

Chapter 2 – Applicability and Core Requirements

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Chapter 2 – Applicability and Core Requirements

2.1 Introduction

2.1.1 Purpose, Content, and Organization

Purpose

Chapter 2 of this manual summarizes the nine core requirements for stormwater management applicable to new development and redevelopment. The remaining chapters of this manual cover submittal requirements and best management practices (BMPs) for specific aspects of stormwater management.

Core requirements cover a range of issues, such as submittal requirements, pollution prevention during the construction phase of a project, control of potential pollutant sources, treatment of runoff, control of stormwater flow volumes, protection of wetlands, and long-term operation and maintenance. The core requirements applicable to a project vary depending on the type and size of the proposed project.

Content

This chapter identifies the nine core requirements for stormwater management applicable to new development and redevelopment sites. The core requirements are:

1. Core Requirement #1: Stormwater Site Plans
2. Core Requirement #2: Construction Stormwater Pollution Prevention
3. Core Requirement #3: Source Control of Pollution
4. Core Requirement #4: Preservation of Drainage Systems and Outfalls
5. Core Requirement #5: On-Site Stormwater Management
6. Core Requirement #6: Runoff Treatment
7. Core Requirement #7: Flow Control
8. Core Requirement #8: Wetlands Protection
9. Core Requirement #9: Operation and Maintenance

Depending on the type and size of the proposed project, different combinations of these core requirements apply. In general, small sites are required to control erosion and sediment from construction activities and to apply simpler approaches for runoff treatment and flow control of stormwater runoff from the developed site. Controlling flows from small sites is important because the cumulative effect of uncontrolled flows from many small sites can be as damaging as those from a single large site. For

residential plats, erosion and sedimentation control during construction applies to individual lots after the developer transfers the project to the builder(s).

Larger sites must provide erosion and sediment control during construction, permanent control of stormwater runoff from the developed site through selection of appropriate BMPs and facilities, and other measures to reduce and control the impacts of the project. Sites being redeveloped must generally meet the same core requirements as new development for the new hard surfaces and pervious surfaces converted to lawn or landscaped areas. Redevelopment sites must also provide erosion control, source control, and on-site stormwater management for the portion of the site being redeveloped. In addition, if the redevelopment meets certain cost or space (as applied to roads) thresholds, updated stormwater management for the redeveloped pervious and hard surfaces must be provided. There may also be situations in which additional controls are required for sites, regardless of type or size, as a result of basin plans or special water quality concerns.

Sections 2.2 and 2.3 provide additional information on applicability of the core requirements to different types of sites. Development sites are to demonstrate compliance with these requirements through the preparation of Stormwater Site Plans. These plans are described in detail in Chapter 3.

Finally, it is important to note that other City requirements beyond those outlined in this chapter, but still related to stormwater management, may apply to a given project. Project proponents are responsible for identifying and addressing all requirements applicable to their proposed project.

Organization

Following this introduction, Chapter 2 contains four additional sections:

- **Section 2.2 – Core Requirements** identifies the core requirements for stormwater management at all new development and redevelopment projects.
- **Section 2.3 – Additional Requirements** describes additional requirements, including financial guarantees and other applicable regulations.
- **Section 2.4 – Adjustments** describes allowable adjustments to the core requirements.
- **Section 2.5 – Exceptions and Variances** describes allowable exceptions and variances to the core requirements.

2.1.2 Applicability of the Core Requirements

Not all of the core requirements apply to every development or redevelopment project. The applicability varies depending on the project type and size. This section identifies thresholds that determine the applicability of the core requirements to different projects.

Use the flow charts in Figures 2.1 (new development) and 2.2 (redevelopment) to determine which core requirements apply. The core requirements themselves are presented in Section 2.2. Development sites are to demonstrate compliance with the core requirements through the preparation and submittal of drainage plans and reports. Submittal requirements are described in Chapter 3.

Projects that propose the use of deep underground injection control (UIC) wells must meet Core Requirements #1 through #9. For more information on deep UICs and the UIC Program, refer to Chapter 7, Appendix 7C.

Note: For definitions related to the core requirements (e.g., redevelopment, converted pervious surface, pollutant generating surface, etc.), refer to the Glossary.

New Development

All new development shall be required to comply with Core Requirement #2.

The following new development shall comply with Core Requirements #1 through #5 for the new and replaced hard surfaces and the land disturbed:

- Results in 2,000 square feet, or greater, of new, replaced, or new plus replaced hard surface area, or
- Has land disturbing activity of 7,000 square feet, or greater.

The following new development shall comply with Core Requirements #1 through #9 for the new and replaced hard surfaces and the converted vegetation areas:

- Results in 5,000 square feet, or more, of new plus replaced hard surface area, or
- Converts 0.75 acre, or greater, of vegetation to lawn or landscaped areas, or
- Converts 2.5 acres, or greater, of native vegetation to pasture.

Supplemental Guidelines

For purposes of applying the above thresholds to a proposed single-family residential subdivision (i.e., a plat or short plat project) the hard surface coverage, as well as the converted vegetation areas, must be specified for each lot and recorded with the City on the face of the final plat (or an alternative acceptable to the City). Where City regulations restrict maximum hard (or impervious) surfaces to smaller amounts, those maxima may be used.

Basin planning is encouraged and may be used to tailor Core Requirements #5: On-Site Stormwater Management, #6: Runoff Treatment, #7: Flow Control, and/or #8: Wetlands Protection. Basin planning may be used to support alternative treatment, flow control, and/or wetland protection through construction of regional stormwater facilities. Such facilities must be operational prior to and must have capacity for new development.

Additional examples of how basin planning can alter the core requirements are given in Appendix I-B of the 2019 Ecology Manual. Regional stormwater facility guidance is provided in Appendix I-D of the 2019 Ecology Manual.

Basin planning provides a mechanism by which the core requirements and implementing BMPs can be evaluated and refined based on an analysis of a basin or watershed. Basin plans may be used to develop control strategies to address impacts from future development and to correct specific problems whose sources are known or suspected. Basin plans can be effective at addressing both long-term cumulative impacts of pollutant loads and short-term acute impacts of pollutant concentrations, as well as hydrologic impacts to streams, wetlands, and groundwater resources. Basin planning will require the use of continuous simulation computer models and field work to verify and support the models.

In order for a basin plan to serve as a means of modifying the core requirements, the following conditions must be met:

- The plan must be formally adopted by all jurisdictions with responsibilities under the plan; and
- All ordinances or regulations called for by the plan must be in effect; and
- The basin plan must be reviewed and approved by Ecology.

Compensatory Flow Control or Treatment

Where new development projects require improvements (e.g., frontage improvements) that are not within the same threshold discharge area, the City may allow the core requirements to be met for an equivalent (flow and pollution characteristics) area that drains to the same receiving water. Guidance on stormwater control transfer programs is included in Appendix I-E of the Ecology Manual. Discussion with the City would be needed prior to implementation of a stormwater control transfer.

Redevelopment

All redevelopment shall be required to comply with Core Requirement #2.

The following redevelopment shall comply with Core Requirements #1 through #5 for the new and replaced hard surfaces and the land disturbed:

- Results in 2,000 square feet, or greater, of new plus replaced hard surface area, or
- Has land disturbing activity of 7,000 square feet, or greater.

The following redevelopment shall comply with Core Requirements #1 through #9 for the new hard surfaces and converted pervious areas:

- Adds 5,000 square feet or greater of new hard surfaces, or

- Converts 0.75 acre, or greater, of vegetation to lawn or landscaped areas, or
- Converts 2.5 acres, or greater, of native vegetation to pasture.

In addition, projects that exceed the above thresholds and: **1) are within the 1-year time of travel zone for a wellhead protection area, and 2) contain existing hard surfaces that do not drain to an approved stormwater BMP** are required to apply the applicable core requirements to the entire project site (i.e., not just to the new and replaced hard surfaces). See area maps in Chapter 8, Appendix 8B as well as on the City’s website at https://cityoflacey.org/resource_library/stormwater-utility/.

The City may allow the core requirements to be met for an equivalent (flow and pollution characteristics) area. The equivalent area may be within the same threshold discharge area (TDA). If the equivalent area is outside the TDA, or off-site, the equivalent area must drain to the same receiving water and the guidance for equivalent facilities using in-basin transfers must be followed (see Appendix I-E of the 2019 Ecology Manual). The City is responsible for maintaining tracking records for all area transfers approved by the City.

Additional Requirements

For road-related projects, runoff from the replaced and new hard surfaces (including pavement, shoulders, curbs, and sidewalks) and the converted vegetated areas shall meet all the core requirements if the new hard surfaces total 5,000 square feet or greater and total 50 percent or more of the existing hard surfaces within the project limits. The project limits shall be defined by the length of the project and the width of the right-of-way.

