

## **1. Minimum Control Measures (MCM) 1. MS4 Maintenance Activities**

- A. Structural Controls: The permittees shall operate and maintain the MS4, including any stormwater structural controls, in such a manner as to reduce erosion and the discharge of pollutants to the Maximum Extent Practicable (MEP).*

**Description:** During the first permit term, two separate studies were performed to address the feasibility of converting existing flood control sump areas into detention/retention ponds for pollutant removal. The first study was performed by one of the co-permittees, the Tarrant Regional Water District (TRWD) on sump areas within its jurisdiction. The second study involved evaluation of 11 flood control structures under the City's jurisdiction. This is an ongoing project with the City of Fort Worth T/PW Stormwater Utility. Yearly summaries will be provided in the Annual Report.

### **TRWD STUDY**

The TRWD used the WMM model (Watershed Management Model) to estimate pollutant loads and reductions that occur with the current BMPs in place in each of their flood control sumps along the Clear Fork and West Fork of the Trinity River. Once the loads were calculated, the sumps available for possible retrofit were determined. Of the 29 total sumps, the study has determined that 13 could possibly be modified for improved pollutant removal capabilities. A final report from the TRWD on the feasibility of retrofitting sumps was included in the 2004 Annual Report. Complete information on the modeling and analysis of the sumps is available in previous Annual Reports. Additional details of this study are described in "FLOOD CONTROL PROJECTS".

### **CITY OF FORT WORTH STUDY**

The City of Fort Worth contracted with Freese and Nichols, Inc. Consulting Engineers and EMCON Engineering and Environmental Services in studying 11 flood control structures for the possible retrofitting of BMPs. These are the only flood control structures that the City owns and/or has operational control of at this time. The study indicated that none of the structures were good candidates for retrofitting due to size, cost effectiveness and other site-specific conditions. The EPA required that the 11 structure evaluations be certified as a part of the Implementation and Compliance Schedule by October 1, 2000. The certifications were sent to the EPA within the timeframe allowed. Additional details of this study are described in "FLOOD CONTROL IMPACTS". All data and documents associated with the study are on file with the City of Fort Worth Transportation & Public Works/Environmental Management Division (TPW/ENV) at the offices on the 7<sup>th</sup> floor of the City Hall Annex Building, 908 Monroe, and are available for review.

## **TXDOT ACTIVITIES**

TxDOT owns, operates and maintains the drainage system that conveys stormwater runoff from the TxDOT right-of-way. The drainage system is typically composed of storm sewers, open ditches, and outfalls. Maintenance activities are on-going and performed continuously throughout the year. Maintenance activities include storm sewer inspection, cleaning and repairs, open ditch cleaning, vegetation control, and storm sewer outfalls. Operations and maintenance procedures for TxDOT's stormwater system will follow the recommended procedures contained in the TxDOT Environmental Affairs Division's March 31, 2004 Memorandum entitled, "Recommended Best Management Practices (BMPs) for TxDOT Stormwater System Maintenance Operations" as warranted.

TxDOT designs, as necessary, stormwater structural controls in a manner to reduce the discharge of pollutants to the MEP. TxDOT's manual entitled Storm Water Management Guidelines for Construction Activities provides guidelines to prevent erosion and pollutants from flowing into the waters of the United States. Chapter 5 of the Storm Water Management Guidelines for Construction Activities, "Structural Control Practices," provides guidelines for each structural control device, including height, width, depth and drainage area design requirements for each device.

In addition to the construction guidelines manual, TxDOT maintains appropriate design specifications, ensuring structural goals meet water quality requirements. Due the linear nature of TxDOT's primary design projects (i.e., highways), TxDOT projects primarily use vegetative controls to ensure water quality. Vegetative controls can be used in combination with other effective stormwater management measures to increase pollutant removal; provide filtering of suspended solids before entering permanent control structures; and reduce erosion and scour at inflow discharges to infiltration basins, detention basins, and wetlands, when utilized. The most common vegetative controls/filters used by TxDOT are as follows:

- Grassed channels, waterways, ditches, or swales designed to inhibit erosion and enhance the settling of suspended solids; and
- Overland flow through a filter strip where such strips consist of grass or forested vegetation designed to filter pollutants from sheet flow runoff and increase filtration.

