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MEMORANDUM

To: Planning Commission

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Date: January 14, 2009

Subject: Kirkland's Shoreline Master Program Update (SMP)
File No. ZON06-00017

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I. RECOMMENDATION

- Receive a **presentation from Dave Douglas** of Waterfront Construction about the permitting processes for shoreline stabilization structures and piers at the local, state and federal permitting agencies. Dave has agreed to relate his experiences and suggestions as a permit coordinator with past experience in both Kirkland and other communities in assisting property owners through the permitting process.
- Review revised **shoreline stabilization standards** based on Planning Commission input received at the November 20, 2008 meeting.
- Review and provide direction on **concept options for addressing pier standards**.

II. INTRODUCTION

At the January 8, 2009 meeting, the Planning Commission made significant progress in reviewing and providing direction on issues related to shoreline setbacks and standards for new upland development, such as shoreline vegetation conservation, lighting, etc. Staff is working on revisions to address Planning Commission recommendations as well as additional research into specific items as requested and will be bringing this information back at a future meeting for review.

At this time, staff would like to focus again on shoreline stabilization, a topic that the Planning Commission provided initial policy direction on at the October and November, 2008 meetings. Finally, staff would like to introduce the Planning Commission to issues related to shoreline piers.

As background, on November 20, 2008 the Commission reviewed background materials and concepts for **shoreline stabilization** including: 1) new bulkheads, 2) replacement of existing bulkheads, and 3) repair of existing bulkheads. Shoreline stabilization has been one of the key topics of concern as voiced by members of the public and discussed by the Planning Commission throughout the SMP update process. At the January 22, 2009 meeting, we will continue working through the issues related to shoreline stabilization. In addition, we will also address issues relating to **piers**, including 1) new piers, 2) pier replacements, 3) pier additions, and 4) repair to existing piers.

III. SHORELINE STABILIZATION

A. **Introduction.** As noted in the Final Shoreline Analysis, much of Kirkland's shoreline presently has low performance for a number of different shoreline functions. Shoreline modifications and near shore structures have, together with other changes, altered Lake Washington's aquatic ecosystem. **Degraded shoreline conditions** resulted originally from lowering the lake water surface levels when the Locks were constructed. Further adverse impacts are a result of urbanization and the majority of the Kirkland's shoreline (approximately 67 percent) is now used for urban commercial and residential uses. As reported in the Chinook Salmon Conservation Plan, "Landscaped yards and bank armoring (bulkheads and riprap) have reduced the amount of riparian vegetation and woody debris contributed to the lake. Armoring has also modified substrates in shallow areas due to prevention of bank erosion and altering sediment dynamics at the water-land interface." These changes have, in turn, **impacted the habitat for salmon**. Lake Washington is used as a migratory and rearing area and shoreline habitat conditions are important for juvenile Chinook using Lake Washington.

At the same time, property owners along the shoreline desire to **protect their property from wind and wave action and erosion** and to be able to use their property and have access to the lake.

Staff has prepared draft standards for the Planning Commission to review (see Attachment 1). The challenge will be to **balance protecting property while improving ecological function**. There was concern expressed by shoreline property owners that an earlier draft presented to the Planning Commission at the October 9, 2008 did not appropriately

address this balance. Staff has revised the standards to address public comments, but it is also acknowledged that there will likely still be concerns over new provisions which focus on new and creative shoreline designs that make use of gravels, cobbles, boulders, logs, and vegetation to stabilize shorelines in lieu of traditional hard materials, such as vertical concrete walls or riprap bulkheads.

B. **Purpose**. With the updated regulations we need to address several different objectives, including the following:

- Ensuring **protection of property from erosion**.
- Improving **shoreline ecological functions**.
- **Enhancing habitat** for salmon.
- Responding to new **State requirements.**
- Providing **consistency with state and federal permitting**, particularly streamlined permitting for fish friendly designs.

The presence of bulkheads along the shoreline has become an increasing area of concern for a number of reasons:

1. To respond to the **Endangered Species Act listing of Chinook salmon** and the subsequent scientific understanding of bulkhead affects on Chinook habitat:
2. To respond to increased understanding of how bulkheads and other shoreline stabilization interfere with **ecological functions and alter ecosystem-wide processes** (see WAC 173-26-231(2) and (3a), pages 71-74 of http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/SMP_Guidelines_Final.pdf for outline of general shoreline stabilization impacts) (included as Attachment 2): and
3. To comply with specific **State requirements that establish provisions for new, enlarged, and replacement bulkheads** which need to be included in the updated SMP (see WAC 173-26-231(3)(a)(iii), pages 74-77 of http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/SMP_Guidelines_Final.pdf (for outline of general shoreline stabilization impacts and Ecology requirements) (included as Attachment 2).

C. **Planning Commission Direction**. At the November 20, 2008 Planning Commission meeting, the Planning Commission provided initial policy direction on a number of items for which staff sought input, including:

i. Permit Process. There was a policy question about the **appropriate review process** to use for new bulkheads. The Planning Commission recommendation was to:

1. Establish an SDP permit review for new hard shoreline stabilization structures, such as bulkheads in the Residential L and M/H and Urban Mixed shoreline environments.
2. Retain the CUP process for the Urban Conservancy shoreline environment; and
3. Retain the limitation on new hard shoreline stabilization structures in the Natural shoreline environment.

Staff has made these revisions to the table and will bring those back a later date.

ii. Mitigation. Mitigation applies to **new hard shoreline stabilization structures**, which would introduce new shoreline impacts that would need to be addressed. Staff asked the Planning Commission whether the regulations should specify required mitigation (a prescriptive approach) or whether the applicant should be provided a menu of choices (a performance approach). The Planning Commission recommended that the regulations be drafted to provide a performance approach that allows applicants to select among a menu of mitigation approaches, which could include the addition of shoreline vegetation, placement of gravel fill for habitat enhancement, or other measures.

After further review by the City's consultant, it was determined that there were not a sufficient number of viable mitigation options on which to base a performance approach. The mitigation measures identified by staff include **shoreline plantings and enhancement of the nearshore area**. These two measures are routinely included as part of proposals that are permitted through the federal agencies and, as a result, have been provided for in the draft provisions. In order to address the desire expressed by the Planning Commission for greater flexibility, staff has proposed including a provision allowing for an **alternative planting plan or mitigation measure** in lieu of meeting these requirements if these alternative measures are approved by other federal and state agencies.

iii. Submittal Requirements for Replacement of Hard Shoreline Stabilization Structures. One of the areas of discussion at the November 20 meeting concerned submittal requirements for replacement of existing hard structural shoreline stabilization measures. As reviewed at the November 20th meeting, the State Guidelines direct local governments to provide standards that require evidence of a ***demonstrated need*** to protect principle uses or structures from erosion caused by currents, tidal action, or waves. Members of the public had expressed significant concern about requiring a geotechnical report to substantiate their demonstrated need. As noted in the November 20, 2008 packet information, staff consulted with the Department of Ecology to determine whether there is any flexibility on how "demonstrated need" for

justifying the replacement of an existing hard structural shoreline stabilization is reviewed by the City. Ecology has responded that *"demonstrated need"* in most cases should be evaluated through a geotechnical report to show that the *"principle use or structure"* needs on-going protection.

However, Ecology has indicated that the City could have additional criteria that would waive the requirement for geotechnical report for replacement of an existing hard shoreline stabilization structures in certain circumstances. These criteria would need to certify the *"demonstrated need"* for protection, consistent with the Guideline's geotechnical requirement citing anticipated damage to an existing structure within three years (WAC 173-26-231(3)(a)(iii)(D)).

The Planning Commission recommended that staff create **additional criteria to waive geotechnical reports**, based upon specific thresholds that are based on geotechnical principles. Staff has included this idea for a waiver in the proposed regulations; the proposal regulations would **not require a geotechnical report for replacement** hard shoreline stabilization structures. Instead, the applicant would need to submit a **written narrative, prepared by a qualified professional, which would outline the need to protect principal uses or structures from erosion caused by waves or other natural processes**. Under this proposal, the narrative would need to be reviewed by the City's consulting shoreline biologist. The requirement for the written narrative would not be required for existing residences that are within 10 feet or less of hard shoreline stabilization structures or if a hard structural stabilization measure is proposed to be replaced with soft structural measures.

D. **Overview**. The following is an overview of the **State requirements addressing shoreline stabilization** (as originally presented in November 20, 2008 meeting packet information), together with information describing how the proposed regulations included in Attachment 1 respond to these State Requirements. Please note that the document contains footers which contain specific language from the WACs.

State Guideline Requirements and Proposed Regulations			
Shoreline Stabilization Action	**Submittal Information**	**Impact Minimization Techniques**	**Mitigation**
New or Enlarged Hard Structural Shoreline Stabilization Structure	**For State Guidelines, see Footnotes i and ii** **<u>Proposed Regulation</u>:** **Section 83.300.4.a and b – Requires geotechnical report for new or enlarged structural shoreline stabilization measures, except when primary structure is located within 10 feet of ordinary high water mark.**	**For State Guidelines, see Footnote iii.** **<u>Proposed Regulation</u>:** **Section 83.300.5 – Requires:** **-Limiting the size of the stabilization measure to the minimum necessary.** **-Use soft shoreline stabilization measures to maximum extent.** **-Limit size of hard structural shoreline stabilization measures to minimum necessary and shift or slope bulkhead landward.** **-Construction timing restrictions to respond to endangered species habitat requirements, use of BMPs to prevent water quality impacts, etc.**	**For State Guidelines see Footnote iv.** **<u>Proposed Regulation</u>:** **Section 83.300.5.d – Requires:** **Placement of gravel beach fill waterward of OHWM and installation of native riparian vegetation.**

Shoreline Stabilization Action	Submittal Information	Impact Minimization	Mitigation
Replacement Shoreline Stabilization Structure	For State Guideline, see Footnote v. **<u>Proposed Regulation</u>:** **Section 83.300.4.c – Requires submittal of written narrative justification outlining need to protect principal uses, except when soft shoreline stabilization measures are to be used or if residence is located within 10 feet of ordinary high water mark (note: no geotechnical report is proposed to be required).** **Section 83.300.4.e requires City consultant review of justification.**	For State Guideline, See Footnote iii. **<u>Proposed Regulation</u>:** **Section 83.300.5 – Requires:** **-Limiting the size of the stabilization measure to the minimum necessary.** **-Use soft shoreline stabilization measures to maximum extent.** **-Limit size of hard structural shoreline stabilization measures to minimum necessary and shift or slope bulkhead landward.** **-Construction timing restrictions, use of BMPs to prevent water quality impacts, etc.**	**Not required by State Guidelines,** other than as may be needed to assure no net loss of ecological functions. **<u>Proposed Regulations:</u>** **Section 83.300.5.b addresses mitigating for short-term construction impacts.** (Note: Other state and federal permitting agencies require mitigation for replacement structures.)
Repair of Shoreline Stabilization Structure	For State Guidelines, see Footnote vi. **<u>Proposed Regulations:</u>** **-Section 83.300.3 distinguishes between minor and major repair.** **-Section 83.300.4.c – For major repair, requires submittal of**	For State Guidelines, see Footnote vi. **<u>Proposed Regulations:</u>** **-Section 83.300.3 distinguishes between minor and major repair. Major repair must meet same impact minimization as new or replacement (see**	**Not required by State Guidelines,** other than as may be needed to assure no net loss of ecological functions. **<u>Proposed Regulations:</u>** **Section 83.300.5.f addresses mitigating for short-term**

	written narrative justification outlining need to protect principal uses, except when soft shoreline stabilization measures are to be used or if residence is located within 10 feet of ordinary high water mark (note: no geotechnical report is proposed to be required). **-Section 83.300.4.e requires City consultant review of justification.**	**above and Section 83.300.5).** **-Section 83.300.5.f addresses mitigating for short-term construction impacts.** **-Section 83.300.3.b.3) limits further encroachment waterward of hard structural shoreline stabilization measures.**	**construction impacts.**

(1) WAC 173-26-231(3)(a)(iii)(B) requires submittal of "conclusive evidence, documented by a **geotechnical analysis**, that the [existing primary structure] is in danger from shoreline erosion caused by tidal action, currents or waves." WAC 173-26-231(3)(a)(iii)(D) notes that "geotechnical reports pursuant to this section that address the need to prevent potential damage to a primary structures shall **address the necessity for shoreline stabilization** by estimating time frames and rates of erosion and report on the urgency of the situation. As a general matter, hard armoring solutions should not be authorized except when a report confirms that there is significant possibility that such a structure will be damaged within three years as a result of shoreline erosion in the absence of such hard armoring measures, or where waiting until the need is that immediate, would foreclose the opportunity to use measures that avoid impacts to ecological functions.

(2) WAC 173-26-231(3)(a)(iii)(B) requires that the applicant demonstrate that nonstructural measures are not feasible or not sufficient. A geotechnical report is also needed in order to demonstrate the need to protect the primary structure from damage due to erosion.

(3) Under WAC 173-26-231(3)(a)(iii)(E), if a structural shoreline stabilization measure is demonstrated to be necessary, then the structure should be designed to minimize impacts, such as:

- Limiting the size of the stabilization measure to the minimum necessary.
- Using soft approaches unless demonstrated to not be sufficient to protect primary structures, dwellings, and businesses.

(4) Under the principles of environmental impact minimization established under WAC 173-26-201(2)(e), the master program shall include provisions that require proposed individual uses and developments to analyze environmental impacts of the proposal and include measures to mitigate environmental impacts not otherwise avoided (e.g. by restricting the occurrence of the development) or minimized (e.g. by the use of the impact minimization measures described above).

(5) WAC 173-26-231(3)(a)(iii)(E) state: "An existing structure may be replaced with a similar structure if there is a demonstrated need to protect principle uses or structures from erosion caused by currents, tidal action, or waves."

(6) WAC 173-26-231(3)(a)(iii)(C)

D. **Public Comments and Proposed Regulations.** There has been **significant public comment** received addressing shoreline stabilization regulations. Staff would encourage you to review prior public comments which have been included in past meeting packets. Below is a **summary of some of the key themes** from the public comments relating to shoreline stabilization, together with a brief response from staff on the status of the regulations with respect to the issue noted:

Public Comment	**Staff Response**
Sweeping changes to local SMP's are **not necessary**; improvements to salmon habitat are already realized under state and federal regulatory review and additional local regulations are not needed.	While staff would concur that the state and federal agencies undertaking review of shoreline stabilization are working to ensure that projects do not have an adverse affect on Chinook salmon or other listed species under ESA, the **City must still ensure that the standards it adopts comply with State Guidelines established for updated SMPs**, which are referenced above under Section III.B.. Current state and federal standards for shoreline stabilization do not address many of the newly required standards established in WAC 173-26-231(3) (e.g. requirements for geotechnical reports, standards addressing when measures are permitted, impact minimization provisions, and mitigation requirements, among some provision) and, as a result, modifications are needed.
More **flexible standards**, especially for redevelopment of piers and bulkheads, will provide greater opportunity for "no net loss', "net gain" and restoration".	Staff is including flexibility where possible.
Allow replacement of existing bulkheads or other structures with similar structures that will result in less impacts and "no net loss" compared to existing conditions. In each project where a hard shoreline stabilization structure is proposed to replace an existing one, the result is always an improvement over existing conditions and will meet the "no net loss" requirement. For instance, current designs of shoreline stabilization structures classified as hard reflect a softer shoreline than existing vertical bulkheads. Rock bulkheads are installed at a 3:1 batter to provide a softer design and very few vertical concrete bulkheads are installed along fresh water lake shorelines. Existing bulkheads replaced in the same location or slightly, often with beaches or pocket coves result in a "no net loss" over existing conditions. If existing conditions on an individual site are considered "impaired" a more environmentally friendly designed bulkhead, even if it consists of rock, would contribute to an overall improvement.	The proposed regulations may **allow replacement** of an existing hard shoreline stabilization structure, provided that there is a **demonstrated need** for the structure. This requirement is based on the provisions contained in WAC 173-26-231(3)(a)(iii)(E), which state: "An existing structure may be replaced with a similar structure if there is a demonstrated need to protect principle uses or structures from erosion caused by currents, tidal action, or waves." If replacement is authorized, then the impact minimization measures noted (e.g. battering back the bulkhead, etc.) would be evaluated as part of the proposal. Staff concurs that these types of impact minimization measures would result in improvements to existing conditions.
Concern about requirements for **geotechnical reports**. A geotechnical report is a costly expense for a property owner. Question why Ecology has not been requiring this since the Guidelines were adopted in 2003.	Draft regulations have responded to this comment where possible by **eliminating the requirements for geotechnical reports for replacement stabilization structures** (which would instead be required to

	submit a written justification establishing the need for the stabilization structure), and eliminating the requirement for a written supporting narrative for stabilization structures on properties where the residence is located within 10 feet of the OHWM, or where a hard stabilization structure is proposed to be replaced with a soft stabilization measure. However, it is important to note that the City is still required under the State Guidelines to **require a geotechnical report in most cases where a new or enlarged shoreline stabilization structure is proposed** under the provisions of WAC 173-26-231(3)(a)(iii)(B), which require submittal of "conclusive evidence, documented by a **geotechnical analysis**, that the [existing primary structure] is in danger from shoreline erosion caused by tidal action, currents or waves." The Guidelines are intended to be used for development of local master programs, rather than for administration of any permits that Ecology reviews. As a result, though Ecology may not have required geotechnical reports over the last several years, it is anticipated that this will become a requirement from local governments as local SMPs are adopted under the State Guideline provisions.
Erosion from tidal action, current or waves is typically evident and does not require a geotechnical report to verify. It is recommended that local governments have staff trained to address such issues in order to save property owner expense. Should the property owner disagree with the opinion of the staff they should hire a geotechnical engineer to prepare a geotechnical report. On the other hand, should DOE disagree with city staff, they should be required to hire a geotechnical engineer at department expense to prepare a geotechnical report. This procedure engages the city as an active part of the process and places the onus on the party who disagrees rather than solely on the property owner.	Please see notes above.
Requirements for **geotechnical analysis places a professional geotechnical engineer, local government, and the state in a legally vulnerable position** because it requires someone to estimate erosion rates based on unsubstantiated data. A single or unusual storm event could negate the professional opinion and result in damage or more extensive repairs than what would have been required if it was originally approved. Once again, the protection is directed toward a primary structure and does not consider the protection of the property itself which the WAC does appear to allow.	Please see notes above. Further, please note that the standards contained in WAC 173-26-231(3)(a)(iii) establish when structural shoreline stabilization measures may be conditionally permitted (to protect existing primary structures, in support of new non-water development, including single family residences, in support of water-dependent development, and to protect projects for the restoration of ecological functions). The provisions in Section 83.300.2 respond to these provisions.

Questioned the accuracy of **scientific study**.	See discussion section under Public Comments in Section VI below.
Carefully consider regulations addressing bulkheads. Restoring natural shorelines **will not work in all locations** and in many cases depending on the water depth at the face of the existing bulkhead a property owner will need to shift their shoreline landward quite a bit, which can impact setback and the amount of impervious area.	Staff concurs that softer approaches **may not be feasible to undertake on all properties**. Responding to the requirements established in WAC 173-26-231(3)(a)(iii)(B), which requires that the applicant demonstrate that nonstructural measures are not feasible or not sufficient, the proposed standards contain provisions requiring that the feasibility of using soft shoreline stabilization measures be pursued. If these provisions are not feasible, then hard stabilization structures would be permitted with design requirements to minimize impacts (e.g. limiting the size, shifting or sloping the structure landward, etc.).
Concerned that removal of existing bulkheads may **adversely impact neighboring properties**.	In order to provide a transition to adjoining properties, the proposed regulations would **allow a hard structural shoreline measure to be installed at the edges of the subject property and tie into existing bulkheads on the adjoining property.** (see 83.300.7).
Concerned that removal of existing bulkheads will **affect lot area.**	The proposed regulations permit the applicant to identify the previous location of ordinary high water mark and **use the pre-restoration location for purposes of calculating lot coverage and setbacks** (see 83.300.5.l).
Should include provisions for property owners to protect their properties from storm damage and/or erosion, as ruled by federal courts. **Property owners should be allowed to reduce the wave action in order to protect their property.** Draft regulations would be expensive, an intrusion on property rights, more than what is necessary to comply with the law and will not achieve the goal of "no net loss."	The proposed regulations **would permit property owners to protect primary structures with a showing of need**, either through a geotechnical report (for new or enlarged) or narrative (for replacement). In preparing the proposed regulations, staff has attempted to balance a number of potentially competing objectives, including protecting property while protecting and ecological function and complying with new state guidelines.
Shoreline vegetation standards from the perspective of piers and bulkheads are already a major part of project approval. If planting plan is required for a project, **plan approved by state and federal agencies should be accepted by local government.**	This c**oncept has been included in the provisions**, under 83.300.5.d.2).
Concern that **spawning gravels placed at site were washed away in storm.**	Placement of gravel/cobble beach fill material waterward of the ordinary high water mark is a mitigation measure that is often incorporated by federal agencies into bulkhead repair or replacement projects and is included as part of the draft regulations as mitigation for new and enlarged shoreline stabilization structures. This type of measure is **not a form of soft shoreline stabilization**, which would include other structural components (e.g. logs, boulders, etc.) to stabilize the

	shoreline against wave action. Staff has proposed language to be included in the SMP addressing **standards for material placement and sizing** to address this type of circumstance (see 83.300.5.d.2)).

IV. PIERS

A. Introduction. As noted above in Section III.A, much of Kirkland's shoreline presently has low performance for a number of different shoreline functions. Shoreline modifications and near shore structures have, together with other changes, altered Lake Washington's aquatic ecosystem. **Degraded shoreline conditions** resulted originally from lowering the lake water surface levels when the Locks were constructed. Further adverse impacts are a result of urbanization and the majority of the Kirkland's shoreline (approximately 67 percent) is now used for urban commercial and residential uses. As reported in the Chinook Salmon Conservation Plan, "Overwater structures have **increased shading and segmented the lake shoreline and nearshore areas**, affecting aquatic organisms such as benthic invertebrates, a prey item of juvenile Chinook (Warner and Fresh 1998; Kahler et al. 2000; Koehler 2002). Docks and piers also **affect the migration movements of juvenile Chinook**. These alterations have **reduced the amount and quality of shallow water habitat**, an important habitat for rearing juveniles (Tabor and Piaskowsi 2002; Tabor et al. 2003)."

At the same time, piers are an **important aspect of lakeside living** and provide recreational amenities and, in certain cases, public access to the shoreline. As with shoreline stabilization, the challenge in establishing updated provisions will be achieving the right **balance** between enjoyment and recreational access to the water and improvement of the shoreline conditions.

B. **Purpose**. With the updated regulations we need to address several different objectives, including the following:

1. Providing for **water-dependent use** along the shoreline.
2. Achieving new State requirements for **no net loss**.
3. **Improving shoreline ecological functions.**
4. Enhancing **habitat for migrating juvenile Chinook salmon**.
5. Providing **consistency with state and federal permitting**, particularly streamlined permitting for fish friendly designs.
6. **Responding to WRIA 8 recommended actions** (see Section D below).

As with shoreline stabilization, the presence of overwater and in-water structures along the shoreline has become an increasing area of concern for a number of reasons:

- Enhanced review that is taking place at the state and federal agencies to respond to the **Endangered Species Act listing of Chinook salmon** and the subsequent scientific understanding of **piers affects on salmon habitat.** In the Lake Washington/Sammamish SMP Guidance issued by ECOLOGY in Fall 2008, Ecology specifically states: "By way of example, recent studies focusing on the affects of shoreline alterations to salmon migration in the littoral environment of lakes…have raised concern pertaining to both the physical barrier of a dock/pier as well as affects to aquatic habitat for both migrating and rearing salmon species." (Note: the studies referenced are included in the guidance memo issued by Ecology).
- Compliance with **specific State requirements that establish provisions for piers** which need to be included in the updated SMP (see WAC 173-26-231(3)(b), pages 77-78 of http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/SMP_Guidelines_Final.pdf (included as Attachment 3). In addition, standards are provided for boating facilities, which would address commercial marinas and piers serving multifamily sites, and are contained in WAC 173-26-241(3)(c), page 84 of http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/SMP_Guidelines_Final.pdf (included as Attachment 3)

C. State Requirements. The following summarizes some of the key requirements that the new standards for piers must address.

1. WAC Requirements for **Piers** (General) (*supplementary to No Net Loss*) – **WAC 173-26-231(3)(b)** establishes the following standards for piers and docks:

   (A) **Allowed** only for:

   1. Water dependent use (including single-family docks).
   2. Public access.

   (B) Permitted only when the applicant has demonstrated that a specific **need** exists to support the intended water-dependent use (except single-family);

   (C) **Minimum size** necessary to meet the needs of the proposed water-dependent use;

   (D) New residential development of two or more dwellings to provide **joint use** or community dock facilities, when feasible, rather than allow individual docks for each residence;

   (E) Piers and docks shall be designed and constructed to **avoid or, if that is not possible, to minimize and mitigate the impacts to ecological functions; and**

   (F) Master programs should require that structures be made of **materials** that have been approved by applicable state agencies.

