

Part Three – Surface Water

Drainage Review and Requirements

Projects that require permits in King County may be subject to drainage review as required under the surface water runoff policies codified in Chapter 9.04 of the King County Code (K.C.C.). This chapter describes the drainage review procedures and types, and provides an overview of drainage requirements. The information presented is intended as a guide for applicants proposing small projects such as single-family residences on lots without approved drainage plans and short subdivisions. These projects can usually be reviewed under the small project drainage review process that is described here. Projects requiring full drainage review will typically need the services of a professional engineer and are beyond the scope of this manual. For more detail on full drainage review, see the Surface Water Design Manual (SWDM). Additional detail for small project design and review is contained in Appendix C of the manual, which is available separately in printed or electronic form.

Drainage Review

Drainage review is the evaluation by the Department of Development and Environmental Services (DDES) permit review staff of a proposed project's compliance with the drainage requirements of the SWDM. During drainage review, members of the DDES permit review staff also evaluate the proposed project for compliance with other King County drainage-related requirements such as those specified in the critical areas and clearing and grading codes. Drainage review is an integral part of the overall permit review process. This section describes when drainage review is required for a proposed project and how to determine which type of drainage review is required.

Guide to Using This Chapter

The following steps are recommended for efficient use of this chapter.

Determine whether your proposed project is subject to the requirements of the SWDM by seeing if it meets any of the thresholds for drainage review specified in "Projects Requiring Drainage Review" below. Making this determination requires an understanding of the key definitions listed below.

If drainage review is required, use the flow chart to determine what type of drainage review will be conducted by DDES. The type of drainage review defines the scope of drainage requirements that will apply to your project. Check the more detailed

threshold information in the narrative discussion under the heading “Projects Requiring Drainage Review” to verify that you have determined the correct type of drainage review. For projects eligible for small project drainage review, see the "Small Project Drainage Review" section below.

For projects not eligible for small project drainage review, use the information in Section 1.1.2 of the SWDM to determine which core requirements (found in Section 1.2) and which special requirements (found in Section 1.3) must be evaluated for compliance by your project. This will typically require the services of an engineer and is beyond the scope of this manual.

Note: It is recommended that you arrange a pre-design meeting with the DDES permit review staff to confirm the type of drainage review and scope of drainage requirements that apply to your proposed project.

Key Words and Phrases

Proper application of the drainage review thresholds in this section requires an understanding of the key definitions listed below.

Construct or modify:

To install a new drainage pipe/ditch or make improvements to an existing drainage pipe/ditch (for purposes other than maintenance, and excluding driveway culverts installed as part of single-family residential building permits) that either serves to concentrate previously non-concentrated surface and storm water runoff or serves to increase, decrease, and/or redirect the conveyance of surface and storm water runoff.

High-use site:

A commercial or industrial site that (1) has an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area, (2) is subject to petroleum storage or transfer in excess of 1,500 gallons per year, not including delivered heating oil, or (3) is subject to use, storage, or maintenance of a fleet of 25 or more diesel vehicles that are over 10 tons net weight (trucks, buses, trains, heavy equipment, etc.). Also included is any road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.

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 demolition, construction, clearing, grading, filling, excavation, and compaction. Landscape maintenance, gardening, and farming activities are not considered to be land disturbing activities.

Maintenance:

Those usual activities taken to prevent a decline, lapse, or cessation in the use of currently serviceable structures, facilities, equipment or systems if there is no expansion of the structure, facilities, equipment or system and there are no significant hydrologic impacts. Maintenance includes the repair or replacement of non-functional facilities and the replacement of existing structures with different types of structures, if the repair or replacement is required to meet current engineering standards or is required by one or more environmental permits and the functioning characteristics of the original facility or structure are not changed. For the purposes of applying this definition to the thresholds and requirements of this manual, DDES will determine whether the functioning characteristics of the original facility or structure will remain sufficiently unchanged to consider replacement as maintenance.