In addition, TxDOT, through research and testing, evaluates the latest controls for stormwater quality. One of TxDOT's recent evaluation measures includes permeable friction courses (PFC). PFC reduces splash and spray from vehicular traffic, minimizing potential pollutant wash off and reducing transport. PFC also serves as a filter for runoff as stormwater flows through the PFC. PFC were originally designed to reduce visibility impairment on windshields due to stormwater vehicular spray. This technology is a key example of TxDOT identifying a structural control that not only improves water quality, but also has a dual use of improving public safety.

Structural control measures can be used alone or in combination to address site-specific highway runoff. Section 5.2 of *Storm Water Management Guidelines for Construction Activities* describes

additional structural control measures, as well as the appropriate usage and typical design efforts. Additional TxDOT control measures include the following:

- Retention/irrigation ponds
- Extended detention basin (wet/dry basins)
- Constructed wetland
- Sand filter
- Sedimentation ponds/traps
- Infiltration ponds
- Catch basins
- Grated inlets
- Outfall velocity dissipation controls
- Hazardous material traps

The effectiveness of controls is a function of variables related to site conditions, highway design, surrounding water quality, and other stormwater considerations.

***B. Floatables: The permittees shall implement a program to reduce the discharge of floatables into the MS4. This program must include source controls at a minimum, and structural controls and other appropriate controls where necessary.***

### **City of Fort Worth Floatables Program**

The City's Parks and Community Services Department has an "Adopt A Park" program, similar to TxDOT's Adopt-A-Highway program, where civic groups are encouraged to sponsor regular litter clean-ups in City parks. The Fort Worth Code Compliance Department's Solid Waste Division (SWD) is responsible for citywide trash, garbage, solid waste collection, and a household paper, plastics, and metals recycling program as well as organizing volunteer activities such as the Cowtown Great American Cleanup. The Fort Worth Code Compliance Department conducts and enforces illegal dumping investigations and assures that outdoor accumulations of trash, debris, and garbage are cleaned up. All of these activities reduce the discharge of floatables (litter and other human generated solid waste). Data regarding actual amounts of litter removed with these programs are included in the Annual Reports. Significant amounts of trash are prevented from entering the City's creeks and ponds or other Waters of the U.S. through these efforts.

In addition to the programs described below for reducing discharge of floatables into the MS4, the permit includes a monitoring requirement to assess the quantity of floatables discharging to or from the MS4. This program is described in the Monitoring section of this document.

## **TRWD Program**

The TRWD annually sponsors Trinity River Awareness Day, an educational event that focuses on activities that the public can perform to improve water quality in the Trinity River watershed. Part of this event involves a river clean up where individual volunteers and volunteer groups are encouraged to remove litter from several sites along the river within Fort Worth. During the last event, 1500 volunteers removed 17,760 pounds of trash from the river.

The TRWD also sponsors an Annual Eagle Mountain Lake Area Cleanup. Eagle Mountain Lake is a reservoir on the West Fork of the Trinity River with portions of the lake within Fort Worth's corporate boundaries. During the last event, 285 volunteers removed approximately 4,360 pounds of trash.

## **TxDOT Program**

TxDOT implements a statewide program to reduce the discharge of floatables (e.g. litter and other human generated solid refuse) into its MS4. The program uses primarily litter pickup, monitoring, and source control to reduce floatables. The following sections provide additional information for the programs.

### Litter Pickup

TxDOT hires private contractors to walk along the entire ROW and pickup litter for disposal. These comprehensive activities minimize the amount of floatable materials which may block storm drain systems and discharge pollutants to surface water, and for safety purposes. On average, the full length of each roadway in the urban area is treated once every few weeks. However some elevated roadway sections are treated more frequently.

Mobile, stop-and-go spot litter pickup operations are also performed to collect litter between comprehensive litter pickup events and on an as-needed basis. Picnic and safety rest areas are also treated on a routine basis.

TxDOT also utilize the "Don't Mess with Texas Program and the Adopt-A-Highway Program in which civic groups and others volunteer to pick up litter from certain sections of roadway. Adopt-This program is described in Section 11.

