



# Abbreviated Stormwater Site Plan

## City of Kelso

### **ELIGIBILITY**

Construction and land disturbing projects that meet the following criteria are eligible to use this form:

- Results in between 2,000 and 4,999 square feet of new plus replaced hard surface area, or
- Results in 7,000 square feet or more of land disturbing activity,  
**AND**
- Converts less than  $\frac{3}{4}$  acres of vegetation to lawn or landscaped area, and
- Converts less than 2.5 acres of native vegetation to pasture

### **INSTRUCTIONS FOR USING THIS FORM**

The purpose of this application form is to assist the applicant in meeting minimum stormwater requirements for small construction projects.

1. Ensure the project meets the eligibility requirements (above)
2. Read the definitions (below)
3. Fill out this application form starting at the beginning and following in order
4. When drawings are required, either use the template provided in this application (last page) or submit clean and legible drawings separately
5. Review the Application Submittal Checklist on page 1 to ensure all required components are complete (Some required components are separate handouts and application forms available from the City)
6. Make a copy of the complete application form and other required attachments for yourself (optional)
7. Submit the completed, signed application to the Permit Counter

### **DEFINITIONS**

The definition of terms is important to understanding how to apply the requirements in this handout.

#### **Best Management Practice (BMP)**

The schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices, that when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State. Permanent stormwater management BMPs include Rain Garden, Permeable Pavement, and Infiltration.

#### **Converted Vegetation**

The areas on a project site where native vegetation, pasture, scrub/shrub, or unmaintained non-native vegetation (e.g., Himalayan blackberry) are replaced with lawn or landscaped areas or where native vegetation is replaced with pasture.

#### **Critical Area**

Areas which include wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, geologically hazardous areas, including unstable slopes, and associated areas and ecosystems.

**Effective Impervious Surface**

Those impervious surfaces that are connected via sheet flow or discrete conveyance to a drainage system. Impervious surfaces are considered ineffective if: 1) the runoff is dispersed through at least one hundred feet of native vegetation 2) residential roof runoff is infiltrated; or 3) approved continuous runoff modeling methods indicate that the entire runoff file is infiltrated.

**Hard Surface**

An impervious surface, a permeable pavement, or a vegetated roof.

Also see the definition for *Replaced Hard Surface*.

**Impervious Surface**

A non-vegetated surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. Common impervious surfaces include but are not limited to roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater.

**Infeasible (Infeasibility)**

A determination that a Permanent Stormwater Management BMP is not required because the site/location meets all of the criteria established for making that determination. In some cases, a BMP may be determined to be infeasible (not required), but could still be used on the site if designed properly.

**Infiltration**

The downward movement of water from the surface to the subsoil.

**Land Disturbing Activity**

Any activity that results in a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land disturbing activities include, but are not limited to clearing, grading, filling, and excavation. Compaction that is associated with stabilization of structures and road construction shall also be considered a land disturbing activity. Vegetation maintenance and gardening are not considered land-disturbing activity.

**Native Vegetation**

Vegetation comprised of plant species, other than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest and which reasonably could have been expected to naturally occur on the site. Examples include trees such as Douglas fir, western hemlock, western red cedar, alder, and big-leaf maple; shrubs such as willow, elderberry, salmonberry and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

**Replace Hard Surface**

For structures, the removal and replacement of hard surfaces down to the foundation. For other hard surfaces, the removal down to bare soil or base course and replacement.

**Redevelopment Site**

A site which is already 35% covered with impervious surfaces prior to the small construction project.

**SWMMWW**

The 2012 Stormwater Management Manual for Western Washington, as amended December 2014, published by the Washington Department of Ecology. Also known as the 2014 Stormwater Management Manual for Western Washington.



# Abbreviated Stormwater Site Plan

## City of Kelso

### PROJECT SITE INFORMATION

Parcel #:

Address/Location:

### PROPERTY OWNER

Business Name:

Contact Name:

Mailing/Billing Address:

City

State

Zip

Phone Number:

Email:

### APPLICANT (If different from property owner listed above)

Business Name:

Contact Name:

Mailing/Billing Address:

City

State

Zip

Phone Number:

Email:

### CONTRACTOR (If applicable)

Business Name:

Contact Name:

Mailing/Billing Address:

City

State

Zip

Phone Number:

Email:

WA State License # (Not UB#):

Expiration Date:

City of Kelso Business License #

Expiration Date:

### PROJECT INFORMATION

Start Date:

Duration:

### APPLICATION SUBMITTAL CHECKLIST

Form Date 12/1/2017

- Complete Application Form (this form)
- Custom Soil Resource Report (see Section 2)
- Site Development Drawings (see Section 7)
- Small Construction Erosion Control Plan (see Section 6)

If required:

- Declaration of Covenant
- Infiltration Evaluation
- Final Feasibility Checklist
- Rain Garden Design & Construction Guide for Small Projects
- Residential Permeable Pavement Design & Construction Guide

### PROPERTY OWNER OR AUTHORIZED AGENT

I hereby certify that I have read and examined this application and know the same to be true and correct, and I am authorized to apply for this permit.

Signature:

Printed Name:

Date:

Refer to the Kelso Engineering Design Manual, online at [www.kelso.gov/engineering/engineering-documents](http://www.kelso.gov/engineering/engineering-documents), for more information or clarification of stormwater requirements within Kelso. You may also contact the City of Kelso's Engineering Department at (360) 423-6590 or at [www.kelso.gov/departments-services/engineering-department](http://www.kelso.gov/departments-services/engineering-department).

**SECTION 1: SITE AND PROJECT DESCRIPTION**

Describe the site now and after the project is completed.

How is the site currently used?

What will be constructed?

Calculate the project impacts. Definitions are found on the cover page.

