



CITY OF KIRKLAND
Department of Public Works
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MEMORANDUM

To: Dave Ramsay, City Manager

From: Stacey Rush, P.E., Surface Water Utility Engineer
Jenny Gaus, P.E., Environmental Services Supervisor
Daryl Grigsby, Director of Public Works

Date: October 8, 2009

Subject: Revised Surface Water Development Regulations

INTRODUCTION

The State Department of Ecology modified our Phase II National Pollutant Discharge Elimination System (NPDES) Permit last June, extending the adoption deadline for revised surface water development regulations to February, 2010. The regulations are designed to create better water quality in our streams, lakes, and wetlands. Adoption of an ordinance will be proposed to Council in November, adopting the 2009 King County Surface Water Design Manual (2009 KCSWDM) and an Addendum through changes to the stormwater code. The ordinance is still undergoing revisions by City staff, and will be finalized next month. The purpose of this memo is to provide information on the following changes:

- Propose adoption of a new stormwater manual for development
- Creation of Addendum to the new stormwater manual
- Identify regulatory items where the City has some flexibility
- Response by other jurisdictions
- Next steps – ordinance to be proposed in November

POLICY IMPLICATIONS

New Stormwater Manual

The Phase II NPDES Permit requires the City to adopt a new stormwater manual for development by February 16, 2010. The City currently uses the 1998 King County Surface Water Design Manual, which does not meet permit requirements. During public meetings with the development community, they requested the City adopt the 2009 KCSWDM instead of Ecology's stormwater manual. The 2009 KCSWDM contains more detailed engineering guidance and better technical support from King County. In addition, the 2009 KCSWDM was more thoroughly vetted with the development community; they were involved with its development and provided review comments. The 2009 KCSWDM has been deemed equivalent to Ecology's stormwater manual. Staff proposes adopting the 2009 KCSWDM with an effective date of January 1, 2010 to meet Phase II NPDES Permit requirements.

Development Regulation Changes

Attached is a table listing the primary development changes under the new regulations (Attachment A). There are increased levels of reporting, detention, and water quality for some projects. The type of projects most affected by the new regulations is redevelopment of existing buildings and paved areas draining to sensitive areas. The projects least affected by

the new regulations are new development of forested areas (because strict requirements are already in place for this type of development). The impacts to CIP projects vary greatly.

The new regulations will translate to additional costs for both public and private projects, but will provide better water quality for our streams, lakes and wetlands. The additional drainage requirements will translate to additional costs for upcoming public projects. For private projects, the cost increase will vary based on the impacts to water quality. The increased level of drainage review necessary by City staff may require us to increase development fees. At this time staff is anticipating a 50% to 70% increase in review hours for review and inspection generated by the new regulations. Staff will evaluate our surface water management rate structure, since the last increase was in 2006. A fee schedule will be presented to Council along with the ordinance in November.

On the other side of the cost/benefit ledger, Ecology's position is that the increased costs actually reflect the true cost of that projects' impact on the water resource. In addition, many in the environmental community still argue the new regulations do not fully cover the actual damages to the environment. Science has shown that watersheds are adversely impacted when they contain 10% impervious surface area. All of our watersheds in Kirkland contain significantly more than 10% impervious surface area.

Because of the significant development changes to the community, outreach has been ongoing throughout this year to educate and involve the residents, business owners, and the development community. Education was in the form of emails, websites & forum updates, news release, handouts, and open house workshops on May 7th and May 13th in 2009. Development regulations are just one piece of the overall water quality puzzle. The Phase II NPDES Permit requires us to address water quality degradation in the following five areas:

1. Public Education and Outreach,
2. Public Involvement and participation,
3. Illicit Discharge Detection and Elimination,
4. Controlling Runoff from New Development, Redevelopment and construction sites, and
5. Pollution Prevention and Operation and Maintenance for Municipal Operations.

The City is taking additional steps to help the development community comply with the new requirements. We are looking at basin planning through an existing Ecology grant in the Juanita Creek drainage basin, and we are examining the possibility of regional detention facilities in the Forbes Creek drainage basin. City staff is currently working with the University of Washington to develop a new geologic/soils map to identify feasible areas for low impact development (LID) in Kirkland. This map is based on actual soil data obtained from previous development projects in Kirkland.

