

CHAPTER 10: COMPREHENSIVE ACTION LISTS FOR CEDAR

Chapter 10: Comprehensive Action Lists

Introduction to Comprehensive lists

Chapters 10 through 15 provide the comprehensive action lists for Chinook conservation in the WRIA 8 watershed. These actions were developed during 2003 and 2004 during a series of meetings with local experts on land use, subareas of the watershed and public outreach and education. For more information on how the recommendations were developed, see Chapter 5 and Appendix D.

Actions are listed by Chinook population area and within each population by land use, site specific, then public outreach.

Caveats related to land use actions summarized in this chapter:

- Land use actions are voluntary – jurisdictions can choose whether or not to apply them
- Additional analyses of land use actions by criteria, and suggested references about low impact development, critical areas and other land use topics are in Appendix D, Parts 5 and 6.

Caveats related to site specific habitat protection and restoration projects summarized in this chapter:

- Lists of site-specific habitat protection and restoration projects are given two ways. First the site-specific projects are listed in priority order for each subarea and then they are listed geographically, reach by reach from downstream to upstream.
- Habitat *protection* projects are listed, then *restoration* projects for each subarea.
- For protection projects, prioritization is based also on whether or not a project has been identified as a priority under existing habitat protection programs, e.g., Waterways or Cedar River Legacy. Existing priorities are shaded in prioritized lists.
- Please note that most of the potential site specific habitat protection and restoration projects described in this chapter still need feasibility analysis and detailed design work before implementation can begin.
- For potential habitat restoration projects calling for addition of large woody debris, particularly in the Cedar and Sammamish Rivers, placement of the wood should be done in a way that minimizes any risk to river users such as boaters and swimmers. Placement of large woody debris should be planned and supervised by a licensed engineer. The location of large woody debris should be chosen so that river users are not inadvertently swept into the wood. Consultation with river user groups will bring insight into the affect of water and obstacles on river users.

The comprehensive lists are in the following order:

Cedar River Population (Chapter 10)

- Land use actions, Tier 1 mainstem: Lower and Middle Cedar River
- Land use actions, Tier 1 migratory: Southern Lake Washington
- Land use actions, Tier 2 tributaries: Taylor, Peterson, Rock creeks, Walsh Lake Diversion
- Site specific projects, Tier 1 mainstem: Lower and Middle Cedar River (*note that for all site specific project lists, there is a prioritized list, then a list in order by geography*)
- Site specific projects, Tier 1 migratory: Lake Washington
- Site specific projects, Tier 2 mainstem: Upper Cedar River

- Site specific projects, Tier 2 tributaries: Taylor, Peterson, Rock Creeks, Walsh Lake Diversion
- Public outreach actions, Tier 1 and Tier 2, Lower and Middle Cedar River and tributaries
- Public outreach actions, Tier 1 migratory: Lake Washington

North Lake Washington Population (Chapter 11)

- Land use actions, Tier 1: Bear, Cottage Lake/Cold Creeks
- Land use actions, Tier 1 migratory: Sammamish River
- Land use actions, Tier 1 migratory: Northern Lake Washington
- Land use actions, Tier 2 tributaries: North, Little Bear, Evans creeks
- Land use actions, Tier 2 tributaries: Kelsey Creek
- Site specific projects, Tier 1: Lower Bear Creek, Upper Bear Creek, Cottage/Cold Creeks (*note that for all site specific project lists, there is a prioritized list, then a list in order by geography*)
- Site specific projects, Tier 1 migratory: Sammamish River
- Site specific projects, Tier 2: North Creek, Little Bear Creek, Evans Creek and Kelsey Creek
- Public outreach actions, Tier 1 and 2 North Lake Washington
- Public outreach actions, Tier 1 migratory: Sammamish River

Issaquah (Chapter 12)

- Land use actions, Tier 1: Lower, Middle, East Fork, North Fork Issaquah Creek; Carey and Holder Creeks; Fifteen Mile Creek
- Land use actions, Tier 1 migratory: Lake Sammamish
- Site specific projects, Tier 1: Lower Issaquah Creek, Middle Issaquah Creek, Carey and Holder Creeks, Fifteen Mile Creek, East Fork, North Fork (*note that for all site specific project lists, there is a prioritized list, then a list in order by geography*)
- Site specific projects, Tier 1 migratory: Lake Sammamish
- Site specific projects, Tier 2: North Creek, Little Bear Creek, Evans Creek and Kelsey Creek
- Public outreach actions, Tier 1: Lower, Middle, East Fork, North Fork Issaquah Creek; Carey and Holder Creeks; Fifteen Mile Creek
- Public outreach actions, Tier 1 migratory: Lake Sammamish

Migratory and Rearing Corridors (used by all three populations) – Chapter 13

- Land use actions, Tier 1: nearshore
- Site specific projects, Tier 1: Ship Canal/Locks
- Site specific projects, Tier 1: nearshore
- Public outreach actions, Tier 1: Ship Canal/Locks
- Public outreach actions, Tier 1: nearshore

Tier 3 subareas (Chapter 14)

Land use and public outreach actions

Addendum to comprehensive lists (Chapter 15)

Actions that require further analysis, added during public review

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR CEDAR RIVER POPULATION (Tier 1 Subareas)	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: Renton, King County, Maple Valley</p> <p>Growth pressures (inside UGA): City of Renton, unincorporated King Co (including East Renton Potential Annexation Area (PAA), Fairwood PAA, West Hill PAA, and other areas), Maple Valley. Note that Renton’s Urban Center borders Cedar River and Lake Washington and is targeted to take in larger concentration of residences and jobs in next 20 years.</p> <p>Percent of Tier 1 subareas inside UGA: UGA runs through reach 5 in Lower Cedar Subarea; 34% of combined Lower and Middle Cedar subareas is inside UGA.</p> <p>Program/mitigation opportunities: Seattle HCP for Upper Cedar, I-405 mitigation, Cedar Basin Plan, Cedar River Instream Flow Commission</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • Lower Cedar Subarea: Tier 1 - Core Chinook use; Moderate watershed function • Middle Cedar Subarea: Tier 1 - Core Chinook use; High watershed function <p>Watershed evaluation summary:</p> <p><u>Lower Cedar Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume • Moderate – total impervious area • Low - % of high gradient streams, road crossings <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams • Moderate – riparian forest cover, wetland area • Low – forest cover <p><u>Middle Cedar Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Moderate – flow volume • Low - % of high gradient streams, road crossings, total impervious area <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High – forest cover, riparian forest cover, % of low gradient streams • Moderate – wetland area

**LAND USE ACTIONS FOR CEDAR RIVER MAINSTEM
BASED ON TECHNICAL RECOMMENDATIONS IN
WRIA 8 CONSERVATION STRATEGY**

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that local jurisdictions in these subareas are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.
- 4) Cedar land use actions were significantly revised from the 12/31/03 version, as a result of WRIA 8 Technical Committee and additional local jurisdiction staff review.

Protect forest cover and soil infiltrative capacity to maintain watershed function and hydrologic integrity and protect water quality; based on watershed evaluation, protection of remaining forest cover in Middle Cedar is high priority.

- C1 Consistent with Growth Management Act, Renton and the potential annexation areas in unincorporated King Co. within the UGA will be expected to absorb most growth; support this as a positive contribution to protecting rural portions of Cedar subareas. New development should be planned to minimize impacts on water quality and quantity, to the extent practicable.
- C2 Outside the UGA, King County should strictly enforce clearing restrictions in rural areas in Tier 1 and Tier 2 subareas, and look for other ways to maximize forest protection (e.g., PBRS and Timberland Programs, TDRs, acquisition). Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. King Co. should continue to

provide technical assistance to small forest landowners to encourage forest stewardship and improved forest management through forest stewardship plans.

- C3 In urban areas which are already developed, encourage protection of remaining trees and replanting through street tree programs, tree protection regulations, landscaping incentives, and redevelopment opportunities (see detail below under *riparian vegetation*). In new developments and plats, protect existing vegetation in sensitive areas through critical area regulations, and protect forest cover through low impact development, clustering, and other flexible tools, recognizing that urban densities can require significant tree removal. Support urban tree planting programs to increase tree cover. Support King County's Urban Forestry Program (including grants and technical assistance) to increase forest cover and forest health on public lands.
- C4 Continue to acquire properties for protection and restoration of forest cover, headwaters, riparian areas, etc. Jurisdictions should coordinate with appropriate entities to nominate high quality headwaters and spawning habitat as Outstanding Resource Waters (through Wash. Department of Ecology guidelines) to increase protection of these areas under the Clean Water Act.

Protect and restore riparian vegetation to provide sources of large woody debris that can contribute to creation of pools; based on watershed evaluation, enhancement of riparian buffers in Lower Cedar is high priority.

- C5 Protect remaining riparian vegetation in Lower and Middle Cedar through strict enforcement of aquatic buffers and limiting variances in sensitive areas. Conifers should be underplanted in deciduous buffers where possible.
- C6 Take advantage of redevelopment of public and private properties to negotiate for enhancement of riparian buffers and improvements to floodplain connectivity. Can offer regulatory flexibility (e.g., increased building density, reduced permit fees) in exchange for buffer and floodplain improvements.
- C7 Offer incentives (e.g., providing expertise, streamlined permitting, current use taxation, livestock cost share and voluntary farm plans) to encourage property owners to restore riparian function, remove impervious area, and improve floodplain connectivity.
- C8 Offer flexible approaches, e.g., wetland and habitat banking, to encourage offsite mitigation in high priority reaches.
- C9 Jurisdictions should develop critical areas ordinances, Shoreline Master Programs, and other policies/regulations based on best available science (BAS) in accordance with the Growth Management Act. The WRIA 8 Conservation Strategy should be used as one of a number of available BAS resources in drafting local policies and regulations.
- C10 King Co. and Renton should review policies that address presence of large woody debris in the river, and implications for recreational boaters and safety during flood events (active vs. reactive management of LWD); policies and rules should be adjusted as appropriate.
- C11 U.S. Army Corps' levee maintenance rules limit ability of jurisdictions to improve riparian habitat on "Corps certified levees"; discuss possible rule changes with the Corps.

Protect water quality to prevent adverse impacts to key life stages from fine sediments, metals, and high temperatures.

- C12 Adopt and enforce stormwater regulations and BMPs, as part of the NPDES Phase 1 and 2 permit requirements, which are consistent with Washington Department of Ecology's 2001 Stormwater Management Manual for Puget Sound, or which go beyond (e.g., to Tri-County standards) to address stormwater impacts from roads, development, and other activities. Encourage low impact development techniques in new construction.
- C13 Explore options to improve stormwater management in developed areas, e.g., through regional stormwater facilities and natural drainage systems (e.g., SEA Streets).
- C14 State and local transportation departments should address road runoff from all roads and retrofit existing roads as part of major maintenance, expansion, or upgrade projects. Stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years) should be addressed.
- C15 Jurisdictions should adopt and implement the Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines for maintaining existing roads and drainage systems.

- C16 Work with Wash. Dept. of Transportation to address opportunities to improve stormwater management on State Route 169.

Protect floodplain connectivity; minimize road crossings to maintain floodplain connectivity.

- C17 Limit new development in floodplains and channel migration zones in Lower and Middle Cedar; develop and apply standards which minimize impacts to salmon. Renton and King County should share information about their floodplain regulations and programs. See also recommendations for redevelopment, under *restore riparian vegetation* above.
- C18 State and local transportation plans should minimize new road crossings.

Protect groundwater recharge areas and hydraulic continuity to maintain hydrologic integrity.

- C19 Protect groundwater recharge areas through Critical Aquifer Recharge Area (CARA) protections or other regulatory mechanisms.
- C20 Encourage low impact development, as noted above under *water quality*.
- C21 Coordinate with the King County Groundwater Protection Program on groundwater related issues. Work with the South King County Groundwater Management Committee to expand stakeholder representation on the committee and to update the groundwater management plan with current scientific data related to salmon and flows, and to include actions to improve instream flows for salmonids. Note that the current proposal is to finalize the groundwater management plan in its current format and then set up a new working groundwater committee to consider implementation in light of new data, reports, studies and Best Available Science.

Provide adequate stream flow to allow upstream migration and spawning.

- C22 Work with Dept. of Ecology and local health departments to improve enforcement of water rights. Identify and prevent illegal withdrawals. Address exempt wells and their impacts.
- C23 Work with City of Seattle, Cedar River Instream Flow Commission, and other stakeholders on policies, procedures and research related to effects of flow on potential habitat restoration projects such as additional side channels, and increasing interaction between river and its floodplain (may need to defer to adaptive management?).
- C24 Water conservation measures throughout WRIA 8 are important because Cedar R. provides drinking water to much of urban area. While conservation is important year-round, summer low flows are especially critical to salmon, therefore, conservation measures addressing landscape irrigation (both residential and commercial) are especially important for residents in the Cedar and throughout the WRIA. Water conservation efforts will become even more critical as human populations continue to grow in the watershed. Jurisdictions could promote utility water conservation programs during permitting process by providing educational materials, and encouraging expansion of these conservation programs.
- C25 Consider potential impacts on flows (quantity and timing) of global warming/climate change, coordinate with ongoing climate change research, and take appropriate action when new information becomes available. Coordinate with Shared Strategy for Puget Sound's chapter on climate change.

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR SOUTH LAKE WASHINGTON (Migratory Tier 1)	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: Renton, Seattle, Mercer Island, Bellevue, Newcastle, King County</p> <p>Growth pressures (inside UGA): Seattle, Renton, unincorporated King Co (West Hill PAA), Mercer Island, Bellevue. Note that Renton's Urban Center borders Cedar River and Lake Washington and is targeted to take in larger concentration of residences and jobs in next 20 years.</p> <p>Percent of basin inside UGA: 100%</p> <p>Program/mitigation opportunities: I-405 mitigation</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • <i>West Lake Wash.</i> Subarea: Tier 1 – Migratory area; Lower watershed function • <i>East Lake Wash.</i> Subarea: Tier 1 – Migratory area; Lower watershed function <p>Watershed evaluation summary: Not applicable</p>

**LAND USE ACTIONS FOR SOUTH LAKE WASHINGTON
MIGRATORY AREA BASED ON TECHNICAL RECOMMENDATIONS
IN WRIA 8 CONSERVATION STRATEGY**

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that local jurisdictions in these subareas are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

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.

C26 Use WRIA 8 science foundation and Conservation Strategy as one of many “best available science” resources during CAO and SMP revisions. Increase riparian/shoreline buffers to extent practicable.

C27 Encourage salmon friendly shoreline design during new construction and redevelopment of shoreline properties, and properties that border tributaries, by offering regulatory flexibility. However, analysis of tradeoffs – including upland land use impacts to the lake - would be necessary to insure a net benefit to salmon. Examples of regulatory flexibility include:

- ✓ Reductions in building setbacks, modest increases in lot coverage or impervious area (or increased density for multi-family) could be allowed if applicant removes, sets back or softens bulkhead and restores shoreline “vegetative management area” (riparian/lakeshore buffer).
- ✓ Reduce prescriptive buffer widths if buffers are planted with appropriate native vegetation and a science-based evaluation determines that no negative impact results.
- ✓ Allow or encourage flexibility from front yard setbacks to avoid allowing encroachment into back yard setbacks that would cause development to encroach further toward the lake. This policy could be incorporated into variance procedures, or it could be granted absent a variance as part of permit review of critical area development.
- ✓ Research effectiveness of regulatory approaches in improving or protecting salmon habitat.

C28 Increase enforcement and address nonconforming structures over the long run by encouraging or requiring that major redevelopment projects meet current standards. Challenge is that the area is mostly

developed, there is little undisturbed landscape left to protect, and much of the shoreline is privately owned.

- C29 Offer incentives to shoreline property owners to voluntarily remove bulkheads, improve beaches, revegetate shoreline, change dock design. Incentives include:
- ✓ Provide expertise (e.g., provide templates for shoreline planting plan, bulkhead design)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)
 - ✓ Provide tax breaks through programs such as PBRS if landowner commits to stewardship activities through permit process. PBRS would likely provide most benefit to/be most appropriate for larger, suburban lots within urban areas.
 - ✓ Provide incentives for establishment of community docks or mooring buoys, rather than individual lot docks.
- C30 Discourage construction of new bulkheads. Develop guidelines to better assess need for bulkheads and restrict height to that necessary to protect the structure; height increases would be allowable only after appropriate analysis based on fetch, waves, wind velocity and direction, etc. Guidelines should take into account tradeoffs with other environmental impacts (e.g., presence of contaminated soils) and public safety hazards.
- C31 Address disincentive in Shoreline Management Act that can discourage shoreline restoration such as when the ordinary high water mark (OHWM) is moved landward as a result of removing a bulkhead, resulting in additional use restrictions placed on adjacent or applicant's property. Local jurisdictions have some ability to limit impact of setback from OHWM, but cannot move the 200 foot shoreline jurisdiction. See Table D-3-1, Appendix D for examples of language jurisdictions can adopt in their Shoreline Master Programs. May require change at state level.
- C32 Support joint effort by NOAA Fisheries, WDFW, COE, USFWS to develop specifications for new and expanded piers. Goal of this effort is for streamlined federal/state permitting for piers that meet these specifications (affects Corps Section 404 permit, Section 401 water quality certification, HPA). COE is developing Regional General Permit for new and expanded overwater structures in Lake Washington. NOAA Fisheries hopes to work with local jurisdictions to adopt similar permit requirements at local level (pilot in Mercer Island April '04).
- C33 Support development of federal/state/local specifications and streamlined permitting for salmon friendly bulkheads. Local jurisdictions would favor fixed and predictable mitigation.
- C34 Offer landscape, bulkhead, or dock contractor training and certification programs.
- C35 Support education and demonstration programs so that shoreline property owners can see examples of how salmon friendly bulkheads, docks, etc. actually work, and will therefore better understand and accept regulations/incentives about these docks and bulkheads.
- C36 Local jurisdictions should share information among themselves about ordinance language, templates and specifications.
- C37 Jurisdictions should continue to apply shoreline restoration, appropriate use of pesticides, native landscaping, etc. in parks and other publicly owned lands.

Protect and restore water quality in tributaries and along shoreline. Restore coho runs in smaller tributaries as control mechanism to reduce the cutthroat population. Reconnect and enhance small creek mouths as juvenile rearing areas.

- C38 Protect and restore water quality and other ecological functions in tributaries to reduce effects of urbanization and reduce conditions which encourage cutthroat. Protect and restore riparian buffers, wetlands, and creek mouths by revising and enforcing critical areas ordinances and Shoreline Master Programs, incentives, and flexible development tools. Outside of sensitive areas, support protection and restoration of forest cover, to the extent practicable, through tree replacement and street tree programs, and flexible development tools such as clustering.
- C39 Address water quality and high flow impacts from urban creeks and shoreline development (including residential, commercial, and industrial uses) through NPDES Phase 1 and Phase 2 permit updates. Stormwater regulations and programs should be consistent with Dept. of Ecology's 2001 Stormwater Management Manual, or beyond (e.g. to Tri-County guidance – see Appendix D). Specific stormwater recommendations include:

- ✓ Promote low impact/sustainable development along shoreline and throughout sub-areas through regulations, education, and incentives (e.g., develop guidelines, offer simpler permit review, reduce requirements for capital projects).
 - ✓ Adopt policies on pesticide use consistent with the January 2004 federal ruling banning certain pesticide use along salmon-bearing streams in the northwest. Application of pesticides should be in accordance with source control BMPs in Ecology's 2001 Stormwater Management Manual.
 - ✓ Address high stormwater runoff in urban creeks (which drain into Lake Washington), through LID, on-site stormwater detention for new and redeveloped projects.
 - ✓ Address stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years).
 - ✓ Address point sources that discharge directly into the lake.
- C40 Address water quality associated with marinas; note that marinas are regulated directly by Dept. of Ecology.
- C41 Reevaluate government policies toward aquatic weed control to minimize impacts to salmon habitat; coordinate with relevant agencies.

