013	0	0	0.067	3200	8	27	0.19	0.82	35000	0	0.82		
22	2/7/1999	Whites Creek	Ewing	Background	7:50	Phil		0			13.7	8.23	16	363	0	0	0.27	0.22	0.025	0.0064	0	0	0.004		3	0	0.26	0.59			0.59		
23	2/7/1999	Whites Creek	Ewing	Rain Event	7:20	Phil/Steve		0			13.7	8.2	16	395	0	0	0.3	0.3	0.022	0.0045	0	0	0.006	270	2	15	0.25	0.98	640	0	0.98		
42	3/31/1999	Richland Creek	Sugartree	Background	11:50	SW	3	0	.1				44	826	0	2.5	0.31	0.31	0	0.004	0	0.073	0.052		0	22	0.41	0.5		0	3		
43	3/31/1999	Mill Creek	7-Mile	Background	11:04	SW	3	0	.1			8.04	7	303	0	0	0.43	0.21	0	0.019	0	0.024	0.046		5	8	0.38	0.72		0	0.72		
44	3/31/1999	Mill Creek	7-Mile	Rain Event	11:04	SW	3	0	.1			7.65	114	266	0	1.6	0.89	0.34	0	0.0078	0	0.018	0.064	1590	13	32	0.34	0.68	2100	0	2.28		
45	3/31/1999	Richland Creek	Sugartree	Rain Event	11:50	SW	3	0	.1			7.32	183	254	0.2	4.5	1.02	0.28	0	0.0075	0	0.026	0.083	2400	18	68	0.37	0.59	5500	0	5.09		
46	3/31/1999	Whites Creek	Ewing	Background	12:30	SW	3	0	.1			7.97	3	346	0	0	0.24	0.24	0	0.0036	0	0	0.07		2	8	0.29	1.37		0	1.37		
47	3/31/1999	Whites Creek	Ewing	Rain Event	12:30	SW	3	0	.1			7.77	30	310	0	1.6	0.34	0.25	0	0.0049	0	0	0.056	500	6	17	0.25	0.29	1545	6	1.89		
21	9/29/1999	Mill Creek	7-Mile	Rain Event	10:05	Mike/Sonia	3	0	.1				62	279	0	0.63	1.13	0.44	0	0.018	0	0	0.037	85000	0	26	0.49	0.37	14000	0			
24	9/29/1999	Richland Creek	Sugartree	Rain Event	11:20	Steve	3	0	.1		21.8	7.4	341	78	0.42	7.44	3.86	0.82	0	0.039	0	0	0.21	28000	12	164	0.19	0.781	19000	0			
26	9/29/1999	Richland Creek	Sugartree	Background	10:15	S.Wall	3	0			21.8	7.4	413	73	0.42	3.68	2.7	0.69	0	0.099	0	0.1	0.33		16	94	0.18	0.713		0	1.133		



Wet Weather Data (Continued)

Incident #	Date	Watershed	Site ID	Background (pre-rain event) or Rain Event	Time	Personnel	Total Time of Event	Velocity	Rainfall	Visual Observations	Temp	pH	TSS	TDS	Tot Ammonia Nitrogen	TKN	Tot Phosphorus	Dissolved Phosphorus	Chromium	Copper	Lead	Nickel	Zinc	Fecal Coliform	BOD5	COD	Fluoride	Nitrate+Nitrite Nitrogen	Fecal Strep	Oil & Grease	Total Nitrogen	E coli	Cyanide	
27	9/29/1999	Mill Creek	7-Mile	Background	10:05	Mike/Sonia	3	0	.1				16	290	0	0	0.49	0.49	0	0.015	0	0	0.012	0	13	0.5	0.4	0						
28	2/17/2000	Mill Creek	7-Mile	Background	10:30	Phil/MikeS	3	210	210	388,860 cf	10.1	7.9	7	313	0	1.07	0.66	0	0	0	0	0	0	310	0	0	0.48	2.05	175	0	3.12			
29	2/17/2000	Mill Creek	7-Mile	Rain Event	10:30	Phil/MikeS	3	210	210	388,860 cf	10.4	8	1	320	0	1.33	1.17	0	0.01	0	0	0	0	310	0	0	0.46	1.96	175	0	3.29			
30	2/17/2000	Richland Creek	Sugartree	Background	11:15	Phil/MikeS	3	0	.1	64,000 cf	9.4	7.9	1	310	0	1.2	0.94	0	0	0	0	0	0.008	1250	0	13	0.58	1.6	240	0	2.8			
31	2/17/2000	Richland Creek	Sugartree	Rain Event	11:15	Phil/MikeS	3	0	.1	64,000 cf	9.2	7.5	76	172	0	1.33	0.29	0.12	0	0	0	0	0.026	1250	5	17	0.31	1.264	240	0	2.59			
32	2/17/2000	Whites Creek	Ewing	Background	10:50	Phil/MikeS	3	30	.33	93,000 cf	8.9	8.1	34	410	0	1.33	1.03	0.92	0	0	0	0	0	1140	0	22	0.37	1.39	220	6	2.72			
33	2/17/2000	Whites Creek	Ewing	Rain Event	10:50	Phil/MikeS	3	30	.33	93,000 cf	9	8	9	371	0	1.2	0	0	0	0	0	0	0.007	1140	5	11	0.34	1.6	220	6	2.8			
34	4/11/2000	Whites Creek	Ewing	Background	5:30	PS	3	0	.1		15	7.9	12	370	0	0	0.45	0.24	0	0.012	0	0	0.034	5800	13	27	0.33	0.21	23000	0	0.21			
35	4/11/2000	Whites Creek	Ewing	Rain Event	5:30	PS	3	0			15	7.9	23	491	0	0	0.73	0.26	0	0.011	0	0.013	0.047	5800	5	64	0.29	0.29	23000	0	0.29			
36	4/11/2000	Richland Creek	Sugartree	Background	6:10	PS	3	0	.1		15.8	7.7	8	352	0	0	1.55	0.49	0	0.011	0	0	0.029	3300	8	32	0.53	0.54	4800	0	0.54			
37	4/11/2000	Richland Creek	Sugartree	Rain Event	6:10	PS	3	0	.1		16.8	7.9	19	324	0	0	1.03	0.26	0	0.014	0	0	0.046	3300	4	46	0.31	0.572	4800	0	0.572			
38	4/11/2000	Mill Creek	7-Mile	Background	7:10	PS	3	0	.1		15.2	7.4	2	253	0	0	0.98	0.41	0	0	0	0	0.017	4500	3	44	0.42	0.88	6200	0	0.898			
39	4/11/2000	Mill Creek	7-Mile	Rain Event	7:10	PS	3	0	.1		15.8	7.8	70	377	0	1.24	1.07	0.29	0	0.013	0	0	0.041	4500	7	26	0.33	0.908	6200	0	2.148			
40	11/6/2000	Richland Creek	Sugartree	Background	13:45	PS	3	0			17.1	7.8	60	154	0	1.43	1.67	0.69	0	0.045	0.056	0.012	0.14	40000	22	82	0.28	1.27	14000	0	2.7			
41	11/6/2000	Richland Creek	Sugartree	Rain Event	13:45	PS	3	0			17.3	7.9	32	185	0.46	0	1	1	0	0.042	0.011	0.017	0.098		10	77	0.27	1.44			1.44			
48	1/29/2001	Whites Creek	Ewing	Background	20:00	PS	3	0	.1		9.3	8	20	438	1.2	1.2	0.52	0.31	0	0.015	0	0	0	60	0	0	0.32	1.03	350	0	2.23			
49	1/29/2001	Whites Creek	Ewing	Rain Event	20:00	PS	3	0	.1		9.6	7.9	12	386	0.47	0	0.47	0.28	0	0.016	0	0	0.008		3	0	0.29	1.34			0		1.34	
50	1/29/2001	Richland Creek	Sugartree	Background	20:45	PS	3	0	.1		11.1	8	57	325	0.61	0	0.76	0.44	0	0.017	0	0.011	0.019	3800	4	0	0.41	1.34	9000	0	1.34			
51	1/29/2001	Richland Creek	Sugartree	Rain Event	20:45	PS	3	0	.1		11.2	8	45	345	0.67	1.01	0.65	0.47	0	0.021	0	0	0.036		7	30	0.36	1.502			0		2.512	
52	4/24/2001	Whites Creek	Ewing	Background	12:11	Phil Saad	3	0			20	8	0.076	353	0	1.21	0.17	0.076	0	0.013	0	0	0	16500	0	0	0.32	0.16	300	0	1.37			
53	4/24/2001	Whites Creek	Ewing	Rain Event	12:11	Phil Saad	3	0			20	7.9	12	308	0	0	0.21	0.09	0	0	0	0	0.007		5	12	0	0.161			0		0.161	
55	4/24/2001	Richland Creek	Sugartree	Background	12:01	Phil Saad	3	0			20	7.4	131	360	0	0	0.9	0.4	0	0.017	0	0	0.033	266000	49	79	0.39	1.22	2800	0	1.22			
56	4/24/2001	Richland Creek	Sugartree	Rain Event	12:01	Phil Saad	3	0			20	7.6	8	248	0.4	2.08	0.32	0.32	0	0.019	0	0	0.032		16	40	0.35	0.694			0		3.174	
57	4/24/2001	Mill Creek	7-Mile	Background	13:00	Phil Saad	3	0			18	7.9	9	306	0	0	0.29	0.29	0	0.01	0	0	0	84000	7	12	0	0.652	9000	0	0.652			
58	4/24/2001	Mill Creek	7-Mile	Rain Event	13:00	Phil Saad	3	0			18	7.8	59	255	0	0.47	0.56	0.47	0	0.01	0	0	0.021		3	21	0.38	0.756			0		1.226	
59	2/26/2002	Richland Creek	Sugartree	Background	6:30	Steve Wall	3	0					84	286	0	0	0.59	0.04	0	0	0	0	0.051		6	45	0.43	0.33			0		0.33	
60	2/26/2002	Richland Creek	Sugartree	Rain Event	6:30	Steve Wall	3	0					22	243	0.35	0	0.15	0	0	0	0	0	0.036		7	19	0.36	0.515			0		0.55	
61	2/26/2002	Whites Creek	Ewing	Background	5:30	Steve Wall	3	0					3	394	0.49	0	0.02	0	0	0	0	0	0.045		6	0	0.32	2.21			0		2.21	
62	2/26/2002	Whites Creek	Ewing	Rain Event	5:30	Steve Wall	3	0					3	356	0	0	0.02	0	0	0	0	0	0.021		2	0	0.3	0.16			0		0.16	
54	3/29/2004	Richland Creek	Sugartree	Background	9:30	MS/JH	3	0	1				160	310	0	5.2	1.6	0.22	0	0	0	0	0.071	9100	42	110	0	0.56			0		5.8	8200



Wet Weather Data (Continued)