The new regulations will encourage and require consideration of stormwater LID techniques. All projects will be required to evaluate the feasibility and applicability of dispersion and infiltration, and install at least one stormwater LID technique on site (a list is provided in the 2009 KCSWDM). Detention volume and water quality treatment can be reduced by incorporating stormwater LID techniques into a project.

Addendum to Manual

Because the 2009 KCSWDM was written for a Phase I jurisdiction (population greater than 100,000), it contains regulations stricter than we are required to adopt at this time. The main difference is Phase I jurisdictions must apply regulations to both small and large sites, whereas our Phase II NPDES Permit specifically refers to projects on sites one acre or larger. Approximately 1/3 of our project sites are 1 acre or larger (excluding single family). Below is a table showing the breakdown of projects by size for the last 2 years:

Type of Permit	2007		2008	
	Less than 1 acre	1 acre or larger	Less than 1 acre	1 acre or larger
New commercial and multi-family	5	8	3	3
Short Plats	38	6	22	3
Subdivisions	1	1	0	2
Grading (separate)	3	2	3	0
Totals	47	17	28	8

The Phase II NPDES Permit gives us some flexibility in applying stormwater requirements for projects that are smaller than one acre. Staff reviewed the 2009 KCSWDM requirements and evaluated the feasibility of the regulations in Kirkland. The Phase II NPDES Permit states we cannot reduce our current standards (no backsliding), and we want to have some consistency with regulations, so we are proposing to adopt some of the same requirements for sites over and under one acre. Staff has prepared an Addendum to address items in the 2009 KCSWDM that are not being adopted at this time, along with Kirkland specific items that differ from King County. The Addendum is attached, but it is still in draft form and will be finalized based on council input (see Attachment B). A table of key issues that may be of interest to Council is also attached (Attachment C).

OTHER JURISDICTIONS

Kirkland is not the only community that will feel the impacts of more stringent environmental regulations. There are approximately 104 jurisdictions in Washington State that are subject to the NPDES Phase II Permit, and therefore will also be required to adopt revised surface water regulations. As part of our process preparing for this change, city staff contacted nine nearby cities and inquired about their regulation changes. Kirkland is generally following the same path as other cities. For detailed information, see the attached jurisdictional comparison table (Attachment D).

NEXT STEPS

Staff would like input from council regarding the issues outlined in Attachment C. An ordinance to adopt the 2009 KCSWDM and the Addendum through changes to the stormwater code (KMC 15.52) will be presented to Council on November 17th.

Should you have questions about the proposed regulations, please contact Stacey Rush at (425) 587-3854 srush@ci.kirkland.wa.us, or Jenny Gaus at (425) 587-3850.

Attachment A: Development Regulation Changes if Adoption of 2009 KC Surface Water Design Manual

Attachment B: Kirkland Addendum to the 2009 KC Surface Water Design Manual

Attachment C: Key issues with new regulations

Attachment D: Jurisdictional Comparison for Revised Stormwater Development Standards

Attachment A

City of Kirkland Development Regulation Changes Between Current Storm Manual and Proposed New Storm Manual

