

## **Appendix F**

### **Long Term (Post-Construction) Stormwater Management Program-MCM 5**

*Post Construction (Long term) Plan*

*Commercial Post Construction SWMP*

*Residential Post Construction SWMP*

*Residential Private Post Construction Inspection form for SWMP*

*80th percentile spreadsheet MSD (0.55'average depth)*



## **Standard Operating Procedures (SOPs) for Post-Construction Stormwater Permit Requirements**

### **I. Purpose**

This SOP outlines procedures and responsibilities for meeting the post-construction and permanent BMP requirements in the Greater Salt Lake Municipal Services District (MSD) stormwater discharge permit.

The post-construction requirements include:

- A. Inspection and maintenance of public and private BMPs
- B. Certification of design of permanent BMPs

### **II. References**

1. Greater Salt Lake Municipal Services General Permit for Stormwater Discharges Associated with Municipal Separate Storm Sewer Systems (MS4s), Authorization to Discharge under the State of Utah Discharge Permit System (UPDES). UPDES Permit Number UTS0000003.
2. Municipal Services Code Chapter 17.22, Stormwater Illicit Discharges and Permit Requirements
3. Salt Lake County Public Works and Flood Control Engineering: Public Improvement Design Standards and Construction Specifications (most recent revision)

### **III. Definitions/Abbreviations**

1. BMP: Best Management Practice
2. SLCOHD: Salt Lake County Health Department and Environment
3. UPDES: Utah Pollution Discharge Elimination System
4. EPA: Environmental Protection Agency
5. GIS: Geographic Information System
6. MS4: Municipal Separate Storm Sewer System
7. PWOPS: Public Works Operations Division
8. NOV: Notice of Violation
9. SLCOPW: Salt Lake County Public Works
10. SOP: Standard Operating Procedure
11. SWMP: Stormwater Management Plan
12. GSLMSD: Greater Salt Lake Municipal Services District
13. MSD: Municipal Services District

#### **IV. Prerequisites**

##### **1. Training and Certification**

- 1.1 Internal training for the Municipal Services District personnel on maintenance and safety procedures. Use of
- 1.2 Permits Eprocess360 data base
- 1.3 Use of City Works, including database.
- 1.4 Basic GIS functions

##### **2. Support Functions or documents**

- 2.1 Municipal Services District Permit Application
- 2.2 As-built development plans including BMP designs
- 2.3 SWMP Review Checklist
- 2.4 EProcess360 permits tracking and record-keeping system & Enforcement response plan
- 2.5

#### **V. Standard Operating Procedures**

##### **1. As-built plans, operating agreements and BMP inspections**

- 1.1 Owner submits as-built plans and certification by a professional engineer verifying that permanent BMPs have been installed per approved plans and specifications to the MSD.
- 1.2 Owner submits inspection and maintenance agreement as required by the Municipal Services to the Stormwater Construction Supervisor.
- 1.3 Development Review Inspectors & Engineer (when applicable) inspect permanent BMPs to insure compliance with as-built plans.
- 1.4 Stormwater Construction Supervisor files the plans, Maintenance agreement and Management plan in the project file.
- 1.5 Stormwater Construction Supervisor provides a copy of plans and Agreements to the staff for mapping on the Utilisync program.
- 1.6 A copy of the inspection and maintenance agreement will be maintained on the Utilisync program as part of post construction inspection program.
- 1.7 Engineering Construction Inspectors notify the Bonding Coordinator that financial security can be released.

##### **2. Mapping and inventory**

- 2.1 Flood Control Engineering staff enters BMP locations and sizing information in to the stormwater GIS for tracking.
- 2.2 MSD staff link BMP information and maintenance agreements into Utilisync.
- 2.3 MSD maintains records of inspections and agreements in Utilisync

3. **BMP Inspection and Maintenance – County Owned Facilities**
  - 3.1 PWOPs staff schedules, assigns and completes annual inspections of BMPs
  - 3.2 PWOPs staff schedules and performs maintenance of BMPs based on inspections
  - 3.3 PWOPs staff tracks and records maintenance activities.
  - 3.4 PWOPs staff keeps database of maintenance records
  
