

2016 STORMWATER LOW IMPACT DEVELOPMENT CODE INTEGRATION PROJECT SUMMARY

Prepared February 10, 2017



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Introduction

Along with other jurisdictions, the City of Kirkland was required no later than December 31, 2016 to review and revise development codes and standards to make stormwater low impact development (LID) the preferred and commonly-used approach to site development. The entire process took 19 months, from June 2015 through December 2016.

This code integration is required through the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit (per section S5.C.4.f.i and ii, see permit text below).

No later than December 31, 2016, Permittees shall review, revise, and make effective their local development-related codes, rules, standards, or other enforceable documents to incorporate and require LID principles and LID BMPs.

The intent of the revisions shall be to make LID the preferred and commonly-used approach to site development. The revisions shall be designed to minimize impervious surfaces, native vegetation loss and stormwater runoff in all types of development situations. Permittees shall conduct a similar review and revision process, and consider the range of issues, outlined in the following document: Integrating LID into Local Codes: A Guidebook for Local Governments (Puget Sound Partnership, 2012).

...Each Permittee shall submit a summary of the results of the review and revision process above with the annual report due no later than March 31, 2017. This summary shall include, at a minimum, a list of the participants (job title, brief job description, and department represented), the codes, rules, standards, and other enforceable documents reviewed, and the revisions made to those documents which incorporate and require LID principles and LID BMPs. The summary shall include existing requirements for LID principles and LID BMPs in development-related codes. The summary shall be organized as follows:

- a) Measures to minimize impervious surfaces;*
- b) Measures to minimize loss of native vegetation; and*
- c) Other measures to minimize stormwater runoff.*

Team Participants

Kirkland staff performed the tasks related to this project, instead of hiring a private consultant. City Surface Water staff led this project, along with a significant amount of staff time from other departments. The table below lists participants, along with their department and area of expertise.

| Department | Subject/Expertise | Staff |
|----------------------------|--|--|
| Planning & Building | Policy, Urban Forestry | *Deborah Powers, Urban Forester |
| | Policy and Development Review | *Dorian Collins, Senior Planner |
| | Planning Policy and Codes | *Paul Stewart, Deputy Director |
| | Policy, Critical Areas | Teresa Swan, Senior Planner |
| | Policy, Critical Areas | Joan Lieberman-Brill, Senior Planner |
| | Planning Policy and Codes | Jeremy McMahan, Planning Manager |
| | Engineering, Inspection and Development Review | Tom Jensen, Plan Review Supervisor |
| Public Works | Engineering, Stormwater | *Stacey Rush, Senior Surface Water Engineer (Project Lead) |
| | Policy, Stormwater | *Anne Dettelbach, Surface Water Planner |
| | Policy and Engineering, Stormwater | *Jenny Gaus, Surface Water Engineering Supervisor |
| | Policy and Development, Engineering | *Rob Jammerman, Development Engineering Manager |
| | Private Development Engineering | John Burkhalter, Development Engineering Supervisor |
| | Capital Streets/Road Engineering | Rod Steitzer, Capital Projects Supervisor |
| | O&M, Public Facilities, Inspections | Erin Devoto, Deputy Director |
| | Construction Inspection | Tom Chriest, Senior Construction Inspector |
| Fire | Emergency response access, street widths and layouts, etc. | Grace Steuart, Assistant Fire Marshall |
| City Attorney Office | Legal | Kevin Raymond, City Attorney |
| | Legal | Oskar Rey, Assistant City Attorney |
| Parks | Parks | Staff |
| Planning Commission | Policy | Commission members |
| Houghton Community Council | Policy | Council members |
| Kirkland City Council | Policy | Council members |
| City Manager Office | Public Outreach | Kathy Cummings, Communications Program Manager |

*Primary staff for this project

Review of Codes, Rules, Standards, and other Enforceable Documents

Available Resources and Documents

Multiple planning resources were available to assist staff on this project. Below are the primary documents staff used:

1. Integrating LID into Local Codes: A Guidebook for Local Governments (Puget Sound Partnership, July 2012), available at the following website:
http://www.psp.wa.gov/LID_manual.php
2. Low Impact Development Code Update and Integration Toolkit (WA Dept. of Ecology, July 2014), available at the following website:
<http://www.wastormwatercenter.org/lidcodeintegration/>

Staff identified the following LID topics to be considered for this project:

1. Landscaping, Native Vegetation, and Street Landscaping
2. Site Planning and Assessment
3. Hard and Impervious Surfaces
4. Bulk and Dimensional Considerations
5. Subdivision and Planned Unit Development
6. Critical Areas and Shoreline Management
7. Clearing and Grading
8. Streets and Roads
9. Healthy Soils
10. Parking
11. Design Guidelines and Standards
12. Stormwater Management and Maintenance

The following specific development related codes and enforceable documents were reviewed:

1. Kirkland Planning & Building Community Development Comprehensive Plan
2. Kirkland Zoning Code Chapters: 5, 15, 55, 70, 83, 85, 90, 95, 105, 110, 113, 114, 115, 125, and 180
3. Kirkland Municipal Code Chapters: 1, 15, 19, 22, and 29
4. Kirkland Shoreline Management Plan
5. Kirkland Development code/standard documents
6. Kirkland Public Works Pre-Approved Plans
7. Capital Project Engineering and Street Standards (Kirkland/WSDOT/other)
8. Kirkland ROW Tree Inventory

Review Process

Regular project team meetings were held between June 2015 and November 2016 (31 meetings total). The *Record of Project Team Meetings* is provided in Appendix 1.

A process for reviewing codes and other enforceable documents was established and followed during the meetings (see below):

1. Select one topic (from the 12 LID topics), and consider each subtopic listed on the excel spreadsheet under the topic.
2. Review the Subtopic Focus Sheet for the selected topic (located in *LID Code Integration Toolkit*).
3. Review examples and helpful information in *Integrating LID into Local Codes*.
4. Record all review information in the corresponding topic excel spreadsheet.
5. For each subtopic: list the applicable Code/Standard document reviewed, from the list of codes and enforceable documents (see list on page 5).
6. Enter the appropriate information from the documents (listed on page 5) into the columns in each Topic excel spreadsheet. See column specific notes below:
 - State the section reference (code, section/page number, etc.)
 - List key components of the current regulations
 - Assess how current regulation supports/advances the LID codes for consideration, and summarize the gap (or no gap)
 - Describe revisions to be made to meet the Permit requirement, or if no revision is made then explain why.
 - Identify which of the 3 review categories are applicable to each item by entering an "X" in the columns. Check all columns that apply. The 3 review categories are:
 1. Measures to minimize impervious surface
 2. Measures to minimize loss of native vegetation
 3. Other measures to minimize stormwater runoff.

Kirkland's review of the development related codes and other enforceable documents is summarized in the *Kirkland LID Code Gap Analysis* table in Appendix 2.

Amendments

Staff used the *Kirkland LID Code Gap Analysis* document to discuss options and develop recommendations to address the identified gaps. Proposed development related code amendments and other document revisions are summarized in Appendix 3, *Revisions to Address Gaps Identified in LID Code Integration*. The table includes the topic, reference material, current regulations, LID considerations, identified gap, and revision made to address gap.

Staff developed proposed language amending Kirkland Zoning and Municipal Codes, and revised the Public Works Pre-Approved Plans (City standard details and policies).

Staff worked with Kirkland commissions, councils, and the public at the following meetings to finalize recommendations for proposed amendments:

- Kirkland Planning Commission, 9/29/16, 11/2/16
- Houghton Community Council, 9/29/16, 11/2/16
- Public Works/Parks/Human Services Council Committee, 10/05/16
- Planning and Economic Development Council Committee, 10/10/16, 11/14/16
- Kirkland Council, 11/15/16, 12/13/16
- Public Open House, 10/24/16
- Public Hearing, 10/24/16

For more detail on the above meetings, see the *Record of Meeting for Public Involvement and Code Adoption* in Appendix 4.

Public Involvement

During September and November 2016, the public was invited to comment on the proposed changes in the following ways:

- City webpage
- News release to general public
- Multiple releases to Kirkland Developers Partnership Forum (over 600 people)
- Article in City Update
- Public Open House on 10/24/16
- Public Hearing on 10/24/16

Adoption

Kirkland Council adopted the LID amended codes on December 13, 2016; ordinances 4547 and 4542, effective January 1, 2017 (see Appendix 5).

Ensure Successful Implementation

Ongoing training to Kirkland staff and the general public began in November 2016, and will continue throughout 2017. Training for the LID code revisions was combined with training on the new King County Surface Water Design Manual (2016).

Kirkland stormwater staff provided the following training sessions for staff:

- Planning and Building Community Development staff, 2/01/17
- Public Works Development Engineering staff, 11/30/16
- Public Works Capital staff, 12/08/16
- Public Works Operations and Maintenance staff, 2/08/17

Kirkland stormwater staff provided the following training and education to the public:

- FAQs on website
- Handouts at City Hall
- Training sessions provided for the development community (consultants, engineers, architects, contractors, etc.), 1/25/17 and 2/7/17
- Inclusion in development pre-application meetings.

Appendices

**2015/2016 Stormwater Low Impact Development Code Integration
Record of Project Meetings**

| Date | Subject | Attendees |
|-------------|--|---|
| 6/23/2015 | Review draft project scope and timeline. | Jenny Gaus and Stacey Rush. |
| 7/8/2015 | Stormwater staff met with the Deputy Director of Planning and Building Department, discussed project requirements and the involvement of Planning staff, review project | Jenny Gaus, Stacey Rush, Paul Stewart. |
| 9/11/2015 | Stormwater staff met with Urban Forester, discussed project scope, timeline, and ideas for gap analysis. | Jenny Gaus, Stacey Rush, Deb Powers. |
| 11/5/2015 | See agenda and meeting notes. Reviewed project scope and timeline, explained review process and gap analysis started by key staff (Landscaping topic), and assign specific tasks. | Primary team members (see agenda and meeting notes). |
| 12/9/2015 | See agenda and meeting notes. Check in on assigned tasks, discussed next steps, estimated staff hours for this project in 2016. | Primary team members (see agenda and meeting notes). |
| 1/20/2016 | Discussed website for needs for this project; where to put links, what docs to add, etc. | Jenny Gaus, Stacey Rush, Betsy Adams. |
| 1/21/2016 | See agenda and meeting notes. Worked through <i>Table 3: Hard and Impervious Surfaces</i> as a group. Several team members had investigated current regulations ahead of time so group could discuss gap analysis. | Primary team members, added Rob Jammerman to primary team (see agenda and meeting notes). |
| 1/27/2016 | See agenda and meeting notes. Topic is <i>Table 8: Streets and Roads</i> . | Primary team members (see agenda and meeting notes). |
| 2/3/2016 | See agenda and meeting notes. Topic is <i>Table 9: Healthy Soils</i> . | Primary team members (see agenda and meeting notes). |
| 2/9/2016 | See agenda and meeting notes. Topic is <i>Table 10: Parking</i> . | Rob Jammerman, Jenny Gaus, Dorian Collins, Stacey Rush (see agenda and meeting notes). |
| 2/24/2016 | See agenda and meeting notes. Topics are <i>Table 4: Bulk and Dimensional Considerations</i> , and <i>Table 5: Subdivision and Planned Unit Development</i> . | Primary team members plus Jeremy McMahan and Dawn Nelson (see agenda and meeting notes). |
| 3/3/2016 | See agenda and meeting notes. Topics are <i>Table 2: Site Planning and Assessment</i> , and <i>Table 7: Clearing and Grading</i> . | Primary team members (see agenda and meeting notes). |
| 3/10/2016 | See agenda and meeting notes. Topics are <i>Table 1: Landscaping, Native Vegetation, and Street Landscaping</i> , and <i>Table 6: Critical Areas and Shoreline Management</i> . | Primary team members (see agenda and meeting notes). |
| 5/4/2016 | See agenda and meeting notes. Topics are <i>Table 1: Landscaping, Native Vegetation, and Street Landscaping</i> , and <i>Table 6: Critical Areas and Shoreline Management</i> . | Primary team members plus Teresa Swan, added Anne Dettelbach as primary team member (see agenda and meeting notes). |
| 6/6/2016 | See agenda and meeting notes. Team worked through code items flagged for consideration of change (gap analysis) from Tables 1 through 8, assigning level of difficulty and priority to each item. | Primary team members (see agenda and meeting notes). |

Record of Project Meetings (continued)

| | | |
|------------|--|---|
| 6/6/2016 | Kirkland staff met with staff from other jurisdictions to discuss project process (with Redmond and Sammamish). | Stacey, Jenny, and Anne met with Redmond staff and Sammamish sammamish. |
| 7/6/2016 | Reviewed items flagged for consideration during gap analysis. | Dorian Collins and Stacey Rush. |
| 7/20/2016 | See agenda and meeting notes. Team worked on proposed code changes identified from Tables 1 and 2. | Primary team members (see agenda and meeting notes). |
| 8/8/2016 | See agenda and meeting notes. Team worked on proposed code changes identified from Tables 3 through 8. Discussed possible dates for scheduling Planning Commission & Houghton Council meetings, Public Hearings, public open house, etc. | Primary team members (see agenda and meeting notes). |
| 8/9/2016 | See agenda and meeting notes. Team worked on proposed code changes identified from Tables 9 through 12. | Primary team members (see agenda and meeting notes). |
| 8/10/2016 | Discuss web page topics. | Wes Ayers and Stacey Rush. |
| 8/24/2016 | Discuss changes in KZC 114 LID. Code includes incentives for SW LID. | Stacey Rush, David Barnes, Dorian Collins. |
| 8/31/2016 | See agenda and meeting notes. Team outlined specific tasks for upcoming Sept 29th joint session with Planning Commission and Houghton Council, and identified tasks and other dates for outreach and committee/council meetings. | Primary team members (see agenda and meeting notes) plus Jeremy McMahan. |
| 9/7/2016 | Discuss potential need for zoning code change to allow wider area adjacent to sidewalk to allow for street trees and bioretention. | Jenny, Stacey, Rob, Jeremy, Eric Shields, Kelli Jones. |
| 9/26/2016 | Discuss presentation to be given to Planning Commission and Houghton Community Council. | Stacey Rush and Jenny Gaus. |
| 10/4/2016 | Met with other jurisdictions to discuss project process (with Sammamish, Redmond, and Renton). | Stacey and Anne met with other jurisdiction staff (Sammamish, Redmond, and Renton). |
| 10/17/2016 | Team meeting to discuss how to address lot coverage and storm LID for projects with subterranean structures. | Team meeting to discuss how to address lot coverage and storm LID for projects with subterranean structures. |
| 10/19/2016 | Discuss display items and handouts for Oct 24th Open House. | Kelli, Stacey, Betsy, Deb, and Dorian. |
| 10/31/2016 | Discuss preparation for Nov 15th Council meeting, and how best to bring differing recommendations from Planning Commission & Houghton Community Council. | Paul, Deb, Dorian, Stacey. |
| 11/1/2016 | Discuss Nov 15th Council packet and preparation for Nov 2nd presentation to PW/Parks/Health Services committee. | Stacey and Jenny. |
| 11/30/2016 | Discussed concerns from HCC member, regarding KZC 115.9.3, clarify language, and proposed removal of exemptions. | Dorian, Paul, Jenny, Stacey, John Burkhalter (Development Engineering Supervisor), Kevin Raymond (City Attorney). |



Overview of Potential LID Code and/or Policy Gaps

The Stormwater Low Impact Development (LID) Code Review Project is being implemented to meet the City of Kirkland's obligations under its Municipal Stormwater Permit. The goal of the project is to identify where potential code and/or policy changes are needed to make stormwater LID the preferred and commonly used approach to site development in Kirkland.

This document represents the code and policy analysis performed by City staff. The Tables listed below were created to address the following development topics:

Table 1: Landscaping, Native Vegetation, and Street Landscaping

Table 2: Site Planning and Assessment

Table 3: Hard and Impervious Surfaces

Table 4: Bulk and Dimensional Considerations

Table 5: Subdivision and Planned Unit Development

Table 6: Critical Areas and Shoreline Management

Table 7: Clearing and Grading

Table 8: Streets and Roads

Table 9: Healthy Soils

Table 10: Parking

Table 11: Design Guidelines and Standards

Table 12: Stormwater Management and Maintenance

Within each topic table, staff compared Kirkland's current regulations to a set of recommended LID principles and Best Management Practices (BMPs). The "Summary of Gap" column explains if a gap was found (or no gap). The next column describes either why no revision is needed, or what action will be considered to address a gap. Rows highlighted in gray are items staff determined warranted further consideration for change. Kirkland is not required to change everything highlighted in this initial analysis. A deeper analysis of highlighted items will be undertaken before changes are recommended to our Planning Commission, Houghton Council, and Kirkland City Council.