2. WAC Requirements for **Navigability and Migration**. WAC 173-26-211(5)(c)(ii)(D) also states: "All developments and uses on navigable waters or their beds should be located and designed to minimize interference with surface navigation … and to

allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration."

3. WAC Requirements for **Single-Family Piers** (*supplementary to General Requirements noted above*) – WAC 173-26-231(3)(b) contains the following provisions specifically addressing piers associated with single-family residences:
    (A) A dock associated with a single family residence is a water dependent use provided that it is designed and intended as a facility for access to watercraft; and
    (B) Master programs should contain provisions to require new residential development of two or more dwellings to provide joint use or community dock facilities, when feasible, rather than allow individual docks for each residence

4. WAC Requirements for **No Net Loss - Cumulative Impacts** - WAC 173-26-186. Evaluation of cumulative impacts should consider:
    (A) Current circumstances affecting the shorelines and relevant natural processes;
    (B) Reasonably foreseeable future development and use of the shoreline. and
    (C) Beneficial effects of any established regulatory programs under other local, state, and federal laws.

5. WAC Requirements for **Protection of Resources with Limited Information** - WAC 173-26-201(3)(g) states that as a general rule, the less known about existing resources, the more protective SMP provisions should be to avoid unanticipated impacts to shoreline resources.

6. WAC Requirements for **Environmental Impact Mitigation** - WAC 173-26-201(2)(e) states that to assure no net loss of shoreline ecological functions, master programs shall include provisions that require proposed individual uses and developments to analyze environmental impacts of the proposal and include measures to mitigate environmental impacts not otherwise avoided or mitigated by compliance with the master program and other applicable regulations… Master programs shall indicate that, where required, mitigation measures shall be applied in the following sequence of steps listed in order of priority, with (a) of this subsection being top priority:
    (A) **Avoiding** the impact altogether by not taking a certain action or parts of an action;
    (B) **Minimizing** impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
    (C) **Rectifying** the impact by repairing, rehabilitating, or restoring the affected environment;

(D) **Reducing or eliminating** the impact over time by preservation and maintenance operations;
(E) **Compensating** for the impact by replacing, enhancing, or providing substitute resources or environments; and
(F) **Monitoring** the impact and the compensation projects and taking appropriate corrective measures.

D. WRIA 8 Recommendations. Staff is evaluating the WRIA 8 Conservation Strategy as one of the resources providing both scientific and policy guidance for the development of the SMP revisions. The Chinook Salmon Conservation Strategy document identified a number of recommended actions that are applicable to Kirkland, including:

- One of the WRIA 8 action items for northern Lake Washington, including Kirkland, is to "**support joint effort by NOAA Fisheries, WDFW, USACOE, USFWS to develop specifications for new piers**…" RGP 3 is the result of this collaboration.
- "**Minimize … overwater structures** that would either disrupt normal migration rates and patterns or limit access to shallow feeding and refuge areas."
- "Encourage **salmon friendly shoreline design** during new construction or redevelopment by offering incentives and regulatory flexibility to improve … dock design and revegetate shorelines. Increase enforcement and address nonconforming structures over long run by requiring that major redevelopment projects meet current standards."
- "**Promote value of light-permeable docks, smaller piling sizes, and community docks** to both salmon and landowners through direct mailings to lakeshore landowners or registered boat owners sent with property tax notice or boat registration tab renewal. Offer financial incentives for community docks in terms of reduced permit fees, loan fees/percentage rates, taxes, and permitting time, in addition to construction cost savings."
- "The outmigration of juvenile Chinook would benefit from improved shoreline connectivity. The **use of mesh dock surfaces and/or community docks** would reduce the severity of predation on juvenile Chinook.
- In the WRIA 8 Chinook Salmon Conservation plan, Kirkland's shoreline is identified as a **Tier 1 migratory corridor for Chinook Salmon**. The plan contains the following technical priorities addressing piers:
    - Reduce predation to outmigrating juvenile Chinook by: reducing bank hardening, restoring overhanging riparian vegetation, replacing bulkheads and rip-rap with sandy beaches with gentle slopes, and **use of mesh dock surfaces and/or community docks.**

E. **Existing Conditions**. The Final Shoreline Analysis Report completed in 2006 provided a characterization of the amount of existing overwater coverage in the City (see Table 8 on page 15 of the Final Kirkland Shoreline Analysis Report). In addition, staff reviewed permitted history for new, enlarged, or replacement piers that have taken place since the RGP-3 was implemented and summarized these projects in Attachment 4 for review. Based on a review of aerial photographs, it appears that the breakdown of lots with existing piers and those without piers would be as follows:

Shoreline Environment	# of Lots with Pier(s)	# of Lots without Pier(s)
Residential – L	90 (with approximately 2 existing joint piers)	9 (including three waterfront street ends)
Residential – M/H	45 (with approximately 3 existing joint piers)	11 (including one waterfront street end)
Urban Mixed	10 (includes public piers)	3
Urban Conservancy	5 (at park, rather than a single lot and includes public piers)	2 (including community owned property near Juanita Beach)

F. **Overview of Potential Impacts and Opportunities.** The following provides an overview of the potential negative impact piers can have on the lake's ecological function, and a list of actions that can minimize or mitigate for these impacts. The impacts noted are summarized in more detail in the Final Kirkland Shoreline Analysis Report, sections of which have been included in Attachment 5. References to scientific studies are found in this Analysis Report and noted below in Section VI.B below. Note: The **nearshore area** of the lake is of particular importance because aquatic life is richest and most abundant in these shallow water areas. Aquatic plants provide a food source and substrate for algae and invertebrates, as well as habitat for fish and other organisms. In particular, this shallow-water habitat is very important to juvenile salmon migrating along the lake shoreline, as a refuge area from predators and for its shallow-water habitat characteristics.

Pier Elements	Impacts	Actions to Minimize or Mitigation
Overwater cover (new and existing)	Overwater structures can shade waters beneath, interfering with aquatic vegetation growth, benthic invertebrates, and salmon migration. May increase attraction of salmon predators, and may introduce contaminants into the water column.	For new piers, pier replacements, and pier additions or other modifications: • Elevate pier decks to increase light penetration • Install grating on new piers, or replace decking with grating on replacement piers • Minimize width of pier structures, particularly in the nearshore • Remove unnecessary overwater structure in the nearshore 30 feet

Pier Elements	Impacts	Actions to Minimize or Mitigation
		• Encourage use of joint-use piers • New decking and replacement decking should be untreated or use only approved aquatic treatments • Design or shift overwater cover (including boats) to the terminal end of the pier.
Piles and other in-water structures such as watercraft lifts (new and existing)	Piles and other simple in-water structures (e.g., free-standing boatlift supports) can provide nesting habitat for juvenile salmon predators at their base, ambush (foraging) habitat for predators, interfere with natural movement and accumulations of lakebed substrate, and introduce harmful contaminants into the water column or the food chain.	For new piers, pier replacements, and pier additions or other modifications: • Reduce the number of piles by increasing pile spacing requirements • Reduce the diameter of piles • Remove any piles unnecessary to support a pier or safely moor a boat • New piles and replacement piles should be untreated or use only approved aquatic treatments
Skirting	Skirting blocks ambient light from penetrating underneath the pier, and can physically block salmon migration and the movement of lakebed substrates.	• Prohibit installation of new skirting • Require removal of existing skirting for all other pier projects
Construction	Short-term in-water construction activities (primarily pile-driving) can directly kill a listed species, can interrupt fish migration, and can cause acute water quality impacts.	• Require compliance with state and federal timing restrictions to protect fish and other aquatic life • Require use of BMPs such as sediment curtains, special equipment or techniques to minimize vibration, etc

G. **Conceptual Policy Options for Piers**. As explained in Section C above, several elements of the WAC Guidelines direct our development of pier regulations. The requirement for "no **net loss** of ecological functions" is just one of them. Additional WAC requirements address the required **use of mitigation sequencing** for all projects (new uses and developments, as well as replacements, enlargements, and repair/maintenance) and direction to **construct piers to the minimum size necessary** to accommodate the water-dependent use (boat moorage). As explained by Ecology in a guidance memo issued in Fall 2008, "Achieving no net loss of ecological function relies on consistent application of mitigation sequencing. Mitigation sequencing sets a priority to first avoid, then minimize, rectify, reduce or compensate for impacts." Finally, regulations for all uses and modifications, including piers, should be developed based "on an analysis incorporating the most current, accurate, and complete scientific or technical information available." The options outlined in the table below for different pier actions implement all of these WAC requirements to varying degrees.

Note: The **RGP 3** provisions noted herein refer to a Regional General Permit issued that applies to Construction of New or Modification of Existing Residential Overwater

Structures and Installation of Moorage Pilings (A link to the RGP 3 document can be reached via the following: http://www.nws.usace.army.mil/publicmenu/DOCUMENTS/REG/RGP%203%20Final%20Text%20_6-13-05_.pdf and a summary is provided in Attachment 6). A **regional general permit** (RGP) is an Army Corps of Engineers authorization that is issued on a regional **(limited geographic scope** – in the case of RGP 3 for Lake Washington, Lake Sammamish, the Sammamish River and Lake Union, including the Lake Washington Ship Cana) basis for a category of activities when those activities are substantially similar in nature and cause only minimal individual and cumulative impacts on the aquatic environment.

Each RGP has a number of terms and conditions that must be met in order for an applicant to use an RGP. The conditions related to piers are summarized in Section H below. In most instances, anyone complying with the terms and conditions of an RGP may receive project specific authorization. For those not able to comply with the terms and conditions, authorization may be received via another type of Department of the Army Corps of engineer permit. In the table below, staff has presented a number of conceptual options and is seeking Planning Commission input on which option(s) to further explore and begin to develop proposed regulations. Please note that the options put forth below focus on piers that serve single family residences. Staff would like to get initial policy direction on this type of pier in order to better inform our approach for commercial piers or piers serving multifamily projects.

Pier Action	Conceptual Approach	Staff Discussion
New Pier	***Option 1:*** Require use of RGP 3 standards (see table below under Section H). Deviations from RGP 3 standards would require a Shoreline Variance.	While this option provides little flexibility, it provides the most consistency with the City's WRIA 8 commitment to support state and federal pier regulations in the interest of streamlining. RGP 3 represents the latest scientific understanding. Option 1 is consistent with the WAC requirements that piers be the "minimum size necessary to meet the needs of the proposed water-dependent use," which is boat moorage and that projects utilize mitigation sequencing in their design. This option is most easily evaluated in the cumulative impacts analysis. However, many piers approved by the Corps since RGP-3 was authorized have not met the dimensional standards established in the RGP-3.
	Option 2: Administrative approval of an alternative pier design that received Corps and WDFW permits or use RGP 3 standards.	This option provides greater flexibility than Option 1, and avoids the need for an expensive and time-consuming Shoreline Variance process if the RGP-3 standards were not met. Many piers approved by the Corps since the RGP-3 was authorized have not met the dimensional standards established in the RGP-3. To enable the cumulative impacts analysis, the regulations for the alternative pier design must include some dimensional limitations. More study would need to be done if this option were chosen, but preliminarily, limitations might include a 6'-wide walkway, and 8'-wide ell, and a length of 150 feet, similar to the existing SMP. Use of the alternative pier design approach may require that the applicant submit a revision request to the City if the City permit applications are filed prior to conclusion of the state and federal permit processes. Or, an applicant will need to complete the state and federal permit processes before applying to the City.

Replacement Pier	***Option 1:*** Require use of RGP 3 standards (see table below). A Shoreline Variance would be required for any exceedance of the RGP 3 standards.	Replacement piers are the City's most significant opportunity to realize "no net loss" in compensation for anticipated new piers, and potentially to reduce overwater cover City-wide. See discussion of Option 1 under New Piers above for additional discussion.
	Option 2: Administrative approval of an alternative pier design that received Corps and WDFW permits or use RGP 3 standards.	See discussion of Option 2 under New Piers above for discussion.
	Option 3: Require area of pier to be reduced to either meet the RGP-3 standard or by 10 percent of existing pier size, whichever is less. Require use of RGP 3 standards for other specific dimensional and material specification	These options provide greater flexibility than Option 1 and may provide more predictability than Option 2, and avoid the need for an expensive and time-consuming Shoreline Variance process if the RGP 3 standards were not met. These two options would both result in an improvement in ecological function at the property scale, but differ in their level of implementation of other WAC requirements. Specifically, the requirement to avoid and minimize impacts is implemented more fully in Option 3. Option 4 does not meet the WAC requirement to minimize pier size. Ecology has advised the City that a "replacement pier, if constructed exactly like it was <u>will likely continue to create impacts</u> to ecological functions that can be reasonably avoided (the first requirement in mitigation and NNL) if more appropriate materials are used." Demonstration of no net loss may be difficult to achieve using these options.
	Option 4: Allow applicants to replace the existing pier with same dimensions, but utilize other impact minimizing measures such as grating, pile size and spacing, etc.	

Pier Enlargement or Addition	***Option 1:*** Allow under certain defined circumstances, such as need to reach 10 feet of water depth, or to increase safety of moorage by adding a finger or ell to form enclosed boatslip or change orientation of boat moorage with respect to wind and waves. Additions must meet RGP 3 dimensional, material, and mitigation standards.	All pier enlargements and additions under Option 1 would unavoidably increase the overwater cover and the number of piles, unless balanced by removal of any unnecessary nearshore overwater cover as required by RGP 3. However, it is not anticipated that there are many opportunities for overwater cover removal in the nearshore 30 feet.
	Option 2: Same as Option 1, but additionally require that enlargement/addition is compensated for with conversion of equivalent area of nearshore solid decking with grating.	Similar to Option 1, but includes additional impact minimization measures targeting the more critical nearshore environment.
	Option 3: Same as Option 1, except that the addition may match the scale of the existing pier with respect to width and decking material. The addition must be mitigated with nearshore improvements. In order of preference, nearshore improvements would include conversion of equivalent area of nearshore solid decking with grating, construction of a cove or larger shoreline softening measure, or installation of new lakebed materials to increase shallow-water conditions.	This option does not utilize RGP 3. For that reason, applicants pursuing an addition under this option have the least amount of predictability relative to Options 1 and 2. Similar to options presented above that provide a process for administrative approval of design not consistent with RGP 3, applicants using this option may need to submit a revision request to the City if the City permit applications are filed prior to conclusion of the state and federal permit processes. Or, an applicant will need to complete the state and federal permit processes before applying to the City. This option would be difficult to evaluate in the Cumulative Impacts Analysis.
Pier Reconfiguration	Because pier reconfiguration usually is a combination of replacement of some components and addition of other components, options for this pier action depend on the options for new piers and replacement piers chosen by the Planning Commission for further development.	To be developed after selection of pier addition and pier replacement options.

Pier Maintenance and Repair Note: Establishment of a threshold separating maintenance/repair and replacement may need to be defined. (e.g. over 5 year period, if more than 60% percent of pilings replaced or 60% percent of substructure replaced, activity is considered replacement)	***Option 1:*** Allow maintenance and repair to replicate current pier, with exception of requirements to use safe chemical treatments (e.g., creosote piles may not be replaced with creosote piles).	This option would not take advantage of maintenance and repair actions that present an opportunity for introduction of impact minimization measures (such as grating). As Ecology has indicated, replacement piers "will likely continue to create impacts to ecological functions that can be reasonably avoided." The same is true of replacement pier components. While repair and maintenance are exempt from a Shoreline Substantial Development Permit, they are not exempt from the requirements of the Shoreline Management Act and the Shoreline Master Program. While this option may be permittable by the Corps, WDFW is requiring that decking replacements use grating.
	Option 2: Allow maintenance and repair, but fully implement feasible impact avoidance and minimization techniques consistent with the type of repair proposed. E.g., use grating for all decking replacement, including when decking is temporarily removed to implement substructure or pile replacements, use steel small-diameter pile for replacement of first pile set. Decking replacements could locate the grating in the nearshore if approved by all other agencies.	This option maximizes implementation of all WAC requirements, and has the greatest consistency with other agency requirements.
New boatlift/jetski lifts and canopies	***Option 1:*** Adopt standards similar to RGP 1 (see table below in Section H).	While this option provides little flexibility, it provides the most consistency with the City's WRIA 8 commitment to support state and federal pier regulations in the interest of streamlining. RGP 3 represents the latest scientific understanding.

H. Other Issues Related to Piers. There are a number of other key issues relating to piers. Staff has outlined some of the key additional issues below and is requesting Planning Commission feedback as staff begins to update existing provisions.

a. Setbacks from property line. The current SMP establishes a **10-foot** setback for pier, measured from the property line (see Attachment 7). This standard was likely established to try and ensure that boats that are moored at the site are not located in front of adjoining property, potentially impacting views. **Greater setbacks are required for piers that would provide moorage for more than two boats**, if the adjoining property is developed with a single-family residence. Staff

Recommendation: Based on current information, it is recommended that this standard continue under the proposed regulations.

b. Setbacks from adjoining moorage structures. The current SMP requires a **25-foot separation between piers** (see Attachment 7). This standard was likely established to provide separation between piers for navigability. **Greater distances are required for piers that would provide moorage for more than two boats**. Staff Recommendation: Based on current information, it is recommended that this standard continue under the proposed regulations.

c. Setbacks from public parks. The current SMP establishes a **25-foot setback** for piers from public parks (see Attachment 7) in the existing Suburban Residential (now Residential – L) shoreline environment. A**dditional separation is required for other shoreline environments (e.g. Urban Mixed) or if the pier provides moorage for more than two boats**. This standard has potentially limited some properties from pursuing a pier. Staff Recommendation: Staff would like to discuss this standard and determine whether there is interest in continuing this provision in the updated regulations.

d. Setbacks from Natural areas or stream mouths. There is presently no standard for this presently; however, piers are typically separated from natural areas as a result of the setback from public parks noted in Section c. Staff is inquiring about whether any **additional standards** should be put in place to **separate piers from stream outlets** or other natural areas that may not be designated as a public park. This standard could be beneficial in order to limit structures in areas near streams, which juvenile salmon have been noted to prefer. (According to Tabor et al. 2006, juvenile Chinook congregate around stream inflows (Feb-June). He also noted that the abundance increases with high flow events and the juveniles do appear to prefer stream mouths close to their natal streams). Staff Recommendation: Staff would recommend including a separation standard from stream outlets.

e. Joint-use. The current SMP encourages property owners in the Suburban shoreline environment to develop joint or shared moorage facilities. If this occurs, the joint or shared moorage facility may contain up to two moorages for each waterfront lot participating in the joint or shared moorage facility. Staff is recommending that this provision be retained, together with additional provisions **demonstrating why joint moorage would not be feasible**. Additionally., the WAC Guidelines indicate that "master programs should contain provisions to require new residential development of two or more dwellings to provide joint use or community docks, when feasible, rather than allow individual docks for each residence". Staff Recommendation: Staff would recommend adding **language to the land division provisions that would contain requirements for use of joint use moorage for the new lots**.

f. Standards for pier structures associated with marinas or public access boardwalks. As noted above, once initial input is received on the approaches for pier standards, staff proposes to apply similar principles to other overwater structures, such as piers associated with marinas and public access.

I. **Public Comments and Conceptual Alternatives.** There have been a number of public comments received addressing piers and staff would encourage you to review prior public comments which have been included in past meeting packets. Below is a **summary of some of the key themes** from the public comments relating to piers, together with a brief response from staff on the proposed conceptual approaches:

Public Comment	Staff Response
Sweeping changes to local SMP's are **not necessary**; improvements to salmon habitat are already realized under state and federal regulatory review and additional local regulations are not needed	Staff anticipates some changes may be needed. For instance, the existing SMP does not contain dimensional standards for piers, yet DOE has advised cities that dimensional standards will be required. (From the Fall 2008 Guidance Memo: "Specific to Piers/Docks, jurisdictions will need to refer to specific development standards as a basis for evaluating the build-out potential allowed through future implementation of the updated SMP. This analysis of cumulative impacts must consider the potential risks to shoreline ecological functions if the shoreline were to be fully developed to the maximum intensity allowed through the updated SMP. Therefore, specific to new Piers/Docks, dimensional standards must be proposed as part of the updated SMP".
There are regulations in place to address impacts through both the state and federal processes. It is important that **local governments are careful not to impose overly rigid restrictions that force property owners to pursue Shoreline Variances or Conditional Use Permits.**	Several options above provide alternatives to using RGP 3 standards.
More **flexible standards**, especially for redevelopment of piers and bulkheads, will provide greater opportunity for "no net loss', "net gain" and restoration".	The options proposed vary as to the degree of flexibility.
Questioned the accuracy of best available **science**.	See discussion section under Public Comments in Section V below.
Kirkland needs to revise regulations to allow for **greater height above Ordinary High Water** in order to be consistent with state and federal requirements for pier height above the water	Staff recognizes this inconsistency and will ensure that new standards are consistent with state and federal requirements for pier height above the water.
Concerned that **minimum width for docks** as required by RGP-3 is **too narrow**	Several options allow for alternatives to use of the RGP 3 width requirements (e.g. Option 2 for new piers and replacement piers, or Option 3 for expansions to existing piers).
Advocates that the City **not adopt the Regional General Permit 3** guidelines into our regulations for	The concepts proposed do envision a separate review process for redevelopment of existing structures. A

piers and docks. Advocates for a **separate process for redevelopment of existing structures** to be adopted which allows property owners making improvements without complying with the RGP-3 guidelines. Include a process to evaluate the properties that have existing structures being replaced or modified differently than those who have undeveloped shorelines. Encouraging property owners to decrease the size or modify the configuration of their current structure by proposing a more environmentally pier or bulkhead, even if it does not align with newly proposed structures, will benefit everyone and the environment. Having a single standard and process for everyone will deter many property owners from even considering changes if there are no incentives to respect and recognize their good faith efforts.	variety of options are presented, some of which incorporate aspects of the RGP-3 (e.g. using dimensional standards other than area, such as pier width), while some, such as Option 4, does not rely upon RGP-3 standards.
The city should **inventory the existing overwater coverage of all private and commercial piers to adequately assess existing conditions**.	The City has completed an overall inventory (see Table 8 in the Final Shoreline Inventory), and have looked back at past permitting history to see what has been approved since the RGP-3 was adopted.
The replacement of existing piers with the same or smaller sized piers, grated surfaces, elevated higher above the water surface, using glu-lam beams for longer spans between piles, smaller diameter and less piles, along with approved wood preservative treatments should all be considered when evaluating a redevelopment project.	These provisions would be included in all of the conceptual options for replacement piers.
Concerned about limitations use of **treated wood**, which is required by building codes.	Draft concepts allow for approved wood treated materials.
Kirkland, as largest property owner along shoreline, has biggest impact and needs to **consider how regulations would impact their activities as well as those of private property owners.**	Staff concurs and has consulted with Parks staff about concepts being considered.

J. **Boatlifts and canopies.** As discussed during the policy preparation work completed in the Spring of 2008, the **current SMP standards do not allow canopies** within the shoreline environment. Boatlifts are currently permitted through review as a Substantial Development Permit. There was discussion of **amending the prohibition on canopies**, as requested by several property owners, and crafting new standards to include design provisions that would minimize impacts to shoreline ecological functions. The Army Corps of Engineers has adopted a Regional General Permit (RGP 1, a copy of which can be viewed at http://www.nws.usace.army.mil/PublicMenu/documents/REG/RGP_1_Rev_Text(1-29-07).pdf, with a summarized version provided in Attachment 8) that provides standards for watercraft lifts (and associated canopies) in Washington State that, like the RGP 3 provisions, can provide some guidance for installation standards that have been identified as having minimal individual and cumulative impacts on the aquatic environment. These provisions also need to be balanced with other important considerations, including **aesthetics and community character**. Key questions that need to be resolved for any new standards, include the following:

a. Should canopies be permitted? As discussed in earlier policy development, staff would recommend that canopies be permitted, subject to certain design standards, including use of a translucent canopy, as well as standards addressing orientation and location.

b. How many canopies should be permitted per pier? Does this differ between piers serving single family residences and piers that may serve multiple residences (e.g. for attached or stacked dwelling units)? The RGP-1 standard would permit only **one canopy** to be installed per single or joint use residential overwater structure (see Category E below). Staff would recommend incorporating this limitation into the new provisions for single-family residences and would like to discuss appropriate limitations on the number of canopies for piers serving multifamily developments. Staff is concerned about potential aesthetic impacts is numerous canopies were to be installed at a multifamily pier.

c. Should the City establish standards limiting the number of watercraft lifts that may be permitted? Should the City continue to limit the number of boats that the pier is designed to provide moorage space for? The existing SMP includes the following standard: "In the suburban residential shoreline environment, moorage structures and facilities may not provide moorage for more than two boats; provided, however, that waterfront lots in this environment are encouraged to develop joint or shared moorage facilities. If this occurs, the joint or shared moorage facility may contain up to two moorages for each waterfront lot participating in the joint or shared moorage facility."

As a result, in the Suburban Environment, **no more than two boatlifts would now be permitted.** The RGP 1 provides a number of different options, requiring additional mitigation for an increase in the number of lifts installed. For

instance, under the RGP 1, one ground-based or floating watercraft lift (without a canopy) can be installed without mitigation. If additional lifts are proposed, mitigation would be required to install the additional lifts (see Category C and D), to a limit of 3 lifts on a pier serving a single-family residence, with no limit on the number of lifts serving a joint use structure.