Item	Current Requirements under 1998 King County Surface Water Design Manual	Changes proposed in 2010 with adoption of 2009 King County Surface Water Design Manual
Threshold for Drainage Review	Minor review for projects adding between 500ft ² - 4,999ft ² impervious surface area, formal drainage review for projects adding 5,000ft ² or more.	Minor review for projects adding between 500ft ² - 1,999ft ² impervious surface area, formal drainage review for projects adding 2,000ft ² and more.
Drainage Technical Information Report	Full drainage TIR required for projects adding 10,000ft ² or more new impervious; partial TIR for 5,000ft ² or greater.	Lower threshold for Drainage Report, size of report depends on level of drainage review required: Small, Targeted, or Full.
Modeling of Predeveloped Conditions	Use existing coverage - credit given for most existing impervious areas.	For areas of Level 1 flow control, existing coverage allowed. For areas of Level 2 flow control, use historic condition (forested - no credit for existing impervious).
Detention Threshold	Required for projects creating 10,000ft ² impervious area or more, applies only to new impervious.	Required for projects involving 10,000ft ² impervious area or more, but is applied to all "effective" impervious on site (new and existing).
Flow Control Level	Level 2 for projects draining to sensitive areas, and Level 1/potential direct discharge exemption for areas draining directly to Lake WA.	No change; use existing flow control map.
Flow Control Exemptions	Minimum impervious area, peak flow, and direct discharge to Lake WA exemptions are available.	Minimum impervious area is reduced to 2,000ft ² , and now includes new and replaced. Direct discharge to Lake WA exemption remains. Peak flow exemption is still available, but must be based on historic condition of site. There is a 40% total impervious area basin exemption that may be applicable to certain areas of Kirkland, but more research and approval from DOE is needed.
Exemption for Road Related Projects	No exemption, treated same as other development.	If new impervious area in a road related project is less than 50% of the existing impervious within project limit, then requirements apply only to "new" impervious surface; otherwise apply to both new and replaced impervious.
Water Quality Threshold	Required if new or replaced pollution generating impervious surface area is 5,000ft ² or greater.	Required for projects where the total "effective" (new and existing) pollution generating impervious surface is 5,000ft ² or more.
Erosion Control	Basic erosion control required on all sites; site greater than 1 acre require Construction SW Pollution Prevention Plan.	All projects must prepare an ESC Report. Projects greater than 1 acre require a Construction SW Pollution Prevention Plan.
Low Impact Development (LID)	encouraged, but not required	Projects are required to evaluate the feasibility and applicability of dispersion and infiltration, and install at least 1 stormwater LID technique on site.
The following 2009 KCSWDM requirements will only apply to project sites 1 acre or larger:		
Enhanced Water Quality Treatment Level	not required	Basic level treatment for projects discharging directly to Lake WA. Enhanced treatment required for some single family residential, multi-family, commercial, and high AADT road projects.
SW Pollution Prevention and Spill Plan (SWPPS)	not required	Plan includes 3 elements: a site plan, a pollution prevention report, and a spill prevention and cleanup report.
Soil Amendment	not required	BMP T5.13, per Core Requirement #5. Includes mixing 2-3" of compost into upper 8" of topsoil. Compost needs to meet specific organic matter content and pH requirements.

DRAFT



Addendum to the 2009 King County Surface Water Design Manual

Proposed effective date: January 1, 2010

Introduction

This addendum to the 2009 King county Surface Water Design Manual (KCSWDM) applies to development and redevelopment proposals within the city of Kirkland. The KCSWDM has been adopted requirements of the Clean Water Act, the Endangered Species Act, and State Growth Management Act. This addendum includes minor revisions to the KCSWDM to address the differences between King County's and the City's organization and processes. No major substantive changes have been made to the KCSWDM in order to maintain equivalency in review requirements and level of protection provided by the manual. It is our intent to maintain equivalency with the 2005 Ecology Stormwater Management Manual for Western WA.

Addendum Organization

The information presented in this addendum is organized as follows:

I. Terminology: At times King County and City of Kirkland use different terminology to describe or to refer to equivalent subject matter. This section identifies these terms and the City of Kirkland's equivalent terminology.

II. Key Revisions: This section specifically identifies the minor revisions the City has made to the KCSWDM.

III. Code Reference Tables: King County code is referenced in many places throughout the KCSWDM. This section identifies these code references and equivalent city code where applicable.

IV. Reference Materials: This section identifies which reference materials provided in the KCSWDM are applicable and which are not. It also identifies if equivalent City of Kirkland reference materials are available.

V. Mapping: The City of Kirkland equivalents to the Flow Control Applications map, Landslide Hazard Drainage Areas map, and Sensitive/Critical Areas map are available online at:

http://www.ci.kirkland.wa.us/depart/Information_Technology/GIS.htm

Note: Clarifications and interpretations to the KCSWDM or this addendum are documented and made available through City Regulatory Code and the Public Works Pre-Approved Plans.

I. Terminology

At times King County and City of Kirkland use different terminology to describe or to refer to equivalent subject matter. This section identifies these terms and the City of Kirkland's equivalent terminology.

Critical Drainage Area (CDA) – refers to the City of Kirkland Sensitive Areas.

Department of Development and Environmental Services (DDES) – all references to DDES conducting drainage reviews or determinations shall refer to City of Kirkland Public Works and Planning and Community Development Departments.

Department of Natural Resources and Parks (DNRP) – references to DNRP shall refer to City of Kirkland Parks and Planning and Community Development Departments.