Incident #	Date	Watershed	Site ID	Background (pre-rain event) or Rain Event	Time	Personnel	Total Time of Event	Velocity	Rainfall	Visual Observations	Temp	pH	TSS	TDS	Tot Ammonia Nitrogen	TKN	Tot Phosphorus	Dissolved Phosphorus	Chromium	Copper	Lead	Nickel	Zinc	Fecal Coliform	BOD5	COD	Fluoride	Nitrate+Nitrite Nitrogen	Fecal Strep	Oil & Grease	Total Nitrogen	E coli	Cyanide
63	3/29/2004	Richland Creek	Sugartree	Rain Event	9:45	MS/JH	3	0	1	Ambient Data from 4/7/04 Sugartree South (upstream of wet weather site): FC=300, EC=300 Sugartree (downstream of wet weather): FC=190, EC=120			54	130	0	1.8	0.63	0.14	0	0.012	0	0	0.056	2600	15	48	0	0.49	0	2.3	3000		
64	3/29/2004	Whites Creek	Ewing	Background	8:43	SMPW	3	0	1				100	340	0	1.1	0.63	0.19	0	0	0	0	0.058	500	7	33	0	0.12	0	1.2	400		
65	3/29/2004	Whites Creek	Ewing	Rain Event	8:58	SMPW	3	0	1				21	340	0	0.58	0.26	0.18	0	0	0	0	0	700	0	0	0	0	0	0.58	1300		
66	3/29/2004	Mill Creek	7-Mile	Background	8:50	RD/DB	3	0	1				4	310	0	0	0.28	0.29	0	0	0	0	0	1000	0	0	0	0.68	0	0.68	200		
67	3/29/2004	Mill Creek	7-Mile	Rain Event	9:05	RD/DB	3	0	1				86	220	0	1.7	0.79	0.31	0	0	0	0	0.074	2900	12	34	0	0.72	0	2.4	2700		
68	9/2/2004	Richland Creek	Sugartree	Rain Event		MS	3	0	1.9	Did not collect first flush *Bacteria samples analyzed past hold time E.coli: <2000			19	110	0.66	0.83	0.27	0	0	0	0	0	0.06	16000	6.6	36		0.15	0	0.98		0	
69	9/2/2004	Whites Creek	Ewing	Rain Event	9:20	DB/PW	3	0	1.9	Did not collect first flush *Bacteria samples analyzed past hold time E.coli: <2000			20	400	0.37	0.74	0.25	0.12	0	0	0	0	0.12	2700	0	0	0	0	0	0.94		0	
70	9/2/2004	Mill Creek	7-Mile	Rain Event	9:30	RD	3	0	1.9	Did not collect first flush *Bacteria samples analyzed past hold time			41	120	0	0.89	0.46	0.1	0	0	0	0	0.16	18000	0	29	0	0.27	0	1.2	2000	0	
71	1/11/2005	Richland Creek	Sugartree	Background	8:15	MS	3	0	.6	E.coli: <2000			190	290	0.62	0.8	1.9	0.18	0.019	0	0.013	0	0.079	200	17	30		1.5	0	2.3		0	
72	1/11/2005	Richland Creek	Sugartree	Rain Event	11:15	MS	3	0	.6				160	170	0.56	0.91	1.4	0	0.016	0	0.013	0	0.097	1400	0	81		0.84		1.8	2000	0	
73	1/11/2005	Whites Creek	Ewing	Background	8:45	DB/PW	3	0	.6	E.coli <2000			27	380	0.34	0	0.3	0	0	0	0.01	0	0.24	100	0	43		0.94	0	0.94		0	
74	1/11/2005	Whites Creek	Ewing	Rain Event	11:45	DB/PW	3	0	.6	E.coli < 2000			130	300	0.46	0.8	0.84	0.63	0.015	0	0.012	0	0.051	2100	0	26	0	0.59	0	1.4	0	0	
75	1/11/2005	Mill Creek	7-Mile	Background	9:00	RD	3	0	.4	E.coli < 2000			9.6	300	0.19	0	0.41	0.36	0	0	0.0088	0	0.2	300	0	0	0	2	0	2		0	
76	1/11/2005	Mill Creek	7-Mile	Rain Event	12:00	RD	3	0	.4	E.coli < 2000			21	270	0.15	0	0.29	0.24	0	0	0.0084	0	0.034	1000	0	0	0	1.9	0	1.9	0	0	





Inc. No.	Watershed	Site ID	Date	Time	Staff	Velocity	Visual Observations	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+Nitrite Nitrogen	Fecal Coliform	Fecal Strep	Tot. Ammonia Nitrogen	TDS	Tot. Phos.	Dissolved Phos.	Chromium	Total Nitrogen	Fluoride	E coli	
18	Mill Creek	Sevenmile east	4/15/1998	9:00	Phil \ Mike	0.84	Rained last night. Water very clear. Aquatic life present in the form of fish & crawfish. Vel. .85. 1) .1/7" 2) .9/9" 3) 1.5/11" 4) 1.7/7" 5) .01/3" Width 18"	15.5	8.2	0	0	0	0	0	0	0	0.002	7	0.77	20	54	0	346	0.3	0.27	0	0.77		
19	Mill Creek	Sevenmile w.(Brentwood branch)	4/15/1998	9:00	Phil \ Mike	1.31	Rained last night. Lot of dead Crawfish. Water was very clear. Turned in samples for pesticide. Vel. 1.31 1) .2/9" 2) 1.9/15" 3) .7/17" 4) .1/15" 5) .01/11"	16.7	8.1	0	0	0	0	0	0	0	0.003	28	0.59	27	45	0	328	0.39	0.27	0	0.59		
20	Richland Creek	Sugartree	6/3/1998	9:15	Mike\Phil	0	No crawfish but plenty of small fish. Has not rained in at least 24 hours. .2 avg. velocity	20.4	7.3	0	0	0	0	0	0	0	0	0	1.02	1360	1000	0	335	0.45	0.44	0	1.02		
21	Richland Creek	Sugartree south	6/3/1998	8:30	Mike\Phil	0	Supporting crawfish, many snails. Has not rained in at least 24 hours. .62 avg. vel.	23.3	7.9	0	0	0	0	0	0	0	0.006	6	0.29	3500	2900	0	368	0.36	0.28	0	0.29		
24	Whites Creek	Ewing	6/10/1998	9:30	Phil\Mike		Rained yesterday, no aquatic life present alive or dead	19.7	8	0	0	98	0	0	0	0.0041	0.064	82	0.76	3500	5000	0	341	0.47	0.37	0	0.76		
22	Whites Creek	Ewing north	6/10/1998	8:45	Phil\Mike		Rained yesterday, no aquatic life present alive or dead	24.8	7.7	0	0	0	0	0	0	0.006	10	0.88	1700	4600	0	318	0.38	0.34	0	0.88			
23	Whites Creek	Ewing south	6/10/1998	9:15	Mike\Phil		Rained yesterday, no aquatic life present alive or dead	24.4	7.7	0	0	41	0	0	0	0.004	7	0.8	3600	6300	0	461	0.43	0.36	0	0.8			
25	Mill Creek	Sevenmile	6/17/1998	9:40	Phil\Steve		No rain in 48 hr., slight turbidity, many fish	19	8.2	0	0	0	0	0	0	0	8	2.04	2600	1320	0	331	0.53	0.4	0	2.04			
27	Mill Creek	Sevenmile east	6/17/1998	9:30	Phil\Steve		No rain in 48 hr., slight turbidity, many fish. No crayfish	19.4	8	0	0	0	0	0	0	0	0.005	18	0.88	600	640	0	330	0.48	0.46	0	0.88		
26	Mill Creek	Sevenmile w.(Brentwood branch)	6/17/1998	9:15	Phil\Steve		No rain in 48 hr., slight turbidity, many fish. Some crayfish	20	7.6	0	0	0	0	0	0	0	4	1.04	800	1250	0	335	0.4	0.4	0	1.04			
29	Richland Creek	Sugartree	8/5/1998	9:00	Phil\Steve	0.015	Sunny no rain in at least 72hrs. Crayfish and fish present. Area=10.3 Flow=.16cfs	22	7.5	0	32	0	0	0	0	0.0021	0	9.5	1	2900	2500	0	357	0.38	0.34	0	1		
28	Richland Creek	Sugartree south	8/5/1998	8:30	Phil\Steve	0.9	Sunny no rain in at least 72hrs. Crayfish present. Area=1.8cf Flow=1.6cfs	23	7.8	0	0	0	0	0	0.0019	0	3	0.3	5900	1950	0	407	0.22	0.22	0	0.3			
30	Whites Creek	Ewing	8/12/1998	10:20	Phil\Steve	0.08	Plenty of aquatic life. 72hrs since qualifying rain event.	25	8.3	0	0	0	0	0	0.0019	0	3	0.3	5900	1950	0	407	0.22	0.22	0	0.3			
32	Whites Creek	Ewing north	8/12/1998	10:05	Phil\Steve	0.1	Plenty of aquatic life. 72hrs since qualifying rain event.	25	8.5	1.6	0	0	0	0	0	0.002	3	0.14	2150	390	0	351	0.32	0.29	0	1.74			
31	Whites Creek	Ewing south	8/12/1998	10:00	Phil\Steve	0.5	Plenty of aquatic life. 72hrs since qualifying rain event.	24	8.5	2.9	0	0	0	0	0	0.002	10	0.13	5300	490	0	459	0.4	0.26	0	3.03			
33	Mill Creek	Sevenmile	8/19/1998	10:30	Phil\Steve	0.25	Fish snails and crayfish. At least 72 hr. since a qualifying rain event.	24	8.3	0	0	0	0	0	0.0022	0.011	4	0.7	20000	970	0	312	0.33	0.29	0	0.7			
35	Mill Creek	Sevenmile east	8/19/1998	10:30	Phil\Steve	0.3	Plenty of fish, snakes and crayfish. At least 72hours since a qualifying rain event	25	8.1	0	0	18	0	0	0	0.006	8	0.24	26000	1060	0	343	0.34	0.23	0	0.24			
34	Mill Creek	Sevenmile w.(Brentwood branch)	8/19/1998	9:45	Phil\Steve	0.25	Plenty of fish, snakes and crayfish. At least 72hours since a qualifying rain event	24	8.4	0	0	0	0	0	0	0.004	5	0.45	96000	3500	0	347	0.26	0.2	0	0.45			
37	Richland Creek	Sugartree	10/7/1998	9:36	Mike\Sonia	0	Raining. Oil sheen runoff from nearby parking lot.	22.2	7.5	0	7.7	95	0.007	0	0.013	0.036	13	1.192	124000	47500	0.14	336	0.37	0.21	0	1.192			
36	Richland Creek	Sugartree south	10/7/1998	9:00	Mike\Sonia	0	Just started raining at time of collection. Ongoing construction at site. Erosion control measures are in place.	22.1	7.8	1.8	0	9	0	0	0.0068	0.006	9	0.36	10400	7730	0.14	443	0.21	0.16	0	2.16			
38	Whites Creek	Ewing	10/14/1998	9:35	Steve	0.1	Has not rained since 10-7-98. Plenty of aquatic life. Low flow.	14	8.1	0	8	49	0	0	0.0039	0.007	5	0.08	1171	973	0	484	0.06	0.04	0.017	0.08			
40	Whites Creek	Ewing north	10/14/1998	9:15	Steve	0.01	Has not rained since 10-7-98. Plenty of aquatic life. Low flow.	14.3	8.3	0	0	0	0	0	0.0058	0.004	2	0.03	81	90	0	431	0.02	0.02	0.016	0.03			
39	Whites Creek	Ewing south	10/14/1998	9:00	Steve	0.02	Has not rained since 10-7-98. Plenty of aquatic life. Low flow.	13.8	8.3	0	0	22	0	0	0.0033	0	3	0.03	390	300	0	517	0.13	0.08	0.013	0.03			



Metropolitan Nashville – Davidson County  
 NPDES-MS4 Permit No. TNS068047  
 Cycle 2, Year 2  
 November 2005