Staff would recommend that the Planning Commission **discuss whether the update should continue to limit the number of boats moored at the site**. If so, then limitations on the number of boatlifts should be consistent with this standard. If not, then staff recommends that appropriate limitations be placed on the number of new ground mounted boatlifts, which can have more impacts that either floating or suspended lifts because the lift would be located in-water.

d. Should mitigation be required for installation of lifts or their associated canopy? Staff would recommend **use of design standards that focus on the position (e.g. orientation), material of canopy, and location (in deeper water or at terminal end of pier)** in lieu of specific mitigation measures.

V. PUBLIC INVOLVEMENT

A. **Public Comments**. This memo includes five written comment letters (see Attachments 9-13).

B. **Response to Specific Issues.** Staff would like to provide a response or clarification to several questions that are included in the attached comments. Staff will respond more specifically to the issues addressed by Mr. Connor in Attachment 13 when shoreline setbacks are brought back to the Planning Commission at a later date.

1. **Presence of Salmonids in Lake Washington and along Kirkland shorelines.** There has been concern expressed that the **presence of salmon, which has been used as a basis for restoring the shoreline, has not been thoroughly established along Kirkland's shoreline**. Below is information concerning the status of Chinook and other salmon in Lake Washington, including along the shores of Kirkland.

   As stated in the City shoreline's inventory dated December 1, 2006, adult Chinook salmon migrate from Puget Sound through the Chittenden Locks and into Lake Washington between July and September, continuing on to various tributary streams where they spawn in October and November. Chinook salmon have been specifically documented in Juanita Creek and in Juanita Bay; sockeye salmon are documented in Juanita and Forbes Creeks; coho salmon are documented in Juanita, Forbes and Yarrow Creeks; and kokanee salmon are documented in Juanita Creek. Chinook fry emerge from their redds between January and February, and either rear in the natal stream or emigrate to Lake Washington for a rearing period extending from three to five months.

   Other anadromous salmonids spawning and/or rearing in the Lake Washington watershed include sockeye salmon, coho salmon, steelhead trout, and possibly bull

trout. Sockeye salmon spawning has also been documented in several locations along Kirkland's shoreline (note: these exact locations may no longer be mapped correctly, but suitable sockeye salmon spawning habitat is available along Kirkland's shorelines – this species' use of Kirkland's shoreline is very secondary in our development of regulations). Information sources for these citations include King County Department of Natural Resources and Washington Department of Fish and Wildlife.

The following are links to a few of the available **maps**:

- http://www.govlink.org/watersheds/8/reports/fish-maps/chinook/pdf/Chinook.pdf (note: the map for Chinook salmon shows salmon throughout Lake Washington)
- http://www.govlink.org/watersheds/8/reports/fish-maps/coho/pdf/Coho.pdf
- http://www.govlink.org/watersheds/8/reports/fish-maps/sockeye/pdf/Sockeye.pdf
- http://www.govlink.org/watersheds/8/planning/chinook-plan/volumeI/06_Chapter_4_Conservation_Strategy.pdf (see last page of document, illustrates Chinook migratory/rearing corridors - yellow highlight)
- WDFW's SalmonScape website also shows documented fish use of Kirkland streams: http://wdfw.wa.gov/mapping/salmonscape/

Roger Tabor of the U.S. Fish and Wildlife Service provided the following information when asked recently (November 18, 2008) about juvenile Chinook salmon usage of Kirkland shorelines:

> "I looked back at some old beach seining data (unpublished) from WDFW and they had a site at **Juanita Beach** and they did collect some juvenile Chinook salmon at this site and probably every site they sampled. This data is from Kurt Fresh's project who now works for NOAA Fisheries.
>
> Also, I doubt if there is any shoreline area in Lake Washington or in Lake Sammamish that Chinook smolts don't use; albeit, the abundance between sites may be extremely different. I based this on a few things.
>
> 1) About 2 million Chinook are released from Issaquah Hatchery.
> 2) These hatchery fish have been observed in the Cedar River and other locations in the south end of Lake Washington.
> 3) Our tracking results indicate they are primarily shoreline oriented.
> 4) Tracking and visual observations indicate they are schooled and most are moving in one direction but often schools are moving in the opposite direction.

It seems logical that **Chinook are all over the lake**. The only way Chinook could entirely miss Kirkland is if all the hatchery and naturally-produced fish from the eastside decided to only use the west shoreline of Lake Washington, which is highly unlikely."

Kurt Fresh of the National Marine Fisheries Service (formerly with Washington Department of Fish and Wildlife) provided the following information when asked recently (November 20, 2008) about juvenile Chinook salmon usage of Kirkland shorelines:

> "…As Roger, suggests, until mid to late May, the **ONLY place we have ever found juvenile Chinook salmon is along the shorelines**."
>
> Mr. Fresh noted that beach seine surveys of three Kirkland waterfronts (Waverly Park, Houghton Park, and Juanita Bay Park) all netted juvenile Chinook salmon.

2. **Scientific Studies.** There has also been concern expressed that the science that staff is consulting is inconclusive and self-contradicting and it has been recommended that in light of this lack of information, jurisdictions on Lake Washington as well as Department of Ecology should conduct comprehensive studies to answer these questions before completing the SMP update processes.

   Under WAC 173-26-201(2)(a), local governments are directed to **identify, compile, and base master program provisions on the most current, accurate, and complete scientific and technical information available** that is applicable to the issues of concern. The **City has and continues to compile information as it becomes available,** including scientific literature or summaries of scientific literature, including research from academic institutions, federal and state agencies, and other material from reliable sources of science. Links to a number of relevant scientific studies can be found at http://www.ci.kirkland.wa.us/depart/Planning/Code_Updates/Shoreline_Master_Program_Update.htm under "Scientific Studies."

   It is important to note that **scientific information continues to be developed**, specifically addressing piers and bulkheads. For instance, the letters from Futurewise and from Mr. Sandaas both make mention of a literature review of different scientific studies completed as part of the City of Bellevue's Critical Area Ordinance update process, which addressed bulkheads and piers along Lake Washington. This report, entitled *Final Report: A summary of the Effects of Bulkheads, Piers, and Other Artificial Structures and Shorezone Development on ESA-listed Salmonids in Lakes*, is now a nine-year old document.

   The Washington Department of Fish and Wildlife, National Marine Fisheries Service, and the U.S. Fish and Wildlife Service have all conducted studies since that time, which continue to support the conclusions drawn in 2000.

It is recognized that scientists may not have had a statistically valid answer to every possible question about piers, bulkheads and salmon in 2000. However, the **studies referenced are the best information available and are the culmination of decades of research** into salmon and other fish ecology, behavior, predator-prey relationships, habitat use, diet, physiology, etc. Staff believes these are important and relevant tools to evaluate potential impacts of shoreline developments and believes that this is necessary to comply with requirements established in the State Guidelines.

Also of note, Ecology has noted that in preparing shoreline regulations, local governments are also required to implement a **precautionary principle**. At WAC 173-26-201(3)(g) the guidelines state "As a general rule, the less known about existing resources, the more protective shoreline master program provisions should be to avoid unanticipated impacts to shoreline resources". Under these provisions, Ecology has indicated that if there is a question about the extent or condition of an existing ecological resource, then the master program provisions shall be sufficient to reasonably assure that the resource is protected in a manner consistent with the policies of these guidelines.

3. **Shoreline enhancement.** The Planning Commission has heard public comments from one shoreline property owner who recently installed gravel in front of a bulkhead as part of a repair activity, only to have the material wash away in the first wind storm.

   While staff understands the concern that this would cause, the small gravel required by state and/or federal agencies as an impact minimization measure for bulkhead repair projects may not always be designed to remain in place in the long term. Much of their long-term stability depends upon the gravel size composition, distribution and nearshore site-specific conditions. The appropriate size of material that could be placed in front of a vertical bulkhead and expect to remain stable would vary depending on lakebed slope, water depth at face of the bulkhead, orientation of the bulkhead, and other factors. Lakeshores are dynamic systems, and substrate material routinely moves laterally up and downlake, as well as from shallower to deeper waters, and back, generally on a seasonal basis.

   The information presented in this letter is helpful to staff's development of shoreline stabilization regulations; **draft regulations now include provisions noting that materials placed in the lake as part of impact minimization or mitigation be sized appropriately in order to remain stable and accommodate alteration from wind and boat-driven waves.**

VI. <u>ATTACHMENTS</u>

1. Draft Shoreline Stabilization Standards
2. WAC 173-26-231(2) and (3a)
3. WAC 173-26-231(3)(b) and WAC 173-26-241(3)(c)
4. Summary of history for new, enlarged, or replacement piers that have taken place since the RGP-3

5. Excerpts from Final Kirkland Shoreline Analysis Report
6. Summary of RGP 3 Provisions
7. KMC 24.05.165
8. Summary of RGP-1 Provisions
9. Letter from Dave Douglas dated January 2, 2009
10. Letter from Dave Douglas dated January 2, 2009
11. Letter from Bob Style dated January 6, 2009
12. Letter from Richard Sandaas dated January 8, 2009
13. Letter from Robert Connor dated January 8, 2009

cc: File No. ZON06-00017, Sub-file #1

Attachment 1
File ZON06-00017

173-26-221 << 173-26-231 >> 173-26-241

WAC 173-26-231 Agency filings affecting this section

Shoreline modifications.

(1) ***Applicability.*** Local governments are encouraged to prepare master program provisions that distinguish between shoreline modifications and shoreline uses. Shoreline modifications are generally related to construction of a physical element such as a dike, breakwater, dredged basin, or fill, but they can include other actions such as clearing, grading, application of chemicals, or significant vegetation removal. Shoreline modifications usually are undertaken in support of or in preparation for a shoreline use; for example, fill (shoreline modification) required for a cargo terminal (industrial use) or dredging (shoreline modification) to allow for a marina (boating facility use).

The provisions in this section apply to all shoreline modifications within shoreline jurisdiction.

(2) ***General principles applicable to all shoreline modifications.*** Master programs shall implement the following principles:

(a) Allow structural shoreline modifications only where they are demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage or are necessary for reconfiguration of the shoreline for mitigation or enhancement purposes.

(b) Reduce the adverse effects of shoreline modifications and, as much as possible, limit shoreline modifications in number and extent.

(c) Allow only shoreline modifications that are appropriate to the specific type of shoreline and environmental conditions for which they are proposed.

(d) Assure that shoreline modifications individually and cumulatively do not result in a net loss of ecological functions. This is to be achieved by giving preference to those types of shoreline modifications that have a lesser impact on ecological functions and requiring mitigation of identified impacts resulting from shoreline modifications.

(e) Where applicable, base provisions on scientific and technical information and a comprehensive analysis of drift cells for marine waters or reach conditions for river and stream systems. Contact the department for available drift cell characterizations.

(f) Plan for the enhancement of impaired ecological functions where feasible and appropriate while accommodating permitted uses. As shoreline modifications occur, incorporate all feasible measures to protect ecological shoreline functions and ecosystem-wide processes.

(g) Avoid and reduce significant ecological impacts according to the mitigation sequence in WAC 173-26-201 (2)(e).

(3) ***Provisions for specific shoreline modifications.***

(a) **Shoreline stabilization.**

(i) **Applicability.** Shoreline stabilization includes actions taken to address erosion impacts to property and dwellings, businesses, or structures caused by natural processes, such as current, flood, tides, wind, or wave action. These actions include structural and nonstructural methods.

Nonstructural methods include building setbacks, relocation of the structure to be protected, ground water management, planning and regulatory measures to avoid the need for structural stabilization.

(ii) **Principles.** Shorelines are by nature unstable, although in varying degrees. Erosion and accretion are natural processes that provide ecological functions and thereby contribute to sustaining the natural resource and ecology of the shoreline. Human use of the shoreline has typically led to hardening of the shoreline for various reasons including reduction of erosion or providing useful space at the shore or providing access to docks and piers. The impacts of hardening any one property may be minimal but cumulatively the impact of this shoreline modification is significant.

Shoreline hardening typically results in adverse impacts to shoreline ecological functions such as:

• Beach starvation. Sediment supply to nearby beaches is cut off, leading to "starvation" of the beaches for the gravel, sand, and other fine-grained materials that typically constitute a beach.

• Habitat degradation. Vegetation that shades the upper beach or bank is eliminated, thus degrading the value of the shoreline for many ecological functions, including spawning habitat for salmonids and forage fish.

• Sediment impoundment. As a result of shoreline hardening, the sources of sediment on beaches (eroding "feeder" bluffs) are progressively lost and longshore transport is diminished. This leads to lowering of down-drift beaches, the narrowing of the high tide beach, and the coarsening of beach sediment. As beaches become more coarse, less prey for juvenile fish is produced. Sediment starvation may lead to accelerated erosion in down-drift areas.

• Exacerbation of erosion. The hard face of shoreline armoring, particularly concrete bulkheads, reflects wave energy back onto the beach, exacerbating erosion.

• Ground water impacts. Erosion control structures often raise the water table on the landward side, which leads to higher pore pressures in the beach itself. In some cases, this may lead to accelerated erosion of sand-sized material from the beach.

• Hydraulic impacts. Shoreline armoring generally increases the reflectivity of the shoreline and redirects wave energy back onto the beach. This leads to scouring and lowering of the beach, to coarsening of the beach, and to ultimate failure of the structure.

• Loss of shoreline vegetation. Vegetation provides important "softer" erosion control functions. Vegetation is also critical in maintaining ecological functions.

• Loss of large woody debris. Changed hydraulic regimes and the loss of the high tide beach, along with the prevention of natural erosion of vegetated shorelines, lead to the loss of beached organic material. This material can increase biological diversity, can serve as a stabilizing influence on natural shorelines, and is habitat for many aquatic-based organisms, which are, in turn, important prey for larger organisms.

• Restriction of channel movement and creation of side channels. Hardened shorelines along rivers slow the movement of channels, which, in turn, prevents the input of larger woody debris, gravels for spawning, and the creation of side channels important for juvenile salmon rearing, and can result in increased floods and scour.

Additionally, hard structures, especially vertical walls, often create conditions that lead to failure of the structure. In time, the substrate of the beach coarsens and scours down to bedrock or a hard clay. The footings of bulkheads are exposed, leading to undermining and failure. This process is exacerbated when the original cause of the erosion and "need" for the bulkhead was from upland water drainage problems. Failed bulkheads and walls adversely impact beach aesthetics, may be a safety or navigational hazard, and may adversely impact shoreline ecological functions.

"Hard" structural stabilization measures refer to those with solid, hard surfaces, such as concrete bulkheads, while "soft" structural measures rely on less rigid materials, such as biotechnical vegetation measures or beach enhancement. There is a range of measures varying from soft to hard that include:

• Vegetation enhancement;

• Upland drainage control;

• Biotechnical measures;

• Beach enhancement;

• Anchor trees;

• Gravel placement;

• Rock revetments;

• Gabions;

• Concrete groins;

• Retaining walls and bluff walls;

• Bulkheads; and

• Seawalls.

Generally, the harder the construction measure, the greater the impact on shoreline processes, including sediment transport, geomorphology, and biological functions.

Structural shoreline stabilization often results in vegetation removal and damage to near-shore habitat and shoreline corridors. Therefore, master program shoreline stabilization provisions shall also be consistent with WAC 173-26-221(5), vegetation conservation, and where applicable, WAC 173-26-221(2), critical areas.

In order to implement RCW 90.58.100(6) and avoid or mitigate adverse impacts to shoreline ecological functions where shoreline alterations are necessary to protect single-family residences and principal appurtenant structures in danger from active shoreline erosion, master programs should include standards setting forth the circumstances under which alteration of the shoreline is permitted, and for the design and type of protective measures and devices.

(iii) **Standards.** In order to avoid the individual and cumulative net loss of ecological functions attributable to shoreline stabilization, master programs shall implement the above principles and apply the following standards:

(A) New development should be located and designed to avoid the need for future shoreline stabilization to the extent feasible. Subdivision of land must be regulated to assure that the lots created will not require shoreline stabilization in order for reasonable development to occur using geotechnical analysis of the site and shoreline characteristics. New development on steep slopes or bluffs shall be set back sufficiently to ensure that shoreline stabilization is unlikely to be necessary during the life of the structure, as demonstrated by a geotechnical analysis. New development that would require shoreline stabilization which causes significant impacts to adjacent or down-current properties and shoreline areas should not be allowed.

(B) New structural stabilization measures shall not be allowed except when necessity is demonstrated in the following manner:

(I) To protect existing primary structures:

• New or enlarged structural shoreline stabilization measures for an existing primary structure, including residences, should not be allowed unless there is conclusive evidence, documented by a geotechnical analysis, that the structure is in danger from shoreline erosion caused by tidal action, currents, or waves. Normal sloughing, erosion of steep bluffs, or shoreline erosion itself, without a scientific or geotechnical analysis, is not demonstration of need. The geotechnical analysis should evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering structural shoreline stabilization.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

(II) In support of new nonwater-dependent development, including single-family residences, when all of the conditions below apply:

• The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.

• Nonstructural measures, such as placing the development further from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

• The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. The damage must be caused by natural processes, such as tidal action, currents, and waves.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

(III) In support of water-dependent development when all of the conditions below apply:

• The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.

• Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

• The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

(IV) To protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to chapter 70.105D RCW when all of the conditions below apply:

• Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

(C) An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion caused by currents, tidal action, or waves.

• The replacement structure should be designed, located, sized, and constructed to assure no net loss of ecological functions.

• Replacement walls or bulkheads shall not encroach waterward of the ordinary high-water mark or existing structure unless the residence was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure.

• Where a net loss of ecological functions associated with critical saltwater habitats would occur by leaving the existing structure, remove it as part of the replacement measure.

• Soft shoreline stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the ordinary high-water mark.

• For purposes of this section standards on shoreline stabilization measures, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure which can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.

(D) Geotechnical reports pursuant to this section that address the need to prevent potential damage to a primary structure shall address the necessity for shoreline stabilization by estimating time frames and rates of erosion and report on the urgency associated with the specific situation. As a general matter, hard armoring solutions should not be authorized except when a report confirms that there is a significant possibility that such a structure will be damaged within three years as a result of shoreline erosion in the absence of such hard armoring measures, or where waiting until the need is that immediate, would foreclose the opportunity to use measures that avoid impacts on ecological functions. Thus, where the geotechnical report confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as the three years, that report may still be used to justify more immediate authorization to protect against erosion using soft measures.

(E) When any structural shoreline stabilization measures are demonstrated to be necessary, pursuant to above provisions.

• Limit the size of stabilization measures to the minimum necessary. Use measures designed to assure no net loss of shoreline ecological functions. Soft approaches shall be used unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses.

• Ensure that publicly financed or subsidized shoreline erosion control measures do not restrict appropriate public access to the shoreline except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to ecological functions. See public access provisions; WAC 173-26-221(4). Where feasible, incorporate ecological restoration and public access improvements into the project.

• Mitigate new erosion control measures, including replacement structures, on feeder bluffs or other actions that affect beach sediment-producing areas to avoid and, if that is not possible, to minimize adverse impacts to sediment conveyance systems. Where sediment conveyance systems cross jurisdictional boundaries, local governments should coordinate shoreline management efforts. If beach erosion is threatening existing development, local governments should adopt master program provisions for a beach management district or other institutional mechanism to provide comprehensive mitigation for the adverse impacts of erosion control measures.

(F) For erosion or mass wasting due to upland conditions, see WAC 173-26-221 (2)(c)(ii).

(b) **Piers and docks.** New piers and docks shall be allowed only for water-dependent uses or public access. As used here, a dock associated with a single-family residence is a water-dependent use provided that it is designed and intended as a facility for access to watercraft and otherwise complies with the provisions of this section. Pier and dock construction shall be restricted to the minimum size necessary to meet the needs of the proposed water-dependent use. Water-related and water-enjoyment uses may be allowed as part of mixed-use development on over-water structures where they are clearly auxiliary to and in support of water-dependent uses, provided the minimum size requirement needed to meet the water-dependent use is not violated.

New pier or dock construction, excluding docks accessory to single-family residences, should be permitted only when the applicant has demonstrated that a specific need exists to support the intended water-dependent uses. If a port district or other public or commercial entity involving water-dependent uses has performed a needs analysis or comprehensive master plan projecting the future needs for pier or dock space, and if the plan or analysis is approved by the local

government and consistent with these guidelines, it may serve as the necessary justification for pier design, size, and construction. The intent of this provision is to allow ports and other entities the flexibility necessary to provide for existing and future water-dependent uses.

Where new piers or docks are allowed, master programs should contain provisions to require new residential development of two or more dwellings to provide joint use or community dock facilities, when feasible, rather than allow individual docks for each residence.

Piers and docks, including those accessory to single-family residences, shall be designed and constructed to avoid or, if that is not possible, to minimize and mitigate the impacts to ecological functions, critical areas resources such as eelgrass beds and fish habitats and processes such as currents and littoral drift. See WAC 173-26-221 (2)(c)(iii) and (iv). Master programs should require that structures be made of materials that have been approved by applicable state agencies.

(c) **Fill.** Fills shall be located, designed, and constructed to protect shoreline ecological functions and ecosystem-wide processes, including channel migration.

Fills waterward of the ordinary high-water mark shall be allowed only when necessary to support: Water-dependent use, public access, cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan, disposal of dredged material considered suitable under, and conducted in accordance with the dredged material management program of the department of natural resources, expansion or alteration of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible, mitigation action, environmental restoration, beach nourishment or enhancement project. Fills waterward of the ordinary high-water mark for any use except ecological restoration should require a conditional use permit.

(d) **Breakwaters, jetties, groins, and weirs.** Breakwaters, jetties, groins, and weirs located waterward of the ordinary high-water mark shall be allowed only where necessary to support water-dependent uses, public access, shoreline stabilization, or other specific public purpose. Breakwaters, jetties, groins, weirs, and similar structures should require a conditional use permit, except for those structures installed to protect or restore ecological functions, such as woody debris installed in streams. Breakwaters, jetties, groins, and weirs shall be designed to protect critical areas and shall provide for mitigation according to the sequence defined in WAC 173-26-201 (2)(e).

(e) **Beach and dunes management.** Washington's beaches and their associated dunes lie along the Pacific Ocean coast between Point Grenville and Cape Disappointment, and as shorelines of statewide significance are mandated to be managed from a statewide perspective by the act. Beaches and dunes within shoreline jurisdiction shall be managed to conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beaches. Beaches and dunes should also be managed to reduce the hazard to human life and property from natural or human-induced actions associated with these areas.

Shoreline master programs in coastal marine areas shall provide for diverse and appropriate use of beach and dune areas consistent with their ecological, recreational, aesthetic, and economic values, and consistent with the natural limitations of beaches, dunes, and dune vegetation for development. Coastal master programs shall institute development setbacks from the shoreline to prevent impacts to the natural, functional, ecological, and aesthetic qualities of the dune.

"Dune modification" is the removal or addition of material to a dune, the reforming or reconfiguration of a dune, or the removal or addition of vegetation that will alter the dune's shape or sediment migration. Dune modification may be proposed for a number of purposes, including protection of property, flood and storm hazard reduction, erosion prevention, and ecological restoration.

Coastal dune modification shall be allowed only consistent with state and federal flood protection standards and when it will not result in a net loss of shoreline ecological functions or significant adverse impacts to other shoreline resources and values.

Dune modification to protect views of the water shall be allowed only on properties subdivided and developed prior to the adoption of the master program and where the view is completely obstructed for residences or water-enjoyment uses and where it can be demonstrated that the dunes did not obstruct views at the time of original occupancy, and then only in conformance with the above provisions.

(f) **Dredging and dredge material disposal.** Dredging and dredge material disposal shall be done in a manner which avoids or minimizes significant ecological impacts and impacts which cannot be avoided should be mitigated in a manner that assures no net loss of shoreline ecological functions.

New development should be sited and designed to avoid or, if that is not possible, to minimize the need for new and maintenance dredging. Dredging for the purpose of establishing, expanding, or relocating or reconfiguring navigation

channels and basins should be allowed where necessary for assuring safe and efficient accommodation of existing navigational uses and then only when significant ecological impacts are minimized and when mitigation is provided. Maintenance dredging of established navigation channels and basins should be restricted to maintaining previously dredged and/or existing authorized location, depth, and width.

Dredging waterward of the ordinary high-water mark for the primary purpose of obtaining fill material shall not be allowed, except when the material is necessary for the restoration of ecological functions. When allowed, the site where the fill is to be placed must be located waterward of the ordinary high-water mark. The project must be either associated with a MTCA or CERCLA habitat restoration project or, if approved through a shoreline conditional use permit, any other significant habitat enhancement project. Master programs should include provisions for uses of suitable dredge material that benefit shoreline resources. Where applicable, master programs should provide for the implementation of adopted regional interagency dredge material management plans or watershed management planning.

Disposal of dredge material on shorelands or wetlands within a river's channel migration zone shall be discouraged. In the limited instances where it is allowed, such disposal shall require a conditional use permit. This provision is not intended to address discharge of dredge material into the flowing current of the river or in deep water within the channel where it does not substantially affect the geohydrologic character of the channel migration zone.

