

# STORMWATER QUALITY

## **3.00 DESIGN STANDARDS**

### **3.01 STORMWATER QUALITY DESIGN STANDARDS**

Springfield staff has reviewed stormwater quality design standards from several jurisdictions in developing the standards contained in this Manual. Springfield is therefore utilizing portions of Eugene's [\*Stormwater Management Manual\*](#) relating to construction and maintenance of stormwater treatment facilities, as modified below, for conditions specific to Springfield. Stormwater quality facilities in compliance with these standards shall be provided for all new developments within Springfield's planning jurisdiction. The standards for Eugene can be found on the Internet at:

<http://www.eugene-or.gov/index.aspx?NID=477>

***IT IS*** Springfield's intent to provide maintenance to assure the proper functioning of all portions of a stormwater system that provides collection and/or conveyance and/or stormwater quality service to the public right-of-way or other publicly owned property, and to any affiliated stormwater quality and detention facilities. All of these facilities shall be designed in accordance with all requirements of design and maintenance access as laid out in this Chapter, Chapter 4 Stormwater Capacity, or as specifically directed by the City Engineer.

For those portions of the system that remain in private ownership, such as those stormwater quality or detention facilities owned by homeowners' associations in subdivisions, Springfield's maintenance rights and responsibilities will be specified in an agreement with the underlying facility owner.

***IT IS NOT*** Springfield's intent that stormwater systems or stormwater quality facilities that serve private development, or for some other reason are not deemed to be "public" in nature, be maintained by the City. Rather, the private property owners shall maintain these facilities in accordance with requirements set forth in this Chapter.

### **3.02 STORMWATER QUALITY DESIGN CRITERIA**

There are numerous regulatory programs and requirements dealing with the environmental impacts of urban runoff. In response, the Department Director, in accordance with the authority granted in Springfield Development Code (SDC) 4.3-110 (regarding stormwater quality protection Citywide), and SDC 3.4-270I (regarding stormwater facilities in Glenwood), and the other applicable standards contained in this Manual, is required "to promote stormwater quality, to preserve groundwater and the vegetation and rivers it supports." These stormwater management practices also specifically implement Metro Plan Environmental Resources Element Policies C.25 and C.26 and are an important element for addressing City's responsibilities under the Endangered Species Act 4(d) Rules, the Clean Water Act, and the Safe Drinking Water Act.

#### **3.02.1 Stormwater Quality Design Storm**

Runoff volumes and flow rates shall be determined in accordance with the hydrologic calculation methods contained in Chapter 4 Stormwater Capacity.

A. When permitted in Chapter 4, in order to use the Rational Method, the stormwater quality

design storm event intensity shall be 0.25 inches per hour.

- B. When required in Chapter 4, in order to use an Urban Hydrograph Method, the stormwater quality design storm event shall be 0.83 inches per 24-hour period.

### **3.02.2 Retention/Protection/Preference for Open Watercourses and Water Bodies**

To the extent practicable, existing water bodies and watercourses shall remain in place and intact, and associated existing native vegetation shall be retained. Unless otherwise approved on a case-by-case basis by the City Engineer, intermittent and perennial watercourses shall not be piped or closed over. The City Engineer may approve the relocation of a watercourse provided the relocation is designed, constructed, maintained, and enhanced to provide its properly functioning condition, and all other necessary state and federal permits and approvals have been obtained.

### **3.02.3 Stormwater Quality Pollutants of Concern**

Urbanization is recognized as having a detrimental impact on receiving waters. As land is developed, impervious area and surface runoff increases. This runoff collects and transports pollutants to downstream receiving waters. Pollutants of concern include:

- Suspended solids (sediment)
- Heavy metals (dissolved and particulate, such as lead, copper, zinc, and cadmium)
- Nutrients (such as nitrogen and phosphorus)
- Bacteria and viruses
- Organics (such as oil, grease, hydrocarbons, pesticides, and fertilizers)
- Floatable debris (primarily trash)
- Increased thermal load (temperature)

In response to the stormwater quality impacts of urbanization, Congress passed the Clean Water Act amendments of 1987, mandating the U.S. Environmental Protection Agency (EPA) to issue regulations to control urban stormwater pollution. The regulations, published in 1990, require larger cities such as Springfield to obtain a National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit for their municipal separate storm sewer discharges (MS4). Compliance with the NPDES MS4 permit requires Springfield to establish a comprehensive stormwater management program. Springfield's stormwater management program includes design standards for source control devices as well as Best Management Practices (BMPs) designed to improve stormwater quality.