Inc. No.	Watershed	Site ID	Date	Time	Staff	Velocity	Visual Observations	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+Nitrite Nitrogen	Fecal Coliform	Fecal Strep	Tot. Ammonia Nitrogen	TDS	Tot. Phos.	Dissolved Phos.	Chromium	Total Nitrogen	Fluoride	E coli
41	Mill Creek	Sevenmile	10/21/1998	9:55	PhilMichael	0.25	At least 72 hrs since a qualifying rain event. Some aquatic life seen.	15.1	8.4	0	0	0	0.074	0	0.0093	0.019	5	0.55	800	510	0	330	0.36	0.35	0.015	0.55		
43	Mill Creek	Sevenmile east	10/21/1998	9:10	PhilMichael	0.25	At least 72 hrs since a qualifying rain event. Plenty of aquatic life seen. An unusual amount of sediment in the bottom of the creek.	14.2	8.3	0	0	6	0.032	0	0.0027	0.005	8	0.13	360	420	0	341	0.36	0.33	0.016	0.13		
42	Mill Creek	Sevenmile w. (Brentwood branch)	10/21/1998	9:20	PhilMichael	0.1	At least 72 hrs since a qualifying rain event. Plenty of aquatic life seen.	13.5	8.4	0	0	0	0.035	0	0.0063	0.012	4	0.32	110	450	0	404	0.37	0.33	0.014	0.32		
45	Richland Creek	Sugartree	12/2/1998	9:00	S.Wall	0.1	Aquatic life visible. 0.09 inches of rain 2 days prior to sampling.	14	7	0	0	4	0	0.027	0.0041	8E-04	21	0.61	236	620	0	336	0.25	0.22	0	0		
44	Richland Creek	Sugartree South	12/2/1998	8:30	S.Wall	0.1	Aquatic life present. .09 inches of rain 2 days prior to sample event.	13.2	7.2	0	0	4	0	0.025	0	0.003	3	0.09	236	620	0	447	0.23	0.14	0	0		
46	Whites Creek	Ewing	12/9/1998	10:30	S.Wall	0	Rain events 1 and 2 days prior to ambient sampling.	20.7	6.2	0	25	20	0	0.041	0.0041	0.036	10	2.75	710	4200	0	166	0.86	0.81	0	0		
48	Whites Creek	Ewing north	12/9/1998	10:15	S.Wall	1		20.4	6.7	0	0	11	0.63	0.038	0	0.011	10	2.2	790	4100	0	504	0.64	0.32	0	0		
47	Whites Creek	Ewing south	12/9/1998	10:10	S.Wall	0.5		21.3	6.8	0	7	15	0	0.036	0.0037	0.01	10	2.91	600	3700	0	41	0.49	0.45	0	0		
49	Mill Creek	Sevenmile	12/16/1998	9:25	Mike/Sonia	0				0	0	3.7	0	0.044	0.058	0	2	2.24	6200	1155	0	347	0.48	0.41	0	2.24		
50	Mill Creek	Sevenmile east	12/16/1998	8:57	Mike/Sonia	0				0	0	7.5	0	0.053	0.0036	0	3	2.46	1818	3100	0	395	0.52	0.39	0	2.46		
51	Mill Creek	Sevenmile w. (Brentwood branch)	12/16/1998	8:57	Mike/Sonia	0				0	0	8.3	0	0.044	0	0	3	2.05	330	670	0	377	0.47	0.47	0	2.05		
52	Richland Creek	Sugartree	2/3/1999	9:40	PhilSteve	1	Some fish. Some rain in the last 72 hours but not qualifying event.	10.4	8	0	0	13	0	0	0.0045	0	5	2.78	20	54	0	336	0.34	0.3	0.021	2.78		
53	Richland Creek	Sugartree south	2/3/1999	9:05	PhilSteve	2	Algae black conical snails, no fish. Some rain in the last 72 hours but not qualifying event.	10	8.1	0.8	0	96	0	0	0.0039	0	5	2.62	130	81	0	387	0.3	0.26	0.02	3.39		
54	Whites Creek	Ewing	2/10/1999	10:40	PhilSteve	1.6	Plenty of fish	12.2	8.5	0	0	6	0	0.011	0.0056	0	10	0.57	72	180	0	340	0.21	0.19	0	0.57	0.26	
56	Whites Creek	Ewing north	2/10/1999	10:20	PhilSteve	0.5	Some aquatic life	11.6	8.7	0	0	0	0	0	0	0	10	0.7	63	290	0	308	0.24	0.21	0	0.7	0.26	
55	Whites Creek	Ewing south	2/10/1999	10:15	PhilSteve	0.75	Some aquatic life.	12.4	8.6	0	9	3	0	0.014	0.0061	0	7	0.69	370	117	0	444	0.17	0.17	0	0.69	0.34	
57	Mill Creek	Sevenmile	2/17/1999	10:10	Phil	0	Plenty of aquatic life	10.4	8.3	0	4	15	0	0.017	0.0065	0.01	55	1.85	1090	2400	0	302	0.67	0.3	0	1.85	0.31	
59	Mill Creek	Sevenmile east	2/17/1999	9:25	Phil	0	Some aquatic life	10.9	8.2	0	0	0	0	0.019	0.024	0.006	13	1.5	460	710	0	314	0.45	0.28	0	1.5	0.27	
58	Mill Creek	Sevenmile w. (Brentwood branch)	2/17/1999	9:15	Phil	0	Some aquatic life	10.8	8.2	0	3	0	0	0.017	0.0051	0	5	1.55	350	530	0	348	0.3	0.26	0	1.55	0.23	
61	Richland Creek	Sugartree	4/7/1999	10:20	PhilSteve	1.34	Algae present		8.5	0	0	15	0	0.023	0.012	0.031	2	0.58	171	90	0.1	350	0.26	0.25	0	0.58	0.46	
60	Richland Creek	Sugartree south	4/7/1999	10:00	PhilSteve	0.5	Very little aquatic life and lots of algae		8.1	0	1	8	0	0.019	0.015	0.036	4	0.45	90	135	0.1	378	0.26	0.25	0	0.45	0.41	
64	Whites Creek	Ewing	4/14/1999	9:20	PhilSteve	0.16	Plenty of aquatic life	14.2	8.2	2.3	6	19	0.012	0.02	0.01	0.024	76	0.11	550	1018	0	343	0.27	0.27	0	2.43	0.3	
62	Whites Creek	Ewing north	4/14/1999	8:50	PhilSteve	0.25	Level lower than normal.	14.4	8.2	2.3	0	13	0	0.022	0.011	0.018	0	0.13	135	320	0	372	0.21	0.17	0	2.43	0.4	
63	Whites Creek	Ewing south	4/14/1999	9:00	PhilSteve	0.25	Level lower than normal.	14	8	2.9	3	9	0	0.02	0	0.019	1	0.4	650	630	0	491	0.18	0.15	0	3.3	0.32	
67	Mill Creek	Sevenmile	4/21/1999	9:30	PhilSteve	0.28	Some aquatic life	15.9	8.4	0.8	0	11	0	0	0.018	0.031	9	0.93	838	480	0	308	0.52	0.36	0	1.71	0.39	
66	Mill Creek	Sevenmile east	4/21/1999	9:05	PhilSteve	1	Some aquatic life	14.9	8.3	0	0	6	0	0	0.017	0.008	6	0.64	153	220	0	349	0.39	0.33	0.013	0.64	0.32	
65	Mill Creek	Sevenmile w. (Brentwood branch)	4/21/1999	9:00	PhilSteve	0.3	Some aquatic life	15.6	8.1	0.8	1	8	0	0	0.018	0.009	4	1.12	613	560	0	365	0.37	0.35	0.01	1.9	0.4	
69	Richland Creek	Sugartree	6/2/1999	9:10	S.Wall	0.2		20	7.3	0.9	0	0	0	0	0.016	0.03	1	1.24	685	1036	0	300	0.47	0.49	0	2.17	0.4	
68	Richland Creek	Sugartree south	6/2/1999	8:45	S.Wall	0.2		21	7.3	4.2	0	0	0	0	0.013	0.019	5	0.47	2900	4300	0	443	0.31	0.32	0	4.67	0.45	



Metropolitan Nashville – Davidson County  
 NPDES-MS4 Permit No. TNS068047  
 Cycle 2, Year 2  
 November 2005

Inc. No.	Watershed	Site ID	Date	Time	Staff	Velocity	Visual Observations	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+Nitrite Nitrogen	Fecal Coliform	Fecal Strep	Tot. Ammonia Nitrogen	TDS	Tot. Phos.	Dissolved Phos.	Chromium	Total Nitrogen	Fluoride	E coli
75	Whites Creek	ewing	6/9/1999	10:05	S.Wall	0.06		24.2	7.8	0	0	24	0	0.013	0.023	0.041	1	0.25	470	135	0	329	0.44	0.34	0	0.25	0.33	
73	Whites Creek	Ewing north	6/9/1999	9:20	S.Wall	0.1		24.1	8	0	0	13	0	0.011	0.017	0.022	1	0.16	350	390	0	320	0.31	0.31	0	0.16	0.32	
74	Whites Creek	Ewing south	6/9/1999	9:10	S.Wall	0.1		23.2	7.9	0	0	11	0	0.015	0.23	0.034	0	0.35	320	760	0	419	0.34	0.19	0	0.35	0.41	
72	Mill Creek	Sevenmile	6/16/1999	10:10	S.Wall	1		20	8	1.3	3	11	0	0	0	0.008	11	1.4	2430	2700	0	300	0.51	0.48	0	2.7	0.5	
70	Mill Creek	Sevenmile east	6/16/1999	9:15	S.Wall	0.5		20	8	1.4	0	40	0	0	0	0.009	12	0.65	1450	2500	0.37	332	0.65	0.59	0	2.05	0.37	
71	Mill Creek	Sevenmile w.(Brentwood branch)	6/16/1999	9:30	S.Wall	0.25		21	7.9	2.3	0	25	0	0	0.013	0.032	4	1.8	570	890	0	345	0.45	0.45	0	3.13	0.47	
77	Richland Creek	sugartree	8/4/1999	10:06	S.Wall	0.1		22.1	7.4	0	0	0	0	0	0	0.072	2	0.93	820	25	0	336	0.48	0.28	0	0.93	0.4	
76	Richland Creek	Sugatree south	8/4/1999	9:30	S.Wall	0.1		22.3	7.7	0	0	0	0	0	0	0.11	2	0.28	1190	27	0	462	0.22	0.22	0	0.28	0.49	
78	Whites Creek	ewing	8/11/1999	9:20	S.Wall	0.2		25.5	7.6	0	11	8	0	0	0	0.099	23	0.18	320	63	0	417	0.4	0.18	0.015	0.18	0.34	
79	Whites Creek	Ewing north	8/11/1999	9:00	S.Wall	0.2		24.5	7.5	0	0	0	0	0	0	0.08	18	0.1	144	153	0	445	0.65	0.22	0.013	0.1	0.33	
80	Whites Creek	Ewing south	8/11/1999	9:10	S.Wall	0.2		25	7.6	0	0	0	0	0	0	0.077	1	0.16	430	189	0	500	0.23	0.23	0.015	0.16	0.43	
81	Mill Creek	sevenmile	8/18/1999	8:40	S.Wall	0.25		24.4	7.9	1.4	0	13	0	0	0	0.07	4	0.57	829	350	0	304	0.38	0.31	0	2.01	0.61	
83	Mill Creek	Sevenmile east	8/18/1999	8:10	S.Wall	0.25		23.2	7.9	0.9	0	0	0	0	0	0.049	5	0.21	230	420	0	360	0.81	0.71	0.015	1.14	0.41	
82	Mill Creek	Sevenmile w.(Brentwood branch)	8/18/1999	8:00	S.Wall	0.25		22.8	7.7	0	0	0	0	0	0	0.052	9	0.25	964	340	0	403	0.46	0.43	0	0.25	0.47	
85	Richland Creek	Sugatree	10/6/1999	8:45	S.Wall	0.1		15.5	7.1	0	0	19	0	0	0	0.008	3	0.79	802	590	0	365	0.4	0.4	0	0.79	0.36	
84	Richland Creek	Sugatree south	10/6/1999	8:10	S.Wall	0.1	Plenty of fish.	15.5	7.6	0	0	17	0	0	0	0.006	2	0.18	1450	500	0	497	0.15	0.15	0	0.18	0.46	
88	Whites Creek	Ewing	10/13/1999	8:30	S.Wall	0	depth=18"	20.5	7.4	0	0	20	0	0	0	0	4	0.28	135	694	0	519	0.26	0.23	0	0.28	0.34	
86	Whites Creek	Ewing north	10/13/1999	8:10	S.Wall	0.3	Depth=6", plenty of aquatic life.	20.2	7.8	0	0	22	0	0	0	0.012	1	0.2	50	90	0	520	0.28	0.28	0	0.2	0.29	
87	Whites Creek	Ewing south	10/13/1999	8:20	S.Wall	0.1	depth=10"	20.2	7.8	0	0	22	0	0	0	0.011	0	0.28	210	135	0	530	0.24	0.23	0	0.28	0.41	
91	Mill Creek	Sevenmile	10/20/1999	10:50	S.Wall	0.1	Plenty of aquatic life. No rain for weeks. Depth = 8"	12.7	7.9	0.6	1	29	0	0.025	0.012	0	1	0.54	117	865	0	338	0.44	0.32	0	1.15	0.5	
89	Mill Creek	Sevenmile east	10/20/1999	10:00	S.Wall	0.5	plenty of aquatic life. No rain for weeks. Depth = 4"	10.9	7.5	0	0	29	0	0.025	0	0	0	0.22	180	91	0	383	0.37	0.36	0	0.22	0.38	
90	Mill Creek	Sevenmile w.(Brentwood branch)	10/20/1999	10:20	S.Wall	0.75	Plenty of aquatic life. No rain for weeks. Depth = 1"	10.4	7.8	0	0	34	0	0.023	0.011	0	0	0.24	27	941	0	454	0.38	0.34	0	0.24	0.44	
92	Richland Creek	Sugatree	12/1/1999	13:30	S.Wall	0	Very low flow. No significant rain for months.	13.8	5.9	0	0	19	0	0.022	0	0.016	6	1.13	9	180	0	342	0.19	0.18	0	1.13	0.37	
93	Richland Creek	Sugatree south	12/1/1999	13:10	S.Wall	0	Very low flow. No significant rain for months.	10.8	6.1	0	0	31	0	0.013	0	0	10	0.43	36	86	0.31	460	0.26	0.26	0	0.43	0.45	
94	Whites Creek	ewing	12/8/1999	9:10	S.Wall	0.01	Depth=18"	4.5	6.2	1	1	26	0	0.012	0	0	1	0.08	18	9	0.2	471	0.06	0.03	0	1.08	0.36	
95	Whites Creek	Ewing north	12/8/1999	8:30	S.Wall	0.4	Depth=8"	5.3	6.5	0.8	0	26	0	0.015	0	0	0	0.12	0	18	0.14	464	0	0	0	0.87	0.29	
96	Whites Creek	Ewing south	12/8/1999	8:45	S.Wall	0.1	Depth=8"	5.7	6.3	4.2	0	28	0	0.014	0	0	1	0.12	108	54	0.14	488	0	0	0	4.32	0.44	
97	Mill Creek	Sevenmile	12/15/1999	10:15	S.Wall	2	depth=8"	11	6.2	1.2	0	0	0	0	0.011	0.018	4	2.14	4900	700	0	378	0.75	0.34	0	3.34	0.44	
98	Mill Creek	Sevenmile east	12/15/1999	9:30	S.Wall	2	Depth=6"	11.3	5.9	0.4	0	9	0	0.01	0.013	0	3	1.53	54	117	0	428	1.5	0.94	0	1.94	0.83	
99	Mill Creek	Sevenmile w.(Brentwood branch)	12/15/1999	9:45	S.Wall	2	depth=4"	10.6	5.8	0.8	0	11	0	0	0.012	0	0	1.57	45	360	0	397	0.78	0.35	0	2.32	0.45	
101	Richland Creek	Sugatree	2/2/2000	10:00	Steve	0	depth=8"	6.9	6	0.8	0	0	0	0	0	0	14	1.15	117	117	0	358	0.3	0.24	0	1.94	0.45	
100	Richland Creek	Sugatree south	2/2/2000	9:30	Steve	0.1	depth=4"	4.6	6.3	0	0	0	0	0	0	0	12	0.84	36	14	0.34	502	0.16	0.095	0	0.84	0.4	
102	Whites Creek	Ewing north	2/9/2000	8:45	Steve	1	depth=6"	4.6	6.5	0.9	0	8	0	0	0	0	0	0.3	0	0	0	423	0.14	0.14	0	1.22	0.31	



