



## Drainage Plans for Single-Family Residential Projects

Managing stormwater runoff and protecting our natural resources are responsibilities of all citizens and property owners within the City of Olympia. Rainfall that is not intercepted by vegetation or infiltrated into the ground becomes surface runoff that can potentially carry pollutants to our City's streams and Puget Sound. Unmanaged stormwater runoff can also cause flooding for downstream properties. Even though small projects create far less stormwater runoff or pollution than a larger development, the cumulative effects of many residential properties together can greatly affect water quality and flooding downstream.

***Projects that create between 2,000 and 5,000 square feet of new plus replaced hard surface are required to prepare an Abbreviated Drainage Plan conforming to the requirements of the 2016 City of Olympia Drainage Design and Erosion Control Manual (DDECM, Volume I, Chapter 3).***

***Hard surfaces include roofs, conventional impervious pavements and walkways, vegetated roofs, decks and patios, porous concrete or asphalt, gravel surfaces, and mechanically compacted soils.***

This guide sheet is intended to facilitate preparation of an **Abbreviated Drainage Plan** to accompany your residential building permit application. *The plan is a required component of your application.* The forms provided here are not acceptable for meeting drainage plan requirements for other types of development or construction, such as plats or commercial construction. **All projects that create more than 5,000 square feet of new plus replaced hard surface must submit a full Drainage Control Plan prepared by a licensed engineer (See Guide Sheet 1C).**

### **Step 1: Determine the type of Abbreviated Drainage Plan required for your project**

While all projects creating more than 2,000 square feet of new hard surface are required to submit an Abbreviated Drainage Plan with a building permit application, only single family residential and duplex building permits are allowed to submit plans using one of the following three options:

- **Option 1: Abbreviated Drainage Plan Exemption**
- **Option 2: Non-Engineered Abbreviated Drainage Plan**
- **Option 3: Engineered Abbreviated Drainage Plan**

Use **Table 1** of this guide sheet to determine which drainage plan option is required or allowed for your construction project. If you need assistance evaluating the eligibility criteria found in Table 1, please contact Community Planning & Development for information on permit requirements. Once you have determined which Option is appropriate for your project, proceed to Step 2.