4. **BMP Inspection and Maintenance – Privately Owned Facilities**
  - 4.1 Municipal Services District staff sends certification forms to owners of private systems once per year
  - 4.2 Owner submits copy of annual inspection and maintenance records and a signed certification that BMPs are being inspected and maintained according to the approved maintenance agreement once per year
  - 4.3 MSD staff annually inspects a representative sample of private BMPs each year to determine compliance with maintenance agreements and completes inspection of all private BMP's a minimum of once every five years.
  - 4.4 MSD staff documents results of inspections and initiates enforcement for non-compliance in accordance with enforcement response plan
  - 4.5 MSD staff provides inspection data to the Program Manager for inclusion in Annual Report to the EPA.
  - 4.6 Municipal Services staff maintains a database of facilities and records of maintenance agreements and annual certifications
  
5. **Violations and Enforcement**
  - 5.1 MSD certified Inspection staff documents violations of inspection and maintenance agreements or the Owners' failure to submit annual certifications
  - 5.2 MSD Inspection staff provides documentation to the Stormwater Construction Supervisor and Program Management staff
  - 5.3 Stormwater Construction Supervisor & Program Manager prepares and issues NOVs, penalty assessments or other enforcement actions per Enforcement Response Plan

6. **third party or public reports of BMP malfunction or improper maintenance**
  - 6.1 Public or third-party reports of inadequate maintenance or malfunctions of BMPs are routed to PWOPs, Flood Control Engineering or Salt Lake County Health Department and the Stormwater Construction Supervisor.
  - 6.2 MSD Inspection staff verifies problems and, if immediate action is not required, submits documentation to the Program Manager & the Stormwater Construction Supervisor for follow-up.
  - 6.3 The Stormwater Construction Supervisor and /or Program Manager issues an NOV informing Owner(s) of their responsibilities and requiring the situation to be corrected.
  - 6.4 If Owner(s) do not comply, the Program Manager may follow up with additional enforcement as outlined in the Enforcement Action Plan.
  
7. **Abatement of violations**
  - 7.1 MSD Inspections and PWOPs staff responds to BMP maintenance problems or malfunctions that require immediate resolution because of public safety or welfare.
  - 7.2 County staff abates violation using County resources or contract services.
  - 7.3 County staff records cost of abatement and submits to either the Salt Lake County District Attorney's Office or the Greater Salt Lake Municipal Services District Attorney for reimbursement.
  - 7.4 The Program Manager and /or the Stormwater Construction Supervisor will issue NOVs and penalty assessments, to the Salt Lake District Attorney's or the Greater Salt Lake Municipal Services District Attorneys Office for collection.



## Post Construction Storm Water Management Plan

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Commercial Best Management Practices (BMPs) are those measures and/or practices to be maintained by the property owner or operator to prevent illicit discharges, pollutants and other contaminants from entering the MSD storm water system. These measures and practices are to be implemented upon completion of construction activities, to be conducted and maintained in perpetuity and will typically address the following:

- \* Inspection and cleaning of oil/water separator and catch basin - Oil/water separator and catch basin are to be inspected monthly and oil/water separator is to be cleaned at least every six months.
- \* Parking area cleaning and sweeping - Parking lots are to be cleaned and swept at least quarterly to prevent pollutants from entering the storm drain system.
- \* Waste management and disposal- Wastes will be limited to standard trash and recycling materials that will be disposed of in covered standard waste bins and disposed of by a licensed waste removal company.
- \* Landscape maintenance - Owner is responsible for general landscape maintenance. The landscape maintenance will consist primarily of grooming & watering.
- \* Employee training - Property owner is to provide or require training in storm water quality management and required BMPs. Employee training in storm water quality management and required BMPs shall be integrated with any other existing employee training programs.
- \* Record of inspection, maintenance and training activities - These shall be kept on site and made available for review by Municipal Services and/or State Officials upon request. An inspection of the site will be conducted by the MSD annually, or more frequently as may be deemed necessary.

The objectives of the plan are to:

1. Control soil erosion
2. Control discharge of sediment into storm drainage facilities or off-site
3. Prevent illicit discharge into on-site soils, into storm drainage facilities or offsite

**If** the objectives of the plan are not being met, the site operator or owner shall make adjustments to the plan as needed to accomplish its purposes.