Metropolitan Nashville – Davidson County  
 NPDES-MS4 Permit No. TNS068047  
 Cycle 2, Year 2  
 November 2005

Inc. No.	Watershed	Site ID	Date	Time	Staff	Velocity	Visual Observations	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+Nitrite Nitrogen	Fecal Coliform	Fecal Strep	Tot. Ammonia Nitrogen	TDS	Tot. Phos.	Dissolved Phos.	Chromium	Total Nitrogen	Fluoride	E coli	
103	Whites Creek	Ewing south	2/9/2000	8:55	Steve	0.5	depth=6"	4.8	6.4	0	3	0	0	0	0	0	0	0.36	250	9	0	515	0.42	0.13	0.01	0.36	0.45		
104	Mill Creek	Sevenmile	2/16/2000	10:00	SW/PS	2.5	depth-24"	11.7	6.4	0	0	4	0	0	0	0.005	37	2.38	460	99	0	343	1.12	0.52	0.014	2.38	0.42		
105	Mill Creek	Sevenmile east	2/16/2000	9:20	PS/SW	2.5	depth-12"	11.6	6.1	0.5	0	0	0	0	0	0.007	10	2.11	72	108	0	377	0.5	0.42	0.013	2.63	0.35		
106	Mill Creek	Sevenmile w.(Brentwood branch)	2/16/2000	9:30	SW/PS	1.3	depth-8"	11.1	6.3	0	0	0	0	0	0	0	2	2.63	144	99	0	393	0.3	0.028	0	2.63	0.46		
107	Richland Creek	Sugartree	4/5/2000	10:30	PS/SW	0.5	depth 12" lots of aquatic life	12.2	8	0	0	22	0	0	0.014	0.034	1	1.09	171	189	0	326	0.56	0.44	0	1.09	0.47		
108	Richland Creek	Sugartree south	4/5/2000	10:05	SW/PS	1	depth- 6" snails and algae	12.5	7.8	0	0	20	0	0	0.016	0.023	2	0.52	144	180	0	397	0.52	0.46	0	0.52	0.38		
109	Whites Creek	Ewing	4/12/2000	9:50	MS/SB	0	depth-	12.5	7.9	1.4	3	22	0	0.13	0	0.017	12	0.84	1333	2500	0	352	1.59	0.38	0	2.14	0.35		
111	Whites Creek	Ewing north	4/12/2000	10:10	MS/SB	0	depth	12.7	7.8	1.2	3	15	0	0.017	0	0.019	9	0.77	3800	2500	0	173	1.39	0.39	0	1.93	0.33		
110	Whites Creek	Ewing south	4/12/2000	10:05	MS/SB	0	depth-	13.3	7.9	0	1	59	0	0.015	0	0.011	8	0.74	530	1360	0	293	0.67	0.56	0	0.74	0.4		
113	Mill Creek	Sevenmile	4/19/2000	9:20	MS/SH	0		13.8	8	0	0	20	0	0	0.016	0.022	9	1.84	856	545	0	304	0.69	0.66	0.012	1.84	0.38		
114	Mill Creek	Sevenmile east	4/19/2000	8:50	SH/MS	0	sediment present	13.6	8	0	0	9	0	0	0.015	0.015	2	1.42	2000	727	0	325	0.82	0.32	0.013	1.42	0.41		
112	Mill Creek	Sevenmile w.(Brentwood branch)	4/19/2000	8:55	MS/SB	0	sediment present	13.4	7.9	0	0	6	0	0	0.015	0.018	1	1.652	2200	1820	0	327	0.96	0.52	0.014	1.652	0.33		
115	Richland Creek	Sugartree	6/7/2000	10:30	PS/SW	1	depth 12" at column saw fish	17.8	7.7	0	0	13	0	0	0	0.011	0	2.4	698	620	0	348	0.35	0.35	0	2.4	0.38		
116	Richland Creek	Sugartree south	6/7/2000	10:10	PS/SW	0.25	depth 1" saw fish algae and snails	18	8.1	0	0	0	0	0	0	0.011	2	0.53	1270	1520	0.39	435	0.24	0.24	0	0.53	0.43		
117	Whites Creek	Ewing	6/14/2000	10:40	PS & SW	0.08	depth-1.5'	25.7	7.8	0	0	15	0	0	0	0.03	4	0.32	2360	30000	0	411	0.3	0.24	0	0.32	0.36		
119	Whites Creek	Ewing north	6/14/2000	10:15	PS & SW	0.1	depth-9"	24.8	8.3	0	1	24	0	0	0	0.015	0	0.16	2600	380	0	430	0.22	0.2	0	0.16	0.47		
118	Whites Creek	Ewing south	6/14/2000	10:20	PS & SW	0.1	depth-4"	25.4	8.3	0	0	0	0	0	0	0.031	0	0.2	1110	200	0	391	0.36	0.3	0	0.2	0.34		
120	Mill Creek	Sevenmile	6/21/2000	10:40	PS & MS	1	1.5'	26.3	8.1	1.2	0	199	0	0.011	0	0.027	12	0.91	1910	440	0	323	18	0.4	0	2.15	0.46		
121	Mill Creek	Sevenmile east	6/21/2000	10:15	MS & PS	1	12"	25	8.1	0	0	26	0	0.011	0	0.013	4	0.62	5800	1410	0	344	0.4	0.36	0	0.62	0.38		
122	Mill Creek	Sevenmile w.(Brentwood branch)	6/21/2000	10:00	PS & MS	1	depth- 2"	25.2	8.1	0	0	29	0	0	0	0.009	4	0.89	5910	2300	0	409	0.43	0.41	0	0.89	0.46		
123	Richland Creek	Sugartree	8/2/2000	10:00	PS	0.1	depth 12"	24	7.4	0	2	0	0	0.035	0.032	0.091	4	1.38	5350	2750	0	359	0.59	0.18	0	1.38	0.43		
124	Richland Creek	Sugartree south	8/2/2000	9:40	PS	0.1	depth-2"	24	7.9	0	1	7	0	0	0	0.007	8	0.36	2200	2900	0	542	0.28	0.18	0	0.36	0.53		
127	Whites Creek	Ewing	8/9/2000	10:15	PS SW	0.1	plenty of fish depth 12"	26.4	7.6	0	2	35	0.005	0	0	0	0.037	5	0.17	1140	210	0.31	469	0.14	0	0.013	0.17	0.43	
125	Whites Creek	Ewing north	8/9/2000	9:45	PS SW	0.1	plenty of fish & cadysfly nymph, much sediment	25.4	8	0	0	0	0	0	0	0	18	0.25	2300	270	0	481	0.96	0.52	0	0.25	0.35		
126	Whites Creek	Ewing south	8/9/2000	10:00	PS SW	0.1	depth - 10" plenty of fish & cadysfly nymph, lots of snails, much sediment present	26.2	8.1	0	0	0	0	0	0	0	6	0.14	748	180	0	465	0.29	0.1	0	0.14	0.56		
128	Mill Creek	Sevenmile	8/16/2000	7:45	MS/SH	0		24.5	7.9	0	3	0	0	0.013	0.013	0	3	0.74	883	580	0	283	0.35	0.29	0.012	0.74	0.31		
130	Mill Creek	Sevenmile east	8/16/2000	8:21	MS/SH	0		24.1	7.9	0	7	0	0	0.011	0.011	0	4.3	0.15	2200	550	0	332	0.34	0.3	0.011	0.15	0.48		
129	Mill Creek	Sevenmile w.(Brentwood branch)	8/16/2000	8:25	MS/SH	0	low flow but abundance of life	23.7	8	0	7	0	0	0	0.011	0	1.3	0.55	901	560	0	400	0.31	0.3	0.012	0.55	0.51		
131	Richland Creek	Sugartree	10/4/2000	9:30	PS & SW	0.01	fish present. 1' depth	20.1	7.4	0	0	19	0	0	0	0	11	0.55	200	240	0	360	0.42	0.21	0	0.55	0.32		
132	Richland Creek	Sugartree south	10/4/2000	9:00	ps & SW	0.1	datrters and algae present. 3" depth	21.5	7.9	0	0	17	0	0	0.011	0	1.3	0.47	555	170	0	492	0.17	0.17	0	0.47	0.44		
133	Whites Creek	Ewing	10/11/2000	14:45	PS & SW	0.01	fish present. 1.6' depth	10.8	8	0	0	60	0	0	0	0	14	0.091	72	50	0	411	0.31	0.23	0	0.091	0.34		
135	Whites Creek	Ewing north	10/11/2000	14:30	PS & SW	0.01	fish present. 6" depth	13.9	8.4	0	1.5	15	0	0	0	0	7	0.023	72	130	0	436	0.26	0.18	0	0.023	0.23		