Native vegetated surface:

A surface in which the soil conditions, ground cover, and species of vegetation are like those of the original native condition for the site. More specifically, this means (1) the soil is either undisturbed or has been treated according to the "native vegetated landscape" specifications in Appendix C, Section C2.2.7, (2) the ground is either naturally covered with vegetation litter or has been top-dressed with 4 inches of hog fuel (or other suitable mulch) consistent with the native vegetated landscape specifications in Appendix C, and (3) the vegetation is either (a) comprised predominantly of plant species, other than noxious weeds, which are indigenous to the coastal region of the Pacific Northwest and which reasonably could have been expected to naturally occur on the site, or (b) comprised of plant species as specified for a native vegetated landscape in Appendix C. Examples of plant species include trees such as Douglas fir, Western hemlock, Western red cedar, alder, big-leaf maple and vine maple; shrubs such as willow, elderberry, salmonberry and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

Natural discharge area:

An onsite area tributary to a single natural discharge location.

Natural discharge location:

The location where runoff leaves the project site under existing site conditions.

New impervious surface:

The addition of a hard or compacted surface such as roofs, pavement, gravel or dirt, or the addition of a more compacted surface such as the paving of pre-existing dirt or gravel.

New pervious surface:

The conversion of a native vegetated surface or other native surface to a non-native pervious surface (e.g., conversion of forest or meadow to pasture land, grass land, cultivated land, lawn, landscaping, bare soil, etc.), or any alteration of existing non-native pervious surface that significantly increases surface and storm water runoff (e.g., conversion of pasture land, grass land, or cultivated land to lawn, landscaping, or bare soil).

Project:

Any proposed action to alter or develop a site that may also require drainage review.

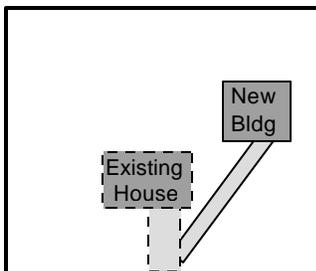
Project site:

That portion of a site and any offsite areas subject to proposed project activities, alterations, and improvements including those required by this manual. .

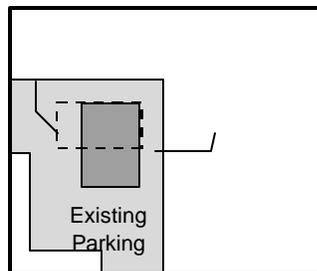
Redevelopment project:

A project that proposes to add, replace, or modify impervious surfaces (for purposes other than a residential subdivision or maintenance) on a site that is already substantially developed in a manner consistent with its current zoning or with a legal non-conforming use or has an existing impervious surface coverage of 35% or more. The following examples illustrate the application of this definition.

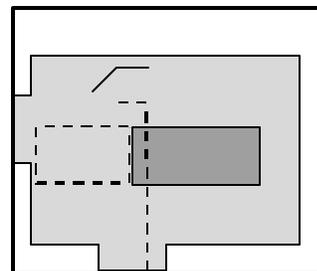
A Redevelopment Project that Adds New Impervious Surface



A Redevelopment Project that Replaces Impervious Surface



A Redevelopment Project that Adds and Replaces Impervious Surface



Replaced impervious surface:

Any existing impervious surface on the project site that is proposed to be removed and re-established as impervious surface, excluding impervious surface removed for the sole purpose of installing utilities or performing maintenance. Removed means the removal of buildings down to bare soil or the removal of Portland cement concrete (PCC) slabs and pavement or asphaltic concrete (AC) pavement together with any asphalt-treated base (ATB). It does not include the removal of pavement material through grinding or other surface modification unless the entire layer of PCC or AC together with ATB is removed.

Single-family residential project:

Any project that (a) constructs or modifies a single-family dwelling unit, (b) makes improvements (e.g., driveways, roads, outbuildings, play courts, etc.) or clears native vegetation on a lot that contains or will contain a single-family dwelling unit, or (c) is a plat, short plat, or boundary line adjustment which creates or adjusts lots that will contain single-family dwelling units.