Other types of redevelopment projects shall comply with Core Requirements #1 through #9 for the new and replaced hard surfaces and the converted vegetated areas if:

- The total of new plus replaced hard surfaces is 5,000 square feet or greater, and
- For commercial and industrial projects: the valuation of proposed improvements—including interior improvements—exceeds 50 percent of the assessed value of the existing Project Site improvements as determined by the City Building Official.
- For all other projects: the valuation of the proposed improvements, including interior improvements, exceeds 50 percent of the assessed value of the existing Site improvements as determined by the City Building Official.

Finally, if the City determines that the project site contributes to an existing water quality, flooding, or erosion problem, the City may require that the project site comply with additional stormwater management requirements.

Objective

Redevelopment projects have the same requirements as new development projects in order to minimize the impacts from new surfaces. To not discourage redevelopment projects, replaced surfaces are not required to be brought up to new stormwater standards unless the noted cost or space thresholds are exceeded. As long as the replaced surfaces have similar pollution-generating potential, the amount of pollutants discharged shouldn't be significantly different. However, if the redevelopment project scope is sufficiently large that the cost or space criteria noted above are exceeded, it is reasonable to require the replaced surfaces to be brought up to current stormwater standards. This is consistent with other utility standards.

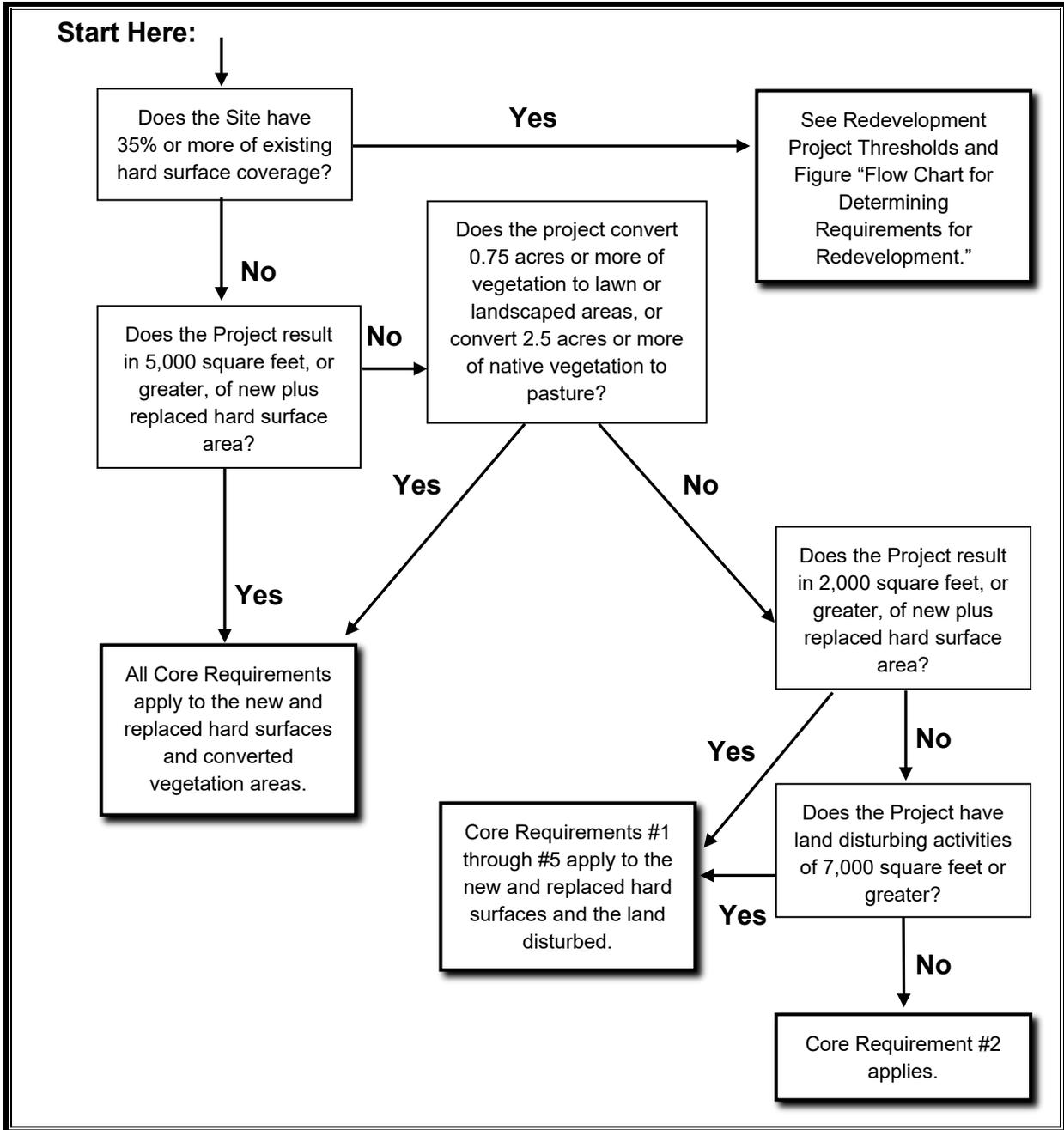


Figure 2.1. Flow Chart for Determining Requirements for New Development.

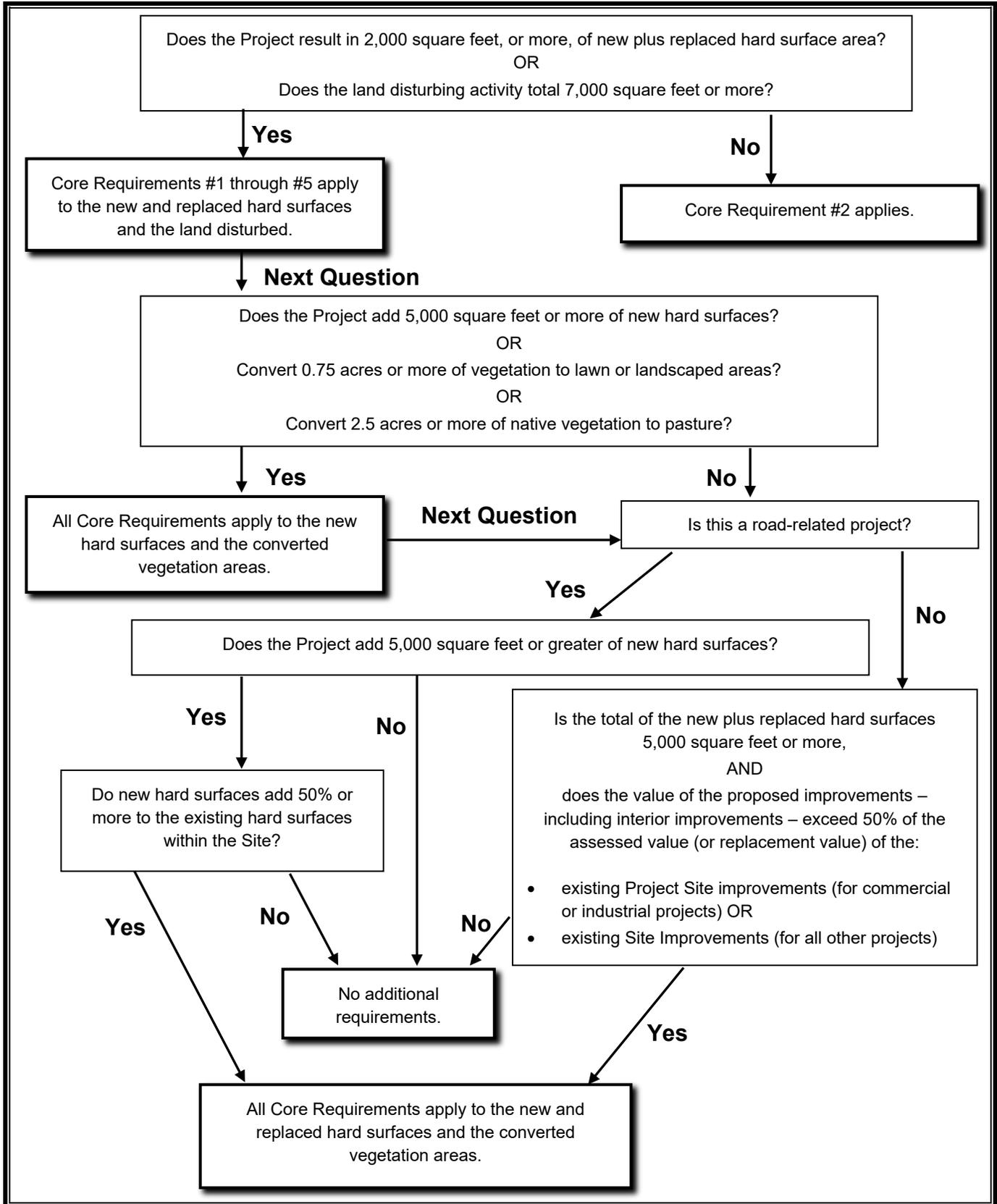


Figure 2.2. Flow Chart for Determining Requirements for Redevelopment.