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Inc. No.	Watershed	Site ID	Date	Time	Staff	Velocity	Visual Observations	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+Nitrite Nitrogen	Fecal Coliform	Fecal Strep	Tot. Ammonia Nitrogen	TDS	Tot. Phos.	Dissolved Phos.	Chromium	Total Nitrogen	Fluoride	E coli
134	Whites Creek	Ewing south	10/11/2000	14:35	PS & SW	0.01	fish present 6" depth	14.1	8.4	0	0	15	0	0	0	0	1	0.14	126	30	0	362	0.19	0.19	0	0.14	0.48	
136	Mill Creek	Sevenmile	10/18/2000	8:30	PS	0.05	fish present	16.1	7.1	0	14	0	0.02	0	0.015	0	16	0.15	420	1300	0	323	0.34	0.18	0	0.15	0.6	
137	Mill Creek	Sevenmile east	10/18/2000	9:00	PS	0.1	fish present	17.1	7.6	0	0	0	0.019	0	0.013	0	5	0.23	90	1300	0.46	408	0.36	0.32	0	0.23	0.48	
138	Mill Creek	Sevenmile w.(Brentwood branch)	10/18/2000	9:05	PS	0.01	fish present	16.2	7.5	0	2	0	0.012	0	0.015	0	4	0.45	440	5000	0	455	0.34	0.34	0	0.45	0.49	
139	Richland Creek	Sugartree	12/6/2000	12:15	PS	0.01	some fish, no rain in at least 72hrs, 1' depth, ecoli-300,enterococcus-<10	9.6	7.2	0	270	0	0	0.01	0	0	20	1.28	160	270	0	328	0.95	0.57	0	1.28	0.42	
140	Richland Creek	Sugartree south	12/6/2000	12:35	PS	0.1	6" depth no rain in at least 72hrs, snails & algae, ecoli-850, enterococcus-<10	7.7	7.7	2.9	0	0	0	0	0	0	9	0.78	220	140	0	523	0.42	0.23	0	3.76	0.45	
141	Whites Creek	Ewing	12/13/2000	9:42	SW/PS	0.01	very cold, depth 1.67, e-coli-50, enterococcus-310	2.3	7.8	0	0	20	0	0	0	0	3	0.05	100	70	0.4	445	0.14	0.14	0	0.05	0.36	
142	Whites Creek	Ewing north	12/13/2000	9:42	SW/PS	0.2	very cold, depth 1', e-coli-800, enterococcus-<10	2.5	8	3.9	0	27	0	0	0	0	2	0.06	340	80	0	458	0.15	0.15	0	3.96	0.3	
143	Whites Creek	Ewing south	12/13/2000	9:42	SW/PS	0.2	very cold, depth 1', e-coli-1700, enterococcus-<10	3.4	7.9	0	0	24	0	0	0	0	1	0.21	290	700	0	505	0.11	0.11	0	0.21	0.46	
144	Mill Creek	Sevenmile	12/20/2000	9:40	SW/MS	1.2	16" depth, ecoli-300, enterococcus-260	5.1	7.7	0	0	41	0	0	0	0	1	2.72	370	1100	0	367	0.38	0.34	0	2.72	0.42	
145	Mill Creek	Sevenmile east	12/20/2000	9:10	SW/MS	4	16" depth, ecoli-800,enterococcus- 9	5.8	7.7	0	0	24	0	0	0	0	3	3.1	45	300	0	376	0.36	0.3	0	3.1	0.35	
146	Mill Creek	Sevenmile w.(Brentwood branch)	12/20/2000	9:20	SW/PS	2	16" depth, ecoli-500,enterococcus- 54	4.3	7.7	0	0	6	0	0	0	0	1	3.03	90	800	0	418	0.34	0.32	0	3.03	0.43	
147	Richland Creek	Sugartree	2/7/2001	11:40	PS	0.01	Some fish, no algae present	11.2	7.7	0	0	0	0	0	0	0	0	2.36	0	110	0.54	360	0.25	0.23	0	2.36	0.4	
148	Richland Creek	Sugartree south	2/7/2001	11:20	PS	1	Lots of brown algae, some fish	10.9	8.1	0	0	0	0	0	0	0	0	1.65	140	700	0.34	474	0.29	0.24	0	1.65	0.42	
151	Whites Creek	Ewing	2/14/2001	9:35	PS/MS/SH	0.4	72 hrs of rain , muddy, no visibility, no rain at the time of sampling	12.1	7.3	2.1	3	49	0	0.02	0.011	0.039	362	0.65	6760	90000	0.54	416	2.51	0.45	0.013	2.73	0.26	
149	Whites Creek	Ewing north	2/14/2001	9:51	PS/MS/SH	1	72 hrs of rain , muddy, no visibility, no rain at the time of sampling	11.7	7.8	0	0	0	0	0.018	0	0.014	65	0.85	3100	5000	0.47	370	0.85	0.18	0	0.85	0.26	
150	Whites Creek	Ewing south	2/14/2001	9:56	PS/MS/SH	3	72 hrs of rain , muddy, no visibility, no rain at the time of sampling	11.9	7.9	1.2	3	20	0	0.022	0.014	0.057	213	1	3300	130000	0.4	340	2.01	0.51	0.017	2.21	0.3	
152	Mill Creek	Sevenmile	2/21/2001	9:45	PS	3	clear, fish present	11	8.3	0	5	0	0	0	0	0	6	2.69	310	1700	0.34	320	0.24	0.13	0	2.69	0.37	
153	Mill Creek	Sevenmile east	2/21/2001	10:45	PS	3	clear, fish present	11	8.1	0	0	0	0	0.01	0	0	10	2.65	117	240	0	340	0.25	0.15	0	2.65	0.31	
154	Mill Creek	Sevenmile w.(Brentwood branch)	2/21/2001	10:30	PS	3.5	clear, fish present & some algae	11	8.2	0	0	0	0	0	0	0	5	2.75	144	300	0	359	0.28	0.13	0	2.75	0.38	
155	Richland Creek	Sugartree	4/3/2001	9:50	PS	0.2		14.1	8	0	3	8	0	0	0	0	3	0.482	19	23	0	335	0.42	0.3	0	0.482	0.42	
156	Richland Creek	Sugartree south	4/3/2001	9:30	PS	1		13.6	7.9	0	12	0	0	0	0	0	2	1.031	130	170	0.47	446	0.45	0	0	1.031	0.39	
157	Whites Creek	Ewing	4/10/2001	11:30	ps	0.1	lots of brown/green algae, plenty of fish no rain in>72 hrs	22	7.5	0	4	17	0	0	0	0	9	0.11	50	80	0.54	365	0.8	0	0	0.11	0.31	
159	Whites Creek	Ewing north	4/10/2001	11:59		0.2	lots of brown/green algae, plenty of fish no rain in>72 hrs	22	7.9	0	0	12	0	0	0	0	1	0.057	18	170	0	341	0.62	0.15	0	0.057	0.3	
158	Whites Creek	Ewing south	4/10/2001	11:45	PS	0.2	lots of brown/green algae, plenty of fish no rain in>72 hrs	22	8	0	3	34	0	0	0	0	0	0.11	150	110	0	490	0.61	0.053	0	0.11	0.4	
160	Mill Creek	Sevenmile	4/17/2001	11:00	PS	3	some fish not much other aquatic life, sediment	12.5	8.1	0	6	15	0	0.011	0.012	0.038	44	1.46	840	350	0	321	1.37	0	0	1.46	0.43	
161	Mill Creek	Sevenmile east	4/17/2001	11:40	PS	2	some fish not much other aquatic life, sediment	12.7	8	1	0	0	0	0	0.015	0	2	1.04	540	220	0	342	0.67	0.02	0	1.04	0.35	
162	Mill Creek	Sevenmile w.(Brentwood branch)	4/17/2001	11:50	PS	2	some fish not much other aquatic life, sediment	12	8	0	0	8	0	0.011	0.013	0	2	1.56	820	280	0	349	0.63	0.32	0	1.56	0.43	
164	Richland Creek	Sugartree	6/6/2001	10:35	SW	0.1		19.6	7.3	0	0	0	0	0	0.012	0	3	1.68	354	1600	0.34	334	0.4	0.33	0	1.68	0.43	
163	Richland Creek	Sugartree south	6/6/2001	10:10	SW	0.2		20.8	7.7	0	0	0	0	0	0	0	2	1.2	5800	1600	0.47	443	0.25	0.12	0	1.2	0.47	



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167	Whites Creek	Ewing	6/13/2001	9:20		1		22.8	7.7	0	0	7	0	0	0	0	15	0.47	1020	268	0	487	0.4	0.16	0	0.47	0.36		
165	Whites Creek	Ewing north	6/13/2001	8:45	SW	0.2		22.1	7.9	0	0	4	0	0	0.011	0	5	0.49	242	237	0	422	0.32	0.2	0	0.49	0.35		
166	Whites Creek	Ewing south	6/13/2001	9:00		0.2		21.2	7.9	0	0	0	0	0	0.01	0	4	0.59	800	880	0	571	0.22	0.16	0	0.59	0.41		
171	Mill Creek	Sevenmile	6/20/2001	10:10	SW	4		23	8	0	1	19	0	0	0	0	13	1.49	1900	900	0	338	0.64	0.49	0	1.49	0.49		
168	Mill Creek	Sevenmile east	6/20/2001	9:10	SW	1		22	7.9	0	1	0	0	0	0.012	0	9	1.18	3570	1910	0	378	0.49	0.49	0	1.18	0.4		
170	Mill Creek	Sevenmile w.(Brentwood branch)	6/20/2001	9:10	SW	0.4		23	7.9	0	2	4	0	0	0	0	7	1.52	1530	1360	0	371	0.5	0.5	0	1.52	0.46		
174	Richland Creek	Sugartree	8/1/2001	11:30	Steve Wall	0		24	7.4	0	2	0	0	0	0.018	0.027	0	1.23	2000	600	0.67	368	0.54	0.43	0.028	0	0.5		
173	Richland Creek	Sugatree south	8/1/2001	11:10	Steve Wall	0		25	7.8	0	4	0	0	0	0.021	0.024	1	0.36	860	5000	0.61	528	0.27	0.27	0.026	0.36	0.57		
175	Whites Creek	Ewing	8/8/2001	9:06	MS & SH	0		26.4	8.3	0	5	0	0	0	0.015	0.026	7	0.39	1130	880	0	537	0.12	0.03	0.028	0.39	0		
177	Whites Creek	Ewing north	8/8/2001	9:30	MS & SH	0	9/6/01-MH sent inquiry to rr asking if they had had any sewer overflows on or just before this date. RR reply-Michael, I'm not aware of any problems at this time, we do have a manhole under heavy rainfall conditi	26.4	8.3	0	6	0	0	0	0	0.015	0.032	38	0.5	85000	9800	0	636	0.15	0.027	0.028	0.5	0.39	
176	Whites Creek	Ewing south	8/8/2001	9:26	SH & MS	0	Suds in creek and quite a bit of sediment. 9/10/01 MS submitted a resample due to the high fecal in Ewing North. Results were 665 col/100mL fecal coliform.	25.5	8.1	0	4	0	0	0	0.015	0.024	6	0.23	1180	460	0	473	0.084	0.027	0.028	0.23	0.37		
182	Mill Creek	Sevenmile	8/15/2001	11:00		0.1		22.5	8	0	0	0	0.014	0	0	0.026	5	1.59	2530	520	0	361	0.18	0.18	0	1.59	0.47		
180	Mill Creek	Sevenmile east	8/15/2001	10:30	Steve Wall	1.2		22.4	7.9	0	0	0	0.015	0	0.011	0.024	5	1.14	4100	800	0	397	0.15	0.13	0	1.14	0.4		
181	Mill Creek	Sevenmile w.(Brentwood branch)	8/15/2001	10:35	Steve wall	1		23.3	7.9	0	1	0	0.014	0	0	0.027	7	0.87	1020	580	0	328	0.2	0.2	0	0.87	0.45		
184	Richland Creek	Sugartree	10/3/2001	10:00	Steve Wall	0		16.2	7.2	0	0	0	0	0	0	0.008	5	0.42	280	411	0.54	374	0.059	0.015	0	0.42	0.41		
183	Richland Creek	Sugatree south	10/3/2001	10:00	Steve Wall	0		18.5	7.8	0	2	0	0	0	0	0.013	0	0.14	960	600	0.34	487	0.024	0	0	0.14	0.6		
187	Whites Creek	Ewing	10/10/2001	10:15	Steve Wall	0.1		14.9	8	0	1	0	0	0	0	0	6	0.48	500	143	0.34	534	0.088	0.063	0	0.48	0.39		
185	Whites Creek	Ewing north	10/10/2001	9:45	Steve Wall	0.1		14.8	8	0	0	0	0	0.01	0	0.013	1	0.388	110	240	0.34	469	0.097	0.052	0	0.388	0.34		
186	Whites Creek	Ewing south	10/10/2001	9:55	Steve Wall	0.1		15.2	8.1	0	0	0	0	0	0	0.008	3	0.23	900	480	0.34	636	0.099	0.022	0	0.23	0.45		
190	Mill Creek	Sevenmile	10/17/2001	9:40	Steve Wall	1		12.1	8.1	0	0	0	0	0	0.01	0.01	0	1.13	520	600	0	349	0.048	0.034	0	1.13	0.52		
188	Mill Creek	Sevenmile east	10/17/2001	9:30	Steve Wall	2		12	7.9	0	6	0	0	0	0.042	0.008	0	0.74	319	255	0	373	0.089	0.056	0	0.74	0.43		
189	Mill Creek	Sevenmile w.(Brentwood branch)	10/17/2001	9:40	Steve Wall	1		11.8	7.7	0	4	0	0	0	0.013	0.009	0	1.02	800	460	0	374	0.037	0.037	0	1.02	0.53		
195	Richland Creek	Sugartree	12/5/2001	10:20	Steve Wall	0.5	Dissolved Oxygen 81.2	15.6	7.4	0	0	0	0.012	0	0.023	0.04	3	1.59	105	1300	0	399	0.02	0.02	0	1.59	0.46		
194	Richland Creek	Sugatree south	12/5/2001	9:55	Steve Wall	0.5	Dissolved Oxygen 88.6	14.6	7.8	0	0	0	0.028	0	0.029	0.05	4	1.05	540	500	0	522	0.04	0.04	0	1.05	0.5		
198	Whites Creek	Ewing	12/12/2001	10:15	Steve Wall	0	Dissolved Oxygen 104.8	13.2	8.1	0	3	0	0	0	0.01	0.049	2	0.96	1170	5000	0	534	0	0	0	0.96	0.29		
196	Whites Creek	Ewing north	12/12/2001	9:40	Steve Wall	1	Dissolved Oxygen 103.7	12.8	8.1	0	0	0	0.018	0.016	0.019	0.056	3	0.77	460	900	0	451	0	0	0	0.77	0.3		
197	Whites Creek	Ewing south	12/12/2001	9:55	Steve Wall	0.5	Dissolved Oxygen 115.4	13.8	8.1	0	1	0	0.012	0	0.011	0.053	0	1.32	5300	1700	0	729	0.01	0.01	0	1.32	0.35		
193	Mill Creek	Sevenmile	12/19/2001	8:55	Steve Wall	0	Dissolved Oxygen 98.8	10.5	8.3	0	2	0	0	0	0	0.036	5	1.9	170	1300	0	356	0	0	0.012	1.9	0.38		
191	Mill Creek	Sevenmile east	12/19/2001	8:30	Steve Wall	3	Dissolved Oxygen 106.5	11.1	7.8	0	0	0	0	0	0	0.021	6	2.02	264	1400	0	387	0	0	0.012	2.02	0.3		