LAND USE, PLANNING AND INFRASTRUCTURE ACTIONS FOR CEDAR RIVER POPULATION (Tier 2 subareas) [Upper Cedar subarea is addressed under site specific projects]	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: Maple Valley, Kent (watershed), Black Diamond, King County</p> <p>Growth pressures (inside UGA): Maple Valley and Black Diamond PAA (in Rock Creek); King County - Fairwood Potential Annexation Area (PAA) - in Peterson Creek</p> <p>Percent of basin inside UGA: Mostly outside the UGA; a small portion of Rock Creek is inside UGA (Maple Valley and Black Diamond PAA); a portion of Peterson Creek is inside UGA (Fairwood PAA).</p> <p>Program/mitigation opportunities: Kent water supply HCP</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • <i>Peterson</i> Subarea: Tier 2 – Low Chinook use; Higher watershed function • <i>Rock</i> Subarea: Tier 2 - Low Chinook use; Higher watershed function • <i>Taylor</i> Subarea: Tier 2 – Satellite Chinook use; Higher watershed function • <i>Walsh</i> Subarea: Tier 2 - Low Chinook use; Higher watershed function <p>Watershed evaluation summary:</p> <p><u><i>Peterson</i> Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Low - % of high gradient streams, total impervious area, road crossings, flow volume <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams • Moderate – forest cover, riparian forest cover, wetland area <p><u><i>Rock</i> Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Low – flow volume, total impervious area, road crossings, % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, riparian forest cover, forest cover • Moderate – wetland area <p><u><i>Taylor</i> Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Low – total impervious area, road crossings • Moderate - % of low gradient streams, flow volume <p>Relative mitigative factors: Moderate - wetland area, forest cover, riparian forest cover, % of low gradient streams</p> <p><u><i>Walsh</i> Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Low – flow volume, total impervious area, road crossings, • High - % of low gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - forest cover, riparian forest cover • Moderate - wetland area • Low - % of low gradient streams

**LAND USE ACTIONS FOR ROCK, TAYLOR,
PETERSON CREEKS, AND WALSH LAKE DIVERSION
BASED ON TECHNICAL RECOMMENDATIONS IN
WRIA 8 CONSERVATION STRATEGY**

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities and are cross-referenced.

- 2) Note that local jurisdictions are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Protect high watershed function by maintaining forest cover, soil infiltrative capacity, and riparian cover, and minimizing road crossings and impervious surface.

Inside Urban Growth Area:

- C42 Accommodate most future growth within existing (and future) incorporated areas and Potential Annexation Areas (PAAs): in Maple Valley and Black Diamond PAA for Rock subarea and in Fairwood PAA for Peterson subarea. Note that in the long-term, the UGA may expand further into Rock, Peterson and Taylor subareas. Manage new residential and commercial development to minimize impacts on water quality, instream flows, and aquatic buffers. Low impact development (LID) is key to protecting flows and water quality.
- C43 Encourage low impact development through regulations, incentives, and education/training. Examples include:
- ✓ Develop, adopt, and update as needed, local regulations and ordinances that improve the ability of builders to design LID projects, and for local government staff to review and approve those projects.
 - ✓ Encourage low impact development by providing technical information to developers about on-the-ground examples of what does and does not work in LID approaches; promoting demonstration projects through incentives and technical assistance, so that other planners and developers can see hands-on examples
 - ✓ Existing examples to show developers and planners include King County's three LID demonstration projects currently underway, Seattle's natural drainage program for retrofitting existing neighborhoods, Issaquah Highlands, and Maltby Joint Ventures-Chinook Homes.
 - ✓ Monitor existing facilities (e.g., green roofs, permeable pavements, etc.) to improve understanding of costs and benefits of LID techniques.
- C44 In urban areas, protect and restore forest cover through tree retention and tree replacement programs, landscaping guidelines, street tree programs, and urban reforestation programs (e.g., King County's Urban Forestry Program which provides grants and technical assistance to increase forest cover and forest health on public lands). Could require that new development over a certain size use clustering to preserve a certain portion of open space (e.g., 50% of site). If developer protects more open space, could offer incentives, such as density bonuses.
- C45 Continue to tighten regulations affecting riparian buffers, including larger stream buffers, more restricted application of buffer averaging, fewer allowable uses in buffers (e.g., not allowing stormwater facilities). Could approve administrative variances of development standards (on case-by-case basis) in order to avoid encroaching into a sensitive area buffer.
- C46 Nonconforming uses can be significant challenge in urban areas. Many existing structures along creeks encroach into required stream buffers and are nonconforming with development and environmental regulations. The degree of nonconformity could become even greater as buffers and other riparian protections become more restrictive. In order to decrease the level of nonconformity over the long term (e.g., 50 years), local jurisdictions should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied (e.g., based on redevelopment thresholds), where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- C47 Encourage or require revegetation and enhancement of riparian buffers where existing buffer vegetation is inadequate (i.e. lacking in tree/shrub vegetation or dominated by non-native invasive species) to protect wetland or stream functions. Restoration should include underplanting of conifers in riparian buffers (identified as Basinwide recommendation for Peterson subarea during project meeting). Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement, particularly for redevelopment. However, any granting of regulatory flexibility needs to analyze site-specific tradeoffs – including upland land use impacts to the creek - to insure a net benefit to salmon. Incentives to encourage voluntary revegetation of riparian buffers and/or reconnection of floodplains include:
- ✓ Provide expertise (e.g., provide templates for riparian planting plan, assist private landowners with applications for grants to restore habitat)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)

- C48 Increase incentives to urban areas to serve as receiving sites for transferable development rights (TDRs), e.g., offer amenity packages to cities, funded by Conservation Future Tax or other funding sources, to improve transit, urban parks, and open spaces in exchange for increasing densities.

In Rural Areas:

- C49 Enforce King County's updated critical areas ordinance, including stream and wetland buffers, clearing restrictions, and drainage review requirements. However, there are a number of considerations:
- ✓ Forest clearing restrictions should take into account substrate, topography, type of vegetation, etc. which affect rates of infiltration.
 - ✓ Clearing restrictions of 35% of lot area may not necessarily protect 65% of forest cover. For example, in Rock Cr. subarea, based on parcel by parcel analysis, current subarea forest cover of 72% could be reduced to 55% (based on analysis by Friends of Rock Creek Valley). Could analyze how 65% forest retention standard has been applied in Bear Creek over last ten years, to better understand on-the-ground results that this standard has or has not achieved, and then try to apply the standard more effectively.
 - ✓ Consider a customized approach which applies different standards for critical areas protection, depending on proximity to the critical area. In King County, the Executive Proposed Critical Areas Ordinance uses a variety of factors including subarea condition and parcel condition in conjunction with stewardship planning in determining clearing and buffer restrictions.
 - ✓ While the customized approach to critical areas protection is proceeding, consider a moratorium on new development in order to ensure that customized critical areas protections are applied.
 - ✓ Include field testing and monitoring of impacts of different standards on parcel by parcel basis.
 - ✓ PBRS is not sufficient incentive, and stewardship plans are not sufficiently flexible for some rural landowners.
 - ✓ Enforcement should be improved (see details below).
- C50 Recognize importance of enforcement for these and all regulatory recommendations. Current regulations are not always enforced, e.g., encroachment into riparian buffers is not uncommon among stream side landowners. Take steps to improve enforcement including:
- ✓ Provide education about why regulations exist in order to make enforcement more effective.
 - ✓ Templates should be provided for different types of parcels so that stewardship provision can be implemented with less design and analysis cost to individual applicants.
 - ✓ King County should connect their databases for County Assessor and DDES together so that biennial property review by assessor's office can inform DDES of any construction activities which have occurred which may or may not be consistent with development regulations. More efficient use of staff will become even more crucial as staffing levels are reduced.
 - ✓ DDES should work more closely with technical staff from WLR when implementing regulations so that DDES staff and applicants have better understanding of scientific justification for various requirements.
 - ✓ Re-examine how DDES staff are funded, and commit higher level of funding to enforcement recognizing its importance to effective natural resource protection.
 - ✓ Effective enforcement must also include monitoring and adaptive management, so that effectiveness of regulations (and related mitigation projects) is measured, and adjustments are made.
- C51 Promote low impact development to improve water quality and flows (see above under *urban areas*).
- C52 Promote flexible development tools, such as transferable development rights or environmental mitigation banking, to shift development to areas which are less environmentally sensitive and/or to mitigate impacts by protecting or restoring areas with highest ecological functions. In King County, the Executive Proposed Critical Areas Ordinance uses flexible standards in rural areas depending upon the subarea condition, parcel condition and stewardship planning (as noted above). In addition, the proposed ordinance includes a resource mitigation program, in which mitigation is channeled into those areas (mitigation reserve areas) where greater benefits can be achieved through matching mitigation needs with habitat restoration and preservation needs on a subarea or basin level.
- C53 Encourage clustering in rural areas in order to preserve contiguous areas of forest cover, wetlands, and riparian habitat. Consider the following factors to make clustering most effective:
- ✓ Total area of open space preserved needs to be large enough to support ecological processes of the preserved area;

- ✓ Total number of units needs to be large enough to be economically viable, but small enough to maintain rural character and levels of service. King County should consider increasing the limit above 8 houses per clustered development.
 - ✓ Clustered developments should be located to avoid checkerboard patterns and to preserve large, contiguous areas of open space, across different developments.
 - ✓ Cumulative impacts of water supply and sewage disposal should be evaluated when considering lot size and overall project size.
- C54 Continue to acquire parcels or conservation easements along creeks and in upland areas that provide valuable habitat but are not sufficiently protected by regulations.
- C55 Identify and protect headwater areas, including seeps, springs, and wetlands.
- C56 Limit future development (including roads) in floodplains; develop and apply standards which minimize impacts to salmon.
- C57 Offer existing and new incentives to protect and restore riparian and upland parcels beyond those that are protected through regulations. Incentives include current use taxation (e.g., King County's Public Benefit Rating system – PBRs and Timberland Program), Native Growth Protection Area programs, voluntary farm plans, and technical assistance (e.g., King County's program for small forest landowners). Protection programs need a stewardship element and adequate funding to ensure management and maintenance of these areas over the long term. Maintenance can be handed over to a local jurisdiction for public management, or if areas are managed privately, standards for review and enforcement must be established. If areas are privately managed, may be necessary to provide an inducement (e.g., additional tax break) in addition to education about value of properties and importance of maintenance.
- C58 Basinwide recommendations for Rock Creek subarea: protect and maintain habitat properties, e.g., from dumping; protect/restore riparian conditions; protect forest cover and limit impervious area in upper reaches and headwaters to protect hydrology; pending final transaction, 85% of riparian corridor will be in protective ownership so buffers are not key issue in Rock.
- C59 Basinwide recommendations for Taylor Cr. subarea: protect forest cover and headwaters.

Protect water quality to prevent adverse impacts from fine sediments, metals (both in sediments and in water), and high temperatures. Adverse impacts from road runoff and other sources of non-point source pollution should be prevented. In Taylor Creek, key life stages would benefit from a reduction in stormwater flows that have increased bed scour and deposition of fine sediments.

- C60 King Co. is updating their Phase 1 NPDES permit now (including updates of regulations and manuals). Maple Valley is scheduled to adopt its NPDES Phase 2 permit, consistent with anticipated Dept. of Ecology guidance, in 2005. These permit updates should address LID and other stormwater recommendations below, consistent with Dept. of Ecology's 2001 Stormwater Management Manual.
- C61 Adopt stormwater BMPs to reduce sediment inputs from bed scouring high flows and to address heavy metals and pollutants.
- C62 Identify sources and adopt source control BMPs to reduce fine sediment inputs to system (e.g., from new construction, erosion, and sedimentation from livestock access to streams). Basinwide recommendations identify new development occurring upstream in Peterson subarea as a likely sediment source, and new development in Walsh subarea (reach 3) as likely cause of loss of forest cover, clearing, and sedimentation. Note also there are a large number of dump trucks using roads in Rock Creek subarea; these loads should be covered.
- C63 Dept. of Ecology should address potential groundwater contamination from highly toxic hazardous wastes dumped at the Landsburg Mine. Ecology should address concerns, such as those expressed by the City of Kent, to improve analyses about where the contaminants are, or whether they are discharging, and take actions to address these water quality concerns which could impact Chinook and other salmonids in Rock Creek and in the Cedar River mainstem.
- C64 In Taylor Creek, adopt and enforce stormwater regulations and BMPs to reduce stormwater flows that have increased bed scour and deposition of fine sediments. Flashy flows should be addressed through forest cover retention, low impact development techniques, erosion control during construction, improved stormwater management on new and existing roads.
- C65 Enforcement (e.g., of clearing and grading ordinance and stormwater management program) is currently reactive (i.e., complaint driven); it should be more proactive (e.g., targeting construction sites, farms). Enforcement of stormwater, as well as of critical areas requirements, could be strengthened through a

“green” inspector group that would share expertise about various environmental incentives and regulations.

- C66 Work with livestock owners in rural areas on water quality BMPs, through livestock ordinance and voluntary farm plans. This is a basinwide recommendation for Taylor Cr. subarea. In urban areas, encourage fencing to keep domestic pets out of riparian areas.
- C67 Through planning for new roads or road widening projects, assess and recommend ways to minimize impacts on water quality, instream flows and sensitive areas. Low impact development includes BMPs for narrower roads, more pervious surfaces, reduced parking areas, maximized infiltration of stormwater, etc.
- C68 Adopt and implement Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines for maintaining existing roads and drainage systems.
- C69 Retrofit existing roads as part of major maintenance, expansion or upgrade projects, in order to improve water quality treatment. Need BMPs for herbicides and pesticides along roads and power lines.

Protect and restore adequate flows during seasonal low flows to maintain pre-spawning holding and migrant life stage in Rock and Taylor Creeks.

- C70 Address maintenance and restoration of instream flows at all levels of government, recognizing that different aspects of the problem are controlled by different government agencies, e.g., water withdrawals are regulated by State Dept. of Ecology, low impact development techniques are affected by local development standards.
- C71 Basinwide recommendation for Taylor Creek subarea: address proposal by Cedar River Water & Sewer District to transfer wells from Cedar River to Taylor Cr. headwaters.
- C72 Basinwide recommendation for Rock Creek subarea: support baseflows in Rock Creek for pre-spawning migration, support efforts to enhance flows, work with City of Kent on HCP (see specifics below).
- C73 Support the City of Kent in developing its HCP for Kent’s public water supply system in Rock Cr. watershed in order to establish instream flows that are protective of Chinook. King County should share relevant data and analyses including spawner surveys, HSPF and EDT modeling, and historical salmon data. The HCP should consider options which would return flows in Rock Cr. to pre-1969 levels. Kent expects that the HCP will be completed by end of 2005.
- C74 Consider encouraging more new development in rural areas to go onto public water systems (e.g., from the Cedar or Green Rivers, Lake Tapps). This would provide less groundwater withdrawals, and more groundwater recharge from onsite septic systems, which need to be properly maintained and functioning. However, any proposal for interbasin transfer must consider instream flow impacts to Chinook and other salmonids in all systems. Friends of Rock Creek Valley is proposing that new residential development (and existing development with water quantity problems) be placed on public water through Covington Water District.
- C75 Determine extent of unauthorized withdrawals in all subareas. Develop and/or use existing database on extent of surface and groundwater withdrawals. In Rock Creek, there have been more spikes and drops in flows recently; determine what is causing this.
- C76 Work with Dept. of Ecology on education and enforcement of unauthorized water withdrawals (e.g., unpermitted withdrawals, permitted withdrawals that exceed authorized volumes).
- C77 Certain groundwater withdrawals are exempt from Ecology regulation; these exempt wells are subject to Seattle-King Co. Dept. of Public Health site review. These exempt wells include wells serving multiple residences but not exceeding 5000 gallons a day (also referred to as 6-packs, or not more than 6 homes on one well), watering of a lawn or garden not exceeding ½ acre. WRIA jurisdictions should work with Seattle-King Co. Dept. of Public Health, DDES, and state Dept. of Ecology to more effectively monitor and enforce the limit to ½ acre of irrigated land per exempt well. Could also encourage KC to place more restrictions on use of exempt wells. Note that proposed revisions to KC Comprehensive Plan include policies that would limit 6 packs (e.g., no more than one exempt well per development), and encourage users to hookup to existing water systems.
- C78 Consider using critical aquifer recharge area (CARA) protections more broadly to protect groundwater recharge for maintaining cold temperatures and flows in fish bearing streams, rather than solely for groundwater quality protection for potable water supply. Current King County proposal also protects recharge for non-potable supplies, including stream flows.
- C79 Coordinate with King County Groundwater Protection Program on groundwater related issues. Work with South King County Groundwater Management Committee to expand stakeholder representation on the

committee and to update the groundwater management plan with current scientific data related to salmon and flows, and to include actions to improve instream flows for salmonids. Note that the current proposal is to finalize the groundwater management plan in its current format and then set up a new working groundwater committee to consider implementation in light of new data, reports, studies and Best Available Science.

- C80 Adopt/enforce stormwater regulations and BMPs to address high and low flows, including forest retention, low impact development, infiltration standards. Identify opportunities to retrofit stormwater retention/detention facilities to better retain, release, treat, and infiltrate stormwater at public and private facilities. See additional stormwater recommendations above under *water quality* and *forest protection*.
- C81 Aggressive water conservation measures should be promoted by all jurisdictions and water purveyors to reduce impacts of water withdrawals throughout WRIA 8. Water conservation measures could include leak detection and repair, pricing structures that encourage more efficient water use and eliminate subsidies to large water users, water efficiency audits, and rebates for commercial and residential water-efficient plumbing fixtures and appliances.
- C82 Look into other water resource allocation processes that could suggest potential actions for this basin (e.g., 2514 processes elsewhere, and the recent state law on water conservation (SHB 1338) - the 2003 Municipal Water Law Water Use Efficiency).
- C83 Consider nominating Rock Creek as an "Outstanding Resource Water" under the Clean Water Act. Guidelines for this program are being developed by Dept. of Ecology and reviewed by the Environmental Protection Agency. Nomination could provide additional protection to the basin.

PROTECTION: Prioritization of Site-Specific Protection Projects in Lower Cedar River

Please note: Prioritization of site-specific protection potential projects is based on both reach priority (using EDT model) and whether or not the potential project is a priority in an existing science-base protection program (such as Waterways). Existing priorities for the Cedar River Legacy Program are shaded in following chart.

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 4: SR 169 Bridge to Upstream of Landslide (RM 4.7)	C213	Protect existing riparian habitat and LWD in Reach 4	H	H
	C214	Protect habitat in Reach 4 and explore ways to reduce flooding and erosion in Ron Regis Park such as adding LWD and setback levee	H	H
Reach 8: RM 8.2 to Cedar Mt. Rd. (RM 9.4)	C228	Jones Reach: 29 acres, 16 parcels targeted for protection	H	H
	C229	Protect riparian buffer behind Scott-Indian Grove levee	H	L
Reach 7: RM 7.3 to 8.2	C224	Cedar Rapids Reach: Acquire ~15 acres for floodplain restoration	H	H
	C225	Protect intact riparian forest along Cedar River Trail and SR 169	H	H
Reach 3: I-405 to SR169 Bridge	C210	Protect riparian habitat in Renton's parkland upstream of I-405 bridge	H	H
Reach 5: Upstream of Landslide (RM 4.7) to RM 5.8	C217	Protect riparian vegetation on left bank in area owned by King County	H	H
Reach 11: Downstream of Taylor Creek (RM 12.7) to RM 13.8	C244	Protect 5 acre parcel including 218th Place side-channel	H	H
	C245	Mouth of Taylor Creek Reach: Acquire 40 acres of forested riparian floodplain	H	H
Reach 10: RM 10.2 to downstream of Taylor Creek (RM 12.7)	C239	Lower Lions Stream Reach: Protect 39 acres between the river & SE 188th St.	H	M
	C240	Byers Reach: Protect 58 acres, 17 parcels on both banks of river	H	M
Reach 9: Cedar Mt. Rd. (RM 9.4) to RM 10.2	C232	Belmondo Reach: 71 acres with numerous side channels, braided reach	H	H
Reach 2: Logan St. Bridge (RM 1) to I-405	C205	Protect and maintain existing tree cover within reach where possible	M	H

PROTECTION: Prioritization of Site-Specific Protection Projects in Middle Cedar River

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 16: RR Trail Crossing at RM 17 to Arcadia (RM	C258	Protect gravel recruitment area and unstable slopes on right bank, upstream of Cedar River trail bridge	M/L	L
	C257	Protect floodplain area on left bank, downstream of "BN Nose" property	?	?

