CITY OF KIRKLAND
Planning and Community Development Department
123 Fifth Avenue, Kirkland, WA 98033 425.587.3225
www.kirklandwa.gov

KIRKLAND 2035 | YOUR VOICE. YOUR VISION. YOUR FUTURE.

MEMORANDUM

Date: **October 15, 2014**

To: **Planning Commission**

From: **David Barnes, Associate Planner**
Paul Stewart AICP, Deputy Planning Director
Eric Shields AICP, Planning Director

Subject: **Comprehensive Plan Update, File No. CAM13-00465, #5**

This memo addresses the following Comprehensive Plan Update topics:
- Environment Element Goals and Policy Direction

I. RECOMMENDATION

Review the goals and preliminary policies and provide direction to staff on the preliminary policy direction that will guide Comprehensive Plan policy development.

Based on Planning Commission direction, staff will bring back draft policies of the Environment Element in the near future. Note however, that the element will continue to be shaped by the following ongoing processes:

- **Neighborhood Plan Discussions**
- **Public Input**

II. BACKGROUND DISCUSSION

Staff presented an issue memo to the Planning Commission on September 11, 2014 and asked for preliminary revisions to the Natural Environment Element. At that meeting the Commission agreed on the preliminary Concept section of the Element and gave direction on 13 issues as noted in the memo.

III. COMPARISON OF EXISTING GOALS AND PROPOSED GOALS

The following table shows the existing goals as shown in the current element and also provides a side by side comparison of the proposed goals. There are five goals in the current element and six are proposed in the revised element.

Existing Goals	Proposed Goals
Managing the Natural Environment **Goal NE-1: Protect natural systems and features from the potentially negative impacts of human activities, including, but not limited to, land development.**	**Managing the Environment (REVISED)** **Goal E-1: Protect and enhance Kirkland's natural systems and features.**
Natural Water Systems **Goal NE-2: Manage the natural and built environments to achieve no net loss of the functions and values of each drainage basin; and, where possible, to enhance and restore functions, values, and features. Retain lakes, ponds, wetlands, and streams and their corridors substantially in their natural condition.**	**Moved Goal NE-2 for policy consideration under Proposed Goal NE-1**
Vegetation **Goal NE-3: Manage the natural and built environments to protect and, where possible, to enhance and restore vegetation**	**Trees and Vegetation (REVISED)** **Goal E-2:** **Protect, enhance and restore vegetation in the natural and built environments.**
Soils and Geology **Goal NE-4: Manage the natural and built environment to maintain or improve soils/geologic resources and to minimize risk to life and property.**	**Soils and Geology (REVISED)** **Goal E-3: Manage the environment to maintain or improve soils/geologic resources and to minimize risk to life and property.**
Air **Goal NE-5: Improve air quality and reduce Kirkland's contribution to climate change.**	**Built Environment(NEW)** **Goal E–4: Manage the built environment to reduce waste, enhance resources and increase energy efficiency.**
	Climate Change (NEW) **Goal E-5: Pursue carbon neutrality by 2050 to greatly reduce the impacts of climate change.**
	Healthy Food Community (NEW) **Goal E-6: Support and encourage a local food economy.**

IV. POLICY DIRECTION

This section illustrates the existing policies of the element (in italics) and the preliminary policy direction for revised and new policies. For reference, the policies that are required for compliance with the King County County-wide Planning Policies and PRSC Vision 2040 are also shown. All of the policies are organized under the six revised goals as shown in the table in this memo. Attachment 2 is the current adopted Natural Environment Chapter for background and reference.

1. Natural Environment (REVISED)

Goal E-1: *Protect and enhance Kirkland's natural systems and features.*

Existing Policy

Policy NE-1.1: Use a system-wide approach to effectively manage environmental resources. Coordinate land use planning and management of natural systems with affected State, regional, and local agencies as well as affected federally recognized tribes

Policy NE-1.3: Use a variety of techniques to manage activities affecting air, vegetation, water, and the land to maintain or improve environmental quality, to preserve fish and wildlife habitat, to prevent degradation or loss of natural features and functions, and to minimize risks to life and property.

Policy NE-1.4: Proactively pursue restoration or enhancement of the natural environment. In addition, require site restoration if land surface modification violates adopted policy or development does not ensue within a reasonable period of time.

Policy NE-1.5: Provide to all stakeholders information concerning natural systems and associated programs and regulations. Work toward creating a culture of stewardship by fostering programs that support sound practices, such as low impact development and sustainable building techniques. Model good stewardship techniques in managing trees, streams, wetlands, shorelines and other natural features and systems in the public realm.

Policy NE-1.8: Minimize human impacts on habitat areas.

Policy NE-2.1: Using a watershed-based approach, apply best available science in formulating regulations, incentives, and programs to maintain and, improve the quality of Kirkland's water resources.

Policy NE-2.2: Protect surface water functions by preserving and enhancing natural drainage systems wherever possible.

Policy NE-2.3: Comprehensively manage activities that may adversely impact surface and ground water quality or quantity.

Policy NE-2.4: Improve management of stormwater runoff from impervious surfaces by employing low impact development practices through City projects, incentive programs, and development standards.

Policy NE-2.5: Preserve the natural flood storage function of 100-year floodplains. emphasize nonstructural methods in planning for flood prevention and damage reduction.

Policy NE-2.6: Regulate development of land along the shoreline of Lake Washington to:

- ***Preserve natural systems and maintain and improve the ecological functions of the water and shorelines;***
- ***Avoid natural hazards;***
- ***Promote visual and physical access to the water;***
- ***Provide recreational opportunities;***
- ***Preserve navigation rights; and***
- ***Minimize the creation of and reduce existing armored shorelines, overwater and in water structures.***

Policy NE-2.7: Support regional watershed conservation efforts.

Preliminary Policy Direction

Introduction

The "Managing the Natural Environment" and the "Natural Water System" policies have been combined under one heading that is named the Natural Environment section because the policies all discuss protecting natural systems and features. The proposed polices below further the protection and enhancement of streams, wetlands and Lake Washington.

- **Manage the natural and built environments to achieve no net loss of the functions and values of each drainage basin; and, where possible, to enhance and restore functions, values, and features.**
- **Retain lakes, ponds and streams in their corridors substantially in their natural condition.**
- **Retrofit existing impervious surfaces for water quality treatment and look for opportunities to provide regional facilities.**
- **Provide resources to respond to spills and dumping of materials that are impactful to the environment.**
- **Prioritize removing fish passage barriers for public projects.**
- **Daylighting and fish passable barriers.**
- **Make allowances for connections between existing streams and their floodplain to increase floodplain storage.**

- **Update Natural Resource Management Plan on a regular schedule (e.g. every 5 years).**

Compliance with King County County-wide Planning Policy and PSRC Vision 2040

- Wildlife Corridors
- Urban Separators
- Add other species besides salmon for Endangered Species listing (MPP-En-10)

2. TREES & VEGETATION (REVISED)

Goal E-2: Protect, enhance and restore trees and vegetation in the natural and built environment.

Existing Policy

Policy NE-3.1: Maintain Kirkland's tree cover to 40 percent and strive for higher tree cover

Policy NE-3.2: Preserve healthy mature native vegetation whenever feasible.

Policy NE-3.3: Ensure that regulations, incentives, and programs maximize the potential benefits of landscaping.

Preliminary Policy Direction

Introduction

The City has recently adopted the Urban Forestry Strategic Management Plan. This plan has helped inform and guide the development of the policies in this section. Particularly, it is understood that there is a need for policies that ensure the periodic assessment of Kirkland's urban forest so that it can continue to provide the benefits for future generations.

- **Maintain Kirkland's overall 40 percent tree canopy.**
- **Strive to achieve a healthy, resilient urban forest that contains a diverse mix of suitable tree species and uneven ages in order to maximize the benefits of trees over a long term horizon.**
- **Protect and enhance Kirkland's urban forest, an integrated natural resource, through a balanced approach.**
- **Establish standards for tree retention and protection and provide flexibility and incentives for site development.**
- **Implement Urban Forest Strategic Management Plan.**

- **Inventory public trees for proactive tree maintenance.**
- **Assess the environmental benefits of Kirkland's urban forest.**
- **Conduct canopy cover assessments at least every 10 years.**
- **Dedicate resources for outreach/education.**
- **Take steps towards attaining a healthy, safe and sustainable urban forest.**
- **Provide for required landscaping standards in the built environment.**

Compliance with King County County-wide Planning Policy and PSRC Vision 2040:

- Preserve and restore native vegetation to protect habitat (MPP-En-12)

3. SOILS AND GEOLOGY (REVISED)

Goal E - 3: Enhance and restore the natural and built environment to maintain or improve soils and geologic resources and to minimize risk to life and property.

Existing Policy

Policy NE-4.1: Require standards to ensure sound soil management practices.

Policy NE-4.2: Update policies and regulations for geologic hazard areas in light of the new watershed conservation plan

Policy NE-4.3: Retain vegetation where needed to stabilize slopes.