(g) **Shoreline habitat and natural systems enhancement projects.** Shoreline habitat and natural systems enhancement projects include those activities proposed and conducted specifically for the purpose of establishing, restoring, or enhancing habitat for priority species in shorelines.

Master programs should include provisions fostering habitat and natural system enhancement projects. Such projects may include shoreline modification actions such as modification of vegetation, removal of nonnative or invasive plants, shoreline stabilization, dredging, and filling, provided that the primary purpose of such actions is clearly restoration of the natural character and ecological functions of the shoreline. Master program provisions should assure that the projects address legitimate restoration needs and priorities and facilitate implementation of the restoration plan developed pursuant to WAC 173-26-201 (2)(f).

[Statutory Authority: RCW 90.58.060 and 90.58.200. 04-01-117 (Order 03-02), § 173-26-231, filed 12/17/03, effective 1/17/04.]

Shoreline Modification Regulations

83.270 General
83.280 Piers, Docks, Floats and Boatlifts
83.290 Marinas
83.300 Shoreline stabilization
83.310 Breakwaters, jetties, rock weirs, groins
83.320 Dredging and dredge material disposal
83.330 Land Surface Modification
83.340 Landfill
83.350 Shoreline habitat and natural systems enhancement projects

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83.300 Shoreline Stabilization

1. General – The purpose of this section is to provide standards and guidelines for the location and design of ~~bulkheads and other~~ hard structural and soft structural shoreline stabilization measures that have the potential to adversely impact the shoreline natural environment. New development, however, shall be located and designed to avoid the need for future shoreline stabilization to the extent feasible. In all cases, the feasibility of soft structural shoreline stabilization shall be evaluated prior to hard structural stabilization. The following standards apply to all developments and uses in shoreline jurisdiction:

2. New or e~~xpanded~~ nlarged~~hard~~ structural shoreline stabilization - ~~Hard structural~~New structural shoreline stabilization measures shall include measures installed to address erosion impacts, including both hard and soft structural shoreline stabilization measures. Enlargement of a structural shoreline stabilization shall include additions to or increases in size (such as height, width, length, or depth) to existing shoreline stabilization measures. Structural stabilization measures shall not be allowed, except as follows:

   a. To protect an existing primary structure, including residences, when conclusive evidence, documented by a geotechnical analysis, is provided that the structure is in danger from shoreline erosion caused by waves. The geotechnical analysis should evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering hard or soft structural shoreline stabilization. The geotechnical analysis requirement shall be waived when a primary structure, including residences, is located ten (10) feet or less from the ordinary high water mark.

   b. In support of new non-water-dependent development, including a detached dwelling unit, when all of the conditions below apply:

      1) The erosion is not being caused by upland conditions, such as drainage and the loss of vegetation.

      2) Nonstructural measures, such as placing the development farther from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

      3) The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. The damage must be caused by natural processes, such as waves.

   c. In support of water-dependent development when all of the conditions below apply:

      1) The erosion is not being caused by upland conditions, such as drainage and the loss of vegetation.

2) Nonstructural measures, planting vegetation, or installing on-site drainage improvements~~,~~ are not feasible or not sufficient.

3) The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.

d. To protect projects for the restoration of ecological functions or for hazardous substance remediation projects pursuant to Chapter 70.105D RCW when nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

3. Replacement or repair of existing shoreline stabilization measures - This section allows repair and replacement of existing legally established shoreline stabilization measures.

a. Minor Repair - Minor repair is permitted, subject to the following standards:

1) Minor repair shall include modifications or improvements to an existing shoreline stabilization measure that are designed to ensure the continued function of the stabilization measure by preventing failure of any part of the stabilization measure. ~~A repair that is proposed after more than 25% of the linear feet of the stabilization measure~~

2) The following activities shall not be considered as "minor repair":

a) A repair needed to a portion of an existing stabilization structure that has collapsed, eroded away or otherwise demonstrated a loss of structural integrity ~~is not a minor repair. Any proposed~~ , or in which the repair ~~that~~ work involves modification of the toe rock or footings ~~is considered a major repair.~~ , and is greater than 15 feet in continuous linear length;

b) A repair to more than 75 percent of the linear length of the existing hard structural shoreline stabilization measure in which the repair work involves replacement of top or middle course rocks or other similar repair activities.

Repair activities not meeting the definition of minor repair shall be considered major repair or replacement and the portion of the shoreline stabilization that is being repaired shall be subject to the provisions contained in subsection b) below.

~~2)~~ 3) Areas of temporary disturbance within the shoreline setback shall be expeditiously restored to their pre-project condition or better.

b. Major Repair or Replacement - The following standards apply to major repair or replacement of existing hard and soft structural shoreline stabilization measures:

1) ~~Major repair or replacement shall be treated as a new shoreline stabilization measure, subject to the provisions of subsection 2. above, including the requirement to prepare a geotechnical analysis and consider soft shoreline stabilization techniques.~~ For purposes of this section, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure that can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall also be considered new structures.

2) Major repair or replacement shall be treated as a new shoreline stabilization measure subject to the restrictions of subsection 2. above, as well as the submittal requirements of subsection 4 below, except for the requirement to prepare a geotechnical analysis. A geotechnical analysis is not required for major repairs or replacements of existing hard or soft structural shoreline stabilization with a similar measure if the applicant demonstrates need to protect principal uses or structures from erosion caused by waves or other natural processes operating at or waterward of the ordinary high water mark. In those circumstances where a primary structure,

including residences, is located ten (10) feet or less from the ordinary high water mark, need will be presumed to have been demonstrated.

3) Replacement hard structural shoreline stabilization measures shall not encroach waterward of the ordinary high water mark or waterward of the existing shoreline stabilization measure unless the primary structure was constructed prior to January 1, 1992, and there is overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure. All other replacement structures shall be located at or landward of the existing shoreline stabilization structure.

3) ~~Soft~~Hard and soft shoreline stabilization measures ~~that provide restoration of shoreline ecological functions~~ may allow some fill waterward of the ordinary high water mark to provide enhancement of shoreline ecological functions through creation of nearshore shallow-water habitat.

4. Submittal Requirements - In addition to submitting an application, the applicant shall submit the following as part of a request to construct a new, enlarged, major repair or replacement shoreline stabilization measure:

a. For a new~~,~~ or enlarged~~, major repair or replacement~~ hard or soft structural shoreline stabilization measure, a geotechnical report prepared by a qualified professional with an engineering degree. The report shall include the following:

1) An assessment of the necessity for structural shoreline stabilization by estimating time frames and rates of erosion and ~~report~~reporting on the urgency associated with the specific situation. New ~~or replacement~~ hard or soft structural shoreline stabilization measures shall not be authorized, except when a report confirms that that there is a significant possibility that an existing structure will be damaged generally within three (3) years as a result of shoreline erosion in the absence of such hard structural shoreline stabilization measures, or where waiting until the need is immediate results in the loss of opportunity to use measures that would avoid impacts on ecological functions.

2) An assessment of the cause of erosion, looking at processes occurring both waterward and landward of the ordinary high water mark.

3) Where structural shoreline stabilization is determined to be necessary in subsection 4 a. above, the assessment must evaluate the feasibility of using soft shoreline stabilization measures in lieu of hard structural shoreline stabilization measures. Soft shoreline stabilization may include the use of gravels, cobbles, boulders, and logs, as well as vegetation.

4) Design recommendations for minimum sizing of hard structural or soft structural shoreline stabilization materials, including gravel and cobble beach substrates~~,~~ necessary to dissipate wave energy, eliminate scour, and provide long-term shoreline stability.

b. ~~For all~~ Geotechnical report requirements for new or enlarged hard or soft structural shoreline stabilization measures may be waived when a primary structure, including residences, is located ten (10) feet or less from the ordinary high water mark.

c. For major repairs or replacements of existing hard structural shoreline stabilization measures with a similar measure, the applicant shall submit a written narrative providing a demonstration of need. The narrative must be prepared by a qualified professional (e.g., shoreline designer or other consultant familiar with lakeshore processes and shore stabilization), but not necessarily a licensed geotechnical engineer. The demonstration of need shall consist of the following:

a. An assessment of the necessity for continued structural shoreline stabilization, considering site-specific conditions such as water depth, orientation of the shoreline, wave fetch, and location of the nearest structure.

b. An assessment of erosion potential resulting from the action of waves or other natural processes operating at or waterward of the ordinary high water mark in the absence of the hard structural shoreline stabilization.

c. An assessment of the feasibility of using soft shoreline stabilization measures in lieu of hard structural shoreline stabilization measures. Soft shoreline stabilization may include the use of gravels, cobbles, boulders, and logs, as well as vegetation.

d. Design recommendations for minimizing impacts of any necessary hard structural shoreline stabilization.

d. A demonstration of need may be waived when an existing hard structural shoreline stabilization measure is proposed to be repaired or replaced using soft structural shoreline stabilization measures, or when a primary structure, including residences, is located ten (10) feet or less from the ordinary high water mark.

e. As part of any approval of a new, enlarged, or replacement structural shoreline stabilization measure, the applicant shall be required to fund a review by the City's shoreline consultant of the shoreline stabilization plan, the monitoring and maintenance program, the narrative justification of demonstrated need, and drawings. In addition, the Planning Official may require funding of a qualified professional, selected and retained by the City subject to a three-party contract, to review the geotechnical report and recommendations.

~~b.~~f. For all structural shoreline stabilization measures, including soft structural shoreline stabilization, detailed construction plans, including the following:

1) Plan and cross-section views of the existing and proposed shoreline configuration, showing accurate existing and proposed topography and ordinary high water marks.

1) Detailed construction sequence and specifications for all materials, including gravels, cobbles, boulders, logs, and vegetation. The sizing and placement of all materials shall be selected to accomplish the following objectives:

a) Protect the property and structures from erosion and other damage over the long term, and accommodate the normal amount of alteration from wind- and boat-driven waves;

b) Allow safe passage and migration of fish and wildlife; and

~~1)~~c) Minimize or eliminate juvenile salmon predator habitat.

2) Detailed five-year vegetation maintenance and monitoring program to include the following:

a) Goals and objectives of the shoreline stabilization plan;

b) Success criteria by which the implemented plan will be assessed;

c) A five (5) year maintenance and monitoring plan, consisting of two site visits per year by a qualified professional, with annual progress reports submitted to the Planning Official and all other agencies with jurisdiction;

d) A contingency plan in case of failure; and

e) Proof of a written contract with a qualified professional who will perform the monitoring.

~~e~~g. The Planning Official shall require a performance or maintenance bond or security, as determined to be appropriate by the Planning Official, to ensure compliance with any aspect of this chapter or any decision or determination made pursuant to this chapter.

1) Performance or Maintenance Bond or Security Requirement - The performance or maintenance security required by the Planning Official shall be provided in such forms and amounts as the Planning Official deems necessary to assure that all work or actions are satisfactorily completed or maintained in accordance with the approved plans, specifications, permit or approval requirements, and applicable regulations, and to assure that all work or actions not satisfactorily completed or maintained will be corrected to comply with approved plans, specifications, requirements, and regulations to restore environmental damage or degradation, protect fish and wildlife habitat, and protect the health, safety, and general welfare of the public.

2) Form of Performance Security - The performance security shall be a surety bond obtained from companies registered as surety in the state or certified as acceptable sureties on federal bonds. In lieu of a surety bond, the Planning Official may allow alternative performance security in the form of an assignment of funds or account, an escrow agreement, an irrevocable letter of credit, or other financial security device in an amount equal to that required for a surety bond. The surety bond or other performance security shall be conditioned on the work being completed or maintained in accordance with requirements, approvals, or permits; on the site being left or maintained in a safe condition; and on the site and adjacent or surrounding areas being restored in the event of damages or other environmental degradation from development or maintenance activities conducted pursuant to the permit or approval.

3) Amount of Performance Security - The amount of the performance or maintenance security shall be a percentage of the estimated cost based on the City's established percentage at the time of the security submittal. , The estimated cost shall be approved by the Planning Official and include conformance to plans, specifications, and permit or approval requirements under this chapter, including corrective work and compensation, enhancement, mitigation, maintenance, and restoration of sensitive areas. In addition, an administrative deposit shall be paid as required in KZC 175.25. All bond or performance security shall be submitted in their original form with original signatures of authorization.

4) Administration of Performance Security - If during the term of the performance or maintenance security, the Planning Official determines that conditions exist which do not conform with plans, specifications, approval or permit requirements, the Planning Official may issue a stop work order prohibiting any additional work or maintenance until the condition is corrected. The Planning Official may revoke the performance or maintenance security, or a portion thereof, in order to correct conditions that are not in conformance with plans, specifications and approval or permit requirements. The performance or maintenance security may be released upon written notification by the Planning Official, following final site inspection or completion, as appropriate, or when the Planning Official is satisfied that the work or activity complies with permits or approved requirements.

5) Exemptions for Public Agencies - State agencies and local government bodies, including school districts, shall not be required to secure the performance or maintenance of permit or approval conditions with a surety bond or other financial security device. These public agencies are required to comply with all requirements, terms, and conditions of the permit or approval, and the Planning Official may enforce compliance by withholding certificates of occupancy or occupancy approval, by administrative enforcement action, or by any other legal means.

d. The cost of producing and implementing the shoreline stabilization plan, the monitoring and maintenance program, reports, and drawings, as well as the review of each component by the City and the City's consultant(s), shall be borne by the applicant.

5. General Design Standards - When a hard or soft structural shoreline stabilization measure is demonstrated to be necessary, the following design standards shall be incorporated into the stabilization design:

a. Soft structural shoreline stabilization measures shall be used to the maximum extent practicable for new, enlarged, major repair or replacement shoreline stabilization measures, limiting hard structural shoreline stabilization measures to the portion or portions of the site where necessary to protect or support existing shoreline structures or trees, or where necessary to connect to existing shoreline stabilization measures on adjacent properties. The length of hard structural shoreline stabilization connections to adjacent properties should be minimized to the maximum extent practicable, and extend into the subject property from adjacent properties no more than 10 feet.

b. ~~The shoreline stabilization measure shall be designed to not significantly interfere with normal surface and/or subsurface drainage into Lake Washington.~~

~~c. The shoreline stabilization measure shall be designed so as not to constitute a hazard to navigation or substantially interfere with visual access to the water.~~

~~d. Stairs or other water access measures may be incorporated into the shoreline stabilization, but shall not extend waterward of the shoreline stabilization measure.~~

~~e. The shoreline stabilization measures shall be designed to ensure that the measures do not restrict appropriate public access to the shoreline, except where such access is modified under the provisions of KZC Section 83.370 for public access.~~

~~f.~~ To the extent feasible~~,~~ and warranted by site-specific conditions, all approved new, enlarged, minor repair, major repair or replacement shoreline stabilization measures must minimize and mitigate any adverse impacts to ecological functions resulting from short-term construction activities. Impact minimization techniques may include compliance with appropriate timing restrictions, use of best management practices to prevent water quality impacts related to upland or in-water work, and stabilization of exposed soils following construction.

c. To the extent feasible and warranted by site-specific conditions, all new, enlarged, major repair, or replacement hard structural shoreline stabilization measures should minimize any long-term adverse impacts to ecological functions by incorporating the following measures into the design:

1) Limiting the size of hard structural shoreline stabilization measures to the minimum necessary, including height, depth, and mass.

2) Shifting the bulkhead landward and/or sloping the bulkhead landward to provide some dissipation of wave energy and increase the quality or quantity of nearshore shallow-water habitat.

d. To the extent feasible and warranted by site-specific conditions, approved new and enlarged shoreline stabilization measures should mitigate any adverse impacts to ecological functions by incorporating the following measures at a minimum into the design:

1) To increase shallow-water habitat, install gravel/cobble beach fill waterward of the ordinary high water mark, grading slope to a maximum of 1 Vertical (V):4 Horizontal (H). The material should be sized and placed to remain stable and accommodate alteration from wind- and boat-driven waves.

2) Plant native riparian vegetation~~ at an average of ten (10) feet deep across~~ , as necessary, in at least ~~50%~~75 percent of the ~~width of the shoreline. Vegetation must include a mix of trees, shrubs and groundcovers, which may be distributed along the shoreline area in a manner that provides maximum benefit to fish and wildlife, while preserving views and water-dependent uses.~~nearshore riparian area located along the water's edge. The nearshore riparian area shall average ten (10) feet in depth from the ordinary high water mark, but may be a minimum of five (5) feet wide to allow for variation in landscape bed shape and plant placement. Restoration of native vegetation shall consist of a mixture of trees, shrubs and groundcover and be designed to improve habitat functions. At least three (3) trees per 100 linear feet of shoreline must be included in the plan. Plant materials must be native and selected from the Kirkland Native Plant List. An alternative planting plan or mitigation measure in lieu of meeting these requirements may be allowed if approved by other state and federal agencies.

e. The shoreline stabilization measure shall be designed to not significantly interfere with normal surface and/or subsurface drainage into Lake Washington.

f. The shoreline stabilization measure shall be designed so as not to constitute a hazard to navigation or substantially interfere with visual access to the water.

g. Stairs or other water access measures may be incorporated into the shoreline stabilization, but shall not extend waterward of the shoreline stabilization measure.

h. The shoreline stabilization measures shall be designed to ensure that the measures do not restrict appropriate public access to the shoreline, except where such access is modified under the provisions of KZC Section 83.370 for public access.

Additional mitigation measures may be required depending on the level of impact.

~~g.~~i. Shoreline stabilization measures shall not extend waterward more than the minimum amount necessary to achieve effective stabilization.

~~h~~j. When a structural shoreline stabilization measures is required at a public access site, provisions for safe access to the water shall be incorporated into the shoreline stabilization structure design. Access measures should not extend farther waterward than the face of the shoreline stabilization structure.

k. When shoreline stabilization measures intended to improve ecological functions shift the ordinary high water mark landward of the pre-modification location, any structure setbacks from the ordinary high water mark or lot area for the purposes of calculating lot coverage shall be measured from the pre-modification location. The pre-modification ordinary high water mark shall be recorded in a form approved by the City Attorney and recorded in the King County Department of Elections and Records.

~~i.~~l. If shoreline stabilization measures intended to improve ecological functions shift the ordinary high water mark landward of the pre-modification location and result in expansion of the shoreline jurisdiction on any property other than the subject property, the plan shall not be approved until the applicant submits to the Planning Official a copy of a statement signed by the property owners of all affected properties, in a form approved by the City Attorney and recorded in the King County Department of Elections and Records, consenting to the shoreline jurisdiction creation and/or increase on such property.

6. Specific Hard Structural Shoreline Stabilization Design Standards - When hard structural shoreline stabilization measures, such as bulkheads, are demonstrated to be necessary, incorporate the following standards into the design:

a. When shoreline stabilization is approved on a site where bulkheads are not located on adjacent properties, the construction of a bulkhead shall tie in with the existing contours

of the adjoining properties, as feasible, such that the proposed bulkhead would not cause erosion of the adjoining properties.

~~b.~~ When shoreline stabilization is approved on a site where bulkheads are located on adjacent properties, the proposed bulkhead may tie in flush with existing bulkheads on adjoining properties, provided that the new bulkhead does not extend waterward of OHWM, except as necessary to make the connection to the adjoining bulkhead. In such circumstances, the remaining portion of the bulkhead shall be placed landward of the existing OHWM such that no net intrusion into the lake occurs nor does net creation of uplands occur.

~~c. Limit the size~~The length of hard structural shoreline stabilization ~~measures~~connections to ~~the minimum necessary, including height, depth, and mass.~~

~~d. To the~~adjacent properties should be minimized to the maximum extent ~~feasible, shift the bulkhead landward and slope the bulkhead landward to provide some dissipation of wave energy.~~

~~e.~~b. ~~When a bulkhead is required at a public access site, provisions for safe access to the water shall be incorporated~~practicable, and extend into ~~bulkhead design.~~the subject property from adjacent properties no more than 10 feet.

~~f.~~c. Fill behind bulkheads shall be limited to an average of one (1) cubic yard per running foot of bulkhead. Any filling in excess of this amount shall be considered a regulated activity subject to the regulations in this Chapter pertaining to fill activities and the requirement for obtaining a Shoreline Substantial Development permit.

7. Specific Soft Structural Shoreline Stabilization Design Standards – In addition to applicable general design standards and hard structural shoreline stabilization standards above, incorporate the following standards into the design:

   a. The soft shoreline stabilization design shall provide sufficient protection of adjacent properties by tying in with the existing contours of the adjoining properties to prevent erosion at the property line. Projects that include necessary use of hard structural shoreline stabilization measures only at the property lines to tie in with adjacent properties shall be permitted as soft shoreline stabilization measures. The length of hard structural shoreline stabilization connections to adjacent properties should be minimized to the maximum extent practicable, and extend into the subject property from adjacent properties no more than 10 feet.

   ~~e.~~b. The soft shoreline stabilization design shall size and arrange any gravels, cobbles, logs, and boulders so that the project remains stable in the long-term and dissipate wave energy, without presenting extended linear faces to oncoming waves.

(b) **Piers and docks.** New piers and docks shall be allowed only for water-dependent uses or public access. As used here, a associated with a single-family residence is a water-dependent use provided that it is designed and intended as a facility for watercraft and otherwise complies with the provisions of this section. Pier and dock construction shall be restricted to the mi necessary to meet the needs of the proposed water-dependent use. Water-related and water-enjoyment uses may be allowe mixed-use development on over-water structures where they are clearly auxiliary to and in support of water-dependent uses minimum size requirement needed to meet the water-dependent use is not violated.

New pier or dock construction, excluding docks accessory to single-family residences, should be permitted only when the demonstrated that a specific need exists to support the intended water-dependent uses. If a port district or other public or co involving water-dependent uses has performed a needs analysis or comprehensive master plan projecting the future needs t space, and if the plan or analysis is approved by the local government and consistent with these guidelines, it may serve as justification for pier design, size, and construction. The intent of this provision is to allow ports and other entities the flexibility provide for existing and future water-dependent uses.

Where new piers or docks are allowed, master programs should contain provisions to require new residential developme dwellings to provide joint use or community dock facilities, when feasible, rather than allow individual docks for each residen

Piers and docks, including those accessory to single-family residences, shall be designed and constructed to avoid or, if t possible, to minimize and mitigate the impacts to ecological functions, critical areas resources such as eelgrass beds and fis processes such as currents and littoral drift. See WAC 173-26-221 (2)(c)(iii) and (iv). Master programs should require that st made of materials that have been approved by applicable state agencies.

(c) **Boating facilities.** For the purposes of this chapter, "boating facilities" excludes docks serving four or fewer single-family
Shoreline master programs shall contain provisions to assure no net loss of ecological functions as a result of development
facilities while providing the boating public recreational opportunities on waters of the state.

Where applicable, shoreline master programs should, at a minimum, contain:

(i) Provisions to ensure that boating facilities are located only at sites with suitable environmental conditions, shoreline co
access, and neighboring uses.

(ii) Provisions that assure that facilities meet health, safety, and welfare requirements. Master programs may reference ot
to accomplish this requirement.

(iii) Regulations to avoid, or if that is not possible, to mitigate aesthetic impacts.

(iv) Provisions for public access in new marinas, particularly where water-enjoyment uses are associated with the marina
with WAC 173-26-221(4).

(v) Regulations to limit the impacts to shoreline resources from boaters living in their vessels (live-aboard).

(vi) Regulations that assure that the development of boating facilities, and associated and accessory uses, will not result
shoreline ecological functions or other significant adverse impacts.

(vii) Regulations to protect the rights of navigation.

(viii) Regulations restricting vessels from extended mooring on waters of the state except as allowed by applicable state r
unless a lease or permission is obtained from the state and impacts to navigation and public access are mitigated.