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
19.0)				
Reach 18: RR Trail Crossing (RM 19.6) to Landsburg Dam (RM 21.7)	C263	Landsburg Reach: 87 acres, including forested floodplain & unarmored, steep bank	H	H
Reach 15: RR Trail Crossing (RM 16.0) to RR Trail Crossing at RM 17.0	C255	Protect left bank forested area upriver of property already owned by King County in reach.	H/M	M
Reach 14: RM 15.0 to RR Trail Crossing (RM 16.0)	C253	Dorre Don Meanders Reach: Protect 71 acres (spans reach 13-14)	H/M	H
Reach 12: RM 13.8 to RM 14.3	C247	Protect Royal Bend: Protect ~7 parcels (spans reach 12- 13)	H/M	H
Reach 13: RM 14.3 to RM 15.0	C249	Protect Royal Bend: Protect ~7 parcels (spans reach 12- 13)	H/M	H
	C250	Dorre Don Meanders Reach: Protect 71 acres (spans reach 13-14)	H/M	H

RESTORATION: Priority of Site Specific Restoration Projects in Lower Cedar River

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
A Reaches				
Reach 2: Logan St. Bridge (RM 1) to I-405 (RM 1.6)	C203	Revegetate riparian areas where possible	H/M	H
	C204	Explore redevelopment options	H/M	L
Reach 3: I-405 (RM 1.6) to SR169 Bridge (RM 4.2)	C209	Riparian restoration in parkland	H	H
	C206	Improve riparian habitat in area of industrial use	H	M/L
	C207	Improve riparian habitat in area of multi-family residential use	H	M/L
	C208	Maplewood neighborhood flood buyouts and floodplain restoration	H	L
B Reaches				
Reach 5: Upstream of Landslide (RM 4.7) to RM 5.8	C215	Bucks Curve buyout and floodplain restoration	H	H
	C216	Additional (1-2) flood buyouts near Elliot Bridge	M/L	H
Reach 7: RM 7.3 to 8.2	C222	Cedar Rapids levee removal and floodplain restoration	H	H
	C223	Cook/Jeffries levee buffer protection and side channel reconnection	H	L
Reach 10: RM 10.2 to just downstream of	C233	Lions Club property side channel restoration	H	H
	C234	Byers Reach Side Channel - Levee removal and floodplain restoration	H	M/L

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Taylor Creek (RM 12.7)	C236	Cedar Grove Mobile Home Park flood buyout and levee removal	H	M/L
	C237	Cedar Grove Road Junkyard buyout and floodplain restoration	H	M/L
	C238	Pursue Additional Buyouts near McDonald levee and restore floodplain	H	M/L
	C235	Cedar Grove Road levee removal and floodplain restoration	M	H
Reach 4: SR 169 Bridge (RM 4.2) to Upstream of Landslide (RM 4.7)	C212	Conifer under-planting within reach, particularly in Ron Regis park	H	H
	C211	Restore side-channel on right bank. Study if project still feasible/ beneficial after landslide.	?	?
Reach 6: RM 5.8 to 7.3	C218	Hertzman levee modification and floodplain restoration	H	M
	C219	River Bend Mobile Home Park buyout and floodplain restoration	H	M
	C220	Explore partial removal of Riverbend levee	H	M/L
	C221	Continue riparian restoration at Cavanaugh Pond	M	H
C Reaches				
Reach 11: Downstream of Taylor Creek (RM 12.7) to RM 13.8	C243	Getchman levee setback and floodplain restoration	H	M
	C241	Partial removal Jan Road and Rutledge/Johnson levees and floodplain restoration	H	M
	C242	Enhance 218th side channel once protected	H/M	M
Reach 1 Mouth to Logan St. (RM 1)	C202	Re-vegetate Reach 1 with overhanging vegetation where possible	H/M	H
	C201	Explore opportunities to improve habitat in Reach 1 where there are extensive areas of industrial land use	M	L
Reach 8: RM 8.2 to Cedar Mt. Rd. (RM 9.4)	C226	Remove remainder of Progressive Investment revetment	H	H
	C227	Study potential for restoration King County open space land	?	H/M
Reach 9: Cedar Mt. Rd. (RM 9.4) to RM 10.2	C231	WPA revetment removal and floodplain restoration	H	H
	C230	Cedar Mountain Revetment removal and floodplain restoration	H	L

RESTORATION: Prioritization of Site Specific Restoration Projects in Middle Cedar River

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
A Reaches: Highest Priority for Increasing Distribution				
Reach 14: RM 15.0 to RR Trail Crossing (RM 16.0)	C252	Dorre Don area flood buyouts and floodplain restoration	H/M	L
	C251	Dorre Don area side channel enhancements (also in Reach 13)	M	M
Reach 15: RR Trail Crossing (RM 16.0) to RR Trail Crossing (RM	C254	Orchard Grove flood buyouts and floodplain restoration	M	L

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
17.0)				
Reach 18: RR Trail Crossing (RM 19.6) to Landsburg Dam (RM 21.7)	C260	Explore feasibility of passing large woody debris over Landsburg Dam.	H	M/L
	C261	Reconnect wetland 69 (historic oxbow) to river.	M/L	L
	C262	If revetments at river mile 20.2 & 20.6 still exist, consider removing them.	L	M
Reach 17: Arcadia (RM 19.0) to RR Trail Crossing (19.6)	C259	Enhance Wingert side-channel on left bank, upper end of reach.	M	H
Reach 16: RR Trail Crossing (RM 17.0) to Arcadia (19.0)	C256	If floodplain area on left bank, downstream of "BN Nose" property is protected, explore restoration opportunities.	?	?
Reach 13: RM 14.3 to RM 15.0	C248	Dorre Don area side channel enhancements (also in Reach 14)	M	M
Reach 12: RM 13.8 to RM 14.3	C246	Explore removal of Royal Arch revetment	M	M

PROTECTION AND RESTORATION: Prioritization of Site-Specific Protection and Restoration Projects for Lake Washington

Please note: Lake Washington sections were prioritized by the EDT Model for both projection and restoration potential together. Therefore protection and restoration recommendations are listed together here (although there are very few protection projects).

Section # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Section 1: Southern most part of Lake Washington Near Cedar River Mouth	C266	Shoreline restoration of WA Department of Natural Resources Property as part of trail project.	H	M
	C267	Shoreline restoration between mouth of Cedar River and Gene Coulon Park.	H	L
	C269	Shoreline restoration West of Cedar River mouth.	H	L
	C270	Explore opportunities to restore small creek mouths.	H	L
	C265	Enhance mouth of Kennydale Creek.	H/M	H/M
	C264	Enhance mouth and lower John's Creek.	H/M	M
	C268	Investigate reducing bird predation at Cedar River delta.	M	L
Section 2: Southern end of Mercer Island, Mouth of Mapes Creek and May Creek	C272	Rainer Beach Lake Park - Removal of marina and shoreline restoration.	H	H
	C273	Pritchard Island Beach shoreline restoration.	H/M	H/M
	C271	Mouth of Mapes Creek restoration.	H/M	M
	C277	Restoration of mouth of May Creek.	H/M	M
	C275	Martha Washington Park shoreline restoration.	M	H
	C278	Port Quindal shoreline restoration and site cleanup.	M	L
	C279	Work with private landowners to restore shoreline.	M	L
	C276	Mouth of Taylor Creek debris removal.	L	M/L
Section 5: Montlake Cut including Union Bay from Madison Park Beach to Webster Point	C291	Protect water quality from runoff from 520.	H	H/M
	C292	Explore reducing predation at Webster Point such as reducing number of docks.	M	L
Section 7: North End of Lake, Including Mouths of MacLeer, Lyons, Sammamish River, Tracey Owen Park (East to West line starts at southern end of St. Edwards Park)	C301	St. Edwards State Park - Protect existing high quality shoreline in park.	H	H
	C299	Improve pollution control at Kenmore Marina.	H/M	M
	C302	Work with private landowners to restore shoreline.	H/M	L
	C297	Restore wetlands at mouth of Sammamish River.	M	M
	C300	O.O. Denny Park shoreline restoration.	M	M
	C298	Tracy Owen Station Park shoreline restoration.	M/L	M
Section 3: South of I-90 including East and West Channel of Mercer Island, Seward Park and Mercer Slough	C286	Remove creosote wall under I-90.	M	?
	C280	Seward Park shoreline restoration.	M	H
	C285	Newcastle Beach Park shoreline restoration.	M	H
	C281	Lake Washington Boulevard South shoreline restoration.	M/L	M
	C283	Explore shoreline restoration at Groveland Park.	M/L	M/L
	C284	Explore daylighting and restoration of creek mouth in Clarke Beach Park.	M/L	M/L

Section # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
	<i>C282</i>	Explore options to restore small creek mouths on west and east side of Island.	L	L
Section 4: Between 520 and I-90	<i>C288</i>	Chism Park shoreline restoration.	M/L	H
	<i>C290</i>	Medina Beach Park shoreline restoration.	L	H/M
	<i>C287</i>	Lake Washington Boulevard shoreline restoration from East Pine St. to the Madrona Dr.	L	M
	<i>C289</i>	Enatai Park shoreline restoration.	L	L
Section 6: North of 520 Including Sand Point, Thorton Creek Mouth, Yarrow Bay and Juanita Bay	<i>C293</i>	North end Magnuson Park shoreline restoration	L	H
	<i>C294</i>	South end Magnuson Park shoreline restoration.	L	M
	<i>C295</i>	Restore creek mouth at NE 80 th in Matthews Beach Park to original location.	L	L
	<i>C296</i>	Explore restoration of creek mouth in Juanita Bay Beach.	L	L

RESTORATION: Priority of Site Specific Restoration Projects in Upper Cedar River

Please Note: Due to the strong protection measures in the Cedar River Watershed Habitat Conservation Plan, only restoration recommendations were developed at the reach level for the Upper Cedar River. The EDT reach ratings need to be updated in light of new information about how Chinook are using the Upper Cedar River, therefore the projects are ranked based on expert opinion of their Benefits to Chinook and Ease of Implementation only. The experts on the Upper Cedar River rated the basinwide restoration recommendations as well as the reach level recommendations for their Benefits to Chinook and Ease of Implementation, so that information has been included as well.

Basinwide Restoration Recommendations for the Upper Cedar

Area Covered	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Basinwide	C607	Large woody debris survey and large woody debris addition plan.	H	H
Basinwide	C609	Cedar River Watershed Management: implementing the Habitat Conservation Plan including road decommissioning and protection and enhancement of riparian and aquatic habitats.	H	H
Basinwide	C608	Enhance riparian conditions through adding vegetation and conducting ecological thinning.	M/L	H

Priority of Site Specific Restoration Projects in the Upper Cedar

Reach #	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 27: Cedar Falls Powerhouse (RM 33.7) to RM 34.1	C324	Maintain flow commitments in Habitat Conservation Plan for this reach.	H	H
Reach 29: Upper Rock Creek	C327	Reconstruction of Road 41 Bridge to allow flood flow and debris passage (if Walsh Lake Ditch flow is added to Rock Creek).	H/M	M
Reach 23: RM 31.4 to RM 31.5	C314	Road decommissioning and improvement and Steele Creek Bridge improvement to reduce sedimentation and riparian confinement.	M	H
Reach 29: Upper Rock Creek	C325	Rock Creek large woody debris placement.	M	H
Reach 22: Barneston Bridge (RM 29.3 - downstream of Taylor Creek) to RM 31.4	C313	Lower Taylor Creek railroad trestle and Road 9 Bridge removal/replacement to reduce channel confinement.	M	H/M
Reach 20: RM 22.2 to RM 23.9	C307	Install rock structures to create flow refuge for juvenile fish in reach.	M	M
Reach 20: RM 22.2 to RM 23.9	C309	Rock Creek confluence restoration.	M	M
Reach 21: RM 23.9 to Barneston Bridge (RM 29.3)	C310	Road decommissioning and improvement to reduce sedimentation in reach.	M	M
Reach 22: Barneston Bridge (RM 29.3 - downstream of Taylor Creek) to RM 31.4	C312	Taylor Creek confluence restoration.	M	M
Reach 29: Upper Rock Creek	C326	Restoration of Walsh Lake Ditch flows back into Rock Creek (under assessment).	M	?

Reach #	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 27: Cedar Falls Powerhouse (RM 33.7) to RM 34.1	C323	Decommission Road 71.	M/L	H
Reach 26: RM 33.2 to Cedar Falls Powerhouse (RM 33.7)	C322	Riparian enhancement on both sides of the river in reach.	M/L	H
Reach 25: RM 32.9 to RM 33.2	C319	Riparian enhancement on both sides of the river in reach.	M/L	H
Reach 24: RM 31.5 to RM 32.9	C316	Riparian enhancement adjacent to Road 9.	M/L	H
Reach 29: Upper Rock Creek	C328	Enhance riparian conditions through adding vegetation and conducting ecological thinning in Rock Creek.	M/L	M
Reach 26: RM 33.2 to Cedar Falls Powerhouse (RM 33.7)	C321	Facilitate instream pool structure, habitat diversity and floodplain connections in reach.	M/L	?
Reach 25: RM 32.9 to RM 33.2	C318	Facilitate instream pool structure, habitat diversity and floodplain connections in reach.	M/L	?
Reach 20: RM 22.2 to RM 23.9	C308	Road decommissioning and improvement in Rock Creek basin.	L	H
Reach 19: Landsburg Dam (RM 21.7) to RM 22.2	C304	Habitat enhancement of Landsburg Impoundment Pool.	L	H
Reach 19: Landsburg Dam (RM 21.7) to RM 22.2	C306	Reforestation of the right bank in reach.	L	H
Reach 22: Barneston Bridge (RM 29.3 - just downstream of Taylor Creek) to RM 31.4	C311	Road decommissioning in Taylor and Williams Creek basins.	L	H
Reach 26: RM 33.2 to Cedar Falls Powerhouse (RM 33.7)	C320	Road decommissioning and improvement in reach.	L	M
Reach 25: RM 32.9 to RM 33.2	C317	Road decommissioning and improvement in reach.	L	M
Reach 19: Landsburg Dam (RM 21.7) to RM 22.2	C305	Installment of engineered log jams near RM 22.	L	M
Reach 24: RM 31.5 to RM 32.9	C315	Road decommissioning and improvement in reach.	L	M
Reach 29: Upper Rock Creek	C329	Restoration of Taylor Ditch flows into Rock Creek.	L	?

Prioritization of Cedar River Tributaries (Tier II)

(Listed from downstream to upstream: Taylor/Downs Creek, Peterson Creek, Rock Creek and Walsh Lake Diversion Ditch)

PROTECTION: Prioritization of Site-Specific Protection Projects for Taylor/Downs Creek

Please Note: Taylor Creek was not ranked by the EDT Model. This work will be done in the future. For this draft, potential site-specific projects for the Taylor Creek basin are prioritized based on expert opinion on Benefits to Chinook and Ease of Implementation. Existing priorities in the Cedar River Legacy Program are shaded below. Prioritization of protection projects is to be based on both the EDT modeling work and whether or not the potential project is a priority in an existing science-based protection program.

Reach # (Not prioritized)	Proj. #	Description Note: Shaded Projects are an existing priority in the Cedar River Legacy Program.	Benefits to Chinook	Ease of Implem.
Reach 1: Mouth to Maxwell Rd crossing (RM 0.4)	C332	Mouth of Taylor Creek Reach: Acquire 40 acres of forested riparian floodplain associated with both the Cedar mainstem and Taylor Creek. Also listed on Cedar River Reach 11.	H	H

RESTORATION: Prioritization of Site-Specific Restoration Projects for Taylor/Downs Creek

Please Note: Taylor Creek was inadvertently not ranked by the EDT Model. This work will be done in the future. For this draft, potential site-specific projects for the Taylor Creek basin are prioritized based on expert opinion on Benefits to Chinook and Feasibility.

Reach # (Not prioritized)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 2: Maxwell Rd crossing (RM 0.4) to RM 0.8	C333	Lower Taylor Creek Floodplain Restoration	H	H
Reach 1: Mouth to Maxwell Rd crossing (RM .04)	C331	Add large woody debris in Reach 1.	H	H
Reach 6: RM 1.4 to top of ravine (RM 1.9)	C336	Add large woody debris in Reach 6.	H	H
Reach 1: Mouth to Maxwell Rd crossing (RM .04)	C330	Riparian restoration in Reach 1.	H/M	H
Reach 2: Maxwell Rd crossing (RM 0.4) to RM 0.8	C334	Work with private property owners in lower part of reach not included in planned floodplain restoration to do riparian restoration.	M	H
Reach 6: RM 1.4 to top of ravine (RM 1.9)	C337	Protect and restore riparian vegetation in Reach 6.	M	H
Reach 5: RM 1.0 to hwy. 18, bottom of ravine (RM 1.4)	C335	Add large woody debris in Reach 5.	M/L	H
Reach 7: RM 1.9 to RM 3.4	C338	Taylor Creek Golf Course - work with golf course owners to implement any needed Best Management Practices.	?	M

RESTORATION: Prioritization of Site-Specific Restoration Projects in Peterson Creek

Reach # (Not prioritized)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 1: Mouth to RM 0.5	C339	Add large woody debris. Explore use of LWD to increase fish passage at the mouth.	H	H
	C340	Consider riparian restoration to increase LWD recruitment (such as thinning and conifer underplanting).	H	H

PROTECTION: Prioritization of Site-Specific Protection Projects in Lower Rock Creek

Reach # (Not prioritized)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reaches 3-5: Se 248 TH St Culvert (RM 0.15) to	C348 C349 C350 C352	Work with adjacent landowners to decrease encroachment into Rock Creek Natural Area and increase stewardship.	M/L	M

RESTORATION: Prioritization of Site-Specific Restoration Projects in Lower Rock Creek

Reach # (Not prioritized)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reaches 6-14: RM 0.65 to RM 4.8	C351	Enhance flows for pre-spawning migrants.	H	H
Reach 1: Mouth to foot bridge over creek (RM 0.06)	C342	Study feasibility of increasing off-channel habitat in Reach 1.	?	H
	C343	Explore improving fish passage at the mouth of Rock Creek.	H	ML
	C341	Buyout house on right bank, and restore floodplain near the mouth.	H/M	H/M
Reach 2: Foot bridge (RM 0.06) to box culvert under SE 248 th St (RM 0.15)	C344	Study feasibility of increasing off-channel habitat in Reach 2.	?	H
	C345	Remove bank hardening on right bank in Reach 2.	H/M	L
Reach 3: SE 248 th St culvert (RM 0.15) to culvert under Cedar River Pipeline (RM 0.27)	C347	Replant conifers lost in 2004 windstorm in Reach 3.	H	H
	C346	Improve fish passage under Cedar river pipeline.	H/M	H

RESTORATION: Prioritization of Site-Specific Restoration Projects in Walsh Lake Diversion Stream

EDIT: The WRIA 8 Technical Committee recommends that a study be conducted to evaluate the feasibility and benefit of relocating Walsh back into its original location in Upper Rock Creek. These recommendations are for if Walsh Lake Diversion remains in place. Walsh Lake Diversion Ditch's reaches were not prioritized using the EDT model. Therefore the potential projects have been prioritized based on expert opinion of potential projects Benefits to Chinook and Ease of Implementation.

Reach # (Not prioritized)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 1: Mouth to bottom of ravine (RM 0.2)	C353	Replant conifers lost during 2004 windstorm and maintain to prevent invasion by invasive plants.	H	H
Reach 2: RM 0.2 to seasonal barrier, top of ravine (RM 0.6)	C354	Replant conifers lost during 2004 windstorm and maintain to prevent invasion by invasive plants.	H	H
Reach 3: RM 0.6 to SPU Watershed Boundary, 276 th Ave SE (RM 1.1)	C356	Work with private property owners in reach to protect riparian corridor and forest cover.	H/M	H
	C355	Improve Chinook passage over velocity barrier in ravine.	M/L	H

Preliminary DRAFT Cedar River Chinook Population - Tier I - Initial Habitat Project List

Includes Potential Restoration and Protection Projects by Reach

Cedar Lower Reaches 1-11

Basinwide Recommendations:

Project #	Description
c601	Need to evaluate where on the Cedar River can add LWD and implement program to add LWD.

