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| Title | ES-301-4.08 Inspection and Maintenance of MS4 Structural Controls |
| Document Owner: | Tom Somers |
| Revision Date: | March 4, 2020 |

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1) Activity Description: MS4 Maintenance and Operations Procedures for DEN

Stormwater control structures in the City and County of Denver (CCD) are maintained pursuant to the requirements of Colorado Discharge Permit System (CDPS) Permit No. COS-000001 for stormwater discharges from CCD's Municipal Separate Storm Sewer System (MS4). At DEN, structural controls are maintained under two separate sets of requirements. Ponds and conveyances associated with the stormwater system are managed pursuant to the requirements in the CCD MS4 permit. Ponds and conveyances associated with industrial systems [such as the spent ADF collection system] are managed in accordance with ES-308-03.03 Maintenance of Sewer System Work Instruction.

This document applies to MS4 structures used in the conveyance of stormwater flows through DEN to receiving waters of the State. These structures include, but are not limited to, storm sewer inlets, detention ponds, improved and unimproved channels, the storm sewer collection system, catch basins, and siphons.

Each operator and tenant conducting the inspection and maintenance of MS4 structural controls is responsible for understanding the applicable regulations and managing their activities accordingly; this Environmental Guideline is meant as guidance only and does not supersede any regulations.

Municipally owned structural controls should be inspected on a periodic basis to reduce pollutants in discharges from the MS4, ensure protection of the City's MS4 system and State receiving waters, and ensure proper functioning of the MS4 system. Improper operation as a result of lack of inspection and maintenance can lead to storm sewer overflows (flooding) and excessive debris build up, which leads to other environmental concerns.

Regional drainage ways at DEN are maintained by the Urban Drainage and Flood Control District (UDFCD). Pond T-239 is maintained by UDFCD. In addition, the Peña Boulevard Ponds will be inspected and maintained as detailed in the MOU between the City and County of Denver Department of Public Works and the developers.

Maintenance of structural controls shall, at a minimum, meet or exceed recommendations outlined in the most recent version of the Urban Drainage and Flood Control District's Urban Storm Drainage Criteria Manual's Volume 3 – Best Management Practices.

* This EG is one of several specifically identified procedures for activities/facilities that are required by the Pollution Prevention/Good Housekeeping section of CCD's MS4 permit. Related procedures not specifically addressed in this EG include, but not limited to, those identified in the Reference section of this document.

2) Potential Environmental Risks

A. The following environmental concerns are associated with these activities:

- Uncontrolled releases
- Storm sewer overflow
- Plugging of outlet structures
- Contamination of soil and/or groundwater
- Flooding
- Odors
- Contamination of surface water
- Aesthetics (trash, mowing)
- Illegal dumping & discharge
- Sediment & erosion control
- Nuisance control (pests, odor)

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- B. Potential consequences from performing the activity incorrectly:
- Personal injury, property damage, or long-term damage to the environment
 - Possible regulatory noncompliance, Notices of Violation, and related [financial & non-financial] penalties

3) Critical Requirements and Tasks

A. Prohibited Activities

- i) Washing spills into the sewer system is prohibited.
- ii) Discharges to State Waters without a permit.
- iii) Discharge of the following materials down any drain is prohibited:
 - Any oils or grease
 - Pesticides, insecticides, or herbicides
 - Solvents
 - Solids of any kind, including soils
 - Generally prohibited discharges as specified by Metro Wastewater and Denver Wastewater rules and regulations
- iv) Disposal/discharge of wastewater into any storm drain, inlet, etc. or waterway is prohibited.
- v) Transporting waste liquids and solids contained in equipment and originating from off-site onto DEN property is prohibited without prior approval from DEN Environmental Services (ES).
- vi) Disposal of materials into the deicing waste (DIW) system (e.g., slot drains, ponds) without prior approval from DEN ES is prohibited.

B. General Considerations

- i) Obtain all applicable federal, state, and local permits for construction projects.
 - Either one or both the Colorado Stormwater Construction General permit and/or the Denver Construction Activities Stormwater Discharge Permit apply to construction sites meet one or more of the following criteria:
 - Disturbing one acre or more, or less than one acre but part of a larger common plan of development,
 - Are part of a larger common plan of development is defined as a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan,
 - The site has been identified as having a significant potential for erosion, based on site characteristics including steep topography,
 - The site is not known to contain contaminated soils or pre-existing environmental impairment, and
 - The site is not directly adjacent to receiving waters (i.e. creek, stream, river, pond, lake, etc.).
 - A dewatering permit may be required if construction activities require the removal and discharge of groundwater offsite.
 - A U.S. Army Corp of Engineers (USACE) Section 404 Permit may be needed if the work will be conducted in or impact waters of the United States, including wetlands, washes, drainages, ditches, creeks, streams, and rivers.
- ii) Applicable sediment and erosion controls shall be installed to prevent illegal discharges to the storm sewer or waterways, such as inlet protection, silt fence, sediment traps, erosion control logs, check

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dams, and vehicle tracking control. Sediment and erosion controls will be installed and maintained in accordance with approved design criteria and/or industry standards.