**Table 1: Abbreviated Drainage Plan Eligibility Criteria**

<p><b>Option #1:</b> <b>Abbreviated Drainage Plan Exemption</b></p>	<p><b>Option #2:</b> <b>Non-Engineered Abbreviated Drainage Plan</b></p>	<p><b>Option #3:</b> <b>Engineered Abbreviated Drainage Plan</b></p>
<p><b><u>Exemption eligibility criteria:</u></b> <i>Only projects meeting either of the following conditions are exempt from preparing an Abbreviated Drainage Plan:</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Single-family home construction on a lot within a residential subdivision whose final plat was recorded with the County after January 1, 2000, <b>and</b> the lot is within a subdivision that has an accepted and functioning stormwater system that accounts for development of the lot,</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Project is on a single parcel greater than 1-acre in size, and the total of <u>new plus existing impervious surface area</u> is less than 10% of the parcel area with at least 65% of the parcel area remaining in undisturbed native vegetation. Additionally, there is no increase (&lt;0.1 cfs) in stormwater discharge from the site that occurs as a result of the project.</li> </ul>	<p><b><u>Non-engineered plan eligibility criteria:</u></b> <i>All of the following conditions must be met to be eligible for a non-engineered plan:</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Construction is proposed on an infill lot (platted prior to January 1, 2000).</li> <li><input type="checkbox"/> Lot is <u>not</u> located in Hydrologic Soil Group ‘D’, hydric, or seasonally saturated soils.</li> <li><input type="checkbox"/> Lot does <u>not</u> contain or is adjacent to critical areas as defined by OMC18.32. Critical Areas may include (confirm with Planning): <ul style="list-style-type: none"> <li>• Wetlands</li> <li>• Geologic Hazard Areas</li> <li>• Steep Slopes exceeding 40%</li> <li>• Marine Bluffs</li> <li>• Flood Hazard Areas</li> <li>• Shoreline Protection Areas</li> <li>• Streams, lakes, rivers</li> </ul> </li> <li><input type="checkbox"/> The average slope of the lot is less than 10%; no slope exceeds 15% onsite; and no more 10 feet elevation change across the lot.</li> <li><input type="checkbox"/> The area is free of historical drainage issues, groundwater seeps, onsite ponding of water, and no offsite surface runoff onto or through the lot (confirm with Water Resources mapping or site visit).</li> <li><input type="checkbox"/> The lot is located adjacent to a City street with an existing City storm system/conveyance (overflow).</li> <li><input type="checkbox"/> The foundation and crawlspace are above the seasonally high or perched groundwater table.</li> </ul>	<p><b><u>Criteria requiring plan be prepared by an engineer:</u></b> <i>If any of the following conditions are met, the plan must be prepared by a registered professional engineer:</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The project fails to meet the eligibility criteria of both Options 1 and 2.</li> <li><input type="checkbox"/> The proposed stormwater design requires hydrologic modeling or engineering calculations to size facilities to meet Core Requirement #5.</li> <li><input type="checkbox"/> The lot is located in an area of seasonally high ground water or seeps, or Hydrologic Soil Group ‘D’ soils are mapped on the site.</li> <li><input type="checkbox"/> There is existing stormwater flows onto the site (either concentrated or dispersed flows apply).</li> <li><input type="checkbox"/> There is no City of Olympia stormwater conveyance (pipe or ditch) or improved street frontage adjacent to the site.</li> <li><input type="checkbox"/> The project site contains critical areas as defined by OMC 18.32. Critical Areas may include (confirm with Planning): <ul style="list-style-type: none"> <li>• Wetlands</li> <li>• Geologic Hazard Areas/Steep Slopes</li> <li>• Marine Bluffs</li> <li>• Flood Hazard Areas</li> <li>• Shoreline Protection Areas</li> <li>• Streams, lakes, rivers</li> </ul> </li> <li><input type="checkbox"/> The average slope of the lot exceeds 10%; any onsite slopes exceeds 15%; or there is more than 10 feet elevation change across the lot.</li> </ul> <p><b>Note:</b> <i>If the project creates or replaces more than 5,000 sq. ft. of hard surface (e.g., impervious surfaces, permeable pavements, or green roofs), a full Drainage Control Plan is required and the project is not eligible for an Abbreviated Drainage Plan. See Guide Sheet 1C.</i></p>

## Step 2: Preparing an Abbreviated Drainage Plan

Each option available for Abbreviated Drainage Plans for single-family residential construction has different submittal requirements. Once you have determined the option your project is eligible for using Table 1, follow the guidance here in Steps 2 and 3 when preparing your plan.

### Option 1: Abbreviated Drainage Plan Exemption

If your project meets the criteria for plan exemption, you do not need to prepare an Abbreviate Drainage Plan that includes a site plan or written summary (see Guide Sheet 1D). However, you are still required to address the following items with your building permit submittal:

- Prepare a Short-Form Construction Stormwater Pollution Prevention Plan (C-SWPPP) using Guide Sheet 2B. Your project must manage stormwater runoff and limit pollutants and sediment from leaving the site during all phases of construction.
- Submit a written explanation (i.e. a professional letter) of the conditions that qualify the project for drainage plan exemption.

### Option 2: Non-Engineered Abbreviated Drainage Plan

If your project meets the criteria for Option 2, an Abbreviated Drainage Plan is required but it is not necessary to have a licensed civil engineer prepare the plan or size onsite stormwater features. If you do not feel comfortable completing the plan or there are site constraints beyond those listed in this Guide Sheet, you may hire an engineer to assist with your plan.