| Table 1. Gap Analysis for Topic: Landscaping, Native Vegetation, and Street Landscaping | | | | | | | | |
|---|---|--|--|--|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Tree preservation/retention | | | | | | | | |
| Kirkland Zoning Code, relating to Tree retention with <u>Development Activity</u> | KZC 95.33 Tree Density Requirement | Min tree density is 30 tree credits per acre, use tree credit table. | Place greater emphasis on conifer preservation | Consider a different system for retaining and replacing trees. Consider modifying Tree Credit table to look at area of native vegetation (or % of site in native veg) in addition to number/size of trees and to give extra points for use of conifers of a similar size as deciduous trees. | Modify existing Tree Credit Table to give more credit for conifers (place more emphasis on conifers). | | X | |
| Kirkland Zoning Code, relating to Tree removal on <u>Private Property</u> | KZC 95.23 Tree Removal Not Associated with Development Activity | 1-Tree density requirement is 6/acre. Allows removal of 2 significant trees per 12 months (except critical area/buffers). Additional tree removals must meet hazard/nuisance criteria. Replacements req'd only with last 2 trees on property. Significant tree= min 6" diam 4.5' from ground height. 2-Only hazard/nuisance trees may be removed in critical areas; 1:1 replacements required. | Retain and replace native vegetation, place greater emphasis on conifer preservation, include strategies to orient retained vegetation and open space to disconnect impervious surfaces. | No Gap. Chapter 95 revision in 2017/2018 will: 1- Consider a trigger for tree replacement prior to last 2 trees on property. Consider # of overall tree removals allowed proportionate to size of property. 2-Consider restoration area in addition or increase replacement ratio. | No Revision - Existing code meets minimum requirement to retain and replace native vegetation | | X | |
| Kirkland Zoning Code, relating to Tree removal on <u>Private Property</u> | KZC 83.400 Tree Management & Vegetation in Shoreline Setback | Tree removals require like-for-like replacement depending on size. >24" dbh removal not allowed unless hazard or nuisance. | > 12" dbh tree requires additional prescribed vegetation in defined area. | No Gap | No Revision - Any changes must be reviewed by Ecology | | X | |
| Kirkland Zoning Code, relating to Tree removal on <u>Public Property</u> | KZC 95.23 Tree Removal Not Associated with Development Activity | Permit required. Only hazard/nuisance ROW trees may be removed. 1:1 replacement required for street tree removal. | Retain and replace native vegetation | No Gap | No Revision - Existing code requires retention and replacement of trees already required. | | X | |
| Kirkland Zoning Code, relating to Tree retention with <u>Development Activity</u> | KZC 95.30 Tree Retention Associated with Development Activity | Tree Retention Plan based on tree retention value. | Retain and replace native vegetation | No Gap. Chapter 95 revision in 2017/2018 will consider changing from minimum # of individual trees to a minimum % area. | No Revision - Existing code meets minimum requirement to retain and replace native vegetation | | X | |
| Kirkland Zoning Code, relating to Tree retention with <u>Development Activity</u> | KZC 83.400 Tree Management & Vegetation in Shoreline Setback | Tree removals require like-for-like replacement depending on size. >24" dbh removal not allowed unless hazard or nuisance. | > 12" dbh tree requires additional prescribed vegetation in defined area. | No Gap | No Revision - Any change must be reviewed by Ecology | | X | |
| | KZC 95.32 Incentives and Variations to Development Standards | Incentives and variations are allowed in the site design to retain trees with a high retention value (for example, variations in parking areas and access, minor adjustments to location of building footprints, walkways, easements, utilities, etc.). | Retain and replace native vegetation, place greater emphasis on conifer preservation, include strategies to orient retained vegetation and open space to disconnect impervious surfaces. | No Gap | No Revision - code allows process for for proposal for variation in site design to retain native vegetation. | | X | |
| | KZC 114 Low Impact Development | Current code incentivizes protected area of trees/native vegetation, includes minimum 40% open space required, maintains existing native vegetation in open space. | | No Gap | No Revision - Current code incentivizes protected area of trees/native vegetation, includes minimum 40% open space required, maintains existing native vegetation in open space. | | X | |
| Tree preservation/retention | | | | | | | | |
| Kirkland Zoning Code, relating to Tree retention with <u>Development Activity</u> | KZC 70 Holmes Point Overlay | Current Code limits the amount of impervious lot coverage, therefore an increased amount of native vegetation is saved (see lot coverage table). | Retain and replace native vegetation, place greater emphasis on conifer preservation, include strategies to orient retained vegetation and open space to disconnect impervious surfaces. | No Gap | No Revision needed - Current Code limits the amount of impervious lot coverage, therefore an increased amount of native vegetation is saved (see lot coverage table). | | X | |
| | | Current Code requires 25% of total lot area (min) designated as Protected Natural Area (PNA) | | No Gap | No Revision - Current Code requires 25% of total lot area (min) designated as Protected Natural Area (PNA) | | X | |
| | | Current Code requires all significant trees to be retained. | | No Gap | No Revision - Current Code requires all significant trees to be retained. | | X | |
| Kirkland Municipal Code | KMC 1.12.100 Code Enforcement, Special provisions relating to enforcement of tree regulations | Restoration plan required, fines assessed per tree for unauthorized tree removal (\$100 to \$1,000). If intentional violation, fines can be based on the city-appraised tree value. | Are there regulatory controls over tree clearance and removal? | No Gap | No Revision - Current code requires restoration plan and gives the city ability to assess fines. | | X | |

| Table 1. Gap Analysis for Topic: Landscaping, Native Vegetation, and Street Landscaping (continued) | | | | | | | | |
|---|---|---|---|--|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Screening | | | | | | | | |
| Kirkland Zoning Code | KZC 95.40 Required Landscaping, KZC 95.41 Supplemental Plantings | 95.40, Item 2. Use of Significant Existing Vegetation, 95.41, Item 2a. Standards for Supplemental | Can the screening requirements be revised to include provisions for retaining native vegetation and replanting? | Consider code modifications to include preference for native species, and expansion of the Kirkland Native Plant List. | Modify code to add preference for native species. Revise Kirkland Native Plant List. | | X | |
| Kirkland Zoning Code | KZC 95.42 Minimum Land Use Buffer Requirements | 95.42 Item 1 and Item 2 (applicable to Standard 1 and Standard 2) | Consider allowing vegetation in LID facilities to count towards site, parking, or perimeter screening requirements. | Consider code modifications to include language allowing vegetation in LID facilities to count towards perimeter, site and parking screening requirements. | No Revision - bioretention does not provide enough perimeter, site, or parking screening. Bioretention can still be used to meet stormwater requirements, but vegetation screening requirements are in addition to those requirements. | | X | |
| Landscape requirements for street frontages | | | | | | | | |
| Kirkland Zoning Code | KZC 95.40 Required Landscaping | Variance and incentive process is in place to encourage retention of existing vegetation, landscaping is required along street frontages and between sidewalk and parking. | Include other landscaping between the sidewalk and the street. Allow vegetation in LID facilities to count towards open space or landscape requirements. | No Gap | No Revision - Development Tree plans include Right-of-Way trees. Efforts are made to retain trees wherever feasible. City requires landscaping to be installed in landscape strips and any excess areas in the ROW. | X | | |
| | KZC 110 | Requires landscaping and ground cover in the Right-of-Way. | | No Gap | No Revision - code requires landscaping and ground cover in ROW (and standards allow groundcover other than turf grass). | X | | |
| Kirkland Public Works Pre-Approved Plans | Policy R-10, Street Tree Selection list | Current policy allows for trees in LID facilities to be counted towards street tree requirements. | | No Gap | No Revision - Current policy allows for trees in LID facilities to be counted towards street tree requirements. | X | | |
| Kirkland Public Works Pre-Approved Plans | Policy R-10, Street Tree Selection list | Current policy requires street trees, and allows other approved vegetation in addition to those trees (like LID facilities). | | No Gap | No Revision - Current policy allows other approved vegetation in addition to street trees (like LID facilities containing trees). | X | | |
| Landscape requirements for parking lots | | | | | | | | |
| Kirkland Zoning Code | KZC 95.44 Internal Parking Lot Landscaping Requirements | Requires min 1 tree (per 25sf) and other groundcover (per parking stall) | Include minimum tree canopy, native vegetation, and allow vegetation in LID facilities to count towards open space or landscape requirements. | Lacks language to allow LID facilities to count towards landscape requirements. | Modify code to specify that LID facilities count towards landscape requirements, but keep tree requirement. Reference COK PW Pre-Approved Plans. | | X | X |
| Kirkland Zoning Code | KZC 95.45 Perimeter Landscape Buffering for Driving and Parking Areas | 5' wide strip, Right-of Way of trees and live groundcover | Include minimum tree canopy, native vegetation, and allow vegetation in LID facilities to count towards open space or landscape requirements. | Lacks language to allow LID facilities to count towards landscape requirements | Modify code to specify that LID facilities count towards landscape requirements. Reference COK PW Pre-Approved Plans. Additional language regarding natives could be considered in a subsequent city code review. | | | X |
| Kirkland Public Works Pre-Approved Plans | Bioretention Details Plan No. CK-L.01,L.02, L.03, L.04 | Existing Bioretention standard details can be used in parking lots. | Allow vegetation in LID facilities to count towards open space or landscape requirements. | No Gap | No Revision - current details for LID facilities can be used in parking lots. | | | X |
| Additional Sub-Topics to Consider (Beyond Ecology Focus Sheets) | | | | | | | | |
| utility setbacks for trees | | | | | | | | |
| COK PW Pre-Approved Plans | General Section | Not addressed in current code. Current process is utility plan comes in, PCD and PW review and come to an agreement. Handled on a case-by-case basis, with understanding trees are saved whenever possible. | Retain native vegetation | "Understanding" is not identified in a written policy, consider creating a written policy for the Pre-Approved Plans. | Establish new Policy in Pre-Approved Plans regarding utility setbacks for trees; also include street improvements. Specify trees should be saved whenever possible. | | X | |
| public safety (site limits at intersections, hazard trees) | | | | | | | | |
| Kirkland Zoning Code | KZC 95.20 Exemptions: (1)Emergency Tree Removal, (2)Utility Maintenance | Tree removal allowed for public safety. | Retain native vegetation, good soil | No Gap | No Revision | | X | |
| | KZC 95.23.5.d. Removal of Hazard or Nuisance Trees | Tree Risk Assessment Report required. | | No Gap | No Revision | | X | |

| Table 1. Gap Analysis for Topic: Landscaping, Native Vegetation, and Street Landscaping (continued) | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|---|---|-------------------------------------|----------------|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| tree and landscape installation and maintenance | | | | | | | | |
| Kirkland Zoning Code | KZC 95.50 Installation Standards for Required Plantings | Soil specs, Kirkland Plant List | Retain native vegetation, good soil | No Gap | No Revision - Existing code requires good soils, avoid compaction, and mulch. | | | X |
| | KZC 95.51 Tree and Landscape Maintenance Requirements | Soil specs, Kirkland Plant List | | No Gap | No Revision - Existing code requires good soils, avoid compaction, and mulch. | | | X |
| Kirkland Public Works Pre-Approved Plans | Policy R-10, Street Tree Selection list | Includes native vegetation appropriate to our area. | | No Gap | No Revision - Existing policy includes native vegetation appropriate to our area. | | | X |
| | Tree Planting Details R.48, R.48A | Tree Planting Details require amended soil per Ecology BMP T5.13. | | No Gap | No Revision - Existing standard requires amended soil per Ecology BMP T5.13. | | | X |

| Table 2: Gap Analysis for Topic: Site Planning and Assessment | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|--|--|---|---|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Building Locations | | | | | | | | |
| Kirkland Zoning Code | KZC 90 Drainage Basins | Existing regulations allow reductions in side and rear yards. | -locate buildings away from critical areas, -preserve soils with good infiltration | No Gap | No Revision - Chapter 90 allows reductions in side and rear yards, and encourages clustering to locate buildings away from critical areas. | | X | |
| Kirklnl Zoning Code | KZC 90 Drainage Basins | Code requires buildings be set back from critical areas and their buffers including wetlands, streams and steep slopes/landslide hazard areas. | -locate buildings away from critical areas, -preserve soils with good infiltration | Consider preserving soils with good infiltration. | No Revision needed. New Storm Manual to be adopted 12/2016 will require infiltration if feasible so that will preserve good soils for infiltration. | | X | |
| | KZC 114 Low Impact Development | Code requires open space | | Consider requiring open space to be located in area with good infiltrative soils. | No Revision needed. Open space typically used for dispersion or infiltration of runoff, so already set aside in area with good infiltrative soils. | | | X |
| Parking area locations | | | | | | | | |
| Kirkland Zoning Code | KZC 90 Drainage Basins | Parking areas may not be located in critical areas or buffers. | Locate parking areas to minimize site grading, preserve natural watercourses, native vegetation and soils. | No Gap. Current CAO revision increased critical areas and buffers. Code revision proposes to allow parking areas within 10-foot wide buffer setback, but this is still further from critical area because buffer was increased. | No Revision - existing code prohibits parking in critical areas or buffers; locates parking areas to minimize site grading, preserve natural watercourses, native vegetation and soils. | | X | |
| Kirkland Zoning Code | KZC 15 | Requirement is to provide two parking stalls per dwelling unit. | Incentive to require parking within garages | No Gap | No Revision - Small front yard setback encourages shorter driveways and garages already. | X | | X |
| | | | Encourage parking near entrance to site to reduce long driveways | No Gap | No Revision - Urban development minimizes driveway lengths already. | X | | X |
| Stormwater BMP/facility locations | | | | | | | | |
| 2009 King County Surface Water Design Manual & Kirkland Public Works Pre-Approved Plans | KCSWDM Section 5.2.1 & COK Policies L-1 and L-2. | All projects with > 2,000sf impervious area are required to assess the feasibility of dispersion and infiltration. At a minimum, an impervious area equivalent to 10% of the site must be routed to an approved LID BMP. | Codes to require infiltration in areas with good soil. | Assess feasibility of infiltration on all projects. | No Revision - New Stormwater Design Manual to be adopted 12/2016 will require development to infiltrate in areas with good soil. | | | X |
| 2009 King County Surface Water Design Manual | Section 1.2.1 | All projects are required to discharge at the natural location. Gravity conveyance of storm is preferred over pumping, so it is more practical to locate a storm facility in the natural drainage path. | Code to prioritize location of storm facility. | No Gap | No Revision - Current adopted stormwater design manual requires discharge at the natural location. | | | X |
| Additional Sub-Topics to Consider (Beyond Ecology Focus Sheets) | | | | | | | | |
| Clustering Housing | | | | | | | | |
| Kirkland Municipal Code | KMC 22.28.040 Lot Averaging | Lot averaging is permitted; additional lot averaging may be considered through a review process. | Are there any codes that require buildings/utilities/streets to be placed in areas that are less conducive to infiltration? | Consider requirements on building placement. | No Revision - New Stormwater Design Manual to be adopted 12/2016 will require infiltration as feasible which will facilitate buildings/utilities/streets to be located in areas that are less conducive to infiltration. | | | X |
| Location of Existing Utilities | | | | | | | | |
| Kirkland Zoning Code | No Code | Gravity dictates location of utilities more than soil type | Any requirement to place utilities in areas less conducive to infiltration? | No Gap | No Revision - Gravity dictates location more than soil type. | | | X |

| Table 3. Gap Analysis for Topic: Hard and Impervious Surfaces | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|--|---|--|--|---|---|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Maximum impervious surface allowances | | | | | | | | |
| Kirkland Zoning Code | Various Chapters in KZC, dependent on zones | Impervious surface lot coverage based off land use: MF - 60-70% lot coverage, SF 50%, Commercial - 80-90% lot coverage. Recently changed the lot coverage in Totem Lake Area to be calculated by zoning and not land use. | -Does code include maximum impervious surface limits for different land use types? -Can maximum impervious areas be reduced in residential areas? | No Gap. Lot coverage in Totem Lake Area is generally 70-85%, even though calculated by zoning and not land use. | No Revision - maximum impervious surfce limits are primarily based off of land use. Residential areas already contain the lowest lot coverage allowance at 50%. | X | | X |
| Kirkland Zoning Code | KZC 114 Low Impact Development | Encourages minimizing impervious surface, allows clustering, reduced lot size, and consolidated open space if storm LID BMPs are used. | -Does code include maximum impervious surface limits for different land use types? -Can maximum impervious areas be reduced in residential areas? | Review incentives under this code, modify so not offering incentives for required items once new storm design manual is adopted 12/2016. | To be determined | X | | X |
| | KZC 115.90 Calculating lot coverage | Pervious pavement and other items receive 50% credit towards maximum impervious lot coverage. | | Consider removing 50% lot coverage incentive items since new storm design manual to be adopted 12/2016 will require pervious surfaces if feasible. | Remove lot coverage exemption items in KZC 115.90.3 (a) permeable pavement, (b) grassed modular grid pavement, and (d) pervious surfaces in compliance with the stormwater design manual. | X | | X |
| | KZC 115.90 Calculating lot coverage | Rockeries/retaining walls count towards impervious area lot coverage. | | Rockeries/retaining walls are difficult for staff to measure and verify, often installed later, and if vegetation is on both sides then runoff is dispersed. Consider removing rockeries/retaining walls from impervious area lot coverage calculations when not integral to a structure, or located elsewhere on lot where runoff is dispersed. | Add the following Exception to lot coverage: d. Rockeries and retaining walls, unless integral to an adjacent structure (like a patio, building, or parking area). | X | | X |
| | KZC 115.90 Calculating lot coverage | Synthetic turf (e.g., Astroturf) on residential properties counts towards impervious area for lot coverage because it does not meet the "open space" definition in KZC 5.10.610. | | Code language may be unclear to applicants - is Astroturf impervious or pervious? Revise code to clearly state how synthetic lawn surface is counted regarding lot coverage. Consider counting 100% towards lot coverage (not "vegetated open space" so not exempt from lot coverage). | To be determined | X | | X |
| Kirkland Zoning Code | KZC 55 | CBD and Totem Lake Urban Center - 100% maximum impervious coverage allowed. | -Does code include maximum impervious surface limits for different land use types? -Can maximum impervious areas be reduced in residential areas? | No Gap | No Revision - Code allows high % impervious and encourages infill in these small business districts. Stormwater management can be provided in underground facilities. LID is not typically feasible in Totem Lake Urban Ctr due to high groundwater/poor soils. | X | | X |
| | KZC 70 Holmes Point Overlay | Code limits the amount of impervious lot coverage (see lot coverage table). | | No Gap | No Revision - Existing code limits the impervious surface area allowed (less than other areas of the city) and requires open space with development. | X | | X |
| | KZC 83 Shoreline Management | Code limits the amount of impervious lot coverage and requires pervious pavement in setbacks. | | No Gap | No Revision - Existing code limits impervious surface area. | X | | X |
| Kirkland Comprehensive Plan | E 1.13, 1.15, 1.16; | General policies to encourage less impervious surface area. | | | No Gap | No Revision - Existing policies encourage less impervious surface area. | X | |
| Kirkland Zoning Code | Various chapters, depending on commercial zone | Commercial - 80-90% lot coverage, no limit on pollution generating impervious surface area. | Can a limit be designated for pollution generating impervious? | Could be considered in future zoning code changes. | No Revision - Current high land values push parking garages, which automatically create less PGIS flowing to storm system. | X | | X |

| Table 3. Gap Analysis for Topic: Hard and Impervious Surfaces (continued) | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|-------------------------------|--|--|---|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Shared driveways | | | | | | | | |
| Kirkland Zoning Code | KZC 105 | Language for required easements between commercial and multi-family for shared access and for connectivity. | Can shared driveways be allowed for multiple SFR, MF, and commercial? | No Gap | No Revision - Current code includes language for required easements for shared access. | X | | X |
| Kirkland Public Works Pre-Approved Plans | Policy R-4, (II.1.d) | Whenever practical, consolidation of driveways of adjoining properties is encouraged. Therefore, in conjunction with approval of development the City may request developers to provide access and circulation easement to an adjacent owner where joint access is reasonable to serve future development. | | No Gap | No Revision - Current policy allows and encourages shared driveways for SFR. This is dependent on size and shape of lots, and is market driven. | X | | X |
| | | Always required with commercial and Multi-family. | | No Gap | No Revision - Current policy requires shared driveways for commercial and multi-family | X | | X |
| Minimum driveway width | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Policy R-4, Section II.5 | Single family: 10' for one-way, 20' for two-way. Multi-Family/Non-Residential: 12-15' for one-way, 20-24' for two-way. If medians, traffic islands and turn lanes are used in driveway, greater width shall be considered. | Can the minimum width be reduced to 9' (one lane), 18' (two lanes) or 16' (shared)? Any safety issues? | No Gap | No Revision - Current code is already reduced at 10' and 20' width. Reductions to 9', 18' are currently considered on a case by case basis. Requiring the narrower driveways has been considered, but this pushes parking into the street, which has a negative impact on available neighborhood parking. | X | | X |
| Use of permeable pavement for driveways | | | | | | | | |
| Kirkland Municipal Code | KMC 19.12.130 Specifications | Specifications for street and curb cutting, refers to 1977 Edition of "Standard Specifications for Municipal Works Construction" | Allow alternative surfaces for driveways. | Consider changing reference to same as KZC 110.65 Engineering Standards (Pre-Approved Plans). See same change on Table 8. | Revise text to refer to KZC 110.65 Engineering Standards. | X | | X |
| Kirkland Zoning Code | KZC 105.100 | Driveway materials must match or exceed the adjacent road. Pervious surfaces can be used in compliance with the adopted stormwater design manual. | Allow alternative surfaces for driveways. | No Gap | No Revisions - current code allows for pervious pavement driveways. | X | | X |
| Kirkland Public Works Pre-Approved Plans | Driveway Policy R-4, (II.1.g) | Driveway materials must match or exceed the adjacent road. Pervious surfaces can be used in compliance with the adopted stormwater design manual. | | No Gap | No Revisions - current policy allows for pervious pavement driveways. | X | | X |
| | Plans No. CK-L.07, L.08, L.09 | Driveway details for: Pervious Concrete, Porous Asphalt, and Permeable Pavers. | | No Gap | No Revisions - current code allows for pervious pavement driveways. | X | | X |
| 2009 King County Surface Water Design Manual | Section C.2.6 | Permeable Pavement section including: porous concrete, porous asphalt, unit pavers with a gravel bed, and grassed modular grid systems. | | No Gap | No Revisions - current storm design manual (and manual to be adopted 12/2016) allows for pervious pavement driveways. | X | | X |
| Use of permeable pavement for driveways (continued) | | | | | | | | |
| Kirkland Comprehensive Plan | U-4.4 | Encourages use of permeable pavement, and lists practices. | Can code be revised to include incentive? | No Gap | No Revision - Current code encourages use of permeable pavement, incentives offered under other codes (50% credit to lot coverage and 50% flow control credit). | X | | X |
| 2009 King County Surface Water Design Manual | Section C.2.6 | Pervious pavement is counted as 50% impervious (instead of 100%), provides a flow control credit as incentive. | | No Gap | No Revision - Current design manual counts pervious pavement as 50% impervious (instead of 100%), provides a flow control credit as an incentive. New storm design manual ato be adopted in 12/2016 requires pervious pavement as feasible. | X | | X |