Attachment 4

	Shoreline Permit Case Number								
	SHR04-00002	SHR04-00004	SHR05-00002	SHR05-00004	SHR06-00002	SHR06-00003	SHR06-00004	SHR07-00003	SHR07-00006
New Dock or Dock Extension?	New	New (Replacement)	New	Extension	Extension	New (Replacement)	New (Replacement)	New (Replacement)	New
Joint Use Dock?	No	No	No	No	No	No	No	Yes	No
Length of dock	110'	84'	130'	Existing- 89'4" Extension- 35' Total- 124'4"	Existing- 86'8" Extensions- 45' Total-131'8"	150'	142'	85' 10.5"	130'
Width of dock	1st 50'- 4' last 60'- 5'	6'	4' Ell- 6'	Existing- 6' 1.5" Extension- 6'	Existing- 6' 1.5" Ell- 8' Extensions- 3'10.75"	6' 3" 1st 30'- 4' 0"	1st 70'- 4' last 72'- 5' finger- 6'	1st 30'- 3' 10.5" middle 48'- 4' 10.5" ell- 7' 10.5"	3' 10.5" ell- 5' 10.5"
Surface coverage of dock (ft²)	~500 ft²	Existing- 150 ft² Proposed- 517 ft²	~645 ft²	Existing- 748 ft² Extension- 210 ft² Total- 924'	Existing- 772 ft² Extension- 360 ft² Total- 1024 ft²	870 ft²	Existing- 565 ft² Proposed- 772 ft²	Existing- 513 ft² Proposed- 539 ft²	622 ft²
Grating?	Yes	Yes	Yes	Extensions and mitigat	Yes	Yes	Yes	Yes	Yes
Type of grating	1st 50'- steel-grated last 60"- Trex decking	1st 42'- 4'10" ipe wood grating last 42' and ell- 3' ipe wood grating	thru-flow plastic grating	Existing- non-grated wood Extensions and mitigation- molded plastic grating	Existing- non-grated wood Extensions and mitigation- molded plastic grating	1st 30'- fully-grated aluminum gangway middle 65'- thru-flow grated decking last 55'- synthetic decking	molded-plastic grating	molded-plastic grating	thru-flow plastic grating
Height of dock above water level	2' to top	2' to top 2'- 3'2" to top for first 42' 1' to bottom 1'- 2'2" to bottom for first 42'	±2' to top 2'-3' to top for first 30' 1' to bottom 1'-2' to bottom for first 30'	Existing- 2' 6" to top 1' 6" to bottom Extension- 2' 2" to top 1' 2" to bottom	2' to top 1' to bottom	1'10" to top	2' 2" to top 1' 2" to bottom	Existing- 1'10" to top 1'1" to bottom Proposed- 2'2" to top 1'2" to bottom	2' 6" to top (exceeds city regulations) 1' 6" to bottom
Spacing of pilings	15'	20'	20'	11'-12'	Existing- ~10'-12' Extensions- 21'6"	18'	~20'-25'	Existing- ~12' Proposed- 22' 6"	21'
Distance of piling closest to shoreline from the shore	20'	18'	30'	11'	~9'-11'	30'	~20'-25'	Existing- ~14' Proposed- 25'	on shore
Depth of water at end of dock	11'	8' 2"	8'	Existing- 5' Extension- 6' 5"	Existing- 6' Extensions- ±8'	15'	7' 6"	8'	9'
Elevated nearshore walkway?	No	No	No	No	No	No	Yes	No	No
# of lifts on dock	1 boatlift 2 jetski lifts	1 Proposed	0	2 (to be removed)	1 Existing 1 Proposed	0	1 boatlift (to be relocated)	1 jet-ski lift 1 boatlift	1
Ell configuration?	No	Yes 8' x 6'	Yes 20' x 6'	corners to be removed and proposal to extend from existing 16'3" x 8'4" ell	proposed finger piers extend from existing 8' x 24' ell	No	No	Yes Existing- 17' x 13' Proposed- 24' x 7'10.5"	Yes 5'10.5" x 20'
Size of boats to be moored at dock	60'	24'	24'	34'	45'	85' & smaller boat	60'	40'	22-30' & 40'
Shoreline plantings proposed?	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Placement of gravel substrate proposed?	No	Yes- 45 yds³	No	Yes- 40 yds³	Yes- 50 yds³	Yes- 15 yds³	No	Yes- 30 yds³	No
(Dock Extensions)- Existing portions of docks removed as mitigation?	N/A	removal of existing 30'10" x 4'10" (150 ft²) pier, 8 timber piles, 7 timber mooring piles	N/A	removal of two jetski lifts; removal of ell corners (65 ft²)	removal of existing 6' x 18' watercraft pier and 5 timber pilings	removal of existing 94'6" x 7'9" pier, 8 wood piles, and 10 soldier piles	removal of existing 6' x 81'6" (565 ft²) pier, 250 ft² moorage canopy, and 17 timber piles	removal of existing 6' x 81'6" (565 ft²) pier, 14 timber support piles	N/A

(Dock Extensions)- existing portions of docks grated as mitigation?	N/A	N/A	N/A	4' wide center grading proposed for existing pier; existing crossover to be replaced with fully-grated crossover	4' wide center grating of first 30' from shore on existing portion	N/A	N/A	N/A	N/A
Floats?	No	No	No	No	No	No	No	No	No
Other proposed mitigations?	removal of 8 existing pilings	No	No	No	No	demolition of carports, shed, and boathouse located along shoreline	No	No	No

5.2 EFFECTS OF SHORELINE MODIFICATIONS ON AQUATIC ORGANISMS AND THEIR HABITATS

Shoreline modifications and nearshore structures around Lake Washington have dramatically altered the lake's aquatic ecosystem. Although some changes in the Lake environment are not completely understood, the effects of physical modifications to shoreline habitats on some aquatic species, particularly chinook salmon, have been very well studied. Because of their sensitivity to changes in the aquatic ecosystem, anadromous salmonids are commonly used as a biological indicator species for the aquatic health of Lake Washington. There are many indigenous aquatic species inhabiting Lake Washington, but salmonids are one of the most sensitive. Due to their "threatened" status under the ESA, funding and other resources have been made available for the study of chinook salmon utilizing Lake Washington, which are an important part of the Puget Sound Chinook Salmon Evolutionary Significant Unit (ESU). The life history pattern and habitat requirements of the chinook salmon reflects the needs of other salmonid and non-salmonid aquatic species indigenous to Lake Washington, and information concerning the chinook salmon serves as a good proxy for other species in the Lake. Similarly, habitat restoration efforts designed to benefit chinook or other salmonids will also be beneficial for other native species inhabiting Lake Washington.

An important part of the City, the Kirkland waterfront has been extensively modified with bulkheads, piers, and other overwater structures (Toft 2001). Common modifications to nearshore aquatic habitats around much of Lake Washington include 1) the construction of bulkheads, which result in the structural simplification of shoreline habitats, and 2) the construction of piers, which block sunlight and create large areas of overhead cover within the littoral zone. These types of structural modifications to shorelines are now known to benefit non-native predators (like largemouth and smallmouth bass), while reducing the amount of complex aquatic habitat formerly available to salmonids rearing and migrating through Lake Washington (Kahler et al. 2000; Kerwin 2001; Tabor et al. 2006). Adult salmonids tend to utilize deepwater habitats in Lake Washington and structural changes to nearshore habitats typically have a lesser affect on adults than they do on juvenile salmonids. Lake Washington serves as an important rearing area and migration corridor for juvenile salmonids, however, and due to their affinity to nearshore, shallow-water habitats, juvenile salmonids are greatly affected by physical changes at the shoreline.

5.2.1 Anadromous Fish in the Lake Washington Watershed

Adult chinook salmon migrate from Puget Sound through the Chittenden Locks and into Lake Washington between July and September, continuing on to various tributary streams where they spawn in October and November. Although most chinook salmon production in the Lake Washington watershed occurs in the Cedar River, the North Lake Washington tributary streams (feeding into the Sammamish River), or at the Issaquah Fish Hatchery, chinook salmon (as well as coho and sockeye) also use many other, smaller Lake Washington tributary streams. A few of the tributary streams in or near the Kirkland area that are used by chinook salmon or other anadromous salmonids include Juanita Creek, Yarrow Creek, Forbes Creek, and Kelsey Creek. Chinook fry emerge from their redds between January and March, and either rear in their natal stream or emigrate to Lake Washington for a rearing period extending from three to five months. Emigrating through the Chittenden Locks and into Puget Sound between May and August,

juvenile chinook salmon leave the Lake Washington system during their first year (Kerwin 2001; Tabor and Piaskowski 2002). Other anadromous salmonids spawning and/or rearing in the Lake Washington watershed include sockeye salmon, coho salmon, steelhead trout, and possibly bull trout.

After emerging from the gravel, chinook fry from Lake Washington tributaries either emigrate directly to the Lake, or rear to the fingerling stage in their natal stream before entering the Lake (Seiler et al. 2005). This process occurs between February and June. After they enter Lake Washington, juvenile chinook often congregate near the mouths of tributary streams, and prefer low gradient, shallow-water habitats with small substrates (Tabor and Piaskowski 2002; Tabor et al. 2004b; Tabor et al. 2006). Chinook fry entering Lake Washington early in the emigration period (February and March) are still relatively small, typically do not disperse far from the mouth of their natal stream, and are largely dependant upon shallow-water habitats in the littoral zone with overhanging vegetation and complex cover (Tabor and Piaskowski 2002; Tabor et al 2004b). The mouths of creeks entering Lake Washington (whether they support salmon spawning or not), as well as undeveloped lakeshore riparian habitats associated with these confluence areas, attract juvenile chinook salmon and provide important rearing habitat during this critical life stage (Tabor et al. 2004b; Tabor et al. 2006). Later in the emigration period (May and June), most chinook juveniles have grown to fingerling size and begin utilizing limnetic areas of the Lake more heavily. As the juvenile chinook salmon mature to fingerlings and move offshore, their distribution extends throughout Lake Washington. Although early emigrating chinook fry from the Cedar River and North Lake Washington tributaries (primary production areas) initially do not disperse to shoreline areas in Kirkland, any salmon fry from smaller tributaries such as Juanita, Forbes, or Yarrow Creeks would depend on nearshore habitats of the Kirkland waterfront. Later in the spring (May and June), however, juvenile chinook are known to be well distributed throughout both limnetic and littoral areas of Lake Washington, and certainly utilize shoreline habitats in Kirkland.

5.2.2 The Effects of Overwater Shading and Shoreline Armoring

Piers and other overwater structures shade the lake bottom and inhibit the growth of aquatic vegetation. Overwater structures affect the size, density, and species composition of aquatic macrophytes living directly beneath them (Fresh and Lucchetti 2000). The magnitude of this effect on aquatic macrophytes varies with the size (square footage) of the structure and the amount of sunlight it blocks. Changes in the physical structure of the aquatic plant community affect juvenile salmonids, as well as other indigenous fishes that use this vegetation in the nearshore environment. Spatial heterogeneity in aquatic vegetation increases the amount of edge habitat, improving the quality of foraging habitat available to ambush predators like the bass (Bryan and Scarnecchia 1992; Weaver et al 1997; Kahler et al. 2000). The combined effect of an overwater structure and a dramatic change in aquatic vegetation results in a behavior modification in juvenile salmonids moving through both littoral and limnetic habitats. Juvenile salmonids migrating parallel to the shoreline will often change course to circumvent large piers or other overwater structures rather than swimming beneath them (Tabor and Piaskowski 2002; Tabor et al. 2004b; Tabor et al. 2006). These behavior modifications disrupt natural patterns of migration and can expose juvenile salmonids to increased levels of predation. Minimizing overwater coverage and associated support structures will benefit salmon fry rearing in the littoral zone as well as older salmon fingerlings utilizing the limnetic zone. Studies related to

shading effects from varying types of pier decking indicate that grated decking provides significantly more light to the water surface than traditional decking methods and may lead to improved migratory conditions for juvenile chinook salmon (Gayaldo and Nelson 2006).

Bulkheads or other types of shoreline armoring affect juvenile salmonids by eliminating shallow-water refuge habitat, or indirectly, by the elimination of shoreline vegetation and in-water woody debris that generally accompanies bulkhead construction. Placing bulkheads waterward of OHWM creates an abrupt, deep-water drop-off at the shoreline while eliminating shallow water habitat in the nearshore. Lange (1999) found that bank stabilization (i.e., various forms of erosion control structures that we refer to as "bulkheads") was negatively correlated to fish abundance and species richness at all spatial scales investigated. Juvenile chinook salmon and other small fishes rely on shallow-water habitats in the littoral zone for foraging, refuge, and migration (Collins et al. 1995; Tabor and Piaskowski 2002). Shoreline armoring and bulkheads are also known to result in local reductions to the species diversity and abundance of both the fish community as well as the macroinvertebrate population inhabiting the littoral zone (Schmude et al. 1998; Lange 1999; Jennings et al. 1999).

5.2.3 Predator-prey Interactions in Lake Washington

Indigenous Lake Washington fish species that prey on juvenile salmonids include cutthroat trout, rainbow trout, coho salmon, northern pikeminnow, five species of sculpin, and lamprey. Non-native predators currently present in the Lake include smallmouth bass, largemouth bass, and yellow perch. Native cutthroat trout populations (adfluvial and anadromous) are strong in Lake Washington, and this species is currently considered the primary predator of juvenile chinook, sockeye, and coho salmon. Smaller-sized cutthroat trout prey on juvenile salmonid fry inhabiting the littoral zone early in the spring, while larger individuals feed on salmonid fingerlings migrating and rearing in the limnetic zone later in the season (Nowak et al. 2004; Tabor et al 2004a). A small proportion of northern pikeminnow, yellow perch, and smallmouth bass reside in nearshore regions during winter, but the majority moves offshore in the spring as temperatures in nearshore areas warm (Bartoo 1972; Olney 1975; Coutant 1975). The distributions of these fishes overlap primarily with the peak out-migration of chinook through the littoral zone, whereas the overlap of cutthroat and chinook distributions is continuous. Sculpins are present in the littoral zone year-round and are also known to eat juvenile chinook salmon (Tabor et al. 1998; Tabor et al 2004a). In mid-summer, temperatures in the littoral zone become undesirable for juvenile chinook and coho salmon, and the majority leave the lake or seek cooler temperatures away from the littoral zone, thus segregating themselves from littoral predators, but remaining vulnerable to cutthroat trout and potentially prickly sculpin.

Shoreline development could potentially increase the rate of predation on juvenile salmonids by several principal means: 1) reducing the amount of refuge habitat available to prey species like juvenile salmonids by modifying the structure of the shoreline; 2) providing concealment structures for ambush predators such as bass and sculpin; 3) providing artificial lighting that allows for around-the-clock foraging by predators; and 4) altering migration routes for smolts and rearing fry. Although many predators that feed on juvenile salmonids are active, cruising hunters (i.e., other salmonids, piscivorous birds, northern pikeminnow), smallmouth and largemouth bass generally utilize ambush or habituation foraging strategies (Hobson 1979). Fayram and Sibley (2000) determined that smallmouth bass in Lake Washington occupied

littoral home ranges that radiated 100 to 200 meters from the focal point and generally did not extend below 8-meter depths. Because of their propensity for ambush foraging and shoreline orientation, bass in Lake Washington benefit from artificial structures placed in the littoral zone, whereas yellow perch are more likely to utilize "non-structural" areas (Paxton and Stevenson 1979). Increased useage of complex cover (e.g., aquatic vegetation, woody debris, substrate interstices, and undercut banks) by prey fishes in the presence of predators, and reduced foraging efficiency of predators due to habitat complexity has been well documented (Wood and Hand 1985; Werner and Hall 1988; Bugert and Bjornn 1991; Tabor and Wurtsbaugh 1991; Persson and Eklov 1995). Juvenile salmonids, like many other prey species, modify their behavior in the presence of predators by seeking or orienting to complex refuge (Gregory and Levings 1996; Reinhardt and Healey 1997), emigrating from areas with predators (Bugert and Bjornn 1991), aggregating (Tabor and Wurtsbaugh 1991), and adopting diel vertical migrations (Eggers et al. 1978). Complex habitat features that exclude predators, physically or through risk-aversion can function as prey refuge. Examples of effective prey refuge include complex substrate, aquatic and emergent vegetation, overhanging terrestrial vegetation, undercut banks, and submerged pieces of large wood. Shallow water also functions as a refuge from predation for small fish, especially in the absence of complex habitat features such as woody debris or submerged vegetation. Historically, Lake Washington's riparian and littoral zones were well vegetated, and interspersed with an abundance of large wood that had fallen along the shoreline (Evermann and Meek 1897; Stein 1970). The lowering of the Lake Washington water level and substantial shoreline development eliminated much of the vegetation and structural complexity historically available to juvenile salmonids rearing and migrating in the nearshore. Management plans seeking to encourage healthy assemblages of native fish should avoid the simplification of shoreline habitat, and the reduction of refuge-habitat for prey species.

Although the magnitude of avian predation in Lake Washington is unknown, piscivorous birds are present and this source of predation must be considered among potential threats to most fish, including juvenile salmonids. Common mergansers are abundant in the spring. Double-crested cormorants are common in Lake Washington, typically perching on the log booms at Union Bay and May Creek rather than on docks and bulkheads. Cormorants also commonly perch on individual piles. Western grebes inhabit enclosed bays (and some marinas), and forage throughout the lakes on calm days. Gulls are common, perching on log booms and on low docks, and are also known to feed on juvenile salmonids (Ruggerone 1986). In-water structures provide perching platforms for avian predators, from which they can launch feeding forays or dry plumage (Kahler et al. 2000). Incorporating anti-perching devices and grating in the design of overwater piers or related structures would work to minimize any advantage these structures convey to piscivorous birds.

5.2.4 Non-native Predators in the Nearshore Environment

The habitat requirements and behavior patterns of bass species have been studied extensively throughout their range, including Lakes Washington and Sammamish. A growing body of bass-related research has collectively demonstrated that bass species have an affinity for structural elements, and that bass prey on juvenile salmonids in Lake Washington. Smallmouth bass are more abundant in Lake Washington than largemouth bass, but both species are present in the system.

Although smallmouth and largemouth bass are known to prefer natural cover types like brush, logs, aquatic vegetation, or boulders (Stein 1970), these adaptive species readily utilize floating docks and the support piles of piers in the absence of natural cover types. Artificial structures and cover types that promote shade or darkness are frequently favored by yearling bass species (Haines and Butler 1969; Bassett 1994). Bass species are known to select low-gradient, shallow-water (0.6-1.5 meters), silty to gravelly habitats near structural features for spawning (Pflug 1981; Heidinger 1975; Allan and Romero 1975), and prefer similar habitat types near cover while foraging or resting (Vogele and Rainwater 1975). Although the habitat preferences of largemouth and smallmouth bass are generally similar, smallmouth bass generally select drop-offs or outcroppings, cover in the form of logs or rocks, and hard substrates without aquatic vegetation (Pflug 1981; Pflug and Pauley 1984), whereas largemouth bass generally prefer softer-bottom substrates and aquatic macrophytes (Coble 1975). These aspects of bass ecology are consistent with observations of bass behavior from across their geographic range (Bryan and Scarnecchia 1992; Kraai et al. 1991; Bassett 1994).

Logs, brush, or other pieces of large wood are rare along developed sections of the shoreline within the City of Kirkland. Piers provide alternative sources of shade, overhead cover, and in-water structure (piles and boatlifts) that attract bass (Fresh et al. 2003). Piers and piles differ from natural cover/structure elements, such as brush piles, primarily in their lack of structural complexity. This difference is critical for prey fish, which rely on structural complexity for avoidance cover in the presence of predators. In developed lakes, piers become the dominant structural features, at the expense of natural complex structures such as woody debris and emergent vegetation (Bryan and Scarnecchia 1992; Poe et al. 1986; Lange 1999). In areas of Lake Washington where smallmouth bass are present, they preferentially select habitats beneath piers and near in-water support pilings (Fresh et al. 2003). Lake Washington smallmouth concentrations tend to be highest around large docks extending over deeper water, equipped with skirting and numerous support piles. Management plans designed to minimize any advantage non-native predators hold over juvenile salmonids in the littoral zone of Lake Washington should also seek to minimize the amount of overwater cover and support structure associated with pier or dock projects along the shoreline.

5.3 CITY OF KIRKLAND SHORELINE JURISDICTION

5.3.1 Summary of City's Analysis

The segment-specific discussion in Section 4 adequately summarizes existing conditions for most of Kirkland's shoreline jurisdiction, including the PAA. Section 5.1 presents lake-wide conditions and function/process performance, with the latter organized per NOAA Fisheries' draft *Lake Matrix of Pathways and Indicators* established for chinook salmon (see Table 17). The latter discussion is focused on the aquatic lake environment, not the associated upland shoreline areas. The following discussion ties together Sections 4 and 5.1 consistent with the lake function delineation as presented in WAC 173-26-201(3)(d)(i)(C) and the processes outlined in WAC 173-26-201(3)(d)(i)(D). Table 18 summarizes the performance of ecological functions of Segments A, C and D. Segment B (Juanita Bay and Yarrow Bay Wetlands) is a notable exception, and is summarized in Table 19.

Comparison of RGP 3 Standards to Current Standards and Recent Permits

The following is a summary of the RGP 3 standards that are discussed as part of the pier provisions.

It is important to note that **compliance with RGP 3 is not required by federal agencies**. Applicants can continue to pursue projects that do not conform to RGP 3 provisions, provided that they can demonstrate that the project will meet a standard of "may affect, not likely to adversely affect" under the Endangered Species Act. There are differences between this standard under the Endangered Species Act and Shoreline Management Act standard of "no net loss of ecological functions", which can roughly be summarized as followed:

Parameter	ESA	SMA
"Geographic" scope	A specific listed fish or wildlife species (one animal)	Local jurisdiction only (City of Kirkland)
Evaluated parameter	Whether a project will have an adverse affect on a species or its habitat	All ecological functions

As noted, the following is a summary of RGP 3 standards, compared with existing SMP and Zoning Standards and a summary of permits issued for piers in Kirkland since implementation of the RGP 3.

Pier Parameter	RGP 3 Requirements	Current SMP or Zoning Standards	Post RGP 3 Permit History in Kirkland[3]
Area	• One lot: 480 ft^2 • Joint-Use Two lots: 700 ft^2 • Joint-Use Three+ lots: 1,000 ft^2	Moorage structures may not be larger than is necessary to provide safe and reasonable moorage for the boats to be moored. The city will specifically review the size and configuration of each proposed moorage structure to help ensure that: (1) The moorage structure does not extend waterward beyond the point necessary to provide reasonable draft for the boats to be moored, but not beyond the outer harbor line; (2) The moorage structure is not larger than is necessary to moor the specified number of boats; and (3) The moorage structure will	• One lot: 727 ft^2 • Joint use: 539 ft^2 • Extensions: 974 ft^2 (post extension)

Pier Parameter	RGP 3 Requirements	Current SMP or Zoning Standards	Post RGP 3 Permit History in Kirkland[3]
		not interfere with the public use and enjoyment of the water or create a hazard to navigation; and (4) The moorage structure will not adversely affect nearby uses; and (5) The moorage structure will not have a significant long-term adverse effect on aquatic habitats. (SMP)	
Length	• Walkway: limited by area and width requirements, special assessment of piers longer than adjacent piers for navigation purposes • Ell[1]: 20' with 2' strip of grating down center or 26' if fully grated • Finger[2]: 20' • Float: 20'	• 150' (Zoning Code)	• 130' total length (new and replacement piers) • 128' total length (post extension) • 21' average for new and replacement piers with ells
Width	• Walkway: 4' • Ramp: 3' • Ell: 6' • Finger: 2' • Float: 6'	May not be wider than is reasonably necessary to provide safe access to the boats, but not more than eight feet in width (Zoning Code).	• Walkway: ~4.3' (new and replacement) • Walkway extensions: ~5' • Ell: ~6.8'
Pile Size and Spacing	• First pair – 4" steel, 18' waterward of OHW • Subsequent pairs – 18' minimum spacing, no larger than 12" diameter	• Not specifically addressed.	• ~27' to first pile set • ~19.6' spacing overall
Water Depth or Location	• No structures other than walkway in nearshore 30 feet • No ells or fingers shallower than 9 feet • No floats shallower than 10 feet	• Not specifically addressed.	• No data to compare • Depth at end of new/replacement piers and extension is ~8.9'
Moorage Piles	2 piles for single-family pier, and 4 piles for joint-use. Installed waterward of 30 feet from shore, no farther than 12 feet from the pier, and no farther waterward than the terminal end of the pier.	• Not specifically addressed.	• No data to compare

Pier Parameter	RGP 3 Requirements	Current SMP or Zoning Standards	Post RGP 3 Permit History in Kirkland[3]
Height above Water Surface	Bottom of all structures (except floats) 1.5 feet above OHW	• Waterward of the high waterline, pier and dock decks may not exceed a height of twenty-four feet above mean sea level. (Note: This is less than 1.5 feet above OHW).	• ~1.3'
Materials	No treatment with pentachlorophenol, creosote, CCA or comparably toxic compounds. ACZA treatment must be per BMPs	No part of moorage structures or other components that may come into contact with the lake may be treated with or consist of creosote, oil base, toxic or other substances that would be harmful to the aquatic environment. (SMP). May not treat moorage structure with creosote, oil base or toxic substances (Zoning Code).	• No data to compare
Mitigation and other Requirements	• Overwater structures within nearshore 30 feet other than the proposed pier must be removed • Planting emergent vegetation waterward of OHW (if site appropriate) and a zone of riparian vegetation a minimum of 10-feet wide along the entire length of the shoreline immediately landward of OHW. Joint use piers will require a planting plan covering all properties sharing the pier. A path 6 feet wide or less is allowed through the zone of riparian vegetation for access to the pier. Chemical fertilizers, herbicides and pesticides shall not be applied to the riparian zone • Existing habitat features (e.g., large and small woody debris, substrate material, etc.) shall not be removed from the	• Not specifically addressed.	• 6 of 7 included shoreline plantings (1 had house at OHW – no room for plantings) • 4 proposed shoreline gravel • some removal of lifts or existing piers/pier components • 1 proposed demolition of carports, shed, and boathouse located along shoreline

Pier Parameter	RGP 3 Requirements	Current SMP or Zoning Standards	Post RGP 3 Permit History in Kirkland[3]
	riparian or aquatic environment. If invasive weeds (e.g., milfoil) are present and applicant wishes to remove them, removal shall occur by nonchemical means only with authorization from the Washington State Department of Fish and Wildlife. At least two native trees and three willow plants shall be included in the planting plan. • Other impact reduction measures may be proposed by the applicant, particularly if riparian plantings are not feasible, due to lack of space. These will be reviewed and approved by the Corps, the U.S. Fish and Wildlife Service and NOAA's National Marine Fisheries Service on a case-by-case basis		

[1] Ell is a terminal pier section oriented perpendicular to the walkway

[2] Finger is a pier section typically oriented perpendicular to walkway, located landward of the ell – often forms the nearshore side of a boatslip

[3] Data based on 2 new piers, 3 replacement piers (1 joint-use), and two pier extensions

24.05.165 Use regulations—Moorage structures and facilities.

(a) General. This section contains regulations pertinent to the development and use of moorage structures and facilities. These regulations are founded on the goals and policies established in Part II of this chapter. Please see the chart contained in Section 24.05.110 of this chapter to determine in which shoreline environments moorage structures and facilities are permitted.