TxDOT hires private contractors to perform street sweeping on TxDOT roadways throughout the permit area. Most of the street sweeping is vacuum-assisted which provides the greatest level of particulate recovery. Roadways with an urban profile are generally treated at least once per month. Elevated roadway sections (bridges) are treated approximately every 2 weeks. Elevated section treatments include as-needed vacuuming of inlets, sediment pans and drain pipes, and expansion joints between bridge deck sections.

### Source Control and Monitoring

Due to the nature of TxDOT's MS4 linear corridor, the primary source of floatables is from public littering from vehicles. TxDOT implements a state-wide floatables source control and

monitoring through the “Don’t mess with Texas” campaign. This campaign uses research to identify the primary litterer profile and conducts targeted public education for source control. The campaign publishes “Attitude & Behaviors Results” presenting a state-wide public survey that identifies the current litterer profile, which is then used to prepare the program’s marketing efforts. The campaign also conducts state-wide visible litter studies to estimate the amounts and types of litter on Texas roadways, which is also used for targeted marketing efforts.

*C. Roadways: The permittees shall operate and maintain public streets, roads, and highways in a manner that minimizes the discharge of pollutants, including those pollutants related to deicing or sanding activities.*

**Description:** The City has an active storm drain inlet cleaning and maintenance program to remove pollutants before they reach receiving waters. The City also has an active spill response program that addresses both hazardous and non-hazardous spills to roads and streets. The City’s street sweeping program primarily involves routine sweeping in the downtown area and clean-up after deicing.

## **MAINTENANCE**

Street Services utilizes two, two-man, VACTOR crews to clean storm drainage structures. VACTOR is a highly specialized truck that utilizes high-pressure water hoses and a vacuum system. There are an estimated 30,000 curb inlets and drop boxes in Fort Worth and the VACTOR crews clean approximately 7% of these annually (10 per day, 200 working days per year). These crews work from a routine work schedule but also respond to complaints from citizens, neighborhood associations and others. The City has purchased additional VACTORS so that five crews can be deployed. Street Services also has three emergency trucks with two-man crews that are utilized in the event of storm drain system clogs, collapses or other emergency needs.

## **SPILL RESPONSE**

The City has a spill response program to remediate spills of hazardous and non-hazardous materials to the roads and streets. This program is described in detail in the “SPILL PREVENTION AND RESPONSE” section of this document. Primary response is through the Fire Department with assistance from TPW/ENV. The Street Services Division also occasionally assists by spreading aggregate over some spills to soak up the material. The material is swept up utilizing street sweepers with the material then being transported to a secure storage area for proper disposal. Spills, involving assistance from Street Services, are typified by hydraulic fluids leaking from a moving vehicle or an oil spill that vehicles have tracked through resulting in several blocks of streets being contaminated. When there is a large spill such as a gasoline tanker overturning, resulting in thousands of gallons of product entering the storm drain, Street Services assists by supplying large amounts of aggregate that is used to construct dams in the storm drain. This action effectively contains the spill and prevents a discharge to the Waters of the U.S.

## **STREET SWEEPING ACTIVITIES**

A private contractor is used to clean approximately 140 blocks of the Central Business District (downtown) on a weekly basis. This activity is funded by the Fort Worth Public Improvement District #1 and managed by Downtown Fort Worth, Inc. The primary function of this service is litter control though oil, grease and other pollutants associated with streets are effectively removed.

The City of Fort Worth Transportation and Public Works Department, Street Services Division, performs street sweeping for two primary activities. Street sweeping is performed before a street is seal coated to prepare the surface for treatment. The street is also swept after seal coating. Limited street sweeping is also performed to support other Street Services activities though this is not widespread and is more associated with “spot” treatments. The other main street sweeping activity is for the benefit of removing deicing materials after winter storms. During snow or icy weather, Street Services places aggregate on bridges, overpasses and selected streets to improve traction. If the aggregate is dry, no salt is added. However, if the aggregate is wet, a 1:29 (3.5%) ratio of salt is added to prevent the aggregate from freezing to the truck. To minimize pollutant discharges to the MS4, the aggregate is swept up after the storms have passed and then recycled whenever possible. The remaining dirt and salt is landfilled.