	Impact	Area
A	New hard surfaces	(sq. ft.)
B	Replaced hard surfaces	(sq. ft.)
C	Total New + Replaced Hard Surfaces (add lines A & B)	(sq. ft.)
D	Total land disturbing activity	(sq. ft.)
	For sites over 0.75 acres, fill in E	
E	Vegetation (including pasture) converted to lawn/landscape	(acres)
	For sites over 2.5 acres, fill in F	
F	Native vegetation converted to pasture	(acres)

**EXISTING SITE CONDITIONS**

*Describe the topography. Check all that apply.*

- Gradual Slopes (0% - 8%)     
  Moderate Slopes (9% - 15%)     
  Steep Slopes (> 15%)

*Describe the existing land cover. Check all that apply.*

- Forest       Grassland       Pasture       Pavement       Gravel  
 Landscaping/Lawn       Brush       Trees       Buildings       Other: \_\_\_\_\_

*Describe how water (runoff, streams, ditches) flows across and from the site. Check all that apply.*

- Overland       Gutter       Catch Basin       French Drain       Sump Pump  
 Stormwater Pipe       Stream       Ditch/Swale       Other: \_\_\_\_\_

Where does surface water enter the site? \_\_\_\_\_

Where does surface water exit the site? \_\_\_\_\_

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Describe drainage, ponding or flooding problems:

**Which natural resources are on the site? Check all that apply.**

- Stream/River       Wetland       Pond       None
- Spring/Seep       Native Trees       Other: \_\_\_\_\_

**Which existing underground and overhead utilities and systems are on the site? Check all that apply.**

- City Water       Electrical       Sanitary Sewer       Fuel Tank       None
- Drinking Water Well       Storm Sewer       Septic System       Other: \_\_\_\_\_

**What is this site's relationship to the street?**

- Is the site on a public street?       Yes       No
- If Yes, is there a ditch or storm pipe in the road?       Yes       No       Unknown

**Stormwater Management Narrative**

Summarize how stormwater will be managed on the site after the construction project is complete. You may need to finish the remainder of this application before filling this in.

**Submit a drawing of the site's existing conditions.**

See Section 7 for requirements.

**SECTION 2: PRELIMINARY SITE SURVEY**

In this section you will gather information you need to decide how to manage stormwater on the site. To complete this section you need to find existing information about the soils, topography, groundwater, and drainage on the project site. Information will be gathered from a variety of resources as described below.

You will use the information gathered here when you are filling out Section 3 of this application.

**CUSTOM SOIL RESOURCE REPORT**

Create a Custom Soil Resource Report for the project site on the NRCS website at <https://websoilsurvey.nrcs.usda.gov/app/>. For instructions on obtaining and reading the Custom Soil Resource Report see the **Custom Soil Resource Report Instructions** handout.

When you’ve finished the **Custom Soil Resource Report**, fill in the table below and attach the report to this application:

Custom Soil Resource Report	Primary soil*	Secondary soil
Soil Number		
Soil Map Unit Name		
Capacity of the most limiting layer to transmit water (K <sub>SAT</sub> )	Inches/hour	Inches/hour
Hydrologic Soil Group		

\* The primary soil is the soil that covers most of the site. If the project site has more than one soil, write down the soil covering the biggest area in this column, and write down the soil covering the next biggest area in the secondary soil column.

The **Custom Soil Resource Report** is attached to this application.

**INITIAL TOPOGRAPHY AND GROUNDWATER REVIEW**

Review and document existing information about the topography and groundwater of the project site. Ask at the Permit Counter for help finding the best available data. Tools may include stormwater feasibility maps for Kelso, Cowlitz County NetMaps, or other sources of information. Fill in the table below based on the best available information.

Data Review			Tips
What is the site’s depth to groundwater?		feet	See the Depth to Groundwater Map.
What is the site’s slope?		% slope	See the Slopes Map. Slope may also be calculated from elevation contours lines on Cowlitz NetMaps. Slope = height (highest elevation minus lowest elevation) /
Is a geohazard present on the site?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	See the Geohazard Map.

**SITE LOCATION IN RELATION TO LARGE OR CONTROLLED WATERS**

For project sites that discharge to a large river or a diking district, some stormwater management requirements are reduced.

Find out if the project is exempt from some requirements by filling out the table below. If you answer **YES** to any question, then the project is exempt from flow control requirements. If you answer **YES** to any question, stop and mark the checkbox for Project **IS** Flow Control Exempt, below. You do not need to continue answering questions.

Question	Yes	No	Tips
Does the project site discharge stormwater directly to a river?			These rivers are the Columbia, Cowlitz and Coweeman Rivers.
Does the project site discharge stormwater to a manmade ditch or pipe that discharges stormwater directly to a river?			A natural stream that has been straightened or ditched is <b>not</b> included.
Is the project site within the Drainage Improvement District #1 boundary?			Check the map on Cowlitz County’s web site at: <a href="http://www.co.cowlitz.wa.us/index.aspx?NID=1810">http://www.co.cowlitz.wa.us/index.aspx?NID=1810</a>
Is the project site within the Consolidated Diking Improvement District #1 boundary?			Check the map on the CDID#1 web site at: <a href="http://www.cdid1.org/downloads/default.html">http://www.cdid1.org/downloads/default.html</a>
Is the project site within the Consolidated Diking Improvement District #3 boundary?			Check the map on Cowlitz County’s web site at: <a href="http://www.co.cowlitz.wa.us/index.aspx?NID=1815">http://www.co.cowlitz.wa.us/index.aspx?NID=1815</a>
Does the project site discharge stormwater via overland flow or manmade conveyance to DID#1, CDID#1, or CDID#3?			A natural stream that has been straightened or ditched is <b>not</b> included.

If you answered **NO** to all questions, then the project site is **NOT** flow control exempt.

- Project **IS** Flow Control Exempt.
- Project **IS NOT** Flow Control Exempt.

**SECTION 3: PERMANENT STORMWATER MANAGEMENT**

The applicant/owner must use permanent stormwater management facilities *to the extent feasible* to disperse, infiltrate, and retain runoff from the roofs, driveways, parking areas, patios, and landscaped areas without causing flooding or erosion impacts.

Permanent stormwater management best management practices (BMPs) include, but are not limited to, rain gardens, drywells, and permeable pavement. These BMPs will remain on the site to manage stormwater after the construction project is complete. The property owner will be responsible for maintaining them.

Follow the steps below to determine the feasibility of BMPs. Select one BMP for each surface that will be constructed as part of the project, unless all BMPs are infeasible. Mark the chosen BMPs in Section 4 on page 11. Then read the instructions for finding BMP design requirements in Section 4 and continue on to Section 5.

**STEP 1. EVALUATE SLOPE INFEASIBILITY**

On sites with extremely steep slopes, applicants should not try to manage stormwater on the site.