Introduction

The existing Natural Environment Element goals and policies address the management of soil and geologic resources to promote public safety and minimize risk to life and property. This section provides the basis for the City's development standards in Chapter 85 of the Zoning Code (Geologically Hazardous Areas). In response to SR 530 landslide last March, Governor Inslee formed a joint commission to review the incident and provide recommendations on lessons learned, technical needs or proposed changes to policies, codes or procedures. The report is due by December 15, 2014.

Many areas of the City have steep slopes and ravines subject to erosion and hazardous conditions (earthquakes or landslides). The City has maps in the Comprehensive Plan that show the general location of landslide and seismic hazard areas (Figure NE-2) although there is more current data for the pre-annexation area of the City. Staff is currently requesting funding to

update these maps and review the zoning code standards as part of the update to the Critical Area Regulations to begin sometime in 2015.

Staff is proposing some updated revisions to the policies in this section as noted below. This is a preliminary direction with anticipated changes possible after the first of the year as a result of the Landslide Commission report.

Preliminary Policy Direction

- **Promote sound soil best management practices through standards, regulations and programs to limit erosion and sedimentation and protect water quality.**

- **Avoid or minimize potential impacts to life and property from landslide and seismic hazard areas.**

- **Require appropriate analysis, sound engineering principles and best management practices for development in or adjacent to geologically hazard areas.**

- **Utilize current and best available science and data for seismic and landslide area mapping and analysis and related codes to protect life and property.**

- **Retain vegetation to help stabilize slopes.**

Compliance with King County County-wide Planning Policy and PSRC Vision 2040:

- Maintain and improve soils and natural systems (MPP-En-3)
- Locate development in a manner that minimizes impacts to natural features (MPP-En-5)
- Use scientific information when establishing environmental standards (Mpp-En-6)

4. BUILT ENVIRONMENT (NEW)

Goal E – 4: Manage the built environment to reduce waste, prevent pollution, enhance resources and increase energy efficiency.

Existing Policy

Policy NE-1.6: Encourage sustainable building and low impact development practices in public and private development.

Policy NE-1.7: Encourage reduction, reuse, and recycling in order to reduce the waste stream and save energy

Preliminary Policy Direction

Introduction

The "Built Environment" section goal and polices have been separated from the "Natural Environment" section so that a focus could be placed on policies that relate specifically to how the built environment influences the health and quality of the water, air, and soil and focuses on reducing the impacts to natural resources.

Specific attention has been given to sustainable development practices such as building and low impact development techniques that will help lead Kirkland to a more livable community where the economy and the environment are in balance.

- **Incentivize and expand city programs that promote sustainable building certifications.**
- **Design, build and certify public projects to a high level of sustainability standards.**
- **Utilize life cycle cost assessment for public projects for the benefit of the built and natural environment.**
- **Employ Low Impact Development techniques to manage stormwater onsite.**
- **Pursue 100% use of a combination of reclaimed, harvested, grey and black water for the community's needs.**
- **Work with regional partners to achieve 70% recycling rate by 2020 and net zero waste by 2030.**
- **Improve the natural and built environments by prohibiting toxins into the air, water and soil.**
- **Promote preservation and adaptive reuse of structures.**
- **Utilize green infrastructure in public projects.**
- **Promote public health.**
- **Promote green business in Kirkland and the use of the JUST Label and Declare label developed by the International Living Future Institute.**

Compliance with King County County-wide Planning Policy and PSRC Vision 2040

- Add section on ensuring that residents regardless of social or economic status live in a healthy environment with minimal exposure to pollution (MPP-En-4)
- Add section to reduce use of pesticides and chemical fertilizers to minimize risks to human health and the environment, and promote alternatives. (MPP-En-15)
- Add section on construction of healthy buildings and facilities (MPP-DP-44 to 47)

5. CLIMATE CHANGE (NEW)

Goal E – 5: Target Carbon neutrality by 2050 to greatly reduce the impacts of climate change.

Existing Policy

Policy NE-5.1: Continue and enhance current actions to improve air quality and reduce greenhouse gas emissions.

Policy NE-5.2: Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.

Preliminary Policy Direction

Introduction

Air and Climate were previously combined under one section. Most of the existing content discussed Kirkland's Climate Protection action plan and emission reduction targets. A policy regarding contaminants in the air has been inserted into the Built Environment section which allows a new Climate Change section to be created.

There has been a tremendous amount of regional collaborative work with the King County Climate Change Collaborative (K4C) that is helping inform staff of the steps need to achieve our City's climate change goals and the larger regional goals. The Joint County-City Climate Commitments, Attachment 1, referenced below is being presented to City Council on October 21st 2014 for the Mayor's signature. These commitments require that specific actions are done periodically to measure and to help achieve our climate change goals in coordination with King County and signatory cities.

- **Update current Climate Protection Action Plan.**

- **Reduce emissions of carbon dioxide and other climate changing greenhouse gasses by funding and implementing strategies in Kirkland's Climate Protection Action Plan.**

- **Pursue 100% renewable energy use by 2050.**

- **Continue participation in regional collaborations such as King County Climate Change Collaborative (K4C).**

- **Pursue principles, pathways and policy as described in K4C Letter and Joint County-City Climate Commitments (See Attachment 1).**

- **Align City greenhouse gas emission targets with new County-wide targets.**

Compliance with King County County-wide Planning Policy and PSRC Vision 2040

- Add section to identify and address impacts of climate change on region's hydrological system (MPP-En-16)
- Add sections on climate change to address City's Climate Protection Action Plan and reduction in building energy use, develop energy management technology, energy efficiency, conservation and alternative energy sources and impact of climate change on regional water sources. Expand Climate change discussion (MPP-En-21 thru En-23 and En-25).

6. HEALTHY FOOD COMMUNITY (NEW)

***Goal E-6: Support and encourage a local food economy*.**

Preliminary Policy Direction

Introduction

This is a new section and a topic that is required to be addressed for compliance with County-wide Planning Policy and PRSC Vision 2040. However, making provisions to ensure a healthy food economy at the local level so that all citizens have access to healthy food now in the future is another component of a sustainable and livable community that was not previously given policy support.

- **Expand the local food economy by supporting urban and community farming, buying locally produced food and by participating in the Farm City Roundtable forum.**

- **Ensure Healthy Food Access.**
- **Reduce Environmental impacts of food production.**
- **Ensure Food availability.**

Compliance with King County County-wide Planning Policy & PSRC Vision 2040

- Add policy on supporting local food production, such as urban farming, community gardens, aquatic foods and year around farmer's markets.(MPP-DP-45 and 47)

Attachments:

1. Joint City/County Climate Change Commitments
2. Existing Natural Environment Element

Joint Letter of Commitment: Climate Change Actions in King County

Climate change is a paramount challenge of this generation and has far-reaching and fundamental consequences for our economy, environment, public health, and safety.

Across King County and its cities, we are already experiencing the impacts of climate change: warming temperatures, acidifying marine waters, rising seas, decreasing mountain snowpack, and less water in streams during the summer. These changes have the potential for significant impacts to public and private property, resource based economies like agriculture and forestry, and to residents' health and quality of life.

The decisions we make locally and regionally, such as where our communities will grow and how they will be served by transportation, will set the stage for success or failure in reducing carbon pollution, making sound long-term investments, and ensuring our communities are livable and resilient to climate change impacts.

Current science indicates that to avoid the worst impacts of global warming we need to reduce global greenhouse gas emissions sharply. The King County Growth Management Planning Council – a formal body of elected officials from across King County - voted unanimously on July 23, 2014 to adopt a shared target to reduce countywide sources of greenhouse gas (GHG) emissions, compared to a 2007 baseline, by 25% by 2020, 50% by 2030, and 80% by 2050. Based on our shared assessment of emissions in King County, and review of potential strategies to reduce emissions, we believe that these targets are ambitious but achievable.

Building on the work of the King County-Cities Climate Collaboration (K4C) - a partnership between the County and cities to coordinate and enhance local government climate and sustainability efforts – more than a dozen cities and the County came together in the first half of 2014 to chart opportunities for joint actions to reduce GHG emissions and accelerate progress towards a clean and sustainable future.

The attached ***Principles for Collaboration*** and ***Joint County-City Climate Commitments*** are focused on practical, near-term, collaborative opportunities between cities and King County. These shared commitments build on the significant work that many of our cities and County are already taking. By signing this letter, we pledge our support for the shared vision that these principles and actions represent. Our cities commit to actively pursue those strategies and catalytic actions where our jurisdictions can make the most impact given our size, location, and development patterns.

Through focused, coordinated action, we will maximize the impact of our individual and shared efforts.

PRINCIPLES FOR COLLABORATION

1. Climate change is the paramount challenge of our generation, and has fundamental and far-reaching consequences for our economy, environment, and public health and safety.

2. Strong action to reduce GHG emissions is needed, and the time is now.

3. Local governments can reduce greenhouse gas (GHG) emissions through many decisions related to transportation and land use, energy and green building, forests and farms, and consumption and materials management.

4. Many cities in King County have set individual climate goals and are taking steps to reduce local GHG emissions, and we need to build on this leadership.