| Table 3. Gap Analysis for Topic: Hard and Impervious Surfaces (continued) | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|-------------------------------------|--|--|----------------|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Two-track driveway design | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Driveway Policy R-4, Section I.8 | Two-track driveway design is allowed for single family residential through modification process (approved on a case-by-case basis). Not allowed for multi-family or commercial access. | Is two-track driveway design allowed? | No Gap | No Revision - Two-track driveway design is allowed for SFR through the modification process (approved on a case-by-case basis). Traffic volume is too high to allow this on multi-family or commercial properties. | X | | X |
| Additional Sub-Topics to Consider (Beyond Ecology Focus Sheets) | | | | | | | | |
| Vegetative Roofs | | | | | | | | |
| Kirkland Zoning Code | KZC 115.90 Calculating lot coverage | Vegetated roofs are allowed, is not exempt from impervious lot coverage. | Are vegetated roofs allowed or incentivized? | No Revision | No Revision - Current code allows vegetated roofs. New storm design manual to be adopted 12/2016 removes 50% pervious credit. | X | | X |
| 2009 King County Surface Water Design Manual | Section 5.2.2 | Vegetated Roofs are allowed, and receive 50% pervious credit as incentive. Vegetated roofs are tracked along with other stormwater BMPs. | | No Revision | No Revision - Current design manual counts vegetated roofs as 50% impervious (instead of 100%), provides a flow control credit as an incentive. New storm design manual to be adopted 12/2016 removes 50% pervious credit. | X | | X |

| Table 4: Gap Analysis for Topic: Bulk and Dimensional Considerations | | | | | | | | |
|--|--------------------------------|--|--|----------------|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Building setbacks, lot setbacks | | | | | | | | |
| Kirkland Zoning Code | KZC 15 | Refer to Density/Dimensions Table | Consider reducing setback distances. | No Gap | No Revision - Because Kirkland has adopted narrow street standards, it is important to provide off-street parking for residents, so reducing driveway length is counter productive. | X | | X |
| | KZC 15 | Refer to Density/Dimensions Table | Consider reducing frontage area requirements in open space residential developments. | No Gap | No Revision - Kirkland has small lots that already minimize frontage improvement requirements. | X | | X |
| | KZC 15 | Current code allows irregular lot shapes. | Consider allowing irregular lot shapes. | No Gap | No Revision - Current code allows irregular lot shapes. | X | | X |
| Height limits | | | | | | | | |
| Kirkland Zoning Code | KZC 15 | Refer to Density/Dimension Table. Maximum height restriction currently cannot be increased. | Consider increasing maximum building height restriction if a project reduces the footprint below maximum lot coverage. | No Gap | No Revision - City has given height bonuses in areas with high % lot coverage, but not in residential areas. | X | | X |
| Maximum square footage | | | | | | | | |
| 2009 King County Surface Water Design Manual | Section 5.2 | A covenant for reduced lot coverage is a current option to meet flow control requirements. Since land value is high, projects typically build out to the maximum allowable lot coverage. | Consider revising code to incentivize or encourage minimizing building footprints. | No Gap | No Revision - Reduced lot coverage (reduced footprint) is currently an option to meet flow control standards (incentive). | X | | X |
| Kirkland Zoning Code | KZC 70 Holmes Point Overlay | Code restricts impervious square footage to lower than other areas in Kirkland | | No Gap | No Revision - Current code restricts impervious square footage to lower than other areas in Kirkland. | X | | X |
| | KZC 114 Low Impact Development | Code offers incentive to provide reduced impervious footprints and increased open space. | | No Gap | No Revision - Current code offers incentive to provide reduced impervious footprints and increased open space. | X | | X |
| Clustering | | | | | | | | |
| Kirkland Zoning Code | KZC113 | Cottage housing is currently allowed | Consider allowing cluster development designs, with no special permit or zoning variance. | No Gap | No revision - Current code allows cottage housing. | X | | X |
| Kirkland Zoning Code | PUD Subdivision | Clustered housing is currently allowed.When developments are proposed using the flexibility in Chap 114 (LID), no PUD is required. | Consider allowing cluster development designs, with no special permit or zoning variance. | No Gap | No Revision - Current code provides options and a process for clustering in single family and multi-family zones. | X | | X |
| | KZC 114 Low Impact Development | Encourages clustering of houses, offers incentives | Allow cluster development designs. | No Gap | No Revision - Current code encourages clustering of houses. | X | | X |
| Additional Sub-Topics to Consider (Beyond Ecology Focus Sheet) | | | | | | | | |
| Stormwater facility setbacks | | | | | | | | |
| 2009 King County Surface Water Design Manual | Sections 5 and 6 | Setbacks vary for different facility types, and Kirkland is flexible on a case-by-case basis. Minimum setbacks are required for maintenance access and functionality (e.g. infiltration systems). Kirkland does not require additional an setback from the easement for a stormwater facility. | Consider reducing setbacks from stormwater facilities. | No Gap | No Revision - Setbacks vary for different facility types, and Kirkland is flexible on a case-by-case basis. Minimum setbacks are required for maintenance access and functionality (e.g. infiltration systems). Kirkland does not require an additional setback from the easement for a stormwater facility. | X | | X |

| Table 5: Gap Analysis for Topic: Subdivision and Planned Unit Development | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|--|---|---|--|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Individual open space requirements | | | | | | | | |
| Kirkand Zoning Code | KZC 70 Holmes Point Overlay (HPO) | Open space is required, and is required to be kept in natural condition. | Consider requiring open space managed in the natural condition. Can this be increased? Required to be consolidated into larger units? | No Gap | No Revision - Code already requires open space in Holmes Point area, and for it to be kept in natural condition. | | X | X |
| | Native Growth Protection Easement | Open space is required to be kept in natural condition. | | No Gap | No Revision - Open space is required to be kept in natural condition. | | X | X |
| | KZC 114 Low Impact Development | Open space is required, and is required to be kept in natural condition. | | No Gap | No Revision - This code already requires open space, and for it to be kept in natural condition. | | X | X |
| | Clustered Housing Section (KZC 113) | Requirement to provide open space, but not to preserve it in natural condition. | | Consider changing to require natural condition of open space. | No Revision - the purpose of open space in cottage development is to provide shared recreational/gathering space since individual lots are small and don't provide this. Space should not be required to be left in natural condition since it must be conducive to recreation/gathering. | | X | X |
| Neighborhood Plan | Finn Hill Neighborhood Plan; Potential KZC 70 change | Finn Hill Neighborhood Plan is currently under revision (2016). | Consider requiring open space managed in the natural condition. | Open space requirements are currently being considered while Neighborhood Plan is under revision (expanding HPO to Finn Hill). | No Revision at this time - Code change to be determined by outcome of Neighborhood Plan, under revision in 2016. | | X | X |
| Passive vs. active open space requirements (consider LID BMPs in passive areas) | | | | | | | | |
| Kirkland Zoning Code | KZC 114 Low Impact Development | Code includes allowable and prohibited uses for open space, minimal amount can be structures, LID BMPs like bioretention are allowed in open space. | Define allowable and prohibited uses, consider allowing LID BMPs like bioretention in open space. | No Gap | No Revision - Code includes allowable and prohibited uses for open space, and LID BMPs like bioretention are allowed. | | | X |
| | KZC 70 Holmes Point Overlay | Code includes allowable and prohibited uses for open space, LID BMPs like bioretention are not allowed in open space (must be native vegetation). | | No Gap | No Revision - Code includes allowable and prohibited uses for open space, but open space must contain native vegetation in a natural setting. LID BMPs like bioretention are not allowed because that would require maintenance work in the open space. | | | X |
| | Native Growth Protection Easement | Open space is required to be kept in natural condition | | No Gap | No Revision - NGPE open space is required to be kept in natural condition, so LID BMPs are not appropriate or allowed | | | X |
| | Native Growth Protection Easement | Active recreation not allowed in open space | Consider active recreation in open space. | No Gap | No Revision - this is not applicable to COK, we don't have large subdivisions with large areas set aside that could be used for dual purposes. | | | X |
| Opportunities for performance based designs (PUDs) | | | | | | | | |
| Kirkland Zoning Code | KZC 125 Planned Unit Development | PUDs are not required for high density areas. | Are PUDs required for high density areas, city centers? | No Gap | No Revision - Kirkland does not need a requirement for PUDs in high density areas. | | | X |
| | | Code specifies native vegetation and maximum impervious surface standards. | Specify native vegetation and maximum impervious surface standards. | No Gap | No Revision - Code already specifies native vegetation and maximum impervious surface standards. | X | X | X |

| Table 6: Gap Analysis for Topic: Critical Areas and Shoreline Management | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|--|---|--|--|--|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Wetlands | | | | | | | | |
| Kirkland Zoning Code, Chapter 90 - Drainage Basins | KZC 90.45 (4) Water Quality Facilities | WQ facilities allowed within outer one-half (1/2) of wetland buffer (with conditions). | Are LID BMPs allowed within or adjacent to buffers? Can native vegetation associated with LID BMPs be used to meet buffer enhancement requirements? | Consider specifying the type of WQ facility/LID BMP allowed under current CAO update. | This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS). | | | X |
| | | WQ facilities allowed elsewhere within wetland buffer if proposed by public agency (with additional conditions). | | Consider changes under current CAO update. | This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS). | | | X |
| | KZC 90.45 Wetland Buffers and Setbacks | LID BMPs not mentioned in code. | | Consider specifying the type of WQ facility/LID BMPs allowed under current CAO update. Options to consider are: Infiltration, Dispersion, Bioretention, and Permeable Pavement. Rainwater Harvesting and Vegetated Roof not likely because this would involve structures in buffer or setback. | This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS). | | | X |
| Kirkland Zoning Code, Chapter 90 - Drainage Basins | KZC 90.45 Wetland Buffers and Setbacks | Allowable and Prohibited uses defined. | Are allowable and prohibited uses defined? | No Gap | No Revision - Allowable and Prohibited uses in wetland buffers and setbacks are already defined. | | | X |
| | KZC 90.65 Wetland Restoration, refers to KZC 95.50(11) Mitigation and Restoration Plantings in Critical Areas/Buffers | Approved plants are in Kirkland Plant List, which is produced by the City's Natural Resource Management Team. | Can native vegetation associated with LID BMPs be used to meet buffer enhancement requirements? | Consider adding Stormwater Bioretention Areas and associated plants as allowable within Critical Area Buffers (for buffer enhancement). See Ecology guidance from SEA. | No Revision - This is not recommended under Ecology wetland guidance. | | | X |
| Streams | | | | | | | | |
| Kirkland Zoning Code, Chapter 90 - Drainage Basins | KZC 90.90 (3) Storm Water Outfalls | Piped stormwater outfalls/dispersion allowed within stream buffer and setback (with conditions). | Are LID BMPs allowed within or adjacent to buffers? Can native vegetation associated with LID BMPs be used to meet buffer enhancement requirements? | Consider changes under current CAO update. | This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS). | | | X |
| | KZC 90.90 (4) Water Quality Facilities | WQ facilities allowed within outer one-half (1/2) of stream buffer (with conditions). | | Consider specifying the type of WQ facility/LID BMP allowed under current CAO update. | This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS). | | | X |
| | | WQ facilities allowed elsewhere within stream buffer if proposed by public agency (with additional conditions). | | Consider changes under current CAO update. | This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS). | | | X |
| | KZC 90.90 Stream Buffers and Setbacks | LID BMPs not mentioned. | | Consider including language to specify LID BMPs under current CAO update. Options to consider are: Infiltration, Dispersion, Bioretention, and Permeable Pavement. Rainwater Harvesting and Vegetated Roof not likely because this would involve structures in buffer or setback. | This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS). | | | X |
| Kirkland Zoning Code, Chapter 90 - Drainage Basins | KZC 90.90 Stream Buffers and Setbacks | Allowable and Prohibited uses defined. | Are allowable and prohibited uses defined? | No Gap | No Revision - Allowable and Prohibited uses in stream buffer and setbacks are already defined. | | | X |

| Table 7: Gap Analysis for Topic: Clearing and Grading | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|---|--|---|---|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Protect existing infiltration/minimize compaction | | | | | | | | |
| Kirkland Zoning Code | KZC 95.30 | No speculative grading - can only clear and grade to the extent necessary for approved access and utility improvements. Prior to individual building permit approval, can only clear for homes if short plat/subdivision was approved with an Integrated Development Plan (IDP). | Include provisions to minimize site disturbance and protect native vegetation and soils (minimize compaction). | No Gap | No Revision - Code does not allow speculative grading; cannot clear for houses when only working on the road portion. This minimizes site disturbance, protects existing infiltration areas, and prevents compaction. | | X | |
| Kirkland Municipal Code | KMC 29.24.010 Land Surface Modification | Municipal code does not include provisions for minimizing site disturbance or protecting native vegetation and soils. | | Consider adding provisions for minimizing site disturbance and protecting native vegetation and soils. | No revision - Zoning code and design standard address actions to protect existing infiltration and minimize compaction. | | X | |
| Kirkland Public Works Pre-Approved Plans | Erosion Plan Note 27 | Area to be used for infiltration must be surrounded by silt fence prior to construction and until final stabilization. | | No Gap | No Revision - Note 27 requires the area used for infiltration to be surrounded by silt fence prior to construction and until final stabilization. | | X | |
| Conserve native vegetation/soils | | | | | | | | |
| Kirkland Zoning Code | KZC 5 | No definition for native vegetation. | Define native vegetation, including minimum tree density, minimum retention requirements, protecting native vegetation areas, replanting requirements, soil amendment standards, management plan specifications, and maintenance requirements. | Consider adding a definition for "native vegetation" | Consider using/modifying the definition in the Ecology NPDES Municipal Stormwater permit for Western WA (see page 70/74). | | X | |
| Kirkland Zoning Code | KZC 95 | Tree density table | In "native vegetation" definition or other code section, include: minimum tree density, minimum retention requirements, protect native vegetation areas, replanting requirements, soil amendment standards, management plan specifications, and maintenance requirements. | Consider modifying tree density table (see Table 1 Topic Landscaping, Native Vegetation). | No Revision needed here - Changes to be considered under the Landscaping, Native Vegetation, and Street Landscaping (Table 1). | | X | |
| | KZC 95 Tree Management and Required Landscaping | Permit is required for tree removal, Tree Retention Plan is required for development activity. | Regulation to require or encourage preservation of natural vegetation. | No Gap | No Revision - Code protects native vegetation by requiring a permit for tree removal, and requiring a Tree Retention Plan with development activity. | | X | |
| | KZC 85 Geologically Hazardous Areas | Code provides slope protection by defining landslide/erosion/seismic hazard areas, and requiring geotechnical report as needed. | Conserve native soils | No Gap | No Revision - Code conserves native soils by requiring slope protection and a geotechnical report as needed for development activity. | | X | |
| | KZC 95.30 | No speculative grading - can only clear and grade to the extent necessary for approved access and utility improvements. Prior to individual building permit approval, can only clear for homes if short plat/subdivision was approved with an IDP. | Prohibit or limit wholesale clearing/mass grading of sites. | No Gap | No Revision - Kirkland protects existing infiltration areas and prevents compaction per current code. | | X | |
| | KZC 70 Holmes Point Overlay | Open space kept in natural conditions is required. | Requirement to set aside an undeveloped portion of site, and specific native vegetation retention standards based on land use and density. | No Gap | No Revision - Code requires open space set aside in undeveloped condition with native vegetation. | | X | |
| | KZC 95.5 | Maintenance of invasives in sensitive areas could be enforced with existing code. | | No Gap | No Revision - Kirkland has a prohibited plant list providing a higher level of control. | | X | |
| Kirkland Municipal Code | KMC 29.24.010 Land Surface Modification | Item (d) requires marking the limit of grading with temporary fence and signage. Item (e) requires protective tree fencing. | Regulation to require or encourage preservation of natural vegetation. | Consider adding provisions to require or encourage preservation of natural vegetation (beyond items d and e). | No Revision - Zoning code and design standard also address preservation of natural vegetation. | | X | |

| Table 7: Gap Analysis for Topic: Clearing and Grading (continued) | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|--|---|--|---|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Conserve native vegetation/soils | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52.010 Surface Water Utility | Surface Water Utility on property tax statement is based on actual impervious area (for commercial and multi-family). Less impervious = Lower utility cost. King County assessment is lowered for critical areas. | Are there any incentives to landowners/developers to conserve land? | No Gap | No Revision - Incentive already exists to conserve land; since utility cost is based on actual impervious area. | X | X | |
| 2009 King County Surface Water Design Manual | Chapter 5 Flow Control | Stormwater control based on impervious area, stormwater credits given for infiltration and dispersion BMPs. Lower cost for flow control if section of land is not developed. | | No Gap | No Revision - Incentive already exists to conserve land; utility cost is based on actual impervious area. | X | X | |
| Kirkland Public Works Pre-Approved Plans | Policy D.10 Addendum to 2009 KCSWDM, section 1.2.5.1 | Amended Soil (per BMP T5.13) is required for all landscaped areas on all project sites 1 acre or larger, and recommended for sites < 1 acre. | Conserve native soils and vegetation | No Gap | No Revision - Existing standard requires soil amendment on larger projects. New Storm manual to be adopted 12/2016 will require amended soil on all qualifying projects. | | | X |
| | Erosion Control Section, E.12 Soil Amendment Notes for BMP T5.13 | Detailed notes designed for the contractor to use when amending soils. | | No Gap | No Revision - Existing standard provides notes to contractor on soil amendment. | | | X |
| | Erosion Control Section, E.1-E.12 | This section includes BMPs to provide tree and slope protection during clearing and grading activities. | | No Gap | No Revision - Existing standards include BMPs to provide tree and slope protection during clearing and grading. | | X | |
| Construction sequencing/phasing | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52.060 Design and construction standards and requirements | Code requires construction projects to follow COK standard plans (pre-approved plans). | Include in code, methods for effective construction sequencing to minimize site disturbance and soil compaction. | No Gap | No Revision - Existing code requires the use of Kirkland Pre-Approved Plans, which includes construction sequencing/phasing. | | | X |
| | KMC 29.24.010 Land Surface Modification | Code does not refer to construction sequence. | | Consider adding provisions to require construction sequencing or phasing. | No revision - construction sequence addressed elsewhere in code. | | | X |
| Kirkland Zoning Code | KZC 95.50 | Code states after soil preparation is completed, motorized vehicles shall be kept off to prevent excessive compaction and underground pipe damage. | | No Gap | No Revision - Existing code requires vehicles to be kept off amended soil to minimize site disturbance and soil compaction. | | | X |
| COK PW Pre-Approved Plans | Erosion Control Plan Notes | Requirements for construction sequencing/phasing is included in the plan notes for all projects (except single family infill). | In engineering and street standards, outline construction sequencing and practices for protecting pervious areas and LID BMPs during construction. | No Gap | No Revision - Existing plan notes contain requirements for construction sequencing/phasing. | | | X |
| | Erosion Plan Note 27 | Area to be used for infiltration must be surrounded by silt fence prior to construction and until final stabilization. | | No Gap | No Revision - Note 27 requires the area used for infiltration to be surrounded by silt fence prior to construction and until final stabilization. | | | X |
| Kirkland Municipal Code | KMC 15.52.060 Design and construction standards and requirements | Code does not limit clearing to just the building footprint. | Consider revising code to limit clearing to the building footprint and area needed for maneuvering machinery. | No Gap | No Revision - It is not realistically feasible to limit clearing to an area a little larger than the building footprint. | | | X |