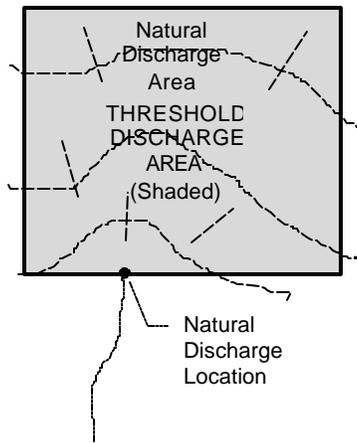
Site (a.k.a. development site):

A single parcel, or two or more contiguous parcels that are under common ownership or documented legal control, used as a single parcel for purposes of applying for authority from King County to carry out a development/project proposal. For projects located primarily within dedicated rights-of-way, site includes the entire width of right-of-way within the total length of right-of-way subject to improvements proposed by the project.

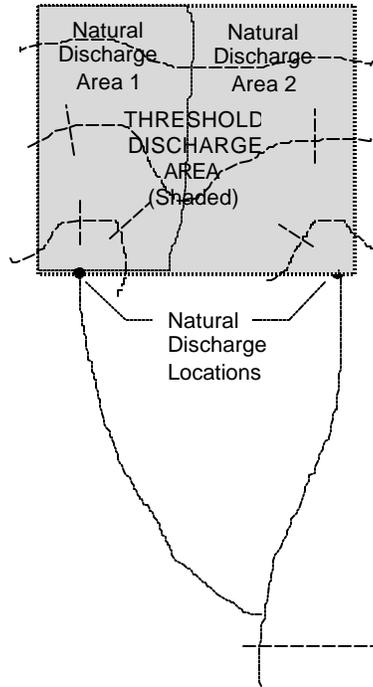
Threshold discharge area:

An onsite area draining to a single natural discharge location or multiple natural discharge locations that combine within one-quarter-mile downstream (as determined by the shortest flowpath). The following examples illustrate this definition. The purpose of this definition is to clarify how the thresholds of this manual are applied to project sites with multiple discharge points.

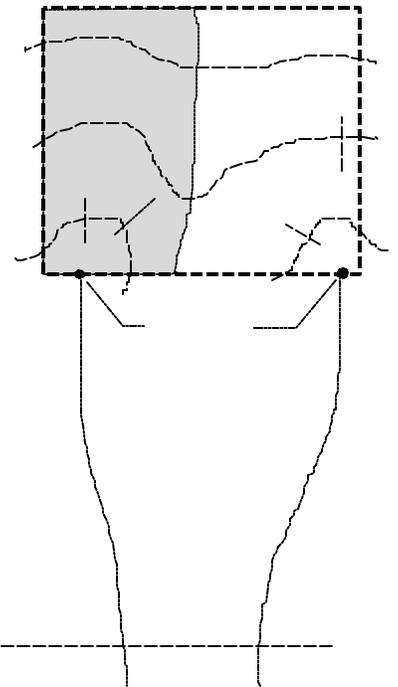
Example of a Project Site with a Single Natural Discharge and a Single Threshold Discharge Area



Example of a Project Site with Multiple Natural Discharges and a Single Threshold Discharge Area



Example of a Project Site with Multiple Natural Discharges and Multiple Threshold Discharge Areas



Projects Requiring Drainage Review

Drainage review is required for any proposed project (except those proposing only **maintenance**) that is subject to a King County development proposal, permit, or approval listed at right, AND which meets any one of the following conditions:

The project adds or will result in 2,000 square feet¹ or more of **new impervious surface**; OR

The project proposes 7,000 square feet¹ or more of **land disturbing activity**; OR

The project proposes to **construct or modify** a drainage pipe/ditch that is 12 inches or more in size/depth, or receives surface and storm water runoff from a drainage pipe/ditch that is 12 inches or more in size/depth; OR

The project contains or is adjacent to a floodplain, stream, lake, wetland, closed depression, or other **critical area** as defined in K.C.C. 21A.24, excluding seismic, coal mining, and volcanic hazard areas; OR

The project is located within a **critical drainage area**;² OR

The project is a **redevelopment project** proposing \$100,000³ or more of improvements to an existing **high-use site**; OR

The project is a **redevelopment project** on a single or multiple parcel site in which the total of new plus replaced impervious surface is 5,000 square feet or more and whose valuation of proposed improvements (including interior improvements and excluding required mitigation and frontage improvements) exceeds 50% of the assessed value of the existing site improvements.