2.1.3 Exemptions

Unless otherwise indicated in this section, the practices described in this section are exempt from the core requirements, even if such practices meet the definition of new development or redevelopment.

Forest Practices

Forest practices regulated under Title 222 WAC, except for Class IV General forest practices that are conversions from timberland to other uses, are exempt.

Commercial Agriculture

Commercial agriculture practices involving working the land for production are generally exempt. However, the conversion from timberland to agriculture, and the construction of impervious surfaces are not exempt.

Pavement Maintenance

The following pavement maintenance practices are exempt from the core requirements, but should use appropriate BMPs to minimize erosion and sediment transport:

- Pothole and square cut patching
- Overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage
- Shoulder grading
- Reshaping/regrading drainage systems
- Crack sealing
- Resurfacing with in-kind material without expanding the road prism,
- Pavement preservation activities that do not expand the road prism
- Vegetation maintenance.

The following pavement maintenance practices are not categorically exempt. The extent to which the manual applies is explained for each circumstance.

- Removing and replacing a paved surface to base course or lower, or repairing the pavement base: If impervious surfaces are not expanded, Core Requirements #1 through #5 apply.
- Extending the pavement edge without increasing the size of the road prism, or paving graveled shoulders: These are considered new hard surfaces and are

subject to the core requirements that are triggered when the thresholds identified for new or redevelopment projects are met.

- Resurfacing by upgrading from dirt to gravel, bituminous surface treatment (“chip seal”), asphalt, or concrete; upgrading from gravel to chip seal, asphalt, or concrete; or upgrading from chip seal to asphalt or concrete: These are considered new impervious surfaces and are subject to the core requirements that are triggered when the thresholds identified for new or redevelopment projects are met.

Underground Utility Projects

Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics are only subject to Core Requirement #2: Construction Stormwater Pollution Prevention.

2.2 Core Requirements

This section describes the core requirements for stormwater management at development and redevelopment sites. Section 2.1 must be consulted to determine which requirements apply to any given project. Figures 2.1 and 2.2 should be consulted to determine whether the core requirements apply to new surfaces, replaced surfaces, or new and replaced surfaces. Chapters 4, 5, 7, and 8 of this manual present BMPs for use in meeting the core requirements.

2.2.1 Core Requirement #1: Stormwater Site Plans

All projects meeting the thresholds in Section 2.1 shall prepare a Stormwater Site Plan for City review. Stormwater Site Plans shall be prepared in accordance with Chapter 3 of this manual.

A Stormwater Site Plan is a comprehensive report containing all of the technical information, analysis, calculations, maps, and graphics necessary for the City to evaluate a proposed project for compliance with stormwater requirements. The information required in the Stormwater Site Plan depends on the nature of the project and its location. Stormwater Site Plans shall use site-appropriate development principles to retain native vegetation and minimize impervious surfaces to the extent feasible.

Each of the plan submittal types listed below are described in detail in Chapter 3. See Chapter 3 and Table 3.1 for the specific information on required plans and plan content.

- SWPPP Short Form: for small projects subject to Core Requirement #2 only
- Abbreviated Drainage Plan: for intermediate-size projects subject to Core Requirements #1-5 only
- Drainage Control Plan: for larger projects subject to all Core Requirements #1-9

Completing the applicable plan type in accordance with the requirements in Chapter 3 will meet Core Requirement #1.

Objective

The 2,000-square-foot threshold for hard surfaces and 7,000-square-foot threshold for land disturbance are specified by the Department of Ecology to capture most single-family home construction and their equivalent. The City-specific thresholds and requirements identified in Chapter 3, Table 3.1, were developed to meet more specific City needs and interests, without negating Ecology's requirements.

Supplemental Guidelines

Projects proposed by City departments and agencies must comply with this requirement. The City shall determine the process for ensuring proper project review, inspection, and compliance by its own departments and agencies. See also Chapter 3, Section 3.2.1.

2.2.2 Core Requirement #2: Construction Stormwater Pollution Prevention

All projects shall address erosion and sediment control during site construction activities.

Thresholds

All new development and redevelopment projects are responsible for preventing erosion and discharge of sediment and other pollutants into receiving waters, and shall comply with Construction SWPPP Elements #1 through #13 as detailed in Chapter 5. The 13 elements are summarized below, but project applicants must refer to Chapter 5 for the full description of applicable requirements.

Projects which result in 2,000 square feet or more of new plus replaced hard surface area, or which disturb 7,000 square feet or more of land must prepare a Construction SWPPP as part of the Stormwater Site Plan submittal (see Chapter 3, Section 3.3). Each of the 13 elements must be considered and included in the Construction SWPPP unless site conditions render the element unnecessary and the exemption from that element is clearly justified in the narrative of the Construction SWPPP. The SWPPP shall be implemented beginning with initial soil disturbance and shall be maintained until final stabilization of the entire project site.

Projects that result in less than 2,000 square feet of new plus replaced hard surface area, or disturb less than 7,000 square feet of land are not required to prepare a Construction SWPPP, but must consider all of the 13 elements of Construction Stormwater Pollution Prevention and develop controls for all elements that pertain to the project site. In addition, these projects shall submit a complete SWPPP Short Form (see Chapter 3, Appendix 3A) to record basic project information, and to document that the 13 elements are being considered and addressed as applicable. See also Chapter 3.

These elements cover the general water quality protection strategies of limiting site impacts, preventing erosion and sedimentation, and managing activities and sources during the construction phase of a project. The 13 elements are:

1. Preserve vegetation/mark clearing limits
2. Establish construction access
3. Control flow rates
4. Install sediment controls
5. Stabilize soils
6. Protect slopes
7. Protect drain inlets
8. Stabilize channels and outlets
9. Control pollutants
10. Control dewatering
11. Maintain BMPs
12. Manage the project
13. Protect Low Impact Development BMPs

A complete description of each element and the associated BMPs are given in Chapter 5.

Additional Requirements

If a Construction SWPPP is found to be inadequate (with respect to erosion and sediment control requirements), the City may require that other BMPs be implemented as needed. The City may also require a wet season amendment to the SWPPP if work will be performed between October 1 and April 30. See Chapter 5, Section 5.2.3 for details.

Note that clearing and grading activities for developments may be permitted only if conducted pursuant to an approved site development plan (e.g., subdivision approval) that establishes permitted areas of clearing, grading, cutting, and filling. These permitted clearing and grading areas and any other areas required to preserve critical or sensitive areas, buffers, native growth protection easements, or tree retention areas shall be delineated on the site plans and at the development site. See Chapter 3 for additional details on project submittal requirements.

In addition, a Construction Stormwater General Permit may be required by Ecology. See Chapter 1, Section 1.7.7, and Chapter 5 of this manual for additional information regarding Ecology’s Construction Stormwater General Permit.

2.2.3 Core Requirement #3: Source Control of Pollution

All known, available, and reasonable source control BMPs shall be applied to all projects to prevent stormwater from coming in contact with pollutants on the developed site.

“Source control” is *postdevelopment* pollution prevention which applies after development occurs. Core Requirement #2 addresses source control during construction, while Core Requirement #3 focuses on postdevelopment measures to prevent pollution. Source control BMPs shall be selected, designed, and maintained according to Volume IV of the 2019 Ecology Manual, as described and referenced in Chapter 9. Source control BMPs shall be identified in the Stormwater Site Plans submitted for City review and must be shown on all applicable plans submitted for City review and approval.

Objective

The intent of source control BMPs is to prevent stormwater from coming in contact with pollutants. They are a cost-effective means of reducing pollutants in stormwater, and therefore should be a first consideration in all projects.

Supplemental Guidelines

An adopted and implemented basin plan or a TMDL (also known as a water cleanup plan or water quality improvement program) may be used to develop more stringent source control requirements that are tailored to a specific basin.

Source control BMPs include operational BMPs and structural source control BMPs. See Chapter 9 for design details of these BMPs. For construction sites, see Chapter 5.

2.2.4 Core Requirement #4: Preservation of Drainage Systems and Outfalls

Both natural drainage patterns and existing stormwater drainage systems shall be maintained, and discharges from the project site shall occur at the natural location, to the maximum extent practicable.

Objective

To preserve and utilize drainage systems to the fullest extent because of the multiple stormwater benefits these systems provide; and to prevent erosion at and downstream of the discharge location.

Guidelines

The manner by which runoff is discharged from the project site must not cause a significant adverse impact to downstream receiving waters or down gradient properties. The discharge must have an identified overflow route that is safe and certain, and leads to the ultimate outfall location (such as a receiving water or municipal drainage system). All outfalls require energy dissipation. To demonstrate compliance with this core requirement, all projects shall submit a *qualitative analysis* downstream from the site to the receiving water. A *quantitative analysis* may be required for any project deemed to need additional downstream information or where the project proponent or the SDM Administrator determines that a quantitative analysis is necessary to evaluate the off-site impacts or the capacity of the conveyance system. See Chapter 3 for additional details.