Is the slope of the project site **greater** than 33% (refer back to page 4 for this information)? .....  **YES**  **NO**

If **YES**, mark “All BMPs are Infeasible” in all three tables on Page 11 and go to Section 5 on page 12. The tables are for *Lawns/Landscapes, Roofs, and Other Hard Surfaces*.

If **NO**, continue to Step 2.

Refer to the Kelso Engineering Design Manual, online at [www.kelso.gov/engineering/engineering-documents](http://www.kelso.gov/engineering/engineering-documents), for more information or clarification of stormwater requirements within Kelso. You may also contact the City of Kelso’s Engineering Department at (360) 423-6590 or at [www.kelso.gov/departments-services/engineering-department](http://www.kelso.gov/departments-services/engineering-department).

**STEP 2. EVALUATE LAWN AND LANDSCAPE AREAS**

One way to reduce stormwater runoff is to ensure that lawn and landscaped areas have sufficient depth and quality of soil that can absorb rain, reduce runoff of nutrients and pollutants, and even infiltrate some water. This is accomplished by leaving native topsoil undisturbed or by reestablishing soil quality and depth after construction by amending the soil with compost.

A stormwater management technique called Post-Construction Soil Quality and Depth (BMP T5.13) is required for all lawn and landscaped areas.

- Lawn and landscaped areas will **not** be created or re-graded as part of the project. Mark “Project has no new or replaced lawns or landscaped areas” in the *Lawn/Landscape* table on page 11 and go to Step 3.
- Lawn and landscaped areas will be created or re-graded as part of the project. Select one of the options in the Soil Quality and Depth table below, then continue to Step 3.

Soil Quality and Depth	
Option	Criteria
<p><input type="checkbox"/> <b>Option 1: Amend existing topsoil or subsoil in place.</b></p> <p>Scarify or till subgrade to 9 inches depth. Entire surface should be disturbed by scarification. Do not scarify within drip line of existing trees to be retained. Amend soil to meet required organic content.</p>	<p><b>Planting Beds:</b> Place 3 inches of composted material and rototill into 5 inches of soil (a total amended depth of about 9.5 inches, for a settled depth of 8 inches). Add 2 inches of organic mulch.</p> <p><b>Turf Areas:</b> Place 1.75 inches of composted material and rototill into 6.25 inches of soil (a total amended depth of about 9.5 inches, for a settled depth of 8 inches).</p>
<p><input type="checkbox"/> <b>Option 2: Stockpile existing topsoil during grading. Amend and replace before planting.</b></p> <p>Stockpile and cover soil with a weed barrier material that sheds moisture yet allows air transmission, in approved location, prior to grading. Replace stockpiled topsoil prior to planting. Amend soil to meet required organic content.</p>	
Option	Criteria
<p><input type="checkbox"/> <b>Option 3: Import topsoil mix of sufficient organic content and depth to meet the requirements.</b></p> <p>Scarify or till subgrade in two directions to 6 inches depth. Entire surface should be disturbed by scarification. Do not scarify within drip line of existing trees to be retained.</p>	<p><b>Planting Beds:</b> Topsoil mix containing 10% organic matter (typically around 40% compost). Soil portion must be sand or sandy loam as defined by the USDA.</p> <ul style="list-style-type: none"> <li>• Place 3 inches of imported topsoil mix on surface and till into 2 inches of soil.</li> <li>• Place second lift of 3 inches topsoil mix on surface.</li> <li>• Rake beds to smooth.</li> <li>• Mulch planting beds with 2 inches of organic mulch.</li> </ul> <p><b>Turf Areas:</b> Topsoil mix containing 5% organic matter (typically around 25% compost). Soil portion must be sand or sandy loam as defined by the USDA.</p> <ul style="list-style-type: none"> <li>• Place 3 inches of imported topsoil mix on surface and till into 2 inches of soil.</li> <li>• Place second lift of 3 inches topsoil mix on surface.</li> <li>• Rake to level.</li> </ul>

Refer to the Kelso Engineering Design Manual, online at [www.kelso.gov/engineering/engineering-documents](http://www.kelso.gov/engineering/engineering-documents), for more information or clarification of stormwater requirements within Kelso. You may also contact the City of Kelso’s Engineering Department at (360) 423-6590 or at [www.kelso.gov/departments-services/engineering-department](http://www.kelso.gov/departments-services/engineering-department).



**STEP 3. EVALUATE FLOW CONTROL EXEMPTION**

Some stormwater BMPs are **not** required if the site discharges to certain large or controlled water bodies. These sites are “Flow Control Exempt”. Flow Control Exempt projects do not have to use Full Dispersion, Downspout Full Infiltration, Rain Garden, or Permeable Pavement.

If your project is Flow Control Exempt **skip to** Step 8 on page 9 (refer back to page 5 for this information).

If your project is **not** Flow Control Exempt go to Step 4.

**STEP 4. EVALUATE GEOLOGICAL HAZARD INFEASIBILITY**

Some stormwater BMPs should **not** be used on or near a geological hazard, such as a landslide risk area or moderately steep slopes.

Is a geological hazard area present on the site (refer back to page 4 for this information)? .....  YES  NO

If **YES**, mark “All BMPs are Infeasible” in the tables for *Roofs* and *Other Hard Surfaces* on page 11 and go to Section 5.

If **NO**, go to Step 5.

**STEP 5. EVALUATE FULL DISPERSION**

If the project design allows at least 65% of the project site to be preserved or restored to a forested or native condition, then Full Dispersion (BMP T5.30) should be used. Full Dispersion is one way to permanently manage stormwater from **roofs** and **other new/replaced hard surfaces** without hiring an engineer and without building a stormwater BMP. Applicants may choose not to preserve 65% of the site.

If the applicant wishes to use Full Dispersion, the Applications, Limitations, Design Requirements, and Native Vegetation Landscape Specifications described in the SWMMWW must be met.