#### **3.02.3.A Temperature Standard**

Oregon lists the Willamette and McKenzie Rivers as 303 (d) Water Quality Limited Streams for exceeding the warm weather statewide temperature standard of 64 degrees Fahrenheit. As a result, the Oregon Department of Environmental Quality (DEQ) adopted a Temperature Total Maximum Daily Load (TMDL) for these rivers in 2006 and the City adopted a TMDL Implementation Plan in 2009. All new development and public works projects shall implement design features, to reduce thermal loadings into the public stormwater system and all receiving waters to the maximum extent practicable. These design features may include:

- A. Increasing large-canopy tree planting.

- B. Surface infiltration of “clean” surface water runoff.
- C. Underground Injection of “clean” surface water runoff. (a permit and approval from the DEQ will be required- <http://www.deq.state.or.us/wq/uic/uic.htm> )
- D. Decreasing the percentage of impervious surfaces on the site.

**3.02.3.B Bacteria and Mercury Standards**

The Willamette and McKenzie Rivers both have bacteria and mercury TMDL standards established by the DEQ. All new development and public works projects shall implement design features to reduce bacteria and mercury loadings into the public stormwater system and all receiving waters, to the maximum extent practicable. These design features may include:

- A. Surface infiltration, treatment and/or filtering of “clean” surface water runoff.
- B. Underground Injection of “clean” surface water runoff. (a permit and approval from the DEQ will be required - <http://www.deq.state.or.us/wq/uic/uic.htm> )
- C. Low impact development techniques, such as those described in Section 4.17.

**3.02.3.C Total Suspended Solids (TSS) Standard**

In addition to requirements listed in Section 3.02.5, all public and private development and redevelopment projects shall employ a system of one or more post-development BMPs that in combination are designed to achieve at least a 70 percent reduction in TSS in the runoff generated by that development.

**3.02.3.D DEQ Stormwater Discharge Benchmarks**

All public and private development and redevelopment projects shall employ a system of one or more post-development BMPs that in combination are designed to achieve the discharge benchmarks established by DEQ for NPDES permitting. These benchmarks can be found on the Internet at the following locations:

General Industrial Stormwater Permit:

<http://www.deq.state.or.us/wq/stormwater/stormwater.htm>

Statewide Water Quality Criteria:

<http://www.deq.state.or.us/wq/standards/standards.htm>

**3.02.4 Special Considerations for Higher-Risk Activities**

Higher-risk activities are those that may generate pollutants that are not addressed solely by the standards and criteria listed above. Springfield considers the following list of activities (302.4A – D) as higher-risk activities and stormwater quality measures shall be designed accordingly. The City Engineer may also designate other developments or activities as being a higher-risk activity based upon the specific characteristics of the development.

**3.02.4.A Eugene Stormwater Management Manual, Chapter 4**

Chapter 4 (Source Controls) of Eugene’s *Stormwater Management Manual* includes the following list of higher-risk activities, and the appropriate design standards for each. Please refer

to the Eugene [Stormwater Management Manual](#) for a discussion of each of these activities and their associated design standards:

- A. Fuel Dispensing Facilities. (Chapter 4.2)
- B. Aboveground Storage of Liquid Materials. (Chapter 4.3)
- C. Solid Waste Storage Areas, Containers, and Trash Compactors. (Chapter 4.4)
- D. Outdoor Storage of Bulk Materials. (Chapter 4.5)
- E. Material Transfer Areas. (Chapter 4.6)
- F. Equipment and/or Vehicle Washing Facilities. (Chapter 4.7)
- G. Stormwater and Groundwater Management for Development on Land with Suspected or Known Contamination. (Chapter 4.8)
- H. Covered Vehicle Parking Structures. (Chapter 4.9)

Additional restrictions may apply to the above activities depending on the Wellhead Time of Travel (TOT) zone that the proposed development is located in, as specified Section 3.02.4.D and in SDC 3.3-200 Drinking Water Protection Overlay District.