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192	Mill Creek	Sevenmile w.(Brentwood branch)	12/19/2001	8:30	Steve Wall	2	Dissolved Oxygen 98.9	10.3	7.5	0	1	0	0	0	0	0.018	6	2.1	420	1700	0.49	384	0	0	0.01	2.59	0.41		
200	Richland Creek	Sugartree	2/6/2002	9:15	Steve Wall	0	D.O. 81.2	8.1	7.6	0	1	0	0	0	0.019	0.018	4	3.94	185	110	1.19	426	0.04	0	0.056	3.94	0.14		
199	Richland Creek	Sugartree south	2/6/2002	9:00	Steve Wall	0	D.O. 89.9	7.1	7.9	0	0	0	0	0	0.025	0.012	7	1.56	103	84	0	432	0.01	0	0.06	1.56	0.2		
203	Whites Creek	Ewing	2/13/2002	9:30	Steve Wall	0.1	D.O. 97	6.5	8.4	0	3	0	0	0	0.011	0.031	5	0.59	118	105	0	465	0	0	0.054	0.59	0.12		
201	Whites Creek	Ewing north	2/13/2002	9:00	Steve Wall	0.75	D.O. 108.8	6.8	8.3	0	1	0	0	0	0.015	0.03	2	0.42	339	110	0	411	0	0	0.052	0.42	0.13		
202	Whites Creek	Ewing south	2/13/2002	9:15	Steve Wall	0.5	D.O. 130	7.7	8.5	0	1	0	0	0	0.013	0.032	2	1.14	170	54	0	655	0	0	0.054	1.14	0.13		
204	Mill Creek	Sevenmile	2/20/2002	9:30	Steve Wall	0	D.O. 9.6	12.9	8	0	3	0	0	0	0	0.025	19	1.19	2100	1500	0	236	0.06	0.06	0.062	1.19	0.28		
205	Mill Creek	Sevenmile east	2/20/2002	9:00	Steve Wall	2	D.O. 10	11.9	7.8	0	1	0	0	0	0.012	0.027	15	1.27	520	1733	0	256	0.14	0.14	0.054	1.27	0.28		
206	Mill Creek	Sevenmile w.(Brentwood branch)	2/20/2002	9:15	Steve Wall	1	D.O. 10.8	11.9	8	0	2	0	0	0	0	0.016	169	1.07	900	840	0	319	0.08	0.08	0.06	1.07	0.34		
207	Richland Creek	Sugartree	4/3/2002	9:30	Sonia Harvat	0	Clear & cool, rained previous night D.O. 12.2	12.6	8.1	0	0	0	0	0.055	0.036	0	0	0	1.97	80	108	0	319	0	0	0.029	1.97	0.37	34
208	Richland Creek	Sugartree south	4/3/2002	9:40	Sonia Harvat	0	Clear & cool Rained previous night D.O. 11.87	13.6	8	0	1	0	0	0.041	0.022	0	4	1.5	110	105	0	394	0	0	0.026	1.5	0.33	170	
211	Whites Creek	Ewing	4/10/2002	11:30	Steve Wall	0.13		14.9	8.5	0	6	9	0	0.027	0.016	0.036	4	0.088	57	54	0	356	0	0	0.01	0.088	0.31	22	
209	Whites Creek	Ewing north	4/10/2002	11:00	Steve Wall	1		13.9	8.6	0	0	0	0	0.04	0.026	0.045	0	0.18	125	38	0	399	0.01	0.01	0.03	0.18	0.3	80	
210	Whites Creek	Ewing south	4/10/2002	11:10	Steve Wall	0.5		16.2	8.5	0	0	5	0	0.023	0.018	0.039	1	0.23	175	88	0	594	0.07	0.07	0.018	0.23	0.37	300	
214	Mill Creek	Sevenmile	4/17/2002	1:35	Steve Wall	0.3		24.6	8.9	0	2	19	0	0	0.014	0.026	3	0.91	210	81	0	290	0.06	0	0	0.91	0.42		
212	Mill Creek	Sevenmile east	4/17/2002	1:10	Steve Wall	3		22.8	8.2	0	4	10	0	0	0.016	0.028	4	0.59	155	105	0	304	0.03	0.01	0	0.59	0.34		
213	Mill Creek	Sevenmile w.(Brentwood branch)	4/17/2002	1:20	Steve Wall	1		23.5	8.5	0	0	4	0	0	0.015	0.029	1	0.86	103	115	0	353	0	0	0	0.86	0.41		
216	Richland Creek	Sugartree	8/7/2002	10:05	SW	0.1		21.5	7.6	0	0	69	0.006	0	0.001	0.014	1	0.93	280	1300	0.06	433	0.33	0.29	0	0.4	270		
215	Richland Creek	Sugartree south	8/7/2002	9:40	SW	0.1		22.7	8.1	0	2.2	0	0.007	0	0.002	0.014	5	0.28	450	840	0.03	461	0.21	0.2	0.001	0.57	440		
219	Whites Creek	Ewing	8/14/2002	13:40	SW	0.1		28.1	8	0	2	0	0.005	0.002	0.001	0.016	13	0.08	80	140	0.03	416	0.22	0.22	0	0.36	80		
217	Whites Creek	Ewing north	8/14/2002	13:30	SW	0.1		26.2	8.5	0	0	0	0.006	0.003	0.001	0.001	9	0.13	150	760	0.02	418	0.21	0.22	0	0.35	88		
218	Whites Creek	Ewing south	8/14/2002	13:20	SW	0.1		25.9	8.4	0	0	0	0.005	0.005	0.001	0.001	16	0.09	1300	3900	0	589	0.18	0.18	0	0.43	300		
222	Mill Creek	Sevenmile	8/21/2002	11:00	SW	0.2		25.6	8	0	2	0	0.004	0.002	0.001	0.003	1	1.27	1300	870	0	353	0.32	0.31	0	0.53	540		
220	Mill Creek	Sevenmile east	8/21/2002	10:25	SW	0.4		25.4	8.1	0	0	0	0.004	0.002	0.001	0.002	3	0.38	640	720	0	388	0.4	0.4	0	0.44	640		
221	Mill Creek	Sevenmile w.(Brentwood branch)	8/21/2002	10:50	SW	0.4		25.2	8.1	0	2	0	0.004	0.002	0.001	0.007	1	0.48	870	1000	0	353	0.39	0.39	0	0.51	620		
227	Richland Creek	Sugartree	10/2/2002	9:40	SW	0.75		21	7.5		3	0	0.016	0.02	0	0.005	1	1.6	3800		0	405	0.7	0.7	0	0.38	2100		
226	Richland Creek	Sugartree south	10/2/2002	9:20	SW	1		22.6	7.8		4	0	0.018	0.003	0	0.017	4	0.2	2600		0	447	0.6	0.6	0	0.44	2200		
230	Whites Creek	Ewing	10/9/2002	9:30	SW	0		18.2	8.1		0	0	0.023	0.012	0	0.006	6	0.17	310	320	0	529	0.6	0.6	0.0005	0.34	260		
228	Whites Creek	Ewing north	10/9/2002	9:00				18.4	8.1		0	0	0.02	0.004	0	0.002	2	0.2	40	240	0	469	0.6	0.6	0	0.34	20		
229	Whites Creek	Ewing south	10/9/2002	9:10				18.2	8.2		0	0	0.026	0.008	0	0.008	2	0.49	450	860	0	665	0.5	0.5	0	0.4	300		
225	Mill Creek	Sevenmile	10/16/2002	9:10	SW	0.8		14.2	8	0	3	5	0.007	0	0.005	0.001	14	1.6	54	590	0	309	1	1	0	0.45	37		
223	Mill Creek	Sevenmile east	10/16/2002	8:30	SW	3		15.6	8.1	0	0	11	0.006	0	0.006	0.01	6	1.4	51	620	0.02	370	1	1	0	0.42	37		



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Inc. No.	Watershed	Site ID	Date	Time	Staff	Velocity	Visual Observations	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+Nitrite Nitrogen	Fecal Coliform	Fecal Strep	Tot. Ammonia Nitrogen	TDS	Tot. Phos.	Dissolved Phos.	Chromium	Total Nitrogen	Fluoride	E coli
224	Mill Creek	Sevenmile w.(Brentwood branch)	10/16/2002	8:40	SW	2		15.2	8.1	0	2	9	0.007	0	0.007	0.011	1	1.7	33	730	0.02	380	1	1	0		0.35	24
232	Richland Creek	Sugartree	12/4/2002	11:10	SW	0					6		0.001	0	0.006	0.009	14	0.51	2000	6300		127	0.9	0.9	0		0.18	1700
231	Richland Creek	Sugartree south	12/4/2002	10:50	SW	0					5		0.007	0	0.01	0.016	28	0.4	5000	18000		198	0.9	0.9	0.0012		0.23	4200
233	Whites Creek	Ewing	12/11/2002	9:35	SM/RD/MS	0		8.3	7.6		3		0.013	0.002	0.002	0.012	17	0.77	1500	5700		310	1.2	1.1	0		0.29	1300
235	Whites Creek	Ewing north	12/11/2002	10:05	SM/RD/MS	0		8.1	7.7		3		0.018	0.003	0.005	0.009	10	0.89	4500	7500		285	1.3	1.2	0		0.29	3800
236	Mill Creek	Sevenmile	12/19/2002	8:55	SM	0		13	7.8		0		0.011	0	0.01	0.013	3	1.7	310	390		346	0.9	0.9	0		0.39	300
238	Mill Creek	Sevenmile east	12/19/2002	10:05	SM	0		12.06	8		0		0.013	0	0.013	0.015	4	1.6	45	310		377	0.9	0.9	0.001		0.32	45
237	Mill Creek	Sevenmile w.(Brentwood branch)	12/19/2002	9:50	SM	0		12.6	7.9		0		0.012	0	0.011	0.013	0	1.6	1.6	130		389	0.9	0.9	0.01		0.42	95
240	Richland Creek	Sugartree	2/5/2003	10:30	SW	0			8.2		3		0.006	0	0.001	0.012	0	1.1	45	99	0	380	0.6	0.6	0		0.41	45
239	Richland Creek	Sugartree south	2/5/2003	10:00	SM/SW	0			8.3		4		0.011	0	0.002	0.018	7	1.2	30	100	0	415	0.6	0.6	0		0.36	20
241	Whites Creek	Ewing	2/12/2003	10:45	SM & SW	0		7.2	8.1		2		0.015	0.004	0.004	0.022	0	0.5	55	45	0.2	494	0.6	0.6	0		0.3	45
243	Whites Creek	Ewing north	2/12/2003	10:20	SM & SW	0		6.8	8.1		0		0.015	0.002	0.004	0.012	0	1.2	140	18	0	448	0.6	0.6	0		0.3	100
242	Whites Creek	Ewing south	2/12/2003	10:30	SM & SW	0		8.2	8		2		0.022	0.005	0.004	0.018	5	0.5	110	36	0	693	0.6	0.6	0		0.38	100
246	Mill Creek	Sevenmile	2/19/2003	11:00	SM & SW	0		11.5	7.3		0		0.009	0	0.001	0.005	1	2.9	470	180	0	310	1.1	1.1	0.0004		0.4	470
244	Mill Creek	Sevenmile east	2/19/2003	10:20	SM & SW	0		11.1	7		0		0.007	0	0	0.01	16	2.3	90	82	0	321	1.1	1.1	0.0004		0.32	90
245	Mill Creek	Sevenmile w.(Brentwood branch)	2/19/2003	10:30	SM & SW	0		11	7		2		0.008	0	0	0.005	3	2.3	3200	770	0	349	1	1	0.0004		0.4	3000
250	Whites Creek	Ewing	4/9/2003	10:58	SM & VW	0		11.7	7.8		4		0.003	0.002	0	0.02	4	0.7	250	410	0	395	0.74	0.76	0		0.34	180
251	Whites Creek	Ewing north	4/9/2003	11:14	SM & VM	0		11.7	7.8		3		0.004	0.002	0	0	3	0.8	320	490	0	384	0.8	0.8	0		0.32	270
252	Whites Creek	Ewing south	4/9/2003	11:20	SM & VW	0		12.1	7.9		1		0.013	0.003	0	0.009	1	0.9	170	450	0	566	0.65	0.65	0		0.43	150
248	Richland Creek	Sugartree	4/9/2003	10:20	SM & VW	0		12.5	7.7		3		0.003	0.002	0	0.023	3	1.2	150	500	0	347	0.8	0.8	0		0.41	150
247	Richland Creek	Sugartree south	4/9/2003	10:00	SM & VW	0		12.6	7.8		4		0.009	0.002	0	0.015	4	1.4	100	140	0	388	0.7	0.7	0		0.36	100
253	Mill Creek	Sevenmile	4/16/2003	8:29	SM & VW	0		11.5	7.3		0		0.007	0	0.001	0.001	0	1.2	240	620	0	353	1	1	0		0.4	210
254	Mill Creek	Sevenmile east	4/16/2003	9:03	SM & VW	0		17	7.5		0		0.01	0	0.001	0.006	0	0.9	1200	630	0	361	0.9	0.9	0		0.35	1000
255	Mill Creek	Sevenmile w.(Brentwood branch)	4/16/2003	9:10	SM & VW	0		17.3	7.7		0		0.013	0	0.004	0.002	0	1.2	140	780	0	382	1	1	0		0.42	88
257	Richland Creek	Sugartree	6/4/2003	8:18	SM/KM/DB	0		18.8	7.2		0		0.007	0	0	0.001	0	1.1	2100	1900	0	365	0.9	0.9	0		0.44	1600
256	Richland Creek	Sugartree south	6/4/2003	7:55	SM/KM/DB	0		18.4	7.7		0		0.013	0	0.01	0.001	0	0.6	600	4000	0	469	0.6	0.6	0		0.47	600
260	Whites Creek	Ewing	6/11/2003	8:30	SM / RD	0		20.7	7.7		2		0.02	0	0.008	0.021	10	0.5	3200	8500	0	439	1	1	0		0.32	2500
258	Whites Creek	Ewing north	6/11/2003	8:05	SM / RD	0		20.6	7.7		0		0.014	0	0.008	0.013	1	0.5	2000	6100	0.02	351	1	1	0		0.28	1600
259	Whites Creek	Ewing south	6/11/2003	8:15	SM / RD	0		20.6	7.8		0		0.023	0	0.008	0.012	7	0.6	2500	8600	0.02	553	0.8	0.8	0		0.4	2300
261	Mill Creek	Sevenmile	6/18/2003	9:28	SM / DB	0		22.4	8		0		0	0	0	0	6	1.2	2700	2100	0.03	334	0.9	0.9	0		0.38	2400
263	Mill Creek	Sevenmile east	6/18/2003	10:10	SM / DB	0		22.8	7.7		0		0	0	0	0	3	1.2	360	2500	0.02	397	0.9	0.9	0		0.42	290
262	Mill Creek	Sevenmile w.(Brentwood branch)	6/18/2003	10:00	SM / DB	0		21.9	7.7		0		0	0	0	0	6	0.9	430	960	0.02	354	0.9	0.9	0		0.33	410
265	Richland Creek	Sugartree	8/6/2003	9:00	SM	0		23.3	7.3		0		0.001	0.001	0.001	0	0	0.84	820	730	0	358	0.6	0.6	0		0.72	