Reach 1: Mouth to Logan St. (RM 1).

Restoration

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C201	1	9 of 11	new	Explore Opportunities to Improve Habitat in Reach 1: There are extensive areas of industrial land use in Reach 1 and at the Cedar River mouth. If existing land uses change in the future, explore opportunities to reduce channel confinement, increase riparian function and increase LWD.		Redevelopment may not occur in this area and if it does, it will be in ~15 years. Concern raised about whether this more of a policy/land use issue rather than a project. It will be very difficult to reduce channel confinement in this highly urbanized reach of the river. The US Army Corps of Engineers will have to be consulted on any habitat restoration done in this area.	M	L
C202	1	9 of 11	new	Revegetate right and left bank of Reach 1 where possible. Overhanging vegetation in this area of the river that experiences inundation by the lake is beneficial.		This reach of the river will be dredged in the future. Any planting project in this area will have to consider: flood control requirements, airport safety issues (bird management), park and trail management and public access to the river. Plants will also have to be flood tolerant. Airport has clear zone over park affecting type of vegetation that can be planted. Recreational uses need to be balanced.	H/M	H

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
	1	10 of 11			No projects identified at this time.				

Reach 2: Logan St. Bridge (RM 1) to I-405 (RM 1.6)**Restoration**

Technical Hypothesis: *Reduce channel confinement, increase pools, large woody debris, and riparian function.*

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C203	2	1 of 11	new	Revegetation in Reach 2: Explore options to add native riparian vegetation on left bank of river and for any needed restoration plantings on the right bank.		Any planting projects in this reach will have to consider park and trail management and public access to the river. Opportunities for riparian plantings will be limited due to the Cedar River trail.	H/M	H
C204	2	1 of 11	new	Explore Redevelopment Options in Reach 2: If redevelopment occurs in this reach of river, explore possibility of setting back levees and restoring riparian buffer.		Land use issue as well as project. Left and right bank both need to be considered. High number of landowners lowers feasibility. Habitat improvement in the reach could be encouraged through incentive programs such as density exchanges.	H/M	L

Protection

Technical Hypothesis: *Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C205	2	11 of 11	N	new	Protect and Maintain Existing Riparian Vegetation: Where possible protect and maintain existing tree cover within reach.		Existing cottonwoods near library are nearing end of lifespan and replanting options will need to be explored. Possibly underplant with conifers now and/or replant area when trees are removed (5-10 years out). Need the ability to remove and manage trees.	M	H

Reach 3: I-405 (RM 1.6) to SR169 Bridge (RM 4.2)**Restoration****Technical Hypothesis:** *Reduce channel confinement, increase pools, large woody debris, and riparian function.*

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C206	3	2 of 11	new	In Reach 3, there is an area of industrial use on the right bank of the river that is likely to be redeveloped in the near future. Seek ways to improve riparian habitat on site such as purchasing easement for buffer, removing bank hardening and restoring riparian buffer.		Redevelopment of the site is likely to occur in near term (3 to 5 years) and actual plans are not known. The bulkhead on this site is quite extensive (ranging in height from about 8.5 ft. to 16 ft. and extending approximately 1,150 ft. along the Cedar River), therefore bank hardening removal is likely to be very expensive.	H	M/L
C207	3	2 of 11	new	In Reach 3, there is multi-family residential use on the right bank of river. Explore opportunities to remove impervious surface area and bank hardening on site, and restore riparian buffer.		Apartment complex currently has extensive impervious surface area. Partial buyout would be necessary to achieve High benefits.	H	M/L
C208	3	2 of 11	new	Maplewood Neighborhood Flood Buyouts: Explore possible flood buyouts in this neighborhood and opportunities to restore floodplain. Explore options for bioengineering and softening bank hardening. See recommendation for Maplewood Flood Hazard Reduction in Cedar River Basin Plan.		Cost is high. Extent of benefits depends upon scale of effort. Highest benefits would require extensive work. Other benefits include flood hazard reduction. Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.	H	L
C209	3	2 of 11	new	Explore any need for riparian restoration in City of Renton-owned parkland upstream of I-405 bridge on left bank. LINKED WITH PROTECTION PROJECT BELOW.		Already well vegetated. Explore diversity of plants, underplanting, and noxious weed control.	H	H

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C210	3	4 of 11	N	new	Protect existing forested, riparian habitat in City of Renton's parkland upstream of I-405 bridge on left bank. LINKED WITH RESTORATION PROJECT ABOVE.		Renton's three riverside parks (Liberty, Cedar River Park, NARCO property) are going through re-master planning. There are opportunities to move some of more active recreation uses of these parks to former Narco site and protect habitat with more passive recreational uses at the other areas of the parks. Maybe region should look to lower river to provide recreational uses in order to protect upstream habitat.	H	H

Reach 4: SR 169 Bridge (RM 4.2) to Upstream of Landslide (RM 4.7)**Restoration**

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C211	4	6 of 11	new	Restore Side-Channel on Right Bank: the Cedar River Basin Plan includes a possible project to restore a side channel on the right bank of the river on property owned by Maplewood Height Home Owners Association and City of Renton across from golf course and downstream of landslide. Channel restoration should be a flow-through channel reconnected to river at upper end for juvenile chinook benefit rather than a groundwater-fed spawning channel (which primarily benefit sockeye).		UW student study was done on this potential restoration project - could be a resource. Landslide changed area extensively, may no longer be a good opportunity for side channel restoration. Needs feasibility study before it can be ranked for benefits. Landslide is a source of fines. No access so difficult to stage restoration. Would be costly. Due to uncertainties about the project, it was not ranked.	?	?
C212	4	6 of 11	new	Riparian restoration in Reach 4: Consider conifer underplanting in forested riparian areas within reach, particularly in Ron Regis park near slide area.		Concern raised that conifer underplantings may not be appropriate in riparian areas along Cedar River. Historic conditions analysis indicates that forested riparian areas in lower Cedar River used to be deciduous. Other plant species or a mix of coniferous and deciduous species might be more in keeping with historic conditions.	H	H

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C213	4	1 of 11	N	new	Protect Habitat in Reach 4: Protect existing riparian habitat, instream habitat conditions and extensive LWD in reach. Most of reach already in public ownership or protected by regulations (e.g. steep slopes).			H	H
C214	4	1 of 11	N	new	Study Options to Protect Habitat in Reach 4 and Reduce Flooding and Erosion in Ron Regis Park: It is unclear how much further river is going to erode bank and migrate into Ron Regis park in landslide area. Eventually there will be a conflict with park uses. Explore using LWD and levee setback to prevent excessive erosion and flood damage to public lands associated with Ron Regis Park while protecting natural habitat forming processes in reach. Study should include lower Madsen Creek.		Concern was raised that it would be better to just protect this reach and let river find its own equilibrium in area.	H	H

Reach 5: Upstream of Landslide (RM 4.7) to RM 5.8**Restoration**

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C215	5	3 of 11	7a,8d	Bucks Curve Buyout and Restoration: Continue buying out structures to build on previous restoration efforts in vicinity of RM 6.2 to RM 6.4. Once sufficient land acquired, remove or setback existing levee, and revegetate floodplain. In best alternative, a portion of SE Jones Road could be relocated northward.	>\$2,000,000 and <\$5,000,000	Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.	H	H
C216	5	3 of 11	new	Additional Flood Buyouts Near Elliot Bridge: Pursue additional home buyouts (1-2) near Elliot Bridge.		Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.	M/L	H

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C217	5	5 of 11	N	new	Protect Riparian Vegetation in Reach 5: Protect riparian vegetation on left bank in area owned by King County.		Similar to Reach 3 recommendations	H	H

Reach 6: RM 5.8 to 7.3**Restoration**

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C218	6	7 of 11	7b	Hertzman Floodplain Restoration: Modify Herzmann levee to improve function of and access to floodplain on backside of levee. Modifications could include partial removal or setback. Additional actions include placement of large wood in the river and floodplain, planting native vegetation, and creation of side-channels and backwater areas where possible.	>\$2,000,000 and <\$5,000,000	Project would need to be coordinated and sequenced with other potential projects in this reach. Would be expensive. Extra engineering required.	H	M
C219	6	7 of 11	8k	River Bend Mobile Home Buyout: Purchase property underlying 19 mobile homes nearest river, recontour existing revetment to reduce erosion, flood damage and improve flood conveyance and habitat. Alternatively, purchase all property and remove all mobile homes and the revetment and the downstream levee to create a continuously unarmored left bank from RM 6.5 (outlet of Cavanaugh Pond) to RM 9.5 (Cedar Mtn. Bridge).	>\$2,000,000 and <\$5,000,000	Project would need to be coordinated and sequenced with other potential projects in this reach and with Cedar Rapids floodplain restoration. Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.	H	M
C220	6	7 of 11	new	Explore Modification of Riverbend Levee: explore partial removal of Riverbend levee in order to reduce channel confinement and connect Cavanaugh Pond to the mainstem river. Modify setback.		There are potential tradeoffs between the existing habitat values provided at Cavanaugh Pond as it is now and what possible salmon habitat could be created with more connection to the river. Project would need to be coordinated and sequenced with other potential projects in this reach. If mobile home park bought out, modify or remove Riverbend levee.	H	M/L
C221	6	7 of 11	new	Continue riparian restoration at Cavanaugh Pond, particularly on river-side of property.		Dependent upon previous two projects.	M	H

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
	6	6 of 11			No projects identified at this time.				

Reach 7: RM 7.3 to 8.2**Restoration**

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C222	7	4 of 11	7j	Cedar Rapids Floodplain Restoration (also named Ricardi): Levee removal and floodplain restoration and revegetation.	>\$500,000 and <\$1,000,000	Project is funded by SRFB. Project would need to be coordinated and sequenced with other potential projects in downstream reach and within reach.	H	H
C223	7	4 of 11	new	Explore options such as easements to protect riparian buffer behind Cook/Jeffries levee and possibly reconnect side channel and/or pond in reach.		Ability to secure necessary easements and acquisitions a factor.	H	L

Protection (Area of high spawning use and egg incubation)

Technical Hypothesis: Riparian function, lwd and channel connectivity should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C224	7	3 of 11	Y	4e	Ricardi Reach: Acquire additional floodplain area (~15 acres) necessary for restoration project C222 described above.	>\$100,000 and <\$250,000	Acquisition is funded by SRFB.	H	H
C225	7	3 of 11	N	new	Protect pockets of intact riparian forest along Cedar River Trail and SR 169 such as area across from Cook-Jefferies levee.		Trying to do restoration projects in these small areas would encourage people and weeds to follow.	H	H

Reach 8: RM 8.2 to Cedar Mt. Rd. (RM 9.4)**Restoration****Technical Hypothesis:** *Reduce channel confinement, increase pools, large woody debris, and riparian function.*

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C226	8	10 of 11	new	Remove Revetment in Reach 8: Progressive Investment revetment is no-longer maintained. Consider removing remainder of revetment.		The river may have already removed the revetment. Verify if this is indeed still required or remove as a potential project.	H	H
C227	8	10 of 11	new	Study Potential for Restoration on Left Bank of Reach: Protect and maintain intact forested riparian area on left bank owned by King County. Study whether or not better connection of this floodplain to the river could be increased without damaging riparian conditions.		Moved from protection to restoration study. Look at historical photos and data for reach. Benefits to Chinook unknown without study results, so not ranked.	?	M/H

Protection (Area of high spawning use and egg incubation)**Technical Hypothesis:** *Riparian function, lwd and channel connectivity should be maintained.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C228	8	2 of 11	Y	4i	Jones Reach: 29 acres, 16 parcels targeted for protection. Left bank of river already protected. Acquiring parcels on right bank of the river would allow both banks of the river to be protected.			H	H
C229	8	2 of 11	N	new	Protect Riparian Buffer Behind Levee: Explore options such as easements to protect riparian buffer behind Scott-Indian Grove levee.		Property owner willingness uncertain.	H	L

Reach 9: Cedar Mt. Rd. (RM 9.4) to RM 10.2**Restoration****Technical Hypothesis:** *Reduce channel confinement, increase pools, large woody debris, and riparian function.*

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C230	9	11 of 11	8h	Cedar Mountain Revetment Removal: Acquire sufficient land and setback or remove revetment. Restore and revegetate floodplain.		King County rebuilt bridge and road.	H	L

C231	9	11 of 11	new	WPA Revetment Removal: Acquire sufficient land and setback or remove revetment. Restore and revegetate floodplain.			H	H
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Protection (Area of high spawning use and egg incubation)

Technical Hypothesis: *Riparian function, lwd and channel connectivity should be maintained.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C232	9	9 of 11	Y	4a	Belmondo Reach: 71 acres, 10 parcels, rural residential, riverfront. No levees in reach, numerous side channels, braided reach.	>\$2,000,000 and <\$5,000,000		H	H

Reach 10: RM 10.2 to just downstream of Taylor Creek (RM 12.7)

Restoration

Technical Hypothesis: *Reduce channel confinement, increase pools, large woody debris, and riparian function.*

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C233	10	5 of 11	7f	Lions Club Side Channel Restoration: Restoration of an ~ 800 foot long historic side channel and associated floodplain for chinook rearing habitat. The Renton Lions Club and King County are potential partners on this project. King County recently purchased property downstream of Lions Club needed for the project.		Lions Club received a SRFB grant to do a feasibility and design study for this project. There are many projects and opportunities in this reach. Need to look at big picture in doing any restoration in this reach so projects done in proper sequence and one action does not preclude other future opportunities.	H	H
C234	10	5 of 11	7g	Byers Reach Side Channel: Levee removal and floodplain restoration on left bank from ~ RM 12.9 to ~ RM 13.3. Some of land for project already has been acquired. Final design and habitat benefits are dependent on available land area.		There are many projects and opportunities in this reach. Need to look at big picture in doing any restoration in this reach so projects done in proper sequence and one action does not preclude other future opportunities.	H	M/L
C235	10	5 of 11	8c	Cedar Grove Road Levee Removal: Conduct further levee modification work to maximize channel-floodplain interactions.	>\$500,000 and <\$1,000,000	There are many projects and opportunities in this reach. Need to look at big picture in doing any restoration in this reach so projects done in proper sequence and one action does not preclude other future opportunities. Project limited by need to protect trail.	M	H

C236	10	5 of 11	8f	<p>Cedar Grove Mobile Home Park Flood Buyout and Levee Removal: Purchase mobile home property and relocate approximately 55 mobile homes; purchase and remove 9 single-family homes, and restore ~40 acres of floodplain area with riparian vegetation and off-channel features.</p>	\$5,000,000- \$7,000,000	<p>There are many projects and opportunities in this reach. Need to look at big picture in doing any restoration in this reach so projects done in proper sequence and one action does not preclude other future opportunities. Cost may be factor. Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.</p>	H	M/L
C237	10	5 of 11	8i	<p>Cedar Grove Road Junkyard Buyout: Acquire left bank parcels in vicinity of RM 14 used for junk salvage operation and restore floodplain. Adjacent to C238, consider combining.</p>		<p>There are many projects and opportunities in this reach. Need to look at big picture in doing any restoration in this reach so projects done in proper sequence and one action does not preclude other future opportunities.</p>	H	M/L
C238	10	5 of 11	8e	<p>Pursue Additional Buyouts near McDonald Levee: Acquire additional developed properties on left bank in vicinity of McDonald levee and modify levee and restore floodplain. Adjacent to C237, consider combining.</p>		<p>If enough buyouts occur in McDonald levee area, road could be set back to open up more floodplain area. New development should be avoided in this bend of river. There are many projects and opportunities in this reach. Need to look at big picture in doing any restoration in this reach so projects done in proper sequence and one action does not preclude other future opportunities. Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.</p>	H	M/L

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C239	10	8 of 11	Y	4g	Lower Lions Stream Reach: 39 acres, 12 parcels, including a large area of riparian forested floodplain between the Cedar River and SE 188th Street. Chinook use the mainstem of the areas of interest within this reach. A past floodplain buyout is adjacent to the left bank area as well as an approximate 15-acre private land holding managed for educational and conservation purposes located just upriver. A portion of this reach is necessary to accommodate restoration project C233 in its entirety.	>\$1,000,000 and <\$2,000,000		H	M
C240	10	8 of 11	Y	4j	Byers Reach: 58 acres, 17 parcels. Includes developed and undeveloped properties on right and left bank. These properties are necessary for project C234.	>\$2,000,000 and <\$5,000,000		H	M

Reach 11: Just downstream of Taylor Creek (RM 12.7) to RM 13.8**Restoration**

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Prot. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C241	11	8 of 11	7c	Partial Removal Jan Road and Rutledge/Johnson Levees: Modify or remove approximately 500 linear feet from the downstream end of the Jan Road Levee and the Rutledge-Johnson Revetment, leaving a sufficient length intact at the upstream end to prevent damage to the remaining facility and maintain the current flood protection to residents' homes. The right bank modifications are part of project C234.	>\$250,000 and <\$500,000	Need 218 side channel property.	H	M
C242	11	8 of 11	7h	Enhance 218th side channel once protected, see C244 below. Also related to C241 above.		Mostly vegetation. Benefits to Chinook- maybe connect channel.	H/M	M

C243	11	8 of 11	7d	Getchman Levee Setback: Remove or setback Getchman levee from ~RM 13.7 to 13.9 to allow channel-floodplain interactions. Additional land still needed for the project. As part of this project, pursue additional buyouts behind Rhode levee on left bank across from Getchman levee.	>\$250,000 and <\$500,000	Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.	H	M
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Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C244	11	7 of 11	Y	4b	218th Place Side Channel: Protect 5 acres, 1 parcel, rural residential, riverfront. Once acquired there are opportunities for habitat enhancement in floodplain and off-channel areas. Related to C242.	>\$250,000 and <\$500,000		H	H
C245	11	7 of 11	Y	4h	Mouth of Taylor Creek Reach: Acquire approximately 40 acres of forested riparian floodplain associated with both the Cedar mainstem and the lower reach of Taylor Creek. The target parcels include approximately 1,000 feet of mainstem channel, nearly 1,300 feet of the lowermost reach and mouth of Taylor Creek, and one of the largest remaining floodplain wetlands adjacent to the mainstem. Some of the acquisitions will facilitate future levee removal and/or modification projects.		Approximately 2 acres at the Taylor Creek confluence have already been acquired.	H	H

Preliminary DRAFT Cedar River Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach
Cedar Middle Reaches 12-18

Reach 12: Cedar River from RM 13.8 to RM 14.3

Restoration

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C246	12	7 of 7	new	Explore whether or not Royal Arch revetment should be removed.		Comments received since the project identification meeting indicate that Royal Arch is an insignificant source of gravel (according to Cedar River Gravel Study, Perkins	M	M

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C247	12	6 of 7	Y	new	Royal Bend: Protect ~7 parcels, riverfront and floodplain from ~RM 14.3 to RM 14.7 (also in Reach 13).			H/M	H

Reach 13: Cedar River from RM 14.3 to RM 15.0

Restoration

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C248	12	6 of 7	7i	Dorre Don Side-Channel Enhancements: Also in Reach 14. Enhance protected side channels as needed.			M	M

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C249	13	7 of 7	Y	new	Protect existing riparian forest and side channel on right bank at ~RM 14.1. Is part of Cedar River Legacy Royal Bend Reach described in Reach 12.			H/M	H
C250	13	7 of 7	Y	4d, 4f	Protect existing riparian forest and side channel on left bank at ~RM 15. Is part of Cedar River Legacy Dorre Don Reach described in Reach 14.			H/M	H

Reach 14: Cedar River from RM 15.0 to RR Trail Crossing at RM 16.0

Restoration

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C251	14	1 of 7	7i	Dorre Don Area Side Channel Enhancements: Enhance protected side channels as needed. Related to C250 and C253.	>\$250,000 and <\$500,000	There is a high potential avulsion hazard in Reach 14.	M	M
C252	14	1 of 7	8j	Dorre Don Area Flood Buyouts: Acquire developed properties in lower Dorre Don area and modify levees and restore floodplain where feasible.	>\$5,000,000 and <\$15,000,000	There is a high potential avulsion hazard in Reach 14. The feasibility of completing all the targeted buyouts is low, however the feasibility of completing some of the buyouts is M or H. Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.	H/M	L

Protection (Area of high spawning and egg incubation)

Technical Hypothesis: *Riparian function, lwd and channel connectivity should be maintained.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C253	14	5 of 7	Y	4d, 4f	Dorre Don Meanders Reach: Protect 71 acres, 14 parcels, rural residential, riverfront with flooding issues. Includes an extensive floodplain riparian forest, numerous valley floor spring-fed features including side channel, stream, and oxbow habitats.	>\$2,000,000 and <\$5,000,000	This is also a good area to work with private property owners to protect habitat on their property, especially on left bank. There is a high potential avulsion hazard in Reach 14. The Cedar River Legacy Dorre Don Meanders Reach spans EDT reach 14 and 15.	H/M	H

Reach 15: Cedar River from RR Trail Crossing at RM 16.0 to RR Trail Crossing at RM 17.0

Restoration

Technical Hypothesis: *Reduce channel confinement, increase pools, large woody debris, and riparian function.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C254	15	2 of 7	new	Orchard Grove Buyouts: Pursue flood buyouts in the Orchard Grove and restore floodplain where possible.		The feasibility of completing all the targeted buyouts is low, however the feasibility of completing some of the buyouts is M or H. Flood buyouts alone generally do not provide significant fish benefit, but are a first step to allow for future floodplain restoration. For greatest benefit, flood buyouts should be pursued in concert with a comprehensive habitat restoration effort.	M	L

Protection (Area of high spawning and egg incubation)

Technical Hypothesis: *Riparian function, lwd and channel connectivity should be maintained.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C255	15	4 of 7	N	new	Protect Left Bank: Explore protection of left bank forested floodplain area adjacent and upriver of property already in King County ownership in this reach.		Area is very close to City of Maple Valley incorporated area. Development has occurred in area since aerial photo that was used in for project identification meeting. There still is forested riparian floodplain to be protected.	H/M	M

Reach 16: Cedar River from RR Trail Crossing at RM 17 to Arcadia (RM 19.0)

Restoration

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C256	16	5 of 7	new	If floodplain area on left bank, downstream of "BN Nose" property is protected , explore restoration opportunities.		More information needed before project can be evaluated.	?	?