#### **3.02.4.B Underground Injection Control (UIC)**

The DEQ has prepared rules for regulating UIC use as specified in Oregon Administrative Rule (OAR) 340-044. Furthermore, OAR 340-040-0020 (3) states that all groundwater in the state shall be protected as a potential source of drinking water.

In response to the above OARs, and the fact that over 90 percent of Springfield's public drinking water supply is from ground water, the City Engineer finds that the following UIC design standards are necessary to protect the groundwater resources in Springfield.

#### **Springfield's UIC Design Standards:**

Any stormwater infiltration facility designed and constructed within the definitions of a waste disposal well or other underground injection activities as specified in OAR 340-044 shall be registered with the DEQ, with proof of registration being provided to Springfield prior to operating the facility. See the DEQ UIC program webpage for more information:

<http://www.deq.state.or.us/wq/uic/uic.htm> ).

- A. In accordance with SDC 3.3-235, no UIC receiving runoff from surfaces other than residential building roofs shall be allowed within the 0-to-5-year time of travel zones of any public drinking water wellhead.
- B. No UIC shall receive runoff from any surface, other than residential building roofs, that has not first been treated by one or more of the BMPs contained in Eugene's [Stormwater Management Manual](#) design standards referenced above.

- C. No UIC shall be located closer than 10 feet to any building footing line or property line, nor located within any public or private easement.
- D. Prior to approval of the final site plan for a private development or redevelopment, the applicant shall provide infiltration testing of the on-site soils and an engineered design for the size of each UIC.
- E. All UICs shall be provided with an overflow pipe that is connected either to the site stormwater system or to the public stormwater system.
- F. Unless otherwise permitted by the DEQ, a minimum of 10 feet of native soils shall separate the bottom of the UIC from the seasonal high water table as indicated in the Natural Resource Conservation Service (NRCS) *Soil Survey of Lane County*. See the NRCS Web Soil Survey for more information:  
<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>
- G. Roof drain drywells shall be designed and constructed in compliance with Springfield Standard Drawing 4-20, *Individual Lot/Roof Drain Drywell Schematic*.

#### **3.02.4.C Roof-mounted Equipment**

All rooftop mounted equipment, or other fluid containing equipment located outside of a building, shall be provided with secondary containment or a weather resistant enclosure to ensure that, in the event of a leak or spill, any fluids cannot migrate into Springfield's stormwater system or any UIC facility.

#### **3.02.4.D Drinking Water Protection (DWP) Overlay District**

SDC 3.3-200 establishes a zoning overlay district and associated land use restrictions based upon the time of travel to each public drinking water wellhead for Springfield. All public and private development and redevelopment shall comply with the appropriate provisions in SDC 3.3-200. In addition, the Springfield Utility Board (SUB) has requirements for stormwater quality swale design for groundwater protection. The specific requirements can be found in the report titled "*Mitigation of Impact of Stormwater Infiltrating Through Grassy Swales on Groundwater*" available from the SUB Water Department.

#### **3.02.5 Parking Lots/Paved Areas**

Runoff from parking lots and paved areas with vehicle circulation contains pollutants that have detrimental effects on stormwater quality. Pollutants from brake pads, exhaust emissions, oil leaks, etc. accumulate during dry weather periods and increase the concentration of hydrocarbons, metals, suspended solids, and organics (among others) in stormwater runoff during the first rain event after a period of dry weather.

Springfield requires that 100 percent of parking lots and paved areas be pre-treated for stormwater quality (excluding on-site sidewalks). Developments or re-developments creating less than 500 square feet of new non-rooftop impervious areas are exempt from this requirement.

#### **3.02.6 Vegetative Treatment Requirements**

In addition to the requirements listed in Section 3.02.5, and unless otherwise approved during the land use review and approval processes required in the SDC, a minimum of 50 percent of the

non-rooftop impervious area on a site shall be treated for stormwater quality improvement using vegetative methods. To the maximum extent practicable, the site design shall utilize the on-site landscaping areas required during the land use review process for stormwater quality treatment areas. Vegetative treatment facilities shall be designed as specified in Section 3.01. For private developments, vegetative treatment facilities shall be located outside of public utility easements. An exception may be made for non-structural grass swale facilities, provided the flow control is located outside all easements and the swale allows compliance with building setback requirements, where applicable. Swales may be allowed within public sewer easements where other utilities and uses are excluded. Lists of suitable and prohibited vegetation are specified in Chapter 6 for all facilities.