Director – refers to the City of Kirkland Public Works Director.

King County – refers to the City of Kirkland (COK).

King County Code (KCC) – refer to the City of Kirkland Municipal and Zoning Codes (KMC and KZC). Check code reference table for equivalent code sections.

King County Designated/Identified Water Quality Problem – This determination is made on a case-by-case basis.

King County Road Standards – refer to the City of Kirkland Public Works Pre-Approved Plans.

Sensitive Area Folio – refer to City of Kirkland Sensitive Areas Map at:
http://www.ci.kirkland.wa.us/depart/Information_Technology/GIS.htm

Water and Land Resources (WLR) Division – refers to the City of Kirkland Surface Water Management Division.

Zoning Classifications: Where the KCSWDM references Agricultural (A) Zoning, Forest (F) Zoning, or Rural (R) Zoning – these zoning classifications are intended for areas outside of the Urban Growth Boundary, therefore the City of Kirkland contains no equivalent zoning. Refer to city zoning maps to determine which zoning classifications apply to your project. The City of Kirkland Land Use Map can be found at:
http://www.ci.kirkland.wa.us/depart/Information_Technology/GIS.htm

II. Key Revisions

This section includes minor revisions to the KCSWDM to address the differences between King County's and the City of Kirkland's organization and processes, as well as to ensure equivalency.

Chapter 1: Drainage Review and Requirements

Applies with the revisions stated below:

1.1 Drainage Review

Criteria for review levels are defined in the COK Public Works Pre-Approved Plans, Policy D-2. Drainage review levels used in the City of Kirkland are listed below:

- Small Project drainage review
- Targeted drainage review
- Full drainage review

1.2 Core Requirements

1.2.2 Core Requirement #2: Offsite Analysis

1.2.2.1 Downstream Analysis

Exclude the section titled Downstream Water Quality Problems Requiring Special Attention. Water quality problems are addressed through educational programs and source control.

1.2.3 Core Requirement #3: Flow Control

Historic pre-developed conditions will be applied to all projects in a level 2 flow control area.

**A. NPDES Phase II Permit requires historic conditions for projects 1 acre or larger.*

1.2.3.1 Area-Specific Flow Control Facility Requirement

The Impervious Surface Percentage Exemption stated on page 1-38 is void and does not apply to the City of Kirkland.

1.2.5 Core Requirement #5: Erosion and Sediment Control

1.2.5.1 ESC Measures

Ecology's Amended Soil Requirement (BMP T5.13) is required for all projects 1 acre or larger. Amended soil is recommended on projects smaller than 1 acre.

**B. NPDES Phase II Permit requires amended soil on projects 1 acre or larger. King County requires it for all projects (regardless of size) in their clearing and grading codes. Current KZC 95.45 requires amended soil with organic content, but it does not include how much organic content is required and is intended for tree installation.*

1.2.5.2 ESC Performance and Compliance Provisions

B. Monitoring of Discharges

For projects that clear 2,000ft² or greater, the City may require the ESC Supervisor to have a turbidity meter onsite and use it to monitor surface and stormwater discharges from the project site and into onsite wetlands, streams, or lakes whenever runoff occurs from onsite activities and during storm events.

1.2.6 Core Requirement #6: Maintenance and Operations

Publicly maintained facilities will be maintained by City of Kirkland.

An Operation and Maintenance Manual is required for all privately maintained stormwater detention and water quality facilities, and is submitted as part of the permit application. A copy of the Operation and Maintenance Manual shall be retained on site and shall be transferred with the property owner to the new owner. A log of maintenance activity indicating when cleaning occurred and where waste was disposed of shall also be kept by the owner and available for inspection by the City.

1.2.7 Core Requirement #7: Financial Guarantees and Liability

This section is replaced by KMC 15.52.080, bonds and irrevocable license to enter.

1.2.8 Core Requirement #8: Water Quality

The road threshold is 7,500 ADT (not 2,000). For projects less than 1 acre in size meeting the Enhanced Basic WQ Treatment threshold, apply the enhanced treatment requirement unless it can be shown as not feasible.

**C. King County applies to all size projects meeting land use criteria, Ecology requires it for projects 1 acre or larger.*

1.2.8.1 B. Sensitive Lake WQ Treatment Areas

This section does not apply to the City of Kirkland.