King County Permits and Approvals

Administrative Subdivision (short plat)
 Binding Site Plan
 Boundary Line Adjustment
 Conditional Use*
 Clearing
 Commercial Building
 Experimental Design Adjustment*
 Formal Subdivision (plat)
 Franchise Utility Right-of-Way Use
 Grading
 Pre-application Adjustment*
 Right-of-Way Use
 Shoreline Substantial Development*
 Single-family Residential Building
 Special Use*
 Unclassified Use*
 Urban Planned Development
 Zoning Reclassification*
 Zoning Variance*

*Note: If the proposed project will require subsequent permits subject to drainage review, then DDES may allow the drainage review to be deferred until application for the later permits.

¹ The thresholds for new impervious surface and land disturbing activity shall be applied by **threshold discharge area** and in accordance with the definitions of these surfaces and activities.

² See Reference Section 3 for a list of critical drainage areas.

³ This is the "project valuation" as declared on the permit application submitted to DDES. The dollar amount of this threshold is considered to be as of January 8, 2001 and may be adjusted on an annual basis using the local consumer price index (CPI).

Note: January 8, 2001 is the effective date of the ESA 4(d) Rule for Puget Sound Chinook salmon.

If drainage review is required for the proposed project, the type of drainage review must be determined based on project and site characteristics as described below. The type of drainage review defines the scope of drainage requirements that must be evaluated for project compliance with the SWDM.

Drainage Review Types and Requirements

For most projects adding 5,000 square feet or more of impervious surface, the full range of core and special requirements contained in Sections 1.2 and 1.3 must be evaluated for compliance through the drainage review process. However for some types of projects, the scope of requirements applied is narrowed to allow more efficient, customized review.

Each of the following four drainage review types tailors the review process and application of drainage requirements to a project's size, location, type of development, and anticipated impacts to the local and regional surface water system:

- Small Project Drainage Review
- Targeted Drainage Review
- Full Drainage Review
- Large Project Drainage Review

Each project requires only one of the above drainage review types, with the single exception that a project which qualifies for small project drainage review may also require targeted drainage review. The following flow chart can be used to determine which drainage review type would be required. Note that projects requiring full drainage review and large site drainage review will require the services of a professional engineer and are beyond the scope of this manual. Many projects requiring targeted drainage review will also require the services of a professional engineer and are beyond the scope of this manual.

FLOW CHART FOR DETERMINING TYPE OF DRAINAGE REVIEW REQUIRED

Is the project a single family residential or agricultural project that results in $\geq 2,000$ sf of new impervious surface and meets one of the following criteria?

- The project results in $\leq 10,000$ sf of total impervious surface added since 1/8/01 and $\leq 35,000$ sf of new pervious surface, or for sites zoned as RA, F, or A, new pervious surface $\leq 70,000$ sf or 35% of the site, whichever is greater, OR
- The project results in $\leq 4\%$ total impervious surface and $\leq 15\%$ new pervious surface on a single parcel site zoned as RA or F, or a single/multiple parcel site zoned as A, and all impervious area on the site, except 10,000 sf of it, is set back from any down slope site boundary, drainage system, or critical area at least 100 ft for every 10,000 sf of total impervious surface?

Yes

SMALL PROJECT DRAINAGE REVIEW

Note: The project may also be subject to Targeted Drainage Review as determined below.

No

Does the project result in $\geq 2,000$ sf of new impervious surface or $\geq 35,000$ sf of new pervious surface, OR is the project a redevelopment project on a parcel or combination of parcels in which new plus replaced impervious surface totals $\geq 5,000$ sf and whose valuation of proposed improvements (excluding required mitigation and frontage improvements) is $> 50\%$ of the assessed value of existing improvements?