**Preliminary Feasibility Questions:**

Will 65% or **more** of the site be preserved as native vegetation? .....  YES  NO

Will 10% or **less** of the site be converted to effective impervious surfaces? .....  YES  NO

Will there be a dispersion flow path through native vegetation of 100 feet or more? .....  YES  NO

Is the slope **less** than 15% (refer back to page 4 for this information)? .....  YES  NO

- YES.** If all questions are marked **YES**, Full Dispersion **may be** feasible for this project. Fill out the **Final Feasibility Checklist** worksheet for “Full Dispersion”. If the **Final Feasibility Checklist** confirms Full Dispersion is feasible, then 1) attach the checklist to this application, and 2) mark “Full Dispersion” in the tables for *Roofs* and *Other Hard Surfaces* on page 12, and 3) go to Section 5 on page 12.
- NO.** If any question is marked **NO**, or if the **Final Feasibility Checklist** establishes that Full Dispersion is **not** feasible for this project, then go to Step 6.

**Tip!**

The **Final Feasibility Checklist** is a separate handout. You may be referred to it several times.

**STEP 6. EVALUATE DOWNSPOUT FULL INFILTRATION**

Downspout Full Infiltration systems (BMP T5.10A) are trench or drywell designs intended for use in infiltrating runoff from **roof** downspout drains. If feasible, projects must use Downspout Full Infiltration for roof areas.

- My project **does not** have a new/replaced roof; mark “Project has no new/replaced roofs” in the *Roofs* table on page 11 and go to Step 7.

**Preliminary Feasibility Questions:**

Does the Soil Map Unit Name include Coarse Sand and Cobbles; Medium Sand; Fine Sand; Loamy Sand; Sandy Loam; or Loam (refer back to page 4 for this information)? .....  YES  NO

Is the depth to groundwater three feet or **greater** (refer back to page 4 for this information)? ...  YES  NO

Is the slope of the site **less** than 25% (refer back to page 4 for this information)? .....  YES  NO

**YES.** If all questions are marked YES, Downspout Full Infiltration **may be** feasible for this project. Fill out the **Final Feasibility Checklist** worksheet.

1. If the **Final Feasibility Checklist** confirms Downspout Full Infiltration is feasible, then attach the checklist to this application and mark “Downspout Full Infiltration” in the table for *Roofs* on page 11 **AND:**

I **do not** have any other new/replaced hard surfaces. Continue to Section 5 on page 12.

I **do** have other new/replaced hard surfaces. Go to Step 7.

**NO.** If any question is marked **NO**, or the **Final Feasibility Checklist** establishes that Downspout Full Infiltration **is not** feasible for this project, go to Step 7.

**STEP 7. PRELIMINARY RAIN GARDEN AND PERMEABLE PAVEMENT EVALUATION**

Rain Gardens (BMP T5.14A) and Permeable Pavement (BMP T5.15) are infiltration facilities designed to allow stormwater runoff to soak into the ground. Rain gardens are non-engineered, shallow, landscaped depressions that temporarily store stormwater runoff from adjacent areas and allow it to soak into the ground. Permeable pavement is a hard surface designed with voids to allow passage of water through.

If feasible, projects must use infiltration BMPs for **roofs** and **other new/replaced hard surfaces**. Rain gardens may be used for both roofs and other hard surfaces. Permeable pavements may only be used for other hard surfaces.

**Preliminary Feasibility Questions:**

Is the Hydrologic Soil Group an A, B, or a C (refer back to page 4 for this information)? .....  YES  NO

Is the depth to groundwater **greater** than 3 feet (for Rain Garden) or 2 feet (for Permeable Pavement) (refer back to page 4 for this information)? .....  YES  NO

Is  $K_{SAT}$  0.3 inches/hour or **greater** (refer back to page 4 for this information)? .....  YES  NO

Is the slope of the site 20% or **less** (refer back to page 4 for this information)? .....  YES  NO

Is the site **NOT** within a geohazard area (refer back to page 4 for this information)? .....  YES  NO

**YES.** If all questions are marked **YES**, Rain Garden or Permeable Pavement **may be** feasible for this project.

1. Fill out the **Final Feasibility Checklist** worksheet.

a. If the **Final Feasibility Checklist** confirms Rain Garden or Permeable Pavement is feasible, attach the checklist to this application and mark “Rain Garden” or “Permeable Pavement” in the *Roofs* and/or *Other Hard Surfaces* tables on page 11 and continue to Section 5 on page 12.

**NO.** If any question is marked **NO**, or the **Final Feasibility Checklist** establishes that Rain Garden and Permeable Pavement **are not** feasible for this project, attach the checklist to this application and go to Step 8.

**STEP 8. EVALUATE LOW PRIORITY BMPS**

The following BMPs are not as effective as full dispersion or infiltration, but they must be used when feasible if full dispersion and infiltration are not feasible. They work primarily by spreading flows over vegetated landscapes.

Does your project have a new/replaced roof? .....  YES  NO

If YES, start at Step 8.A

IF NO, start at Step 8.B

**Step 8.A. Roofs**

*Downspout Dispersion (BMP T5.10B) Feasibility Questions*

Downspout Dispersion (BMP T5.10B) systems are splash blocks or gravel filled trenches, which serve to spread **roof** runoff over vegetated pervious areas.

Can the downspout discharge to a vegetated flow path at least 50 feet in length before reaching a slope over 15%? .....  YES  NO

Can the downspout discharge to a vegetated flow path at least 25 feet in length before reaching a downstream property line, structure, stream, wetland or other impervious surface? .....  YES  NO

Can the downspout discharge to a location more than 10 feet from a structure or property line?  YES  NO

If there is a septic system on site, is the discharge area at least 10 feet downgradient from the drainfield primary and reserve areas? (if there will be no septic system, mark "Yes").....  YES  NO

- If all questioned are marked **YES**, Downspout Dispersion **is** feasible for the project. Mark Downspout Dispersion in the *Roofs* table on page 11 and go to Step 8.B.
- If any question marked **NO**, Downspout Dispersion **is not** feasible for this project. Evaluate Perforated Stub-Out Connection.

*Perforated Stub-out Connection (BMP T5.10B) Feasibility Questions*

A perforated stub out connection is a length of perforated pipe within a gravel filled trench that is placed between **roof** downspouts and a stub out connection to the City drainage system.

Is the depth to groundwater **greater** than 2.5 feet? (Refer back to page 4 for this information) ...  YES  NO

- If **YES**, Perforated Stub-out Connection **is** feasible for this project. Mark "Perforated Stub-out Connection" in the *Roofs* table on page 11 then go to Step 8.B.
- If **NO**, All **roof** BMPs are infeasible for this project. This project is not required to implement permanent stormwater management on the site for **roofs**.