| Table 8: Gap Analysis for Topic: Streets and Roads | | | | | | | | |
|---|-------------------------------------|--|---|---|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Travel lane widths | | | | | | | | |
| Kirkland Zoning Code | KZC 110.25 | Current regulations include narrow travel lane widths (10') see link | Minimize travel lane widths - 10' | No Gap | No Revision - Existing code is already at suggested minimum narrow travel lane width. | X | | |
| | KZC 110.27 | Current regulation includes narrow alley width (12') see link | | No Gap | No Revision - Existing code includes 12' minimum alley width, which is less than suggested minimum for each travel lane. | X | | |
| | KZC 110.30, 110.35, 110.38 | Neighborhood Access Streets, R-20, R-24, R-28, include minimum street widths from 20' to 28'. | | No Gap | No Revision - Existing code includes minimum street widths. | X | | |
| | KZC 110.40 | Collector Streets include minimum lane width of 11'. | | No Gap | No Revision - Existing code includes minimum street widths feasible for street type designation. | X | | |
| ROW widths | | | | | | | | |
| Kirkland Zoning Code | KZC 110.30, 110.35 | Neighborhood Access Streets, R-20, R-24, include minimum ROW at 30'. | Minimize ROW width or include flexibility for LID considerations. | No Gap | No Revision - Existing code includes a minimum ROW. Reducing ROW further would inhibit the ability to install LID in ROW. | X | | |
| | KZC 110.38 | Neighborhood Access Streets R-28, include minimum ROW at 40'. | | No Gap | No Revision - Existing code includes a minimum ROW. Reducing ROW further would inhibit the ability to install LID in ROW. | X | | |
| | KZC 110.40 | Collector Streets include minimum ROW at 60'. | | No Gap | No Revision - Existing code includes a minimum ROW. Reducing ROW further would inhibit the ability to install LID in ROW. | X | | |
| | KZC 110.65 Engineering Standards | Design standards allow sidewalks on one side of street only on a case-by-case basis. | Allow sidewalks on one side of street only in low-density residential areas. | No Gap | No Revision - Changes to design standards are allowed on a case-by-case basis. | X | | |
| | KZC 110.65 Engineering Standards | Design standards allow streets with no sidewalks or other alternatives on a case-by-case basis. | Allow alternate pedestrian networks (e.g., trails through common areas) be substituted for sidewalks. | No Gap | No Revision - Changes to design standards are allowed on a case-by-case basis. | X | | |
| Use of permeable pavement for streets and roads | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Pre-Approved Plans, Design Criteria | Permeable pavement is allowed for private streets, and allowed on a case-by-case basis for public streets (no written policy). | Can permeable pavement be used for road shoulders, parking lanes, and emergency parking areas? | Consider adding a written policy to the Pre-Approved Plans. | Develop written policy on when permeable pavement will be used on private and public streets and alleys; including when to use for travel lanes, road shoulders, parking lanes, and emergency parking areas. Include requirements dictated by new storm design manual. | X | | |
| | | Plans do not include a standard detail for permeable streets. | | Consider adding standard details for permeable streets to the Pre-Approved Plans. | Develop standard details for pervious pavement streets, private and public. | X | | |
| Kirkland Municipal Code | KMC 19.12.130 Specifications | Specifications for street and curb cutting, refers to 1977 Edition of "Standard Specifications for Municipal Public Works Construction". | | Consider changing reference to same as KZC 110.65 Engineering Standards (Pre-Approved Plans). See same change on Table 3. | Revise text reference to KZC 110.65 Engineering Standards | X | | |
| Kirkland Zoning Code | KZC 110.65 Engineering Standards | Permeable pavement is allowed for private streets, and allowed on a case-by-case basis for public streets. | Can permeable pavement be used for road shoulders, parking lanes, and emergency parking areas? | No Gap | No Revision - Code refers to Kirkland Pre-Approved Plans, and those will be revised (see above). | X | | |
| Placement of utilities under paved areas in the ROW | | | | | | | | |
| Kirkland Zoning Code | KZC 110.65 Engineering Standards | Utilities are allowed under roadways, no language stating utilities cannot be under road. | Does code allow utilities to be placed under the paved section of ROW? | No Gap | No Revision - current code allows utilities to be placed under paved ROW. | X | | |
| Required truck turn around area | | | | | | | | |
| Kirkland Zoning Code | KZC 110 | Kirkland has the smallest cul-de-sac diameters, reduced from 90ft to 70ft diameter in 1995. | Is the minimum street section necessary for safe access and emergency response being used? | No Gap | No Revision - Kirkland has the smallest allowable cul-de-sac diameters, reduced from 90ft to 70ft diameter in 1995 (smallest amount allowed by fire department). | X | | |

| Table 8: Gap Analysis for Topic: Streets and Roads (continued) | | | | | | | | |
|--|------------------------------------|--|---|--|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Sidewalk widths | | | | | | | | |
| Kirkland Zoning Code | KZC 110.30, 110.35, 110.38, 110.40 | Neighborhood Access Streets, R-20, R-24, R-28, & Collector Streets include minimum sidewalk at 5'. | Consider reduction to minimum sidewalk widths. | No Gap | No Revision - Existing code includes minimum sidewalk width at 5'. | X | | |
| | KZC 110.52 | Sidewalks in Design Districts use Pedestrian-Oriented Street Standards, with minimum sidewalk widths of 8'. | | No Gap | No Revision - Existing code includes minimum sidewalk width of 8' needed for heavy pedestiran use on commercial streets. | X | | |
| Kirkland Public Works Pre-Approved Plans | Plan CK-R.23 | 5' minimum | Consider reduction to minimum sidewalk width in areas where LID BMPs are present. | No Gap | No Revision - Smaller width not needed if permeable pavement is used, or sloped towards bioretention area. | | | X |
| Permeable pavement for sidewalks & sidewalk slope | | | | | | | | |
| Kirkland Municipal Code | KMC 19.20.030 | Code identifies maintenance of sidewalk is the responsibility of abutting property owner (this includes repairs if need is caused by abutting property owner). | Allow permeable pavement for sidewalks | Consider Revision. New Storm Design Manual adopted 12/2016 will require either pervious pavement sidewalks or adjacent bioretention areas. Current city staff allocation is not adequate to take on maintenance of all sidewalks and bioretention areas. Recent maintenance standards recommend pressure washer and vacuum system "calibrated to not dislodge wearing course aggregate". | To be determined | X | | |
| Kirkland Public Works Pre-Approved Plans | Policy R-15 | List of permitted groundcover species in public Right-of-Way landscape strip. Policy states maintenance is the responsibility of the adjacent property owner. | New storm design manual will require bioretention area instead of standard landscape strip if traditional impervious sidewalk is used instead of pervious pavement. | Consider Revision. New Storm Design Manual to be adopted 12/2106 will require either pervious pavement sidewalks or traditional sidewalks draining to a bioretention area. | To be determined | | | X |
| | Plan CK-R.23 | Design standard is 2% max slope towards road. ROW includes a landscape strip between sidewalk and road, so sidewalk slopes towards landscape strip. | Allow sidewalk slope toward landscape strip, LID BMP, or other. | Consider Revision. New Storm Design Manual adopted 12/2016 will require either pervious pavement sidewalks or traditional sidewalks draining to a bioretention area. | Modify design standard to show sidewalk draining to landscape strip/bioretention/road; depending on requirements in new storm design manual. | | | X |
| Kirkland Zoning Code | KZC 110 | Landscape strips are required on all streets other than alleys. | New storm design manual will require bioretention area instead of standard landscape strip if traditional impervious sidewalk is used instead of pervious pavement. | No Gap | No Revision - existing code requires landscape strip on all streets; landscape strip details (like bioretention) are referenced in Kirkland Pre-Approved Plans. | | | X |
| Kirkland Zoning Code | KZC 110.65 Engineering Standards | Code allows permeable pavnment to be used for sidewalks. | Allow permeable pavement for sidewalks | No Gap | No Revision - Code refers to Kirkland Pre-Approved Plans, and those already allow permeable pavement sidewalks. | X | | |
| Permeable pavement for sidewalks & sidewalk slope | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Plan CK-L.06 | Pervious concrete allowed for public sidewalks (required when sidewalk is within wetland and strream buffers). | Allow permeable pavement for sidewalks | No Gap | No Revision - Design standard allows permeable pavement for sidewalks. | X | | |
| Minimum cul-de-sac radius | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Plan CK-R.15 | Plan includes R=35' for cul-de-sacs. | Allow minimum Radius of 35' | No Gap | No Revision - Standard is already at minimum 35' radius recommended. | X | | |
| | | Center Islands are allowed. | Require or encourage landscape islands? | No Gap | No Revision - Center islands are allowed, but they require more ROW so are less popular to developers, and require plant maintenance. | X | | |
| Alternatives to cul-de-sacs(turn-around) | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Plan CK-R.16 | Plan includes 60' x 20' turnaround. | Allow 60' x 20' T-shaped turn-around, and loop road as option. | No Gap | No Revision - Design standard is already at minimum size recommended for turnaround. | X | | |

| Table 9: Gap Analysis for Topic: Healthy Soils | | | | | | | | |
|--|--|--|---|--|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Protecting and restoring healthy soils | | | | | | | | |
| Kirkland Zoning Code | KZC 95.34 and KZC 95.50.4 | KZC 95.34 implies protection of existing soil (w/ trees). KZC 95.50 intends to address soil restoration | Is there a soil management plan in place that identifies soil protection zones and describes quantities of compost amendment? Are protection areas required to be fenced? | Does not refer to PW Pre-Approved Plans. KZC 95.50. Consider removing soil compaction density reference, etc. | Revise code to reflect BAS/BMPs, refer to PW Pre-Approved Plans, specify 'soil' in 95.34 (protection) and 95.50 (restoration). | | | X |
| Kirkland Public Works Pre-Approved Plans | Policy D-2, D-3 | TESC Plan is required for all development. | | Require a separate Soil Management Plan document for all LSM permits, and for multi-family and commercial BLD permits. Document is tool for staff to help verify amended soil requirement is met. | Revise Pre-Approved Plans (2017) to include a soil management plan document (like King County's document). | | | X |
| | Details R.48, R.48A | Tree planting details | | Currently considering revisions to include adequate soil volume. | Revise Pre-Approved Plans (2017) to include adequate soil volume. | | | X |
| 2009 King County Surface Water Design Manual | | TESC Plan is required for all development. KC starting requiring a Soil Management Plan around 2011. It was not in 2009 KC Manual. | Is there a soil management plan in place that identifies soil protec tion zones and describes quantities of compost amendment? Are protection areas required to be fenced? | New SW design manual to be adopted by 12/2016. KC manual requires a soil management plan. | No Revision - will be included with adoption of new SW Design Manual by 12/2016. | | | X |
| Kirkland Municipal Code | KMC 15.52.060, KMC 15.04.340 | Codes refer to 2009 KCSWDM and PW Pre-Approved Plans | | No Gap | Codes will be updated with adoption of new SW Design Manual (12/2016). | | | X |
| Kirkland Zoning Code | KZC 70 Holmes Point Overlay | Required to set aside 25% protected open space. | | No Gap | No Revision - current code requires 25% area set aside, which meets intent of protecting native soils. | | | X |
| Compost amendments | | | | | | | | |
| Kirkland Zoning Code | KZC 95.50.4 Installation Standards for Required Plantings | Item 4 intends to address soil amendments with plant installation. | Does code require amendment of disturbed soil? Are there incentives for compost on small projects? | Item 4 is vague; does not use industry standard soil specs, does not state soil quality shall comply with requirements of the PW Pre-Approved Plans. Update re: soil compaction density, amendments, etc. Should link to pending soil req'ments. | Modify code to add requirement for compost amendments per Ecology BMP T5.13 (since amended soil will be required for all landscaping under new SW Design Manual, to be adopted 12/2016). | | | X |
| Kirkland Public Works Pre-Approved Plans | Plan No. CK-E.12 | Soil Amendment Notes for using BMP T5.13 | | Worked soil depth of 12" may not be adequate, consider increasing to 18". | Consider increasing worked soil depth from 12" to 18". | | | X |
| Kirkland Public Works Pre-Approved Plans | Policy D-10, 1.2.5.1 | Amended Soil (BMP T5.13) required for all lanscaped areas on all project sites 1 acre or larger, recommended on smaller sites. | Does code require amendment of disturbed soil? Are there incentives for compost on small projects? | No Gap | No Revision - current policy requires amended soil for projects 1 acre or larger. Adoption of new SW manual will require amended soil on all projects. | | | X |
| Compaction | | | | | | | | |
| Kirkland Zoning Code | KZC 95.50.4 | After soil preparation is completed, motorized vehicles shall be kept off to prevent excessive compaction and underground pipe damage. | Can the code be revised to include different types of equipment for clearing and grading to minimize compaction? Are there any limits or restrictions on clearing , grading, and soil disturbance outside the bldg footprint? | No Gap | No Revision - code requires contractor to keep motor vehicles off soil to prevent excessive compaction. | | | X |
| | KZC 95.34 | Existing soils out to drip line of trees are required to be retained and protected with tree fencing. No limits on type of equipment used. | | No Gap | No Revision - code requires contractor to protect soils around trees out to the drip line to prevent excessive compaction. | | | X |
| Kirkland Public Works Pre-Approved Plans | Erosion Control Plan Note 27 | Any area to be used for infiltration or permeable pavement (including a 5-foot buffer) must be protected with fencing prior to construction and until final stabilization of site to prevent soil compaction and siltation by construction activities. | Consider requiring contractor to re-establish permeability of soils that have been compacted by construction vehicles. | No Gap | No revision - current standard requires contractor to protect the soil of areas to be used for infiltration. If infiltration facility does not function after installation, the contractor is required to restore the permeability of the soils. | | | X |
| Kirkland Municipal Code | KMC 15.52.060 Design and Construction Standards and Requirements | KMC refers to 2009 KCSWDM, which requires performance testing on bioretention or infiltration facilities. If facility fails this testing, soil permeability must be re-established. This is required and enforced through building/development permit. | Consider requiring contractor to re-establish permeability of soils that have been compacted by construction vehicles. | No Gap | No Revision - code refers to adopted SW Design Manual which requires contractor to re-establish permeability of soils that have been compacted during construction. | | | X |

| Table 10: Gap Analysis for Topic: Parking | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|--|--|--|--|---|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Minimum/maximum parking ratios | | | | | | | | |
| KZC Use Zone Charts | Multifamily parking - all zones - Adopted 9/1/2015 | 1.2 stalls per studio, 1.3 per 1 bedroom unit, 1.6 per 2 bedroom, 1.8 per 3 bedroom. Guest parking calculated at 10% of total required spaces. | Consider reducing min # of spaces due to shared parking, proximity to transit, car sharing, etc. and/or setting a max # to reduce imperv. area. | No Gap | No Revision - current code reduced parking areas for multi-family development, adopted 9/1/2015. | X | | |
| KZC Chapter 105 and KZC Use Zone Charts | Standard Parking Ratios | Parking ratios are: 1) provided as minimums for each use in each zone or 2) evaluated on a case-by-case basis per Section 105.103, based on the actual parking demand on existing uses similar to the proposed use. | Consider reducing minimum # of spaces due to shared parking, proximity to tyransit, car sharing, etc. and/or setting a maximum # to reduce impervious area. | No Gap | No Revision - current code includes a maximum parking standard, which is a technique suggested for Urban Centers/areas with close proximity to transit. Section 105.103 provides for modifications to allow a reduction in required parking and reductions in stalls for shared parking if a study shows that the proposed stalls will be sufficient to fully serve the use(s). | X | | |
| | Restaurant/Tavern - most zones | 1 stall/100 square feet of gross floor area | | | | | | |
| | Retail - most zones | 1 stall/300 square feet of gross floor area | | | | | | |
| | Office - most zones | 1 stall/300 square feet of gross floor area | | | | | | |
| | Single family | 2 stalls/dwelling unit | | | | | | |
| KZC Use Zone Charts and KZC Chapter 55 | Shopping Centers/Mixed Use | TL 2 (Totem Lake Mall) - case by case basis to allow flexibility and reduced parking. TL 5 (Totem Square) - case by case (with MF parking as noted above) | Consider reducing minimum # of spaces due to shared parking, proximity to tyransit, car sharing, etc. and/or setting a maximum # to reduce impervious area. | No Gap | No Revision - current code includes flexibility in parking requirements, which is a technique used in Urban Centers and other areas with close proximity to transit. Section 105.103 provides for modifications to allow a reduction in required parking and reductions in stalls for shared parking if a study shows the proposed stalls will be sufficient to fully serve the use(s). In areas with higher land values, developers often choose to use land for leasable space rather than excess surface parking. Code allows flexibility, but goal is for no excess parking. | X | | |
| | Urban Center: Office Use and mixed use | TL 1A (office) Case by case due to proximity to transit center. TL 1B (mixed use) Case by case for non-residential and other use in mixed use | | No Gap | | | | |
| Permeable pavement use for parking lots (parking stalls, drive aisles) | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Permeable pavement | No standard detail yet for permeable pavement parking lot. | Allow permeable pavement for parking areas, parking lanes, and/or parking spaces. | Consider adding a standard detail for porous asphalt/pervious concrete parking lot. | Add a detail for permeable pavement parking lot to 2017 Update to Pre-Approved Plans | X | | |
| Kirkland Zoning Code | Section 105.100 | Parking area and driveway must be surfaced with material comparable or superior to r-o-w providing direct vehicle access. Pervious surface (such as pervious concrete or asphalt, or modular grid pavement) can be used per KMC 15.52.060. Grassed modular pavement may be used for emergency access areas that are not used in regular permanent circulation and parking areas. | Allow permeable pavement for parking areas, parking lanes, and/or parking spaces. Consider offering an incentive for spillover or other infrequently used parking areas to be permeable. | No Gap | No Revision - zoning code already allows permeable pavement for parking lots. | X | | |
| 2009 King County Surface Water Design Manual | Chapter 5 | Permeable pavement/infiltration allowed for flow control for parking lots (stalls and drive aisles). | | No Gap | No Revision - current storm design manual allows permeable pavement for parking lots. | X | | |
| Parking stall dimensions | | | | | | | | |
| Kirkland Zoning Code | Chapter 180 - Plates 1-4 | Standard Stall: 8.5'x18.5', Compact Stall: 8'x16' | Minimum for Standard Stall: 9.5'x19' | No Gap | No revision - zoning code contains standard stall size of 8.5'x18.5', which is already below target of 9.5'x19'. | X | | |
| Kirkland Zoning Code | Section 105.65 | Up to 50% of required parking spaces may be designated for compact cars. | Is there a fixed % of stalls assigned to compact cars(15%-35%)? | No Gap | No revision - zoning code contains standard of 50% required parking spaces designated for compact cars, which is already below target of 35%. | X | | |
| Driving aisle dimensions | | | | | | | | |
| Kirkland Zoning Code | Chapter 180 | 17' and 24' depending on one or two way and compacts. | Is the driving aisle wider than required by Fire Dept? Can one-way aisles be used in conjunction with angled parking stalls instead of two-way aisles? | No Gap | No revision - zoning code contains narrowest driving aisle width allowed by Fire Dept, and one-way aisles can be used in conjunction with angled parking stalls. | X | | |