Protection (Area of highest spawning and egg incubation in Cedar-Rural)

Technical Hypothesis: Riparian function, lwd and channel connectivity should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C257	16	1 of 7	N	new	Consider protecting floodplain area on left bank , downstream of "BN Nose" property and upstream of Orchard Grove revetment.		More information needed before project can be evaluated.	?	?
C258	16	1 of 7	N	new	Consider protecting gravel recruitment area and unstable slopes on the right bank , at the downstream end of Reach 16 and upstream of the Cedar River trail bridge.		Comments received since meeting indicating that this slope is not a source of gravel (per Cedar River Gravel Study, Perkins '02). Extremely unstable slopes crossed by a private road reduce the benefits and feasibility of this project. Proposal should probably be removed from list.	M/L	L

Reach 17: Cedar River from Arcadia (RM 19.0) to RR Trail Crossing at RM 19.6

Restoration

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C259	17	4 of 7	new	Enhance Wingert Side: Channel on left bank, upper end of reach.		Property is in King County ownership.	M	H

Protection (Supports spawning and egg incubation downstream)

Technical Hypothesis: Riparian function, lwd and channel connectivity should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
	17	2 of 7			No projects identified at this time.				

Reach 18: Cedar River from RR Trail Crossing at RM 19.6 to Landsburg Dam (RM 21.7)

Restoration

Technical Hypothesis: Reduce channel confinement, increase pools, large woody debris, and riparian function.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C260	18	3 of 7	9	Explore feasibility of passing large woody debris over Landsburg Dam.		Currently about 10 pieces per year are removed from the river in the vicinity of Landsburg Dam to avoid damage to the dam. With the gate modifications at the dam, some wood will pass naturally through the structure. Active passage of wood is uncertain due to legal liability associated with public safety issues and operational ability to move large pieces of wood from upstream to downstream of the dam. Seattle Public Utilities is investigating a project to install a floodway at Landsburg Dam to pass flood flows and wood during high flows. There is disagreement about the benefits to Chinook of this project. Seattle Public Utilities staff would rate Benefits to Chinook as M/L and Feasibility as uncertain.	H	M/L
C261	18	3 of 7	7e	Reconnection of Wetland 69: Reconnect wetland 69 (oxbow) to river. Additional acquisition would be needed.	>\$500,000 and <\$1,000,000	Concerns raised about proposal hurting other terrestrial and aquatic species such as Western Toad. Also concerns about water levels in pond vs. the river. Project will require an engineered fix and is likely to be costly.	M/L	L
C262	18	3 of 7	new	Explore whether or not revetments at river mile 20.2 and 20.6 still exist. If they do, consider removing them.		Comments received since the meeting indicate that revetment at river mile 20.2 no longer exists as anything other than an old, slightly raised eroding prism of native channel material (so no need to do anything with it but let the river continue to erode it). The revetment at 20.6 still exists. Removal would be problematic because it protects the regional Cedar River Trail.	L	M

Protection (Supports spawning and egg incubation downstream)

Technical Hypothesis: Riparian function, lwd and channel connectivity should be maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C263	18	3 of 7	Y	4c	Landsburg Reach: 87 acres, rural residential, riverfront including forested floodplain and areas of unarmored, steep bank.	>\$2,000,000 and <\$5,000,000	In particular, protect gravel recruitment source on left bank in downstream portion of Reach 18.	H	H

DRAFT Lake Washington - Tier I - Initial Habitat Project List

Includes Potential Restoration And Protection Projects

Basinwide Recommendations:

Project #	Description
C602	Study lake lift stations for combined sewer overflows harm juvenile fish. Explore moving lift station intakes into deeper water and installing screens.

Section 1: Southern most part of Lake Washington Near Cedar River Mouth

Restoration & Protection

Technical Hypothesis: Focus is fry migrants which are shallow-water dependent. Reduce bank hardening by replacing bulkheads and riprap with gently sloped, sandy beaches; Reconnect and enhance small creek mouths as rearing areas; Plant native, overhanging riparian vegetation; Reduce impact of docks to promote safe juvenile salmon migration and deter the aggregation of predators. Address predation effects at the mouth of the Cedar River and backwater area in lower Cedar River.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C264	1	1 of 7	new	Enhance Mouth and Lower John's Creek: Enhance lower channel to reduce predator habitat, restore riparian vegetation, and protect water quality and quantity from stormwater flows. Located in Gene Coulon Park.		Lots of fry seen in area. WDOT considering direct discharge of stormwater into John's Creek for I-405 expansion. Important to protect what we have: water quality, flows. Enhancement should aim to reduce predator habitat. Extensive planting was done when Park was created. Park is heavily used and any restoration project will need to allow continued recreational use of the site.	H/M	M
C265	1	1 of 7	new	Enhance Mouth of Kennydale Creek: in Gene Coulon Park. Project would enhance mouth, remove silt, and facilitate recruitment of sand and gravel. Should also protect shallow water delta.		The mouth has a good delta and there is a good gradient. There are fish (juvenile Chinook) at mouth but not in stream. Extensive planting was done when Park was created. Any restoration project will need to allow continued recreational use of the Park.	H/M	H/M
C266	1	1 of 7	new	Shoreline restoration of WA Department of Natural Resources Property as part of City of Renton's Sam Chisham Trail project. Remove a portion of flume (along lakeside), create shallow water habitat, protect existing cove, and plant overhanging riparian vegetation along shore.		Sam Chisham Trail is a Renton project to connect Cedar River trail to Gene Coulon Park. Money needed for habitat restoration component of the project. Shoreline restoration should not occur independent of trail construction. Might be done as mitigation for trail project.	H	M
C267	1	1 of 7	new	Shoreline restoration between mouth of Cedar and Gene Coulon Park: Explore options to work with private property owners to remove bulkheads, restore shallow water habitat and riparian vegetation.		Possible opportunity with Boeing redevelopment, but many years out.	H	L

C268	1	1 of 7	new	Cedar River Delta: Explore lowering/modifying delta to create more shallow water habitat, and reduce predation for juvenile Chinook by cutting trees lower.		Would require regular maintenance. Area has high bird predation on Chinook fry. Birds also a problem for airport safety. Uncertainty about project, more study required. Questions raised about the purpose of doing a project at the site if you don't want juvenile Chinook hanging out there anyway.	M	L
C269	1	1 of 7	new	Shoreline Restoration West of Cedar Mouth: Explore options to work with homeowners to remove bulkheads, conversion of nearshore habitat to shallow beach and restore riparian vegetation. Reduce number of docks by using community docks.		Work with private landowners and need to explore options for incentive programs such as PBRS to encourage participation.	H	L
C270	1	1 of 7	new	Explore opportunities to restore small creek mouths, remove bulkheads and reduce number of docks by developing community docks throughout section 1.		Restore mouths of small creeks in Section 1, bulkhead removal and community dock construction, replacing individual docks.	H	L

Section 2: Southern end Mercer Island, Mouth of Mapes Creek and May Creek Restoration & Protection

Technical Hypothesis: Focus is fry migrants which are shallow-water dependent. Reduce bank hardening by replacing bulkheads and riprap with gently sloped, sandy beaches; Reconnect and enhance small creek mouths as rearing areas; Plant native, overhanging riparian vegetation; Reduce impact of docks to promote safe juvenile salmon migration and deter the aggregation of predators.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C271	2	2 of 7	P6, P10	Mouth of Mapes Creek Restoration: Restore mouth of Mapes Creek, which is currently in a culvert that empties into deep water in Lake Washington. Use as demonstration project and evaluate stability, sedimentation rates, and juvenile/adult use and predation. Developing an experimental stormwater treatment system is being considered as part of this project. Proposed City of Seattle project.		Concerns about cutthroat predation in bay. Convergence pool possible even if cannot create delta. Corps funding uncertain.	H/M	M
C272	2	2 of 7	new	Rainier Beach Lake Park: Removal of marina and bulkhead, regrading the shoreline to a gentle slope, and placing fine-grained substrate. Remove invasive vegetation and add native overhanging vegetation. Protect existing high quality shoreline habitat in park. From Seattle Shoreline Park Inventory and Habitat Assessment.		Docks to be removed, parking lot removed and create shoreline habitat. 700 ft. of habitat. Good number of Chinook using the area.	H	H

C273	2	2 of 7	new	Pritchard Island Beach: In northern reach, remove concrete bulkhead and regrade shoreline to gentle slope. Add fine substrate where needed. Remove invasive vegetation and plant native vegetation. Swim beach would be left intact. From Seattle Shoreline Park Inventory and Habitat Assessment.		Extensive riparian vegetation restoration done on south part. Project could set an example.	H/M	H/M
C274	2	2 of 7	new	Explore buyout between Rainier Beach Park and Beer Sheva. Connect and restore wetland behind Pritchard Island.		Would be expensive.	L	L
C275	2	2 of 7	new	Martha Washington Park: Regrade shoreline to gentle slope, add fine-grained beach substrate, remove riprap and rock armoring. Scallop shoreline edge to enhance habitat diversity and avoid damaging large cottonwood trees. Plant native vegetation. From Seattle Shoreline Park Inventory and Habitat Assessment.		Bulkhead removal project in southern portion funded in '04-'05. Benefit of the project limited by small size.	M	H
C276	2	2 of 7	new	Mouth of Taylor Creek: Remove lumber debris that provides bass habitat. Explore restoration of mouth.		Creek may be used by cutthroat, therefore too large to restore without increasing predation risk on Chinook. Removal of treated wood from old mill removes refuge habitat for later predators. Chinook there at earlier time. Creek flows through 3 private properties with lawns.	L	M/L
C277	2	2 of 7	new	Restoration of Mouth of May Creek: Restore mouth and lower reaches May Creek. Increase beach, set back banks, plant riparian buffers and add LWD to improve habitat for juvenile Chinook.		There is a development proposal for site that proposes some restoration of creek buffers and mouth (easier at mouth). EIS done on project, so may be hard to do more restoration than is already planned. Currently May Creek is dredged annually. In the future maintenance will probably cease. Need to maximize Chinook and minimize cutthroat with development of beach and placement of LWD. Area zoned/plotted for single family.	H/M	M
C278	2	2 of 7	new	Port Quindal Shoreline Restoration and Site Cleanup: restore shoreline, cleanup hazardous material on site and cap with sand. Explore restoration of small tributary and its mouth on the site.		Restoration of tributary and its mouth may not be possible due to hazardous materials on site (part of site is a Superfund site).	M	L
C279	2	2 of 7	new	South end of island is Chinook rearing habitat. Work with private landowners to remove bulkheads, create beaches and reduce the number of docks through the development of community docks.			M	L

Section 3: South of I-90 including East and West Channel of Mercer Island, Seward Park and Mercer Slough

Restoration & Protection

Technical Hypothesis: Area used by large portion of fingerling/parr and small portion of fry. Emphasis on reducing impact of docks to promote safe juvenile migration and deter aggregation of predators; Plant native, overhanging riparian vegetation; For fry, bank hardening should be reduced by replacing bulkheads and riprap with gently sloped, sandy beaches; Small creek mouths should be reconnected/enhanced. However similar efforts for fry migrants to the south should have priority.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C280	3	5 of 7	P1	Seward Park Shoreline Restoration: Restore approximately 2,000 feet of shoreline along Bailey Peninsula in Seward Bay by putting in finer substrate and overhanging vegetation (potential City of Seattle project).		1,500 feet funded by KCD to be done in '04. 500-1,000 feet unfunded on SE shore of park. Placed fine sediments may move with wave action - long term maintenance issue. Will reduce sculpin habitat. May be good location to experiment with restoration techniques.	M	H
C281	3	5 of 7	P4	Lake Washington Boulevard South: Control invasive weeds at several locations and re-establish native vegetation (potential City of Seattle project). Remove debris along the water's edge in the north portion, from Mount Baker Park to Stan Sayres Park. Grade the shoreline, add beach gravels, and plant native riparian shrubs to return the shoreline to natural conditions (potential City of Seattle project).		Section 3 is migration zone. Fry seen here 1-2 meters off bank.	M/L	M
C282	3	5 of 7	new	Explore options to restore small creek mouths on west and east side of Mercer Island.		Prioritize mouths that are not pipes.	L	L
C283	3	5 of 7	new	Groveland Park: Explore opportunities for restoration.		Check with Mercer Island. Water quality may be a problem if drains highway versus forested ravine.	M/L	M/L
C284	3	5 of 7	new	Clarke Beach Park: Explore daylighting and restoration of creek mouth in park.		There was some debate of how or if Chinook will use Mercer Island Sites if restored. Rating reflects the small number of fish that do use Mercer Island.	M/L	M/L
C285	3	5 of 7	new	Newcastle Beach Park: Remove bank hardening and bulkheads, plant riparian vegetation and protect existing riparian area.			M	H
C286	3	5 of 7	new	Remove Wall Under I-90: Remove creosote wall under I-90. Leaches toxics into mouth of Mercer Slough.		Pipelines in area may limit restoration opportunities. Need to research who maintains the wall to help determine feasibility.	M	?

Section 4: Between 520 and I-90

Restoration & Protection

Technical Hypothesis: Focus is on parr/fingerling migrants, which are not as shallow-water dependent as fry.

Reduce predation risks by reducing impact of docks on juvenile salmon migration and deterring aggregation of predators.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C287	4	6 of 7	P3	Lake Washington Boulevard: Remove concrete debris and blackberry bushes, regrade, and re-establish native trees and shrubs on the shoreline boulevard from East Pine Street to the Madrona Drive intersection (potential City of Seattle project).		Project fits recommendation but low priority.	L	M
C288	4	6 of 7	new	Chism Park Shoreline Restoration: Remove bulkhead and place gravels.		Bellevue submitted for Corps GI.	M/L	H
C289	4	6 of 7	new	Enatai Park Shoreline Restoration: Explore potential to remove bulkhead and place gravels.		Area gets heavy boat wake and recreational use. Bellevue Parks may not be supportive of riprap removal here.	L	L
C290	4	6 of 7	new	Medina Beach Park: Shoreline restoration for approximately 1/3 of park as part of park upgrade project. Will include riparian revegetation and area will be off-limits for swimmers and boats.		Work expected to be done in 2005 or 2006, but needs approval from City Council still. Includes replacing bulkhead, repairing two docks for pedestrian use. Docks are to be "fish friendly". Will improve swimming beach as well.	L	H/M

Section 5: Montlake Cut including Union Bay from Madison Park Beach to Webster Point

Restoration & Protection

Technical Hypothesis: All fish must pass through area, so very important. Focus is on parr/fingerling migrants, which are not as shallow-water dependent as fry as well as adults. Remove docks to reduce predation risks (this may be the most important area to remove docks). Reduce impacts (e.g. pollution, contaminants from marinas and industrial areas. Improve areas with severely degraded habitat.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C291	5	3 of 7	new	Montlake Cut/ Union Bay: Protect water quality from runoff from 520.		WDOT 520 expansion an issue. May have funds for researching pollution prevention.	H	H/M
C292	5	3 of 7	new	Webster Point: Important area for predation. Need to deter aggregation of predators, especially bass. Explore reducing number of docks - establish community docks.		Need to study how fish move through Union Bay, Montlake Cut and research ways to reduce predation risk. Potentially add Madison park? Also need to study whether or not extensive non-native lily pads in area increase predation risk.	M	L

Section 6: North of 520 Including Sand Point, Thorton Creek Mouth, Yarrow Bay and Juanita Bay

Restoration & Protection

Technical Hypothesis: Focus is on parr/fingerling migrants, which are not as shallow-water dependent as fry.

Reduce predation risks by reducing impact of docks on safe juvenile salmon migration and to deter the aggregation of predators.

Reduce impacts (e.g. pollution, contaminants) from marinas and industrial areas. Improve severely degraded areas.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C293	6	7 of 7	P5	Magnuson Park Shoreline North: Remove dumped material, concrete, and other unnecessary shoreline hardening measures, regrade, install appropriate beach gravels, and plant with native trees and shrubs in the north end of the park (potential City of Seattle project).		NTAA P5 is actually two projects - divided here. Shoreline revegetation funded for North end part of project (Shoreline is full of Navy dump and covered with blackberries). Need to improve severely degraded area. Project is partially funded and partially designed.	L	H
C294	6	7 of 7	part of P5	Magnuson Park Shoreline South: Remove dumped material, concrete, and other unnecessary shoreline hardening measures, regrade, install appropriate beach gravels, and plant with native trees and shrubs in the south end of the park (potential City of Seattle project).		Shoreline is full of Navy dump and covered with blackberries. Point project is unfunded and unscheduled.	L	M
C295	6	7 of 7	new	Matthews Beach: Restore creek mouth at NE 80th to original location.		Creek is a Chinook "sink" - do not want to enhance for returning adults.	L	L
C296	6	7 of 7	new	Juanita Bay Beach: Explore restoration of creek mouth, return to more natural outlet. Remove armoring.			L	L

Section 7: North End of Lake, Including Mouths of MacLeer, Lyons, Sammamish River, Tracey Owen Park (East to West line starts at southern end of St. Edwards Park)

Restoration & Protection

Technical Hypothesis: Focus is fry migrants which are shallow-water dependent. Reduce bank hardening by replacing bulkheads and riprap with gently slope

Reconnect and enhance small creek mouths as rearing areas; Plant native, overhanging riparian vegetation;

Reduce predation risks by reducing impact of docks on safe juvenile salmon migration and to deter the aggregation of predators.