1.2.8.1 C. Sphagnum Bog WQ Treatment Areas

This section does not apply to the City of Kirkland.

1.3.2 Special Requirement #2: Flood Hazard Area Delineation

Flood Hazard Area is any area adjacent to a Kirkland sensitive area, unless topography is such that the area will not flood.

1.3.3 Special Requirement #3: Flood Protection Facilities

This section does not apply to the City of Kirkland.

1.3.4 Special Requirement #4: Source Controls

Source Control requirements are replaced by Volume IV of the 2005 Ecology Stormwater Management Manual for Western WA.

1.4 Adjustment Process

Refer to the adjustment process defined in COK Pre-Approved Plans, Policy D-11.

**Policy must meet permit requirements for Exceptions/Variance process (App 1 – Section 6)*

Chapter 2 Drainage Plan Submittal

Applies with the revisions stated below:

2.1 Plans Required for Drainage Review

Refer to the COK Pre-Approved Plans, Policies G-7, D-2, and D-3.

2.2 Plans Required with Initial Permit

Refer to the COK Pre-Approved Plans, Policies G-7, D-2, and D-3.

2.3 Drainage Review Plan Specifications

2.3.1.1 Technical Information Report

An Operation and Maintenance Manual is required for all privately maintained stormwater detention and water quality facilities, and is submitted as part of the permit application.

2.3.1.2 – Site Improvement Plan

Refer to the COK Pre-Approved Plans, Policies G-7, D-2, and D-3.

2.3.1.3 – ESC Plan Section

Refer to the COK Pre-Approved Plans, Policies G-7, D-2, and D-3.

2.3.1.4 – Stormwater Pollution Prevention and Spill (SWPPS) Plan

Refer to the COK Pre-Approved Plans, Policies G-7, D-2, and D-3.

2.3.1.5 – Landscape Management Plan

Refer to the COK Pre-Approved Plans, Policies G-7, D-2, and D-3.

2.3.2 – Projects in Targeted Drainage Review (TDR)

Refer to the COK Pre-Approved Plans, Policies G-7, D-2, and D-3.

2.4 Plans Required After Drainage Review (pg 2-35)

Refer to the COK Pre-Approved Plans, policies G-7, D-2, and D-3.

Chapter 5 Flow Control Design

Applies with the revisions stated below:

5.2 Flow Control BMP Requirements

5.2.1 Individual Lot BMP Requirements

**E. 2009 KCSWDM requires this on small site and large projects. Ecology requires LID as feasible for projects 1 acre or larger.*

5.2.1.4 Implementation Requirements for Individual Lot BMPs

This section is replaced by KMC 15.52.080, bonds and irrevocable license to enter.

5.3 Detention Facilities

Use details located in the Public Works Pre-Approved Plans, if available.

5.3.4.1 Control Structures Design Criteria

Minimum orifice diameter is 0.5 inches.

5.3.5 Parking Lot Detention

Parking lot detention is not allowed in the City of Kirkland.

Chapter 6 Water Quality Design

Applies with the revisions stated below:

Use details located in the Public Works Pre-Approved Plans, if available.

Appendix A: Maintenance Requirements for Flow Control , Conveyance, and WQ Facilities

Applies. Other maintenance techniques may be used as directed by city staff.

Appendix B: Master Drainage Plan Objective, Criteria and Components, and Review Process

This Appendix does not apply to projects in the city of Kirkland.

III. Code Reference Tables

King County Code is referenced in many places throughout the KCSWDM. The following tables identify these code references and equivalent City of Kirkland code where applicable (Kirkland Municipal Code is KMC and Kirkland Zoning Code is KZC). Policies are in the Public Works (PW) Pre-Approved Plans.