All vegetative treatment facilities serving private development will require an Operations and Maintenance (O&M) Plan submittal and approval as specified in Section 3.03.

### **3.02.7 Parking Lot Maintenance**

In addition to the above requirements, Springfield highly recommends routine surface cleaning of parking lots. The use of “dry” cleaning techniques (sweeping, vacuuming, etc.) is highly preferred because they eliminate water discharges to the storm system. Absorbent material shall be used on particularly oily or dirty surfaces prior to cleaning. Generally, parking lots should be cleaned prior to the wet season (i.e. October) to dampen the effects of the first flush. Additional cleanings can be determined through on-site observations and accumulations of sediments. Parking lot debris from cleanup shall be disposed of at a landfill.

Wet cleaning techniques (pressure washing, garden hoses, etc.) involving water for parking lot cleanup are highly discouraged and regulated by the Springfield Municipal Code (SMC), Sections 4.370 and 4.372. If parking lots must be washed with water, contact the Environmental Services Division for information regarding requirements and disposal of cleaning water. Wash water shall not be directed into the stormwater system under any circumstances without required BMPs being implemented.

Routine area drain and catch basin cleaning shall also be done as part of parking lot cleaning activities. Storm catch basins collect debris such as oils, paper, sediments and other trash. If not routinely cleaned this debris will plug the discharge pipe and cause flooding as well as discharging polluted water into the public stormwater system. Discharge of polluted stormwater is a violation of the SMC Section 4.372(6) and is subject to a fine.

## **3.03 PRIVATE STORMWATER MAINTENANCE REQUIREMENTS**

Private stormwater management facilities are a primary mechanism for Springfield to meet the stormwater quality requirements of the Clean Water Act. Springfield requires private stormwater quality facilities to have ongoing maintenance to ensure systems function as designed. All proposed and constructed private facilities shall be subject to an Operation and Maintenance Plan (O&M Plan) submittal and approval process as outlined in Section 3.03.1.

### **3.03.1 Operations and Maintenance Plan Submittal for Privately Maintained Facilities**

An O&M Plan submittal for private stormwater facilities must be submitted for review at the time of final site plan or plat submittal. Upon approval by Springfield, the Notice of Operation and Maintenance Agreement (NOMA) must be recorded with Lane County prior to occupancy. The O& M Plan submittal for private stormwater quality facilities shall include the following:

1. A recorded copy of the Notice of Operation and Maintenance Agreement (NOMA)  
*See Appendix 3A-1 for a NOMA template*
2. Operations and Maintenance Agreement (O&M Agreement) (*see Appendix 3A-2 for an O&M Agreement template*)
3. Stormwater Management Site Plan (as approved under the Development Agreement)
4. Landscape Plan
5. Stormwater Management Facility Inspection and Maintenance Log (*see Appendix 3A-3 for an Inspection and Maintenance Log template*)
6. Facility-Specific Operations and Maintenance Plan(s) (O&M Plan(s)) (*see Appendix 3A-4 for Facility Specific Operations and Maintenance Plans template*)

Detailed submission requirements for the above items are found below.

*Notice of Operations and Maintenance Agreement (NOMA)*

The NOMA is recorded with Lane County, identifies the property as having a stormwater management facility, and identifies the financial method used to guarantee future operations and maintenance. It gives notice that stormwater runoff from impervious surfaces on the site require stormwater management facilities that are located, designed, and constructed in compliance with this Manual; and that property owners are required to operate and maintain the facilities in accordance with the approved O&M Plan.

The NOMA must be completed and recorded at Lane County Deeds and Records. Signatures on the NOMA shall be notarized. The NOMA shall be printed on legal-sized (8 ½ x 14) paper to facilitate the recording process. The property description on the NOMA must be a legal description and may not be an Assessor’s Map and tax lot number reference.