## Post Construction Storm Water Management Plan

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Residential Best Management Practices (BMPs) are those measures and/or practices to be maintained by the property owner or operator to prevent illicit discharges, pollutants and other contaminants from entering the city storm water system. These measures and practices are to be implemented upon completion of construction activities, to be conducted and maintained in perpetuity and will typically address the following:

- \* Inspection and cleaning of oil/water separator and catch basin - Oil/water separator and catch basin are to be inspected monthly and oil/water separator is to be cleaned at least every six months.
- \* Parking area cleaning and sweeping - Parking lots are to be cleaned and swept at least quarterly to prevent pollutants from entering the storm drain system.
- \* Waste management and disposal - Wastes will be limited to standard trash and recycling materials that will be disposed of in standard waste bins and disposed of by a licensed waste removal company.
- \* Landscape maintenance - Owner is responsible for general landscape maintenance. The landscape maintenance will consist primarily of watering.
- \* Employee training - Property owner is to provide or require training in storm water quality management and required BMPs. Employee training in storm water quality management and required BMPs shall be integrated with any other existing employee training programs.
- \* Record of inspection, maintenance and training activities - These shall be kept on site and made available for review by county and/or state officials upon request. An inspection of the site will be conducted by the city annually, or more frequently as may be deemed necessary.

The objectives of the plan are to:

1. Control soil erosion
2. Control discharge of sediment into storm drainage facilities or off-site
3. Prevent illicit discharge into on-site soils, into storm drainage facilities or offsite

If the objectives of the plan are not being met, the site operator or owner shall make adjustments to the plan as needed to accomplish its purposes.

## Residential Post Construction Example Inspection SWMP



### MAINTENANCE INSPECTION REPORT POST CONSTRUCTION PRIVATE STORMWATER BMP MAINTENANCE

#### INSPECTION PROCEDURE

These instructions and inspection report can serve as a Standard Operating Procedure (SOP) to comply with The Utah Department of Environmental Quality mandate that private stormwater facilities that discharge to Salt Lake County MS4 are properly inspected annually. At the discretion of the P.W. Engineer, some sites will require additional site specific SOP in addition to the following:

Site evaluation- Submit a copy of the inspection report to Salt Lake County Township office by July 31st of each year.

1. **Dumping Evidence:** Evaluate catch basins, inlets, manholes, gutters etc. for the presence of stains from dumping or paints, thinners, oils, or other hazardous substances.
2. **Spill Evidence:** Evaluate pavements and soils for spills, particularly for evidence of neglected spills.
3. **General Site Exposure:** Evaluate materials, devices, and operations that are exposed to weather. Inspect to verify that BMPs are in place or that there are practices that will contain or minimize pollutants and pollutant sources. Look for uncontained waste material, oil, antifreeze, cleansers and other materials and chemicals that could seep into the ground, enter the storm drain system, or affect water quality.

Other Pollution Sources: Evaluate any activity or operations that are or may pollute the environment.
4. **Stormwater Storage:** Inspect for proper maintenance and condition of detention/retention ponds. Check for proper capacity, debris or sediment accumulation, and that overflow devices are in place and in good condition, etc.
5. **Inlets and catch basins:** Inspect for proper maintenance and function of stormwater inlets and catch basins. Inspect for pollutants, debris, and excessive amounts of dirt and sediment. Inlets, basins, and covers should be in good working order.
6. **Conveyance Systems:** Inspect for proper maintenance, condition, and function of stormwater pipes, catch basins, swales, ditches and other conveyances.
7. **Manholes:** Inspect manholes for condition, debris, excessive amounts of sediment, proper maintenance, and function.
8. **Parking:** Inspect parking areas for proper maintenance and condition. Inspect for pollutants, spills, etc. Pavement areas should indicate regular sweeping activity and maintenance.
9. **Waste Collection:** Inspect for proper maintenance and function of waste collection facilities. Inspect for stains and leaks from containers. Ensure that lids are kept closed.
10. **Landscaping:** Inspect for condition, maintenance, and function. Inspect for excessive debris. Ensure proper application of chemicals by looking for accumulation of excess fertilizers, herbicides, insecticides, etc.
12. **Pre-Treatment Devices:** Inspect pre-treatment devices for proper maintenance and condition. Pre-treatment devices are devices such as hooded outlet cover (Snout), grease/sand interceptors, or other devices designed to remove pollutants from stormwater.
13. **Sumps:** Inspect for proper maintenance and condition of Sumps, Class-V Injection Wells, and other similar underground devices designed to collect stormwater and percolate it to the ground.
14. **Flow Control Devices:** Inspect for proper maintenance and function of Weirs, orifice plates and other similar flow control devices.
15. **Site Specific SOP Items:** Certain land uses require site specific stormwater management SOP's to ensure the quality of stormwater that is discharged from a site. Review site inspections for compliance with site SOPs. Evaluate the current SOP's and modify, update, or amend them as needed.
16. **Other:** Inspect other post construction stormwater items for proper function. This could include Pumps, Vaults, Backflow Devices, Bio-Filters, Bio-Retention Areas, Permeable Pavement, Green Roofs, etc.