Project #	Sect. #	Draft Priority	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C297	7	4 of 7	P8	Sammamish River Mouth and Inglewood Golf Course: Restore wetlands at mouth of Sammamish River (south side of mouth), remove invasive, non-native plants and plant native riparian vegetation.		North side of mouth is historic landfill, so there are water quality issues with doing restoration on Northside. Shoreline is linear blackberry patch. Wetlands owned by King County.	M	M

C298	7	4 of 7	new	Tracy Owen Station Park Shoreline Restoration: Shoreline near the mouth of the Sammamish River is degraded by the presence of weedy and invasive species, erosion, and shoreline armoring. A City of Kenmore project could explore removal of wood waste from area - potential bass habitat and bad for benthic conditions. Project may include beach creation in future. The proposed project could also restore the shoreline by removing invasive plant species, planting native vegetation, and replacing existing shoreline armoring with bioengineered stabilization features.		Site is a tangle of willows, with open grass to the water. City of Kenmore is ready/interested in doing the project.	M/L	M
C299	7	4 of 7	new	Kenmore Marina: Improve pollution control at marina. In critical location right at mouth of Sammamish River.		Owner's willingness unknown.	H/M	M
C300	7	4 of 7	new	O.O. Denny Park Shoreline Restoration: Remove bulkhead, plant riparian vegetation. Explore restoration of Denny Creek mouth.		Park is heavily used, so may have conflict with recreational uses. Restoration at mouth could increase predation risk.	M	M
C301	7	4 of 7	new	St. Edwards State Park: Protect existing high quality, natural shoreline in park.			H	H
C302	7	4 of 7	new	Explore opportunities to restore riparian vegetation and reduce number of docks by working with private property owners in section.			H/M	L
C303	7	4 of 7	new	Explore opportunities to restore mouths of small tributaries in this section, including MacLeer Creek. Will require working with private property owners on revegetation.		Many of small tributaries are steep, in pipes. Low feasibility. MacLeer Creek is a Chinook "sink". Avoid attracting more Chinook into creek.	M/L	L

Preliminary DRAFT Cedar Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Upper Cedar Reaches 19-28

****NOTE:** These projects are based upon one year of fish habitat use data (2003). More information on fish distribution and habitat use is needed before many of these projects are moved forward. Protection projects are listed in the section for the entire upper Cedar River subarea and are not designated by reach.

Basinwide Recommendations Unranked:

Project #	Description
C603	Pool habitat and the habitat features that support the creation of pool habitat (LWD, riparian function, and channel connectivity) should be maintained.
C604	In the Upper Cedar River, protect LWD in the channel unless it poses a danger to dam operations.
C605	Protect high watershed function by maintaining forest cover, riparian cover and minimizing the amount of road crossings and impervious surface.
C606	Protect water quality to prevent adverse impacts to key life stages for fine sediments, metals, and high temperatures.

Basinwide Recommendations Ranked:

Restoration

Technical Hypothesis: Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C607	BW	n/a	new	LWD Survey and LWD Addition Plan: Wood has been removed from the upper Cedar River in the past to protect Landsburg Dam. However, in the past few years, wood that falls into the stream is left there and only removed if it moves downstream close to the dam. This project includes a survey of current LWD conditions, modeling expected wood recruitment levels over time, and development and implementation of a plan to add LWD to the river in prioritized locations. The LWD survey will be underway in fall of 2004. It is expected that the plan will be developed by late 2005 and wood addition will occur from 2006 to 2008.			H	H
C608	BW	n/a	new	Riparian Enhancement: Enhance riparian conditions through adding vegetation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover.		Ecological thinning is poorly understood by the environmental community, although it is an important action for encouraging the development of large trees in areas that have been previously logged and are dominated by dense, young forest stands. Benefits for Chinook from riparian enhancements would increase over time as the vegetation grows/matures.	M/L	H

Protection

Technical Hypothesis: *Protect high watershed function by maintaining forest cover, riparian cover and minimizing the amount of road crossings and impervious surface. Protect water quality to prevent adverse impacts to key life stages for fine sediments, metals, and high temperatures.*

Reach #	Reach #	Reach Prot. Benefit Rank	Exist. Prot. Priority (Y/N)	NTAA #	Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C609	BW	n/a		new	Cedar River Watershed Management. The Cedar River watershed is owned by the City of Seattle and managed to provide clean water for a municipal water supply. Management of the watershed has prohibited development of the area, as well as severely restricted the presence of impervious surfaces. Under the Cedar River HCP, the watershed forests area protected from commercial logging until 2050 (although ecological and restoration thinning are permitted to advance the seral stage of the forest in previously logged areas). The HCP also calls for road decommissioning, which reduces sedimentation and mass wasting associated with improper road drainage. Collectively, management of the watershed should protect and enhance riparian and aquatic habitats for Chinook salmon, along with other fish and wildlife species.			H	H

Reach 19: Cedar River from Landsburg Dam (RM 21.7) to RM 22.2**Restoration**

Technical Hypothesis: *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C304	19	n/a	new	Habitat Enhancement of Landsburg Impoundment Pool: Create cover for juvenile salmon in the pool behind Landsburg Dam through installing wood and/or rock structures and vegetation.		Many juvenile salmon are using this area. Need to be sure that cover does not encourage predators, perhaps through focusing actions in very shallow water.	L	H
C305	19	n/a	new	Installation of Engineered Log Jams: Install large wood jam(s), upon which logs comes down the river will be captured, near RM 22. Intent is to both build habitat complexity and protect Landsburg Dam from debris build-up and damage from debris. This will reduce the need to remove the debris material from in front of the dam.		This project would depend upon the LWD survey and additional plan outcomes. This project would need to include a risk analysis for facility protection, as well as consider the benefits of a large wood jam for small (juvenile) fish (compared with providing cover for larger predatory fish).	L	M
C306	19	n/a	new	Reforestation of Right Bank: Revegetate the right bank of the river, between the river and the access road.		Need to consider facility maintenance activities. This area was partially planted, but more could be added.	L	H

Reach 20: Cedar River from RM 22.2 to RM 23.9**Restoration**

Technical Hypothesis: Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C307	20	n/a	new	Rock Structure Installation: Install rock structures to create flow refuges for juvenile fish.		This was a spawning reach for coho salmon in 2003. Need to make sure that structures are sized for small fish and not larger trout and other potential predators. Also need to consider rocks versus wood as the appropriate material to use for cover.	M	M
C308	20	n/a	new	Road Decommissioning and Improvement: Decommissioning of roads in the Rock Creek basin. This should reduce sedimentation reaching the mainstem and improve substrate conditions.			L	H
C309	20	n/a	new	Confluence Restoration of Rock Creek: Rock Creek is one of the largest tributaries to the Cedar River in the upper watershed with a large area accessible to fish. The creek has a high chance of being used by coho, and Chinook to a lesser degree. Restoration at the mouth of Rock Creek would mainly include vegetation enhancement and structure addition (wood).			M	M

Reach 21: Cedar River from RM 23.9 to Barneston Bridge (RM 29.3 - just downstream of Taylor Creek)**Restoration**

Technical Hypothesis: Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C310	21	n/a	new	Road Decommissioning and Improvements: Abandon roads and improve important transportation roads to reduce sedimentation to the river. Focus on those roads adjacent to the river and subject to erosion.			M	M

Reach 22: Cedar River from Barneston Bridge (RM 29.3 - just downstream of Taylor Creek) to RM 31.4**Restoration****Technical Hypothesis:** Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C311	22	n/a	new	Road decommissioning: Road decommissioning (roads 33, 60, 80) in the Taylor and Williams Creek basins to reduce the amount of sediment from road failures that affect the mainstem Cedar.			L	H
C312	22	n/a	new	Confluence Restoration of Taylor Creek: Taylor Creek is the largest tributary to the Cedar River in the upper watershed, with about 0.5 mile of habitat accessible to fish (natural barrier). The creek has a high chance of being used by coho and Chinook. Restoration at the mouth of Taylor Creek would mainly include vegetation enhancement and structure addition (wood).			M	M
C313	22	n/a	new	Lower Taylor Creek Railroad Trestle and Road 9 Bridge Removal/replacement: The railroad trestle and Road 9 bridge confine the lower portion of Taylor Creek, which is accessible to salmon. This project would remove the railroad bridge and remove or reconstruct the Road 9 bridge to open up and increase the attractiveness of 0.5 mile of large stream habitat.		This project should be considered with any Road 9 improvements. The bridge is creosote treated, presenting water quality concerns. Benefit from this project would increase as fish numbers in the river increase.	M	H/M

Reach 23: Cedar River from RM 31.4 to RM 31.5**Restoration****Technical Hypothesis:** Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C314	23	n/a		Road Decommissioning and Improvement and Steele Creek Bridge Improvement: This reach has roads adjacent to the river which contribute sediment (through erosion) directly to the river. Roads that should be considered for improvement include Road 10, 20 and 12. The Steele Creek bridge should be reconstructed at the same time as any road improvements. The bridge should be improved to reduce riparian confinement, and coupled with efforts to stabilize the stream banks through revegetation and other riparian enhancements.		Potentially the 10 Road could be decommissioned from the 20 to the 12 road, and the latter roads could be improved to replace the 10 Rd as core road. The 20 Road crossing over Steele Creek also needs improvement.	M	H

Reach 24: Cedar River from RM 31.5 to RM 32.9**Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C315	24	n/a	new	Road Decommissioning and Improvements: Abandon roads and improve important transportation roads to reduce sedimentation to the river. Focus on those roads adjacent to the river and subject to erosion.			L	M
C316	24	n/a	new	Riparian Enhancement: Enhance riparian conditions on the south side of the river, adjacent to Road 9. Enhancement should occur through adding vegetation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover.		Ecological thinning is poorly understood by the environmental community, although it is an important action for encouraging the development of large trees in areas that have been previously logged and are dominated by dense, young forest stands. Benefits for Chinook from riparian enhancements would increase over time as the vegetation grows/matures.	M/L	H

Reach 25: Cedar River from RM 32.9 to RM 33.2**Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C317	25	n/a	new	Road Decommissioning and Improvements: Abandon roads and improve important transportation roads to reduce sedimentation to the river. Focus on those roads adjacent to the river and subject to erosion.		An evaluation will need to be conducted to determine sediment contribution rates, costs, and need for access.	L	M
C318	25	n/a	new	Facilitate Instream Pool Structure, Habitat diversity, and Floodplain Connections: This area has high rearing potential as a redd in 2003 was located just downstream. However, maintaining the wetted channel can be difficult due to the depositional nature of the reach and powerhouse operations affecting flows. Increasing pools and habitat diversity would provide additional rearing opportunities in this area.		Benefits will depend on fish use of the area. Projects will need to consider the highly variable flows in the area.	M/L	?

C319	25	n/a	new	Riparian Enhancement: Enhance riparian conditions on both sides of the river. Enhancement should occur through adding vegetation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover.		Ecological thinning is poorly understood by the environmental community, although it is an important action for encouraging the development of large trees in areas that have been previously logged and are dominated by dense, young forest stands. Benefits for Chinook from riparian enhancements would increase over time as the vegetation grows/matures.	M/L	H
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Reach 26: Cedar River from RM 33.2 to Cedar Falls Powerhouse (RM 33.7)

Restoration

Technical Hypothesis: Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C320	26	n/a	new	Road Decommissioning and Improvements: Abandon roads and improve important transportation roads to reduce sedimentation to the river. Focus on those roads adjacent to the river and subject to erosion.		An evaluation will need to be conducted to determine sediment contribution rates, costs, and need for access.	L	M
C321	26	n/a	new	Facilitate Instream Pool Structure, Habitat Diversity, and Floodplain Connections: This area has high rearing potential as a redd in 2003 was located just downstream. However, maintaining the wetted channel can be difficult due to the depositional nature of the reach and powerhouse operations affecting flows. Increasing pools and habitat diversity would provide additional rearing opportunities in this area.		Benefits will depend on fish use of the area. Projects will need to consider the highly variable flows in the area.	M/L	?
C322	26	n/a	new	Riparian Enhancement: Enhance riparian conditions on both sides of the river. Enhancement should occur through adding vegetation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover.		Ecological thinning is poorly understood by the environmental community, although it is an important action for encouraging the development of large trees in areas that have been previously logged and are dominated by dense, young forest stands. Benefits for Chinook from riparian enhancements would increase over time as the vegetation grows/matures.	M/L	H

Reach 27: Cedar River from Cedar Falls Powerhouse (RM 33.7) to RM 34.1**Restoration****Technical Hypothesis:** Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C323	27	n/a	new	Road Decommissioning: Decommission Road 71, a major source of sedimentation in this area.			M/L	H
C324	27	n/a	new	Maintain Flow Commitments: Maintain HCP-guaranteed flows in this reach (between Masonry Dam and the powerhouse).		Included in the HCP.	H	H

Reach 28: Cedar River from RM 34.1 to Lower Cedar Falls (RM 34.3)**Restoration****Technical Hypothesis:** Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
	28	n/a		No projects are identified at this time.				

Reach 29 - Rock Creek (upper)**Restoration****Technical Hypothesis:** Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
C325	29	n/a	new	Rock Creek LWD Placement: Place LWD in creek, 27 reaches of 100 m, total of 2700m of wood placement.		200 m has been completed.	M	H
C326	29	n/a	new	Restoration of Walsh Ditch Flows into Rock Creek: Walsh Ditch was originally created to divert Walsh Lake flows downstream of the supply intake at Landsburg (due to the Taylor town site and mining in the vicinity). The ditch experiences periodic "blowouts" which cause tremendous turbidity and sediment impacts to Rock Creek and the mainstem river. This diversion also restricts access to Walsh Lake and its tributaries. This project would restore the historical hydrology of Rock Creek, which may benefit Chinook to significant extent by increasing flows to level more likely to be recolonized by chinook. It will also allow access to high quality spawning and rearing habitat areas (coho primarily) above the current Walsh Lake diversion.		The feasibility of placing Walsh ditch flows back into Rock Creek is being assessed currently. The outcome of that study will inform feasibility of the project. If this project was implemented, the Road 41 bridge would need to be improved/reconstructed.	M	?

C327	29	n/a	new	Road 41 Bridge Project: The road 41 bridge is a wood stringer bridge located just above the confluence of Rock Creek with the mainstem river. The bridge has low clearance over the creek and currently confines the stream and restricts wood passage. This project would reconstruct the bridge to meet flood flow and debris passage after Walsh Lake Ditch flow are added to Rock Creek.		This project would have to occur if Walsh flows were rediverted into Rock Creek.	H/M	M
C328	29	n/a	new	Riparian Enhancement: Enhance riparian conditions through adding vegetation (underplanting), snag creation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover.			M/L	M
C329	29	n/a	new	Restoration of Taylor Ditch Flows into Rock Creek: Taylor Ditch was constructed to carry poor quality water out of the watershed. The ditch restricts access to stream areas in Webster Creek, a main tributary to Walsh Lake. This project will primarily increase spawning habitat for coho but will also increase flows in Rock Creek, an area that Chinook may use, particularly in the lower reaches.		The feasibility of placing Taylor ditch flows back into Rock Creek is being studied. The outcome of that study will inform feasibility of the project.	L	?

Preliminary DRAFT Cedar River Tributaries Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Taylor/Downs Reaches 2-7

Reach 1: Taylor/Downs Creek from Mouth to Maxwell Rd Crossing (RM 0.4)

Restoration

Technical Hypothesis: Reduce sedimentation, restore pool habitat by adding LWD, restoring riparian vegetation, and increasing off-channel habitat.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C330	1	not ranked	new	Riparian Restoration: Removal of invasive species such as japanese knotweed and replanting with native vegetation and conifers.	Y			H/M	H
C331	1	not ranked	new	Add Large Woody Debris in Reach 1.	Y			H	H

Protection

Technical Hypothesis: Protect forest cover, riparian cover, LWD, channel connectivity and pools.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C332	1	1 of 7	Y	4h	Mouth of Taylor Creek Reach: Acquire approximately 40 acres of forested riparian floodplain associated with both the Cedar mainstem and the lower reach of Taylor Creek. The target parcels include approximately 1,000 feet of mainstem channel, nearly 1,300 feet of the lowermost reach and mouth of Taylor Creek, and one of the largest remaining floodplain wetlands adjacent to the mainstem. Some of the acquisitions will facilitate future levee removal and/or modification projects.	Y		Also listed on Cedar Mainstem.	H	H

Reach 2: Taylor/Downs Creek from Maxwell Rd Crossing (RM 0.4) to RM 0.8 (stream leaves ditch alongside Maxwell Rd, lower end of potential restoration project)

Restoration

Technical Hypothesis: Reduce sedimentation and channel confinement; restore pool habitat by adding LWD, restoring riparian vegetation, and increasing off-channel habitat.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C333	2	not ranked	8l	Lower Taylor Creek Floodplain Restoration: Relocate 800 feet of stream away from Maxwell Road, restore floodplain wetlands and off-channel habitat, place LWD and restore riparian vegetation.	Y	\$1.4 million	Planned for construction in 2005. Cost estimate includes acquisition of one property.	H	H
C334	2	not ranked	new	Riparian Restoration: In lower 20-30% of reach not included in planned floodplain restoration, work with private property owners to remove non-native plants and plant native vegetation.	Y		Willing land owners.	M	H

Protection

Technical Hypothesis: Protect forest cover, riparian cover, LWD, channel connectivity and pools.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	2	7 of 7			No projects identified at this time.					

Reach 3: Taylor/Downs Creek from RM 0.8 (creek leaves Maxwell Rd) to RM 0.9

Restoration

Technical Hypothesis: Reduce sedimentation, restore pool habitat by adding LWD, restoring riparian vegetation, and increasing off-channel habitat.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	3	not ranked		No projects identified at this time.					

Protection

Technical Hypothesis: Protect forest cover, riparian cover, LWD, channel connectivity and pools.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	3	6 of 7			No projects identified at this time.					

Reach 4: Taylor/Downs Creek from RM 0.9 to RM 1.0 (upper end of restoration project)

Restoration

Technical Hypothesis: Reduce sedimentation, restore pool habitat by adding LWD, restoring riparian vegetation, and increasing off-channel habitat.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	4	not ranked		No projects identified at this time.					

Protection

Technical Hypothesis: Protect forest cover, riparian cover, LWD, channel connectivity and pools.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	4	2 of 7			No projects identified at this time.					

Reach 5: Taylor/Downs Creek from (RM 1.0) to RM 1.4 (Hwy. 18, bottom of ravine); End of Chinook Distribution.

Restoration

Technical Hypothesis: Reduce sedimentation, restore pool habitat by adding LWD, restoring riparian vegetation, and increasing off-channel habitat.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C335	5	not ranked	new	Add Large Woody Debris: Add large woody debris in Reach 5.	Y		WDOT doing work on Hwy. 18 upstream - maybe potential source of funds.	M/L	H

Protection

Technical Hypothesis: Protect forest cover, riparian cover, LWD, channel connectivity and pools.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	5	5 of 7			No projects identified at this time.					

Reach 6: Taylor/Downs Creek from RM 1.4 to top of ravine (RM 1.9).

Restoration

Technical Hypothesis: Reduce sedimentation, restore pool habitat by adding LWD, restoring riparian vegetation, and increasing off-channel habitat.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L

C336	6	not ranked	new	Add Large Woody Debris: Add large woody debris in Reach 6.	Y		Chinook now have access above Highway 18.	H	H
C337	6	not ranked	new	Protect and Restore Riparian Vegetation in Reach 6.	Y		There are pastures in reach, would be good to not have pastures encroach further into riparian buffer.	M	H

Protection

Technical Hypothesis: *Protect forest cover, riparian cover, LWD, channel connectivity and pools.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	6	3 of 7			No projects identified at this time.					

Reach 7: Taylor/Downs Creek from RM 1.9 to RM 3.4 (upper extent of coho distribution; assumed at 258th St - King County Fish Dist Map)

Restoration

Technical Hypothesis: *Reduce sedimentation, restore pool habitat by adding LWD, restoring riparian vegetation, and increasing off-channel habitat.*

Project #	Reach #	Reach Restor. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C338	7	not ranked		new	Taylor Creek Golf Course: Investigate whether or not there are any water quality problems associated with management of the golf course and work with golf course owners to implement additional Best Management Practices if necessary.	Y			?	M

Protection

Technical Hypothesis: *Protect forest cover, riparian cover, LWD, channel connectivity and pools.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	7	4 of 7			No projects identified at this time.					