King County Code Reference	Subject of Reference	COK Code/Policy Equivalent	Comment
KCC 2.98	Adoption procedures and Critical Drainage Areas	KZC Chapter 90	
Title 9	Surface Water Management	KMC 15.52	
KCC 9.04	Surface Water Run-off policy	KMC 15.52	
KCC 9.04.030	Drainage Review	PW Pre-Approved Plans	Policy D-2
KCC 9.04.050	Drainage Review-requirements	PW Pre-Approved Plans	Policy D-2
KCC 9.04.070	Engineering plans for the purposes of drainage review	KMC15.52.060 and PW Pre-Approved Plans	Policy D-2
KCC 9.04.090	Construction timing and final approval	KMC 15.52.060	
KCC 9.04.100	Liability Requirements	KMC 15.52.080	
KCC 9.04.115	Drainage Facilities accepted by King County	KMC 15.52.070	
KCC 9.04.120	Drainage Facilities accepted by King County	KMC 15.52.070	
KCC 9.12	Prohibited discharges in the water quality section	KMC 15.52.090	
KCC 9.12	Water Quality	KMC 15.52.090 – 15.52.110	
KCC 9.12	Water Quality: Stormwater Pollution Prevention Manual Adoption	KMC 15.52.100	
KCC 16.82	Erosion and Sediment Control, Clearing and Grading	KMC 15.52.060	
KCC 16.82.095(A)	ESC standards: seasonal limitation period	PW Pre-Approved Plans	Erosion/Sediment Control Plan Notes, item #9

KCC 16.82.100(F)	Grading standards: preservation of duff layer	KZC Chapter 95	
KCC 16.82.100(G)	Grading Standards: soil amendments	KZC Chapter 95	
KCC 16.82.150	Clearing standards in rural zone	Not applicable	COK does not contain rural zones
KCC 20.20	Land Use Review Procedures	KZC Title 23	
KCC 20.70.020	Critical Aquifer recharge area	Not applicable	No critical aquifer recharge areas in COK
KCC 21A	Critical Areas Requirements	KZC Title 23	Sensitive areas in Chapter 90
KCC 21A.14.180.D	On-site recreation space required	No equivalent City code exists	On-site recreation space is not required
KCC 21A.24	Critical Areas Code	KZC Chapter 90	
KCC 21A.38	Property specific development standards or special district overlays	KZC Chapter 90	
KCC 23.20	Code compliance: citations	KMC 15.52.140	
KCC 23.24	Code compliance: notice and orders	KMC 15.52.140	
KCC 23.28	Code compliance: stop work orders	KMC 15.52.140	
KCC 23.40	Code compliance: liens references on declaration of covenants form	KMC Title 15	

IV. Reference Materials

This section identifies which reference materials provided in the 2009 KCSWDM are applicable and which are not. Reference materials that have been struck through (i.e., ~~struck through~~) are not applicable to projects in the City of Kirkland. The list is followed by City of Kirkland equivalent reference materials.

- ~~1. KCC 9.04 – Surface Water Runoff Policy~~
- ~~2. Adopted Critical Drainage Areas~~
- ~~3. Other Adopted Area Specific Drainage Requirements~~
 - ~~A. RA Zone Clearing Restrictions~~
- ~~4. Other Drainage Related Regulations and Guidelines~~
 - ~~A. Grading Code Soil Amendment Standard~~
 - ~~B. Clearing & Grading Seasonal Limitations~~
 - ~~C. Landscape Management Plan Guidelines~~
 - ~~D. Shared Facility Maintenance Responsibility Guidance~~
- 5. Wetland Hydrology Protection Guidelines**
Need to compare this with our COK Zoning Code
- ~~6. Hydrologic/Hydraulic Design Methods~~
 - ~~A. EPA Infiltration Rate Test~~
 - ~~B. Pond Geometry Equations~~
- ~~7. Engineering Plan Support~~

- ~~A. King County Standard Map Symbols~~
- ~~B. Standard Plan Notes and Example Construction Sequence~~
- ~~C. Stormfilter Access and Cartridge Configuration~~
- 8. Forms and Worksheets
 - A. Technical Information Report (TIR) Worksheet
 - B. Offsite Analysis Drainage System Table
 - C. Water Quality Facility Sizing Worksheets
 - D. Flow Control and Water Quality Facility Summary Sheet and Sketch
 - E. CSWPPP Worksheet Forms
 - ~~F. Adjustment Application Form and Process Guidelines~~
 - ~~G. Dedication and Indemnification Clause – Final Recording~~
 - ~~H. Bond Quantities Worksheet~~
 - ~~I. Maintenance and Defect Agreement~~
 - ~~J. Drainage Facility Covenant~~
 - ~~K. Drainage Release Covenant~~
 - ~~L. Drainage Easement~~
 - ~~M. Flow Control BMP Covenant~~
 - ~~N. Impervious Surface Limit Covenant~~
 - ~~O. Clearing Limit Covenant~~
 - ~~P. River Protection Easement~~
 - ~~Q. Leachable Metals Covenant~~
- 9. Interim Changes to Requirements
 - A. Blanket Adjustments
 - B. Administrative Changes
- 10. King County Identified Water Quality Problems