5. Local solutions need to be implemented in ways that build a cleaner, stronger and more resilient regional economy.

6. Progress will require deeper engagement with communities of color and low income, immigrant, and youth populations. These communities can be more vulnerable to the impacts of climate change–from increasing flood risks to rising costs of fossil fuels – and historically less likely to be included in community-scale solutions or as leaders. We are committed to work in ways that are fair, equitable, empowering, and inclusive and that also ensure that low income residents do not bear unfair costs of solutions.

7. Federal and state policies and laws can help us achieve our goals, but countywide and local policy, programs and partnerships are needed to fill the existing gap to achieve local GHG targets.

8. Progress will require deep partnerships between the County, cities, utilities, businesses, nonprofit organizations, and other public sector agencies.

9. King County and nine cities have formed the King County-Cities Climate Collaboration (K4C), and we will work to build on this initial pledge, both in increased action and increased participation from additional cities.

10. We can accomplish more with a shared vision and coordinated action; collaboration will increase the efficiency of our efforts and magnify the impact of our strategies beyond what each of us could achieve on our own.

11. Our cities support the shared vision that the Joint County-City Climate Commitments represent, but it is not the intention that each city will pursue every catalytic action. Cities and King County will actively pursue strategies where they have the most impact and influence.

12. We will reconvene at least annually to share progress. We also dedicate a staff point person from our cities and from the County to help coordinate implementation of the following Joint County-City Climate Commitments, and to serve as a point person to the K4C.

JOINT COUNTY-CITY CLIMATE COMMITMENTS

I. Shared Goals

Pathway: Adopt science-based countywide GHG reduction targets that help ensure the region is doing its part to confront climate change.

Catalytic Policy Commitment: Collaborate through the Growth Management Planning Council, Sound Cities Association, and other partners to adopt countywide GHG emissions reduction targets, including mid-term milestones needed to support long-term reduction goals.

Catalytic Project or Program: Build on King County's commitment to measure and report on countywide GHG emissions by sharing this data between cities and partners, establishing a public facing dashboard for tracking progress, and using the information to inform regional climate action.

II. Climate Policy

Pathway: Support strong federal, regional, state, countywide and local climate policy.

Catalytic Policy Commitment: Advocate for comprehensive federal, regional and state science-based limits and a market-based price on carbon pollution and other greenhouse gas (GHG) emissions. A portion of revenue from these policies should support local GHG reduction efforts that align with these Joint County-City Climate Commitments, such as funding for transit service, energy efficiency projects, and forest protection and restoration initiatives.

III. Transportation and Land Use

Pathway: For passenger vehicles and light trucks, reduce vehicle miles traveled by 20% below 2012 levels by 2030 and GHG emissions intensity of fuels by 15% below 2012 levels by 2030.

Catalytic Policy Commitment: Partner to secure state authority for funding to sustain and grow transit service in King County.

Catalytic Policy Commitment: Reduce climate pollution, build our renewable energy economy, and lessen our dependence on imported fossil fuels, by supporting the adoption of a statewide low carbon fuel standard that gradually lowers pollution from transportation fuels.

Catalytic Policy Commitment: Focus new development in vibrant centers that locate jobs, affordable housing, and services close to transit, bike and pedestrian options so more people have faster, convenient and low GHG emissions ways to travel.

Catalytic Project or Program: As practical, for King County and cities developing transit oriented communities around high capacity light rail and transit projects, adopt the Puget Sound Regional Council's Growing Transit Communities Compact. For smaller cities, participate in programs promoting proven alternative technology solutions such as vehicle electrification, as well as joint carpool and vanpool promotional campaigns.

IV. Energy Supply

Pathway: Increase countywide renewable electricity use 20% beyond 2012 levels by 2030; phase out coal-fired electricity sources by 2025; limit construction of new natural gas based electricity power plants; support development of increasing amounts of renewable energy sources.

Catalytic Policy Commitment: Build on existing state renewable energy commitments including the Washington State Renewable Portfolio Standard (RPS) to partner with local utilities, state regulators and other stakeholders on a countywide commitment to renewable energy resources, including meeting energy demand through energy efficiency improvements and phasing out fossil fuels.

Catalytic Project or Program: In partnership with utilities, develop a package of county and city commitments that support increasingly renewable energy sources, in areas such as community solar, green power community challenges, streamlined local renewable energy installation permitting, district energy, and renewable energy incentives.

V. Green Building and Energy Efficiency

Pathway: Reduce energy use in all existing buildings 25% below 2012 levels by 2030; achieve net-zero GHG emissions in new buildings by 2030.

Catalytic Policy Commitment: Join the *Regional Code Collaboration* and work to adopt code pathways that build on the Washington State Energy Code, leading the way to "net-zero carbon" buildings through innovation in local codes, ordinances, and related partnerships.

Catalytic Project or Program: Develop a multi-city partnership to help build a regional energy efficiency retrofit economy, including tactics such as: collaborating with energy efficiency and green building businesses, partnering with utilities, expanding on existing retrofit programs, adopting local building energy benchmarking and disclosure ordinances, and encouraging voluntary reporting and collaborative initiatives such as the 2030 District framework.

VI. Consumption and Materials Management:

Pathway: By 2020, achieve a 70% recycling rate countywide; by 2030, achieve zero waste of resources that have economic value for reuse, resale and recycling.

Catalytic Policy Commitment: Partner through the Metropolitan Solid Waste Management Advisory Committee on policy, projects and programs focused on (1) waste prevention and reuse, (2) product stewardship, recycling, and composting, and (3) beneficial use.

Catalytic Project or Program: Develop a regional strategy through the Comprehensive Solid Waste Management Plan process to reach 70% recycling through a combination of education, incentives and regulatory tools aimed at single-family, multi-family residents, businesses, and construction projects in King County.

VII. Forests and Farming

Pathway: Reduce sprawl and associated transportation related GHG emissions and sequester biological carbon by focusing growth in urban centers and protecting and restoring forests and farms.

Catalytic Policy Commitment: Partner on Transfer of Development Rights (TDR) initiatives to focus development within the Urban Growth Area, reduce development pressure on rural lands, and protect our most valuable and important resource lands.

Catalytic Project or Program: Protect and restore the health of urban and community trees and forests, for example through public-private-community efforts such as Forterra's Green Cities Partnerships.

Catalytic Project or Program: Partner on collaborative efforts to expand forest and farm stewardship and protection, for example through King Conservation District's farm management planning, landowner incentive, and grant programs.

Catalytic Project or Program: Expand our local food economy, for example by supporting urban and community farming, buying locally produced food, and participating in the Farm City Roundtable forum.

VIII. Government Operations

Pathway: Reduce GHG emissions from government operations in support of countywide goals.

Policy Commitment: Develop and adopt near and long-term government operational GHG reduction targets that support countywide goals, and implement actions that reduce each local government's GHG footprint.

Catalytic Project or Program: In support of the *Section V. Green Building and Energy Efficiency* pathway targets to reduce energy use in existing buildings 25% below 2012 levels by 2030 and achieve net-zero GHG emissions in new buildings by 2030: execute energy efficiency projects and initiatives at existing facilities, measure existing building performance through EPA's Energy Star or equivalent program, implement high-efficiency street and traffic light replacement projects, and construct new buildings to LEED or Living Building Challenge standards and infrastructure to equivalent sustainability standards.

IX. Collaboration

Policy Commitment: Participate in or join the King County-Cities Climate Collaboration (K4C) – focused on efforts to coordinate and enhance city and County climate and sustainability efforts – to share case studies, subject matter experts, resources, tools, and to collaborate on grant and funding opportunities.

Catalytic Project or Program: Engage and lead government-business collaborative action through efforts such as the Eastside Sustainable Business Alliance.

V. Natural Environment

Charting a Future Course

◆ RELATIONSHIP TO THE FRAMEWORK GOALS ◆

The **Natural Environment Element** highlights the following Framework Goals:

FG-1 Maintain and enhance Kirkland's unique character.

FG-2 Support a strong sense of community.

FG-3 Maintain vibrant and stable residential neighborhoods and mixed-use development, with housing for diverse incomes, ages, and lifestyles.

FG-4 Promote a strong and diverse economy.

✓ **FG-5 Protect and preserve environmentally sensitive areas and reduce greenhouse gas emissions to ensure a healthy environment.**

FG-6 Identify, protect and preserve the City's historic resources, and enhance the identity of those areas and neighborhoods in which they exist.

✓ **FG-7 Encourage a sustainable community.**

✓ **FG-8 Maintain and enhance Kirkland's strong physical, visual, and perceptual linkages to Lake Washington.**

FG-9 Provide safety and accessibility for those who use alternative modes of transportation within and between neighborhoods, public spaces, and business districts and to regional facilities.

FG-10 Create a transportation system which allows the mobility of people and goods by providing a variety of transportation options.

✓ **FG-11 Maintain existing park facilities, while seeking opportunities to expand and enhance the current range and quality of facilities.**

FG-12 Ensure public safety.

FG-13 Maintain existing adopted levels of service for important public facilities.

FG-14 Plan for a fair share of regional growth, consistent with State and regional goals to minimize low-density sprawl and direct growth to urban areas.