## **TXDOT ACTIVITIES**

### **Roadways**

TxDOT operates and maintains highways in a manner to minimize the discharge of pollutants, including those pollutants related to deicing or sanding activities. TxDOT reduces the discharge of pollutants from road repair, equipment yards, and material storage/maintenance facilities to the MEP. BMPs and state-wide programs described throughout this SWMP have the primary goal of minimizing pollutants from roadways, as the highways are TxDOT’s primary MS4 area of operation. In addition to these BMPs, TxDOT implements a number of programs, as presented in the following section, to minimize pollutant discharge.

#### Mowing and Vegetation Management

Mowing and vegetation management are an integral part of TxDOT’s highway maintenance program. The wildflower program is part of a comprehensive vegetation management program. It encourages the growth of native species that require less mowing and care. The native grasses and wildflowers help to conserve water, control erosion and provide a habitat for wildlife. The department normally plants over 50,000 pounds of wildflower seeds each year and has an annual landscaping budget of approximately \$10 million. Mowing is delayed until wildflowers have set mature seeds to assure the preservation and propagation of wildflower species. Detailed information on the wildflower program, as well as types of mowing, special situations mowing and litter pickup and non-mow areas, are located in the *Roadside Vegetation Management Manual*, June 2009.

## Material Storage/Stockpiles

*Materials Storage at Maintenance Facilities* - The Department's Division of Occupational Safety has implemented a program of inspection at each District/Section maintenance facility once every three years with an objective to note hazards within the workplace that may contribute to employee accidents or violate state and federal regulations (including water quality); the Fort Worth District performs these inspections on a monthly basis. The responses by the Districts and Sections have shown that the survey team is serving as educators as well as reporters. Following the report of the visit, the Districts have promptly addressed the adequate storage, handling, labeling and personal protection requirements involved with such items as solvents, wet batteries, paint/oil/grease barrels, etc.

*Stockpiled Materials* – Stockpile Management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials such as portland cement concrete rubble, reclaimed asphalt pavement (RAP), hot mixed-cold laid bituminous mixes, limestone rock asphalt, pre-coated aggregates, and various patching mixes.

TxDOT implements best management practices at all facilities that stockpile soil and other materials. Protection of stockpiles is a year-round requirement. To properly manage stockpiles TxDOT:

- Locates stockpiles away from concentrated flows of stormwater, drainage courses, and inlets.
- Protects all stockpiles from stormwater run-on using temporary perimeter sediment barriers such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers.
- Manages stockpiles of contaminated soil as follows:
  - Cover stockpiles with plastic sheeting or tarps.
  - Install berms around stockpiles to prevent runoff from leaving the area.
  - Does not stockpile in or near storm drains or watercourses.
- Place bagged materials on pallets and under cover.
- While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.

Non-active stockpiles of the identified materials are protected further as follows:

- During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

### Spill Response

TxDOT often discovers or is notified of hazardous material spills on right-of-way. A State accepted response plan calls for TxDOT's relationship with the TCEQ regarding clean-up of oil and hazardous material spills to be in a "coordination and support" role. TxDOT has an interagency agreement with the TCEQ that provides for the TxDOT's limited participation in cleanup of spills throughout the State. Implementation of the contract is accomplished through the Maintenance Division and the "TCEQ Spill Response Unit".

### Bridge, Heavy Equipment and Building Paint Removals

Bridge paint removal and application projects are closely scrutinized to ensure potentially hazardous materials do not adversely affect the environment. Sand blasting has typically been used in the cleaning and removal of paint from equipment and structures, particularly on maintenance of existing bridges. New air control regulations limiting airborne particles and the work locations near water impoundments has placed a greater awareness of the potential for environmental impact to receiving waters. Old paints often contain a substantial amount of heavy metals (lead, chromium), with some of the newer paints containing volatile organic compounds (VOC). Strict TxDOT requirements involving containment on site and disposal limitations are currently being developed. Recent letting of paint cleaning contracts on bridges have resulted in pessimism about the cost-effectiveness of the strict containment process, as compared to alternative re-construction. A moratorium on new cleaning contracts is currently in effect until the cost issue is resolved.