**AND**

- There are no **other new/replaced hard surfaces**. Mark "All BMPs infeasible" in the *Roofs* table and "Project has no other hard surfaces" in the *Other Hard Surfaces* table on page 11. Then go to Section 5 on page 12.
- There are **other new/replaced hard surfaces**. Mark "All BMPs infeasible" in the *Roofs* table on page 11. Then go to Step 8.B.

**Step 8.B. Other Hard Surfaces**

Will the slope of the new/replaced hard surface (e.g. driveway, patio) be **less than** 15%? .....  **YES**  **NO**

If the answer is **YES**, evaluate Sheet Flow Dispersion.

If the answer is **NO**, evaluate Concentrated Flow Dispersion

Concentrated Flow Dispersion (BMP T5.11) and Sheet Flow Dispersion (BMP T5.12) direct runoff from driveways or other hard surfaces (such as patios and lawns) through a vegetated pervious area to slow the entry of the runoff into the conveyance system. Concentrated Flow Dispersion is used for steep driveways and other surfaces that concentrate flow. Sheet Flow Dispersion is used for flat or moderately sloping surfaces where concentrated flows can be avoided.

*Sheet Flow Dispersion (BMP T5.12)*

Is the slope of the site 20% or **less** (refer back to page 4 for this information)? .....  **YES**  **NO**

If there is a septic system on site, is the discharge area at least 10 feet downgradient from a from the drainfield primary and reserve areas? (If there will be no septic system, mark “Yes”) .....  **YES**  **NO**

Is there a vegetated flow path of at least 10 feet per 20 feet width of runoff source surface? .....  **YES**  **NO**

- If the answer is **YES** to all questions, Sheet Flow Dispersion **is** feasible for the project site. Mark “Sheet Flow Dispersion” in the *Other Hard Surfaces* table on page 11 and go to Section 5 on page 12.
- If the answer is **NO** to any question, mark “All BMPs are Infeasible” in the *Other Hard Surfaces* table on page 11 and go to Section 5 on page 12.

*Concentrated Flow Dispersion (BMP T5.11) Feasibility Questions*

Is the Slope of the site 20% or less (refer back to page 4 for this information)? .....  **YES**  **NO**

If there is a septic system on site, is the discharge area at least 10 feet downgradient from a from the drainfield primary and reserve areas? .....  **YES**  **NO**

Is there a vegetated flow path of at least 50 feet between the discharge point and any property line, structure, steep slope, stream, lake wetland, lake or other impervious surface? .....  **YES**  **NO**

- If the answer is **YES** to all questions, Concentrated Flow Dispersion **is** feasible for this project. Mark “Concentrated Flow Dispersion” in the *Other Hard Surfaces* table on page 11 then go to Section 5 on page 12.
- If the answer is **NO** to any question, Concentrated Flow Dispersion **is not** feasible for this project. Mark “All BMPs are infeasible” in the *Other Hard Surfaces* table on page 11 then go to Section 5 on page 12.

**SECTION 4: SUMMARY OF SELECTED PERMANENT STORMWATER BMPS**

Lawns/Landscapes	Additional Instructions
<input type="checkbox"/> <i>Project has no new or replaced lawns or landscaped areas</i>	
<input type="checkbox"/> All BMPs for lawns/landscapes are infeasible	
<input type="checkbox"/> Post-Construction Soil Quality and Depth (BMP T5.13)	<input type="checkbox"/> Show BMP T5.13 on the <b>Small Construction Erosion Control Plan</b>

Roofs	Additional Instructions
<input type="checkbox"/> <i>Project has no new/replaced roofs</i>	
<input type="checkbox"/> All BMPs for roofs are infeasible	
<input type="checkbox"/> Full Dispersion (BMP T5.30)	<input type="checkbox"/> Attach a <b>Covenant</b> preserving 65% of the site in a natural state <input type="checkbox"/> Show BMP T5.30 on Site Development Drawing
<input type="checkbox"/> Downspout Full Infiltration (BMP T5.10A)	<input type="checkbox"/> Show BMP T5.10A on Site Development Drawing <input type="checkbox"/> Submit BMP Detail Drawing
<input type="checkbox"/> Rain Garden (BMP T5.14A)	<input type="checkbox"/> An <b>Infiltration Evaluation</b> is required (Section 6) <input type="checkbox"/> Show BMP T5.14A on Site Development Drawing <input type="checkbox"/> Submit BMP Detail Drawing
<input type="checkbox"/> Downspout Dispersion Systems (BMP T5.10B)	<input type="checkbox"/> Show BMP T5.10B on Site Development Drawing
<input type="checkbox"/> Perforated Stub-out Connections (BMP T5.10C)	<input type="checkbox"/> Show BMP T5.14A on Site Development Drawing

Other Hard Surfaces	Additional Instructions
<input type="checkbox"/> <i>Project has no new/replaced other hard surfaces</i>	
<input type="checkbox"/> All BMPs for other hard surfaces are infeasible	
<input type="checkbox"/> Full Dispersion (BMP T5.30)	See entry for Full Dispersion in <i>Roofs</i> table, above.
<input type="checkbox"/> Rain Garden (BMP T5.14A)	See entry for Rain Garden in <i>Roofs</i> table, above.
<input type="checkbox"/> Permeable Pavement (BMP T5.15)	<input type="checkbox"/> An <b>Infiltration Evaluation</b> is required (Section 6) <input type="checkbox"/> Show BMP T5.15 on Site Development Drawing <input type="checkbox"/> Submit BMP Detail Drawing
<input type="checkbox"/> Sheet Flow Dispersion (BMP T5.12)	<input type="checkbox"/> Show BMP T5.12 on Site Development Drawing
<input type="checkbox"/> Concentrated Flow Dispersion (BMP T5.11)	<input type="checkbox"/> Show BMP T5.11 on Site Development Drawing

**REQUIREMENTS FOR BMP DESIGN AND CONSTRUCTION**

**Tip!**

Ask at the Permit Counter if the City has simplified design and construction guidance for the BMPs you selected.