| Table 10: Gap Analysis for Topic: Parking (continued) | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|---|---|--|----------------|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Off-street parking regulations | | | | | | | | |
| Kirkland Zoning Code | KZC 105.103 | Existing KZC provisions allow for modifications from parking requirements (number of stalls, location, etc.), if a parking study shows that the proposed modification will fully serve the use. | Consider mechanisms to reduce parking requirements (like shared parking, proximity to transit, car share, etc.). | No Gap | No revision - existing Zoning Code provisions already allow for modifications. | X | | |
| | KZC use Zone Charts | Is allowed, no incentive offered | Consider incentives for structured or tuck under parking. | No Gap | No revision - taller height limits in business districts (Totem Lake, Yarrow Bay) already encourage structured parking to allow for more development on site. | X | | |
| Additional Sub-Topics to Consider (Beyond Ecology Focus Sheets) | | | | | | | | |
| Integrate storm LID BMPs (bioretention) into landscape islands | | | | | | | | |
| Kirkland Zoning Code | KZC 95.44 Internal Parking Lot Landscaping Requirements | Requires min 1 tree, and LID facilities count towards landscape requirements. | Allow vegetation in LID Facilities to count towards open space or landscape requirements. | No Gap | No Revision - zoning code already allows LID facilities to count towards landscape requirements. | | | X |
| Kirkland Public Works Pre-Approved Plans | Plan No. CK-L.01,L.02, L.03, L.04 | Existing Bioretention standard details can be used in parking lots. | | No Gap | No Revision - existing bioretention standard detail can be used in parking lots. | | | X |

| Table 11: Gap Analysis for Topic: Design Guidelines and Standards | | | | | | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|---|---|---|--|--|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | | | |
| Trees and bioretention | | | | | | | | |
| Kirkland Zoning Code | KZC 95.50.5a Installation Standards for Required Plantings | Code refers to PW Pre-Approved Plans, which includes Kirkland Street Tree Selection List of tree species. | Are specific street tree species included in the design guidelines and standards? Are they flexible to allow alternative tree species compatible with bioretention designs? | No Gap | No Revision - code references PW Policy R-10, which includes Kirkland Street Tree Selection List. | | | X |
| Kirkland Public Works Pre-Approved Plans | Policy R-10 Street Tree Selection List, and Planting and Pruning Procedures | Policy provides a variety of recommended tree species on the tree list; contains some flexibility for different tree species on a case-by-case basis. | Are specific street tree species included in the design guidelines and standards? Are they flexible to allow alternative tree species compatible with bioretention designs? | Expand Kirkland Street Tree Selection List to include tree species compatible with bioretention designs. | Modify policy by expanding Kirkland Street Tree Selection List to include tree species compatible with bioretention designs. | | | X |
| Continuous curb requirements | | | | | | | | |
| Kirkland Zoning Code | KZC 110.65 Engineering Standards | Code refers to Kirkland Pre-Approved Plans | Are conventional curbs and gutters required? Can the requirements be adjusted to allow the use of curb cuts (breaks that allow runoff to flow into bioretention cells) or "invisible" curbs (flush with the road surface)? | No Gap | No Revision - code refers to Kirkland Pre-Approved Plans which allows for flexibility on a case-by-case basis. | | | X |
| Kirkland Public Works Pre-Approved Plans | CK-R.17 Concrete Curb and Gutter | Standard includes typical curb requirements, but includes flexibility on a case-by-case basis. | | No Gap | No Revision - Curb and gutter requirements are already flexible to allow curb cuts and flush curbs on a case-by case basis. For example, curb cuts to bioretention areas were installed at Garden Gate subdivision (along 112th Ave NE), and flush curbs were installed on Park Lane. | | | X |
| Kirkland Municipal Code | KMC 19.20 Sidewalks, Curbs and Gutters - Construction and Maintenance | Code refers to RCW 35.68, 35.69, 35.70 | | No Gap | No Revision - code refers to RCW. | | | X |
| Curb radii | | | | | | | | |
| Kirkland Zoning Code | KZC 110.65 Engineering Standards | Code refers to Kirkland Pre-Approved Plans | Are minimum curb radii requirements specified for street intersections or pedestrian bulbs? Can curb radii requirements be reduced to provide additional space for LID BMPs? | No Gap | No Revision - code refers to Kirkland Pre-Approved Plans which allows for flexibility on a case-by-case basis. | | | X |
| Kirkland Public Works Pre-Approved Plans | CK-R.24 Curb Radius Standards | Standard curb radius ranges between 25' to 35', depending on street designation (neighborhood access to collector to arterial). Note 3 allows for radii down to 15' when curb bulbs are used. | | No Gap | No Revision - Standard already has allowance for lower curb radii (down to 15') when curb bulbs are used. | | | X |

| Table 12: Gap Analysis for Topic: Stormwater Management and Maintenance | | | | | | | | |
|--|--|--|---|----------------|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Process to determine public or private maintenance responsibility | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52.120 Operation and maintenance of storm water facilities | 1. Single Family Residential development is primarily publicly maintained. 2. Multi-family and Commercial development are privately maintained. | Is there an established process/policy to determine responsibility of stormwater maintenance? | No Gap | No Revision - Current code specifies which party has responsibility for maintenance of stormwater facilities. | | | X |
| Kirkland Standard Operating Procedures | D-2. Maintenance of Residential Stormwater Facilities | SOP D-2 provides clarification on publicly maintained residential facilities. | | No Gap | No Revision - Standard Operating Procedure supports municipal code and provides additional clarification on publicly maintained residential facilities. | | | X |
| Privately Maintained Stormwater Facilities | | | | | | | | |
| Private Maint - mechanism to preserve and maintain facility (tract, easement, covenant, title) | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52.120 Operation and maintenance of storm water facilities | Any modification of an existing drainage facility must be approved and permitted by the City. | Does the code require private stormwater facilities be located in a tract/easement? | No Gap | No Revision - Current code is adequate to preserve and maintain private stormwater facilities; requires City permit and approval for any modification to existing drainage facility. | | | X |
| | | Any person or persons holding title to a nonresidential property for which storm water facilities have been required by the city of Kirkland shall be responsible for the continual operation, maintenance, and repair of said storm water facilities in accordance with the criteria set forth in Appendix A of the 2009 King County Surface Water Design Manual and the City of Kirkland Addendum to the 2009 King County Surface Water Design Manual. | Does the code require a maintenance covenant or other legal agreements for private stormwater facilities? | No Gap | No Revision - Current code is adequate to preserve and maintain private stormwater facilities; requires private party to maintain existing drainage facility per adopted City standards. | | | X |
| Kirkland Public Works Pre-Approved Plans | Policy D-7. Private Maintenance Agreement for a Stormwater Facility Including LID Facility | Policy includes maintenance agreement to be signed by private party to ensure private maintenance. | Does the code require a maintenance covenant or other legal agreements for private stormwater facilities? | No Gap | No Revision - policy contains a private maintenance agreement to be signed by private party acknowledging they agree to maintenance standards. | | | X |
| Private Maint - maintenance specifications in place | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52.120 | Section e, 1, refers to 2009 King County Surface Water Design Manual. | Does the adopted stormwater manual outline maintenance standards and/or procedures? | No Gap | No Revision - 2009 KCSWDM outlines maintenance standards for stormwater facilities. New stormwater design manual to be adopted Dec 31, 2016 will include maintenance standards. | | | X |
| Kirkland Public Works Pre-Approved Plans | Policy D-7. Private Maintenance Agreement for a Stormwater Facility Including LID Facility | Maintenance agreement signed by private party includes maintenance standards for stormwater facilities. | | No Gap | No Revision - policy contains a private maintenance agreement signed by private party that includes maintenance standards for stormwater facilities. | | | X |
| Private Maint - mechanism for access, inspection, enforcement process | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52 | 15.52.130 allows inspection. 15.52.120 requires maintenance and repairs. 15.52.140 enforcement under KMC 1.12. | Does the code allow access to inspect, maintain, repair and enforcement of the facility if a private property owner fails to maintain the facility? | No Gap | No Revision - current codes allow for the City to access, inspect, sample, and enforce maintenance and repairs as needed. | | | X |
| | KMC 1.12 | KMC 1.12 includes fines and penalties determined using an enforcement penalty matrix. | Does the code include reimbursement for any City maintenance activities conducted on a private facility? | No Gap | No Revision - current codes includes fines and penalties determined using an enforcement penalty matrix. Code allows reimbursement for the cost if the City has to maintain a private facility. | | | X |
| | KMC 15.52 | No reduction in stormwater fee as incentive for property owners the meet maintenance requirements. | Are incentives (reduction in stormwater fees) provided for private property owners that meet their maintenance requirements? | No Gap | No Revision - incentive for maintenance is not needed at this time; Kirkland achieves compliance through education, inspections, and by providing technical assistance to property owners. | | | X |

| Table 12: Gap Analysis for Topic: Stormwater Management and Maintenance (continued) | | | | | | | | |
|---|--|---|---|---|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Private Maint - education plan, signage | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52 | Kirkland has an ongoing Private Maintenance Program, where city staff work with commercial and multifamily property owners to ensure they understand the stormwater facilities and structures on their property and the maintenance requirements. Staff inspect all sites on an annual or bi-annual basis, and follow up to ensure systems are adequately maintained. | Is there an education plan, signage, or other process used to inform private property owners of the required maintenance? | No Gap | No Revision - Kirkland has an ongoing Private Maintenance Program, where city staff work with commercial and multifamily property owners to ensure they understand the stormwater facilities and structures on their property and the maintenance requirements. Staff inspect all sites on an annual or bi-annual basis, and follow up to ensure systems are adequately maintained. | | | X |
| Kirkland Public Works Pre-Approved Plans | Policy D-7. Private Maintenance Agreement for a Stormwater Facility Including LID Facility | For new single family residential systems that will be privately maintained, property owners sign a private maintenance agreement, recorded with King County. The agreement includes the facility type, location, and all maintenance requirements. | | No Gap | No Revision - For new single family residential systems that will be privately maintained, property owners sign a private maintenance agreement, recorded with King County. The agreement includes the facility type, location, and all maintenance requirements. | | | X |
| Publicly Maintained Stormwater Facilities | | | | | | | | |
| Public Maint - mechanism to preserve and maintain facility (public Right-of-Way, tract, easement) | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52 | Kirkland takes maintenance responsibility for all elements of the storm drainage system beginning at the first catch basin within the public Right-of-Way. | Does the code require public stormwater facilities be located in public ROW or a public easement? | No Gap | No Revision -Kirkland assumes maintenance responsibility for all parts of the storm drainage system within the ROW (starting at first catch basin), and within easements or tracts dedicated to the City. | | | X |
| Public Maint - maintenance specifications in place | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52.120 | Section e, 1, refers to 2009 King County Surface Water Design Manual. | Does the adopted stormwater manual outline maintenance standards and/or procedures? | No Gap | No Revision - 2009 KCSWDM outlines maintenance standards for stormwater facilities. New stormwater design manual to be adopted 12/2016 will include maintenance standards. | | | X |
| Public Maint - mechanism for access and inspection | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52 | Facilities serving single-family residential developments must be in ROW, easements or tracts dedicated to the City. | Does the code allow access to inspect, maintain, and repair stormwater facilities? | No Gap | No Revision - code is adequate to provide City access, inspection, and maintenance as needed. | | | X |
| Public Maint - education plan, signage | | | | | | | | |
| Kirkland Municipal Code | KMC 15.52 | Publicly maintained ponds require education signage per the 2009 King County Surface Water Design Manual. KMC refers to surface water design manual. | Is there an education plan, signage, or other process used to inform the public about maintenance of stormwater facilities? | No Gap | No Revision - code refers to the adopted storm design manual, which requires signage on publicly maintained ponds. | | | X |
| Kirkland Public Works Pre-Approved Plans or Standard Operating Procedure (SOP) | Kirkland Public Works Pre-Approved Plans or Standard Operating Procedure | Informal policy for when signage is used on facilities other than ponds; primarily if located in high visibility public areas. There is not a written Policy on when stormwater education signage is required. City website contains educational information on publicly maintained facilities. | Is there an education plan, signage, or other process used to inform the public about maintenance of stormwater facilities? | Consider writing a policy or standard operating procedure on when educational signage is used on storm facilities/BMPs. | Adopt a sign standard to provide public education on LID stormwater facilities (function and maintenance). Add to next PW Pre-Approved Plans or SOP update in 2017. | | | X |

| Revisions to Address Gaps identified in LID Code Integration | | | | | | Revised: 12/31/16 | | |
|--|---|--|--|---|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Table 1. Topic: Landscaping, Native Vegetation, and Street Landscaping | | | | | | | | |
| Tree preservation/retention | | | | | | | | |
| Kirkland Zoning Code, relating to Tree retention with Development Activity | KZC 95.33 Tree Density Requirement | Min tree density is 30 tree credits per acre, use tree credit table. | Place greater emphasis on conifer preservation | Consider a different system for retaining and replacing trees. Consider modifying Tree Credit table to look at area of native vegetation (or % of site in native veg) in addition to number/size of trees and to give extra points for use of conifers of a similar size as deciduous trees. | Amended code with Tree Credit Table to give 1.5 credit for conifers (more emphasis on conifers). | | X | |
| Screening | | | | | | | | |
| Kirkland Zoning Code | KZC 95.40 Required Landscaping, KZC 95.41 Supplemental Plantings | 95.40, Item 2. Use of Significant Existing Vegetation, 95.41, Item 2a. Standards for Supplemental | Can the screening requirements be revised to include provisions for retaining native vegetation and replanting? | Consider code modifications to include preference for native species, and expansion of the Kirkland Native Plant List. | Amended code to include preference for native species. Kirkland Native Plant List to be revised in next update by Planning & Buidling Department. | | X | |
| Landscape requirements for parking lots | | | | | | | | |
| Kirkland Zoning Code | KZC 95.44 Internal Parking Lot Landscaping Requirements | Requires min 1 tree (per 25sf) and other groundcover (per parking stall) | Include minimum tree canopy, native vegetation, and allow vegetation in LID facilities to count towards open space or landscape requirements. | Lacks language to allow LID facilities to count towards landscape requirements. | Amended code to specify that LID facilities count towards landscape requirements, and kept tree requirement. Reference COK PW Pre-Approved Plans. | | X | X |
| Kirkland Zoning Code | KZC 95.45 Perimeter Landscape Buffering for Driving and Parking Areas | 5' wide strip, ROW of trees and live groundcover | Include minimum tree canopy, native vegetation, and allow vegetation in LID facilities to count towards open space or landscape requirements. | Lacks language to allow LID facilities to count towards landscape requirements | Amended code to specify that LID facilities count towards landscape requirements. Reference COK PW Pre-Approved Plans. Additional language regarding natives to be considered in a subsequent city code review. | | | X |
| Utility setbacks for trees | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | General Section | Not addressed in current code. Current process is utility plan comes in, PCD and PW review and come to an agreement. Handled on a case-by-case basis, with the understanding that trees to be saved whenever possible. | Retain native vegetation | "Understanding" is not identified in a written policy, consider creating a written policy for the Pre-Approved Plans. | Establish a new Policy in Pre-Approved Plans regarding utility setbacks for trees; also include street improvements. Specify trees should be saved whenever possible. | | X | |
| Table 3. Topic: Hard and Impervious Surfaces | | | | | | | | |
| Maximum impervious surface allowances | | | | | | | | |
| Kirkland Zoning Code | KZC 114 Low Impact Development | Encourages minimizing impervious surface, allows clustering, reduced lot size, and consolidated open space with storm LID BMPs. | -Does code include maximum impervious surface limits for different land use types? -Can maximum impervious areas be reduced in residential areas? | Review incentives under this code, consider removing incentives for required items once new storm design manual is adopted 12/2016. | Amended code to remove stormwater incentives, since storm LID is required under 2017 KCSWDM. | X | | X |
| | KZC 115.90 Calculating lot coverage | Permeable pavement and other items receive 50% credit towards maximum impervious lot coverage. | | Consider removing exemptions (items that receive 50% lot coverage credit) since new storm design manual to be adopted 12/2016 will require permeable surfaces if feasible. | All exemptions remain in code. Providing 50% exemption does not inhibit the use of permeable surfaces, it encourages it. | X | | X |
| | KZC 115.90 Calculating lot coverage | Rockeries/retaining walls count towards impervious area lot coverage. | | Rockerries/retaining walls are difficult for staff to measure and verify, often installed later, and if vegetation is on both sides then runoff is dispersed. Consider removing rockeries/retaining walls from impervious area lot coverage calculations when not integral to a structure, or located elsewhere on lot where runoff is dispersed. | Amended code by adding the following Exception to lot coverage: d. Rockeries and retaining walls, unless integral to an adjacent structure (like a patio, building, or parking area). | X | | X |
| | KZC 115.90 Calculating lot coverage | Synthetic turf (e.g., Astroturf) on residential properties counts towards impervious area for lot coverage because it does not meet the "open space" definition in KZC 5.10.610. | | Code language may be unclear to applicants, whether synthetic turf is impervious or pervious. Revise code to clearly state how synthetic lawn surface is counted regarding lot coverage. Consider counting 100% towards lot coverage since it is not "vegetated open space". | Planning Commission to determine policy for use of synthetic turf in Kirkland; issues are appearance (material preference) and function (porosity). | X | | X |