When submitting a **Non-Engineered Abbreviated Drainage Plan**, the following items must be included or addressed with your building permit submittal:

- Prepare a Short-Form Construction Stormwater Pollution Prevention Plan (C-SWPPP) using [Guide Sheet 2B](#). Your project must manage stormwater runoff and limit pollutants and sediment from leaving the site during all phases of construction.
- Include locations of all construction stormwater best management practices described in the C-SWPPP on the project site plan.
- Include all applicable items listed in the *Site Development Drawings – Content Checklist* found in [Guide Sheet 1D](#) on the project site plan.
- Include appropriate construction details for stormwater management features. The details for stormwater facilities and dispersion practices must have all necessary dimensions necessary for review, construction, and inspection.
- Submit a **Written Summary** for your project that describes the project, project site, existing conditions, and proposed methods for grading and managing stormwater runoff from the hard surfaces created. [Guide Sheet 1D](#) contains a content checklist and explanation of items to be addressed in this narrative.
- Include within the Written Summary a discussion of how the project meets Core Requirements 1 through 5 from [Volume I of the 2016 City of Olympia Drainage Design and Erosion Control Manual](#). This item is discussed further in **Step 3** below.
- Include calculation sheets in the Written Summary for sizing onsite stormwater management features such as:
  - Downspout Infiltration Trenches/Galleries
  - Rain Gardens
  - Permeable Pavements
  - Post Construction Soil Amendment for the Site
  - Concentrated Flow Dispersion

If you are eligible for a non-engineered Abbreviated Drainage Plan, you may use prescriptive methods for sizing these facilities. For prescriptive sizing, it is acceptable to base the calculation on the Natural Resource Conservation Service designated Hydrologic Soil Group (A, B, C, or D) rather than hiring a geotechnical engineer or licensed soils professional to evaluate site soils. If you need assistance determining your site soil type, you may use online soil maps posted at <http://olympiawa.gov/ddec> or contact a Permit Technician in Community Planning & Development department.

When sizing these facilities, please use the following references and standards:

<b>Downspout Infiltration Trenches</b>	<a href="#">EDDS, Std. Dwg. 5-7</a> and <a href="#">DDECM, Volume III BMP T5.10A</a>
<b>Rain Gardens</b>	<a href="#">Rain Garden Handbook for Western Washington</a>
<b>Permeable Pavements</b>	<a href="#">DDECM, Volume V, BMP T5.15</a>
<b>Post Construction Soil Amendment</b>	<a href="#">DDECM, Volume V, BMP T5.13</a> and <a href="#">EDDS Std. Dwg. 5-8</a>
<b>Stormwater Flow Dispersion</b>	<a href="#">DDECM, Volume V, BMPs T5.11, T5.12, and T5.30</a>

### Option 3: Engineered Abbreviated Drainage Plan

If your project site has any of the constraints listed under Option 3 of Table 1, the Abbreviated Drainage Plan must be prepared by a licensed engineer. The criteria listed for Option 3 does not imply that the site cannot be developed, only that there are sensitive areas or factors that should be addressed by a qualified professional. The management of stormwater on these sites will require additional design work, engineering calculations, or computer modeling to assure there are no long-term impacts to private properties, environmentally sensitive areas, or structures.

When submitting an **Engineered Abbreviated Drainage Plan**, the following items must be included or addressed with your building permit submittal:

- Prepare a Short-Form Construction Stormwater Pollution Prevention Plan (C-SWPPP) using [Guide Sheet 2B](#). Your project must manage stormwater runoff and limit pollutants and sediment from leaving the site during all phases of construction.
- Include locations of all construction stormwater best management practices described in the C-SWPPP on the project site plan.
- Include all applicable items listed in the *Site Development Drawings – Content Checklist* found in [Guide Sheet 1D](#) on the project site plan.
- Include appropriate construction details for stormwater management features. The details for stormwater facilities and dispersion practices must have all necessary dimensions necessary for review, construction, and inspection.
- Submit a **Written Summary** for your project that describes the project, project site, existing conditions, and proposed methods for grading and managing stormwater runoff from the hard surfaces created. [Guide Sheet 1D](#) contains a content checklist and explanation of items to be addressed in this narrative.
- Provide an engineering analysis of the onsite soils as necessary to support stormwater infiltration facilities (such as downspout infiltration trenches, rain gardens, or permeable pavements). The analysis and report should be completed by a licensed engineer or qualified soils professional and meet the soil testing requirements of [Volume III, Chapter 3 of the Drainage Design and Erosion Control Manual](#).
- For each infiltration or low impact development (LID) stormwater facility proposed, the Written Summary must provide hydrologic computer modeling using the Western Washington Hydrology Model (WWHM) consistent with the requirements of [Volume III, Chapter 2 of the Drainage Design and Erosion Control Manual](#) (DDECM). The following features must have hydrologic modeling to support their design:
  - Downspout Infiltration Trenches/Galleries
  - Bioretention (i.e., an ‘engineered rain garden’ meeting BMP T5.14B from [Volume V of the DDECM](#))
  - Permeable Pavements
- Include within the Written Summary a discussion of how the project meets Core Requirements 1 through 5 from [Volume I, Section 2.5 of the 2016 City of Olympia Drainage Design and Erosion Control Manual](#). This item is discussed further in Step 3 below.

### **Step 3: Addressing Core Requirements 1 through 5 in your Written Summary**

The following stormwater requirements must be applied to all projects exceeding 2,000 square feet – but less than 5,000 square feet – of new plus replaced hard surface. A hard surface is defined as any permeable pavement, green roof, or other impervious surface such as a roof, paved driveway, sidewalks, patios, gravel surfacing, or compacted earth.

#### **Core Requirement #1: Preparation of Drainage Control Plans**

The first stormwater Core Requirement is met with preparation of the Abbreviated Drainage Plan. As discussed in the DDECM, full Drainage Control Plans addressing all nine Core Requirements are required if the project exceeds 5,000 square feet of new plus replaced hard surface. Typically, a single-family residential building permit proposes less than 5,000 square feet of hard surface, so an Abbreviated Drainage Plan is appropriate to meet this requirement.

#### **Core Requirement #2: Construction Stormwater Pollution Prevention**

All projects within the City of Olympia are required to manage construction stormwater runoff regardless of development area or the amount of newly created hard surfaces. Best management practices (BMPs) used to control runoff, prevent erosion of soils, and eliminate pollutants discharged from the site must meet those described in Volume II of the DDECM. Projects eligible for an Abbreviated Drainage Plan are also allowed to complete a much shorter version of the Construction Stormwater Pollution Prevention Plan (C-SWPPP) that would be required on large projects.

When submitting your building permit application, you must complete the Short Form C-SWPPP worksheet (Guide Sheet 2B) by answering questions and providing information about the site conditions. Additionally, the locations for BMPs chosen on the worksheet should be shown on your site plan drawing. *(For example, the length and location of construction entrance and silt control fencing or inlet protection for catch basins that may receive construction runoff.)*

#### **Core Requirement #3: Source Control of Pollution**

*Source Control Best Management Practices* are behaviors or site features that prevent contaminants from entering stormwater runoff by controlling them at the source. Some source control BMPs are operational, such as checking regularly for leaks and drips from vehicles, covering materials that have potential to add pollutants to surface water if rainwater comes in contact with the materials, cleaning up pet waste, and minimizing use of pesticides, herbicides, and fertilizers. Other source control BMPs require use of a structure to prevent rainwater from contacting materials that will contaminate stormwater runoff such as provide a covered area or berm to prevent clean stormwater from entering work or storage areas.

Discussion of pollution source control BMPs shall be included in the Written Summary portion of your Abbreviated Drainage Plan. To facilitate a complete source control program consistent with residential pollutant sources and practices specified in the City's drainage manual, the [Pollution Source Control Program template](#) found on the City's webpage should be used to meet this requirement.