Preliminary DRAFT Cedar River Tributaries Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Walsh Ditch Reaches 1-8

WRIA 8 Technical Recommendation: The WRIA 8 Technical Committee recommends that the benefits of re-directing Walsh Ditch back into Upper Rock Creek versus keeping it at its current location be studied. Walsh Ditch was not evaluated in its current location pending such a study and because there is no "template condition" to compare to the stream's existing habitat conditions. The benefits of re-directing the stream to its original watershed could be analyzed during treatment phase of EDT.

PLEASE NOTE: Following potential site-specific projects are actions that could be taken to improve Walsh Ditch for Chinook if it remains in its current location.

Reach 1: Walsh Ditch from mouth to RM 0.2 (bottom of ravine)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C353	1	not ranked	new	Riparian Restoration and Conifer Underplanting: Lower Walsh suffered heavy tree loss during 2004 windstorm. Replant with conifers and maintain riparian area to prevent invasion by non-native, invasive plant species.	Y		LWD is not needed in reach due to past restoration project to add LWD and the 2004 windstorm.	H	H

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	1	not ranked			No projects identified at this time.					

Reach 2: Walsh Ditch from RM 0.2 to RM 0.6 (seasonal barrier, top of ravine); End Chinook Distribution

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C354	2	not ranked	new	Riparian Restoration and Conifer Underplanting: Lower Walsh suffered heavy tree loss during 2004 windstorm. Replant with conifers and maintain riparian area to prevent invasion by non-native, invasive plant species.	Y		LWD is not needed in reach due to past restoration project to add LWD and the 2004 windstorm.	H	H

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	2	not ranked			No projects identified at this time.					

Reach 3: Walsh Ditch from RM 0.6 (seasonal barrier) to RM 1.1 (SPU Watershed Boundary, 276th Ave SE)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C355	3	not ranked	new	Improve Fish Passage: Improve Chinook passage over velocity barrier in ravine.	Y		Concern raised that Reach 3 is ditched and unlikely to be used by large-bodied Chinook.	M/L	H
C356	3	not ranked	new	Protect Riparian Corridor in Reach 3: Work with private property owners in reach to protect riparian corridor and forest cover in reach through acquisition, conservation easements, education and farmplans for livestock.	Y		Most of Walsh is in protective ownership except for Reach 3.	H/M	H/M

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	3	not ranked			No projects identified at this time.					

Reach 4: Walsh Ditch from RM 1.1 (SPU Watershed Boundary) to RM 1.6 (lower end of "natural" reach)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
		not ranked			No projects identified at this time.				

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
		not ranked			No projects identified at this time.					

Reach 5: Walsh Ditch from RM 1.6 (lower end of "natural" reach) to RM 2.1 (upstream end of "natural" reach)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
		not ranked		No projects identified at this time.					

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
		not ranked			No projects identified at this time.					

Reach 6: Walsh Ditch from RM 2.1 (upstream end of "natural" reach) to 40/18 Rd Junction (RM 3.8)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
		not ranked		No projects identified at this time.					

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
		not ranked			No projects identified at this time.					

Reach 7: Walsh Ditch from 40/18 Rd Junction (RM 3.8) to Walsh Lake outlet (RM 4.1)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits with Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
		not ranked		No projects identified at this time.					

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
		not ranked			No projects identified at this time.					

Reach 8: Walsh Lake

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	8	not ranked		No projects identified at this time.					

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	8	not ranked			No projects identified at this time.					

Preliminary DRAFT Cedar River Tributaries Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Peterson Creek Reach 1

Reach 1: Peterson Creek from mouth to RM 0.5 (beginning of ravine)

Restoration

Technical Hypothesis: Reduce sedimentation, restore pool habitat by adding LWD and restoring riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C339	1	1 of 1	new	Add Large Woody Debris: Identify opportunities to add large woody debris in Reach 1 in order to trap sediment and increase pool habitat. Explore whether or not LWD might be used to increase fish passage at the mouth of Peterson Creek.	Y			H	H
C340	1	1 of 1	new	Riparian Restoration: Explore options to increase LWD recruitment in reach. Thinning may help to increase growth of existing trees and conifer underplanting might be appropriate.	Y			H	H

Protection

Technical Hypothesis: Protect forest cover, riparian cover, channel connectivity, LWD, pools.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
	1	1 of 1			No projects identified at this time.					

Preliminary DRAFT Cedar River Tributaries Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Rock Creek Reaches 1-5,6-14

Reach 1: Rock Creek from mouth to foot bridge over creek (RM 0.06).

Restoration

Technical Hypothesis: Reduce channel confinement, remove bank hardening in Reach 1; restore seasonal low flows, add LWD, restore riparian vegetation to increase pools.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C341	1	1 of 6	new	Floodplain Restoration Near Mouth: Buyout house on right bank, remove bank hardening, add LWD and restore riparian vegetation (remove non-native plants and replant with native vegetation).	Y			H/M	H/M
C342	1	1 of 6	new	Study Feasibility of Increasing Off-channel Habitat in Reach 1: Study whether or not it is feasible to increase off-channel habitat in Reach 1 without harming existing wetland, hydrology in creek. Re-examine connecting wetland on left side of lower Rock Creek to the creek to increase off-channel habitat.	Y		Left bank in reach is steeper. Will be less feasible to increase off-channel habitat on left side. There is high quality riparian habitat in reach now. Should avoid harming it. Concern project to connect left bank wetland in Reach 1 could de-water mouth of Rock Creek; need to study how project would affect the hydrology of the wetland and Rock Creek. If done, benefit would be for juvenile rearing.	?	H
C343	1	1 of 6	new	Fish Access at Mouth: Explore improving fish passage at the mouth of Rock Creek.	Y		Might be able to be done with LWD installation. Concern expressed about engineered solution. Need .8 feet of depth, so may not be feasible to achieve that depth.	H	M/L

Protection

Technical Hypothesis: Protect seasonal flows, forest cover, riparian cover, pools, LWD and channel connectivity.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	1	1			No projects identified at this time.					

Reach 2: Rock Creek from foot bridge at RM 0.06 to box culvert under SE 248th St (@ RM 0.15)**Restoration****Technical Hypothesis:** Restore seasonal low flows, add LWD, restore riparian vegetation to increase pools.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C344	2	2 of 6	new	Remove Bank Hardening: Remove bank hardening on right bank in Reach 2.	Y		There are houses on right bank in reach.	H/M	L
C345	2	2 of 6	new	Study Feasibility of Increasing Off-Channel Habitat: Study whether or not is feasible to increase off-channel habitat in Reach 2 without harming existing wetland, hydrology in creek.	Y		Left bank in reach is steeper. Will be less feasible to increase off-channel habitat on left side. There is high quality riparian habitat in reach now. Should avoid harming it. Feasibility to do study is high, less so to do project.	?	H

Protection**Technical Hypothesis:** Protect seasonal flows, forest cover, riparian cover, pools, LWD and channel connectivity.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	2				No projects identified at this time.					

Reach 3: Rock Creek from SE 248th St Culvert (RM 0.15) to culvert under Cedar River Pipeline (RM 0.27)**Restoration****Technical Hypothesis:** Restore seasonal low flows, add LWD, restore riparian vegetation to increase pools.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C346	3	4 of 6 (tied with 4B)	new	Improve Fish Passage Under Cedar River Pipeline: Evaluate whether or not culvert under Cedar River pipeline is a partial barrier to fish passage and if found to be a problem, implement improvements.	Y		City owns the land upstream. Study being done by City of Seattle to evaluate the culvert under the Cedar River Pipeline and recommend alternative solutions if found to be a barrier to fish passage.	H/M	H
C347	3	4 of 6 (tied with 4B)	new	Restore Riparian Vegetation: Many large conifers lost in Reach 3 in 2004 windstorm. Replant conifers. Control invasive plant species.	Y		Landowner willingness uncertain. Should consult with forester to determine need for planting versus relying on existing young trees or natural seeding from remaining trees. There is a lot of LWD in Reach 3.	H	H

Protection

Technical Hypothesis: *Protect seasonal flows, forest cover, riparian cover, pools, LWD and channel connectivity.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	3	2			No projects identified at this time.					

Reach 4A: Rock Creek from culvert under Cedar River Pipeline (RM 0.27) to RM 0.32

Restoration

Technical Hypothesis: *Restore seasonal low flows, add LWD, restore riparian vegetation to increase pools.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	4A	3 of 6		No projects identified at this time.					

Protection

Technical Hypothesis: *Protect seasonal flows, forest cover, riparian cover, pools, LWD and channel connectivity.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C348	4A	not ranked	Y	new	Protect Rock Creek Natural Area: Work with adjacent landowners to decrease encroachment into Rock Creek Natural Area and increase stewardship. Consider fencing Natural Area to reduce encroachment.	Y		Covers Reaches 4-8.	M/L	M

Reach 4B: Rock Creek from RM 0.32 to RM 0.43

Restoration

Technical Hypothesis: *Restore seasonal low flows, add LWD, restore riparian vegetation to increase pools.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	4B	4 of 6 (tied with 3)		No projects identified at this time.					

Protection

Technical Hypothesis: *Protect seasonal flows, forest cover, riparian cover, pools, LWD and channel connectivity.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C349	4B	not ranked	Y	new	Protect Rock Creek Natural Area: Work with adjacent landowners to decrease encroachment into Rock Creek Natural Area and increase stewardship. Consider fencing Natural Area to reduce encroachment.	Y		Covers Reaches 4-8.	M/L	M

Reach 5: Rock Creek from RM 0.43 to RM 0.65 (upper extent Chinook)

Restoration

Technical Hypothesis: *Restore seasonal low flows, add LWD, restore riparian vegetation to increase pools.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	5	5 of 6		No projects identified at this time.					

Protection

Technical Hypothesis: *Protect seasonal flows, forest cover, riparian cover, pools, LWD and channel connectivity.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C350	5	3	Y	new	Protect Rock Creek Natural Area: Work with adjacent landowners to decrease encroachment into Rock Creek Natural Area and increase stewardship. Consider fencing Natural Area to reduce encroachment.	Y		Covers Reaches 4-8.	M/L	M

Reach 6-14: Rock Creek from RM 0.65 to RM 4.8 (upper extent of coho potential)

Restoration

Technical Hypothesis: *Restore seasonal low flows, add LWD, restore riparian vegetation to increase pools.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C351	R6-14	not ranked	new	Enhance Flows for Pre-Spawning Migrants: Work with the City of Kent in establishing instream flows that are protective of Chinook through their HCP process.	Y		Kent HCP process is underway.	H	H

Protection**Technical Hypothesis:** *Protect seasonal flows, forest cover, riparian cover, pools, LWD and channel connectivity.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
C352	R6-14	not ranked	Y	new	Protect Rock Creek Natural Area: Work with adjacent landowners to decrease encroachment into Rock Creek Natural Area and increase stewardship. Consider fencing Natural Area to reduce encroachment.	Y		Covers Reaches 4-8. Fish distribution map indicates that this is the upper extent of coho in Rock Creek. Concern expressed that this is based on anecdotal, historical information and that WDFW stream catalog shows coho distribution to stop just above C.	M/L	M

**Draft Proposed Outreach & Education Actions for the Cedar Population (Tier 1 and 2 Subareas)
(by WRIA 8 Public Outreach Committee)**

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
C701	Riparian vegetation displaced by lawn, invasives, or exotics; water quality compromised by garden chemicals, metals, sediment.; higher water use at times when flows lowest.	Protect & restore riparian vegetation to provide sources of large woody debris/pools/riffles; protect& restore water quality, maintain instream flows	Shoreline property owners and general public	Update and distribute streamside living materials such as <i>Streamside Savvy</i> , <i>Salmon Friendly Gardening Practices</i> , or <i>Going Native</i> . Distribute to all shoreline property owners and make available at City Hall, libraries, and retail establishments such as home & garden centers.	High	Ongoing or have been distributed in past.	Low-Medium
C702	Riparian vegetation displaced by lawn, invasives, or exotics; water quality compromised by landscape practices; higher water use at times when flows lowest.	Protect & restore riparian vegetation to provide sources of large woody debris/pools; protect& restore water quality, maintain instream flows	Shoreline property owners	Offer shoreline property owners a workshop in streamside living. Include tips on landscape design/maintenance appropriate for riverside properties and shoreline stabilization (alternatives to vertical wall bulkhead design). Feature designers and contractors who have both experience and recognition in salmon friendly design.	High	Seattle Public Utilities and Snohomish County Streamside Stewardship Courses, Issaquah's Creekside Living workshops	Low
C703	Smaller parcels lost to development or possible habitat degradation without financial incentives to conserve that are offered to owners of larger parcels	Protect good salmon habitat that could provide source of shelter, pools, riffles, food	Shoreline property owners	Expand use tax credit incentives to encourage protection of smaller properties not currently eligible for existing programs.	High	Public Benefits Rating System, Open Space Current Use Tax (CUT)	Variable (Low budget)
C704	Channel confinement from bulkheads, levees, and armoring; loss of riparian vegetation	Soften shorelines, restore floodplain connectivity and channel complexity	Shoreline property owners	Reduce permit fees for shoreline stabilization if design is salmon friendly (employing alternatives to dikes, levees, revetments, and vertical wall bulkheads). Also reduce permit fees (where applicable) for streamside restoration and removal & replacement of non-native vegetation.	High		Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
C705	Riparian vegetation displaced by lawn, invasives, or exotics; water quality compromised by garden chemicals, metals, sediment. Higher water use at times when flows lowest.	Protect & restore riparian vegetation; protect& restore water quality, maintain instream flows, stabilize slopes with native riparian vegetation. Increase likelihood of achieving these goals by bringing on board industry with a large influence over the landscapes within watershed.	Landscape Contractors	Offer educational opportunities to landscape designers/contractors on riparian design/naturescaping, local plant sourcing, proper installation techniques, invasive species, efficient watering techniques and use of compost to build healthy soils, control erosion and reduce need for supplemental irrigation. Augment training to accommodate English as Second Language participants.	High	Washington Assoc. of Landscape Professionals (WALP) trainings	Low - Medium (industry supported)
C706	Reduced forest cover; increased impervious areas/lack of infiltration/ground water recharge	Protect forest cover, reduce impervious surface area, increase infiltration back into soil and ground water recharge, decrease water use.	Design & Building Professionals	Provide education to architects, landscape architects, engineers, and developers on sustainable building/design practices. Work with professional associations to highlight building practices that maintain watershed health. Include Low Impact Development, importance of maintaining canopy cover and limiting impervious surfaces.	High	City of Seattle Business & Industry Venture, King County Green Building, LEEDS, Construction Works and other Solid Waste Division outreach programs	Low – Medium
C707	Reduced forest cover; increased impervious areas/lack of infiltration/ground water recharge	Control stormwater runoff to more closely mimic natural hydrology, reduce paving and impervious areas, increase infiltration, protect forest cover	Design & Building Professionals	Use recognition as a means to encourage more salmon sustainable designs and construction. In addition to professional association awards, expand recognition to include merit awards celebrated by popular magazines read by a broader sector of the general public. Promote through design competitions and media coverage the use of “rain gardens” and other low impact development practices that mimic natural hydrology. Combine a home/garden tour or “Street of Dreams” type event featuring these landscape	High	AIA, ASLA, Sunset Magazine, and Seattle Times Home and Garden awards, King County EnviroStars	