(b) Permitted Use.

(1) The principal use permitted in this section is moorage of private pleasure watercraft.

(2) In the suburban residential shoreline environment, accessory uses, structures and facilities are not permitted as part of this use.

(3) In shoreline environments where this use is permitted, other than as specified above, the following accessory uses, developments and facilities are permitted as part of this use:

(A) Boat and motor sales and leasing;

(B) Boat and motor repair and service, if:

(i) This activity is conducted on dry land and either totally within a building or totally sight-screened from adjoining property and the right-of-way; and

(ii) All dry land motor testing is conducted within a building.

(C) Pumping facilities to remove effluent from boat holding tanks.

(D) Dry land boat storage; provided, however, that stacked storage is not permitted.

(E) Meeting and special event rooms.

(F) Gas and oil sales for boats, if:

(i) All storage tanks are underground and on dry land; and

(ii) The use has facilities to contain and clean up gas and oil spills.

This accessory use (gas and oil sales) may be conducted within an over water shed that is not more than fifty square feet in area and ten feet high as measured from the deck.

(G) Boat launch ramps that meet the following requirements:

(i) The ramp is paved with concrete.

(ii) There is sufficient room on the subject property for maneuvering and parking so that traffic impact on the frontage road will not be significant.

(iii) Access to the ramp is not directly from the frontage road.

(iv) The design of the site is specifically approved by the city.

(4) Other sections in this chapter contain regulations on bulkheads and other shoreline protective structures and other uses, developments and activities which may be conducted accessory to the principal use.

(c) Minimum Lot Size. There is no minimum lot size for this use; provided, however, that the subject property must be large enough and be of sufficient dimensions to comply with the site design and other requirements of this chapter.

(d) Limitation on Uses in the Suburban Residential Shoreline Environment.

(1) In the suburban residential shoreline environment, moorage structures and facilities may only be developed and used accessory to detached dwelling units on waterfront lots. Use of moorage structures and facilities in the suburban residential shoreline environment is limited to the residents and guests of the waterfront lots to which the moorage is accessory. Moorage space may not be leased, rented, sold or otherwise made available to other than the residents and guests of the waterfront lots to which the moorage is accessory.

(2) In the suburban residential shoreline environment, moorage structures and facilities may not provide moorage for more than two boats; provided, however, that waterfront lots in this environment are encouraged to develop joint or shared moorage facilities. If this occurs, the joint or shared moorage facility may contain up to two moorages for each waterfront lot participating in the joint or shared moorage facility.

(e) Size of Moorage Structures. Moorage structures may not be larger than is

necessary to provide safe and reasonable moorage for the boats to be moored. The city will specifically review the size and configuration of each proposed moorage structure to help ensure that:

(1) The moorage structure does not extend waterward beyond the point necessary to provide reasonable draft for the boats to be moored, but not beyond the outer harbor line;

(2) The moorage structure is not larger than is necessary to moor the specified number of boats; and

(3) The moorage structure will not interfere with the public use and enjoyment of the water or create a hazard to navigation; and

(4) The moorage structure will not adversely affect nearby uses; and

(5) The moorage structure will not have a significant long-term adverse effect on aquatic habitats.

(f) Over Water Structures — Required Yards.

(1) No structures regulated under this section, other than moorage structures and sheds associated with gas and oil sales for boats, may be located waterward of the high waterline. Other sections of this chapter contain regulations on bulkheads and other shoreline protective structures and breakwaters which may be accessory to this use and located waterward of the high waterline.

(2) The required yards for structures landward of the high waterline are as established in the various shoreline environments by Section 24.05.150 regarding attached and stacked dwelling units.

(3) Waterward of the high waterline, the required setbacks in the suburban residential shoreline environment are as follows:

(A) No moorage structure on private property may be within twenty-five feet of a public park.

(B) No moorage structure may be within twenty-five feet of another moorage structure not on the subject property.

(C) The side property line setback is ten feet.

(4) Waterward of the high waterline, the required setbacks in the Urban Mixed Use 1 Shoreline Environment are as follows:

(A) If the subject property provides moorage for not more than two boats, the following setbacks apply:

(i) No moorage structure may be within twenty-five feet of another moorage structure not on the subject property.

(ii) The side property line setback is ten feet.

(B) If the subject property provides moorage for more than two boats, the following setbacks apply:

(i) No moorage structure on private property may be within one hundred feet of a public park.

(ii) No moorage structure may be within fifty feet of an abutting lot that contains a detached dwelling unit.

(iii) No moorage structure may be within twenty-five feet of another moorage structure not on the subject property.

(5) The side property line setback is ten feet.

(6) Waterward of the high waterline, the required setbacks in shoreline environments other than as listed above, wherein this use is permitted, are as follows:

(A) If the subject property provides moorage for not more than two boats, the following setbacks apply:

(i) No moorage structure on private property may be within twenty-five feet of a public park.

(ii) No moorage structure may be within twenty-five feet of another moorage structure not on the subject property.

(iii) The side property line setback is ten feet.

(B) If the subject property provides moorage for more than two boats, the

following setbacks apply:

(i) No moorage structure on private property may be within one hundred feet of a public park.

(ii) No moorage structure on private property may be closer to a public park than a line that starts where the high waterline of the park intersects with the side property line of the park closest to the moorage structure and runs waterward toward the moorage structure at a forty-five-degree angle from that side property line. This setback applies whether or not the subject property abuts the park, but does not extend beyond any intervening over-water structures.

(iii) No moorage structure on private property may be closer to a lot containing a detached dwelling unit than a line that starts where the high waterline of the lot intersects with the side property line of that lot closest to the moorage structure and runs waterward towards the moorage structure at a thirty-degree angle from that side property line. This setback applies whether or not the subject property abuts the lot containing the detached dwelling unit, but does not extend beyond any intervening over-water structures.

(iv) No moorage structure may be within twenty-five feet of another moorage structure not on the subject property.

(v) The side property line setback is ten feet.

(g) Height of Structures.

(1) Landward of the high waterline, the maximum permitted height of structures is as follows:

(A) In the Suburban Residential Shoreline Environment, the maximum height of structures landward of the high waterline is as established for detached dwelling units in that shoreline environment. See Section 24.05.145 of this chapter.

(B) In all other shoreline environments where this use is permitted, the maximum height of structures landward of the high waterline is as established in each of those shoreline environments for stacked and attached dwelling units. See Section 24.05.150 of this chapter.

(2) Waterward of the high waterline, pier and dock decks may not exceed a height of twenty-four feet above mean sea level.

(h) Moorage Structures Waterward of the Inner Harbor Line. If the moorage structure will extend waterward of the inner harbor line, the applicant must obtain a lease from the Department of Natural Resources prior to proposing this use.

(i) Certain Substances Prohibited. No part of moorage structures or other components that may come into contact with the lake may be treated with or consist of creosote, oil base, toxic or other substances that would be harmful to the aquatic environment.

(j) Certain Moorages Prohibited. Covered moorage is prohibited. Aircraft moorage is prohibited. (Ord. 3153 § 1 (part), 1989: Ord. 2938 § 1 (part), 1986)

Summary of RGP 1 provisions

The following is a summary of another Regional General Permit (RGP 1) that provides standards for watercraft lifts (and associated canopies) in Washington State. [move to attachment]

Watercraft Lift Action	**RGP 1 Mitigation Requirements**[1]
Category A: Installation or retention of one ground-based or floating watercraft lift without a canopy, per adjacent upland property, where no other watercraft exists. If watercraft lifts are proposed to be installed at a joint-use pier owned by two upland property owners, under this Category, only one can be installed	• None required
Category B: Installation, repair, maintenance, replacement or retention of one watercraft lift, without a canopy, and the placement of no more than 2 cubic yards of fill to anchor the lift	• None required
Category C: Installation or retention of additional watercraft lifts beyond one, without a canopy, at a single residential use waterfront structure. A maximum of 3 lifts are allowed at a single residential use overwater structure. However, only two lifts can be ground-based, all other lift(s) must be floating or suspended lift(s)	• 2 or 4 pts for each additional floating or suspended watercraft lift, depending on depth (< or > 9') • 4 or 6 pts for each additional ground-based watercraft lift depending on depth depending on depth (< or > 9')
Category D: Installation or retention of additional watercraft lifts beyond one, without a canopy, at a joint use waterfront structure. There is no limitation to the maximum amount of watercraft lifts at an existing joint use structure. However, different project impact reduction and mitigation measures will be required based on the type of additional lifts (e.g., floating or suspended versus ground-based).	• 2 or 4 pts for each additional floating or suspended watercraft lift, depending on depth (< or > 9') • 4 or 6 pts for each additional ground-based watercraft lift depending on depth depending on depth (< or > 9')
Category E: Installation or retention of a translucent canopy on a new or existing watercraft lift. Lift should be located waterward of the 9-foot depth elevation. Lowest edge of the canopy must be at least 8 feet above OHW. Only 1 canopy can be installed per single or joint use residential overwater structure. Lift with canopy must be oriented with the length in the north-south direction to the maximum extent practicable	• one required if placed on lift > 9' deep • 2 pts required if placed on lift < 9' deep
Category F: Replacement, repair or maintenance of existing watercraft lifts. This includes parts which are located above or below ordinary high water (OHW) including parts which make contact with the substrate of the waterbody. If a watercraft lift is being replaced, it must be replaced in the same footprint as the original one or in a location at the same water depth or deeper on the same property.	• one required

[1] See table below for mitigation points system.

Mitigation Measure Option #	Number of Mitigation Points	Project Impact Reduction and Mitigation Measure Description
1	2	Plant 1 tree and 1 shrub (from the planting list and per planting specifications in this RGP) within 15 feet landward of MHHW or OHW and parallel to the shoreline
2	2	Remove 1 pile (if the pile is treated wood, use MMO#4 instead)
3	2	Permanently prevent an existing permitted float, which currently grounds out, from resting on the tidal substrate (at least 1 foot above the tidal substrate)
4	2	Remove 1 treated wood pile located waterward of MHHW or OHW Guidance on disposal and disposal location of treated wood material is located at www.ecy.wa.gov/programs/hwtr/demodebris/pages2/demowood.html
5	2	Remove 9 square feet of an existing overwater structure. This includes the permanent removal of a covered moorage, opaque watercraft lift canopies, and skirting.
6	2	Permanently prevent an existing anchor line from scouring the tidal substrate
7	6	Remove 3 linear feet of hardened shoreline and plant removal area with native vegetation (see Table 3)
8	1	Remove manmade debris (e.g., concrete rubble, tires, etc.) covering 9 square feet This option will require before and after photos of debris removal and removal area, a description of the type of debris and a vicinity map showing the location of the debris and removal area.
9	Varies	Removal of an entire or portion of an existing groin, The number of mitigation points varies depending on the size of the groin. Three mitigation point = 9 square feet (footprint) of groin removed. This option will require before and after photos of the groin and removal area and a vicinity map showing the location of the groin. For example: The groin to be removed is 9 feet long and 3 feet wide. This structure has a footprint of 27 square feet. 27 divided by 3 equals 9 mitigation points.
10	Varies	Removal of an entire or portion of an existing boat ramp, The number of mitigation points varies depending on the size of the boat ramp. Three mitigation point = 9 square feet (footprint) of boat ramp removed. This option will require before and after photos of the boat ramp and removal area and a vicinity map showing the location of the boat ramp. For example: The boat ramp to be removed is 12 feet long and 8 feet wide. This structure has a footprint of 96 square feet. 96 divided by 9 = 10.7 times 3 equals 32 mitigation points.

Mitigation Measure Option #	Number of Mitigation Points	Project Impact Reduction and Mitigation Measure Description
11	Varies	Removal of an entire or portion of an existing marine railway (two rails and support structures), in its entirety. The number of mitigation points varies depending on the length of the marine railway. One mitigation point = 2 linear feet of a pair of rails removed. Note: each rail is not counted separately. This option will require before and after photos of the marine rail and removal area and a vicinity map showing the location of the boat ramp. For example: The marine railway to be removed is 14 feet long. 14 divided by 2 = 7 mitigation points.
12	Varies	Install grating on an existing overwater structure with a solid deck surface. Three mitigation point = 9 square feet of installed grating For example: A boatlift will be installed adjacent to a pier which has the surface area completely decked with wood, no open surface area. The decking is removed from an area 6- by 3-feet and grating is installed for a total area of 18 square feet. 18 divided by 9 sq. ft. equals 2 times 3 → 6 mitigation points.

Teresa Swan

From: Daved [Daved@waterfrontconstruction.com]
Sent: Friday, January 02, 2009 7:30 AM
To: CLAUSON Stacy A; Paul Stewart; Teresa Swan
Cc: Mark Nelson; Richard Sandaas; vanskamok@verizon.net
Subject: COMMENTS ON 12/3/08 SMP PACKET
Attachments: Kirkland SMP Response 12-31-2008.doc

Hi Stacy, Paul and Teresa,

Here are comments for the Planning Commission from the latest packet. Because the City (and DOE) seems to be placing such a strong emphasis on WAC 173-26-231 Shoreline Modifications I have devoted a lot of time and space to that particular section. I think there is room for flexibility by local governments for total or partial bulkhead replacements and do not see where DOE has adequately justified requiring a geotechnical report all of a sudden since these are actually taken from 2003 guidelines which they have never enforced although they could have through the comment and appeal process at local, state and federal levels. To all of a sudden place the requirement for geotechnical justification on the local government and property owner or openly deny bulkhead replacements with or without the report is unreasonable.

Please take special note that the WAC allows property owners to protect their property also although this has never been mentioned by DOE or at any of the meetings I have attended.

Thanks,
Dave Douglas
Permit Coordinator
Waterfront Construction, Inc.

WATERFRONT

December 31, 2008

From: David Douglas, Waterfront Construction, Inc.
To: City of Kirkland
Attn: Paul Stewart
Stacy Clauson
Teresa Swan
Planning Commission Members

Ref: COMMENTS TO DECEMBER 3, 2008 PLANNING COMMISSION MEMORANDUM REGARDING SHORELINE MASTER PROGRAM UPDATE

Dear City of Kirkland Staff,

I have reviewed the most recent Planning Commission packet dated December 3, 2008 and provide the comments below.

1) Page 3 of 35
ADDRESSING INDIVIDUAL AND CUMULATIVE IMPACTS AND SHORELINE RESTORATION
Purpose
   a) "No net loss" continues to be an ever-evolving term and has been extrapolated to place the responsibility of "net gain" or "restoration" on property owners as the process moves forward and DOE is challenged. This term as defined by DOE means "the existing condition of shoreline ecological functions should remain the same or be improved over time". Please do not lose sight of this meaning for bulkheads, piers and other shoreline development, especially when it involves redevelopment.

   b) Improving shoreline ecological functions to enhance habitat for salmon has been taking place for a long time and in most cases local policy has not been the major contributing factor for this improvement. It has been WA Dept of Fish and Wildlife and the Army Corps of Engineers regulatory processes, with DOE standing on the fringes to ensure compliance with local SMP's that have driven improvements of salmon habitat. Are sweeping changes to local SMP's necessary or simply routine to further sustain the agency and remove local control which is currently working well in combination with state and federal regulatory review? Each time a new project is placed before local, state and federal regulatory agencies, especially for redevelopment, there are vast improvements. Is the wheel really broken and need fixed? Please take time to understand the entire regulatory process.

      Please note that it is only Sockeye Salmon that reportedly spawn in Lake Washington so we are mainly concerned with salmon migration to rivers and streams. Documented sockeye spawning maps used by WDFW have not been updated for over 20 years and WDFW does not have a budget to do an updated inventory on the lake so they use old information to regulate inwater work.

   c) Restoration is now included in the evaluation of cumulative impacts even though the state does not provide specific guidance on how and to what extent to include restoration. This leaves it in the city's hands to do as much or as little "beyond what is required" as they wish. Once again the "no net loss" definition does not include restoration.

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What does this mean for Kirkland?

a) Longer piers to provide access to deeper waters are viewed as an adverse impact as it is read in context. In reality, a longer pier in deeper water reflects an improvement because even though it does typically require additional overwater coverage, it relocates human and boating activities away from the most critical nearshore area. This is highly favorable. Wider platforms and pier sections over deeper water have fewer impacts on migration and aquatic vegetation.

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b) More flexible standards, especially for redevelopment of piers and bulkheads, will provide greater opportunity for "no net loss', "net gain" and restoration". I cannot comment on residential construction because it is not my specialty, but to take a practical and reasonable approach by individually comparing what exists against what is proposed seems to be the least complex way of achieving the "no net loss" mandate. Linking individual property owners to what exists elsewhere and using that as a means for not properly crediting them with measurable improvements on their own property is unreasonable. Once again the state does not prescribe how the regulations should change so this leaves it in the city's hands to do as much or as little "beyond what is required" as they wish. The "no net loss" mandate can be met with little or no changes.

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Additional Information- Restoration Feasibility

a) Please provide examples for property owners of what the City refers to in the term "soft structural stabilization measures". It says these designs use large boulders, log and other features to attenuate wave energy and stabilize the shoreline. If large the boulders are proposed waterward of the OHWL are they considered obstructions to fish migration, will they provide ambush opportunity for predator fish, do they stop the natural drift of sediment, and does wave deflection cause injury to fish? Other regulatory agencies have not allowed this unless they are used to shelter emergent vegetation in very shallow water.

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a) It appears that the biological consultant may have identified individual properties according to restoration potential. One would also presume the properties with a high restoration potential will have the most difficult time getting new or replacement bulkheads approved and those with moderate or low restoration potential would have an easier time. Will the city provide each of the identified property owners with their "restoration potential" so they know where they stand for possible future development or redevelopment? The City continues to allow the biological consultant to refer to and promote itself as a company that has extensive shoreline restoration experience and while this is appreciated it should be acknowledged that there are many biological firms and marine contractors that offer these same services.

Other jurisdiction approaches

a) The City should exercise caution in gauging the approach of other cities because each has a different and unique scenario. In addition, updated SMP's will be challenged and face the possibility of legal action. Should one of the cities further along in the process experience this it would cause a domino effect for all subsequent jurisdictions.

Page 8 of 35 Matrix- Action at or Waterward of the Ordinary High Water Line

1. Construction of Bulkheads

a) Please provide an updated and current map of documented sockeye spawning areas along the Kirkland shoreline showing where sockeye currently spawn and where future restoration will enhance this opportunity. This will provide the city and property owners with accurate information in regard to this element listed as a development impact. There does not appear to be any updated documented sockeye

spawning maps for Lake Washington or Lake Sammamish available from WDFW so if this is listed as an impact, accurate information should be provided to city leaders and property owners.

b) Each of the 3 opportunities listed are already being accomplished through the existing biologists and experienced staff at local, state and federal agencies. Why does an SMP need to further address this rather than requiring that proof of other required permits have been completed at the time of the building permit review process?

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2. Construction of Piers

a) The relatively inconclusive development impacts from the construction of piers listed have been known and used for years by state and federal regulatory agencies to evaluate and direct projects. The impacts listed have never been quantified as a part of the "Best Available Science" process but have been widely accepted as factual. As a result, hundreds of pier, boatlift and moorage cover projects have been reviewed and approved over the past 5 to 10 years, with the vast majority resulting in an improvement to the aquatic environments and nearshore area.

b) Using the SMP as an opportunity to reduce overwater coverage through size minimization of replacement overwater structures, use of grating, and other impact minimization measure not mentioned is understandable. If reducing the size and number of inwater structures can be accomplished without thwarting the rights of private property owners it should be pursued. If DOE is requiring dimensional standards it is suggested that the City recommend the maximum possible and as the Corp RGP-3 continues to be referenced it should also be noted that there are other processes available to attain federal approval and there have been main walkways approved at 6 feet wide and ELLS and platforms approved at 10 feet wide in Lake Washington recently. These are typically through a redevelopment where the proposed structure was a vast improvement over the existing conditions but the main point is if the city adopts the overly restrictive dimensional standards DOE is trying to push on them it will remove any incentive for existing piers to be removed. Existing piers can be maintained and repaired under an exemption so if an alternative process for redevelopment is not adopted the chance for improvement and an overall "no net loss" is unlikely.

The city should inventory the existing overwater coverage of all private and commercial piers to adequately assess existing conditions. The replacement of existing piers with the same or smaller sized piers, grated surfaces, elevated higher above the water surface, using glu-lam beams for longer spans between piles, smaller diameter and less piles, along with approved wood preservative treatments should all be considered when evaluating a redevelopment project. Placing an emphasis only on the size of a replacement pier does not take all aspects into account.

Flexible size and dimensions for new piers should also be considered since the RGP-3 DOE is promoting contains recommended guidelines and less than 5% of approved projects have met the overly strict standards.

NOTE: IT IS VITAL THAT A TOTALLY SEPARATE PROCESS BE DEVELOPED FOR THE REDEVELOPMENT OF EXISTING PIERS AND OVERWATER STRUCTURES. DOE HAS ACKNOWLEDGED THAT REPLACING AN EXISTING PIER, REGARDLESS OF WHETHER THE NEW PIER ALIGNS WITH THE DEVELOPMENT STANDARDS IN THE RGP-3, CAN RESULT IN "NO NET LOSS". THIS CAN BE EASILY PROVEN AND IT WE MUST REMEMBER THAT THE RGP-3 WAS NOT WRITTEN TO ARRIVE AT A "NO NET LOSS". ARBITRARILY CHOOSING TO USE THE RGP-3 TO ARRIVE AT A "NO NET LOSS" IS UNFAIR TO THOSE WHO HAVE EXISTING STRUCTURES THEY ARE REMOVING WHEN COMPARED TO THOSE WHO ARE PROPOSING TOTALLY NEW STRUCTURES. THIS WILL HAVE A DIRECT IMPACT ON PROPERTY VALUES.

All agencies recommend that the main section of piers along with moorage covers and boatlifts be located further from the shoreline and in deeper water. This encourages all human and boating activity to be away from the most critical nearshore area. Longer walkways mean more coverage. Overly strict dimensional standards, for new or redeveloped structures, will push reasonable projects into the Shoreline Variance process and place decisions into the hands of the state and remove local control.

Take time to review some recently approved projects which will show that many recent projects reflect size reduction and vast improvements over existing conditions.

D. Conceptual Policy Options for Shoreline Restoration

a) Linking shoreline restoration with new development or redevelopment of property is very costly and involves permitting from agencies that would not be involved in residential development.

b) Shoreline vegetation standards from the perspective of piers and bulkheads are already a major part of project approval.

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5. In-Water Activity

a) Proposed regulations: Best Management Practices are currently practiced for all inwater and overwater construction activities as required by state and federal regulatory agencies and as an accepted industry practice. In addition, there are specific and general conditions that accompany each state and federal permit depending upon the project scope. There are also area specific inwater work windows throughout the Puget Sound's fresh and salt water bodies to protect fish migration and spawning imposed by WDFW and the Corps of Engineers.

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Public Comments

B. Response to Specific Issues

- Provisions for replacement bulkheads.

  The City and DOE continue to point out that standards in the SMP must respond to WAC requirements for "no net loss" and over the years the standards for justifying a protective bulkhead common to a single family residence has become increasingly stringent based on ever changing information from regulatory agencies. In 2002 when I started with Waterfront Construction new and replacement bulkheads were approved with little or no resistance from local, state and federal agencies with the only requirement being that a residence must be on site. Currently local governments under the direction of the state have placed additional restrictions for new and replacement bulkheads using limited scientific data and placing the onus on the property owner through geotechnical reports required to predict the future erosion rates that could be nullified through a single storm event leaving local governments in the vulnerable position of turning down an application for new or replacement bulkheads as a result of state requirements even when a "no net loss" or in many cases a "net gain" over existing shoreline ecological functions can be established. Essentially, the expense of a geotechnical report is being placed on the property owner to justify a structure that would otherwise be categorically exempt from the Shoreline Substantial Development Process. Geotechnical engineers are also being placed in a very vulnerable and legally compromising position by being asked to predict erosion rates. From 2002 to present there has been limited new information regarding the effects of bulkheads discovered and it has not prevented the approval of new or replacement bulkheads in fresh water lakes by local, state and federal regulatory agencies. Salt water applications differ greatly due to tidal activity and habitat and location of shoreline development so they cannot be similarly applied in most cases.

A lot of emphasis has been placed on WAC 173-26-231 regarding shoreline stabilization. I have reviewed this section and while it is quite ambiguous and a little contradictory it appears to provide a lot of flexibility for local governments to boldly defend a property owner's right to provide shoreline protection for residence and property. I have inserted responses to each statement from this section of the WAC as needed to provide Planning Commissioners and City Council Members with information a the design and permitting perspective through the experience of a non-agency applicant who has handled hundreds of projects since this information was made effective on 1/172004.