- Permanent stormwater BMPs must be designed in accordance with design criteria found in the Kelso Engineering Design Manual. City handouts may substitute. You will include drawings of your BMP(s) on the Site Development Drawings in Section 7.
- Stormwater that is not managed on site should be discharged to the City’s drainage system in accordance with the Unified Building Code.
- Pipes must be installed in conformance with the Unified Plumbing Code.
- If approved by the Community Development Director, **roof drains and footings** for residences and commercial redevelopment may drain to a street via a gravity curb drain where historic installation of curb drains is evident in the immediate neighborhood. Curb drains are not allowed for new commercial development.

Refer to the Kelso Engineering Design Manual, online at [www.kelso.gov/engineering/engineering-documents](http://www.kelso.gov/engineering/engineering-documents), for more information or clarification of stormwater requirements within Kelso. You may also contact the City of Kelso’s Engineering Department at (360) 423-6590 or at [www.kelso.gov/departments-services/engineering-department](http://www.kelso.gov/departments-services/engineering-department).

**SECTION 5: POLLUTION PREVENTION**

For the lifetime of the site, pollutants must be kept from draining into the street, storm drainage system, streams, rivers, lakes, and wetlands. Permanent stormwater management BMPs must be maintained.

If any of the Ongoing Activities in the left column are anticipated to take place on the site after construction, then check each item in the Required Pollutant Control Actions column to acknowledge the required pollutant control actions.

Ongoing Activities	Required Pollutant Control Actions
<p><input type="checkbox"/> <b>Landscaping Maintenance and Lawn Care</b> will be conducted after construction.</p> <p><input type="checkbox"/> Not Applicable</p>	<p><input type="checkbox"/> Do not dispose of collected vegetation in the street, drainage system, stream, river, lake, or wetland.</p> <p><input type="checkbox"/> Apply fertilizer, pesticide, and herbicide according to label directions. Do not exceed quantities stated in manufacturers' instructions.</p> <p><input type="checkbox"/> Store fertilizer, pesticide, and herbicide in an enclosed or contained area.</p> <p><input type="checkbox"/> Do not wash or allow spills to enter the street, storm drainage system, stream, river, lake, or wetland.</p> <p><input type="checkbox"/> Clean up spills of chemicals and petroleum products immediately.</p>
<p><input type="checkbox"/> <b>Pools, Spas, or Hot Tubs</b> will be on the site after construction.</p> <p><input type="checkbox"/> Not Applicable</p>	<p><input type="checkbox"/> Do not discharge drained water to a stream, river, or wetland.</p> <p><input type="checkbox"/> Dispose of unwanted cleaning chemicals properly.</p> <p><input type="checkbox"/> Do not discharge drainage water into the street or a storm drain unless the water is dechlorinated/debrominated to 0.1 ppm or less, pH-adjusted, free of dirt, suds, and algae, free of filter media, free of acid cleaning wastes, cooled to ambient air temperature, and released without causing downstream erosion.</p> <p><input type="checkbox"/> Do not discharge pool cleaning wastewater, filter backwash, or diatomaceous earth to the street or a storm drain.</p>
<p><input type="checkbox"/> <b>Drywell, Infiltration Trench, Rain Garden, or Permeable Pavement</b> will be on the site after construction.</p> <p><input type="checkbox"/> Not Applicable</p>	<p><input type="checkbox"/> Retain a copy of the recorded maintenance instructions for the site, and routinely follow the instructions in it for inspecting and maintaining the storm drainage system.</p>
<p><input type="checkbox"/> <b>Any Commercial Activity</b> will take place on the site after construction.</p> <p><input type="checkbox"/> Not Applicable</p>	<p><input type="checkbox"/> Refer to Volume IV, Source Control BMPs, of the 2014 Stormwater Management Manual for Western Washington. Find the commercial activity and the associated pollutant source-specific BMPs. Attach to this application a copy of the pertinent sheets from the manual.</p> <p>List the BMPs in the space below:</p>

**SECTION 6: OTHER REQUIRED PLANS**

**INFILTRATION EVALUATION**

If Rain Gardens or Permeable Pavements are proposed, then the infiltration rate of the soil ( $K_{SAT}$ ) at the proposed location must be tested on-site.

- Infiltration Evaluation is Not Applicable (no Rain Garden or Permeable Pavements are proposed)

**Non-Residential Site Infiltration Evaluation Requirements**

For non-residential sites and multifamily sites, a qualified professional is required to perform an infiltration test. A qualified professional is a professional engineer, geologist, hydrogeologist, or engineering geologist registered in the State of Washington or a professional soil scientist certified by the Soil Science Society of America (or an equivalent national program), a locally licensed on-site sewage designer, or other suitably trained person working under the supervision of one of the above.

The qualified professional shall conduct an infiltration test at the spot where Rain Gardens or Permeable Pavement will be located using the small-scale pilot infiltration test (PIT) as described in the SWMMWW Volume III Section 3.3.6. The testing shall take place between December 1 and April 1.

A soil boring or test pit must be used to find the depth of the seasonal high groundwater or bedrock.

The **Infiltration Evaluation** must be a written report prepared and signed by the qualified professional.

- It must describe the testing procedures and results.
- It must state the infiltration rate ( $K_{SAT}$ ) at the location where a Rain Garden or a Permeable Pavement is proposed.
- It must state the depth of seasonal high groundwater or bedrock at the location where a Rain Garden or a Permeable Pavement is proposed.

- A **Professional Infiltration Evaluation** is attached.

**Residential Site Infiltration Evaluation Requirements**

For single-family and duplex construction sites, the applicant is required to perform an infiltration test. If done by the applicant, the infiltration test must follow the “Test Your Soil” procedure in the *Rain Garden Handbook for Western Washington*, June 2013, on pages 15 through 17.

- A **Residential Infiltration Evaluation** is below.

Depth of water used in test (see Step 4 of the procedure): <input type="checkbox"/> 6 inches <input type="checkbox"/> 12 inches
Date or dates of test(s): _____
Calculated infiltration rate (a.k.a. “soil drainage rate”): _____ inches/hour

**SMALL CONSTRUCTION EROSION CONTROL PLAN**

The applicant/owner must prevent discharge of sediment and other pollutants from the site during construction. A **Small Construction Erosion Control Plan** is required to demonstrate how erosion and pollutants will be controlled during construction. See the **Small Construction Erosion Control Plan** form for detailed instructions. The form is a separate handout.

- A completed **Small Construction Erosion Control Plan** is attached.