✓ **FG-15 Solve regional problems that affect Kirkland through regional coordination and partnerships.**

✓ **FG-16 Promote active citizen involvement and outreach education in development decisions and planning for Kirkland's future.**

✓ **FG-17 Establish development regulations that are fair and predictable.**

V. Natural Environment

A. Introduction

Natural systems serve many essential biological, hydrological, and geological functions that significantly affect life and property in Kirkland. Features such as wetlands and streams provide habitat for fish and wildlife, flood control, and groundwater recharge, as well as surface and groundwater transport, storage, and filtering. Vegetation, too, is essential to fish and wildlife habitat, and also helps to support soil stability, prevents erosion, moderates temperature, produces oxygen, and absorbs significant amounts of water, thereby reducing runoff and flooding. Soils with healthy structure and organic content, such as those found in natural wooded areas, absorb, store, and transport water, effectively supporting vegetation, slope integrity, and reducing flooding and erosion. Clean air is essential to life. In addition to these functions, the natural environment provides many valuable amenities such as scenic landscape, community identity, open space, and opportunities for recreation, culture, and education. Kirkland's citizens recognize and often comment upon the important role the natural environment plays in the quality of life.

Maintaining these valuable natural systems within Kirkland is a crucial but complex undertaking. Effective management of the natural environment must begin with the understanding that natural features are components of systems which are, in turn, interdependent upon other natural systems that range beyond the City's borders. The Washington State Growth Management Act and Federal Endangered Species Act underscore this approach and prescribe additional requirements. Accordingly, Kirkland manages the interrelated natural systems:

- Jointly with other agencies and the affected Federally recognized tribes to ensure coordinated and consistent actions among the jurisdictions sharing an ecosystem (e.g., a watershed);
- Comprehensively, by coordinating natural systems information and practices across City departments;
- Scientifically, by applying the best available science to system-wide inventories and analyses to formulate policies and development standards to protect the functions and values of critical areas; and
- Conscientiously, to give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries through salmonid habitat conservation.

Additionally, Kirkland's desire and duty to protect natural resources must be balanced with the City's obligations to:

- Accommodate future growth; and
- Provide a development process that is timely, predictable, and equitable to developers and residents alike.

Success in balancing these complex and often conflicting concerns depends in large part upon the provision of extensive opportunities for public participation during the formulation of policies, programs, and regulations relating to the natural environment.

As an urban community with a considerable legacy of environmental resources, Kirkland continues its long-standing effort to balance multiple concerns. The City's natural resources include nine drainage basins – some with salmonid-bearing streams, several large wetlands, two minor lakes, and extensive shoreline on Lake Washington (see Figure NE-1). Large portions of the City contain steep slopes and mature vegetation (see Figures NE-2, NE-3, and NE-4). Future growth will generally be infill within Kirkland's well-established, compact land use pattern. Because many of the remaining sites are small and constrained by environmentally sensitive or hazardous areas, Kirkland's challenge for the future will be to accommodate infill growth while protecting and enhancing natural systems on public and private lands.

A variety of tools are needed to effectively manage the natural environment, because natural systems traverse private and public property lines as well as jurisdictional boundaries. These tools include:

V. Natural Environment

- Programs and practices used by the City to maintain land for which it is responsible, such as parks, open space, and rights-of-way;
- Public education and involvement to cultivate a culture of stewardship;
- Incentives to foster sound practices by Kirkland residents, businesses, and institutions;
- Acquisition of the most ecologically valuable sites by the City when feasible; and
- Regulations accompanied by effective enforcement.

Of these, public involvement and education should be emphasized, due to the considerable cumulative impact of the actions and choices of individuals, institutions, and businesses in Kirkland.

The reader may wish to refer to Kirkland's Natural Resource Management Plan for additional discussion of issues related to the natural environment. The Natural Resource Management Plan is a reference document intended to facilitate coordinated, comprehensive management of Kirkland's urban forest, water, earth, and air resources. The guiding principles and implementing strategies set forth in the Natural Resource Management Plan do not have the legal status of the Comprehensive Plan or development regulations. Rather, it serves as an informational resource when considering new City practices, programs, and regulations that will implement the goals and policies in the Kirkland Comprehensive Plan.

B. The Natural Environment Concept

The fundamental goal of the Natural Environment Element is to protect natural systems and features from the potentially negative impacts of nearby development and to protect life and property from certain environmental hazards. To accomplish this, the Element:

- Recognizes the importance of environmental quality and supports standards to maintain or improve it;
- Supports comprehensive management of activities in sensitive and hazard areas through a variety of methods in order to ensure high environmental quality and to avoid risks or actual damage to life and property;
- Promotes system-wide management of environmental resources. Supports interagency coordination among jurisdictions sharing an ecosystem;
- Supports the acquisition of comprehensive technical data and the application of best available science for natural systems management; and
- Acknowledges the importance of informing the public of the locations, functions, and needs of Kirkland's natural resources.

C. Natural Environment Goals and Policies

Goal NE-1: Protect natural systems and features from the potentially negative impacts of human activities, including, but not limited to, land development.

Goal NE-2: Manage the natural and built environments to achieve no net loss of the functions and values of each drainage basin; and, where possible, to enhance and restore functions, values, and features. Retain lakes, ponds, wetlands, and streams and their corridors substantially in their natural condition.

Goal NE-3: Manage the natural and built environments to protect and, where possible, to enhance and restore vegetation.

Goal NE-4: Manage the natural and built environment to maintain or improve soils/geologic resources and to minimize risk to life and property.

Goal NE-5: Improve air quality and reduce Kirkland's contribution to climate change.

V. Natural Environment

Managing the Natural Environment

Goal NE-1: Protect natural systems and features from the potentially negative impacts of human activities, including, but not limited to, land development.

Policy NE-1.1: Use a system-wide approach to effectively manage environmental resources. Coordinate land use planning and management of natural systems with affected State, regional, and local agencies as well as affected federally recognized tribes.

Environmental resources – such as streams, soils, and trees – are not isolated features, but rather components of ecosystems that go beyond a development site and, indeed, beyond our City boundaries. Therefore, a system-wide approach is necessary for effective management of environmental resources. Also, recognition of the interdependence of one type of natural system upon another is essential. An example of this is the relationship between the shoreline and Lake Washington. For this reason, a comprehensive approach to the management of natural resources is most effective.

Responsibility for management of these ecosystems falls to many agencies at many levels of government, including King County, State resource agencies, and watershed planning bodies. Kirkland and its planning area lie within the Usual and Accustomed Treaty Area of the Muckleshoot Indian Tribe. Joint coordination and planning with all affected agencies is appropriate to ensure consistent actions among the jurisdictions sharing an ecosystem.

Policy NE-1.2: Concentrate efforts in areas that will yield the greatest benefits.

City projects, programs, practices, and regulations related to the natural environment should be focused to yield maximum ecological benefit for the time and money involved. Application of this policy will involve selecting the most effective management tool for a desired outcome (see Policy NE-1.3), allocating staff and financial resources for greatest results, and determining which natural features are most important to protect or restore.

Policy NE-1.3: Use a variety of techniques to manage activities affecting air, vegetation, water, and the land to maintain or improve environmental quality, to preserve fish and wildlife habitat, to prevent degradation or loss of natural features and functions, and to minimize risks to life and property.

The systems and features of the natural environment are considered to be community assets that significantly affect the quality of life in Kirkland. In public rights-of-way, City parks, and on other City-owned land, current technology, knowledge, and industry standards should be proactively used to practice and model sound stewardship practices. For resources on private property, the City should use a combination of public education and involvement, acquisition of prime natural resource areas, and incentives to promote stewardship, as well as regulations combined with effective enforcement.

Because of the many problems caused by adverse impacts to natural vegetation, water, or soils/geologic systems, developers should provide site-specific environmental information to identify possible on- and off-site methods for mitigating impacts. The City should be indemnified from damages resulting from development in sensitive or hazard areas, and land surface modification of undeveloped property should be prohibited unless a development application has been approved. Protective measures should also include techniques to ensure perpetual preservation of sensitive areas and their buffers, as well as certain hazard areas.

Policy NE-1.4: Proactively pursue restoration or enhancement of the natural environment. In addition, require site restoration if land surface modification violates adopted policy or development does not ensue within a reasonable period of time.

The City should look for and act upon opportunities to restore or enhance natural features and systems wherever significant environmental benefits will be realized cost-effectively. Too, land surface modifications

that violate the intent of the Goals and Policies should be corrected through site restoration. Developers and property owners should be required to restore the affected sites to a state which approximates the conditions that existed prior to the unwarranted modification. At the very least, developers should be required to restore the site to a safe condition and revegetate areas where vegetation has been removed.

Policy NE-1.5: Provide to all stakeholders information concerning natural systems and associated programs and regulations. Work toward creating a culture of stewardship by fostering programs that support sound practices, such as low impact development and sustainable building techniques. Model good stewardship techniques in managing trees, streams, wetlands, shorelines and other natural features and systems in the public realm.

By sharing information the City can better serve the interests of both the environment and people. In order to provide a degree of consumer awareness, the City should make available information which is based on current knowledge, technology, and appropriate standards and practices, as well as data regarding known natural resources and potential natural hazards.