Off-site drainage is drainage from adjacent property that enters the proposed project site in other than a defined natural channel. Existing off-site flows must be accommodated without causing erosion or flooding impacts. Off-site flows shall not be routed through the project's conveyance, treatment, or retention/detention systems, unless those systems are sized to control those flows. Off-site contribution areas shall be mapped.

Off-site flows that are collected and routed through or around the site in a separate conveyance shall be dispersed at the downgradient property line, if feasible, or discharged at a project outfall (or outfalls) in a manner that does not violate the criteria below or cause the capacity of a conveyance system to be exceeded.

Where no conveyance system exists at the adjacent downgradient property line and the discharge was previously unconcentrated flow or significantly lower concentrated flow, measures must be taken to prevent downgradient impacts. Drainage easements from downstream property owners may be needed and should be obtained prior to approval of engineering plans.

Where no conveyance system exists at the abutting downstream property line and the natural (existing) discharge is unconcentrated, any runoff concentrated by the proposed project, including off-site drainage, must be discharged as follows:

1. If the 100-year peak discharge, as estimated using an approved continuous simulation model using 15-minute time steps, is less than or equal to 0.3 cfs under existing conditions and will remain less than or equal to 0.3 cfs under developed conditions, then the concentrated runoff may be discharged onto a rock pad or to any other system that serves to disperse flows.
2. If the 100-year peak discharge, as estimated using an approved continuous simulation model using 15-minute time steps, is between 0.3 and 0.75 cfs under existing conditions and will remain in that range under developed conditions, then the concentrated runoff may be discharged through a dispersal trench or other dispersal system, provided the applicant can demonstrate that there will be no significant adverse impact to downhill properties or drainage systems.

3. If the 100-year peak discharge, as estimated using an approved continuous simulation model using 15-minute time steps, is greater than 0.75 cfs for either existing or developed conditions, or if a significant adverse impact to downgradient properties or drainage systems is likely, then a conveyance system shall be provided to convey the concentrated runoff across the downstream properties to an acceptable discharge point (i.e., an enclosed drainage system or open drainage feature where concentrated runoff can be discharged without significant adverse impact).

Stormwater retention, detention, or runoff treatment BMPs, as required by this manual, shall not be located within the expected 25-year water level elevations for salmonid-bearing waters. Such areas may provide off-channel habitat for juvenile salmonids and salmonid fry. Designs for outfall systems to protect against adverse impacts from concentrated runoff are included in Chapter 6.

2.2.5 Core Requirement #5: On-Site Stormwater Management

Projects shall employ on-site stormwater management BMPs in accordance with the following project thresholds, standards, and lists to infiltrate, disperse, and retain stormwater runoff on site to the extent feasible without causing flooding or erosion impacts. Table 2.1 summarizes the list approach compliance method for Core Requirement #5. A flow chart (Figure 2.3) is provided at the end of this section to help summarize the key components of this core requirement.

Objective

To use practices as feasible, distributed across a development, which reduce the amount of disruption of the natural hydrologic characteristics of the site, and keep runoff on the parcel/lot on which it originates by keeping it dispersed rather than concentrated.

Project Thresholds

Core Requirements #1 Through #5

Projects triggering only Core Requirements #1 through #5 shall either:

1. Use LID BMPs from List #1 for all surfaces within each type of surface in List #1 for each Site or Project Site; or
2. Demonstrate compliance with the LID Performance Standard. Projects selecting this option cannot use rain gardens. They may choose to use bioretention areas as described in Chapter 7, Section 7.4.4, to achieve the LID Performance Standard. Projects selecting this option must implement the post-construction soil quality and depth BMP described in Chapter 7, Section 7.4.1.

Core Requirements #1 Through #9

Projects triggering Core Requirements #1 through #9 shall either:

1. Use LID BMPs from List #2 for all surfaces within each type of surface in List #2 for each Site or Project Site; or
2. Use the LID Performance Standard and post-construction soil quality and depth BMP (see Chapter 7, Section 7.4.1). Projects selecting this option cannot use rain gardens.

Projects triggering Core Requirements #1 through #9 which qualify as Flow Control exempt in accordance with the TDA Exemption in Core Requirement #7 (Section 2.2.7) shall either:

1. Use the LID BMPs from List #3 for all surfaces within each type of surface in List #3 for each tract, parcel, or lot within the Site or Project Site; or
2. Use any flow control BMP(s) desired to achieve the LID Performance Standard and apply the post-construction soil quality and depth BMP. Projects selecting this option cannot use rain gardens.

If the project has multiple TDAs, all TDAs must be flow control exempt per the TDA Exemption in Core Requirement #7 (Section 2.2.7) for the project to use the options listed here.

Low Impact Development Performance Standard

Stormwater discharges shall match developed discharge durations to predeveloped durations for the range of predeveloped discharge rates from 8 percent of the 2-year peak flow to 50 percent of the 2-year peak flow. Refer to the *Standard Flow Control Requirement* section in Core Requirement #7 for information about the assignment of the predeveloped condition. Project sites that must also meet Core Requirement #7 must match flow durations between 8 percent of the 2-year flow through the full 50-year flow.

In order to meet the LID Performance Standard, designers may use any flow control BMP. There are no specific flow control BMPs that must be used to meet the LID Performance Standard. In order to meet the LID Performance Standard, the selected flow control BMPs will most likely need to include infiltration.

Note that rain gardens cannot be used to meet the requirements of the LID Performance Standard. This is because the LID Performance Standard requires the submittal of an engineered design and analysis and rain gardens by definition are non-engineered. For projects proposing to meet the LID Performance Standard, a bioretention BMP must be used in lieu of a rain garden, even though they may look and perform similarly in practice.

List Approach

The list approach compliance method for Core Requirement #5 required evaluating the BMPs in List #1, #2, or #3 (see Table 2.1).

For each surface, evaluate the feasibility of the BMPs in the order listed, and use the first BMP that is considered feasible. The designer must document the site conditions and infeasibility criteria used to deem BMPs infeasible. Once a BMP is deemed feasible and used for a surface, no other on-site stormwater management BMP is necessary for that surface. Feasibility shall be determined by evaluation against:

1. Design criteria, limitations, and infeasibility criteria identified for each BMP in Chapter 7 and Appendix 7B of this manual; and
2. Competing Needs Criteria listed below.

If all BMPs in the list are infeasible, then the designer must document the site conditions and infeasibility criteria used to deem each BMP infeasible. This documentation will demonstrate compliance with Core Requirement #5.

Table 2.1. The List Approach for Core Requirement #5 Compliance.		
List #1 (for projects triggering Core Requirements #1–5)	List #2 (for projects triggering Core Requirements #1–9)	List #3 (for flow control exempt projects)
Surface Type: Lawn and Landscaped Areas		
Post-Construction Soil Quality and Depth (Chapter 7, Section 7.4.1)	Post-Construction Soil Quality and Depth (Chapter 7, Section 7.4.1)	Post-Construction Soil Quality and Depth (Chapter 7, Section 7.4.1)
Surface Type: Roofs		
1. Full Dispersion (Chapter 7, Section 7.4.2) or Downspout Full Infiltration (Chapter 7, Section 7.4.10) 2. Rain Gardens (Chapter 7, Section 7.4.5) ¹ or Bioretention (Chapter 7, Section 7.4.4) ¹ 3. Downspout Dispersion Systems (Chapter 7, Section 7.4.10) 4. Perforated Stub-out Connections (Chapter 7, Section 7.4.10)	1. Full Dispersion (Chapter 7, Section 7.4.2) or Downspout Full Infiltration (Chapter 7, Section 7.4.10) 2. Bioretention (Chapter 7, Section 7.4.4) ¹ 3. Downspout Dispersion Systems (Chapter 7, Section 7.4.10) 4. Perforated Stub-out Connections (Chapter 7, Section 7.4.10)	1. Downspout Full Infiltration (Chapter 7, Section 7.4.10) 2. Downspout Dispersion Systems (Chapter 7, Section 7.4.10) 3. Perforated Stub-out Connections (Chapter 7, Section 7.4.10)
Surface Type: Other Hard Surfaces		
1. Full Dispersion (Chapter 7, Section 7.4.2) 2. Permeable Pavements (Chapter 7, Section 7.4.6) ² or Rain Gardens (Chapter 7, Section 7.4.5) ¹ or Bioretention (Chapter 7, Section 7.4.4) ¹ 3. Sheet Flow Dispersion (Chapter 7, Section 7.4.2) or Concentrated Flow Dispersion (Chapter 7, Section 7.4.2)	1. Full Dispersion (Chapter 7, Section 7.4.2) 2. Permeable Pavements (Chapter 7, Section 7.4.6) ² 3. Bioretention (Chapter 7, Section 7.4.4) ¹ 4. Sheet Flow Dispersion (Chapter 7, Section 7.4.2) or Concentrated Flow Dispersion (Chapter 7, Section 7.4.2)	Sheet Flow Dispersion (Chapter 7, Section 7.4.2) or Concentrated Flow Dispersion (Chapter 7, Section 7.4.2)
Notes for using the List Approach: ¹ Rain Gardens and Bioretention used in the List Approach to have a minimum horizontal projected surface area below the overflow which is at least 5% of the area draining to it. ² When the designer encounters Permeable Pavements in the List Approach, it is not a requirement to pave these surfaces. Where pavement is proposed, it must be permeable to the extent feasible unless Full Dispersion is employed.		