| Revisions to Address Gaps in Development Related Code Revisions | | | | | | Revised: 12/31/16 | | |
|--|--|--|--|--|--|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Use of permeable pavement for driveways | | | | | | | | |
| Kirkland Municipal Code | KMC 19.12.130 Specifications | Specifications for street and curb cutting, refers to 1977 Edition of "Standard Specifications for Municipal Works Construction" | Allow alternative surfaces for driveways. | Consider changing reference to same as KZC 110.65 Engineering Standards, PW Pre-Approved Plans, which include the use of alternative surfaces. See same change listed under Table 8. | Amended code to refer to PW Pre-Approved Plans, for consistency with KZC 110.65 Engineering Standards. | X | | X |
| Table 6: Gap Analysis for Topic: Critical Areas and Shoreline Management | | | | | | | | |
| Wetlands | | | | | | | | |
| Kirkland Zoning Code, Chapter 90 - Drainage Basins | KZC 90.45 (4) Water Quality Facilities | WQ facilities allowed within outer one-half (1/2) of wetland buffer (with conditions). | Are LID BMPs allowed within or adjacent to buffers? Can native vegetation associated with LID BMPs be used to meet buffer enhancement requirements? | Consider specifying the type of WQ facility/LID BMP allowed under current CAO update. | KZC 90.55 amended per O-4551 12/13/16. Water quality and LID facilities are not allowed within wetland buffers (except dispersion flow path). | | | X |
| | | Consider changes under current CAO update. | | | | | X | |
| | KZC 90.45 Wetland Buffers and Setbacks | LID BMPs not mentioned in code. | | Consider specifying the type of WQ facility/LID BMPs allowed under current CAO update. Options to consider are: Infiltration, Dispersion, Bioretention, and Permeable Pavement. Rainwater Harvesting and Vegetated Roof not likely because this would involve structures in buffer or setback. | KZC 90.140 amended per O-4551 12/13/16. Bioretention such as rain gardens, and dispersion techniques that result in sheet flow such as level spreaders, dispersion trenches, splash blocks and similar techniques may extend no more than 9' into structure setback from critical area buffer. | | | X |
| Streams | | | | | | | | |
| Kirkland Zoning Code, Chapter 90 - Drainage Basins | KZC 90.90 (3) Storm Water Outfalls | Piped stormwater outfalls allowed within stream buffer and setback (with conditions). | Are LID BMPs allowed within or adjacent to buffers? Can native vegetation associated with LID BMPs be used to meet buffer enhancement requirements? | Consider changes under current CAO update. | KZC Chapter 90 amended per O-4551 12/13/16. Storm water outfall section removed. | | | X |
| | KZC 90.90 (4) Water Quality Facilities | WQ facilities allowed within outer one-half (1/2) of buffer (with conditions). | | Consider specifying the type of WQ facility/LID BMP allowed under current CAO update. | KZC 90.65 amended per O-4551 12/13/16. Water quality and LID facilities are not allowed within stream buffers (except dispersion flow path). | | | X |
| | | WQ facilities allowed elsewhere within buffer if proposed by public agency (with additional conditions). | | Consider changes under current CAO update. | | | | X |
| | KZC 90.90 Stream Buffers and Setbacks | LID BMPs not mentioned. | | Consider including language to specify LID BMPs under current CAO update. Options to consider are: Infiltration, Dispersion, Bioretention, and Permeable Pavement. Rainwater Harvesting and Vegetated Roof not likely because this would involve structures in buffer or setback. | KZC 90.140 revised per O-4551 12/13/16: bioretention such as rain gardens, and dispersion techniques that result in sheet flow such as level spreaders, dispersion trenches, splash blocks and similar techniques may extend no more than 9' into structure setback from critical area buffer. | | | X |
| Table 7: Gap Analysis for Topic: Clearing and Grading | | | | | | | | |
| Conserve native vegetation/soils | | | | | | | | |
| Kirkland Zoning Code | KZC 90 (KZC 5) | No definition for "native vegetation". | Define native vegetation, including minimum tree density, minimum retention requirements, protecting native vegetation areas, replanting requirements, soil amendment standards, management plan specifications, and maintenance requirements. | Consider adding a definition for "native vegetation" | Amended KZC 5.10 Definitions per O-4551 12/13/16 to include a definition for native vegetation. | | X | |
| Revisions to Address Gaps in Development Related Code Revisions | | | | | | Revised: 12/31/16 | | |

| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
|--|---|---|---|---|---|--|--|--|
| Table 8: Gap Analysis for Topic: Streets and Roads | | | | | | | | |
| Use of permeable pavement for streets and roads | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Pre-Approved Plans, Design Criteria | Permeable pavement is allowed for private streets, and allowed on a case-by-case basis for public streets (no written policy). | Can permeable pavement be used for road shoulders, parking lanes, and emergency parking areas? | Consider adding a written policy to the Pre-Approved Plans. | Revised Policy D-10 to clarify use of permeable pavement on private and public streets and alleys. | X | | |
| | | Plans do not include a standard detail for permeable streets. | | Consider adding standard details for permeable streets to the Pre-Approved Plans. | Develop standard details for pervious pavement streets, private and public. | X | | |
| Kirkland Municipal Code | KMC 19.12.130 Specifications | Specifications for street and curb cutting, refers to 1977 Edition of "Standard Specifications for Municipal Public Works Construction". | | Consider changing reference to same as KZC 110.65 Engineering Standards, PW Pre-Approved Plans, which include the use of alternative surfaces. See same change listed under Table 3. | Amended code to refer to PW Pre-Approved Plans, for consistency with KZC 110.65 Engineering Standards. | X | | |
| Permeable pavement for sidewalks & sidewalk slope | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Policy R-15 | List of permitted groundcover in public landscape strip, and policy states maintenance is the responsibility of the adjacent property owner. | New storm design manual will require bioretention area instead of standard landscape strip if traditional impervious sidewalk is used instead of permeable pavement. | Consider Revision. New Storm Design Manual to be adopted 12/2106 will require either pervious pavement sidewalks or traditional sidewalks draining to a bioretention area. | No revision to policy at this time; current policy does not prevent LID. | | | X |
| | Plan CK-R.23 | Design standard is 2% max slope towards road. ROW includes a landscape strip between sidewalk and road, so sidewalk slopes towards landscape strip. | Allow sidewalk slope toward landscape strip, LID BMP, or other. | Consider Revision. New Storm Design Manual adopted 12/2016 will require either pervious pavement sidewalks or traditional sidewalks draining to a bioretention area. | Revise design standard in next update to Pre-Approved Plans to show sidewalk draining to landscape strip/bioretention/road; depending on requirements in 2016 KCSWDM. | | | X |
| Table 9: Gap Analysis for Topic: Healthy Soils | | | | | | | | |
| Protecting and restoring healthy soils | | | | | | | | |
| Kirkland Zoning Code | KZC 95.34 and KZC 95.50.4 | KZC 95.34 implies protection of existing soil (w/ trees). KZC 95.50 intends to address soil restoration | Is there a soil management plan in place that identifies soil protection zones and describes quantities of compost amendment? Are protection areas required to be fenced? | Consider adding soil protection to tree protection, reference to Ecology soil quality, and remove soil compaction density reference. | Amended code to reflect BAS/BMPs, to refer to Ecology soil quality, and specified 'soil' in 95.34 (protection) and 95.50 (restoration). | | | X |
| Kirkland Public Works Pre-Approved Plans | Policy D-2, D-3 | TESC Plan is required for all development. No separate document for soil management required. | | Revise in next update to Pre-Approved Plans (2017). Require a separate Soil Management Plan document for all LSM permits, and for multi-family and commercial BLD permits. Document is tool for staff to help verify amended soil requirement is met. | Revise policies in next update to Pre-Approved Plans to include a soil management plan document (see King County's document). | | | X |
| | Details R.48, R.48A | Tree planting details | | Currently considering revisions to include adequate soil volume. | Revise details in next update to Pre-Approved Plans to include adequate soil volume. | | | X |
| Compost amendments | | | | | | | | |
| Kirkland Zoning Code | KZC 95.50.4 Installation Standards for Required Plantings | Item 4 intends to address soil amendments with plant installation. | Does code require amendment of disturbed soil? Are there incentives for compost on small projects? | Item 4 is vague; does not use industry standard soil specs, does not state soil quality shall comply with requirements of the PW Pre-Approved Plans. Update re: soil compaction density, amendments, etc. Link to pending soil req'ments. | Amended code to include requirement for soil quality equivalent to Ecology BMP T5.13. Amended soil is required for all landscaped area under the 2016 KCSWDM. | | | X |
| Kirkland Public Works Pre-Approved Plans | Plan No. CK-E.12 | Soil Amendment Notes for using BMP T5.13 | | Worked soil depth of 12" is required by Ecology, but may not be adequate. Consider increasing depth to 18". | Consider revising plan in next update to Pre-Approved Plans to increase worked soil depth from 12" to 18". This would be greater than Ecology requires. | | | X |

| Revisions to Address Gaps in Development Related Code Revisions | | | | | | Revised: 12/31/16 | | |
|--|---|---|---|---|---|--|--|--|
| Document | Section Reference | Current Regulation - key components | LID Code Consideration | Summary of Gap | Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why. | Measures to minimize impervious surfaces | Measures to minimize loss of native vegetation | Measures to minimize stormwater runoff |
| Table 10: Gap Analysis for Topic: Parking | | | | | | | | |
| Permeable pavement use for parking lots (parking stalls, drive aisles) | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Permeable pavement | No standard detail yet for permeable pavement parking lot. | Allow permeable pavement for parking areas, parking lanes, and/or parking spaces. | Consider adding a standard detail for porous asphalt/pervious concrete parking lot. | Add a detail in the next update to Pre-Approved Plans for permeable pavement parking lot. | X | | |
| Table 11: Gap Analysis for Topic: Design Guidelines and Standards | | | | | | | | |
| Trees and bioretention | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans | Policy R-10 Street Tree Selection List, and Planting and Pruning Procedures | Policy provides a variety of recommended tree species on the tree list; contains some flexibility for different tree species on a case-by-case basis. | Are specific street tree species included in the design guidelines and standards? Are they flexible to allow alternative tree species compatible with bioretention designs? | Expand Kirkland Street Tree Selection List to include tree species compatible with bioretention designs. | Revise policy in next update to Pre-Approved Plans to expand the Kirkland Street Tree Selection List to include tree species compatible with bioretention designs. | | | X |
| Table 12: Gap Analysis for Topic: Stormwater Management and Maintenance | | | | | | | | |
| Publicly Maintained Stormwater Facilities - education plan, signage | | | | | | | | |
| Kirkland Public Works Pre-Approved Plans or Standard Operating Procedure | Kirkland Public Works Pre-Approved Plans or Standard Operating Procedure | Informal policy for when signage is used on facilities other than ponds; primarily if located in high visibility public areas. There is not a written Policy on when stormwater education signage is required. City website contains educational information on publicly maintained facilities. | Is there an education plan, signage, or other process used to inform the public about maintenance of stormwater facilities? | Consider writing a policy or standard operating procedure on when educational signage is used on storm facilities/BMPs. | Revised policy D-7 in recent update of Pre-Approved Plans to address Public education and maintenance standards for LID stormwater facilities (function and maintenance). | | | X |

2015/2016 Stormwater Low Impact Development Code Integration

Record of Public Involvement and Code Adoption Meetings

| Date | Subject | Attendees |
|------------|---|--|
| 9/29/2016 | Team presentation of proposed code amendments to joint study session for Planning Commission and Houghton Community Council | Team members, Planning Commission, and Houghton Community Council |
| 10/5/2016 | Team presentation of proposed code amendments to Public Works/Parks/Human Services Council Committee. | Team members, Public Works/Parks/Human Services Council Committee. |
| 10/10/2016 | Team presentation of proposed code amendments to Planning and Economic Development (PED) Council Committee. | Team members, Planning and Economic Development (PED) Council Committee. |
| 10/24/2016 | Public Open House | Jenny, Kelli, Stacey, Dorian, Deb, Paul Stewart |
| 10/24/2016 | Public Hearing for LID Proposed Code Amendments - Planning Commission and Houghton Community Council | Team members, Planning Commission and Houghton Community Council, General Public |
| 11/2/2016 | Team presentation of Planning Commission and Houghton Community Council recommendations on proposed LID code amendments to Public Works/Parks/Human Services Council Committee. | Team members, Planning Commission, and Houghton Community Council. |
| 11/14/2016 | Team presentation of proposed code amendments to Planning and Economic Development (PED) Council Committee. | Team members, Planning and Economic Development (PED) Council Committee. |
| 11/15/2016 | Team presentation of proposed code amendments to Kirkland Council, as new business. | Team members and Kirkland Council. |
| 12/13/2016 | Team presentation to Kirkland Council - final adoption of Ordinances 4547 (KZC) and 4542 (KMC) by Kirkland Council | Team members, Kirkland Council Members. |
| 1/26/2017 | Houghton Community Council meeting - adopted ordinance 4547 | Paul, Stacey, Dorian, and Houghton Community Council. |

ORDINANCE O-4547

AN ORDINANCE OF THE CITY OF KIRKLAND RELATING TO ZONING, PLANNING, AND LAND USE AND AMENDING CHAPTERS 95, 114 and 115 OF THE KIRKLAND ZONING CODE REGARDING STORMWATER LOW IMPACT DEVELOPMENT PRINCIPLES AND REQUIREMENTS AND APPROVING A SUMMARY ORDINANCE FOR PUBLICATION, FILE NO. CAM16-02154.

1 WHEREAS, the City Council has received a recommendation
2 from the Kirkland Planning Commission to amend various sections of
3 Chapters 95, 114 and 115 of the Kirkland Zoning Code, as set forth in
4 the report and recommendation of the Planning Commission dated
5 October 24, 2016 and bearing Kirkland Planning and Building
6 Department File No. CAM16-02154; and
7

8 WHEREAS, prior to making the recommendation, the Kirkland
9 Planning Commission, following notice as required by RCW 36.70A.035,
10 held a public hearing on the amendment proposals on October 24, 2016;
11 and
12

13 WHEREAS, pursuant to the State Environmental Policy Act
14 (SEPA), Chapter 43.21C RCW, a SEPA Addendum to Existing
15 Environmental Documents was issued by the responsible official
16 pursuant to WAC 197-11-625 on October 20, 2016; and
17

18 WHEREAS, in an open public meeting on December 13, 2016,
19 the City Council considered the environmental documents received from
20 the responsible official, together with the report and recommendation
21 of the Planning Commission and a report from staff.
22

23 NOW, THEREFORE, the City Council of the City of Kirkland do
24 ordain as follows:
25

26 Section 1. Chapters 95, 114 and 115 of the Kirkland Zoning
27 Code are amended as set forth in Attachment A attached to this
28 ordinance and incorporated by reference.
29

30 Section 2. If any section, subsection, sentence, clause, phrase,
31 part or portion of this ordinance, including those parts adopted by
32 reference, is for any reason held to be invalid or unconstitutional by any
33 court of competent jurisdiction, such decision shall not affect the validity
34 of the remaining portions of this ordinance.
35


36 Section 3. To the extent the subject matter of this ordinance is
37 subject to the disapproval jurisdiction of the Houghton Community
38 Council, this ordinance shall become effective within the Houghton
39 Community Municipal Corporation only upon approval of the Houghton
40 Community Council or the failure of said Community Council to
41 disapprove this ordinance within 60 days of the date of the passage of
42 this ordinance.

43 Section 4. Except as provided in Section 3, this ordinance shall
44 be in force and effect on January 1, 2017, after its passage by the
45 Kirkland City Council and publication, pursuant to Section 1.08.017
46 Kirkland Municipal Code, in the summary form attached to the original
47 of this ordinance and by this reference approved by the City Council, as
48 required by law.

49
50 Section 5. A complete copy of this ordinance shall be certified
51 by the City Clerk, who shall then forward the certified copy to the King
52 County Department of Assessments.

53
54 Passed by majority vote of the Kirkland City Council in open
55 meeting this 13th day of December, 2016.

56
57 Signed in authentication thereof this 13th day of December,
58 2016.


MAYOR

Attest:


City Clerk

Publication Date: December 19, 2016

Approved as to Form:


City Attorney

Kirkland Zoning Code
Chapter 95 – TREE MANAGEMENT AND
REQUIRED LANDSCAPING

1. Common Recreational Open Space. Reductions or variations of the area, width, or composition of required common recreational open space may be granted.
2. Parking Areas and Access. Variations in parking lot design and/or access driveway requirements may be granted when the Public Works and Planning Officials both determine the variations to be consistent with the intent of City policies and codes.
3. Required Yards. Initially, the applicant shall pursue options for placement of required yards as permitted by other sections of this code, such as selecting one (1) front required yard in the RSX zone and adjusting side yards in any zone to meet the 15-foot total as needed for each structure on the site. The Planning Official may also reduce the front, side or rear required yards; provided, that:
 - a. No required side yard shall be less than five (5) feet; and
 - b. The required front yard shall not be reduced by more than five (5) feet in residential zones. There shall not be an additional five (5) feet of reduction beyond the allowance provided for covered entry porches;
 - c. Rear yards that are not directly adjacent to another parcel's rear yard but that are adjacent to an access easement or tract may be reduced by five (5) feet;
 - d. No required yard shall be reduced by more than five (5) feet in residential zones.
4. Storm Water. Requirements pertaining to stormwater may be varied if approved by the Public Works Official under KMC 15.52.060.
5. Additional Variations. In addition to the variations described above, the Planning Official is authorized to require site plan alterations to retain trees with a high retention value. Such alterations include minor adjustments to the location of building footprints, adjustments to the location of driveways and access ways, or adjustment to the location of walkways, easements or utilities. The Planning Official and the applicant shall work in good faith to find reasonable solutions.

(Ord. 4350 § 1, 2012; Ord. 4238 § 2, 2010)

.33 Tree Density Requirement

The required minimum tree density is 30 tree credits per acre for single-family homes, cottages, carriage units, two/three-unit homes, short plats, and/or subdivisions and associated demolition and land surface modification. For individual lots in a short subdivision or subdivision with an approved Tree Retention Plan, the tree density shall be calculated for each lot within the short plat or subdivision. The tree density may consist of existing trees pursuant to the tree's retention value, supplemental trees or a combination of existing and supplemental trees pursuant to subsection (2) of this section. Existing trees transplanted to an area on the same site shall not count toward the required density unless approved by the Urban Forester based on transplant specifications provided by a qualified professional that will ensure a good probability for survival.

1. Tree Density Calculation. In calculating tree density credits, tree credits may be rounded up to the next whole number from a .5 or greater value. For the purpose of calculating required minimum tree density, public right-of-way, areas to be dedicated as public right-of-way, and vehicular access easements not included as lot area with the approved short plat shall be excluded from the area used for calculation of tree density.

Tree density calculation for existing individual trees:

- a. Diameter breast height (DBH) of the tree shall be measured in inches.
- b. The tree credit value that corresponds with DBH shall be found in Table 95.33.1. Existing native conifers (or other conifer species as approved by the Urban Forester) shall count 1.5 times credits for retention.

Table 95.33.1

Tree Density for Existing Significant Trees

(Credits per minimum diameter – DBH)

| DBH | Tree Credits | DBH | Tree Credits | DBH | Tree Credits |
|---------|--------------|-----|--------------|-----|--------------|
| 3 – 5" | 0.5 | | | | |
| 6 – 10" | 1 | 24" | 8 | 38" | 15 |
| 12" | 2 | 26" | 9 | 40" | 16 |
| 14" | 3 | 28" | 10 | 42" | 17 |
| 16" | 4 | 30" | 11 | 44" | 18 |
| 18" | 5 | 32" | 12 | 46" | 19 |
| 20" | 6 | 34" | 13 | 48" | 20 |
| 22" | 7 | 36" | 14 | 50" | 21 |

Example: a 7,200-square-foot lot would need five (5) tree credits ($7,200/43,560 = 0.165 \times 30 = 4.9$) or five (5)). The tree density for the lot could be met by retaining with one (1) existing 16-inch deciduous tree and one (1) existing 6-inch deciduous tree on site. The same 7,200 square-foot-lot would meet the required five (5) tree credits by retaining one (1) existing 14-inch conifer.

2. Supplemental Trees Planted to Meet Minimum Density Requirement. For sites and activities requiring a minimum tree density and where the existing trees to be retained do not meet the minimum tree density requirement, supplemental trees shall be planted to achieve the required minimum tree density.
3. Tree Location. In designing a development and in meeting the required minimum tree density, the trees shall be planted in the following order of priority:
 - a. On-Site. The preferred locations for new trees are:
 - 1) In preserved groves, critical areas or their buffers.
 - 2) Adjacent to storm water facilities as approved by Public Works under KMC 15.52.060.
 - 3) Entrance landscaping, traffic islands and other common areas in residential subdivisions.
 - 4) Site perimeter – The area of the subject property that is within 10 feet from the property line.
 - 5) On individual residential building lots.
 - b. Off-Site. When room is unavailable for planting the required trees on site, then they may be planted at another approved location in the City.
 - c. City Forestry Account. When the Planning Official determines on-site and off-site locations are unavailable, then the applicant shall pay an amount of money approximating the current market value of the supplemental trees into the City forestry account.