- iii) Protect storm drain inlets and drains with curb socks, rock berms, inlet protection, or drain covers/mats prior to any activity.
- iv) Sediment, debris, and litter removed from structures will be disposed of in accordance with regulatory requirements. Disposal of solid waste on DEN property is prohibited without prior DEN ES approval. Manage wastes generated during maintenance activities in accordance with ES-301-6.01: General Waste Management.
- v) Where feasible, schedule maintenance activities during dry weather.
- vi) Stay alert for any signs of illicit discharges. This includes “dry weather” flows or pipes or hoses emptying directly into waterways or the storm sewer system.
- vii) Leaking material containers should be properly discarded and replaced.
- viii) Store materials in containers under cover when not in use and away from any storm drain inlet.
- ix) Keep impervious surfaces clean of debris and sediment to avoid transport of materials into the MS4.

C. Employee Training

- i) Training will be conducted as necessary to conduct the Activity as described herein and to inform employees of impacts associated with illegal discharges and improper disposal of waste from municipal operations.
- ii) Records of on-the-job training are not required. Records of formal employee training, if provided, shall be retained.

D. Storage & Material Handling Requirements

- i) Store materials per RCRA-approved methods.
- ii) Maintain legible labels and markings on all containers and tanks.
- iii) Ensure adequate secondary containment for all bulk storage containers, and that all containers and containment are in good operating condition.

E. Emergency Response

- i) Call DEN Communications Center immediately at 303-342-4200 for all spills.
- ii) If a spill occurs, refer to Environmental Guideline ES-301-5.02 Spill Response.
- iii) Control spills to minimize property damage and eliminate imminent risk to human health and the environment.
- iv) Containerize all collected wastes and evaluate for labeling, storage and disposal.

4) Tenant Inspection and Maintenance Requirements:

Private tenants are responsible for the maintenance of structural controls on or that service leased property pursuant to agreements signed with DEN. Tenants should periodically inspect structural controls and remove sediment, trash, and debris when observed.

DEN ES performs periodic inspections of tenant-operated structural controls. The Pond Inspection Checklist located in ES Data Files/Recordkeeping Forms can be utilized to document the DEN ES inspections; however, there is no required field documentation necessary for the field inspection. The inspector makes visual observations and compiles a report summarizing these observations. If proper maintenance activities are not occurring as required, a report will be submitted to the DEN Properties Department for evaluation and compliance with applicable agreements signed with DEN.

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Expected Records / Outputs:

- Tenants should utilize the “Pond Inspection Checklist” (provided at end of this EG) or similar document to record inspection and maintenance activities.
- Results of DEN ES inspections will be recorded on the Maintenance of Structural Controls Reporting Form (ES Data Files/Recordkeeping Forms) for incorporation into the CCD MS4 Annual Report.

5) DEN Inspection and Maintenance Requirements:

Maintenance activities are initiated by FAA requirements, field observations made during normal daily activities, or based on the results of the DEN ES inspection. Depending on the level of maintenance required, DEN Field Maintenance or a contractor will provide maintenance activities for the municipally owned and operated MS4 system. These activities include but are not limited to, mowing operations to limit unwanted vegetation and to improve aesthetics, removal of debris and litter to minimize inlet/outlet clogging, repair and re-vegetation of eroded areas, and remove accumulated sediment near culverts, in channels, and pond bottoms to maintain flow capacity.

DEN ES performs an annual inspection of municipally owned and operated structural controls to identify issues and ensure that proper maintenance activities are occurring. The Pond Inspection Checklist located in ES Data Files/Recordkeeping Forms can be utilized to document the DEN ES inspections; however, there is no required field documentation necessary for the field inspection. The inspector makes visual observations and compiles a report summarizing these observations. If maintenance is required a report will be submitted to the Director of Field Maintenance for evaluation to determine the level of maintenance required.

Detention Facilities

A detention facility is a sedimentation basin designed to totally drain dry sometime, usually within 40 hours, after stormwater runoff ends. The ponds are considered “dry” because they are designed not to have a significant permanent pool of water remaining between storm runoff events. Therefore, standing or pooling water during dry periods is an indication that maintenance may be required.

- Debris and litter removal will be conducted based on visual inspection.
- Mowing operations will be conducted on an as needed basis.
- Non-irrigated native grasses should be 4 to 6 inches tall.
- Erosion and sediment control issues will be addressed as necessary based on visual inspection.
- Sediment removal from the fore bay, micro-pool, and the pond bottom will take place based on visual inspection.
- Repair and revegetation of eroded areas of basins and channels will take place on an as needed basis.