No

Does the project have the characteristics of one or more of the following categories of projects (see the more detailed threshold language on p. 3.7)?

1. Projects that contain or are adjacent to floodplains or critical areas; projects within a Critical Drainage Area or Landslide Hazard Drainage Area; or projects that propose $\geq 7,000$ sf (3 ac if the project is in Small Project Drainage Review) of land disturbing activity.
2. Projects proposing to construct or modify a drainage pipe/ditch that is 12" or larger or receives runoff from a 12" or larger drainage pipe/ditch.
3. Redevelopment projects proposing $\geq \$100,000$ in improvements to an existing high-use site.

Yes

Reassess whether drainage review is required

No

Yes

TARGETED DRAINAGE REVIEW

Note: see Surface Water Design Manual.

Is the project an Urban Planned Development (UPD), OR does it result in ≥ 50 acres of new impervious surface within a subbasin or multiple subbasins that are hydraulically connected, OR does it have a project site ≥ 50 acres within a critical aquifer recharge area?

No

FULL DRAINAGE REVIEW

Note: See Surface Water Design Manual.

Yes

LARGE PROJECT DRAINAGE REVIEW

Note: See Surface Water Design Manual

Purpose and Intent of Small Project Drainage Review

The purpose of small project drainage review is to provide a simpler, less costly method of review and approval of drainage plans for small-scale single-family residential projects and agricultural projects. Small project drainage review is a simplified alternative to the full drainage review process that most projects must undergo as part of permit review and approval by the county. In full drainage review, the county's full complement of core and special requirements for mitigation of storm water impacts from new development and redevelopment are applied as specified in the *SWDM*. Because these requirements usually involve engineering analysis, collection and assessment of technical information, and the design of drainage facilities among other things, a licensed civil engineer is required to address compliance with each requirement. In small project drainage review, most of the core and special requirements are replaced with simplified requirements and BMPs that can be applied by a non-engineer.

The intent of small project drainage review is to achieve the same level of mitigation as full drainage review while minimizing the need for a licensed civil engineer, thus reducing costs to the applicants of smaller projects. This is made possible by limiting the size and type of projects eligible for small project drainage review such that the core and special requirements of the *SWDM* are either not applicable or can be adequately addressed by a non-engineer through proper application of the BMPs and measures Appendix C of the *SWDM*. A licensed engineer is then only required when the county identifies site-specific drainage concerns that must be addressed by an engineer through targeted drainage review.

Small Project Drainage Review Process

Drainage review, when required, is one of several reviews conducted by the Department of Development and Environmental Services (DDES) as part of its review process for county development permits and approvals. The process used for drainage review depends largely on the permit review process already established for different types of developments (e.g., subdivision, single-family residence, or commercial building). For projects in small project drainage review, the review process primarily depends on whether the project is a proposed short plat or just proposed site improvements to an existing parcel or combination of parcels. A flow chart that shows the general drainage review process common to these two types of development follows this text. Following is a description of the small project drainage review process for each of these development types.

Site Improvement Projects

This section describes the small project drainage review process for single-family residential projects and agricultural projects that apply for a permit or approval to

make specific site improvements such as construction of buildings, additions, driveways, or other impervious surfaces, or clearing of native vegetation.

When a permit/approval for a single-family residential project or agricultural project requires drainage review as specified in the *SWDM*, members of the DDES Site Engineering staff plot the project location on various maps (Assessor's, Kroll, topography, soils, etc.), research sensitive areas on or near the site, and check for adopted area-specific conditions which might affect the drainage requirements for the site. A DDES engineer reviews this information with respect to the proposed application. In most cases, a visit to the site is made to check existing conditions and drainage concerns.

The DDES engineer makes a determination of the type of drainage review required for the site and will either:

- Approve the permit subject to complying with an approved small project drainage plan or engineered plan;
- Request additional information as needed;
- Request that a small project drainage plan be submitted in accordance with Appendix C of the *SWDM*;
- Request that an engineered drainage plan be submitted in accordance with the *Surface Water Design Manual*; OR
- Deny the permit application because it cannot meet required codes (e.g., a proposed new residence located in a FEMA floodway or in a channel migration hazard area).