Kirkland can promote public environmental awareness and stewardship of sensitive lands in a variety of ways. The City can provide resources and incentives to assist the public in adopting practices that benefit rather than harm natural systems. For example, the City should work with residents, businesses, builders, and the development community to promote low impact development and sustainable building practices. These practices can lower construction and maintenance costs and enhance human health, as well as benefit the environment.

The City should promote and model these practices and others, including purchasing energy efficient and renewable technology products and services whenever feasible, by maintaining model sensitive area buffers, using current arboricultural techniques for public trees, using and eventually certifying new public facilities through programs fostering sustainable building practices, and by linking Kirkland stakeholders to information sources and programs for notable trees, neighborhood planting events, backyard wildlife, and streamside living.

The City can also increase awareness by allowing access where appropriate to sensitive areas for scientific and recreational use while protecting natural systems from disruption. Careful planning of access trails and the installation of environmental markers and interpretive signs can allow public enjoyment of lakes, streams, or wetlands and increase public awareness of the locations, functions and needs of sensitive areas. In the case of large scale projects on sensitive sites, the City can require developers to provide additional materials, such as brochures, to inform owners and occupants of the harmful or helpful consequences of their actions in or near sensitive areas and buffers.

Policy NE-1.6: Encourage sustainable building and low impact development practices in public and private development.

Low impact development (LID) techniques minimize surface water runoff by reducing impervious surface and by using landscaping and permeable materials or retaining mature vegetation to absorb water close to the source. LID strives to mimic nature by minimizing impervious surface, infiltrating surface water through bio-filtration and bio-retention facilities, retaining contiguous forested areas and maintaining the character of the natural hydrologic cycle. Sustainable or green building practices cover all aspects of development, including site preparation and layout, material selection and building construction, deconstruction of existing buildings, and operation and maintenance.

Utilizing these practices has many benefits: construction and maintenance costs are lowered; water quality is improved; surface water runoff is reduced and treated; stream and fish habitat impacts are lessened; native trees and other vegetation are preserved; and recycled materials are used. Some examples of the practices include integrated building and site design, vegetated roofs, reduced impervious surface, reused waste water for irrigation, alternative heating and cooling systems, and recycled building materials and

landscaping used to reduce heat emissions and to treat surface runoff. The practices may evolve over time as the market, science and technology change.

The City recognizes that modeling sustainable building practices in the construction of public facilities will set the tone for private development to reduce waste, preserve resources and increase energy efficiency. The City should strive to create a green building program that initially incorporates green building construction into new or renovated City facilities, with the goal of eventually requiring certification through the LEED, BUILT GREEN, or other programs fostering sustainable building practices. The City should also provide incentives and standards for private development to utilize green building practices. Incentives could include priority permit processing for certified green building projects. Increased public awareness of sustainable building practices can be accomplished with educational materials, outreach to building professionals and citizens, and with public displays designed to explain the various facets of low impact development and green building construction.

Policy NE-1.7: Encourage reduction, reuse, and recycling in order to reduce the waste stream and save energy.

Development actions to salvage, reuse and/or recycle building construction materials should be promoted and encouraged. This includes not only new construction but deconstruction of existing buildings.

Policy NE-1.8: Strive to minimize human impacts on habitat areas.

The presence and activities of humans can impact habitat in a variety of ways. City policies and regulations strive to ensure that those impacts are avoided, if possible, or at least mitigated. In addition to physical alterations of natural resources, less obvious impacts, such as those from noise and light, should be minimized.

Natural Water Systems

Goal NE-2: Manage the natural and built environments to achieve no net loss of the functions and values of each drainage basin; and, where possible, to enhance and restore functions, values, and features. Retain lakes, ponds, wetlands, and streams and their corridors substantially in their natural condition.

Policy NE-2.1: Using a watershed-based approach, apply best available science in formulating regulations, incentives, and programs to maintain and, to the degree possible, improve the quality of Kirkland's water resources.

Kirkland's Streams, Wetlands, and Wildlife Study (July, 1998) is a natural resource inventory of wetlands, streams, fish, wildlife, and habitat areas within Kirkland. A drainage basin or watershed approach was used to identify Kirkland's drainage systems, to determine primary and secondary basins, and to evaluate and record the primary functions, existing problems and future opportunities for each drainage basin. This data and analysis forms a scientific basis for system-wide resource management that addresses the distinct characteristics of each basin. The inventory was updated in 2003 with the production of the Natural Resource Management Plan. Figure NE-1 indicates general locations of known sensitive areas and drainage basin boundaries. This study is supplemented by technical information from the Water Resource Inventory Area (WRIA) 8 salmon conservation planning effort and the City's *Surface Water Master Plan*.

Policy NE-2.2: Protect surface water functions by preserving and enhancing natural drainage systems wherever possible.

Urban development, through addition of impervious surface and removal of vegetation, increases the volume and rate and decreases the quality of stormwater runoff. This often results in flooding that threatens safety and property, and results in damage to the aquatic environment. Water quality is reduced when

flooding causes erosion, and when water is not filtered through soils and vegetation prior to entering streams and lakes. Steps to limit this damage include:

- Minimize creation of new impervious surfaces;
- Maximize use of soils and vegetation in slowing and filtering runoff;
- Install structural flow control facilities at new or redeveloping sites where appropriate to mimic the predevelopment hydrologic regime;
- Prohibit nonessential development activity in and around watercourses. Preserve the natural drainage system to the greatest extent feasible and prohibit nonessential structures, land modifications, or impervious surfaces in the drainage system to assist in ensuring unimpeded flow, maximal stream storage capacity, and optimal natural functioning within the drainage area; and
- Implement programs and projects to remedy flooding and habitat destruction caused by uncontrolled flows from past development. Using a basin planning process and a watershed perspective, identify projects and programs to reduce flood frequency, address/prevent erosion problems, and restore/enhance fish habitat.

Specific information on the technical and programmatic aspects of surface water management is contained in the City's *Surface Water Master Plan*.

Policy NE-2.3: Comprehensively manage activities that may adversely impact surface and ground water quality or quantity.

Increases in impervious surface resulting from development result in decreases in ground water recharge. This, in turn, results in a decline in baseflows and subsequent loss of habitat that impacts fish and wildlife populations.

Urban runoff often contains pollutants such as gasoline, oil, sediment, heavy metals, herbicides, and other contaminants. These materials degrade the quality of water in our streams and lakes. Steps to limit contamination include:

- Prohibit the dumping of refuse or pollutants in or next to any open watercourse or wetlands or into the storm drainage system. Dumped refuse and pollutants can contaminate surface and subsurface water and can physically block stream flows;
- Provide education to businesses and residents about the role that each individual plays in maintaining and improving water quality. It is much easier and cheaper to control pollution at its source than it is to clean polluted stormwater. Demonstrate ways that each person can control pollution at its source;
- Require projects to provide water quality treatment facilities if they propose to alter or increase significant quantities of impervious surface that generate pollution; and
- Preserve and enhance sensitive area buffers to maximize natural filtration of contaminants. Pursue opportunities to improve buffer viability by improving maintenance of buffer vegetation.

Policy NE-2.4: Improve management of stormwater runoff from impervious surfaces by employing low impact development practices where feasible through City projects, incentive programs, and development standards.

As land is developed, the loss of vegetation, the compaction of soils, and the transformation of land to impervious surface all combine to cause stormwater runoff to degrade many streams, wetlands and associated habitat; to increase flooding, and to make many properties wetter. Low impact development practices minimize impervious surfaces, and use vegetated and/or pervious areas to treat and infiltrate stormwater. Such practices can include incentives or standards for landscaped rain gardens, permeable pavement, narrower roads, vegetated rooftops, rain barrels, impervious surface restrictions, downspout disconnection programs, "green" buildings, street edge alternatives and good soil management.

V. Natural Environment

Policy NE-2.5: Preserve the natural flood storage function of 100-year floodplains. emphasize nonstructural methods in planning for flood prevention and damage reduction.

Floodplains are lands adjacent to lakes, rivers, and streams that are subject to periodic flooding. Floodplains naturally store flood water, protect water quality, and provide recreation and wildlife habitat. New development or land modification in 100-year floodplains should be designed to maintain natural flood storage functions and minimize hazards to life and property (see Figure NE-1).

Policy NE-2.6: Regulate development of land along the shoreline of Lake Washington to:

- ***Preserve natural systems and maintain and improve the ecological functions of the water and shorelines;***
- ***Avoid natural hazards;***
- ***Promote visual and physical access to the water;***
- ***Provide recreational opportunities;***
- ***Preserve navigation rights; and***
- ***Minimize the creation of and reduce existing armored shorelines, overwater and in water structures.***

The Lake Washington shoreline plays a vital role in the ecology of our watershed (which includes land that drains into Lake Washington, the Cedar River, and Lake Sammamish). All species of anadromous salmonids in our watershed migrate through and rear in Lake Washington. The decline of salmonid populations in Lake Washington has been linked to the following factors: vegetation modification and removal, shoreline armoring, overwater and in water structures, storm water runoff and introduction of pollutants. Establishing regulations that avoid, minimize and mitigate impacts to the shoreline and restore degraded ecological functions will substantially aid salmon recovery efforts in our watershed.