Improved and Unimproved Drainage Ways and Storm Sewer System

Improved channels consist of engineered channels that are lined with riprap, concrete, or other materials that provide protection and / or improve flows. Unimproved channels are vegetated or un-vegetated drainage ways with low pitched side slopes that collect and slowly convey runoff. The Storm Sewer System includes inlets, catch basins, siphon sets, mainline pipe and associated fittings. Standing or ponding water during dry periods is an indication that maintenance may be required.

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- Improved channels require periodic maintenance including debris and sediment removal, patching, joint repair, riprap adjustment, and other such activities.
- Mowing operations will be conducted on an as needed basis.
- Debris, litter, and sediment removal will be conducted as needed based on visual inspection.
- Erosion and sediment control issues will be addressed as necessary based on visual inspection.
- Sediment in the channel should not reach a depth of 6 inches or impede the intended flow.

Expected Records / Outputs:

- MS4 related maintenance activities conducted by DEN Field Maintenance shall be recorded in the DEN Maximo system. Recorded information should include costs incurred and total hours for the activity. This information will be incorporated into the CCD MS4 Annual Report.
- Results of the annual DEN ES inspection will be recorded on the Maintenance of Structural Controls Reporting Form (ES Data Files/Recordkeeping Forms) for incorporation into the CCD MS4 Annual Report.

6) References

A. Phone Numbers

DEN Communications Center (for Spill Reporting) (303) 342-4200
 Tom Somers (DEN Environmental Services) (303) 342-2733
 DEN Environmental Services (Main Line)(303) 342-2730

B. Guidance Materials (list not limited to the following)

- SDSs
- DEN Stormwater Management Plan (SWMP)
- DOT Labeling and Placarding Guidance
- SPCC Plan
- Urban Drainage and Flood Control District’s Urban Storm Drainage Criteria Manual Volume 3 – Best Management Practices

C. Related Environmental Guidelines (list not limited to the following)

Note: The following list identifies procedures related to MS4 Operations and Maintenance Procedures but may not be all-inclusive. The following procedures are considered primary documents for purposes of compliance with the MS4 permit.

- ES-301-1.02 Cleaning/Washing – Aircraft, Vehicles, and Equipment
- ES-301-1.07 Storage of Vehicles and Equipment Containing Chemicals
- ES-301-2.05 Cleaning/Washing – Indoor Industrial Surfaces
- ES-301-2.07 Maintenance of Pretreatment Devices
- ES-301-3.01 Construction
- ES-301-3.02 Planning and Design
- ES-301-4.01 Management of Pesticides and Herbicides
- ES-301-4.03 Cleaning/Washing – Outdoor Areas and Structures
- ES-301-4.06 Pavement Deicing

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- ES-301-5.02 Spill Response
- ES-301-6.01 General Waste Management

D. Applicable Regulations (list not limited to the following)

- 40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
- 40 CFR 122-124 NPDES Regulations for Storm Water Discharges
- 40 CFR 260-262-273 Federal RCRA Regulations
- 6 CCR 1007-3, Part 261 State RCRA Regulations
- CCD MS4 Permit
- CCD Ordinances
- Denver Wastewater Management Division Rules and Regulations
- Metro Wastewater Reclamation District Rules and Regulations
- DEN Rules and Regulations
- CCD Mayor's Executive Orders

E. Other Documents

- DEN Managers Bulletins

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POND INSPECTION CHECKLIST

Pond Inspected (#): _____ Inspector's Name: _____

Date of Inspection: _____

| Inspected Item | Overall Condition | Maintenance Needed | Comments |
|--|-----------------------|--------------------|-----------------------------------|
| A. SEDIMENT/DEBRIS/LITTER | <i>Good/Fair/Poor</i> | <i>Yes/No</i> | |
| Sediment Deposits | G F P | Y N | Depth (in.) = |
| Debris in pond | G F P | Y N | |
| Litter | G F P | Y N | |
| B. VEGETATION | | | |
| Vegetative Cover | G F P | Y N | |
| Seeding Required | | Y N | Location: Approx. (Sq. Ft.): |
| Mowing Required | | Y N | |
| C. OUTLET STRUCTURE | | | |
| Trash Rack | G F P | Y N | |
| Orifice Plate | G F P | Y N | |
| Outlet Structure | G F P | Y N | |
| D. POND BOTTOM | | | |
| Concrete Trickle Channel (if present) | G F P | Y N | |
| Side Slopes | G F P | Y N | |
| Inflow Pipes | G F P | Y N | |
| E. ADDITIONAL ITEMS: | | | |
| F. MAINTENANCE REQUIRED: | | | |

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