Short Plat Projects

For single-family residential projects that are short plats, the small drainage review process generally includes the following elements.

Pre-application

The short plat process requires a mandatory pre-application meeting prior to formal submittal. The purpose of the pre-application meeting is to identify potential site constraints and regulatory requirements for the proposed project. If the short plat is potentially eligible for small project drainage review, the applicant may use Appendix C of the *SWDM* and other information necessary to complete the small project drainage plan.

If the drainage requirements for a specific short plat are determined during a pre-application meeting, small project drainage plans or full drainage review engineering plans [site improvement plans, erosion and sediment control plans, and a technical information report (as necessary) – see *SWDM* Section 2.3] may be submitted with the application. Reference C of Appendix C contains a series of questions that may help assess the requirements for a potential small project short plat. Submitting

plans with the short plat permit application may expedite the review of the proposed application. However, there is risk that the plans prepared may exceed, or not adequately address, the yet-to-be-determined conditions of preliminary approval.

Preliminary Approval

After formal permit application, a more detailed review of the site and a determination of the type of drainage review required for the proposed short plat are made. If eligible for small project drainage review, the application may be placed on hold pending the completion of a small project drainage plan.

The applicant is responsible for submitting a small project drainage plan. Upon completion and approval of the small project drainage plan (and other application requirements), preliminary approval may be granted, subject to the conditions of the small project drainage plan. For simple short plats that have no drainage issues triggering targeted drainage review, engineered drainage plans are not usually required.

For proposed short plats requiring some engineering analysis, preliminary approval may be granted subject to the approval of engineering plans and a small project drainage plan. The applicant may choose to have the small project drainage plan incorporated into the engineered plans (prepared by a licensed civil engineer) or may elect to have a separate small project drainage plan that is not prepared by an engineer.

Proposed short plats that qualify for small project drainage review but cannot, or elect not to, comply with the small project drainage requirements will be subject to full drainage review. Any proposed short plats unable to comply with all applicable regulations (drainage or non-drainage) may be denied.