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4. Minimum Size and Tree Density Value for Supplemental Trees. The required minimum size of the supplemental tree worth one (1) tree credit shall be six (6) feet tall for Thuja/Arborvitae or four (4) feet tall for native or other a conifers and 2-inch caliper for deciduous or broad-leaf evergreen tree. Additional credits may be awarded for larger supplemental trees. The installation and maintenance shall be pursuant to KZC 95.50 and 95.51 respectively.

(Ord. 4238 § 2, 2010)

.34 Tree & Soil Protection during Development Activity

Prior to development activity or initiating tree removal on the site, vegetated areas, ~~and~~ individual trees, ~~and soil~~ to be preserved shall be protected from potentially damaging activities pursuant to the following standards:

1. Placing Materials near Trees. No person may conduct any activity within the protected area of any tree designated to remain, including, but not limited to, operating or parking equipment, placing solvents, storing building material or ~~stockpiling any materials~~~~soil deposits~~, or dumping concrete washout or other chemicals. During construction, no person shall attach any object to any tree designated for protection.

2. Protective Barrier. Before development, land clearing, filling or any land alteration, the applicant shall:

a. Erect and maintain readily visible temporary protective tree fencing along the limits of disturbance which completely surrounds the protected area of all retained trees, ~~or~~ groups of trees, ~~vegetation and native soil~~. Fences shall be constructed of chain link and be at least six (6) feet high, unless other type of fencing is authorized by the Planning Official.

b. Install highly visible signs spaced no further than 15 feet along the entirety of the protective tree fence. Said sign must be approved by the Planning Official and shall state at a minimum "Tree & Soil Protection Area, Entrance Prohibited" and provide the City phone number for code enforcement to report violations.

c. Prohibit excavation or compaction of ~~soil~~~~earth~~ or other potentially damaging activities within the barriers; provided, that the Planning Official may allow such activities approved by a qualified professional and under the supervision of a qualified professional retained and paid for by the applicant.

d. Maintain the protective barriers in place for the duration of the project until the Planning Official authorizes their removal.

e. Ensure that any approved landscaping done in the protected zone subsequent to the removal of the barriers shall be accomplished with ~~light~~ machinery from outside the protected zone or by hand labor.

f. In addition to the above, the Planning Official may require the following:

1) If equipment is authorized to operate within the ~~protected~~~~critical root~~ zone, ~~cover~~ the soil and areas adjoining the critical root zone of a tree must be covered with mulch to a depth of at least six (6) inches, or with plywood, steel plates or similar material in order to protect roots and soil from damage caused by heavy equipment.

2) Minimize root damage by hand-excavating a 2-foot-deep trench, at edge of critical root zone, to cleanly sever the roots of trees to be retained. Never rip or shred roots with heavy equipment.

3) Corrective pruning performed on protected trees in order to avoid damage from machinery or building activity.

4) Maintenance of trees throughout construction period by watering and fertilizing.

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3. Grade.

a. The grade shall not be elevated or reduced within the critical root zone of trees to be preserved without the Planning Official's authorization based on recommendations from a qualified professional. The Planning Official may allow coverage of up to one-half (1/2) of the area of the tree's critical root zone with light soils (no clay) to the minimum depth necessary to carry out grading or landscaping plans, if it will not imperil the survival of the tree. Aeration devices may be required to ensure the tree's survival.

b. If the grade adjacent to a preserved tree is raised such that it could slough or erode into the tree's critical root zone, it shall be permanently stabilized to prevent soil erosion and suffocation of the roots.

c. The applicant shall not install an impervious surface within the critical root zone of any tree to be retained without the authorization of the Planning Official. The Planning Official may require specific construction methods and/or use of aeration devices to ensure the tree's survival and to minimize the potential for root-induced damage to the impervious surface.

d. To the greatest extent practical, utility trenches shall be located outside of the critical root zone of trees to be retained. The Planning Official may require that utilities be tunneled under the roots of trees to be retained if the Planning Official determines that trenching would significantly reduce the chances of the tree's survival.

e. Trees and other vegetation to be retained shall be protected from erosion and sedimentation. Clearing operations shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time. To control erosion, it is encouraged that shrubs, ground cover and stumps be maintained on the individual lots, where feasible.

4. Directional Felling. Directional felling of trees shall be used to avoid damage to trees designated for retention.

5. Additional Requirements. The Planning Official may require additional tree protection measures that are consistent with accepted urban forestry industry practices.

(Ord. 4238 § 2, 2010)

.40 Required Landscaping

1. User Guide. Chapters 15 through 56 KZC containing the use zone charts or development standards tables assign a landscaping category to each use in each zone. This category is either "A," "B," "C," "D," or "E." If you do not know which landscaping category applies to the subject property, you should consult the appropriate use zone chart or development standards table.

Requirements pertaining to each landscaping category are located throughout this chapter, except that Landscaping Category E is not subject to this section.

Landscape Categories A, B, C, D, and E may be subject to additional related requirements in the following other chapters:

a. Various use zone charts or development standards tables, in Chapters 15 through 56 KZC, establish additional or special buffering requirements for some uses in some zones.

b. Chapter 85 KZC, Geologically Hazardous Areas, addresses the retention of vegetation on steep slopes.

c. Chapter 90 KZC, Drainage Basins, addresses vegetation within sensitive areas and sensitive area buffers.

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- d. Chapter 110 KZC and Chapter 19.36 KMC address vegetation within rights-of-way, except for the I-405 and SR-520 rights-of-way, and the Cross Kirkland Corridor railbanked rail corridor or the Eastside Rail Corridor.
 - e. KZC 115.135, Sight Distance at Intersections, which may limit the placement of landscaping in some areas.
 - f. Chapter 22 KMC addresses trees in subdivisions.
2. Use of Significant Existing Vegetation.
- a. General. The applicant shall apply subsection KZC 95.30(3), Tree Retention Plan Procedure, and KZC 95.32, Incentives and Variations to Development Standards, to retain existing native trees, and vegetation and soil in areas subject to the landscaping standards of this section. The Planning Official shall give substantial weight to the retained native trees and vegetation when determining the applicant's compliance with this section.
 - b. Supplement. The City may require the applicant to plant trees, shrubs, and groundcover according to the requirements of this section to supplement the existing vegetation in order to provide a buffer at least as effective as the required buffer.
 - c. Protection Techniques. The applicant shall use the protection techniques described in KZC 95.34 to ensure the protection of significant existing vegetation and soil.
3. Landscape Plan Required. In addition to the Tree Retention Plan required pursuant to KZC 95.30, application materials shall clearly depict the quantity, location, species, and size of plant materials proposed to comply with the requirements of this section, and shall address the plant installation and maintenance requirements set forth in KZC 95.50 and 95.51. Plant materials shall be identified with both their scientific and common names. Any required irrigation system must also be shown.

(Ord. 4476 § 3, 2015; Ord. 4408 § 1, 2013; Ord. 4238 § 2, 2010; Ord. 4121 § 1, 2008; Ord. 4097 § 1, 2007; Ord. 4037 § 1, 2006; Ord. 4030 § 1, 2006; Ord. 4010 § 2, 2005)

.41 Supplemental Plantings

1. General. The applicant shall provide the supplemental landscaping specified in subsection (2) of this section in any area of the subject property that:
- a. Is not covered with a building, vehicle circulation area or other improvement; and
 - b. Is not a critical area, critical area buffer, or in an area to be planted with required landscaping; and
 - c. Is not committed to and being used for some specific purpose.
2. Standards. The applicant shall provide the following at a minimum:
- a. Living plant material which will cover 80 percent of the area to be landscaped within two (2) years. If the material to be used does not spread over time, the applicant shall re-plant the entire area involved immediately. Any area that will not be covered with living plant material must be covered with nonliving groundcover. Preference is given to using native plant species. See Kirkland Native Tree/Plant Lists.
 - b. One (1) tree for each 1,000 square feet of area to be landscaped. At the time of planting, deciduous trees must be at least two (2) inches in caliper and coniferous trees must be at least five (5) feet in height.

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horizontal dimension of these areas shall not exceed 50 percent of the length of the facade of the structure or fence (see Plate 11).

4. Outdoor dining areas.

5. That portion of an outdoor display of vehicles for sale or lease which is adjacent to a public right-of-way that is improved for vehicular use; provided, that it meets the buffering standards for driving and parking areas in KZC 95.45(1); and provided further, that the exemptions of KZC 95.45(2) do not apply unless it is fully enclosed within or under a building, or is on top of a building and is at least one (1) story above finished grade.

6. Outdoor Christmas tree lots and fireworks stands if these uses will not exceed 30 days, and outdoor amusement rides, carnivals and circuses, and parking lot sales which are ancillary to the indoor sale of the same goods and services, if these uses will not exceed seven (7) days.

(Ord. 4238 § 2, 2010)

.44 Internal Parking Lot Landscaping Requirements

The following internal parking lot landscape standards apply to each parking lot or portion thereof containing more than eight (8) parking stalls.

1. The parking lot must contain 25 square feet of landscaped area per parking stall planted as follows:

a. The applicant shall arrange the required landscaping throughout the parking lot to provide landscape islands or peninsulas to separate groups of parking spaces (generally every eight (8) stalls) from one another and each row of spaces from any adjacent driveway that runs perpendicular to the row. This island or peninsula must be surrounded by a 6-inch-high vertical curb and be of similar dimensions as the adjacent parking stalls. Gaps in curbs are allowed for stormwater runoff to enter landscape island.

b. Landscaping shall be installed pursuant to the following standards:

1) At least one (1) deciduous tree, two (2) inches in caliper, or a coniferous tree five (5) feet in height.

2) Groundcover shall be selected and planted to achieve 60 percent coverage within two (2) years.

3) Natural drainage landscapes (such as rain gardens, bio-infiltration swales and bioretention planters) are allowed when designed in compliance with the stormwater design manual adopted in KMC 15.52.060. Internal parking lot landscaping requirements for trees still apply. Refer to Public Works Pre-Approved Plans

c. Exception. The requirements of this subsection do not apply to any area that is fully enclosed within or under a building.

2. Rooftop Parking Landscaping. For a driving or parking area on the top level of a structure that is not within the CBD zone or within any zone that requires design regulation compliance, one

(1) planter that is 30 inches deep and five (5) feet square must be provided for every eight (8) stalls on the top level of the structure. Each planter must contain a small tree or large shrub suited to the size of the container and the specific site conditions, including desiccating winds, and is clustered with other planters near driving ramps or stairways to maximize visual effect.

3. If development is subject to Design Review as described in Chapter 142 KZC, the City will review the parking area design, plant choice and specific plant location as part of the Design Review approval.

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The City may also require or permit modification to the required landscaping and design of the parking area as part of Design Review approval.

(Ord. 4350 § 1, 2012; Ord. 4238 § 2, 2010)

.45 Perimeter Landscape Buffering for Driving and Parking Areas

1. Perimeter Buffering – General. Except as specified in subsection (2) of this section, the applicant shall buffer all parking areas and driveways from abutting rights-of-way and from adjacent property with a 5-foot-wide strip along the perimeter of the parking areas and driveways planted as follows (see Figure 95.45.A):

- a. One (1) row of trees, two (2) inches in caliper and planted 30 feet on center along the entire length of the strip.
- b. Living groundcover planted to attain coverage of at least 60 percent of the strip area within two (2) years.

c. Natural drainage landscapes (such as rain gardens, bio-infiltration swales and bioretention planters) are allowed when designed in compliance with the stormwater design manual adopted in KMC 15.52.060. Perimeter landscape buffering requirements for trees in driving and parking areas still apply. Refer to Public Works Pre-Approved Plans

2. Exception. The requirements of this section do not apply to any parking area that:

- a. Is fully enclosed within or under a building; or
- b. Is on top of a building and is at least one (1) story above finished grade; or
- c. Serves detached dwelling units exclusively; or
- d. Is within any zone that requires design regulation compliance. See below for Design District requirements.

3. Design Districts. If subject to Design Review, each side of a parking lot that abuts a street, through-block pathway or public park must be screened from that street, through-block pathway or public park by using one (1) or a combination of the following methods (see Figures 95.45.A, B, and C):

- a. By providing a landscape strip at least five (5) feet wide planted consistent with subsection (1) of this section, or in combination with the following. In the RHBD Regional Center (see KZC Figure 92.05.A) a 10-foot perimeter landscape strip along NE 85th Street is required planted consistent with subsection (1) of this section.
- b. The hedge or wall must extend at least two (2) feet, six (6) inches, and not more than three (3) feet above the ground directly below it.
- c. The wall may be constructed of masonry or concrete, if consistent with the provisions of KZC 92.35(1)(g), in building material, color and detail, or of wood if the design and materials match the building on the subject property.
- d. In JBD zones:
 - 1) If the street is a pedestrian-oriented street, the wall may also include a continuous trellis or grillwork, at least five (5) feet in height above the ground, placed on top of or in front of the wall and planted with climbing vines. The trellis or grillwork may be constructed of masonry, steel, cast iron and/or wood.

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- 3) The modification will provide a visual screen that is comparable or superior to the buffer required by KZC 95.45; or
- 4) The modification eliminates the portion of the buffer that would divide a shared parking area serving two (2) or more adjacent uses, but provides the buffer around the perimeter of the shared parking area.

(Ord. 4238 § 2, 2010)

.47 Nonconforming Landscaping and Buffers

1. The landscaping requirements of KZC 95.41, Supplemental Plantings, KZC 95.43 Outdoor Use and Storage, KZC 95.44, Internal Parking Lot Landscaping, and KZC 95.45, Perimeter Landscape Buffering for Driving and Parking Areas, must be brought into conformance as much as is feasible, based on available land area, in either of the following situations:

- a. An increase of at least 10 percent in gross floor area of any structure; or
- b. An alteration to any structure, the cost of which exceeds 50 percent of the replacement cost of the structure.

2. Land use buffers must be brought into conformance with KZC 95.42 in either of the following situations:

- a. An increase in gross floor area of any structure (the requirement to provide conforming buffers applies only where new gross floor area impacts adjoining property); or
- b. A change in use on the subject property and the new use requires larger buffers than the former use.

(Ord. 4238 § 2, 2010)

.50 Installation Standards for Required Plantings

All required trees, ~~and~~ landscaping and soil shall be installed according to sound horticultural practices in a manner designed to encourage quick establishment and healthy plant growth. All required landscaping shall be installed in the ground and not in above-ground containers, except for landscaping required on the top floor of a structure.

When an applicant proposes to locate a subterranean structure under required landscaping that appears to be at grade, the applicant will: (1) provide site-specific documentation prepared by a qualified expert to establish that the design will adequately support the long-term viability of the required landscaping; and (2) enter into an agreement with the City, in a form acceptable to the City Attorney, indemnifying the City from any damage resulting from development activity on the subject property which is related to the physical condition of the property. The applicant shall record this agreement with the King County Recorder's Office.

1. Compliance. It is the applicant's responsibility to show that the proposed landscaping complies with the regulations of this chapter.
2. Timing. All landscaping shall be installed prior to the issuance of a certificate of occupancy, except that the installation of any required tree or landscaping may be deferred during the summer months to the next planting season, but never for more than six (6) months. Deferred installation shall be secured with a performance bond pursuant to Chapter 175 KZC prior to the issuance of a certificate of occupancy.
3. Grading. Berms shall not exceed a slope of two (2) horizontal feet to one (1) vertical foot (2:1).
4. Soil Specifications. Soils in planting areas shall have soil quality equivalent to WA State Dept. of Ecology BMP T5.13 ~~adequate porosity to allow root growth. Soils which have been compacted to a density greater than one and three-tenths (1.3) grams per cubic centimeters shall be loosened to increase~~

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~~aeration to a minimum depth of 24 inches or to the depth of the largest plant root ball, whichever is greater. Imported topsoils shall be tilled into existing soils to prevent a distinct soil interface from forming. After soil preparation is completed, motorized vehicles shall be kept off to prevent excessive compaction and underground pipe damage.~~ The soil quality in any landscape area shall comply with the soil quality requirements of the Public Works Pre-Approved Plans. See subsection (9) of this section for mulch requirements.

5. Plant Selection.

- a. Plant selection shall be consistent with the Kirkland Plant List, which is produced by the City's Natural Resource Management Team and available in the Planning and Building Department.
- b. Plants shall be selected and sited to produce a hardy and drought-resistant landscape area. Selection shall consider soil type and depth, the amount of maintenance required, spacing, exposure to sun and wind, the slope and contours of the site, and compatibility with existing native vegetation preserved on the site. Preservation of existing vegetation is strongly encouraged.
- c. Prohibited Materials. Plants listed as prohibited in the Kirkland Plant List are prohibited in required landscape areas. Additionally, there are other plants that may not be used if identified in the Kirkland Plant List as potentially damaging to sidewalks, roads, underground utilities, drainage improvements, foundations, or when not provided with enough growing space.
- d. All plants shall conform to American Association of Nurserymen (AAN) grades and standards as published in the "American Standard for Nursery Stock" manual.
- e. Plants shall meet the minimum size standards established in other sections of the KZC.
- f. Multiple-stemmed trees may be permitted as an option to single-stemmed trees for required landscaping provided that such multiple-stemmed trees are at least 10 feet in height and that they are approved by the Planning Official prior to installation.

6. Fertilization. All fertilizer applications to turf or trees and shrubs shall follow Washington State University, National Arborist Association or other accepted agronomic or horticultural standards.

7. Irrigation. The intent of this standard is to ensure that plants will survive the critical establishment period when they are most vulnerable due to lack of watering. All required plantings must provide an irrigation system, using either Option 1, 2, or 3 or a combination of those options. For each option irrigation shall be designed to conserve water by using the best practical management techniques available. These techniques may include, but not be limited to: drip irrigation to minimize evaporation loss, moisture sensors to prevent irrigation during rainy periods, automatic controllers to insure proper duration of watering, sprinkler head selection and spacing designed to minimize overspray, and separate zones for turf and shrubs and for full sun exposure and shady areas to meet watering needs of different sections of the landscape.

Exceptions, as approved by the Planning Official, to the irrigation requirement may be approved xeriscape (i.e., low water usage plantings), plantings approved for low impact development techniques, established indigenous plant material, or landscapes where natural appearance is acceptable or desirable to the City. However, those exceptions will require temporary irrigation (Option 2 and/or 3) until established.

- a. Option 1. A permanent built-in irrigation system with an automatic controller designed and certified by a licensed landscape architect as part of the landscape plan.
- b. Option 2. An irrigation system designed and certified by a licensed landscape architect as part of the landscape plan, which provides sufficient water to ensure that the plants will become established. The system does not have to be permanent if the plants chosen can survive adequately on their own, once established.

KZC 114 Low Impact Development with Proposed 2016 Edits

Chapter 114 – LOW IMPACT DEVELOPMENT

Sections:

- [114.05](#) User Guide
- [114.10](#) Voluntary Provisions and Intent
- [114.15](#) Parameters for Low Impact Development
- [114.20](#) Design Standards and Guidelines
- [114.25](#) Review Process
- [114.30](#) Additional Standards
- [114.35](#) Required Application Documentation

114.05 User Guide

This chapter provides standards for an alternative type of site development that ensures low impact development (LID) ~~principles~~~~facilities~~ are utilized to ~~reduce environmental impacts~~~~manage stormwater~~ on project sites in specified low density zones. If you are interested in proposing detached dwelling units or two (2) unit homes ~~s~~ that reduce environmental impacts or you wish to participate in the City's decision on a project including this type of site development, you should read this chapter.