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Inc. No.	Watershed	Site ID	Date	Time	Staff	Velocity	Visual Observations	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+Nitrite Nitrogen	Fecal Coliform	Fecal Strep	Tot. Ammonia Nitrogen	TDS	Tot. Phos.	Dissolved Phos.	Chromium	Total Nitrogen	Fluoride	E coli
264	Richland Creek	Sugatree south	8/6/2003	8:45	SM	0		24.8	7.8		0		0	0.001	0.002	0	0	0.39	820	2500	0	441	1	1	0.0008		0.53	
268	Whites Creek	Ewing	8/13/2003	9:15	RD/SM	0		24.6	7.9		0		0.001	0.002	0	0	7	0.26	730	960	0	503	0.8	0.8	0		0.34	
266	Whites Creek	Ewing north	8/13/2003	8:52	RD/SM	0		24.7	8		0		0.001	0	0	0	4	0.19	140	320	0	357	0.8	0.8	0		0.3	
267	Whites Creek	Ewing south	8/13/2003	9:00	RD/SM	0		24.3	7.9		0		0.001	0.001	0	0	0	0.38	1200	2600	0	663	0.7	0.7	0.0004		0.32	
269	Mill Creek	Sevenmile	8/20/2003	9:30	SM/DB	0		25.8	7.9		2		0.001	0.001	0.006	0.003	6	0.47	240	1100	0	524	1.1	1.1	0		0.34	
271	Mill Creek	Sevenmile east	8/20/2003	10:10	SM/DB	0		26.4	7.9		3		0.001	0.001	0.008	0.007	4	0.63	320	500	0	388	1	1	0		0.43	
270	Mill Creek	Sevenmile w.(Brentwood branch)	8/20/2003	9:40	SM/DB	0		25.8	7.9		2		0.001	0.002	0.012	0.005	2	0.53	300	830	0	494	1.1	1.1	0		0.47	
272	Richland Creek	Sugartree	10/1/2003	9:15	RD/MS	0		19.4	7		0		0	0	0.005	0.006	6	1.6	1200	820	0	381	0.9	0.9	0		0.36	800
273	Richland Creek	Sugatree south	10/1/2003	9:30	RD/MS	0		18.2	7.4		0		0	0	0.005	0.009	0	0.46	1500	760	0	443	0.6	0.6	0		0.48	1500
274	Whites Creek	Ewing	10/8/2003	8:30	RD/MS	0		18.6	7.7		2		0	0	0	0	6	0.02	140	250	0	535	0.7	0.7	0		0.37	140
276	Whites Creek	Ewing north	10/8/2003	8:00	RD/MS	0		19.7	7.8		4		0	0	0	0	6	0.12	63	140	0	560	0.7	0.7	0		0.35	63
275	Whites Creek	Ewing south	10/8/2003	8:15	RD/MS	0		18.9	7.9		3		0	0	0	0	4	0.2	120	260	0	622	0.6	0.6	0		0.44	110
277	Mill Creek	Sevenmile	10/15/2003	8:30	RD/MS	0		15.8	7.6		0		0	0	0	0	0	0.71	1500	3500	0	313	1	1	0		0.38	1500
278	Mill Creek	Sevenmile east	10/15/2003	9:00	RD/MS	0		16.1	7.5		0		0	0	0	0	0	0.46	600	2000	0	359	1	1	0		0.36	600
279	Mill Creek	Sevenmile w.(Brentwood branch)	10/15/2003	9:15		0		15.8	7.6		0		0	0	0	0	0	0.6	1100	4300	0	414	1	1	0		0.43	910
281	Richland Creek	Sugartree	12/3/2003	9:44	RD/MS	0		13.7	7.2		0		0	0	0	0.003	0	1.42	1200	230	0	351	1	1	0		0.34	1100
282	Whites Creek	Ewing	12/10/2003	9:30	RD/MS	0		12.6	8.3		2		0.002	0	0	0.002	26	0.38	1600	5600	0	347	1.2	1.2	0		0.28	1500
283	Whites Creek	Ewing north	12/10/2003	9:45	RD/MS	0		12.8	8.4		2		0.002	0	0	0.001	48	0.68	1300	6700	0	397	1.6	1.6	0		0.33	1300
284	Whites Creek	Ewing south	12/10/2003	10:00	RD/MS	0		12.3	8.4		2		0.002	0	0	0.002	56	0.36	2000	6500	0	416	1.4	1.4	0		0.31	2000
234	Whites Creek	Ewing south	12/11/2003	9:50	SM/RD/MS	0		9	7.8		3		0.012	0.002	0.003	0.021	21	0.078	540	7000		447	0.9	0.9	0		0.36	400
287	Mill Creek	Sevenmile	12/17/2003	10:00	RD/DB	0		7.4	8.5		0		0	0	0	0.001	1	1.31	200	220	0	361	1	1	0		0.42	170
286	Mill Creek	Sevenmile east	12/17/2003	9:15	RD/DB	0		8.1	8.5		0		0	0	0	0.001	0	1.03	80	110	0	404	0.8	0.8	0		0.37	80
285	Mill Creek	Sevenmile w.(Brentwood branch)	12/17/2003	9:20	RD/DB	0		7.5	7.9		0		0	0	0.002	0.001	1	0.94	240	240	0	411	0.9	0.9	0		0.47	160
288	Richland Creek	Sugartree	2/4/2004	9:00	RD/PW	0		6.7	8.3		0		0.001	0	0.003	0.004	0	1.16	54	170	0	327	0.6	0.6	0		0.44	30
289	Richland Creek	Sugatree south	2/4/2004	9:30	RD/PW	0		6.6	9.5		0		0.001	0	0.004	0.006	1	0.82	99	500	0	365	0.6	0.6	0		0.37	0
292	Whites Creek	Ewing	2/11/2004	9:30	RD/PW	0		6.9	7.7		0		0	0	0.001	0.016	0	0.75	73	99	0	415	0.5	0.5	0		0.31	64
290	Whites Creek	Ewing north	2/11/2004	9:00	RD/PW	0		8.6	8.8		0		0	0	0.001	0.008	0	0.98	100	210	0	382	0.7	0.7	0		0.33	100
291	Whites Creek	Ewing south	2/11/2004	9:15	RD/PW	0		7.3	8.2		0		0	0	0.001	0.004	0	0.68	90	72	0	569	0.5	0.5	0		0.42	90
295	Mill Creek	Sevenmile	2/18/2004	9:15	RD/PW	0		8	8		0		0	0	0.001	0.008	4	1.4	90	54	0	340	1.1	1.1	0		0.38	90
293	Mill Creek	Sevenmile east	2/18/2004	8:45	RD/PW	0		8	9.3		0		0	0	0.001	0.006	1	1.3	60	110	0	340	1	1	0		0.32	30
294	Mill Creek	Sevenmile w.(Brentwood branch)	2/18/2004	9:00	RD/PW	0		6.5	8.8		0		0	0	0.002	0.012	0	1.4	150	77	0	381	0.7	0.7	0		0.4	150
296	Richland Creek	Sugartree	4/7/2004	9:45	RD	0		15.8	8		0		0	0	0	0.023	2	0.93	190	310	0.04	320	0.8	0.8	0		0.34	120
297	Richland Creek	Sugatree south	4/7/2004	10:00	RD	0		14.7	8.3		0		0.001	0	0.002	0	0	0.09	300	230	0.04	361	0.4	0.4	0		0.39	300
298	Whites Creek	Ewing	4/14/2004	9:45	RD/MS	0		9.6	8.8		0		0.001	0	0.001	0.004	4	0.71	590	1000	0	354	0.8	0.8	0		0.3	380