Engineering Review

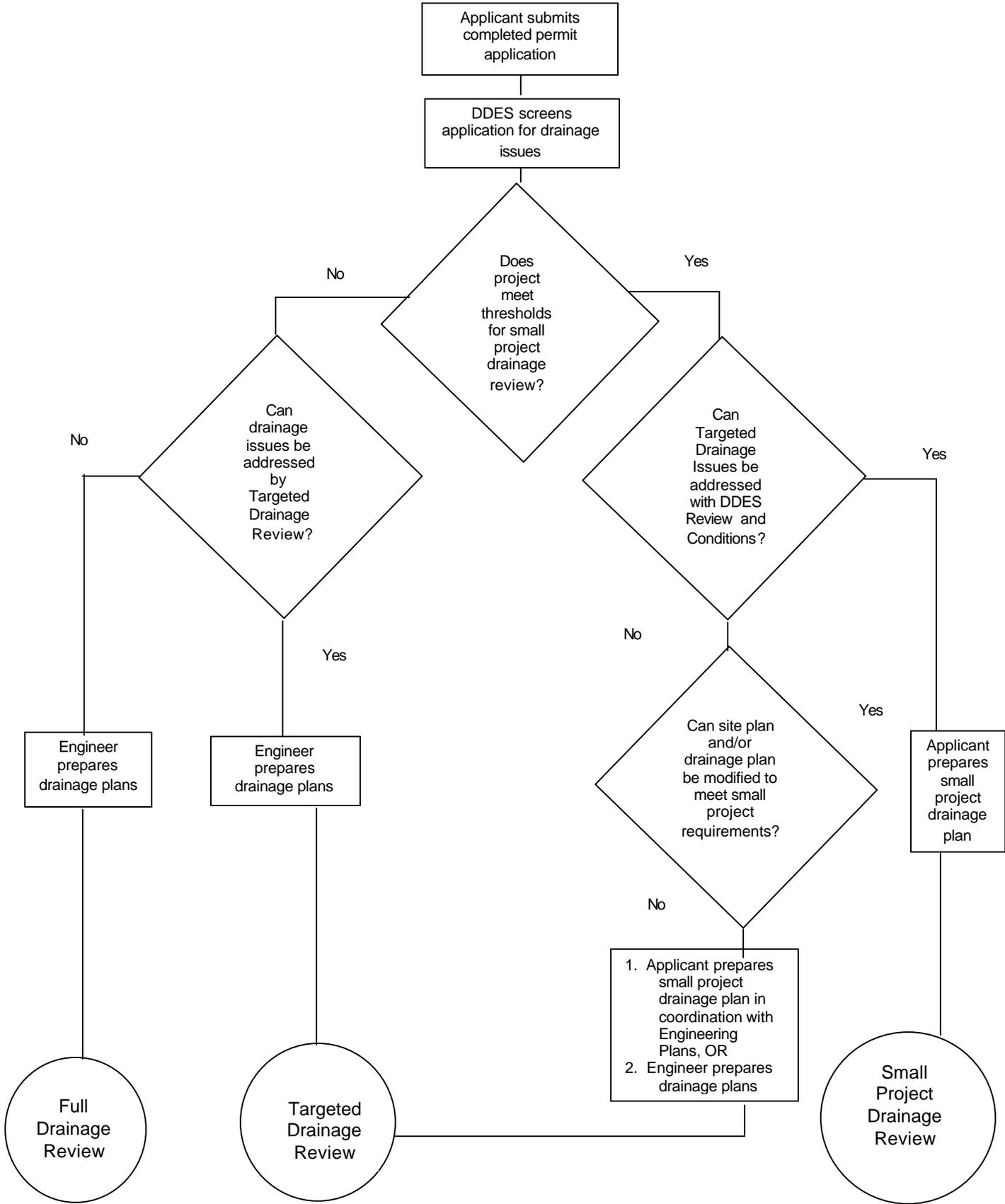
Short plats receiving preliminary approval subject to the completion of a small project drainage plan and/or engineering plans are subject to engineering review. When separate plans are being prepared, submittals for engineering review should include both sets of plans to minimize review time and re-submittal fees.

Final Recording

All short plat applications must complete the requirements of final recording. Small projects will require additional note(s) be placed on the recorded documents which reference the approved small project drainage plan for future lot construction.

Note: Future building permit applications which do not comply with the conditions of the approved small project drainage plan (e.g., impervious coverage limits, location of BMPs, etc.) may be subject to full drainage review.

SMALL PROJECT DRAINAGE REVIEW PROCESS



Water Quality Code

The Water Quality Code (King County Code 9.12 Water Quality) protects surface and ground water quality by providing minimum requirements for reducing and controlling the discharge of contaminants. The code prohibits any person from discharging contaminants into surface and storm water and ground water, and requires preventative measures to restrict contaminants from entering such waters. King County provides technical assistance to identify appropriate preventative measures, or Best Management Practices (BMPs). Failure to prevent contaminants from entering the water could result in enforcement and fines can be levied.

Stormwater Pollution Prevention Manual

The Stormwater Pollution Prevention Manual was developed to identify BMPs to prevent contaminants from entering storm, surface and ground waters. Pollutant source control BMPs, either structural or nonstructural, are identified by pollutant-generating activities. Examples include: 1) an engine repair activity would require the use of drip pans and ground cloths (nonstructural) to capture oil spills and drips, 2) a vehicle washing activity may require hookup to a sanitary sewer (structural) for discharge of soapy wash water. If source control measures are not sufficient to prevent contamination, then a treatment BMP, such as an oil/water separator, may be required to remove the pollutant.

The Stormwater Pollution Prevention Manual can be viewed online at: <http://dnr.metrokc.gov/wlr/dss/spcm.htm>. Technical assistance is provided to identify required BMPs. A water quality audit can be scheduled by calling 206-296-1900.