Competing Needs

LID BMPs can be superseded or restricted where they are in conflict with:

- Requirements of the following federal or state laws, rules, and standards:
 - Historic preservation laws and archaeology laws listed at <https://dahp.wa.gov/project-review/preservation-laws>
 - Federal Superfund or Washington State Model Toxics Control Act (MTCA)
 - Federal Aviation Administration requirements for airports
 - Americans with Disabilities Act (ADA)
- Special zoning district design criteria adopted and being implemented pursuant to a community planning process found in Title 16 Lacey Municipal Code (LMC); the existing local codes may supersede or alter the LID requirement.
- Public health and safety standards.
- Transportation regulations to maintain the option for future expansion or multi-modal use of public rights-of-way.
- Critical Area Ordinance (Chapter 16.54 LMC), as well as Chapter 14.32 LMC that provides specific protection of tree species.
- A local code or rule adopted as part of a wellhead protection program established under the Safe Drinking Water Act; or adopted to protect a critical aquifer recharge area established under the state Growth Management Act.

Supplemental Guidelines

“Flooding or erosion impacts” include flooding of septic systems, crawl spaces, living areas, outbuildings, etc.; increased ice or algal growth on sidewalks/roadways; earth movement/settlement; erosion and other potential damage.

An adopted and implemented basin plan, or a TMDL may be used to develop on-site stormwater management requirements that are tailored to a specific basin and may also be used to ensure that stormwater design provides a sampling location for sampling the water quality of any stormwater leaving the site. However, on-site stormwater management requirements shall not be less than that required by List #1, List #2, List #3, or the LID Performance Standard.

Recent research indicates that traditional development techniques in residential, commercial, and industrial land development cause gross disruption of the natural hydrologic cycle with severe impacts to water and water-related natural resources. Based upon gross-level applications of continuous simulation modeling and assumptions

concerning minimum flows needed to maintain beneficial uses, watersheds must retain the majority of their natural vegetation cover and soils, and developments must minimize their disruption of the natural hydrologic cycle in order to avoid significant natural resource degradation in lowland streams.

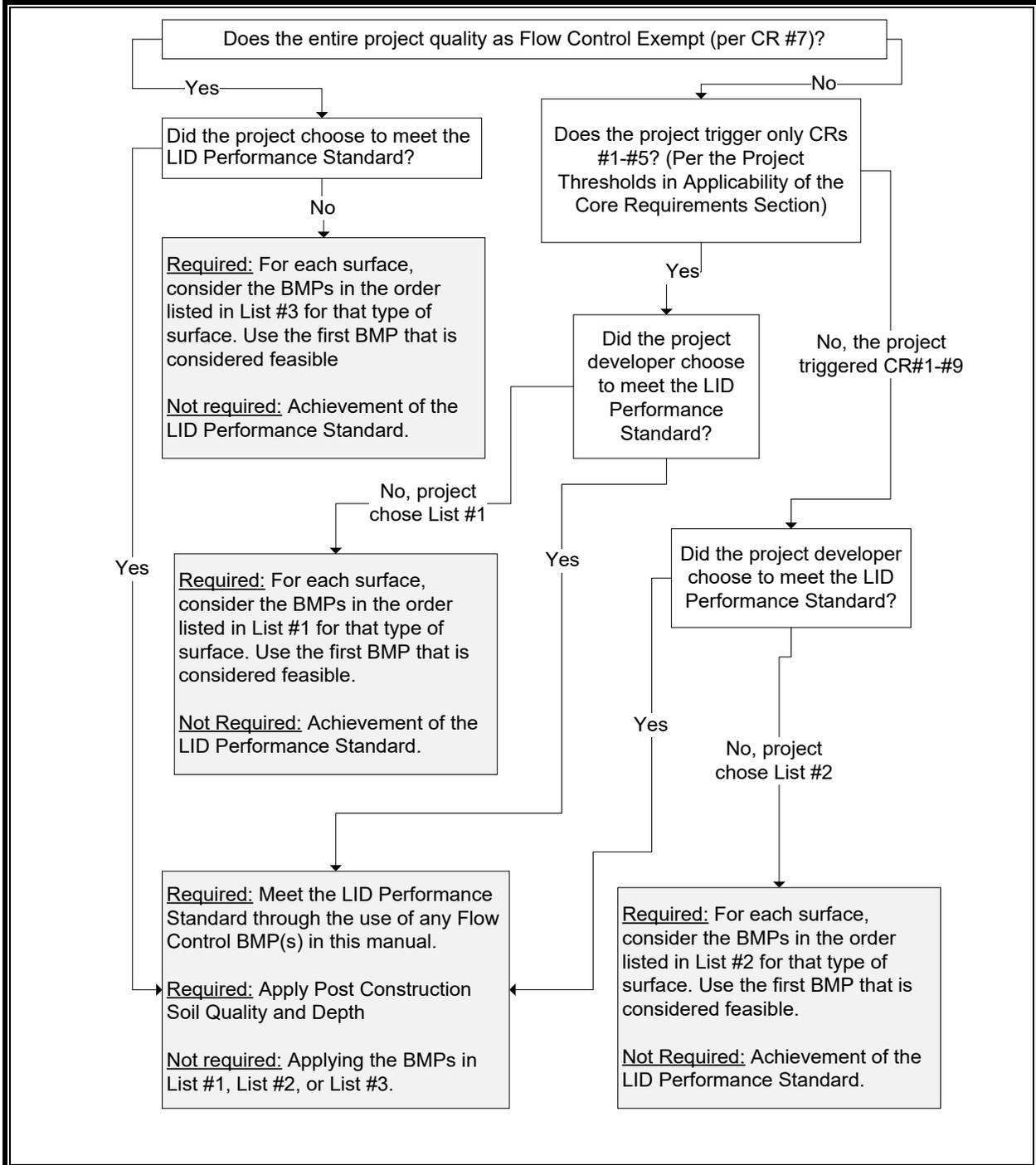


Figure 2.3. Flow Chart for Determining Core Requirement #5 Requirements.

2.2.6 Core Requirement #6: Runoff Treatment

Runoff treatment shall be provided at development project sites to remove pollutants from stormwater runoff, and to reduce the water quality impacts of stormwater runoff.

This shall include treatment for oil products, phosphorus control, basic treatment for suspended solids, or enhanced treatment for dissolved metals for projects that meet specified thresholds.

Objective

The purpose of runoff treatment is to reduce pollutant loads and concentrations in stormwater runoff using physical, biological, and chemical removal mechanisms so that beneficial uses of receiving waters are maintained and, where applicable, restored. When site conditions are appropriate, infiltration can potentially be the most effective BMP for runoff treatment.

Runoff Treatment BMP Selection, Design, and Maintenance

Runoff treatment BMPs shall be:

- Selected in accordance with the process identified in Chapter 4 and detailed in Chapter 8
- Designed in accordance with the design criteria in Chapter 8
- Maintained in accordance with the maintenance checklists in Chapter 10.

TDA Thresholds

Each TDA within a project that requires Core Requirement #6 (as detailed in Section 2.1.2 Applicability of the Core Requirements) must be reviewed to determine if Runoff Treatment BMPs are required for the TDA to be in compliance with Core Requirement #6.

Any TDA that includes a deep UIC well is required to construct stormwater treatment facilities. Additional treatment volume/flow rate requirements apply to projects with deep UICs. For more information related to deep UICs and the UIC Program, refer to Chapter 7, Appendix 7C.

Note that it is possible for a project that requires Core Requirement #6 with multiple TDAs to not need runoff treatment BMP(s) in one or more individual TDAs. If a TDA does not trigger the TDA threshold for runoff treatment BMPs, then the designer must document the areas within the TDA used to determine that the TDA threshold was not met. This documentation will demonstrate compliance with Core Requirement #6 for the TDA.

When assessing a TDA against the following thresholds, only consider those hard and pervious surfaces that are subject to this core requirement as determined in Section 2.1.2 of this chapter.

The following TDAs require construction of stormwater treatment facilities. If a TDA meets any of the following thresholds, runoff treatment BMPs are required. The project proponent must demonstrate that the TDA does not meet either of the following thresholds for runoff treatment BMPs to not be required for that TDA.