City of Kirkland reference materials are listed below:

- 1. Area Specific Drainage Requirements
 - Flow control map
 - Drainage Basin and Sensitive areas map
- 2. Other Drainage Related Regulations and Guidelines
 - KZC Chapter 90
 - KMC 15.52
 - PW Pre-Approved Plans, Policy G-7
 - PW Pre-Approved Plans, Policy D-2
 - PW Pre-Approved Plans, Policy D-3
 - PW Pre-Approved Plans, Policy D-11
 - PW Pre-Approved Plans, Erosion/Sedimentation Control – Plan Notes
- 3. Forms and Worksheets
 - Surface Water Design Manual Requirements/Standards Adjustment Request form
 - Stormwater Drainage Report Template

V. Mapping

Below is a list of City of Kirkland maps to be used during drainage design. The maps are available on the following website:

http://www.ci.kirkland.wa.us/depart/Information_Technology/GIS.htm

The maps can be viewed on-line, purchased on a CD, or viewed at the Public Works counter at City Hall.

1. Base Map
2. Flow Control Map
3. Sensitive Areas Map
4. Land Use Map

Table of 2009 King County Surface Water Design Manual (2009 KCSWDM) Key Items for Council

Kirkland is not required to meet Phase I requirements, but cannot reduce current program requirements (no backsliding). Kirkland is required to meet Phase II requirements (at a minimum).

Letters in the first column below correspond to sections in the Addendum to the 2009 KCSWDM.

	Item	Requirements		Current City Program	City Staff Recommendation	Impact to Private Development	Impact to Public Development Projects	Benefits to the Environment
		NPDES Phase I (2009 KCSWDM)	NPDES Phase II (Minimum)					
A	Use of "historic conditions" (fully forested) for pre-developed runoff modeling	Use on all projects in Level 2 flow control ¹ areas	Only apply to project sites 1 acre or larger in Level 2 flow control ¹ areas	Actual conditions are used (including impervious), not historic conditions	Use Ecology Phase I threshold, require it on all size projects in Level 2 flow control ¹ areas.	Increased detention volumes, additional costs, can be partially offset by storm LID ² techniques	Increased detention volumes, additional costs, can be partially offset by storm LID ² techniques	The higher level of protection controls flow durations and peaks, which protects water quality and habitat functions essential to fish and other aquatic life.
B	Soil Amendment, including specific % organics and pH, mixed into the top 8 inches of soil	All projects required to include soil amendment, per King County clearing and grading code, and 2009 KCSWDM Core Requirement #5.	Only apply to project sites 1 acre or larger	Amended soil with organic content is currently required by KZC 95.45 <i>Installation Standards for Required Plantings</i> . It does not include an amount for organic content, ph, or minimum soil depth.	Use Ecology Phase II threshold, require it on all projects 1 acre or larger. Recommend on projects less than 1 acre, and create incentives to encourage soil amendment.	Additional landscaping cost for project sites 1 acre or larger	Additional landscaping cost for project sites 1 acre or larger	Amended soil promotes vegetation, pollutant decomposition, and water storage. It helps to control flows and increases water quality to protect fish and other aquatic life.
C	Enhanced Water Quality Treatment (requires removal of metals such as copper and zinc)	Treatment level determined by land use (for all project size). Enhanced treatment required for: (a) residential subdivisions if density is > 8 units per acre, (b) for all commercial, industrial, and multi-family, and (c) road with ADT ³ 2,000 +	Only applies to project sites 1 acre or larger, and applies to the following land uses: (a) no residential (b) all Industrial, Commercial, and multi-family, and (c) road with ADT ³ 7,500 +	No projects require enhanced treatment	Use Ecology Phase II threshold, require it only for projects 1 acre or larger, and for higher volume roads known to produce high levels of pollutants. Apply as feasible on projects less than 1 acre.	Additional cost for enhanced water quality treatment systems for industrial, commercial, and multi-family projects	Additional cost for enhanced water quality treatment systems for projects with higher volume roads	The higher level of water quality treatment removes metals (like copper and zinc) that are commonly found in stormwater runoff and can be toxic to fish and other aquatic life.
D	Stormwater Low Impact Development (LID) Techniques	All projects are required to evaluate the feasibility and applicability of dispersion first, then infiltration (requiring soils report). If neither is feasible then applicant must choose at least 1 stormwater LID ² technique from list.	Required as feasible for project sites 1 acre or larger.	Projects are encouraged to implement stormwater LID ² but are not required.	Use Ecology Phase I threshold, require it on all size projects.	Requiring LID ² to be considered on all projects will result in more LID ² facilities in private projects	Requiring LID ² to be considered on all capital projects will result in more LID ² facilities on public property. This may increase the need for more grounds crews to maintain the LID ² facilities (such as rain gardens).	Projects with stormwater LID ² facilities typically have less impervious area and less pollution generating areas, which reduces the impacts to water quality from development.