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300	Whites Creek	Ewing north	4/14/2004	9:15	RD/MS	0		8.4	8.9		0		0.002	0	0	0.01	4	0.84	900	1200	0	359	0.8	0.7	0		0.84	900
299	Whites Creek	Ewing south	4/14/2004	9:30		0		9.6	8.5		0		0.002	0.001	0	0.006	4	0.85	1200	2100	0	526	0.7	0.7	0		0.4	900
302	Mill Creek	Sevenmile	4/21/2004	10:00	RD/MS	0		19.4	8		0		0	0	0	0.004	1	1.2	390	910	0.03	346	1	1	0		0.34	390
303	Mill Creek	Sevenmile east	4/21/2004	10:30	RD/MS	0		18.5	7.9		0		0	0	0	0.004	1	0.9	290	340	0.02	350	0.8	0.8	0		0.32	290
304	Mill Creek	Sevenmile w.(Brentwood branch)	4/21/2004	10:35	RD/MS	0		17	7.9		0		0	0	0	0.006	2	0.9	360	630	0.02	364	0.9	0.9	0		0.37	360
305	Richland Creek	Sugartree	6/2/2004	9:00	RD/PW	0		20.4	7		0		0	0	0.001	0	1	1.37	1500	2800	0	420	0.9	0.9	0	0	0.37	1500
306	Richland Creek	Sugartree south	6/2/2004	9:15	RD/PW	0		20.6	7.6		0		0	0	0.001	0	1	0.87	1300	1700	0	420	0.9	0.9	0		0.35	1300
307	Whites Creek	Ewing	6/9/2004	9:30	RD/JH	0		22.5	7.7		0		0	0	0.001	0.002	2	0.21	380	700	0	459	0.8	0.8	0		0.33	380
308	Whites Creek	Ewing north	6/9/2004	9:16	RD/JH	0		22.2	7.8		0		0.003	0	0.014	0	4	0.29	1700	2100	0	456	1	1	0		0.32	1700
309	Whites Creek	Ewing south	6/9/2004	9:09	RD/JH	0		22.3	7.8		0		0	0	0	0.002	0	0.3	540	540	0	546	0.9	0.9	0		0.44	540
312	Mill Creek	Sevenmile	6/16/2004	9:45	RD/JH	0		23	7.9		0		0	0	0	0.003	3	1.11	820	1700	0	356	0.9	0.9	0		0.42	500
310	Mill Creek	Sevenmile east	6/16/2004	9:15	RD/JH	0		22.6	7.6		0		0	0	0	0	6	1.05	1400	3500	0	388	0.9	0.9	0		0.35	1100
311	Mill Creek	Sevenmile w.(Brentwood branch)	6/16/2004	9:20	RD/JH	0		22.4	7.6		0		0	0	0	0	2	1.44	700	2600	0	379	0.9	0.9	0		0.4	450
313	Richland Creek	Sugartree	8/4/2004	10:15	JH/PW	0		24.7	7		0		0	0.002	0.002	0.004	4	0.55	410	4500	0.06	374	0.8	0.8	0		0.5	270
314	Richland Creek	Sugartree south	8/4/2004	10:45	JH/PW	0		25.3	7.4		0		0.001	0	0.004	0.002	2	0.31	1300	1200	0.06	490	0.5	0.5	0		0.65	950
315	Whites Creek	Ewing	8/11/2004	8:57	JH/MS	0		21.5	7.8		0		0	0	0	0.003	3	0.16	310	670	0	517	0.6	0.6	0		0.41	210
316	Whites Creek	Ewing north	8/11/2004	8:40	JH/MS	0		23.2	7.8		0		0	0	0	0.004	1	0.22	140	380	0	487	0.6	0.6	0		0.38	81
317	Whites Creek	Ewing south	8/11/2004	8:47	JH/MS	0		21.7	7.9		0		0	0	0	0.005	1	0.37	580	2500	0	551	0.5	0.5	0		0.49	450
320	Mill Creek	Sevenmile w.(Brentwood branch)	8/14/2004	10:16	JH/DB	0		19.3	8.1		0		0	0.002	0.002	0.006	3	0.66	3800	2800	0	380	0.7	0.7	0		0.44	3800
318	Mill Creek	Sevenmile	8/18/2004	9:40	JH/DB	0		19.6	8		0		0	0.002	0.002	0.01	0	0.91	640	2500	0	356	0.8	0.8	0		0.47	640
319	Mill Creek	Sevenmile east	8/18/2004	9:15	JH/DB	0		19.6	8		0		0	0.002	0.004	0.008	1	0.66	680	2600	0	371	0.9	0.9	0		0.39	570
321	Richland Creek	Sugartree	10/6/2004	7:30	RD/MS	0		16.1	7		0		0.001	0	0.001	0	1	0.45	280	2700	0	487	0.8	0.8	0		0.43	250
322	Richland Creek	Sugartree south	10/6/2004	7:45	RD/MS	0		15	7.5		0		0.001	0	0.001	0	0	0.2	2500	4700	0	381	0.5	0.5	0		0.5	2300
325	Whites Creek	Ewing	10/13/2004	8:00	RD/MS	0		17.8	7.4		3		0.001	0	0.001	0.002	16	0.41	5600	13000	0	413	1	1	0		0.32	3400
323	Whites Creek	Ewing north	10/13/2004	7:50	RD/MS	0		18.2	7.5		2		0.001	0	0.001	0.002	10	0.37	2800	8900	0	349	1.1	1.1	0		0.31	2100
324	Whites Creek	Ewing south	10/13/2004	7:55	RD/MS	0		17.7	7.3		3		0.001	0.001	0.001	0.002	34	0.58	5400	1500	0	476	1.1	1.1	0		0.36	3400
328	Mill Creek	Sevenmile	10/20/2004	8:56	MS/SW	0		18.7	7.6		0		0.001	0	0.001	0.004	10	2.1	1800	4100	0	356	1.4	1.4	0		0.4	1500
326	Mill Creek	Sevenmile east	10/20/2004	8:40	MS/SW	0		18.5	7.4		0		0.001	0	0.001	0.004	16	2	2600	5600	0	367	1.6	1.6	0		0.34	1300
327	Mill Creek	Sevenmile w.(Brentwood branch)	10/20/2004	8:43	MS/SW	0		18.5	7.5		2		0.001	0	0.002	0.002	8	2	1400	4100	0	396	1.4	1.4	0		0.41	820
329	Richland Creek	Sugartree	12/1/2004	8:35	RD/MS	0		12	7.4		0		0	0	0.002	0.006	1	1.8	4500	3500	0	319	1	1	0		0.4	3600
330	Richland Creek	Sugartree south	12/1/2004	8:50	RD/MS	0		11.8	7.2		0		0	0.001	0.001	0.004	3	1.4	6500	2200	0	322	1	1	0		0.38	600
280	Richland Creek	Sugartree south	12/3/2004	9:30	RD/MS	0		11.7	7.5		0		0	0	0	0.004	0	0.58	91	210	0	464	0.6	0.6	0		0.38	73
333	Whites Creek	Ewing	12/8/2004	8:35	RD/MS	0		11.9	7.4		2		0.001	0.001	0	0.005	13	1.1	1800	1300	0	391	1.1	1.1	0		0.29	1000
331	Whites Creek	Ewing north	12/8/2004	8:16	RD/MS	0		14	7.7		2		0.001	0.001	0	0.005	8	1.4	6800	4200	0.02	340	1.1	1.1	0		0.29	5700



Metropolitan Nashville – Davidson County  
 NPDES-MS4 Permit No. TNS068047  
 Cycle 2, Year 2  
 November 2005

Inc. No.	Watershed	Site ID	Date	Time	Staff	Velocity	Visual Observations	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+Nitrite Nitrogen	Fecal Coliform	Fecal Strep	Tot. Ammonia Nitrogen	TDS	Tot. Phos.	Dissolved Phos.	Chromium	Total Nitrogen	Fluoride	E coli	
332	Whites Creek	Ewing south	12/8/2004	8:23	RD/MS	0		13.2	7.6		0		0.002	0.001	0	0.006	6	1	700	2000	0	566	0.7	0.7	0		0.38	700	
334	Mill Creek	Sevenmile	12/15/2004	10:00	RD/PW	0	*meter broke				0		0.001	0	0	0	0	1.8	130	290	0.03	319	0.9	0.9	0		0.38	130	
335	Mill Creek	Sevenmile east	12/15/2004	9:15	RD/PW	0		8.7	8.5		0		0.001	0	0	0	6	1.6	70	140	0.03	355	1	1	0		0.33	70	
336	Mill Creek	Sevenmile w.(Brentwood branch)	12/15/2004	9:30	RD/PW	0	*meter broke				0		0.002	0	0	0	0	1.7	160	230	0.03	346	1	1	0		0.38	130	
339	Richland Creek	Sugartree	2/2/2005	9:45	DB	0		8.79	7.8		0		0	0	0	0.006	4	1	340	860	0	306	0.5	0.5	0		0.39	340	
337	Richland Creek	Sugatree south	2/2/2005	9:15	DB	0		10.9	8		0		0	0	0.001	0.014	6	0.9	1900	790	0.03	324	0.6	0.6	0		0.31	1900	
342	Whites Creek	Ewing	2/9/2005	8:15	RD/MS	0		12	8.2		2		0.001	0	0.004	0.011	3	0.5	120	130	0	400	0.6	0.6	0		0.36	100	
340	Whites Creek	Ewing north	2/9/2005	8:00	RD/MS	0		13	8.1		3		0.001	0	0.005	0.012	4	0.6	240	280	0	347	0.8	0.8	0		0.35	150	
341	Whites Creek	Ewing south	2/9/2005	8:05	RD/MS	0		11.9	7.9		3		0.001	0	0.008	0.009	2	0.6	120	160	0		0.7	0.7	0		0.43	100	
345	Mill Creek	Sevenmile	2/16/2005	9:45	RD/KM	0		12.1	8.1		0		0	0.004	0.004	0.005	3	1.18	120	41	0	311	0.9	0.9	0		0.43	110	
343	Mill Creek	Sevenmile east	2/16/2005	9:05	RD/KM	0		11.9	8		0		0.001	0.003	0.002	0.006	5	1	180	81	0	337	0.7	0.7	0		0.4	130	
344	Mill Creek	Sevenmile w.(Brentwood branch)	2/16/2005	9:15	RD/KM	0		11.8	8		0		0	0.003	0.004	0.006	2	1	150	63	0	351	0.8	0.8	0		0.45	130	
346		Sugartree	4/6/2005	8:45	RD/MS	0		14.2	7.7		0		0	0	0	0.001	1	1.2	70	150	0.03	347	0.6	0.6	0		0.41	70	
347		Sugatree south	4/6/2005	9:15	RD/MS	0		14.8	8.1		2		0	0	0	0.001	7	0.6	70	99	0	395	0.3	0.3	0		0.34	70	
350		Ewing	4/13/2005	9:00	SW	0		13.7	8.2		0		0	0	0	0.003	5	0.6	280	200	0	380	0.7	0.7	0		0.34	190	
348		Ewing north	4/13/2005	8:35	SW	0		13.6	8.2		0		0	0	0	0.002	3	0.8	220	230	0.02	372	0.7	0.7	0		0.42	170	
349		Ewing south	4/13/2005	8:40	SW	0		13.8	8.2		0		0	0	0	0.004	3	0.4	340	330	0	471	0.6	0.6	0		0.41	220	
353		Sevenmile	4/20/2005	9:15	RD/MS	0		15.8	8.3		0		0	0	0	0	3	0.8	2400	180	0	345	0.8	0.8	0		0.39	2300	
351		Sevenmile east	4/20/2005	8:40	RD/MS	0		15.2	8.1		0		0	0.001	0	0	3	0.8	4500	310	0	368	0.8	0.8	0		0.4	4200	
352		Sevenmile w.(Brentwood branch)	4/20/2005	8:50	RD/MS	0		15.6	8.1		0		0.001	0	0	0.001	2	0.7	2200	360	0	386	0.9	0.9	0		0.34	2200	
355	Richland Creek	Sugartree	6/1/2005	9:00	RD/MS	0		17.7	7.5		0		0	0	0.001	0.008	0	0.8	55	3000	0.03	321	0.8	0.8	0		0.37	490	
357	Richland Creek	Sugartree	6/1/2005	9:00	RD/MS	0	Duplicate sample	17.7	7.5		0		0	0	0.001	0.006	7	0.8	440	2300	0.02	320	0.9	0.9	0		0.38	380	
356	Richland Creek	Sugatree south	6/1/2005	9:25	RD/MS	0		18.9	7.8		0		0	0	0.002	0.006	2	0.4	3200	5800	0	440	0.6	0.6	0		0.43	2200	
360	Whites Creek	Ewing	6/8/2005	8:30	RD/MS	0		22	7.9		0		0	0	0	0.001	4	0.3	360	390	0	439	0.7	0.7	0		0.43	220	
358	Whites Creek	Ewing north	6/8/2005	8:15	RD/MS	0		21.7	8.1		0		0	0	0	0	4	0.5	560	3500	0.02	443	0.8	0.8	0		0.37	560	
359	Whites Creek	Ewing south	6/8/2005	8:20	RD/MS	0		21.2	8		0		0	0	0	0.003	4	0.3	730	2100	0	445	0.7	0.7	0		0.55	690	
363	Mill Creek	Sevenmile	6/15/2005	10:00	RD/MS	0		21.8	8.2		2		0	0	0	0.001	6	1.16	1500	1100	0	343	0.6	0.6	0		0.44	500	
361	Mill Creek	Sevenmile east	6/15/2005	9:30	RD/MS	0		20.9	8.1		0		0	0	0	0.001	10	1	1700	2100	0.06	404	1	1	0		0.36	1400	
362	Mill Creek	Sevenmile w.(Brentwood branch)	6/15/2005	9:40	RD?MS	0		22	8.1		0		0	0	0	0.001	7	1	1300	2300	0.04	460	0.9	0.9	0		0.45	1300	
354						0																						0	0
172		Sevenmile east				0																							0