Kirkland's Shoreline Master Program (SMP) was adopted pursuant to the Washington State Shoreline Management Act of 1971. It designates all parcels within 200 feet of Lake Washington and associated wetlands as shoreline environments. The SMP goals and policies are contained in the Shoreline Area Chapter of the Comprehensive Plan. Detailed shoreline management regulations in the Kirkland Zoning Code implement these policies. Pursuant to Washington State requirements, the 2010 update of the Kirkland Shoreline Master Program reflects current best management practices. The Shoreline Restoration Plan, a component of the SMP, identifies and prioritizes public restoration projects that are in the Parks Capital Improvement Program. In addition, it lists other public actions and programs and private restoration projects that should be undertaken over a 20-year period.

Policy NE-2.7: Support regional watershed conservation efforts.

The federal listing of Puget Sound wild Chinook salmon as a threatened species in 1999 has focused attention on salmon. In addition to the economic, recreational, and cultural value of salmon, they are also a widely accepted indicator of the level of our region's environmental health, because their survival requires that they migrate throughout the watershed – from freshwater headwaters to the marine environment and back again. The decline of salmon points to the need to improve the quality of habitat in the watersheds that drain to Puget Sound.

In the Lake Washington/Cedar River/Lake Sammamish Watershed, Kirkland joined with 26 other local jurisdictions to fund a joint effort to conserve salmon habitat in the shared watershed. The resulting watershed conservation plan, The Lake Washington/ Cedar River/Lake Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan, was developed through a multi-jurisdictional, multi-stakeholder process with a scientific basis, and was approved by Kirkland in 2005.

Incorporated into the Puget Sound Salmon Recovery Plan, approved by NOAA in 2007, it is implemented by the participating local governments in the watershed as they update their policies, regulations, and

programs (e.g., capital facilities and road management practices) for critical areas, shorelines, drainage, and clearing/grading to be consistent with the conservation plan. It seeks to provide a Puget Sound-wide conservation plan for a coordinated approach to restoring the wild Chinook salmon of Puget Sound. Kirkland's role in salmon recovery is to protect and restore habitat within the City limits through land use and stream restoration actions, and to participate in regional recovery efforts through the WRIA 8 Salmon Recovery Council.

Vegetation

Goal NE-3: Manage the natural and built environments to protect and, where possible, to enhance and restore vegetation.

Policy NE-3.1: Work toward increasing Kirkland's tree cover to 40 percent.

In 2003, Kirkland's overall tree cover was estimated to be 32 percent (see Figure NE-4: Tree Canopy). Significant improvements in storm water management and air quality could be realized if the average tree cover were to be increased to 40 percent[1]. To approach measurable economic and ecologic benefits, Kirkland's regulations, programs, and public outreach should aim toward increasing the City's tree canopy long term, to the extent feasible when balancing other City goals. In order to track progress, it will be important to complete, then monitor and maintain the inventory of public trees, as well as to periodically assess the canopy Citywide. As land develops, care should be taken to preserve and protect trees and other natural resources of value whenever feasible.

Policy NE-3.2: Preserve healthy mature native vegetation whenever feasible.

Healthy mature native vegetation contributes numerous ecological benefits to the community, including oxygen production, provision of fish and wildlife habitat, filtration of stormwater runoff, erosion reduction, hillside and stream bank stabilization, moderation of temperature, interception of rainfall that would otherwise become surface runoff, and scenic beauty. Of special importance are significant stands of native evergreen trees and sensitive area buffers appropriately vegetated with native plants. Needless removal or destruction of such vegetation should not be allowed. In cases where development necessitates plant removal, every effort should be made to expeditiously replant equivalent and appropriate vegetation.

Preservation of native vegetation requires that noxious and invasive plant species in the native landscape and in environmentally sensitive areas and their buffers be effectively managed. Otherwise, non-native monoculture displaces the diverse habitat necessary to nourish, protect, and support native fish and wildlife. The City should work toward ensuring that noxious and invasive plant species are controlled on public and private property.

Policy NE-3.3: Ensure that regulations, incentives, and programs maximize the potential benefits of landscaping.

Trees and plants contribute to an overall sense of community and can bring aesthetic, environmental, and economic benefits. Besides the obvious advantages of adding summer shade, seasonal color, texture, and human scale, certain plants may be used to screen adjacent land uses and activities, define views, and unify and organize disparate site elements. Plants can play a significant role in modifying the climate of the immediate vicinity and moderating daily temperatures. They improve air quality by absorbing pollutants, thereby reducing unpleasant odors and filtering impurities. Foliage can reduce reflection or glare from the sun, street lights or vehicle lights, making an area more hospitable and safe. Too, dense foliage can absorb and disperse sound energy. Economic benefits can be realized through energy savings by arranging plants around buildings for an insulating effect from extreme temperatures and to deflect wind, and by attracting customers by increasing visual appeal. The City's landscaping requirements should be updated to maximize potential benefits and to reflect current knowledge, technology, and industry standards.

1. Regional Ecosystem Analysis: Puget Sound Metropolitan Area – Calculating the Value of Nature, 1998, by American Forests, www.americanforests.org.

V. Natural Environment

Soils and Geology

Goal NE-4: Manage the natural and built environment to maintain or improve soils/geologic resources and to minimize risk to life and property.

Policy NE-4.1: Introduce standards and programs to promote sound soil management practices.

Healthy soil provides nutrients to support vegetation, habitat for subsurface organisms, and it absorbs, cleans, stores, and conveys water, thereby improving water quality and moderating water quantity. Mismanagement or neglect of soil can result in increased flooding, loss of vegetation, sedimentation of watercourses, erosion, and landslides – all of which degrade habitat for humans as well as for other species. Although the City has standards to address soil erosion, additional standards and programs are needed so that valuable topsoil will be conserved and reused and soil for required plantings will be amended as appropriate.

Policy NE-4.2: Consider updating policies and regulations for geologic hazard areas in light of the new watershed conservation plan, once it has been completed.

For many years, Kirkland has regulated and mapped geologic hazard areas (see Figure NE-2), based on available geologic and soils information. Landslides are highly probable in some steep slope areas, regardless of development activity. These areas have been designated as "unstable slopes." Landslides may be triggered by grading operations, land clearing, irrigation, or the load characteristics of buildings on hillsides. Damage resulting from landslides may include loss of life and property, disruptions to utility systems, or blockage of transportation corridors. For these reasons, development is regulated where landslides are likely. In some cases, regulation may result in severe limitations to the scale and placement of development, and land surface modification should be limited to the smallest modification necessary for reasonable site development.

According to recent earthquake hazard evaluation studies of the Puget Sound area, possible damage to structures on some unstable slopes or wetland areas can be caused by low-intensity tremors. This is especially true when hillsides composed of clay and/or organic materials are saturated with water. Slopes with grades of 15 percent or steeper are also subject to seismic hazards. Low-intensity earth tremors could cause liquefaction and damage development in wetland areas composed of organic or alluvial materials. In hillside and wetland areas described above, structures and supporting facilities need to be regulated and designed to minimize hazards associated with earthquakes.

The watershed conservation planning effort discussed in Policy NE-2.7 is expected to produce recommendations for managing geologic hazard areas based on newly available scientific studies specific to our watershed. Kirkland's programs and regulations relating to geologic hazard areas, clearing and grading, vegetation, and critical areas should be evaluated and possibly updated to achieve consistency with the watershed conservation plan, once it has been completed.

Policy NE-4.3: Retain vegetation where needed to stabilize slopes.

Significant vegetation as cover on hazard slopes can be important, because plants intercept precipitation reducing peak flow, runoff, and erosion; which all can impact water quality and slope stabilization. Vegetated ravines also provide habitat linkages for wildlife. Avoiding disturbance of steep slopes and their vegetative cover should be a high priority for the City. An increased effort to establish Natural Growth Protection Easements in such areas will be key.

V. Natural Environment

Air

Goal NE-5: Improve air quality and reduce Kirkland's contribution to climate change.

The surrounding air, both outdoors, and indoors, has the potential to affect human health. It is important to maintain the quality of outdoor air since all life forms depend on it, and the quality of indoor air is dependent on that of the outdoors. Although all Washington counties currently meet federal health standards for air pollution, it is necessary to remain vigilant. Air pollution that includes greenhouse gases also contributes to climate change or global warming.

The largest source of air pollution in Kirkland is motor vehicle use. Kirkland should continue to adopt and promote smart transportation and land use choices as part of a strategy to reduce air pollution and slow climate change. The Kirkland community also contributes to air pollution and greenhouse gas emissions through energy consumption and landfilled waste, among other things.

A comprehensive approach, including transportation and land use strategies, waste reduction, urban forest preservation, protection, and enhancement, purchasing decisions, and public outreach, is necessary to reduce Kirkland's contribution to air pollution and climate change.

Policy NE-5.1: Continue and enhance current actions to improve air quality and reduce greenhouse gas emissions.