WAC 173-26-231
Shoreline Modifications

(1) ***Applicability.*** Local governments are encouraged to prepare master program provisions that distinguish between shoreline modifications and shoreline uses. Shoreline modifications are generally related to construction of a physical element such as a dike, breakwater, dredged basin, or fill, but they can include other actions such as clearing, grading, application of chemicals, or significant vegetation removal. Shoreline modifications usually are undertaken in support of or in preparation for a shoreline use; for example, fill (shoreline modification) required for a cargo terminal (industrial use) or dredging (shoreline modification) to allow for a marina (boating facility use).

The provisions in this section apply to all shoreline modifications within shoreline jurisdiction.

(2) ***General principles applicable to all shoreline modifications.*** Master programs shall implement the following principles:

(a) Allow structural shoreline modifications only where they are demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage or are necessary for reconfiguration of the shoreline for mitigation or enhancement purposes.
Structural shoreline modifications are allowed.

(b) Reduce the adverse effects of shoreline modifications and, as much as possible, limit shoreline modifications in number and extent.
Structural shoreline modifications which are allowed should result in reducing adverse effects and should be limited in number and extent.

(c) Allow only shoreline modifications that are appropriate to the specific type of shoreline and environmental conditions for which they are proposed.
Structural shoreline modifications which are allowed should be appropriate for the shoreline and environmental conditions for which they are proposed.

(d) Assure that shoreline modifications individually and cumulatively do not result in a net loss of ecological functions. This is to be achieved by giving preference to those types of shoreline modifications that have a lesser impact on ecological functions and requiring mitigation of identified impacts resulting from shoreline modifications.
Structural shoreline modifications which are allowed should not result individually or cumulatively in a net loss of ecological functions.
Note: This supports the replacement of existing bulkheads or other structures with similar structures that will result in less impacts and "no net loss" compared to existing conditions.

(e) Where applicable, base provisions on scientific and technical information and a comprehensive analysis of drift cells for marine waters or reach conditions for river and stream systems. Contact the department for available drift cell characterizations.
Does not apply to fresh water lake applications.

(f) Plan for the enhancement of impaired ecological functions where feasible and appropriate while accommodating permitted uses. As shoreline modifications occur, incorporate all feasible measures to protect ecological shoreline functions and ecosystem-wide processes.
Allow for permitted uses but use scientific and technical information to enhance impaired ecological functions and use all feasible measures to protect ecological shoreline functions individually and ecosystem-wide.
Note: Current designs of shoreline stabilization structures classified as hard reflect a softer shoreline than existing vertical bulkheads. Rock bulkheads are installed at a 3:1 batter to provide a softer design and very few vertical concrete bulkheads are installed along fresh water lake shorelines. Existing bulkheads replaced in the same location or slightly, often with beaches or pocket coves result in a "no net loss" over existing conditions. If existing conditions on an individual site are considered "impaired" a more environmentally friendly designed bulkhead, even if it consists of rock, would contribute to an overall improvement.

(g) Avoid and reduce significant ecological impacts according to the mitigation sequence in WAC 173-26-201 (2)(e).
The following section of WAC 173-26-201 referencing mitigation sequencing is provided.
(A) Avoiding the impact altogether by not taking a certain action or parts of an action;
(B) Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
(C) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
(D) Reducing or eliminating the impact over time by preservation and maintenance operations;
(E) Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
(F) Monitoring the impact and the compensation projects and taking appropriate corrective measures.

This section acknowledges that new impacts will be unavoidable and approved while outlining the preferred method for limiting the impacts caused.
Note: For new shoreline stabilization letter A would be the obvious choice using the most environmentally friendly design possible.
For projects where a large percentage of the shoreline is hardened with existing vertical concrete or rock bulkheads, letters B, C, E, and F would be most appropriate. Letter D may be achievable in some cases on a larger scale through total site development that could support total removal of existing shoreline stabilization. On a case-by-case basis the required mitigation sequencing in WAC 173-26-201 can be achieved by local government.
Each project where a hard shoreline stabilization structure is proposed to replace an existing one, the result is always an improvement over existing conditions and will meet the "no net loss" requirement. The existing condition of shoreline ecological functions would typically reflect a "net gain" but at a minimum would remain the same or be improved over time whereby meeting the DOE goal for no net loss".

Please note that new or replacement shoreline stabilization complies with one or more of the above mitigations as listed below:
A) Areas where shoreline stabilization and erosion protection are left untouched,

B) **New and replacement shoreline stabilization measures, whether hard or soft, are designed in an environmentally friendly manner to limit or avoid impacts to the greatest extent possible,**
C) **Most replacement bulkheads or other shoreline stabilization measures meet this mitigation sequence by improving conditions and resulting in a "net gain" of shoreline ecological functions.**
E) **Each shoreline stabilization project, whether new or replacement, includes mitigation, impact minimization and conservation measures designed to compensate for impacts. Native riparian and emergent vegetation, restoration of natural shoreline, pocket coves, and nearshore fill to provide shallow fish migration and spawning habitat are some examples.**
F) **Ongoing maintenance and inspection occur for each project. Planting plans approved by state and federal regulatory agencies are monitored for a 5 year period requiring 100% survival of all vegetation after 3 years and 80% after 5 years. Initial and annual reports and photos are submitted to WDFW and the Army Corps of Engineers.**

(3) ***Provisions for specific shoreline modifications.***
(a) **Shoreline stabilization.**

(i) **Applicability.** Shoreline stabilization includes actions taken to address erosion impacts to property and dwellings, businesses, or structures caused by natural processes, such as current, flood, tides, wind, or wave action. These actions include structural and nonstructural methods.
The WAC shoreline stabilization includes actions taken to address erosion impacts to property and dwellings.
Note: Very little is said regarding property as most attention is directed toward protecting a residence but this clearly lists a property owners' right to the protection of property.

Nonstructural methods include building setbacks, relocation of the structure to be protected, ground water management, planning and regulatory measures to avoid the need for structural stabilization.
Note: These types of nonstructural methods are typically addressed through zoning and code regulations.

(ii) **Principles.** Shorelines are by nature unstable, although in varying degrees. Erosion and accretion are natural processes that provide ecological functions and thereby contribute to sustaining the natural resource and ecology of the shoreline. Human use of the shoreline has typically led to hardening of the shoreline for various reasons including reduction of erosion or providing useful space at the shore or providing access to docks and piers. The impacts of hardening any one property may be minimal but cumulatively the impact of this shoreline modification is significant.
Note: While shoreline hardening has receive much scrutiny, it is important to remember that each has been reviewed and approved by local, state and federal regulatory agencies responsible for the protection of natural resources and fish and wildlife. Changes in design standards for bulkheads, docks and piers have resulted in nearshore and overwater structures that meet state and federal guidelines regarding impacts to listed species and critical habitat. Each of the soft and hard shoreline stabilization measures constructed at or below the OHWL has received extensive review and approval by local, state and federal agencies based on current regulatory standards. The WA Department of Ecology has the same review, comment and appeal opportunity offered to all regulatory agencies on each project and has rarely commented on or opposed any of the projects approved for residential property owners in Kirkland and throughout the Puget Sound. This is despite the fact that the new SMA guidelines were published over 5 years ago in 2003. If hard shoreline stabilization measures were as impacting as we are told why hasn't DOE take a more aggressive approach in stopping them rather than waiting until the burden can be placed on local governments through their SMP updates?

Shoreline hardening typically results in adverse impacts to shoreline ecological functions such as:

• Beach starvation. Sediment supply to nearby beaches is cut off, leading to "starvation" of the beaches for the gravel, sand, and other fine-grained materials that typically constitute a beach.
Note: If substantiated, this is a salt water issue and not applicable to fresh water lakes.

• Habitat degradation. Vegetation that shades the upper beach or bank is eliminated, thus degrading the value of the shoreline for many ecological functions, including spawning habitat for salmonids and forage fish.
Note: While this may have been true 10 or 20 years ago, all shoreline stabilization projects include native riparian and/or emergent vegetation resulting in vast improvement over existing conditions. The removal of bulkheads and restoring of a natural shoreline may result in no vegetation being installed or if installed it is often further from the shoreline. Bulkheads actually allow and encourage the installation of riparian vegetation within a few feet of the water's edge. If people cannot replace bulkheads they may be less likely to install native vegetation near or in the water.

• Sediment impoundment. As a result of shoreline hardening, the sources of sediment on beaches (eroding "feeder" bluffs) are progressively lost and longshore transport is diminished. This leads to lowering of down-drift beaches, the narrowing of the high tide beach, and the coarsening of beach sediment. As beaches become more coarse, less prey for juvenile fish is produced. Sediment starvation may lead to accelerated erosion in down-drift areas.
Note: If substantiated, this is a salt water issue and not applicable to fresh water lakes.

• Exacerbation of erosion. The hard face of shoreline armoring, particularly concrete bulkheads, reflects wave energy back onto the beach, exacerbating erosion.
Note: Current design standards and 3:1 battering (laying back) of rock bulkheads limits wave deflection and exacerbation of erosion. They also help to decrease oversplash into the upland area to further control erosion. The addition of nearshore fill to assist in wave dissipation further from the toe of the bulkhead can eliminate deflection altogether. As stated, vertical concrete bulkheads tend to promote a lot of deflection.

• Ground water impacts. Erosion control structures often raise the water table on the landward side, which leads to higher pore pressures in the beach itself. In some cases, this may lead to accelerated erosion of sand-sized material from the beach.
Note: If substantiated, this is a salt water issue and not applicable to fresh water lakes. Using modern techniques, new and replacements bulkheads along fresh water lakes do not attribute to a rise in the water table and we have never been asked by local governments to address this as an issue of concern.

• Hydraulic impacts. Shoreline armoring generally increases the reflectivity of the shoreline and redirects wave energy back onto the beach. This leads to scouring and lowering of the beach, to coarsening of the beach, and to ultimate failure of the structure.
Note: If installed improperly and not appropriately "keyed in" this can be true. This is a problem when bulkheads have not been properly installed, especially in salt water where wave activity is less predictable. A properly installed bulkhead along with the standard requirement for nearshore fill to offset assumed impacts should not result in this happening. Properly installed bulkheads are not destined for failure and there are many bulkheads that were built 40 or more years ago still in place and showing no signs of failure. Longevity is a combination of location and construction technique and while no guarantees can be made a properly installed bulkhead should provide several decades of protection.

• Loss of shoreline vegetation. Vegetation provides important "softer" erosion control functions. Vegetation is also critical in maintaining ecological functions.
Note: Bulkhead replacements typically result in a gain of shoreline vegetation through mitigation and in many cases non-armored shorelines are overgrown with non-native and invasive vegetation. Bulkheads provide the opportunity for native vegetation in the form of plants, shrubs and even large trees to be planted close to the water and provide shade, leaf litter and insects for fish. When properly installed and combined with nearshore fill and native vegetation a hard shoreline stabilization measure results in an improvement in ecological functions.

• Loss of large woody debris. Changed hydraulic regimes and the loss of the high tide beach, along with the prevention of natural erosion of vegetated shorelines, lead to the loss of beached organic material. This material can increase biological diversity, can serve as a stabilizing influence on natural shorelines, and is habitat for many aquatic-based organisms, which are, in turn, important prey for larger organisms.
Note: If substantiated, this is a salt water issue and not applicable to fresh water lakes.

• Restriction of channel movement and creation of side channels. Hardened shorelines along rivers slow the movement of channels, which, in turn, prevents the input of larger woody debris, gravels for spawning, and the creation of side channels important for juvenile salmon rearing, and can result in increased floods and scour.
Note: If substantiated, this is a river issue and not applicable to fresh water lakes.

Additionally, hard structures, especially vertical walls, often create conditions that lead to failure of the structure. In time, the substrate of the beach coarsens and scours down to bedrock or a hard clay. The footings of bulkheads are exposed, leading to undermining and failure. This process is exacerbated when the original cause of the erosion and "need" for the bulkhead was from upland water drainage problems. Failed bulkheads and walls adversely impact beach aesthetics, may be a safety or navigational hazard, and may adversely impact shoreline ecological functions. **Note: This is a far reaching statement that may or may not have validity and applies to vertical concrete bulkheads. This is similar to the argument made under Hydraulic Impacts above. Please see those comments regarding properly installed rock bulkheads.**

"Hard" structural stabilization measures refer to those with solid, hard surfaces, such as concrete bulkheads, while "soft" structural measures rely on less rigid materials, such as biotechnical vegetation measures or beach enhancement. There is a range of measures varying from soft to hard that include:

• Vegetation enhancement;
• Upland drainage control;
• Biotechnical measures;
• Beach enhancement;
• Anchor trees;
• Gravel placement;
• Rock revetments;
• Gabions;
• Concrete groins;
• Retaining walls and bluff walls;
• Bulkheads; and
• Seawalls.

Generally, the harder the construction measure, the greater the impact on shoreline processes, including sediment transport, geomorphology, and biological functions.

Note: If substantiated, this is primarily a salt water issue although some aspects could be applied to fresh water lakes.

Structural shoreline stabilization often results in vegetation removal and damage to near-shore habitat and shoreline corridors. Therefore, master program shoreline stabilization provisions shall also be consistent with WAC 173-26-221(5), vegetation conservation, and where applicable, WAC 173-26-221(2), critical areas.
Note: These issues are addressed through the SSDP and SEPA reviews locally and by WDFW and Corps of Engineers at the state and federal regulatory levels. Nearly all shoreline stabilization measure projects involve the removal of some existing vegetation, typically non-native, invasive and/or noxious and the planting of native plants, shrubs and trees. Existing SMP's take vegetation conservation and critical areas into consideration and with the overlapping reviews by the state and federal agencies the result is always an improvement over existing conditions.

In order to implement RCW 90.58.100(6) and avoid or mitigate adverse impacts to shoreline ecological functions where shoreline alterations are necessary to protect single-family residences and principal appurtenant structures in danger from active shoreline erosion, master programs should include standards setting forth the circumstances under which alteration of the shoreline is permitted, and for the design and type of protective measures and devices.

(iii) **Standards.** In order to avoid the individual and cumulative net loss of ecological functions attributable to shoreline stabilization, master programs shall implement the above principles and apply the following standards:

(A) New development should be located and designed to avoid the need for future shoreline stabilization to the extent feasible. Subdivision of land must be regulated to assure that the lots created will not require shoreline stabilization in order for reasonable development to occur using geotechnical analysis of the site and shoreline characteristics. New development on steep slopes or bluffs shall be set back sufficiently to ensure that shoreline stabilization is unlikely to be necessary during the life of the structure, as demonstrated by a geotechnical analysis. New development that would require shoreline stabilization which causes significant impacts to adjacent or down-current properties and shoreline areas should not be allowed.
Note: These are typically addressed through zoning and code regulations.

(B) New structural stabilization measures shall not be allowed except when necessity is demonstrated in the following manner:

(I) To protect existing primary structures:
Note: This may be in direct conflict with and contradictory to the WAC Sections below:

WAC 173-26-231(2)(a) states:
(2) ***General principles applicable to all shoreline modifications.*** Master programs shall implement the following principles:
(a) **Allow structural shoreline modifications only where they are demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage or are necessary for reconfiguration of the shoreline for mitigation or enhancement purposes.**
Note: This indicates that structural shoreline modifications are allowed when they support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage. Residential development is a legally existing shoreline use. Are other structures that support the primary structure a part of the legally existing shoreline use and therefore also afforded protection?

WAC 173-26-231(3)(a)(i) states:

(3) ***Provisions for specific shoreline modifications.***

(a) **Shoreline stabilization.**

(i) **Applicability.** Shoreline stabilization includes actions taken to address erosion impacts to property and dwellings, businesses, or structures caused by natural processes, such as current, flood, tides, wind, or wave action. These actions include structural and nonstructural methods. **Note: Does this provision of the WAC allow a property owner to use structural and nonstructural methods for the protection of the property itself, regardless of whether the primary structure is threatened? In other words, if a property is being naturally eroded does a property owner have the right to prevent further erosion based on this premise alone? This section of the WAC allows action to be taken to address erosion impacts to *property, dwellings, businesses, or structures.* Out buildings, garages, gazebos, retaining walls, upland rockeries, stairs, and bulkheads are all considered structures so this provision appears to allow a property owner to address erosion impacts to them using structural and nonstructural methods. A property owner's right to protect their property itself may have been overlooked. Do they or do they not have a right to protect their property which in many cases is valued at more than the residential structure ?**

• New or enlarged structural shoreline stabilization measures for an existing primary structure, including residences, should not be allowed unless there is conclusive evidence, documented by a geotechnical analysis that the structure is in danger from shoreline erosion caused by tidal action, currents, or waves. Normal sloughing, erosion of steep bluffs, or shoreline erosion itself, without a scientific or geotechnical analysis, is not demonstration of need. The geotechnical analysis should evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering structural shoreline stabilization.

Note: A geotechnical report is a costly expense for a property owner. This section of the WAC has been effective since 1/17/2004 but local governments and DOE itself has not required or requested such reports even though many new and enlarged structural shoreline stabilization measures have been approved and constructed since that time. DOE has always had the authority to request and local governments the authority to require these reports if they were considered vital to deciding whether to approve or deny a shoreline stabilization measure, especially in the case of a bulkhead if they are as impacting as believed.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

Note: New erosion control structures, if needed, can usually be designed resulting in a "no net loss of shoreline ecological functions" or offset through mitigation. Replacement erosion control structures can in nearly every case result in meeting DOE's definition of "no net loss of shoreline ecological functions".

(II) In support of new nonwater-dependent development, including single-family residences, when all of the conditions below apply:

Note: I trust non-water dependent development is interpreted to mean those residences or developments which do not include waterfront property but are within 200 feet of the OHWL. If this is referring to single family residences located on the water then it may be an error since they are considered water-dependent uses.

• The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.

Note: No Comment

• Nonstructural measures, such as placing the development further from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.
Note: No Comment as this is a zoning and code issue.

• The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. The damage must be caused by natural processes, such as tidal action, currents, and waves.
Note: As noted above, the WAC allows protection of property and dwellings. The wording in this provision is confusing since it states "the need to protect primary structures from damage in the first sentence and then in the second sentence it says the damage must be caused by natural process … If the intent is to prevent damage then what damage must be caused? Erosion is not damage but a natural process that can lead to damage.

• The erosion control structure will not result in a net loss of shoreline ecological functions.
Note: Please refer to previous comments addressing the issue of "no net loss".

(II) In support of water-dependent development when all of the conditions below apply:
Note: I trust water-dependent development is interpreted to mean single family residences located on waterfront property which are defined as water-dependent uses.

• The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.
Note: Erosion from tidal action, current or waves should be evident.

• Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.
Note: Erosion from tidal action, current or waves should be evident.

• The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.
Note: Erosion from tidal action, current or waves is typically evident and does not require a geotechnical report to verify. It is recommended that local governments have staff trained to address such issues in order to save property owner expense. Should the property owner disagree with the opinion of the staff they should hire a geotechnical engineer to prepare a geotechnical report. On the other hand, should DOE disagree with city staff, they should be required to hire a geotechnical engineer at department expense to prepare a geotechnical report. This procedure engages the city as an active part of the process and places the onus on the party who disagrees rather than solely on the property owner.

• The erosion control structure will not result in a net loss of shoreline ecological functions.
Note: Please refer to previous comments addressing the issue of "no net loss".

(IV) To protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to chapter 70.105D RCW when all of the conditions below apply:
Note: No Comment

• Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.
Note: No Comment

• The erosion control structure will not result in a net loss of shoreline ecological functions.
Note: No Comment

(C) An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion caused by currents, tidal action, or waves.
Note: No Comment

• The replacement structure should be designed, located, sized, and constructed to assure no net loss of ecological functions.
Note: No Comment

• Replacement walls or bulkheads shall not encroach waterward of the ordinary high-water mark or existing structure unless the residence was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure.
Note: No Comment

• Where a net loss of ecological functions associated with critical saltwater habitats would occur by leaving the existing structure, remove it as part of the replacement measure.
Note: No Comment

• Soft shoreline stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the ordinary high-water mark.
Note: No Comment

• For purposes of this section standards on shoreline stabilization measures, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure which can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.
Note: No Comment

(D) Geotechnical reports pursuant to this section that address the need to prevent potential damage to a primary structure shall address the necessity for shoreline stabilization by estimating time frames and rates of erosion and report on the urgency associated with the specific situation. As a general matter, hard armoring solutions should not be authorized except when a report confirms that there is a significant possibility that such a structure will be damaged within three years as a result of shoreline erosion in the absence of such hard armoring measures, or where waiting until the need is that immediate, would foreclose the opportunity to use measures that avoid impacts on ecological functions. Thus, where the geotechnical report confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as the three years, that report may still be used to justify more immediate authorization to protect against erosion using soft measures.
Note: This requirement places a professional geotechnical engineer, local government, and the state in a legally vulnerable position because it requires someone to estimate erosion rates based on unsubstantiated data. A single or unusual storm event could negate the professional opinion and result in damage or more extensive repairs than what would have been required if it was originally approved. Once again, the protection is directed toward a primary structure and does not consider the protection of the property itself which the WAC does appear to allow.

(E) When any structural shoreline stabilization measures are demonstrated to be necessary, pursuant to above provisions.

• Limit the size of stabilization measures to the minimum necessary. Use measures designed to assure no net loss of shoreline ecological functions. Soft approaches shall be used unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses.
Note: Once again, there is no mention of protecting the property itself which the WAC appears to allow. This offers excellent opportunity for partial replacement with beaches and pocket coves and returns on each end if the size of the property and site conditions will support it. "No net loss", as mentioned earlier, can be achieved on full and partial bulkhead replacements.

• Ensure that publicly financed or subsidized shoreline erosion control measures do not restrict appropriate public access to the shoreline except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to ecological functions. See public access provisions; WAC 173-26-221(4). Where feasible, incorporate ecological restoration and public access improvements into the project.
Note: No Comment

• Mitigate new erosion control measures, including replacement structures, on feeder bluffs or other actions that affect beach sediment-producing areas to avoid and, if that is not possible, to minimize adverse impacts to sediment conveyance systems. Where sediment conveyance systems cross jurisdictional boundaries, local governments should coordinate shoreline management efforts. If beach erosion is threatening existing development, local governments should adopt master program provisions for a beach management district or other institutional mechanism to provide comprehensive mitigation for the adverse impacts of erosion control measures.
Note: No Comment (Salt water application)

(F) For erosion or mass wasting due to upland conditions, see WAC 173-26-221 (2)(c)(ii).
Note: No Comment

Please keep in mind as you review the hundreds of pages of literature associated with the SMP Update process that it has been provided by regulatory agencies and their preferred biological firms and is designed to make nearshore and overwater structures look as impacting as possible. Much of the white papers and scientific data referenced is inconclusive and self-contradicting and have been funded using taxpayer money by the agencies regulating these activities or by conservation or environmental groups opposed to shoreline development.

Thank you for your time and attention to this very important matter on behalf of those living within 200 feet of state waters and particularly those living on the shoreline of Lake Washington. If you have any questions I can be reached at 206-786-6470.

Sincerely,

David Douglas
Permit Coordinator
Waterfront Construction, Inc.

Teresa Swan

From: RLSTYLE [rlstyle@aol.com]
Sent: Tuesday, January 06, 2009 1:43 PM
To: Teresa Swan
Subject: Wave action

Now that we've had our first wind storm exceeding 50 mph coming from the SW, about half of the spawning gravel was washed away from the bulkhead about 5 to 6 feet toward deeper water. The other half is gone moved to somewhere else not on my property.

I've taken camcorder movies of what the "softened" bulkhead looks like now. You're welcome to see for yourself.

Bob Style

Teresa Swan

From: Richard Sandaas [eride@msn.com]
Sent: Thursday, January 08, 2009 11:26 AM
To: Stacy Clauson; Teresa Swan; Paul Stewart
Subject: Comments for tonight's Planning Commission Meeting

Stacy, Teresa, and Paul:

Here are some comments on the materials being discussed at the January 8 Planning Commission Meeting.
They are brief, primarily because I haven't had the time in the two days since these were posted on the website to give them a complete review. I would ask that agenda materials be made available to the public with greater leadtime before a meeting.

In reviewing the agenda materials including the comment letters as well as Mr. David Douglas' letter of December 31, 2008, one important issue, once again, comes to light. And that is the 'science' and technical data which is driving the SMP updates and the shoreline restoration.

The importance of restoring shoreline habitat is continually mentioned as the basis for bulkhead removal, beach restoration, and other 'eco-friendly' measures. But where do the fish migrate and travel? As Mr. Douglas points out on page one of his letter, old information is used regarding Sockeye Salmon. Other species travel to and from the Samammish Slough or the Cedar River (including Sockeye). Do any of these fish travel anywhere near the Kirkland shoreline? This is a critical question that needs a definitive answer. Millions of dollars of shoreline restoration projects are resting on this, money that should be spent where it makes the most environmental difference.

