

# CHAPTER 12 – MAINTENANCE, TRACTS AND EASEMENTS



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## **12.1 MAINTENANCE**

### **12.1.1 INTRODUCTION**

Insufficient maintenance of stormwater control facilities can lead to poor performance, shortened life, increased maintenance and replacement costs, possible property damage, and regulatory non-compliance.

The local jurisdiction maintains the stormwater system structures located within the public road right-of-way (ROW) and structures located within border easements that serve public road runoff, unless a formal written agreement assigns the responsibility to a different entity. Unless otherwise established and formal written agreement, the project proponent is to provide for the perpetual maintenance of all elements of the stormwater system located outside of the public ROW. When applicable, the following items shall be submitted for all land actions:

- A copy of the Conditions, Covenants and Restrictions (CC&R's) for the Homeowner's Association (HOA) or other legal entity in charge of operating and maintaining all elements of the stormwater system;
- A Financial Plan outlining the funding mechanism for the operation, inspection, maintenance, repair, and replacement of the private stormwater system, including contingencies; and,
- An Operations and Maintenance (O&M) Manual.

### **12.1.2 HOMEOWNER'S AND PROPERTY OWNER'S ASSOCIATION**

For privately maintained stormwater systems in residential neighborhoods, an HOA, or another legal entity shall be formed to maintain the facilities located outside of the public ROW. Alternatively, the HOA or other legal entity may contract with the local jurisdiction to maintain the facilities for an agreed upon reimbursement rate.

A draft copy of the CC&R's for the HOA in charge of operating and maintaining the facilities associated with the stormwater system shall be submitted as part of the Drainage Submittal review package. The CC&R's are to summarize the maintenance and fiscal responsibilities of the HOA, reference the O&M Manual (Section 12.1.3), and include a copy of the sinking fund calculations and Financial Plan (Section 12.1.4). The annual HOA dues need to include the funds for the annual operation and maintenance of all facilities associated with the stormwater system, and funds for the eventual replacement of these facilities.

For commercial/industrial and multi-family residential developments with joint stormwater systems and multiple owners, a Property Owners Association (POA) or similar entity such as a business association shall be formed, or a reciprocal use agreement executed.

### 12.1.3 OPERATION AND MAINTENANCE MANUAL

For stormwater systems serving single-family residential neighborhoods, or other land-use actions operated and maintained by an HOA or POA, an O&M Manual is required. The O&M Manual summarizes the tasks required to ensure the proper operation of all facilities associated with the stormwater system and must include, as a minimum:

- Description of the entity responsible for the perpetual maintenance of all facilities associated with the stormwater system, including legal means of successorship;
- Description of inspection and maintenance tasks to be performed;
- Frequency of inspection and maintenance activities;
- Expected design life and replacement schedule of the various components;
- A general site plan (drawn to scale) showing the overall layout of the site and all the facilities associated with the stormwater system;
- Locations and operations of any offsite drainage facilities being installed to accommodate project drainage; and
- Inspection Recording form.

Maintenance guidelines for various stormwater facilities (water quality, flow control, and energy dissipators) are provided in Appendix 12A to assist the project proponents in developing the O&M Manual. The guidelines are copied from the *Stormwater Management Manual for Eastern Washington* (Washington Department of Ecology, 2004). Note that not all systems detailed in these maintenance criteria are approved for full use in all areas of Central Oregon. Refer to Chapters 6 and 7 for facility design guidelines and applicability criteria.

### 12.1.4 FINANCIAL PLAN

The Financial Plan is to provide the following items:

- A list of all stormwater related structures/facilities and their expected date of replacement and associated costs;
- Sinking fund calculations that take into consideration probable inflation over the life of the infrastructure and estimates the funds that need to be set aside annually. The dues collected by the HOA or POA need to include funds for the operation and maintenance of the facilities associated with the stormwater system. An example is provided in Appendix 12B; and,
- A mechanism for initiating and sustaining the sinking fund account needs to demonstrate that perpetual maintenance of all facilities associated with the stormwater system will be sustained.

### 12.1.5 MAINTENANCE ACCESS REQUIREMENTS

An access road is required when the stormwater system facilities/structures are located 8 feet or more from an all weather drivable surface and are maintained by the local jurisdiction. Privately maintained facilities located 25 feet or more from an all weather drivable surface are also required to have an access road. When required, maintenance access drives shall meet the following minimum requirements:

- Access drives shall consist of an all weather, drivable surface, 12 feet or greater in width on straight sections and 15 feet or greater on curves;
- Access drives shall be located within a 20 feet minimum width (or as required by the horizontal alignment requirements) tract or easement, extending from a public or private road;
- The horizontal alignment shall be designed and constructed to accommodate the turning movements of a Single-Unit Truck design vehicle as defined by AASHTO (See AASHTO-Geometric Design of Highways and Streets, Exhibit 2-4, 2001 Edition). The minimum outside turning radius should be 50 feet;
- A paved apron must be provided where access roads connect to paved public roads; and,
- Gravel maintenance roads shall have a minimum of 6 inches of crushed surfacing top course, in accordance with ODOT Standard Specifications and shall be designed to support the heaviest anticipated maintenance vehicle year round.

The items below are only required when the local jurisdiction has assumed the responsibility of the maintenance and operation of the facilities. However, it is recommended that access drives for privately maintained facilities are also designed to meet the following criteria:

- Access drives shall have a maximum grade of 15 percent;
- If the maintenance access drive is greater than 150 ft. in length, a turn-around is required at or near the terminus of the access drive. Turnarounds are required for long, winding, or steep conditions, regardless of the length of the drive, where backing up would otherwise be difficult; and,
- Turnarounds shall conform to the local fire department requirements.

### 12.1.6 SEDIMENT DISPOSAL

Sediment and debris cleaned from drywells, catch basins, and other stormwater facilities may contain materials that characterize the waste as hazardous or industrial process waste and it must be handled in accordance with regulations that govern those types of wastes. Catch basins and other stormwater system components can periodically receive illegal discharges that make the wastes highly hazardous. Contact the DEQ to determine when and how to test wastes to determine if they are regulated wastes and dispose accordingly. Also, obtain permission from the landfill operator before sending any hazardous or industrial wastes to a landfill. DEQ or landfill rules may require that the wastes be disposed of at a special disposal facility.

Slurries must be separated into liquid and solid components before appropriate disposal. Untreated decant water should not be conveyed to the storm sewer or nearby surface water for disposal. Options for managing decant water include the following:

- Decant water can be contained (e.g. in a facility with a concrete pad, berms, and roof) and conveyed to the sanitary sewer system after sanitary sewer pre-treatment requirements have been met and permission has been obtained from the sanitary sewer authority. Pre-treatment may include containing decant water for a minimum of 24 to 48 hours to allow settling of particulate matter. Note that clay, pumice, and cinder particles may be difficult to settle prior to discharge to the sanitary sewer system. Centrifugation, chemical coagulation, or filtration may be required to achieve the appropriate liquid/solid separation efficiency.
- The volume of decant water can be reduced by reducing the amount of liquids removed from stormwater facilities during maintenance. When possible, perform maintenance when systems have little or no standing water present.
- Decant water can be transported to decant stations for treatment, eliminating discharges in the field. (Note that decant water may be hazardous waste and should be handled as such until test results prove otherwise.)
- Field settling sumps can be used to promote gravity settling and reduce decant water contamination.

Research by the Federal Highway Administration, ODOT, and Multnomah County indicates that sediments removed from roadway catch basins could potentially contain high levels of chemicals such as heavy metals, organics, and petroleum products. When managing sediment removed from stormwater facilities, the pollutant concentrations should be determined and the environmental health risks associated with the pollutant concentrations should be evaluated. Once pollutant risks are known, a cost effective management or disposal option can be chosen. DEQ has not specifically approved guidelines for these management options. Heavily polluted sediment management options include landfilling, high temperature thermal treatment, and in some cases composting/microbial degradation. Reuse, such as for soil amendment, construction fill, and landfill cover are options that need to be carefully investigated and discussed with DEQ.

## **12.2 TRACTS AND EASEMENTS**

### **12.2.1 TRACTS**

Tracts shall be granted to the entity responsible for maintaining the stormwater system. Unless otherwise approved by the local jurisdiction, a tract will be granted for:

- All facilities associated with a stormwater system that serves residential developments, therefore located outside of the public ROW; and,

- Drainage ditches located in residential neighborhoods not adjacent to public streets. The limits of the tract may be required to be delineated with a permanent fence when the ditch is located near property lines.

Tracts shall be of sufficient width to provide access to, and maintain, repair or replace elements of the stormwater system without risking damage to adjacent structures or utilities and without incurring additional costs for shoring or specialized equipment.

### 12.2.2 EASEMENTS

A drainage easement for access, maintenance, operation, inspection, and repair shall be dedicated to the entity in charge of the maintenance and operation of the stormwater system. The easement shall grant to the local jurisdiction the right to ingress/egress over the easement for purposes of inspection or emergency repair. The following infrastructure shall be placed within drainage easements:

- Elements of a stormwater system such as a pipe, therefore located outside of the public ROW. Easements for stormwater conveyance pipes shall be of sufficient width to be able to access and maintain, repair or replace the pipe and appurtenances without risking damage to adjacent structures and incurring increased costs for shoring. No storm pipe in a drainage easement shall have its centerline closer than 10 feet to a private rear or side property line. The storm drain shall be centered in the easement. The minimum drainage easement shall be 20 feet;
- Drainage ditches and natural drainage channels. The easement width shall be wide enough to contain the runoff from a 50 year, SCS Type II 24 hour storm event, for the contributing stormwater basin, plus a 30% freeboard. For natural channels, the minimum easement width is 25 feet and all others shall be a minimum of 20 feet wide; and,
- Access roads and turnarounds. Access road easements shall be at least 20 feet wide.

Stormwater facilities must be located within the ROW, within a border easement parallel to the road or within an individual tract. Stormwater facilities may not be located within a drainage easement on private property. A stormwater facility, as defined for this section, is meant to imply a swale or pond. It is acceptable for a pipe to be in a drainage easement, for example.

#### *Offsite Easements*

When a land action proposes infrastructure outside of the property boundaries, an offsite easement shall be recorded separately from plat documents. The easement language shall grant the local jurisdiction the right to ingress and egress for purposes of routine or emergency inspection and maintenance. Legal descriptions and plat and easement exhibits shall conform to the local jurisdiction guidelines.

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## **APPENDIX 12A – RECOMMENDED MAINTENANCE CRITERIA**

The following tables are from Appendix 5A and Appendix 6A from the *Stormwater Management Manual for Eastern Washington* (Washington State Department of Ecology, September 2004). The maintenance criteria are intended to assist project proponents in developing an appropriate operations and maintenance manual for development sites. The following stormwater facilities are included:

### ***Water Quality and Conveyance Facilities***

- Wetponds
- Bio-infiltration/Infiltration Trenches/Basins
- Closed Treatment Systems (Tanks/Vaults)
- Control Structure/Flow Restrictor for Wetponds
- Catch Basins
- Debris Barriers (e.g. trash racks)
- Energy Dissipators
- Biofiltration Swale
- Vegetated Filter Strip
- Wetvaults
- Sand Filters (below ground/enclosed)
- Media Filter
- Baffle Oil/Water Separators (API Type)
- Coalescing Plate Oil/Water Separators
- Catch Basin Inserts

### ***Flow Control Facilities***

- Detention Ponds
- Detention Vaults/Tanks
- Control Structures
- Drywells
- Infiltration Ponds
- Evaporation Ponds

Note that infiltration trenches and dispersion BMPs used for flow control should follow the same maintenance criteria as infiltration trenches and energy dissipators (respectively) included in the Water Quality and Conveyance list. Drill holes should follow the dry well maintenance criteria.

**INSERT DOE MANUAL TABLES HERE**

## APPENDIX 12B – EXAMPLE CALCULATION – SINKING FUND

### LIST OF QUANTITIES

Description	Units	Quantity	Unit Price	Total
24" Pipe	LF	175	\$40.00	\$ 7,000.00
21" Pipe	LF	50	\$40.00	\$ 2,000.00
18" Pipe	LF	700	\$26.00	\$ 18,200.00
15" Pipe	LF	650	\$24.00	\$ 15,600.00
12" Pipe	LF	1600	\$22.00	\$ 35,200.00
10" Pipe	LF	50	\$20.00	\$ 1,000.00
			<b>Pipe Total</b>	<b>\$ 79,000.00</b>
Inlets	EA	22	\$500.00	\$ 11,000.00
Drywells	EA	4	\$2,500.00	\$ 10,000.00
			<b>Structure Total</b>	<b>\$ 21,000.00</b>

### ANNUAL MAINTENANCE AND OPERATION COSTS

Description	Units	Quantity	Unit Price	Total
Inspect Structures	DAY	4	\$50.00	\$ 200.00
Flush/Clean Inlets	EA	26	\$100.00	\$ 2,600.00
Flush Pipes				\$ -
Inspect Ponds and Clean Outlets	LS	1	\$500.00	\$ 500.00
Mowing & Irrigation of Ponds	DAY	34	\$250.00	\$ 8,500.00
			<b>Annual Maintenance Cost</b>	<b>\$ 11,800.00</b>

### REPLACEMENT COST & ANNUAL COST PER LOT

Description	Total
Assume 50% of Pipe is Replaced in 20 years (=Pipe Total*0.5)	\$ 39,500.00
Assume 25% of Structures are Replaced in 20 years (=Structure Total*0.25)	\$ 5,250.00
<b>Total Present Value (PV) of Replaced Pipe and Structures</b>	<b>\$ 44,750.00</b>
Future Value of Pipe and Structures (FV), assume inflation=4%, n=20 FV = PV(F/P, 4%, n=20)	\$ 98,052.76
Annual Set-Aside for Future Replacement (A), assume interest=6%, n=20 A = FV(A/F, 6%, n=20)	\$ 2,665.52
Annual Maintenance and Operation Costs (from subtotal above)	\$ 11,800.00
<b>Total Annual Costs</b>	<b>\$ 14,465.52</b>
Total Charge per Lot, assume 100 Lots Charge per Lot = Total Annual Costs / # of Lots	
<b>Charge per Lot</b>	<b>\$ 144.66</b>

NOTE: F/P, A/F factors are from standard interest tables