- TDAs in which the total of effective, pollution-generating hard surface (PGHS) is 5,000 square feet or more, or
- TDAs in which the total area of pollution-generating pervious surfaces (PGPS)—not including permeable pavements—is 0.75 acre or more, and from which there will be a surface discharge in a natural or constructed conveyance system from the site.

Additional Requirements

Direct discharge of untreated stormwater from pollution-generating impervious surfaces to groundwater is prohibited. Chapter 8, Section 8.3 provides additional detail on stormwater treatment requirements that may apply to projects that incorporate infiltration facilities, while Section 8.6.3 details the soil requirements to achieve runoff treatment through infiltration. Projects proposing to drain to existing BMPs must ensure and provide documentation that those BMPs have been maintained, are fully functional, and have adequate capacity.

Additional/specific requirements apply to development projects located within basins with known water quality problems. A water quality problem, for the purposes of impact mitigation in this manual, is defined as a stream reach, lake, or other waterbody of the state that is either: currently designated in the state’s Water Quality Assessment 303(d)/305(b) Integrated Report as a Category 5, 4, or 2 water due to exceedance or concern for exceedance of the state’s numeric action standard for any pollutants of concern (fecal coliform, dissolved oxygen, or temperature, as noted below), or 2) is currently designated by the City or Thurston County as a problem based on credible data indicating exceedance or concern for exceedance of the state’s numeric action standard.

Based on the current 303(d) listings in the City, there are currently three types of downstream water quality problems for which additional attention needs to be given to preventing or minimizing increases in the pollutant or pollutants of concern discharging from the site (fecal coliform bacteria, dissolved oxygen, or temperature issues). The additional requirements associated with these known problem conditions are outlined in Chapter 8, Sections 8.2.1 and 8.3.5.

Supplemental Guidelines

See Chapter 8 for more detailed guidance on selection, design, and maintenance of treatment facilities. Chapter 8 includes performance goals for basic, enhanced,

phosphorus, and oil control treatment, and a menu of BMP options for each treatment type. Runoff treatment BMPs that are selected from the appropriate menu and designed in accordance with their design criteria are presumed to meet the applicable performance goals.

An adopted and implemented basin plan, or a TMDL may be used to develop runoff treatment requirements that are tailored to a specific basin. However, treatment requirements shall not be less than that achieved by facilities in the applicable treatment menu for the site (see Chapter 8, Section 8.3).

Runoff treatment BMPs applied consistent with this manual are presumed to meet the requirement of state law to provide all known available and reasonable methods of treatment (RCW 90.52.040, RCW 90.48.010). This technology-based treatment requirement does not excuse any discharge from the obligation to apply whatever technology is necessary to comply with state water quality standards, Chapter 173-201A WAC; state groundwater quality standards, Chapter 173-200 WAC; state sediment management standards, Chapter 173-204 WAC; and the underground injection control program, Chapter 173-218 WAC. Additional treatment to meet those standards may be required by federal, state, or local governments.

Infiltration through use of on-site stormwater management BMPs can provide both treatment of stormwater, through the ability of certain soils to remove pollutants, and volume control of stormwater, by decreasing the amount of water that runs off to surface water. Infiltration through engineered treatment BMPs that utilize the natural soil profile can also be very effective at treating stormwater runoff. However, note that pretreatment is required for most infiltration facilities, and soil conditions must also be appropriate to achieve effective treatment while not impacting groundwater resources. See Chapter 8, Sections 8.2.2 and 8.6.3 for further details.

2.2.7 Core Requirement #7: Flow Control

Projects that discharge stormwater directly or indirectly into surface water must provide flow control of stormwater discharges and infiltration, to reduce the impacts of stormwater runoff from impervious surfaces and land-cover conversions. Discharges to closed depressions also must provide flow control to minimize potential flooding in the closed depression area.

Objective

To prevent increases in the stream channel erosion rates that are characteristic of natural conditions (i.e., prior to disturbance by European settlement). The standard intends to maintain the total amount of time that a receiving stream exceeds an erosion-causing threshold based upon historical rainfall and natural land cover conditions. That threshold is assumed to be 50 percent of the 2-year recurrence interval peak flow. Maintaining the naturally occurring erosion rates within streams is vital, though by itself insufficient, to protect fish habitat and production.

TDA Exemption

Flow control is not required for TDAs that discharge to Puget Sound or the Nisqually River.

Discharges to flow control-exempt waters are only allowed in accordance with the following restrictions:

- Direct discharge to the exempt receiving water does not result in the diversion of drainage from any perennial stream classified as Types 1, 2, 3, or 4 in the State of Washington Interim Water Typing System, or Types “S”, “F”, or “Np” in the Permanent Water Typing System, or from any Category I, II, or III wetland.
- If flow splitters or conveyance elements are applied to route natural runoff volumes from the TDA to any downstream Type 5 stream or Category IV wetland, then:
 - Design of flow splitters or conveyance elements must be based on approved continuous simulation modeling analysis. The design must assure that flows delivered to Type 5 stream reaches will approximate, but in no case exceed, durations ranging from 50 percent of the 2-year to the 50-year recurrence interval peak flow.
 - Flow splitters or conveyance elements that deliver flow to Category IV wetlands must also be designed using approved continuous simulation modeling to preserve pre-project wetland hydrologic conditions unless specifically waived or exempted by regulatory agencies with permitting jurisdiction.
- The TDA must be drained by a conveyance system that is composed entirely of constructed conveyance elements (e.g., pipes, ditches, outfall protection) and extends to the ordinary high water mark of the exempt receiving water.
- The conveyance system between the TDA and the exempt receiving water shall have sufficient hydraulic capacity to convey discharges from future build-out conditions (under current zoning) of the Site, and the existing condition from off-site areas from which runoff is or will be collected.
- Any erodible elements of the constructed conveyance system must be adequately stabilized to prevent erosion under the conditions noted above.
- Surface water from the area must not be diverted from or increased to an existing wetland, stream, or near-shore habitat sufficient to cause a significant adverse impact.

If the discharge is to a stream that leads to a wetland, or to a wetland that has an outflow to a stream, both this requirement and Core Requirement #8 apply.

Refer to Appendix I-E (Flow Control Exempt Surface Waters) of the 2019 Ecology Manual for a complete list of Flow Control Exempt Surface Waters. An exemption from flow control requirements for a waterbody that is not listed in Ecology's Appendix I-E (Flow Control Exempt Surface Waters) is subject to Ecology approval on the basis of a hydrologic study demonstrating the absence of significant downstream impacts.

TDA Thresholds

Each TDA within a project that requires Core Requirement #7 (as detailed in Section 2.1.2) must be reviewed to determine if Flow Control BMPs are required for the TDA to be in compliance with Core Requirement #7.

Note that it is possible for a project that requires Core Requirement #7 with multiple TDAs to not need flow control BMP(s) in one or more individual TDAs. If a TDA does not trigger the TDA thresholds for flow control BMPs, then the designer must document the areas within the TDA used to determine that the TDA thresholds were not met. This documentation will demonstrate compliance with Core Requirement #7 for the TDA

When assessing a TDA against the following thresholds, consider only those impervious, hard, and pervious surfaces that are subject to this core requirement as determined in Section 2.1.2. If a TDA meets any of the following thresholds, flow control BMPs are required. The project proponent must demonstrate that the TDA does not meet any of the following thresholds for flow control BMPs to not be required for that TDA.

The following circumstances require achievement of the standard flow control requirement for western Washington:

- TDAs in which the total of effective impervious surfaces is 10,000 square feet or more, or
- TDAs that convert 0.75 acre or more of vegetation to lawn or landscape, or convert 2.5 acres or more of native vegetation to pasture, and from which there is a surface discharge in a natural or constructed conveyance system from the TDA, or
- TDAs that through a combination of effective hard surfaces and converted vegetation areas cause a 0.15 cubic feet per second (cfs) increase in the 100-year recurrence interval flow frequency as estimated using the WWHM or other approved model and 15-minute time steps. See the supplemental guidelines below for example scenarios that could trigger this requirement.

Development projects that discharge stormwater off site shall submit an off-site analysis report that assesses the potential off-site water quality, erosion, slope stability, and drainage impacts associated with the project and that proposes appropriate mitigation of those impacts.

Discharge Requirements

The allowable release rates from a project are dependent upon the ultimate destination for the stormwater. All projects not directly attributable to Category B below, and not exempted per the flow-control exempt receiving waters outlined above, shall use Category A for determining the allowable discharge rates.

Category A: Discharge to a fresh waterbody.

Any waterbody not defined as a flow control-exempt receiving waters (described above), or closed depression.

Requirements

Stormwater discharges shall match developed discharge durations to predeveloped durations for the range of predeveloped discharge rates from 50 percent of the 2-year recurrence interval peak flow up to the full 50-year peak flow. The predeveloped condition to be matched shall be a forested land cover unless reasonable, historical information is provided that indicates the site was prairie prior to settlement (modeled as “pasture” in the WWHM).

In addition, flow control BMPs shall be selected, designed, and maintained according to this manual.

Alternative Requirement

An alternative requirement may be established through application of watershed-scale hydrological modeling and supporting field observations. Possible reasons for an alternative flow control requirement include:

- Establishment of a stream-specific threshold of significant bedload movement other than the assumed 50 percent of the 2-year recurrence interval peak flow
- Zoning and Land Clearing Ordinance restrictions that, in combination with an alternative flow control standard, maintain or reduce the naturally occurring erosive forces on the stream channel
- A duration control standard is not necessary for protection, maintenance, or restoration of designated and existing beneficial uses or Clean Water Act compliance.

Category B: Discharge to a closed depression.

Discharges to any low-lying area which has no outlet, or such a limited surface outlet that in most storm events the area acts as a retention basin holding water for infiltration or evaporation, shall be considered discharges to a closed depression. Appropriate runoff treatment BMPs shall be applied to all discharges.

Requirements

Due to the significant adverse impacts that can result from increasing the rate, volume, and duration of stormwater runoff to closed depressions, the contributing area to the closed depression must be analyzed using a continuous simulation model for the 100-year recurrence interval flow. When a proposed development contributes to a closed depression area, flow from the entire drainage basin tributary to the closed depression shall be routed into the closed depression, using only infiltration as outflow. (Infiltration rates shall be determined as specified in Chapter 7, Section 7.2.3, and Appendix 7A.) Discharge to the area may be allowed when modeling of the postdevelopment (i.e., postproject) high water level indicates no more than a 0.1-foot increase relative to the predevelopment (i.e., existing) high water level for the 100-year recurrence interval, unless the development has acquired ownership or discharge rights to the closed depression. Absent ownership or discharge rights, projects must excavate additional storage volume in the closed depression (subject to all applicable requirements, for example, providing a defined overflow system) needed to achieve the 0.1-foot maximum water level increase.

Note that where there is a flooding potential, concern about rising ground water levels, property rights/ownership/use issues, or sensitive area ordinances and rules, this analysis may not be sufficient. In such cases, the City may require additional analysis and impose more stringent requirements.

Appropriate runoff treatment BMPs must also be applied to all discharges. When selecting appropriate treatment BMPs, the engineer shall assume the soil is fully saturated all year within the closed depression unless the engineer provides supporting documentation for an alternative condition.

Additional Requirements

Projects proposing to drain to existing BMPs must ensure and provide documentation that those BMPs have been maintained, are fully functional, and have adequate capacity.

Supplemental Guidelines

Calculations to determine whether a project exceeds 0.15 cfs using a 15-minute time step in the 100-year recurrence interval flow must be done individually for each project using an approved continuous simulation runoff model. The calculation will compare runoff in the postdevelopment site to the predevelopment land cover. Predevelopment, for this activity, is the lower runoff of the pre project condition or the site in 1997¹. The unique site, soil, precipitation, and other project-specific factors will ultimately determine whether this threshold is exceeded. Nonetheless, the following general guidelines (based on hypothetical site designs) may be used to help identify the likelihood of this threshold being exceeded. The following land uses changes are likely to exceed this threshold under certain conditions:

³ November 3, 1997, effective date of first ordinance to meet Clean Water Act and NPDES permit requirements for flow control.

- Converting approximately 5,000 square feet of forest to impervious surface
- Converting approximately 5,000 square feet of pasture to impervious surface
- Converting approximately 0.25 acre of forest to landscape surface
- Converting approximately 1.25 acres of forest to pasture surfaces (in till soil conditions).

Reduction of flows through infiltration decreases surface water runoff and helps to maintain base flow throughout the summer months. However, infiltration shall follow the requirements in this manual (particularly Chapters 7 and 8) to reduce the chance that groundwater quality is threatened by such discharges.

Chapter 7 includes a description of the WWHM and other approved continuous simulation runoff models. Some of these models provide tools and/or credits for use of certain on-site stormwater management BMPs and LID techniques described in Chapter 7. Using those BMPs and LID techniques reduces the predicted runoff rates and volumes and thus also reduces the size of the required flow control facilities.

Application of sufficient types of on-site stormwater management BMPs can result in reducing the effective impervious area and the converted vegetation areas, thereby reducing or eliminating the need for a flow control BMP. Impervious surfaces that are fully dispersed in accordance with full dispersion in Chapter 7, Section 7.4.2, are not considered effective impervious surfaces. Impervious surfaces that are dispersed in accordance with downspout dispersion in Chapter 7, Section 7.4.10; concentrated flow dispersion in Chapter 7, Section 7.4.2; and sheet flow dispersion in Chapter 7, Section 7.4.2, are still considered effective surfaces though they may be modeled as pervious surfaces if flow path lengths meet the specified minimums. Permeable pavers and modular grid pavements are assigned lower surface runoff calibrations and may also reduce flow control BMP sizes. See Chapter 7 for more complete descriptions of hydrologic credits for LID and on-site stormwater management BMPs.

Diversions of flow from perennial streams and from wetlands can be considered if significant existing (i.e., pre-project) flooding, stream stability, water quality, or aquatic habitat problems would be solved or significantly mitigated by bypassing stormwater runoff rather than providing stormwater detention and discharge to drainage features. Bypassing shall not be considered as an alternative to applicable flow control or runoff treatment if the flooding, stream stability, water quality, or habitat problem to be solved would be caused by the project. In addition, the proposal shall not exacerbate other water quality/quantity problems such as inadequate low flows or inadequate wetland water elevations. The existing problems and their solution or mitigation as a result of the direct discharge shall be documented by an engineer or scientist after review of any available drainage reports, basin plans, or other relevant literature. The restrictions in this core requirement on conveyance systems that transfer water to an exempt receiving water are applicable in these situations. Approvals by all regulatory authorities with relevant permits applicable to the project are necessary.

2.2.8 Core Requirement #8: Wetlands Protection

Wetlands protection is intended to prevent diminishment of the functions and values of wetlands by avoiding alterations to the structural, hydrologic, and water quality characteristics of existing wetlands to the extent feasible during new development, redevelopment, and stormwater management projects.

Objective

To ensure that wetlands receive the same level of protection as any other waters of the state. Wetlands are extremely important natural resources which provide multiple stormwater benefits, including groundwater recharge, flood control, and stream channel erosion protection. They are easily impacted by development unless careful planning and management are conducted. Wetlands can be severely degraded by stormwater discharges from urban development due to pollutants in the runoff and also due to disruption of the natural hydrologic pattern of the wetland

Applicability

The requirements below apply only to projects whose stormwater discharges into a wetland, either directly or indirectly through a conveyance system.

Thresholds

Refer to Figure 2.4 to determine what level(s) of wetland protection must be applied to comply with Core Requirement #8.