Exhibit B

Storm water Management BMP  
Schedule of Long Term Maintenance  
Activities in Salt Lake County, Utah

Activity	Frequency	Notes
Inspection	Annually	It is recommended that the SMP Operation and Maintenance Inspection Report, referenced by this agreement, be used as a guiding document. This annual inspection should be submitted to Salt Lake County upon completion.
Mowing and maintenance of vegetation	Variable, depending on vegetation and desired aesthetics	Landscaping and vegetation should be cared for throughout the year to ensure that proper sediment removal and infiltration is maintained and the Facilities remains aesthetically appealing.
Remove trash and debris	As needed or following each storm	Trash and debris should be removed regularly to ensure that the Facilities function properly and operate effectively. Trash often collects at inlet and outlet structures.
Inspect and maintain inlet and outlet structures	Annually	The inlet and outlet structures should be inspected for damage and proper operation.
Sediment removal	Variable (5-10 years is typical)	The removal of sediment is necessary if the Facilities begin to lose capacity or effectiveness.

Residential Private Inspection Form Example



SMP OPERATION AND MAINTENANCE INSPECTION REPORT  
POST CONSTRUCTION PRIVATE STORMWATER BMP MAINTENANCE

Site Name:		Date of Evaluation:						
Site Address:								
Facility Contact Information								
NAME and MAILING ADDRESS		Phone	E-MAIL ADDRESS					
SITE CONTACT:								
INSPECTOR CONTACT:								
BUSINESS TYPE: INSTITUTIONAL     COMMERCIAL     INDUSTRIAL     OTHER _____								
Circle Business type								
Are SOP's for Stormwater Post Construction Inspections implemented and available for review?     YES     NO								
Circle Answer								
Orifices Required for site     YES     NO     Critical Size:		Hooded or other cover (if new) Required for site     YES     NO						
Circle Answer								
Item's Inspected	Checked		Maintenance Req'd?		Is there excessive accumulation of debris or sediment?		Observations and Remarks	Deadline for corrective action
	Yes	No	Yes	No	Yes	No		
1. Dumping Evidence								
2. Spill Evidence								
3. General Site Exposure								
4. Other Pollution Sources								
5. Stormwater Storage condition and capacity (detention/retention ponds)								
6. Inlets and catch basins								
7. Conveyance System								
8. Manholes								
9. Parking								
10. Waste Collection								
11. Landscaping								
12. Pre-Treatment devices								
13. Sumps								
14. Flow Control devices								
15. Site Specific SOP Items								
16. Other								
Notes:								
Print Name:				Date:				
Signature:				Title or Position				

*80th percentile Spreadsheet for MSD areas*

*Data was Calculated by Robert Thompson for various elevations of 4 areas in the MSD:*

1. *Brighton Cabin*
2. *Mt Dell*
3. *White City*
4. *Magna*

The 70<sup>th</sup> percentile was 0.46 Inches of rain

The 80<sup>th</sup> percentile was 0.56 inches of rain

The 90<sup>th</sup> percentile was 0.75 inches of rain

It was decided that averaged with all areas, 0.55 inches of rain, would correctly capture the 80<sup>th</sup> percentile storm for all MSD areas.