The City pursues several actions to help reduce vehicle emissions to improve regional air quality and address climate change. First, great care has been taken to provide a pedestrian friendly environment in Kirkland. In 1995, adoption of the Non-Motorized Transportation Plan (now referred to as the Active Transportation Plan), provided additional guidance for a systematic enhancement of a network of pedestrian and bicycle facilities linking important destinations both inside and outside the City. Second, Kirkland works to implement the State Commute Trip Reduction Law through a transportation management program. The program includes providing incentives to City employees to walk, bike, use transit, and rideshare to work, and the City coordinates with regional agencies to assist Kirkland employers in meeting their Single Occupancy Vehicle (SOV) trip reduction and vehicle miles traveled (VMT) targets. Third, many City vehicles utilize an alternative fuel to reduce pollution and boost fuel efficiency. Fourth, the City implements the Electric Vehicle Infrastructure (EVI) Act (RCW 43.31.970) through its development regulations and installation provisions. The regulations allow EVI to be located in all appropriate locations in the City and to consider incentive programs, to encourage the retrofitting of existing structures with EVI. In addition, for the many important functions trees serve, including improving air quality, the City supports street tree planting throughout the city and retention of existing trees on private property. Too, Kirkland is at the forefront in the area of waste reduction. The City is focusing on environmental outreach and development of new programs to reduce waste through reduction and recycling in both the residential and business communities. Finally, the City strives to purchase energy efficient and renewable technology products and services whenever feasible.

Policy NE-5.2: Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.

Climate disruption is an urgent threat to the environmental and economic health of our communities. With less than five percent of the world's population, the United States produces more than 25 percent of the global greenhouse gas emissions, and those emissions are continuing to grow. There is a broad scientific consensus that carbon dioxide (CO_2) and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate and there is clear evidence of human influences on climate due to changes in greenhouse gases. Local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money. Seattle, along with a growing number of other U.S. cities, is leading the way by committing to the *U.S. Mayors*

Climate Protection Agreement. On May 17, 2005, the Kirkland City Council signed a resolution endorsing the *U.S. Mayors Climate Protection Agreement.*

The City is pursuing five milestones to reduce greenhouse gas emissions in City operations and throughout the community:

1. Conduct a greenhouse gas emissions inventory and forecast to determine the source and quantity of greenhouse gas emissions in the City;

2. Establish a greenhouse gas emissions reduction target;

3. Develop an action plan with both existing and future actions which, when implemented, will meet the local greenhouse gas reduction target;

4. Implement the action plan; and

5. Monitor and report progress.

The Kirkland Council by resolution committed to the following greenhouse gas reduction targets for the Kirkland community and governmental operations:

- Interim: 10% below 2005 levels by 2012
- Primary: 20% below 2005 levels by 2020
- Long-term: 80% below 2007 levels by 2050

This page left intentionally blank.