## **SECTION 7: SITE DEVELOPMENT DRAWINGS**

The site development drawings show information necessary to construct the stormwater elements of the construction project.

Drawings must demonstrate that permanent stormwater management BMPs are designed to meet the Applicability, Limitations, Infeasibility Criteria, Design Criteria, and Setbacks described in the KEDM. (City handouts may substitute.)

Site drawings shall be drawn proportionally on 11x17 paper and shall be clean and legible. You may use the graph paper template on the last page of this handout, or you may create your own drawings separately. More than one sheet may be necessary to show all required elements. Required elements are shown in the checklists below.

### **Existing Conditions Site Drawing**

Attach at least one drawing showing the site's existing conditions.

- Property boundary and dimensions
- Streets (labeled)
- Boundaries of existing vegetation (trees, lawn, native plants, etc.)
- Existing buildings, driveways, and other hard surfaces, if any
- Existing retaining walls and embankments, if any
- Existing drainage patterns (use arrows to show how surface water flows across the site)
- Surface water and drainage features, if any
- Existing drainage and utility easements, if any
- Parcel ID, site address or location, applicant or owner's name, and a north arrow (on each drawing)

### **Tip!**

You will make several drawings of your site. You could make a base drawing and photocopy it several times. The base drawing should include:

- Property boundary + dimensions
- Streets
- North arrow
- Parcel ID, site address or location, name of applicant or owner

### **Site Development Drawing**

Attach at least one drawing showing how the site will look at the completion of construction.

- Property boundary and dimensions
- Streets (labeled)
- Any existing structures or elements from the Existing Conditions Site Drawing that will remain
- New drainage patterns (use arrows to show generally how surface water will flow across the site)
- New and replaced buildings and hard surfaces (include dimensions)
- Location and surface dimensions of Permanent Stormwater Management BMPs
- Flow paths and flow distances for dispersion-type Permanent Stormwater Management BMPs
- Setbacks
- Boundaries of existing native vegetation to be preserved
- Boundaries and dimensions of new and replaced lawn / landscaping
- Legend (if symbols are used)
- Parcel ID, site address or location, applicant or owner's name, and a north arrow (on each drawing)

### **Tip!**

Ask at the Permit Counter if the City has simplified BMP Detail Drawings you may use.

### **BMP Detail Drawing (8 ½ x 11)**

For each permanent stormwater management BMP that will be constructed, attach one 8 ½ x 11 sheet showing a plan drawing and a profile drawing.

- BMP Name (e.g. "Rain Garden")
- Show all components
- Dimensions
- Parcel ID, site address or location, applicant or owner's name, and north arrow

Refer to the Kelso Engineering Design Manual, online at [www.kelso.gov/engineering/engineering-documents](http://www.kelso.gov/engineering/engineering-documents), for more information or clarification of stormwater requirements within Kelso. You may also contact the City of Kelso's Engineering Department at (360) 423-6590 or at [www.kelso.gov/departments-services/engineering-department](http://www.kelso.gov/departments-services/engineering-department).



DRAWING: \_\_\_\_\_

APPLICANT PLAN SET

OWNER/APPLICANT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

INDICATE  
NORTH:

CHECK  ONE SQUARE = TWO FEET  
SCALE  ONE SQUARE = FIVE FEET  
USED:  ONE SQUARE = TEN FEET



DRAWING: \_\_\_\_\_

APPLICANT PLAN SET

OWNER/APPLICANT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

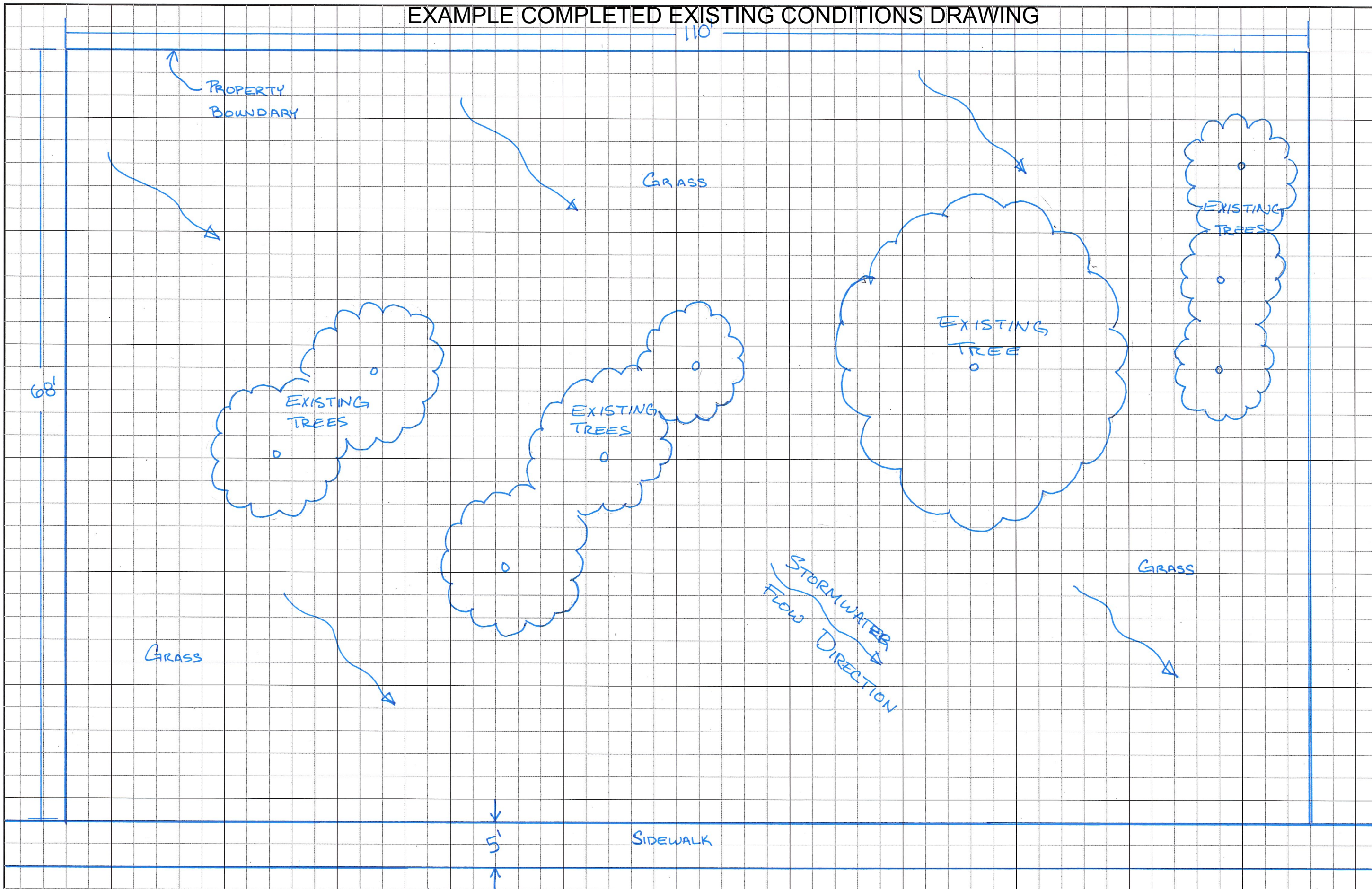
INDICATE  
NORTH:

- CHECK SCALE USED:
- ONE SQUARE = TWO FEET
  - ONE SQUARE = FIVE FEET
  - ONE SQUARE = TEN FEET



EXAMPLE COMPLETED EXISTING CONDITIONS DRAWING

TEMPLATE  
VERSION:  
2017-12-08  
SHEET # 1



DRAWING: EXISTING CONDITIONS

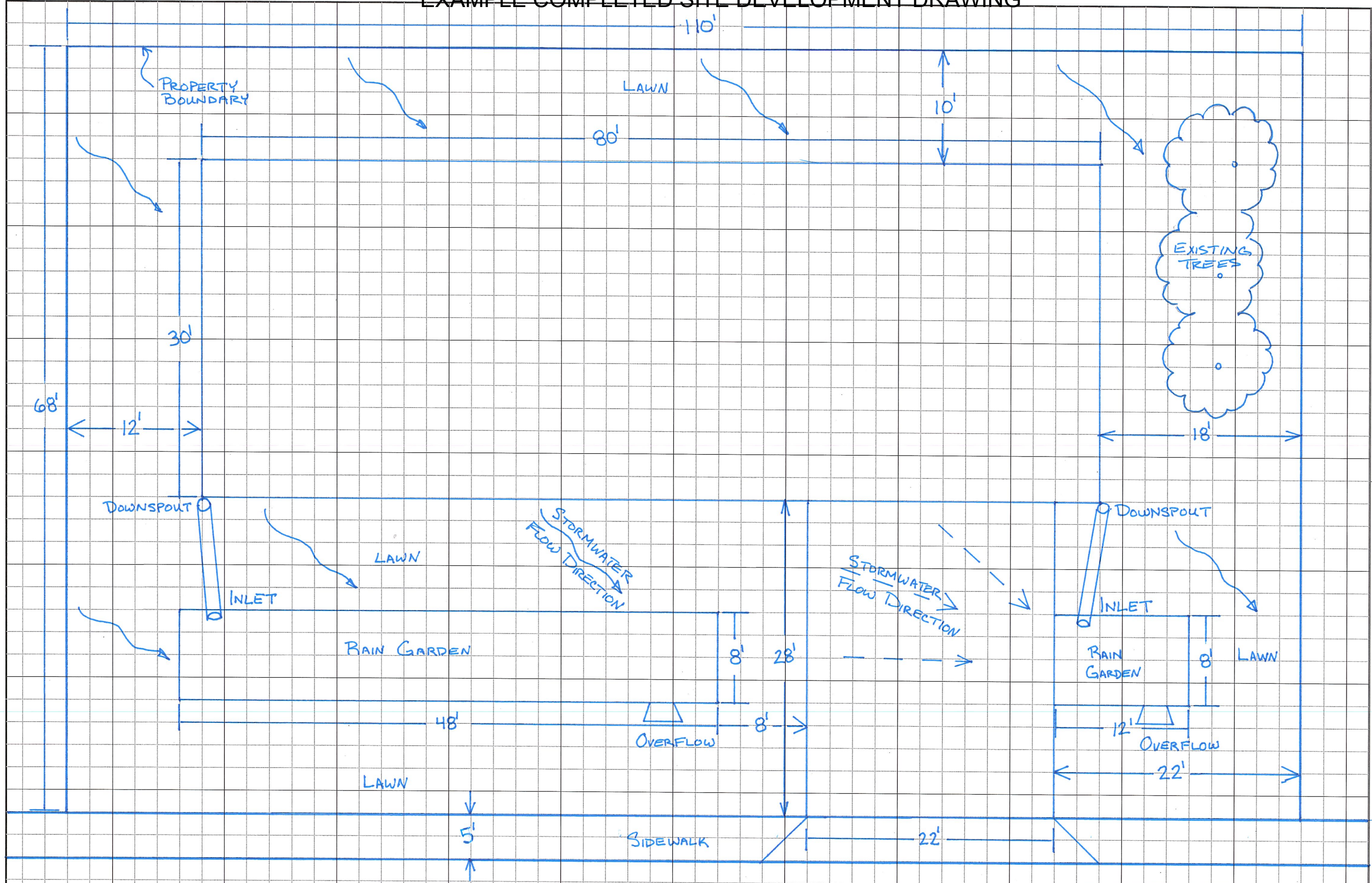
APPLICANT PLAN SET  
OWNER/APPLICANT: JOHN DOE  
ADDRESS: 123 MAIN STREET, KELSO

INDICATE NORTH:  
↑

CHECK SCALE USED:  
 ONE SQUARE = TWO FEET  
 ONE SQUARE = FIVE FEET  
 ONE SQUARE = TEN FEET

# EXAMPLE COMPLETED SITE DEVELOPMENT DRAWING

TEMPLATE  
VERSION:  
2017-12-08  
SHEET # **2**



DRAWING: SITE DEVELOPMENT

APPLICANT PLAN SET

OWNER/APPLICANT: JOHN DOE  
ADDRESS: 123 MAIN STREET, KELSO

INDICATE NORTH:  
↑

CHECK SCALE USED:  
 ONE SQUARE = TWO FEET  
 ONE SQUARE = FIVE FEET  
 ONE SQUARE = TEN FEET