(Ord. 4350 § 1, 2012)

114.10 Voluntary Provisions and Intent

The provisions of this chapter are available as alternatives to the development of typical lots in low density zones. In the event of a conflict between the standards in this chapter and the standards in Chapters [15](#), 17 or 18 KZC, the standards in this chapter shall control except for the standards in Chapters [83](#) and [141](#) KZC.

The goal of LID is to conserve and use existing natural site features, to integrate small-scale stormwater controls, and to prevent measurable harm to streams, lakes, wetlands, and other natural aquatic systems from development sites by maintaining a more hydrologically functional landscape. LID may not be applicable to every project due to topography, high groundwater, or other site specific conditions.

The LID requirements in this code do not exempt an applicant from stormwater flow control and water quality treatment development requirements. LID facilities are part of ~~can be counted toward~~ those requirements, and

in some cases may ~~be all that is required. meet the requirements without traditional stormwater facilities (pipes and vaults).~~

The purpose of this chapter is to allow flexibility, establish the development guidelines, requirements and standards for ~~LID low impact development~~ projects. Because all projects are required to use ~~some form of LID principle techniques~~ and facilities ~~/best management practices (BMPs)~~ as feasible, the use of LID techniques does not necessarily fulfill all the requirements for a LID project. This chapter is intended to fulfill the following purposes:

- ~~34.~~ Manage stormwater through a land development strategy that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic predevelopment hydrologic conditions.
- ~~12.~~ Encourage creative and coordinated site planning, the conservation of natural conditions and features, the use of appropriate new technologies and techniques, and the efficient layout of streets, utility networks and other public improvements.
- ~~43.~~ Minimize impervious surfaces.
- ~~24.~~ Encourage the creation or preservation of permanent forested open space.
5. Encourage development of residential environments that are harmonious with on-site and off-site natural and built environments.
6. Further the goals and the implementation of the policies of the Comprehensive Plan.

(Ord. 4350 § 1, 2012)

114.15 Parameters for Low Impact Development

These standards and incentives address the portion of the project site utilizing the LID principles ~~stormwater techniques and facilities to meet applicable stormwater requirements~~. The remainder of the project site must comply with underlying zoning and ~~conventional~~ stormwater ~~development regulations~~ requirements. Please refer to KZC [114.30](#) and [114.35](#) for additional requirements related to these standards.

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| | <ul style="list-style-type: none">• <u>Detached dwelling units</u>. |
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| | |
|-------------------------------|---|
| Permitted Housing Types | <ul style="list-style-type: none"> • <u>Accessory dwelling units</u>. • 2/3 unit homes. |
| Minimum <u>Lot Size</u> | <ul style="list-style-type: none"> • Individual <u>lot sizes</u> must be at least 50% of the minimum <u>lot size</u> for the underlying zone. |
| Minimum Number of Lots | <ul style="list-style-type: none"> • 4 lots. |
| Maximum Density | <ul style="list-style-type: none"> • As defined in underlying zone's <u>Use Zone</u> Chart or Density/Dimensions Table. • Bonus density is calculated by multiplying number of lots or units by 0.10. If a fraction of 0.5 or higher is obtained then round to the next whole number. |
| <u>Low Impact Development</u> | <ul style="list-style-type: none"> • <u>LID principles and facilities/BMP techniques</u> must be employed to control stormwater runoff generated from 50% of all hard surfaces <u>as feasible</u>. This includes all vehicular and pedestrian access. <u>LID facilities/BMPs</u> must be designed according to Public Works stormwater <u>development regulations</u> as stated in Chapter <u>15.52</u> KMC. |
| Locations | <p>Allowed in low density <u>residential zones</u> with the exception of the following: PLA 16, PLA 3C, RSA 1, RSA 8, or the RS 35 and RSX 35 zones in the Bridle Trails neighborhood north and northeast of the Bridle Trails State Park, and the Holmes Point Overlay zone. Any property or portion of a property with shoreline jurisdiction must meet the regulations found in Chapter <u>83</u> KZC, including minimum <u>lot size</u> or units per acre and lot coverage.</p> |
| Review Process | <ul style="list-style-type: none"> • Short plats shall be reviewed under KMC <u>22.20.015</u> and subdivisions shall be reviewed under KMC <u>22.12.015</u>. • Condominium projects shall be reviewed under KZC 145, Process I. |
| Parking Requirements | <ul style="list-style-type: none"> • 2 stalls per <u>detached dwelling unit</u>. • 1 stall per <u>accessory dwelling unit</u>. • 1.5 stalls per unit in multi-unit home, rounded to next whole number. • See KZC <u>105.20</u> for guest parking requirements. • Parking pad width required in KZC <u>105.47</u> may be reduced to 10 feet. • Parking pad may be counted in required parking. • Tandem parking is allowed where stalls are shared by the same <u>dwelling unit</u>. • Shared garages in separate tract are allowed. |

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| | <ul style="list-style-type: none"> • All required parking must be provided on the <u>LID</u> project site. |
| Development Type | <ul style="list-style-type: none"> • Subdivision. • Condominium. |
| Minimum <u>Required Yards</u> (from exterior <u>property lines</u>) | <ul style="list-style-type: none"> • 20 feet for all front yards. • 10 feet for all other <u>required yards</u>. |
| Minimum <u>Required Yards</u> (from internal <u>property lines</u>) | <ul style="list-style-type: none"> • Front: 10 feet. • Option: Required front yard can be reduced to 5 feet, if required rear yard is increased by same amount of front yard reduction. • Side and rear: 5 feet. • Zero lot line for 2/3 unit homes between internal units. |
| Front Porches | <ul style="list-style-type: none"> • Must comply with KZC 115.115(3)(n), except that front entry porches may extend to within 5 feet of the interior required front yard. |
| Garage Setbacks | <ul style="list-style-type: none"> • Must comply with KZC 115.43, except that attached garages on <u>front facade</u> of <u>dwelling unit</u> facing internal front <u>property line</u> must be set back 18 feet from internal front <u>property line</u>. |
| Lot Coverage (all impervious surfaces) | <ul style="list-style-type: none"> • <u>Maximum lot coverage</u> is the <u>maximum lot coverage</u> percentage of the underlying zone and may be aggregated. |
| Required Common <u>Open Space</u> (RCOS) | <ul style="list-style-type: none"> • Minimum of 40%. • Must preserve Native and undisturbed vegetation is preferred. • Allowance of 1% of required common <u>open space</u> for shelters or other recreational structures. • Paths connecting and within required common <u>open space</u> to development must be pervious. • Landscape greenbelt <u>easement</u> is required to protect and keep required common <u>open space</u> undeveloped in perpetuity. |
| Maximum Floor Area ^{1,2} | <ul style="list-style-type: none"> • Maximum floor area is 50% of the minimum <u>lot size</u> of the underlying zone. |

Footnotes:

1. The maximum floor area for LID projects does not apply within the disapproval jurisdiction of Houghton.
2. The maximum floor area for LID projects in RS 35 and RSX 35 zones is 20 percent of the minimum lot size of the underlying zone.

(Ord. 4476 § 3, 2015; Ord. 4437 § 1, 2014; Ord. 4350 § 1, 2012)

114.20 Design Standards and Guidelines

1. Required Low Impact Development Stormwater Principles and Facilities/BMPs – Low impact development (LID) ~~stormwater facilities shall be designed to control stormwater runoff from 50 percent of all hard surfaces created within the LID portion of the project site. This includes all vehicular and pedestrian access.~~ LID facilities/BMPs shall be designed according to Public Works stormwater development regulations, as stated in KMC 15.52.060. The maintenance of LID facilities shall be maintained in accordance with requirements in KMC 15.52.120. The proposed site design shall incorporate the use of LID strategies to meet stormwater management standards. LID is a set of techniques that mimic natural watershed hydrology by slowing, evaporating/transpiring, and filtering water, which allows water to soak into the ground closer to its source. The design should seek to meet the following objectives:
 - a. Preservation of natural hydrology.
 - b. Reduced impervious surfaces.
 - c. Treatment of stormwater in numerous small, decentralized structures.
 - d. Use of natural topography for drainage ways and storage areas.
 - e. Preservation of portions of the site in undisturbed, natural conditions.
 - f. Restoration of disturbed sites.
 - g. Reduction of the use of piped systems. Whenever possible, site design shall use multifunctional open drainage systems such as rain gardens, vegetated swales or filter strips that also help to fulfill landscaping and open space requirements.

2. Required Common Open Space – Required common open space shall support and enhance the project's LID stormwater facilities/BMPs; secondarily to provide a sense of openness, visual relief, and community for low impact development projects.

a. The minimum percentage for required common open space is 40 percent and is calculated using the size of the LID portion of the project site. Wetland and streams shall not be included in the calculation. The required common open space must be located outside of wetlands and streams, and may be developed and maintained to provide for passive recreational activities for the residents of the development as allowed in Chapter 90 KZC.

b. Conventional ~~surface storm~~water management facilities such as vaults and tanks shall not be ~~located~~limited within required common open space areas unless there is no other feasible alternative placement for stormwater facilities and shall be placed underground at a depth to sufficiently allow landscaping to be planted on top of them. ~~Low impact development (LID) facilities/BMPs~~features are permitted, provided they do not adversely impact access to or use of the required common open space for passive recreation. Neither conventional nor LID stormwater facilities can result in the removal of healthy native trees, unless a positive net benefit can be shown and there is no other alternative for the placement of stormwater facilities. The Public Works Director must approve locating conventional stormwater facilities within the required common open space.

c. Existing native vegetation, forest litter and understory shall be preserved to the extent possible in order to reduce flow velocities and encourage sheet flow on the site. Invasive species, such as Himalayan blackberry, must be removed and replaced with native conifers and plants (see Kirkland Native Tree and -Plant List). Undisturbed native vegetation and soil shall be protected from compaction during construction. A restoration plan that achieves 80% coverage within two (2) years must be included with the applicant's submittal.

d. If no existing native vegetation, then applicant may propose a restoration plan to achieve 80% coverage within two (2) years that shall include all native conifer and plant species (see Kirkland Native Tree and Plant List). No new lawn is permitted and all improvements installed must be of pervious materials.

- e. Vegetation installed in required common open space areas shall be designed to allow for access and use of the space by all residents, and to facilitate maintenance needs. However, existing mature trees should be retained.

(Ord. 4437 § 1, 2014; Ord. 4350 § 1, 2012)

114.25 Review Process

1. Approval Process – Low Impact Development Projects

- a. The City will review and process an application for a LID project concurrent with and through the same process as the underlying subdivision proposal (Process I, Chapter 145 KZC for short plats; Process IIA, Chapter 150 KZC for subdivisions). However, public notice for LID projects shall be as set forth under the provisions of Chapter 150 KZC (Process IIA). A Process I and site plan review will be required for projects that use a condominium ownership structure and do not subdivide the property into individually platted lots.
- b. Lapse of Approval – Unless otherwise specified in the decision granting Process I approval, the applicant must begin construction or submit to the City a complete building permit application for development of the subject property consistent with the Process I approval within four (4) years after the final decision granting the Process I approval or that decision becomes void. The applicant must substantially complete construction consistent with the Process I approval and complete all conditions listed in the Process I approval decision within six (6) years after the final decision on the Process I approval or the decision becomes void. “Final decision” means the final decision of the Planning Director.

2. Approval Process – 2/3 Unit Homes – The City will review and process a LID project application that includes a 2/3 unit home with an additional land use process as follows:

- a. One 2/3 unit home requires a Planning Official ~~Process I~~ review.
- b. More than one 2/3 unit home requires a Process ~~IIA~~ review.

3. Approval Process – Requests for Modifications to Standards

- a. Minor Modifications – Applicants may request minor modifications to the general parameters and design standards set forth in this chapter. The Planning Director under a

Process I, Chapter [145](#) KZC or Hearing Examiner under Process IIA, Chapter [150](#) KZC may modify the requirements if all of the following criteria are met:

- 1) The site is constrained due to unusual shape, topography, easements or sensitive areas; and
- 2) The modification is consistent with the objectives of this chapter; and
- 3) The modification will not result in a development that is less compatible with neighboring land uses.

(Ord. 4350 § 1, 2012)

114.30 Additional Standards

1. The City's approval of a low impact development project does not constitute approval of a subdivision or short plat. An applicant wishing to subdivide in connection with a development under this chapter shall seek approval to do so concurrently with the approval process under this chapter.
2. To the extent there is a conflict between the standards set forth in this chapter and Title 22 of the Kirkland Municipal Code, the standards set forth in this chapter shall control.

(Ord. 4350 § 1, 2012)

114.35 Required Application Documentation

1. Site assessment documents to be submitted with application include:
 - a. Survey prepared by a registered land surveyor or civil engineer.
 - b. Location of all existing and proposed lot lines and easements.
 - c. Location of all sensitive areas, including lakes, streams, wetlands, flood hazard areas, and steep slope/erosion hazard areas.
 - d. Landscape plan showing existing and proposed trees and other vegetation. The plan must show that the Required Common Open Space to be restored or augmented will be planted with Native Conifers and native plants to achieve 80% coverage within two (2) years.
2. Soil report prepared by a licensed civil engineer, geotechnical engineer, or engineering geologist.

3. Stormwater drainage report/technical information report.

(Ord. 4350 § 1, 2012)

115.90 Calculating Lot Coverage

1. General – The area of all structures and pavement and any other impervious surface on the subject property will be calculated as a percentage of total lot area. If the subject property contains more than one (1) use, the maximum lot coverage requirements for the predominant use will apply to the entire development. Lot area not calculated under lot coverage must be devoted to open space as defined in KZC [5.10.610](#).

2. Exceptions

- a. An access easement or tract that is not included in the calculation of lot size will not be used in calculating lot coverage for any lot it serves or crosses.
- b. Pervious areas below eaves, balconies, and other cantilevered portions of buildings.
- c. Landscaped areas at least two (2) feet wide and 40 square feet in area located over subterranean structures if the Planning Official determines, based on site-specific information submitted by the proponent and prepared by a qualified expert, soil and depth conditions in the landscaped area will provide cleansing and percolation similar to that provided by existing site conditions.

d. Rockeries and retaining walls, unless located adjacent to or within twelve (12) inches of another impervious surface such as a patio, building or parking area.

~~d.e.~~ Public sidewalk if located within a public easement on private property.

3. Exemptions – The following exemptions will be calculated at a ratio of 50 percent of the total area covered. Exempted area shall not exceed an area equal to 10 percent of the total lot area. Installation of exempted surfaces shall be done in accordance with the current adopted stormwater design manual.

- a. Permeable pavement (non-grassed).
- b. Grassed modular grid pavement.
- c. Open grid decking over pervious area.
- d. Pervious surfaces in compliance with the stormwater design manual adopted in KMC [15.52.060](#).

PUBLICATION SUMMARY
OF ORDINANCE O-4547

AN ORDINANCE OF THE CITY OF KIRKLAND RELATING TO ZONING, PLANNING, AND LAND USE AND AMENDING CHAPTERS 95, 114 and 115 OF THE KIRKLAND ZONING CODE REGARDING STORMWATER LOW IMPACT DEVELOPMENT PRINCIPLES AND REQUIREMENTS AND APPROVING A SUMMARY ORDINANCE FOR PUBLICATION, FILE NO. CAM16-02154.

SECTION 1. Provides amendments related to tree management and required landscaping, low impact development and lot coverage exceptions in Chapters 95, 114 and 115 of the Kirkland Zoning Code.

SECTION 2. Provides a severability clause for the ordinance.

SECTION 3. Provides that the effective date of the ordinance is affected by the disapproval jurisdiction of the Houghton Community Council.

SECTION 4. Authorizes publication of the ordinance by summary, which summary is approved by the City Council pursuant to Kirkland Municipal Code Section 1.08.017 and establishes the effective date as January 1, 2017.

SECTION 5. Establishes certification by City Clerk and notification of King County Department of Assessments.

The full text of this Ordinance will be mailed without charge to any person upon request made to the City Clerk for the City of Kirkland. The Ordinance was passed by the Kirkland City Council at its meeting on the 13th day of December, 2016.

I certify that the foregoing is a summary of Ordinance O-4547 approved by the Kirkland City Council for summary publication.



City Clerk

ORDINANCE O-4542

AN ORDINANCE OF THE CITY OF KIRKLAND RELATING TO STREET AND CURB CUTTING SPECIFICATIONS AND AMENDING SECTION 19.12.130 OF THE KIRKLAND MUNICIPAL CODE, FILE NO. CAM16-02154.

1 WHEREAS, the City Council has received a recommendation from
2 the Kirkland Planning Commission to amend Kirkland Municipal Code
3 (KMC), Title 22, Subdivisions, as set forth in the report and
4 recommendation of the Planning Commission dated October 24, 2016,
5 and bearing Kirkland Planning and Building Department File No. CAM16-
6 02154; and
7

8 WHEREAS, prior to making the recommendation to amend Title
9 22, Subdivisions, the Kirkland Planning Commission, following notice as
10 required by KMC 22.04.050, held a public hearing on October 24, 2016
11 on the amendment proposals and considered the comments received at
12 the hearing; and
13

14 WHEREAS, prior to making the recommendation to amend Title
15 22, Subdivisions, the Houghton Community Council, following notice,
16 held a courtesy hearing on October 24, 2016, on the amendment
17 proposals and considered the comments received at the hearing; and
18

19 WHEREAS, pursuant to the State Environmental Policy Act
20 (SEPA), there has accompanied the legislative proposal and
21 recommendation through the entire consideration process, a SEPA
22 Addendum to Existing Environmental Documents issued by the
23 responsible official pursuant to WAC 197-11-625; and
24

25 WHEREAS, in regular public meeting the City Council considered
26 the environmental documents received from the responsible official.
27

28 NOW, THEREFORE, the City Council of the City of Kirkland do
29 ordain as follows:
30

31 Section 1. Section, 19.12.130 of the Kirkland Municipal Code is
32 amended to read as follows:
33

34 **19.12.130 Specifications.**

35 The public works director approves full engineering pre-approved plans
36 and policies for all street and utility improvements constructed within
37 the City of Kirkland. The applicant shall comply with these standards
38 and specifications for all improvements in the right-of-way. These
39 standards and specifications are available for public inspection in the
40 Public Works Department during regular business hours or online at
41 www.kirklandwa.gov.

42 ~~All work shall conform to the requirements of "Standard Specifications~~
43 ~~for Municipal Public Works Construction," 1977 Edition, prepared by~~
44 ~~Washington State Chapter, American Public Works Association, copies~~
45 ~~of which are on file with the city and available to the general public.~~

46 ~~Exception: Only Standard Plan No. 10 concrete driveways type D,~~
47 ~~alternate 1 or 2, on page VII 11 of the above standards are permitted~~
48 ~~for driveways. A specific alternate may be required by the public service~~
49 ~~department after the preconstruction inspection~~

50 Section 2. This ordinance shall be in force and effect on January
51 1, 2017 after its passage by the Kirkland City Council and publication,
52 as required by law.

53
54 Passed by majority vote of the Kirkland City Council in open
55 meeting this 15th day of November, 2016.

56
57 Signed in authentication thereof this 15th day of November,
58 2016.



MAYOR

Attest:


City Clerk

Approved as to Form:

Publication Date: November 21, 2016


City Attorney