¹Level 2 flow control (also called conservation flow control) refers to a higher level of flow control intended to protect sensitive areas.

²LID - low impact development

³ADT - average daily traffic counts

Jurisdictional Comparison for Revised Stormwater Development Standards

Attachment D

Note: This information was gathered during August and September of 2009.

Jurisdiction	Primary Development Manual	Adoption Date	Extend to projects less than 1 acre (not small site)	Small Site Manual	Amended Soil on small sites	LID feasibility on small sites	Forested Conditions on small sites	Contact
Redmond	2005 Ecology Stormwater Manual for WA	1/1/2007	Yes	2005 Ecology Manual	Required	Required as feasible	Required in level 2 areas	Andy Rhume 425-556-2741
Bothell	2005 Ecology Stormwater Manual for WA	8/15/2009	Yes	2009 KCSWDM, Appendix C	Required	Required	Required in level 2 areas	Kristin Terpstra 425-486-2768 x4463
Bellevue	2005 Ecology Stormwater Manual for WA	1/1/2010	Yes	undecided	staff will recommend	staff will recommend	staff will recommend	Pam Maloney (425-452-4625) Elissa Ostergaard (425-452-6879)
Edmonds	2005 Ecology Stormwater Manual for WA	2/16/2010	Yes - but not LID	Edmonds specific Addendum	Required	No	Required in level 2 areas	Jerry Shuster
Federal Way	2009 King County Surface Water Design Manual	2/16/2010	Yes	2009 KCSWDM, Appendix C	Recommended but not required	Required	Required in level 2 areas	Fei Tang 253-835-2751
Renton	2009 King County Surface Water Design Manual	2/16/2010	Yes	2009 KCSWDM, Appendix C	Required	Required	Required in level 2 areas	Ron Straka 425-430-7248

Sammamish	2009 King County Surface Water Design Manual	2/16/2010	Staff will recommend	2009 KCSWDM, Appendix C	undecided	Already has City LID Ordinance requiring LID as feasible	undecided	Eric LaFrance 425-295-0562
Woodinville	2009 King County Surface Water Design Manual	2/16/2010	undecided	undecided	undecided	undecided	undecided	Clint Moyer 425-489-2700 x2294
Auburn	Slightly modified City of Tacoma Surface Water Management Manual	2/16/2010	Yes	Slightly modified City of Tacoma Surface Water Management Manual	not required for small site	Code change will "encourage" LID	Required in level 2 areas	Dan Repp 253-804-5062

Summary

Manual

2009 KCSWDM - 4 cities
2005 Ecology Manual - 4 cities
Tacoma Manual - 1 city

Adoption Date

Already in place - 2 cities
January 2010 - 1 city
February 2010 - 6 cities

Extend requirements to projects less than 1 acre

Yes, staff will recommend - 7 cities
Will extend some requirements (not LID) - 1 city
Undecided - 1 city

Small single family sites

Amended soils required - 4 cities
Amended soils recommended, but not required - 3 cities
Amended soils undecided - 2 cities

LID feasibility already required by code - 1 cities
LID feasibility required - 6 cities
LID feasibility not required - 1 city
LID feasibility undecided - 1 city

Forested condition required - 7 cities
Forested condition undecided - 2 cities