Before paint is to be removed, it is to be tested for heavy metals, especially lead. If lead is present, all blast material will be contained and collected. Blast material is to be tested for hazardous materials and disposed of properly. TxDOT, at several levels, is working with State and federal agencies in researching methods of encapsulating the resulting contaminant (usually lead) and containing blast sand into reusable material such as concrete or clay bricks.

Heavy equipment and building paint removal and application projects will continue to be performed by contract and state labor. As in bridge related projects, strict compliance with Departmental, state and federal standards and regulations will be followed.

### Other Maintenance Considerations

*Use of Right-of-Way by Others* – The primary use of the highway system other than for public travel is utility assignments on the right-of-way. TxDOT's utility policy applies to underground,

surface or overhead facilities. These are private lines as well as public, including power transmission, telephone, telegraph, television cable, water, gas, oil, petroleum products, chemicals, steam, sanitary sewer and similar lines. The Department utilizes a utility permit process with intent to regulate the location, design and methods for installation and adjustment of utility lines on State-controlled highways.

Under existing laws, various utility firms and agencies have a legal right to install their lines along and across State highways. Policies governing the design, location and methods of installation are set out in the Safety and Maintenance Operations Manual, and in the Utility Accommodation Policy Manual maintained by the Division of Right-of-Way. The Division of Right-of-Way's "Utility Manual" will give guidance in the administration of utility adjustments or financial participation therein. Although difficult to determine the legal status of some of the proposed installations, the Department maintains its rights to designate the location and conditions that will govern their installation and maintenance. There is general consensus that the utility policy should enforce more stringent water quality protection in the applicant's construction and maintenance procedures.

TxDOT is experiencing an increase in the requests to temporarily use highway right-of-way for investigation and remediation of leaking petroleum storage tanks (LPST's). The applicants are both private property owners and public entities. Through cooperation with the TCEQ, TxDOT is successfully using an agreement process with the LPST site owner and contractor. The disturbance to the roadside is minimal in the initial investigative stages of the work, but the applicant is instructed to follow an abbreviated planning and design process in the remediation stages involving construction/repair threatening the integrity of the system or inconvenience to the traveling public.

The Divisions of Right-of-Way, Construction, Contract Services, and Maintenance have developed rules and policy for allowing this and other such temporary uses of right-of-way. In the tank program a written confirmation by TCEQ or EPA stating agency requirements of investigation/remediation, possibly requiring use of the highway roadside, is normally a required attachment to the Agreement.

#### Sanding and De-icing Activities

Removal of snow and ice from the roadway is classified as an emergency operation that takes precedence over all other work to ensure public safety. Deicing magnesium chloride (Meltdown 20®) is used on a limited basis by TxDOT. The preferred method of maintaining a safe roadway during icy conditions is through the use of sand without magnesium chloride. Only during the most severe conditions will magnesium chloride be mixed with the sand, at approximately 100 pounds per cubic yard of sand. During and after the icy conditions, inspections are conducted to ensure proper cleanup operations minimize pollutant discharge from the MS4.

## Roadway Maintenance

TxDOT engages in earth-disturbing operations during regular maintenance of roadways. These operations, such as shoulder blading and ditch cleaning, do not presently meet the definition of construction activities as regulated by the TPDES program, but TxDOT encourages the use of controls to limit erosion and sedimentation resulting from these projects. Most highway maintenance sites experience little erosion as the work is performed as follows:

- At the proper time of year (season),
- At a location protected from sensitive environments,
- With minimal land area disturbance, and
- Only after an investigation/knowledge of area soils.

During usual maintenance, minimal amounts of land area are disturbed or rehabilitated into additional paved surface areas, which would increase stormwater runoff. Ditch work is scheduled in seasons when the vegetation will recover, or seeding, sodding and fertilizing could safely be utilized.

## Storm Sewer System and Drainage Ditch Cleaning

Drainage ditches are cleaned on an as needed basis during the summer. During the winter, all state-owned drainage ditches are systematically cleaned. Stormwater structures are cleaned on an as needed basis as identified by inspection procedures.