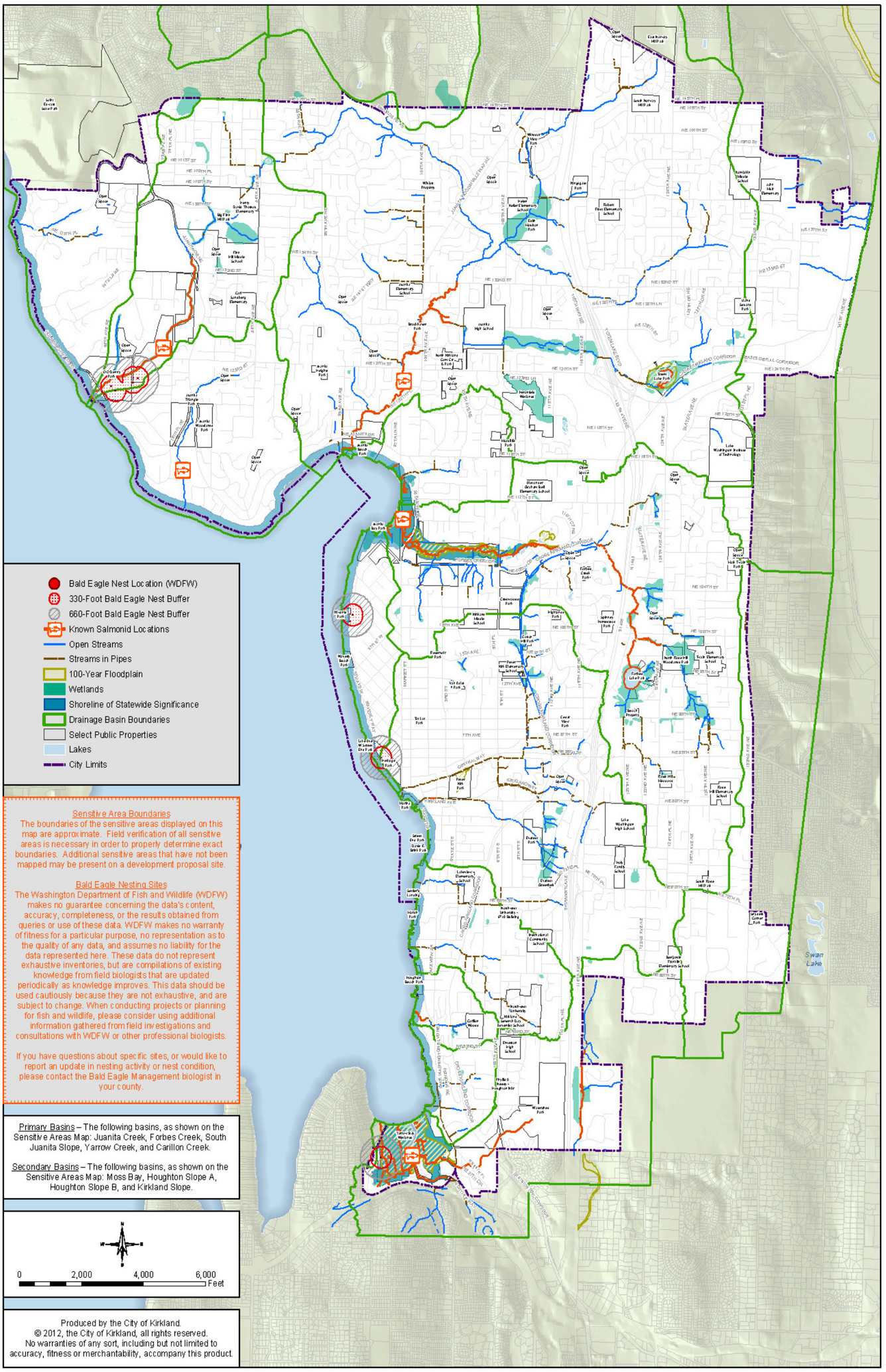

Figure NE-1: Sensitive Areas

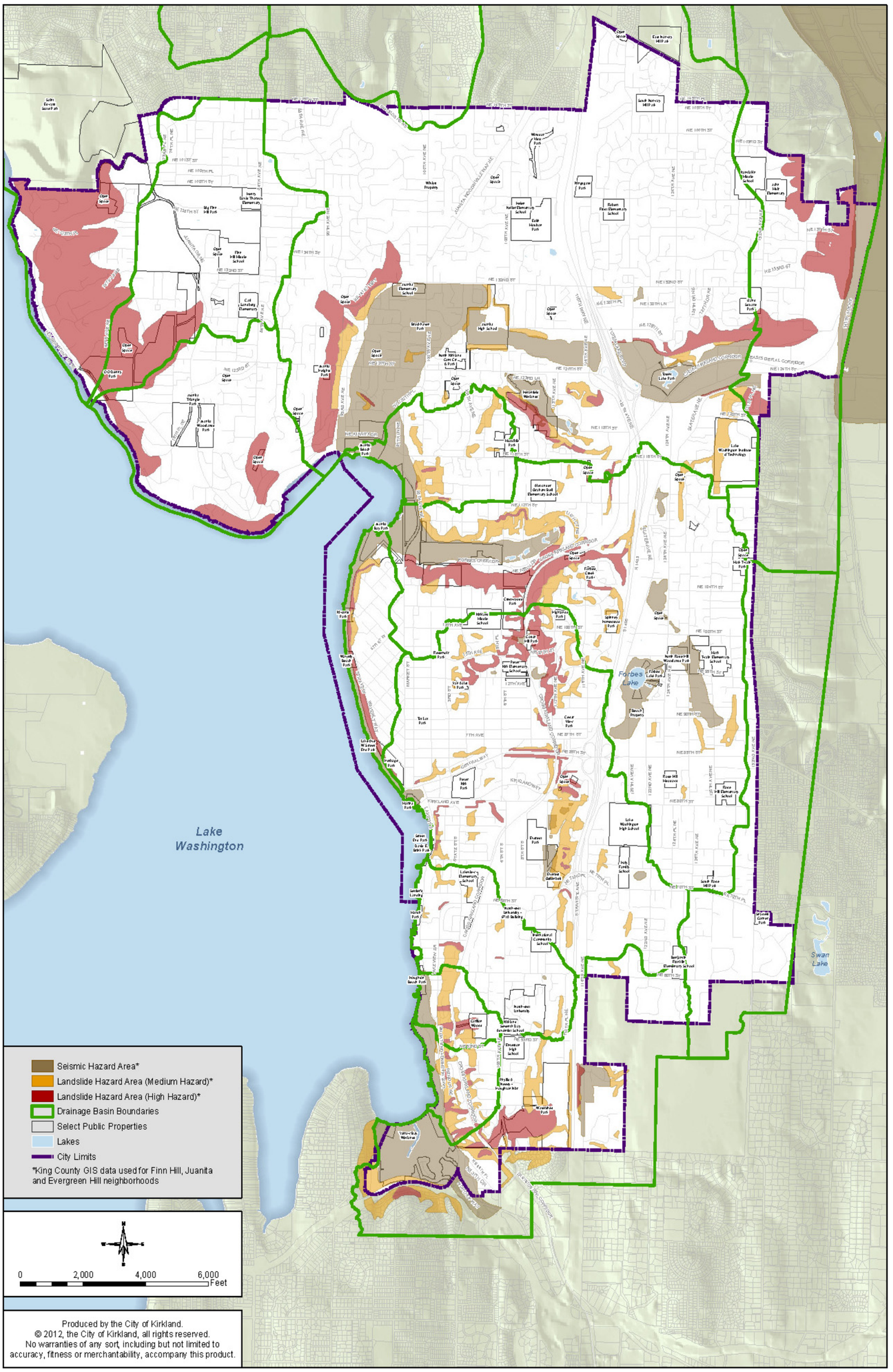

Figure NE-2: Landslide and Seismic Hazard Areas

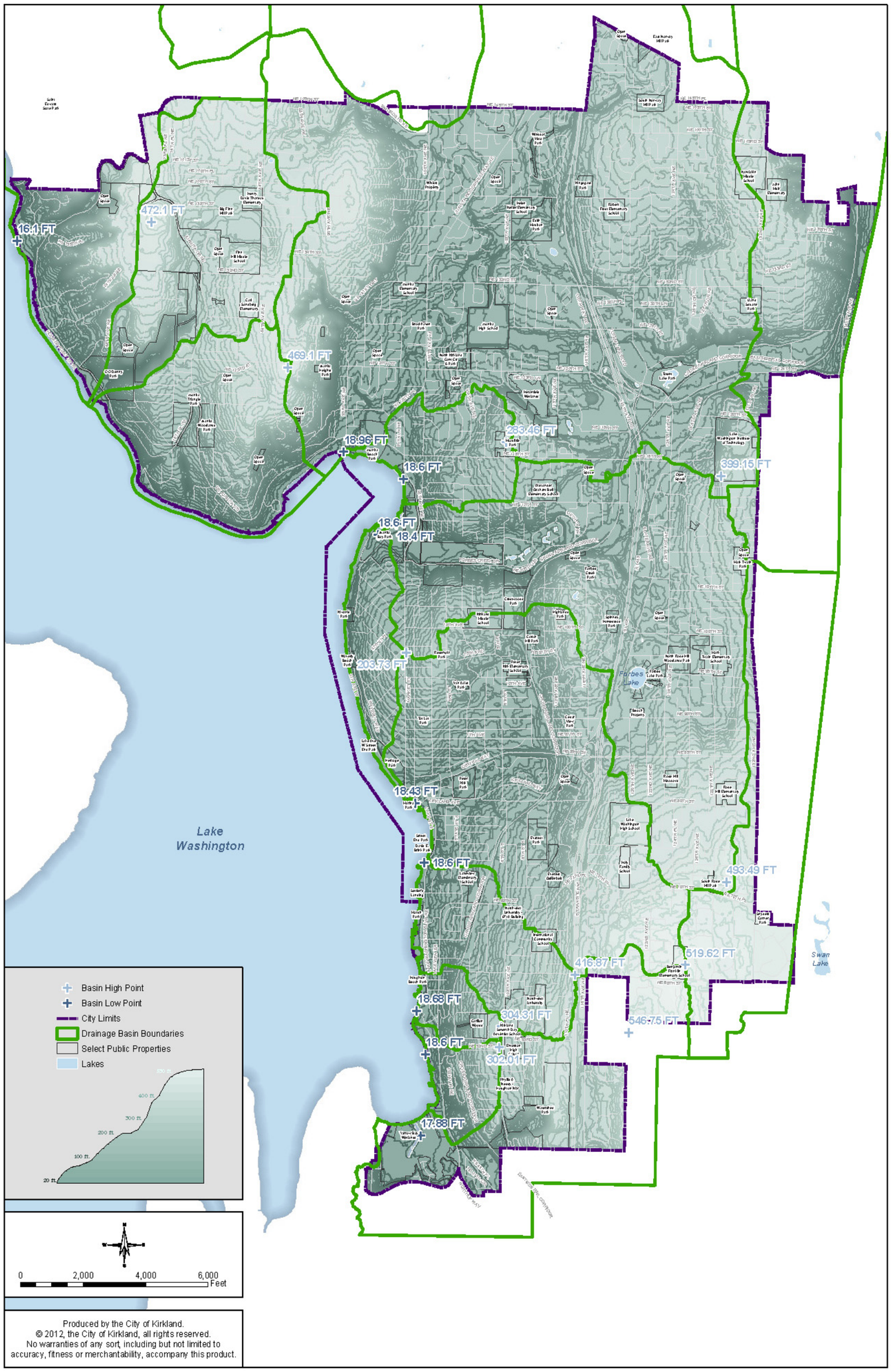

Figure NE-3: Topography

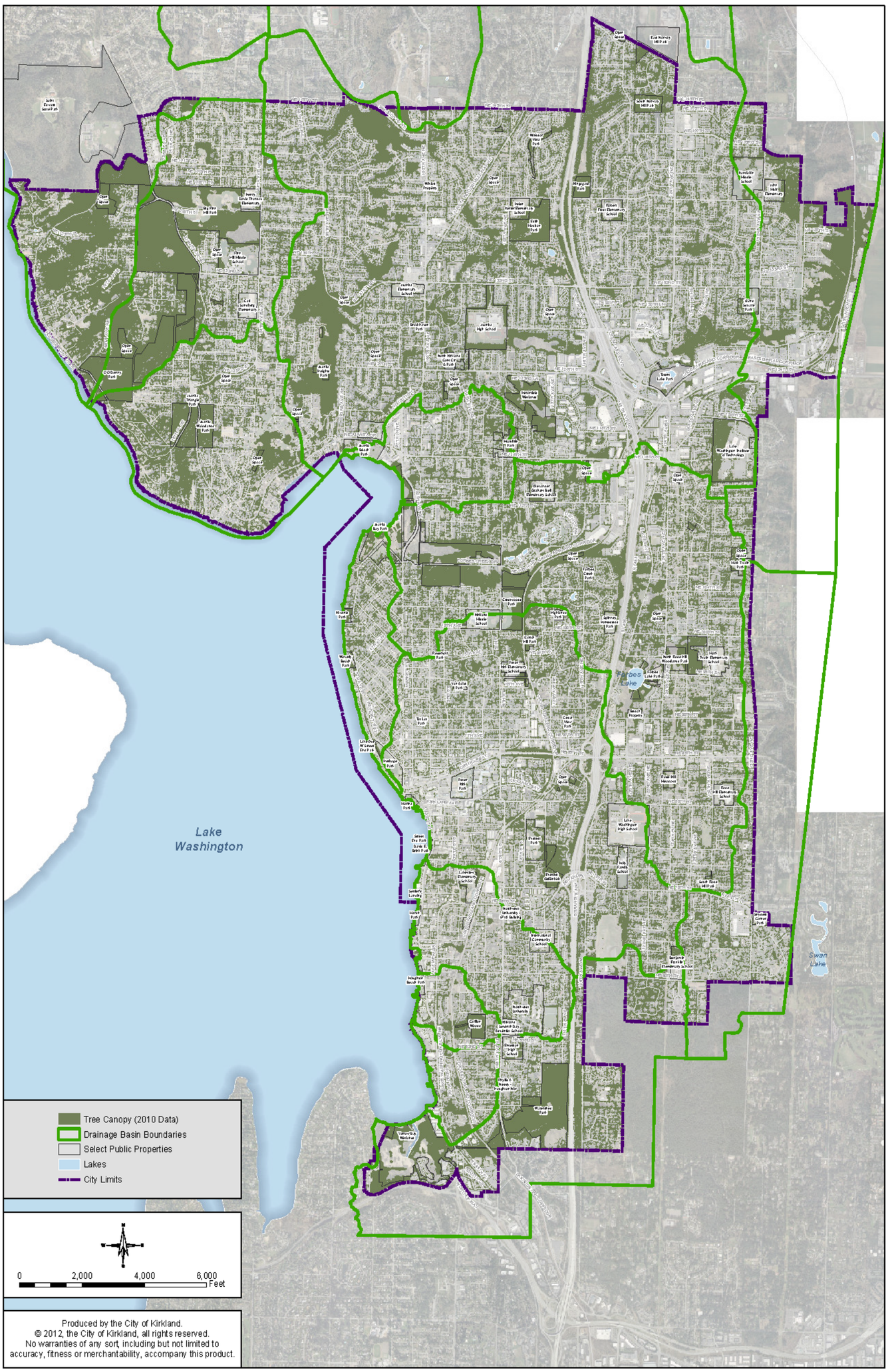

Figure NE-4: Tree Canopy