Another example, this being questionable or lack of science driving decisions, is found in Mr. Dean Patterson's comment letter, Attachment 5, representing Futurewise. In it he cites a report prepared by the Watershed Company for the City of Bellevue: *Final Report: A summary of the Effects of Bulkheads, Piers, and Other Artificial Structures and Shorezone Development on* ESA-*listed Salmonids in Lakes.* This report is not a scientific study but rather a literature review.

Refering to this report, Mr. Patterson cites that ..."removal of bulkheads in favor of shoreline restoration measures such as low-gradient beaches and planting native vegetation...protect(s) salmon habitat in Lake Washington." A review of this report finds this conflicting statement on page 43: **No studies were located that specifically inivestigated the effects of piers and armored shorelilnes on the migration of juvenile chinook and coho salmon along lakeshores.** And on page 49 of the report there is a list of 13 questions that are unanswered by the literature review that was conducted. These questions range from how juvenile salmoids respond to piers and bulkheads to what are cumulative impacts of overwater coverage on total lake productivity among may other questions.

In light of this lack of information it would seem extremely important for the jurisdictions on Lake Washington as well as the Department of Ecology to conduct comprehensive studies to answer these questions before completing the SMP update processes.

Thank you for your efforts in carrying out the SMP update process. It is most important that the results are credible and that they will provide cost effective and true environmental benefits.

Richard Sandaas
Shoreline property owner
Chair, SPOCA

Thielsen
ARCHITECTS

January 8, 2009

Kirkland Planning Commission
123 5th Avenue
Kirkland, WA 98033

Re: Shoreline Master Program Update

Dear Planning Commission Members,

Thielsen Architects commends the commission and the City planning staff on the depth, breadth and detail of the work they have undertaken in updating the City's Shoreline Master Program. We appreciate the opportunity to make comments to the Planning Commission on this complex and vitally important piece of work. Thielsen Architects has been located in Kirkland since its founding in 1991. Over the past eleven years we have had the opportunity to complete eleven projects on Kirkland's shoreline. These have included new and remodeled single family homes and accessory dwelling units. We have also worked extensively with the new King County Critical Areas Ordinance and recently completed one of the first projects incorporating a full shoreline restoration under the City of Sammamish's new shoreline master program.

We recommend that the Planning Commission requests the City planning staff to make specific provisions for the property owners on Rose Point Lane. These property owners are squeezed between wetland buffers on the east and shoreline setbacks on the west. With buffers for the Juanita Bay wetland expected to double from 75 to 150 feet and the shoreline setback increase on the agenda for discussion tonight these properties can expect to be left with little to no buildable area.

Thielsen Architects analyzed two lots, 2069 and 2075 Rose Point Lane, for which we have a current wetland delineation, by The Watershed Company, and boundary and topographic survey. This analysis shows that the buildable areas would be reduced to forty-nine square feet at 2075 and zero square feet at 2069. Other properties will be similarly encumbered. The attached drawings show the two parcels with the proposed wetland buffer, buffer setback and a 35% shoreline setback (Option #4 of Approach Option 4 – Shoreline Setbacks, page 2 of 11 of attachment #1 in the January 8, 2009 packet).

Thielsen Architects recommends that the language in the December 11th, 2008 packet on page 106 for 83.450.4.a be revised to state that where the wetland buffer is bisected by a legal right of way the buffer shall stop at the wetland side of the right of way. The King County Critical Areas Ordinance (CAO) is being used by City staff as the model for the new wetland categories and buffers in the SMP update. The CAO, in 21A24.325.D.4 establishes the criteria for this buffer reduction. The Rose Point Lane properties meet the stated criteria. There is a berm three to four feet in height between the right of way and the wetland meaning all runoff from these properties flows into Lake Washington rather than the wetland. The buffer area west of Rose Point Lane is fully developed with houses and driveways and does not provide any ecological or biological buffer function. As such the buffer for the Juanita Bay wetland adjacent to Rose Point Lane should be formally designated as ending at the wetland (east) side of the right of way.

On page 13 of 23 of the packet for the January 8, 2009 Planning Commission meeting the planning staff states that the City Attorney's Office believes that there are significant legal issues with requiring shoreline restoration as a condition of permit for upland development. Thielsen Architects recommends that the Planning Commission

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accept the City Attorney's guidance that such a requirement would not be a legally defensible position and instead seek to achieve the restoration of the shoreline through the implementation of incentives in the zoning code which will encourage shoreline property owners to voluntarily undertake shoreline restoration.

To this end we recommend that the Planning Commission advise the City planning staff to develop sufficient regulatory flexibility in the shoreline setbacks and other sections of the code to make voluntary shoreline restoration appealing to the shoreline property owners, especially those in the residential-L (low density single family residential) shoreline environment. 55% of the properties in the residential-L environment have been assessed as having a high potential for restoration and residential-L properties account for 80% of all properties deemed to have that high restoration potential. Properly crafted regulations can encourage redevelopment which will enhance shoreline ecological function. If the regulations are not crafted in a manner which creates a significant incentive to redevelop and restore these properties a huge opportunity will be lost.

It was stated at the December 11, 2008 meeting that mitigation options should allow only small shoreline setback reductions. This is the opposite of what will incent shoreline restoration. If there is little or no incentive for restoration property owners will not take on the added expense as they redevelop, instead they will redevelop within the standard requirements and retain their bulkheads and lawns. It is only by creating meaningful incentives for shoreline restoration that it will be accomplished.

City consultant Amy Summe of The Watershed Company was asked at the December 11th meeting if she believed a house set 100 feet from the high water mark with an armored shoreline and lawn had a greater or lesser impact on shoreline ecological function than a house set 25 feet from the shoreline with a soft shoreline and native vegetation. She stated that the reduced setback and soft shoreline option would be preferable ecologically. This can be encouraged through regulatory flexibility which encourages voluntary shoreline restoration.

Beyond regulatory flexibility for shoreline setbacks, Thielsen Architects recommends that the Planning Commission advise the City planning staff to allow increases in allowable building height in exchange for shoreline restoration and other low impact development techniques. In the current proposal many lots have more restoration and low impact development options than they could use to reduce their shoreline setback. If there were other incentives more restoration or low impact development could be accomplished on each parcel than if the incentives were limited to simply a reduction in shoreline setback.

As was noted in the December 11, 2008 meeting, many of the parcels in the residential-L environment could have increased height while not impacting the views of those parcels behind them. Thielsen Architects believes that sixty-four of the ninety-six parcels in the residential-L environment fall into this group. On that small minority of parcels where a view impact could possibly occur with an increase in allowable height, such an impact would be offset by the restoration accomplished. This additional restoration which would allow the height increase would constitute a significant public good and is a restoration opportunity that would otherwise be lost.

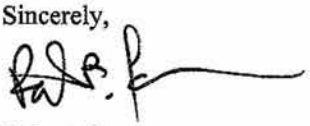
Thielsen Architects strongly recommends that the Planning Commission request the City planning staff to make specific provisions in the code language for the lot depth calculation of those parcels along Lake Avenue West and 5th Avenue West where, due to access easements and topography, the buildable depth of the lot is significantly less than the actual lot depth. These parcels account for thirty-five of the ninety-six parcels in the residential-L shoreline environment. For these parcels the shoreline side of the access easement should be treated as the front property line.

In analyzing three parcels in this area, 437, 509 and 537 5th Avenue West, Thielsen Architects determined that with a shoreline setback of 35% of lot depth (Option #4) if the full lot depth were used the buildable areas would be reduced to 1,771.8, 1,380.8 and 371.43 square feet respectively. Using the access easement line as the front property line would result in buildable areas of 3404.5, 3409.5 and 2,747.2 square feet respectively while still

leaving shoreline setbacks of 43.25 feet, 43.03 feet and 36.42 feet for the three lots. We feel this strikes a good compromise between protecting the shoreline environment and protecting the private property rights of these homeowners. Should any of the parcels along these two streets have buildable depths significantly shallower than the three parcels analyzed the proposed minimum shoreline setback of 30 feet in Option #4 would provide insure of the protection the shoreline. Attachments 2, 3, and 4 show the three lots referenced with shoreline setbacks based on the actual lot depth and the buildable lot depth.

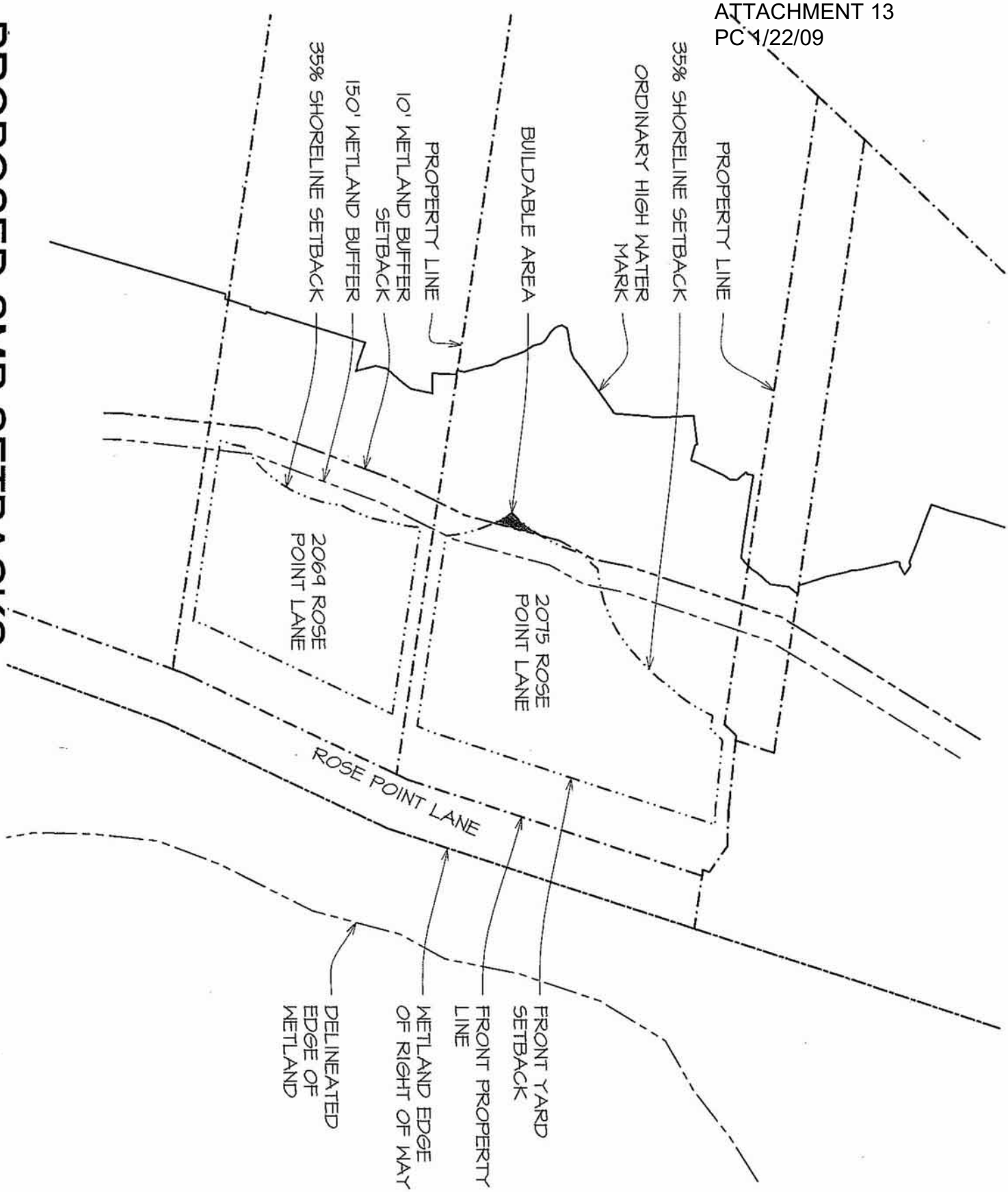
Thank you for your consideration of these recommendations. If any members of the Planning Commission or City staff would like to discuss our recommendations further please do not hesitate to call us at (425) 828-0333 or email robertc@thielsen.com.

Sincerely,



Robert Connor
Thielsen Architects

Cc: Kirkland City Council
Houghton Community Council
Paul Stewart, Deputy Director of Planning
Teresa Swan, Senior Planner
Stacy Clauson, Contract Planner

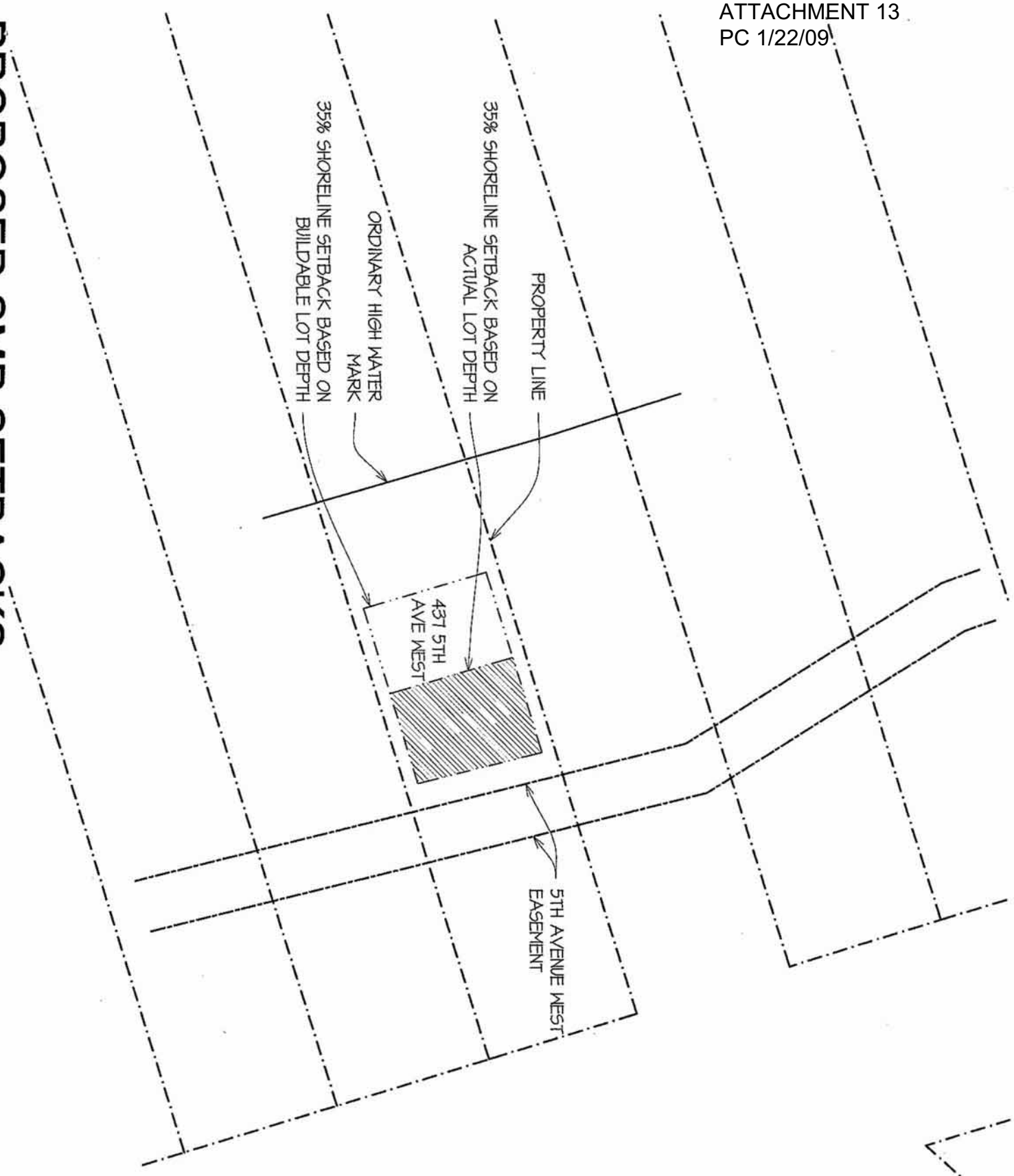


PROPOSED SMP SETBACKS

1" = 50'

Sheet: 1 Project No.	Sheet Title: ROSE POINT LANE SETBACKS	Project: CITY OF KIRKLAND SHORELINE MASTER PROGRAM UPDATE	Thielsen ARCHITECTS Kirkland, WA 98033 Tel 425.828.0333 Fax 425.828.9376

Issued: 01/08/09
Drawn: RBC
Revised:

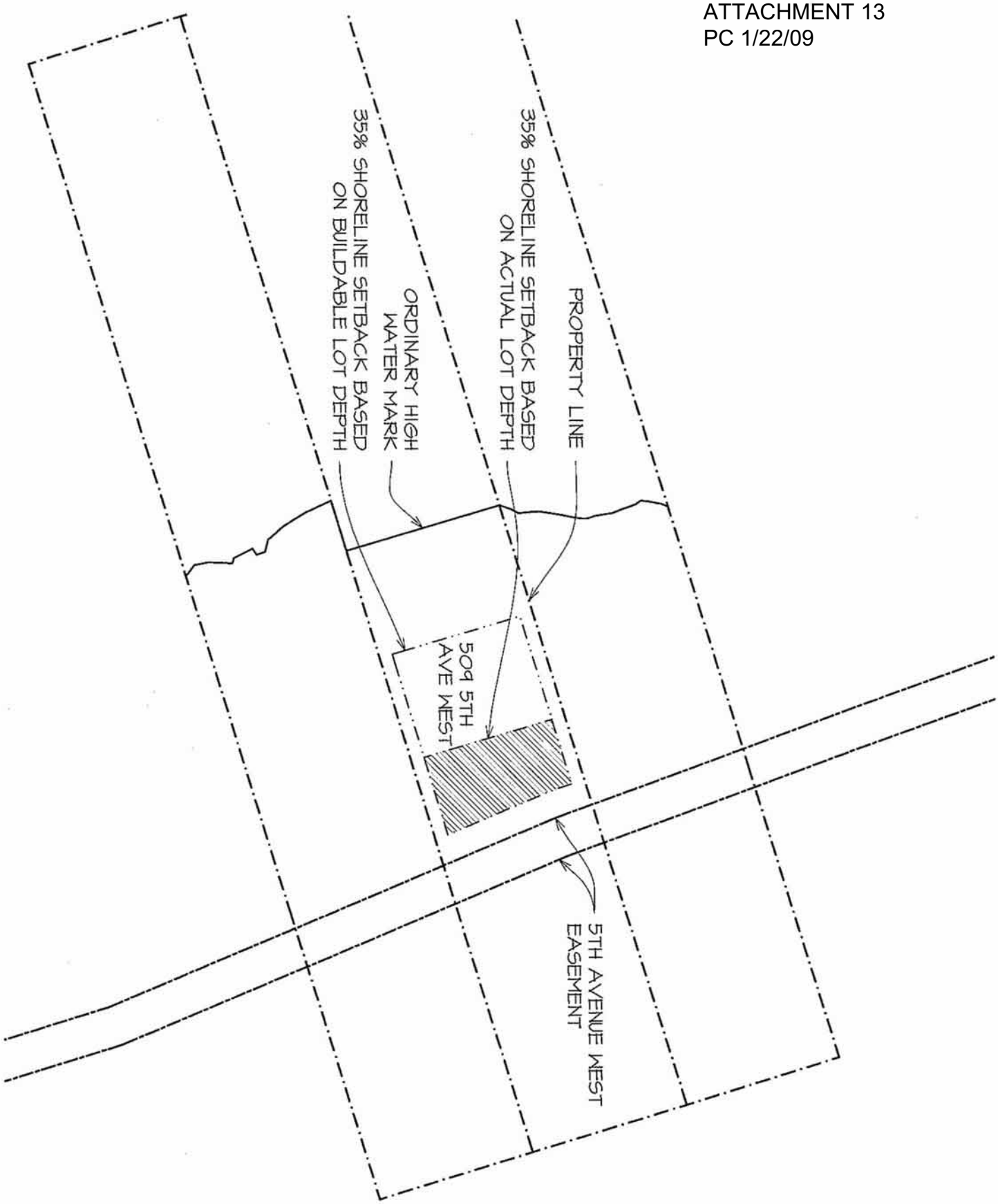


PROPOSED SMP SETBACKS

1" = 50'

Sheet: 2 Project No.	Sheet Title: 5TH AVENUE WEST SETBACKS	Project: CITY OF KIRKLAND SHORELINE MASTER PROGRAM UPDATE	Thielsen ARCHITECTS Kirkland, WA 98033 Tel 425.828.0333 Fax 425.828.9376

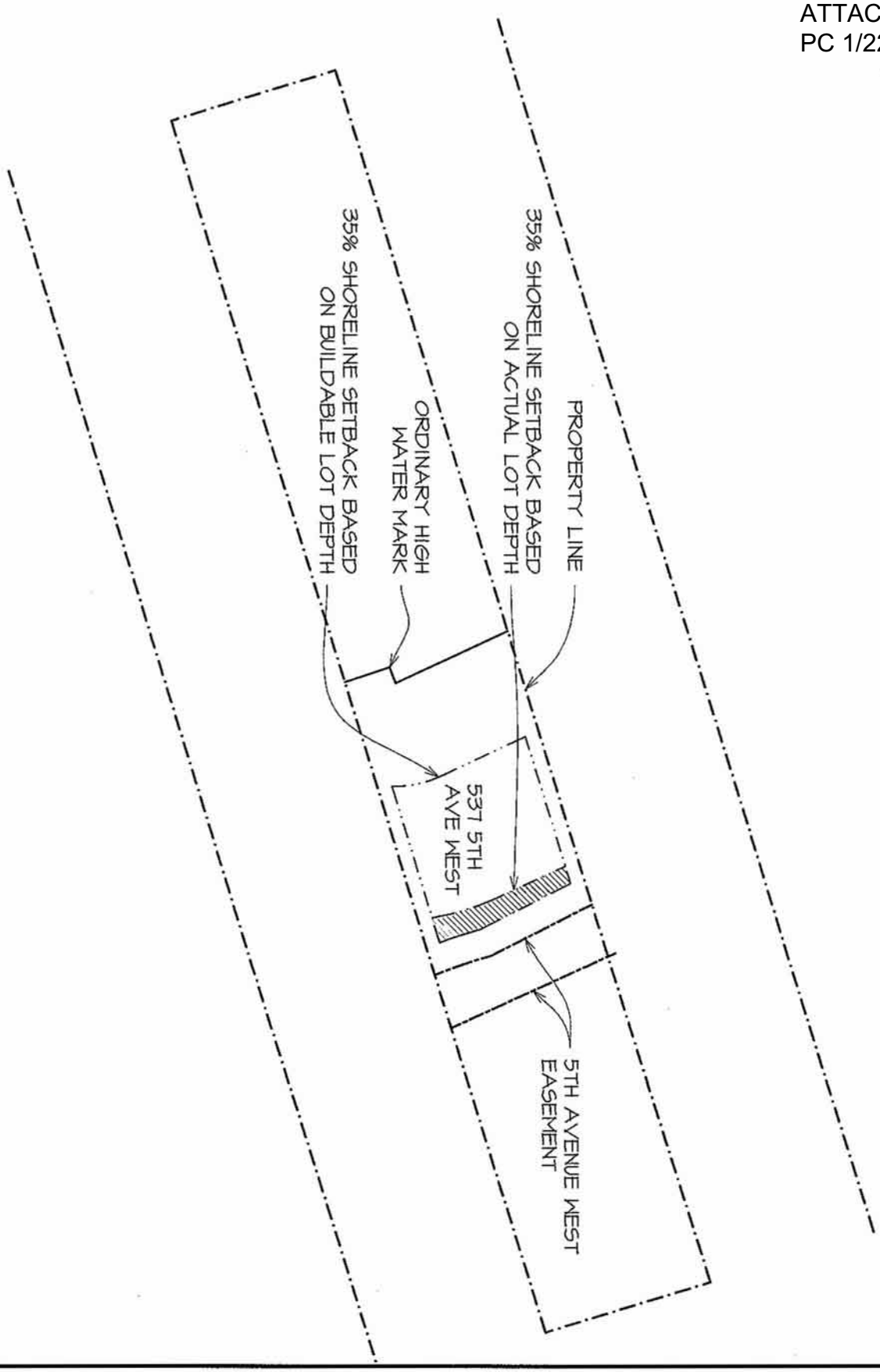
Issued: 01/08/09
Drawn: RBC
Revised:



PROPOSED SMP SETBACKS

1" = 50'

Sheet: 3 Project No.	Sheet Title: 5TH AVENUE WEST SETBACKS	Project: CITY OF KIRKLAND SHORELINE MASTER PROGRAM UPDATE	Thielsen ARCHITECTS Kirkland, WA 98033 Tel 425.828.0333 Fax 425.828.9376	Issued: 01/08/09 Drawn: RBC Revised:



PROPOSED SMP SETBACKS

1" = 50'

Sheet: 4 Project No.	Sheet Title: 5TH AVENUE WEST SETBACKS	Project: CITY OF KIRKLAND SHORELINE MASTER PROGRAM UPDATE	Thielsen ARCHITECTS Kirkland, WA 98033 Tel 425.828.0333 Fax 425.828.9376

Issued: 01/08/09
Drawn: RBC
Revised: