



# Drainage Design and Erosion Control Manual

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## Volume I Core Technical Requirements and Site Planning



## Chapter 2 - Core Requirements for New Development and Redevelopment

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#### **2.5.4 Core Requirement #4: Preservation of Natural Drainage Systems and Outfalls**

Natural drainage patterns shall be maintained, and discharges from the project site shall occur at the natural location, to the maximum extent practicable. The manner by which runoff is discharged from the project site must not cause a significant adverse impact to downstream receiving waters and downgradient properties. It must have an identified overflow route that is safe and certain, and leads to the ultimate outfall location (such as a receiving water or city drainage system). All outfalls require energy dissipation.

In the Chambers Basin R-4CB zone, all improvements shall be constructed in a manner that will not impound surface or shallow groundwater nor prevent it from flowing in a manner consistent with its predevelopment natural drainage condition.

Offsite drainage is drainage from adjacent property that enters the proposed project site in other than a defined natural channel. Development projects are required to handle offsite drainage in the same manner as exists under current conditions. This means that offsite flows shall be infiltrated within or passed-through the project site at the same rates and quantities after development as before. The development's infiltration/retention systems shall be sized to accommodate the correct proportion of offsite flows. This requirement shall not be construed as limiting a development's legal rights regarding offsite drainage.

Where practicable, offsite pass-through flows shall be routed separately across the development site. They shall not be routed through the project's conveyance, treatment, or retention/detention systems, unless those systems are sized as if the offsite flows were generated within the development project's boundaries.

#### **Objective**

To preserve and utilize natural 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.

#### **Supplemental Guidelines**

Creating new drainage patterns results in more site disturbance and more potential for erosion and sedimentation during and after construction. Creating new discharge points can create significant stream channel erosion problems as the receiving water body typically must adjust to the new flows. Diversions can cause greater impacts than would otherwise occur by discharging runoff at the natural location.

Where no conveyance system exists at the adjacent downgradient property line and the discharge was previously unconcentrated flow or significantly lower concentrated flow, then 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 must be discharged as follows:

- a) If the 100-year peak discharge is less than or equal to 0.2 cfs (0.3 cfs using 15 minute time steps) under existing conditions and will remain less than or equal to 0.2 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.
- b) If the 100-year peak discharge is less than or equal to 0.5 cfs (0.75 cfs using 15 minute time steps) under existing conditions and will remain less than or equal to 0.5 cfs 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.

- c) If the 100-year peak discharge is greater than 0.5 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 must 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).

**For (c) only, drainage easements from downstream property owners shall, if needed, be obtained prior to approval of engineering plans. If the proposed project is unable, after reasonable efforts, to obtain needed easements, the discharge approach described in (b) above may be used. Reasonable efforts to obtain needed easements along with communications regarding the alternatives shall be demonstrated through documented written correspondence.**

Stormwater control or treatment structures should 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 Volume V, Chapter 4.

## **2.5.5 Core Requirement #5: On-site Stormwater Management**

**Projects shall employ On-site Stormwater Management BMPs in accordance with the following projects thresholds, standards, and lists to infiltrate, disperse, and retain stormwater runoff on-site to the extent feasible without causing flooding or erosion impacts.**

**Projects qualifying as flow control exempt in accordance with Section 2.5.7 of this chapter do not have to achieve the LID performance standard, nor consider bioretention, rain gardens, permeable pavement, and full dispersion if using List #1 or List #2. However, those projects must implement BMP T5.13; BMPs T5.10A, B, or C; and BMP T5.11 or T5.12, if feasible.**

**Note: For projects within the Green Cove and Chambers Basin zoning districts, refer to the City of Olympia Engineering Design and Development Standards and Olympia Municipal Code for additional design guidelines.**

### **Project Thresholds**

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

- a) **Use On-site Stormwater Management BMPs from List #1 for all surfaces within each type of surface in List #1; or**
- b) **Demonstrate compliance with the LID Performance Standard. Projects selecting this option cannot use Rain Gardens. They may choose to use Bioretention BMPs as described in Chapter 7 of Volume V to achieve the LID Performance Standard.**

**Projects triggering Core Requirements #1 through #9, must meet the requirements in Table 2.5.1.**