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

The City of Olympia Drainage Design and Erosion Control Manual requires that natural and pre-existing drainage patterns on a project site and surrounding areas be maintained whenever a development project is proposed. Discharges from a 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 significant adverse impact to downstream receiving waters, existing drainage systems, and downgradient properties.

*Offsite drainage* is drainage from adjacent property that enters the proposed project site in other than a defined natural channel. All 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 existed before. This includes stormwater that may runoff of fronting streets onto an undeveloped parcel. This requirement shall not be construed as limiting a development's legal rights regarding offsite drainage.

Addressing Core Requirement #4 will require careful evaluation of the site conditions, topography, the presence of groundwater, flows of stormwater from adjacent properties and street right-of-way, and existing drainage systems in the area. The Written Summary shall include this discussion as well as surface flow directions shown on the plans.

## Core Requirement #5: On-Site Stormwater Management/Low Impact Development

The last Core Requirement for Abbreviated Drainage Plans is the description and proposed method for managing runoff from the developed area within your lot. This requirement is listed in the City's drainage manual (DDECM) as *On-Site Stormwater Management*, but has been come to be known as the "low impact development requirement". Low impact development stormwater management practices applies to both new and replaced hard surfaces and disturbed pervious areas on the lot.

The basic purpose of this requirement is to promote retention of stormwater on the site where it falls, rather than allowing stormwater to runoff to adjacent or downstream properties and the municipal storm system. Low impact development (LID) is a strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

For every hard surface or landscaped area on your project site, your Abbreviated Drainage Plan must describe how stormwater runoff from that surface will be managed. Core Requirement #5 in Section 2.5.5, Volume I of the DDECM describes the possible BMPs for managing runoff from these surfaces. When planning the development of your lot with roof, landscaping, driveways, and patios or sidewalks, choose one of the listed BMPs and provide sizing calculations in the Written Summary:

### Lawn and Landscaped Areas:

- Post Construction Soil Quality and Depth – BMP T5.13

### Roofs:

- Full Dispersion – BMP T5.30
- Downspout Infiltration Trenches – BMP T5.10A
- Rain Gardens – BMP T5.14A
- Downspout Dispersion Systems or Splash-blocks – BMP T5.10B
- Perforated Stub-out Connections – BMP T5.10C

### Driveways:

- Full Dispersion – BMP T5.30
- Permeable Pavements – BMP T5.15
- Rain Gardens or Bioretention – BMP T5.14A or BMP T5.14B
- Sheet Flow Dispersion – BMP T5.12

### Sidewalks, Patios, and Decks:

- Full Dispersion – BMP T5.30
- Permeable Pavements – BMP T5.15
- Rain Gardens or Bioretention – BMP T5.14A or BMP T5.14B
- Sheet Flow Dispersion – BMP T5.12

The BMP numbering references can be found in the [Drainage Design and Erosion Control Manual](#). Non-Engineered Abbreviated Drainage Plans may use prescriptive methods for BMP sizing, while Engineered Abbreviated Drainage Plans must provide a soils report and engineering calculations/computer modeling for facility sizing. All BMPs shall be shown on the site plan with appropriate details and dimensions necessary for construction.

## **Step 4: Submit the Abbreviated Drainage Plan with your building permit application**

When you are ready to apply for your building permit, please use the **Application Intake Checklist**, **Site Development Drawing Content Checklist**, and **Written Summary Content Checklist** found in [Guide Sheet 1D – Abbreviated Drainage Plans](#). You should use these checklists to confirm that your plan addresses all the required items listed.

Source: 2016 City of Olympia Drainage Design and Erosion Control Manual, Volume I – Sec. 2.5 and Ch. 3

Revised: 09/18

### **For more information or clarification of stormwater requirements within the City of Olympia:**

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