*Operation and Maintenance Agreement (O&M Agreement)*

The completed O&M Agreement must identify the owner’s name, address, and phone number, the site address, the financially responsible party’s method used to guarantee future operation and maintenance of the facility, and parties responsible for inspecting and maintaining the facility. The O&M Agreement does not need to be recorded. The following documents must be attached to the O&M Agreement:

1. A copy of the Stormwater Management Site Plan, typically approved as part of the Development Agreement, must show the location of the facility on the site, the sources of runoff entering the facility, and the ultimate stormwater destination;
2. A copy of the Landscape Plan approved as part of the Development Agreement; and
3. Copies or details of the Pre-approved Facility Specific O&M Plans found in this Manual or any proprietary plan requirements.

*Note: The Stormwater Management Site Plan and the Landscape Plan shall be legible with a font size no smaller than 11 points and a page size no smaller than 8 ½ x 11 inches.*

#### Stormwater Management Facility Inspection and Maintenance Log

Facility owners shall keep Stormwater Management Facility Inspection and Maintenance Logs on file at the site. The Logs shall note all inspection dates, the facility components that were inspected, and any maintenance or repairs made. The Facility Specific O&M Plans can serve as a checklist for what should be included in the Log (e.g. the facility elements that need to be inspected, frequency of inspection, conditions that indicate maintenance is needed, etc.).

#### **3.03.2 Specific Requirements of the O & M Plan**

Pre-approved Facility Specific O&M Plans identify activities required for maintenance of any of the stormwater quality facilities listed in Chapter 2 of the Eugene Stormwater Manual. A Facility Specific O&M Plan for every type of stormwater facility used on site must be included in the O&M Plan submittal and approved as part of the Development Agreement. Applicants may choose to submit the pre-approved Facility Specific O&M Plans, or may develop their own maintenance plan for review by the City Engineer. If the applicant proposes a proprietary mechanical stormwater treatment facility, the maintenance schedule recommended by the manufacturer shall be used.

The O&M Plan may be modified with consent of the City Engineer and the property owner. Letters requesting modifications to an existing O&M Plan shall be submitted, along with the proposed amended O&M Plan, to the City Engineer. Any modification request shall demonstrate the continuing effectiveness and functionality of the stormwater facilities in compliance with the requirements in this Chapter and Chapter 4 Stormwater Capacity.

Maintenance Logs Operations and maintenance activities for each type of stormwater facility include inspection as well as maintenance responsibilities. Facility owners shall document and keep on file Stormwater Management Facility Inspection and Maintenance Logs. The Logs must note all inspection dates, the facility components that were inspected, and any maintenance or repairs made to the facility. The Facility Specific O&M Plans can serve as a checklist for what should be included in the log (e.g. the facility elements that need to be inspected, frequency of inspection, conditions that indicate maintenance is needed, etc.). Proprietary and manufactured stormwater facility owners are required to submit a Stormwater Management Facility Inspection and Maintenance Log that conforms to maintenance requirements of the manufacturer.

Inspection Access By signing the O&M Agreement, the property owner/developer agrees to allow Springfield staff access to the site for inspection purposes. The access to the property will be limited to the area of the stormwater treatment facility and the needed ingress and egress to inspect the facility.

Enforcement Actions Stormwater facilities constructed to comply with the requirements of Springfield's *Engineering Design Standards and Procedures Manual* (EDSP Manual) shall be properly operated and maintained for the life of the facility. The O&M Agreement must identify the parties responsible for the on-going operations and maintenance of the stormwater treatment facilities. Springfield has the right and responsibility to inspect private facilities to assure they are being operated and maintained in accordance with the approved design, the O&M Agreement, the Facility Specific O&M Plan, and the EDSP Manual. In the event that the City

finds that one or more of the stormwater facilities on a site do not comply with the terms of the Development Agreement, including the O&M Plan required by this Chapter, a written notice shall be given to the property owner listing the non-compliant aspects of the stormwater facility, including a time line for achieving compliance. In the event that the owner does not bring the stormwater facility into compliance the City may, at its discretion, restore the stormwater facility to compliance and bill the property owner for the cost of the remedial actions required to restore the stormwater facility to an operational condition.