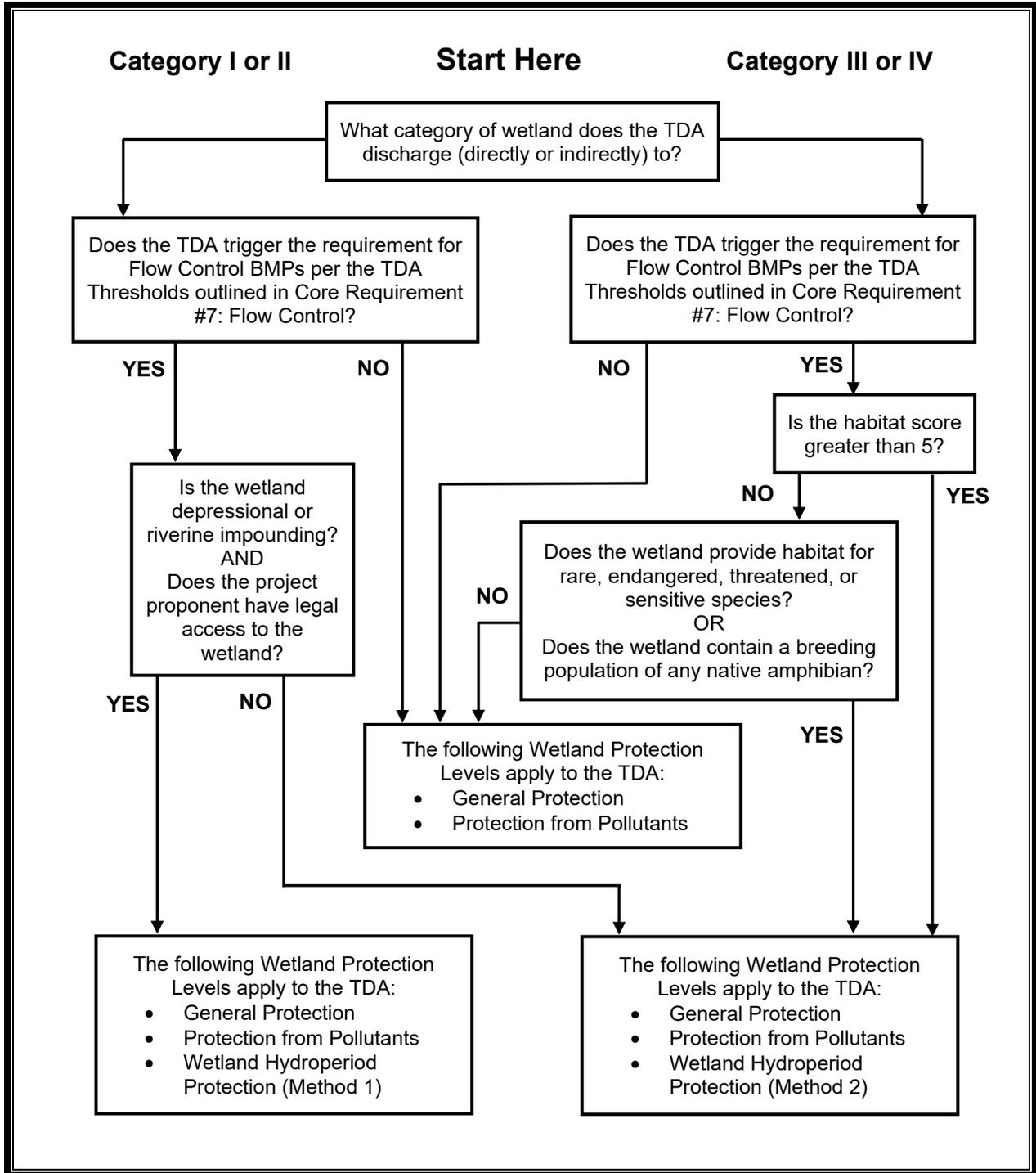


Figure 2.4. Flow Chart for Determining Wetland Protection Level Requirements.

Standard Requirement

Projects shall comply with Title 14 LMC, Chapter 14.28 LMC, and Appendix I-C of the 2019 Ecology Manual. For general protection, see Section I-C.2 and for wetland hydroperiod protection, see Section I-C.3 of the 2019 Ecology Manual. A wetland can be considered for hydrologic modification and/or stormwater treatment in accordance with City codes and Appendix I-C of the 2019 Ecology Manual.

Additional Requirements

Runoff treatment and flow control BMPs shall not be built within a natural vegetated buffer, except for:

- Necessary conveyance systems as approved by the City
- As allowed in Appendix I-C.6 of the 2019 Ecology Manual.

An adopted and implemented basin plan or TMDL may be used to develop requirements for wetlands that are tailored to a specific basin.

Supplemental Guidelines

Appendix I-C of the 2019 Ecology Manual, “Wetlands Protection Guidelines,” shall be used for discharges to natural wetlands and wetlands constructed as mitigation. While it is always necessary to pretreat stormwater prior to discharge to a wetland, there are limited circumstances where wetlands may be used for additional treatment and detention of stormwater. These situations must comply with the LMC as well as the requirements and Appendix I-C.

In most cases, if wetland hydroperiod protection is required per Core Requirement #8, then meeting the discharge requirements listed in Core Requirement #7 is also required. In these cases, the designer must attempt to meet the requirements for both Core Requirements. This may prove to be feasible in many situations because Core Requirement #7 will seek to adjust the flow in small time intervals and Core Requirement #8 looks to maintain daily flow volumes.

If the designer is unable to meet both requirements, then the requirement to maintain the hydroperiod of the wetland becomes the overriding concern and the designer must show compliance with Core Requirement #8. If this is the case, the designer must also provide documentation detailing why they are unable to meet both requirements.

2.2.9 Core Requirement #9: Operation and Maintenance

Maintenance access, a project-specific operation and maintenance agreement, and Maintenance and Source Control Manual shall be provided for all proposed stormwater facilities and BMPs.

The Maintenance and Source Control Manual shall be consistent with the provisions in Chapters 3, 9, and 10 of this manual. A Maintenance and Source Control Manual shall be provided for all proposed stormwater facilities and BMPs, and the party (or parties) responsible for maintenance and operation shall be identified. For most facilities, the owner shall sign the maintenance agreement and record it at the Thurston County Auditor's Office. At private facilities, a copy of the manual shall be retained on site or within reasonable access to the site, and shall be transferred with the property to the new owner. Copies of the agreement and manual shall be retained on site or within reasonable access to the site. For City-owned facilities, maintenance agreements are not required, but a copy of the maintenance manual shall be retained in the appropriate department. A log of maintenance activity that indicates what actions were taken and when (as part of the required ongoing maintenance inspections) shall be kept and be available for inspection by the City at any time. See also the stormwater maintenance requirements in Chapter 14.25 LMC.

Objective

To ensure that stormwater control BMPs are adequately maintained and operated properly long-term.

Supplemental Guidelines

Inadequate maintenance is a common cause of failure for stormwater control facilities. The Maintenance and Source Control Manual should be viewed as the owner's manual, written for the person who was not the designer, builder, or inspector but who, in the future, is charged with the responsibility to maintain the facilities built for them. While the Maintenance and Source Control Manual may be submitted during permitting at the same time as the complete set of construction plans, the two are often separated after final construction. The manual should be written with sufficient information to describe the number, location, and type of BMPs as well as specific details and inspection intervals to ensure proper maintenance long into the future. The description of each BMP in Chapters 4, 5, 7, and 8 includes a section on maintenance to assist in writing the Maintenance and Source Control Manual. Chapter 10 includes maintenance checklists for many drainage BMPs.

2.3 Additional Requirements

2.3.1 Financial Guarantees

Maintenance and/or operational bonding or other appropriate financial guarantees are required for all projects to ensure construction and functionality of drainage facilities in compliance with applicable standards. These guarantees are to be consistent with the most recent edition of the City of Lacey *Development Guidelines and Public Works Standards*.

2.3.2 Other Additional Requirements

Requirements of this manual may be superseded or augmented by the adoption of ordinances and rules to implement the recommendations of watershed plans or basin plans, or through the adoption of actions and requirements identified in a TMDL (or water quality improvement program) that is approved by Ecology and the U.S. EPA. These additional requirements are reflected in (Core Requirement #6 and Chapter 8).

Additional requirements apply to projects that propose the use of deep UICs:

- Project proponents must develop a replacement plan or include additional property set asides to account for potential well failure.
- Project proponents must identify a party who has long-term responsibility and liability for the monitoring, maintenance, and potential replacement of the well.
- Project proponents must create a funding security mechanism.

For more information related to deep UICs and the UIC program, refer to Chapter 7, Appendix 7C.

The City may request additional information or impose controls that differ from (and may exceed the core requirements of) those specified in this manual, at the discretion of the City. In doing so, the City shall act reasonably, exercising best professional judgment based on available information. Typical reasons for requiring additional information or controls may include, but are not limited to, the following:

- Water quality degradation potential
- Stream bank erosion potential caused by increased flows, leading to habitat damage
- Flooding potential that may present risk to life, safety, vital services, or property
- TMDLs or other regulatory mandates imposed by state or federal agencies

2.4 Adjustments

Adjustments to the core requirements may be granted prior to permit approval and construction. The SDM Administrator may grant an adjustment, subject to a written finding of fact that documents the following:

- The adjustment provides substantially equivalent environmental protection.
- The objectives of safety, function, environmental protection, and facility maintenance are met, based upon sound engineering practices.

2.5 Exceptions and Variances

Exceptions/variances to the core requirements may only be granted prior to permit approval and construction, subject to the requirements specified below and pursuant to provisions of the LMC. Chapter 2.30 LMC and Chapter 16.90 LMC, and other sections of the LMC may be applicable.

Exceptions and variances to the core requirements may be granted following legal public notice of an application for an exception or variance, legal public notice of the City's decision on the application, and written findings of fact that document the City's determination to grant an exception. The City shall keep records, including the written findings of fact, of all local exceptions to the core requirements.

The City may grant an exception to the core requirements if such application imposes a severe and unexpected economic hardship. To determine whether the application imposes a severe and unexpected economic hardship on the project applicant, the applicant must consider and document with written findings of fact the following:

- The current (pre-project) use of the site
- How the application of the core requirements restricts the proposed use of the site compared to the restrictions that existed prior to the adoption of the core requirements
- The possible remaining uses of the site if the exception were not granted
- The uses of the site that would have been allowed prior to the adoption of the core requirements
- A comparison of the estimated amount and percentage of value loss as a result of the core requirements versus the estimated amount and percentage of value loss as a result of requirements that existed prior to adoption of the core requirements
- The feasibility for the applicant to alter the project to apply the core requirements.

In addition, any exception must meet the following criteria:

- The exception will not increase risk to the public health and welfare, nor be injurious to other properties in the vicinity and/or downstream, and to the quality of waters of the state; and
- The exception is the least possible exception that could be granted to comply with the intent of the core requirements.