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
				/engineering treatments			
C708	Insufficient flow	Maintain instream flows	High-end water users, general public	Extend availability of water conservation incentive programs (such as rebates for efficient toilets, appliances, free indoor conservation kits, or free landscape irrigation audits) to decrease household and commercial water consumption.	High	Smart & Healthy Landscapes, Water Cents	Low
C709	Water quality compromised by garden chemicals, metals, sediment. Higher water use at times when flows lowest.	Protect water quality from degradation by pesticides and soil erosion, maintain instream flows by reducing water used for irrigation, increase organic content in soils to increase water holding capacity	General public	Target Natural Yardcare Neighborhoods Program to include more communities in the Cedar sub-basin. Expand curricula to offer more landscaping guidelines specific to shoreline residences.	High	Ongoing program	Medium - High
C710	Water quality degraded by cleaners, oils, grit, and paint; stream flows reduced by excessive water use	Protect and restore water quality and maintain flows	General Public	Coordinate with local business community to encourage the use of commercial car washes. (Water quality and salmon conservation could provide a new marketing angle; car dealerships could offer car wash coupons as bonus with car purchase.). Require that car kits be used for all parking lot fund raiser car washes, or offer carwash coupons or as more eco-friendly alternative funding source.	High	Puget Sound CarWash Association Coupon Program.	Variable - Low
C711	All conditions listed above Water quality degraded by toxics and garden chemicals; channel confinement; loss of riparian buffer; use of large woody debris, pools, riffles, reduced channel complexity; riparian vegetation displaced by lawn; high water use when flows lowest.	Increase public watershed literacy awareness of effects on water quality and habitat conditions.	General Public, but in particular, residents of Cedar sub-basin who may not be aware of existence of salmon right within urban area	Support and encourage efforts of Cedar River Naturalist Program to promote voluntary stewardship by focusing on education, monitoring, and maintenance of restoration sites (e.g. Cavanaugh Pond). Continue and expand messaging about how everyday personal actions affect salmon, the Cedar River, and entire watershed.	High	Ongoing program with successful track record since 1998	Low-Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
C712	Water quality degraded by toxics	Keep toxics out of water by providing safer alternative	General Public	Increase outreach about availability and locations of Hazardous Waste Collection sites and special collection events.	High	King County Local Hazardous Waste Management Program	Low (cheaper than dealing with illegal dumping)
C713	Water quality degraded by toxics, pesticides, metals, increased nutrient loads, sediments, loss of riparian buffer	Protect and restore water quality	General Public	Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, non-permitted in-stream grading, and wood removal incidents.	High	Seattle Public Utilities Surface Water Pollution Prevention Hotline and website	Low
C714	Riparian vegetation displaced by lawn, invasives, and exotics, providing little food value, no source of LWD, or soil stability (sedimentation of gravel beds). Increased water use when flows lowest; increased use of pesticides on less resistant exotics	Restore native riparian vegetation to provide cover and terrestrial food source, reduce soil erosion and sedimentation in gravel beds, protect and restore water quality, maintain instream flows	Shoreline Property Owners and Community	Increase number of native plant salvages. Integrate these salvage opportunities into naturscaping classes; class participants can take home native plants for immediate use both within and surrounding sensitive areas.	High	King and Snohomish County Native Plant Salvage Programs, WSU Cooperative Extension Native Plant Salvage Project partnership with Puget Sound Action Team, Thruston & Mason Counties.	Low
C715	Channel confinement and loss of channel complexity from bulkheads, levees, and armoring; loss of riparian vegetation	Reduce channel confinement, restore riparian vegetation, and floodplain connectivity and channel complexity	Shoreline property owners, general Public	Demonstration Project. Locate property owner in publicly accessible (or viewable) area willing to remove bulkhead, levee, or stream bank armoring and replace it with more ecologically friendly design. Publicize efforts through various means. Demonstration project should contain elements that can be done by average shoreline property owner. Provide information on costs and advantages of alternate treatments.	High – Medium-		Variable
C716	Lack of large woody debris	Overcome public fear and resistance to providing and	Shoreline property owners,	Increase public awareness about the value of large woody debris and native vegetation for flood protection, salmon habitat, and healthy streams. Convey through	High-Medium	Existing King County and US Forest	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
		maintaining woody debris along shorelines and subsequent source of cover, pools, riffles	general public	<p>media (local newspapers, community newsletters); signage along publicly accessible "model" shoreline; and brochures such as King County's <i>Large Woody Debris and River Safety</i> and US Forest Service <i>Large Woody Material: The Backbone of a Stream</i>. Distribute to all shoreline property owners and to more of general public, especially recreational boaters.</p> <p>Brochures on LWD and boater safety could be made available at appropriate locations such as: the Renton Community Center (where some tubers put in or pull out), the Henry Moses Pool and Water Park, the Renton Public Library (also on the river), and retail locations where inner-tubes, canoes, and kayaks are sold or rented.</p> <p><i>Where there is right-of-way or permission from private owners, consider installing kid-friendly signage which addresses the potential dangers that LWD can pose to boaters – along with the value it provides to salmon and the health of the river.. Where possible, locate signs at popular "put-in" and "take-out" spots along the river.</i></p>		Service brochures	
C717	All conditions listed above.	Reduce channel confinement, restore riparian vegetation, and floodplain connectivity and channel complexity	Shoreline property owners	Explore possibility of adding a disclosure to Real Estate Sales Agreement describing shorelines as sensitive areas, subject to rules and regulations of City and County. Look to model set by King County.	High – Medium	King County Dept. of Development and Environmental Services	Medium
C718	Water quality compromised by toxics, pesticides, metal fines, and nutrient overloads	Protect and restore water quality.	General Public	<p>Work with auto parts retailers and gas stations to increase potential for collection of used motor oil/transmission fluids.</p> <p>Distribute Water Quality poster series which depicts impacts of everyday practices: washing car, driving car without maintenance, leaving pet wastes unattended, and improperly using lawn chemicals. Promote</p>	High-Medium	Yes, King County Local Hazardous Waste Management <i>EnviroStars</i> program	Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
				stormwater best management practices related to parking lot cleaning, storm drain maintenance, and road cleaning. Make printed material available in other languages.		Water Quality Consortium, Businesses for Clean Water	
C719	Channel confinement reduced channel complexity, loss of riparian vegetation	Increase public watershed literacy awareness of effects on water quality and habitat conditions,	Community	Increase citizen involvement in voluntary stewardship programs, focusing on restoration projects to meet the needs of the conservation plan through restoration, education, monitoring and restoration site maintenance	High – Medium	Various: Cedar River Naturalists, Sammamish ReLeaf, Stream Team; Water Tenders	Medium
C720	Water quality degraded by sediment, diminished ground water recharge, flashiness of floods and resultant bed scour	Protect and restore forest cover, increase infiltration, decrease intensity of flood conditions, protect water quality from sediment	General public	Increase outreach efforts about the benefits of trees and basin-wide forest coverage to protect water quality. Clarify issues about hazard trees. Offer seedlings (perhaps provided by a timber company) to replant after potentially hazardous trees are removed. Enlist the help of nurseries/home & garden centers on this education campaign. (Potential new Fathers' Day gift idea: Buy and plant a tree each year for a dad who loves salmon).	High in rural areas; Medium in urban/suburban areas.	Yes, Sammamish ReLeaf; Mountains-to-Sound Greenway; City tree ordinances.	Variable - Medium
C721	All conditions listed.	Protect forest cover, wetlands, headwaters, critical salmon habitat; increase public support for land acquisition and restoration projects, as well as land use policies.	Shoreline property owners, general public	Identify and encourage shoreline neighborhood and community stewardship associations to foster the ethic of voluntary stewardship. Use these groups to build a bridge between property owners, agencies, and local governments. Promote watershed health through grassroots messaging. Increased potential for media coverage when efforts initiated at community level.	Medium	Friends of Rock Creek Valley, Friends of Cedar River Watershed, Cedar River Council, Lake Forest Park Stewardship Foundation,	Low
C722	Loss of forest cover, organic content in soils, increase in impervious areas and increased run-off, degraded water quality flashiness during flood conditions.	Protect forest cover, reduce impervious area and runoff, increase infiltration, protect and restore water quality, maintain instream flows	Design/Build Industry	Create a campaign that tracks demand among community residents for purchasing green homes and remodeling with green building strategies.	Medium	Green Car Program	Low
C723	Degraded water	Cultivate ethic of	Youth	Link education and community service stewardship	Medium	Environmental	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
	quality, instream flows, habitat quality	environmental stewardship; increase watershed awareness and links between manmade habitat and environmental health.		projects. Expand to community outreach to community/technical colleges & universities.		Portal Seattle, Mercer Slough Interns, N. Shore Utility Tour, Water Tenders.	
C724	Riparian vegetation displaced by lawn, invasives, or exotics, providing little food value, source of large woody debris, or soil stability. Water quality compromised by garden chemicals, metals, sediment. Higher water use at times when flows lowest.	Replace lawn and other lower ecological value plantings with riparian buffers and native plants	General public	Encourage neighborhood garden tours of salmon friendly gardens. Help residents visualize alternatives to traditional (and often less eco-friendly) landscape treatments. Offer neighbors assistance with publicity, signage, and volunteer docents. Coordinate with neighborhood garden clubs.	Medium	Existing neighborhood garden tours. Volunteer docents by King County Master Recycler Composters and WSU Master Gardeners.	Low
C725	All conditions discussed above.	Increase awareness about effects of habitat on salmon and watershed health; increase support for land acquisition and restoration efforts as well as landuse policies; inspire shoreline property owners to make changes on their own property.	General public, but in particular Shoreline property owners	Create local informational TV spots that could run on the government cable channels. Focus on those habitat conditions threatening salmon that are affected by our daily personal practices, landscape design and management practices. Showcase good designs to provide models to emulate.	Medium – Low	Salmon Information TV, C-TV,	Variable
C726	All conditions discussed above.	Encourage Design/Build industry professionals to offer more salmon friendly/eco-friendly	Design & Building Professionals	Use recognition as a means to encourage more salmon sustainable designs and construction. Coordinate with professional association awards in addition to popular magazine merit awards. Continue to recognize businesses that carry out procedures or use products	Medium – Low	American Institute of Architects, American Society of	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
		design solutions.		that protect watershed health.		Landscape Architects, Sunset Magazine, and Seattle Times Home and Garden awards, King County Enviro. Stars.	
C727	All conditions discussed above	Increase watershed literacy and understanding of effects of habitat on salmon	Business Community and General Public	Coordinate with businesses along Cedar that can help with outreach goals. For example, Ivar's Seafoods could promote key messages about salmon conservation on their menus or through game cards. This seafood chain also has other restaurants located within WRIA 8 so it could be cost effective for them to do such a promotion.	Medium	Yes	Low
C728	Water quality degraded by toxics and metal fines.	Reinforce to students and the community the relationship between what goes down storm drain and watershed health via an affordable and easily implemented program.	General Public	Expand storm-drain stenciling program locally and basin-wide. Track locations and dates in a Cedar Basin database.	Medium - Low	Yes	Low
C729	Channel confinement, loss of riparian buffer: sources of large woody debris, pools, riffles; reduced channel complexity,	Inspire shoreline property owners to make changes on their own property by providing good examples; increase public support for land acquisition and restoration efforts as well as landuse policies.	Shoreline property owners and general public	Use government cable channels to follow progress of the site specific restoration projects. Use of video to document projects before, during, and after restoration. Distribute resulting programs to libraries, schools, and communities groups.	Low	Salmon Information TV	Variable
C730	All conditions discussed above.	Improve watershed awareness and	Youth	Focus environmental/science curricula on local watershed issues, with particular emphasis on key	Low-Future	Yes	Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
		possibly prevent future habitat degradation by instilling a better understanding of interrelationship between habitat, daily actions, and watershed health.		factors limiting the Cedar Chinook population.			

**Draft Proposed Outreach & Education Actions for Lake Washington
(by WRIA 8 Public Outreach Committee)**

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
C729	Shoreline hardening, riparian vegetation displaced by lawn, invasives, or exotics with low ecological value, overwater structures creating sharp light contrast, water quality degraded by effects of landscape practices	Increase awareness that the lakeshore is also a nursery for juvenile salmon. It's possible to make "home improvements" that can benefit both property owner and salmon. [people, pets, and planet]	Lakeshore property owners	Promote concept of living <u>with</u> the lake, instead of just <u>on</u> it through public messaging. Foster idea of <u>sharing</u> the shoreline with other species that inhabit the lakeshore. Carry out through workshops, literature, and development of education and marketing campaigns	High	Lakeside Living Workshop Series; King County Lake Stewardship Program	Variable
C730	Shoreline hardening, riparian vegetation displaced by lawn, invasives, or exotics with low ecological value, overwater structures creating sharp light contrast, water quality degraded by effects of landscape practices	Reduce conditions favored by predator species; protect & restore water quality.	Lakeshore property owners	Offer lakeshore property owners a series of workshops on lakeshore living: natural yard care; reduction of lawn size, shoreline buffer planting design/noxious weed management; alternatives to vertical wall bulkheads; salmon friendly dock design; aquatic weed management; environmentally friendly methods of maintaining boats, docks, decks; porous paving options	High	WRIA 8/KCD Lakeside Living Lakeshore Property Owner Workshops, Seattle Public Utilities and Snohomish County Creek Stewardship Programs, City of Issaquah's Creekside Living Program, Natural Yard Care Neighborhoods	Medium-High

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
C731	Forested parcels threatened by development, (even though difficult to build on); creek mouths degraded or unrecognizable (culverted); riparian vegetation replaced by invasives infested along shoreline	Protect and/or restore forest land, critical areas such as wetlands and shallow water rearing habitat. Promote watershed health through grassroots messaging.	Community, but especially lakeshore property owners.	Identify and encourage shoreline neighborhood and community stewardship associations. Use to foster the ethic of voluntary stewardship, set examples for other neighbors to follow, enlist community support to acquire and restore habitat, and to build a bridge between property owners, agencies, and local governments. Increase potential for media coverage when efforts initiated at community level.	High	Lake Forest Park Stewardship Foundation, Save Lake Sammamish, Denny Creek Neighborhood Association	Low
C732	Riparian vegetation displaced by lawn, invasives, or exotics; water quality compromised by garden chemicals, metals, sediment; elevated water temperatures due to increased water use at times when flows lowest.	Protect and improve rearing and migratory habitat; protect and restore water quality	Lakeshore property owners, general public	Update where necessary salmon-friendly educational materials such as <i>Salmon Friendly Gardening Practices</i> , <i>Going Native</i> , <i>Watershed Waltz</i> and <i>Sammamish Swing</i> booklets. Print and distribute to the following prioritized audiences: 1)lakeshore property owners 2) Public places such as libraries, city halls, community centers and where permitted, at home improvement centers and other major retail establishments.	Medium - High	Yes	Low-Medium
C733	Riparian vegetation displaced by lawn, invasives, or exotics; water quality compromised by garden chemicals, metals, sediment.; elevated water temperatures due to increased water use at times when flows lowest.	Protect & restore shoreline buffer plantings to provide source of food & shelter; protect& restore water quality, maintain baseflows of feeder streams in order to provide source of cooler water	Lakeshore property owners	Modify more for "lakeshore living" the existing "Streamside Living Welcome Wagon" program in which residents welcome new homeowners to the neighborhood and provide information concerning "salmon friendly" yard care, lakeshore planting tips, water-wise gardening.	Medium	WaterTenders Streamside Living Welcome Wagon	Low-Medium
C734	Solid overwater surfaces that create sharp light contrast and dark shadows,	Reduce severity of predation on juveniles	Lakeshore property owners	Explain about mutual value of mesh docks, smaller piling sizes, and community docks to salmon and property owners: Reduced predation for fish; reduced maintenance for homeowners, opportunity to watch small	High		Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	conditions favored by predators.			fish swimming under the dock, and architectural interest provided by new salmon-friendly elevated dock bridges. Outreach could be carried out, for example, by creating a boat owner education campaign. Mailings could be sent with boat registration tab renewal or with property tax notice for shoreline property owners; by literature at marine, sporting goods and hardware stores, at boat shows; and through workshops to homeowners and marine construction industry. Coordinate outreach through appropriate licensing agencies.			
C735	Sharp light contrast and dark hiding spots created by overwater structures, conditions favored by predators	Reduce severity of predation on juveniles by reducing number of docks.	Lakeshore property owners	Offer financial incentives for community docks in terms of reduced: permit fees, loan fees/percentage rates, taxes and permitting time, in addition to reduced construction costs	High		low
C736	Steep shoreline gradient with coarse aggregate caused by wave action on vertical wall bulkheads	Create sandy, shallow water habitat needed by juveniles.	Lakeshore property owners	Utilize niche marketing to promote a "Build a Beach" campaign. Clarify how hardened shorelines prevent the development of shallow, sandy beaches and how alternative treatments can provide these amenities. Of benefit to salmon and to homeowners desiring more easily accessible shallow beach and aesthetics of a cove. Work with media (including design and lifestyle magazines) and real estate community (articles in real estate sections of papers) as well as construction, and design industry professionals	High	Pro Bono advertising campaign development – The Coalition for Drug Free America ad campaign). Bert the Salmon ads	Variable, but low able to get Pro Bono assistance
C737	Lack of shelter provided by large and small woody debris due to lack of shoreline vegetation; steep dropoffs from shoreline hardening	Reduce conditions favored by predator species.; increase shoreline buffer vegetation and sources for large and small woody debris	Lakeshore property owners	Alternative marketing campaign: work with advertising industry and media. Do a play on "Child Haven" promotion. <i>Fry Haven?</i> Contrast picture of a sandy shallow shoreline containing woody debris hiding Chinook juveniles with that of a deep gravelly shoreline with evil looking predator species lurking, gobbling up young Chinook. [A "Chinook need safe places too" idea]. Possibly graphics in style of <i>Finding Nemo</i> . Create a marketing niche with landscape related industries to inform property owners about feeding requirements of out-migrating salmon off their beach. Validate need for native vegetation along the shoreline in	High	Various Bert the Salmon Ad campaigns	

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
				<p>how it provides food source for fish and other wildlife. Perhaps an “Are you starving your neighborhood salmon?” campaign that addresses impacts of denuding shorelines of woody and emergent vegetation could be developed. Or maybe flip to more positive “Have you fed your neighborhood salmon today?”</p> <p>Heighten awareness that it is the young juvenile fish that are at risk. (Humans are often more receptive to saving children). Possibly do a play on <i>Save the Children</i> charity campaign, showing stressed conditions for juvenile Chinook trying to rear and migrate through lake.</p>			
C738	Lack of appropriate shoreline vegetation, shoreline hardening by vertical wall bulkheads and rip rap walls; docks that create stark light contrast and hiding spots for predators	Reduce conditions favored by predator species by “softening” shoreline; increase shoreline buffer vegetation and sources for large and small woody debris, replace the many docks with more salmon friendly designs	Lakeshore property owners	Demonstration Project. Locate property owner in publicly accessible (or viewable) area willing to remove bulkhead, or shoreline armoring and replace it with more ecologically friendly design. Similarly, renovate existing dock with more salmon-friendly design. Publicize efforts through various means. Demonstration project should contain elements that can be done by average shoreline property owner. Provide information on costs and advantages of alternate treatments.	Medium – High	Redmond River Walk, Juanita Beach, Classic Nursery, Lark Forest Park Stewardship projects	Medium
C739	Coarse substrate, steep slope, dark hiding spots for predators caused by bulkheads and solid surface docks.	Reduce conditions favored by predator species; increase shoreline buffer vegetation and sources for large and small woody debris	Lakeshore property owners, general public	Document video progress on a range of restoration projects from planning to post-construction. Air on government cable channels, in shoreline property owner classes and for libraries, schools, communities groups.	Medium		Variable
C740	Coarse substrate, steep slope, dark hiding spots for	Overcome resistance of shoreline property	Lakeshore property owners,	Combine recreation and education. Organize a Bulkhead Alternatives and Salmon Friendly Dock Design tour to see good examples of design on a residential scale.	Low	King County and People for Puget Sound	Variable

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	predators caused by bulkheads and solid surface docks.	owners to make such drastic changes to their shorelines by offering local examples of alternative treatments. Ultimate goal is to reduce conditions favored by predator species	general public	Organize as boat tour so properties can be viewed from water (less invasive to property owner). Alternatively, create a self-guided water tour (most shoreline property owners have their own boats) with GPS coordinates to help locate example property.		shoreline homeowner workshops (pilot programs)	
C741	Shoreline hardening, riparian vegetation displaced by lawn, invasives, or exotics with low ecological value, overwater structures creating sharp light contrast, water quality degraded by effects of landscape practices	Protect and improve water quality; habitat quality - or - Protect & restore riparian vegetation to provide terrestrial food source and shelter; protect& restore water quality, maintain instream flows upstream to provide source of cooler water	Landscape Contractors	Offer professional workshops to landscape designers & contractors on environmentally-friendly lakeshore landscaping. Include topics such as shoreline buffer function and design, native plant selection, installation techniques, use of compost to build healthy soils, and noxious weed control. Determine need for training for non-English speaking participants	Medium – High	Washington Assoc of Landscape Professionals (WALP) Trainings by King County Local Hazardous Waste Management Program	Low
C742	Riparian vegetation displaced by lawn. Water quality compromised by garden chemicals, metals, sediment.	Increase shoreline planting; reduce lawn size to at least have buffer between lawn and shore.	Lakeshore property owners	Work with landscape, design, and real estate industries to sell benefit of “privacy” to homeowners. With restoration of shoreline buffer planting homeowners can increase privacy without sacrificing views. Promote idea of “framed views” as a more sophisticated landscape aesthetic.	Medium - High	1998 Lake Sammamish Shoreline Prop owners workshop Pilot Program	
C743	Lack of shoreline buffer vegetation, increased water use when levels lowest;	Increase native vegetation and source of shelter and food for fish;	Lakeshore property owners , Community	Increase number of native plant salvages where landowners can take plants back to their yards. Publicize opportunity to drop off unwanted native plants at various parks surrounding the lake.	Low – Lake Washin gton	King County Native Plant Salvage Program	

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	increased perceived need for pesticides	reduce erosion and need for supplemental irrigation (once established)			Low-Med Sammamish		
C744	Lack of appropriate shoreline vegetation	Increase shoreline vegetation and reduce non-native vegetation & spread of invasives	Lakeshore property owners	Reduce permit fees (where applicable) for shoreline restoration, removal & replacement of non-native vegetation	Medium		Low
C745	Water quality degraded by toxics, pesticides, increased nutrient loads, sediment from construction sites; loss of riparian vegetation	Protect and improve water quality	General Public	Publicize emergency call numbers for public to report water quality problems, water diversion from lake for irrigation, , non-permitted vegetation clearing, or tree overspray (pesticide) related incidents.	High	King County Water & Land Division, Seattle Public Utilities Hotlines	Low
C746	Reduced forest and canopy cover; increased impervious areas, decreased infiltration; more flashiness of floods due to intensity of runoff	Protect and improve water quality; reduce quantity of water entering lake: during flood conditions can mix with sanitary sewer flows and enter lake.	General public, but property owners in particular	Increase outreach concerning the benefits of trees and basin-wide forest coverage to protect water quality. Include such actions as significant tree ordinance and information that links canopy cover to storm water issues. Provide clarification on hazardous tree issues. Offer seedlings to replant after hazard trees are removed. Coordinate with commercial nurseries to expand outreach about benefits of trees to salmon.	Medium-High	Sammamish ReLeaf; Mountains-to-Sound Greenway; City tree ordinances, King County Forestry Program	Low
C747	Elevated lake temperatures, lack of cool water sources from feeder streams, insufficient flows in feeder streams to provide source of cooler water, lack of ground water recharge, water	Protect forest cover, reduce paving and impervious areas, increase infiltration and conditions that mimic natural hydrology, protect water quality	Design, engineering, and construction industries	Provide education to architects, landscape architects, engineers, and developers on sustainable building/design practices. Work with professional associations to highlight building practices that maintain watershed health, importance of maintaining canopy cover and limiting impervious surfaces. Provide incentives to builders that demonstrate a use ecologically sensitive designs and/or techniques. Provide professional workshop and tours focusing on	Medium - High	WALP Trainings by King County Local Hazardous Waste Management Program. Stoneway	Variable

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	quality, habitat quality			<p>sustainable building/design practices to architects, landscape architects, engineers and developers. Build partnerships with professional associations to highlight the benefits of practices that maintain watershed health.</p> <p>Promote through design competitions and media coverage the use of “rain gardens” and other low impact development practices that mimic natural hydrology. Combine a home & garden tour or “Street of Dreams” type event featuring these landscape and engineering treatments.</p>		<p>Concrete Council for Sustainable Development outreach on pervious pavement.</p> <p>Port Blakely Communities, Issaquah partnerships, Built Green, Sustainable Seattle, LEEDS</p>	
C748	Reduced forest cover, increased impervious area, decreased infiltration and ground water recharge, water quality degraded by runoff	Protect and improve water quality and quantity to more closely mimic natural hydrology	Developers, Architects, Engineers Building Professionals	<p>Use recognition as a means to encourage more salmon sustainable designs and construction. Coordinate with professional association awards, in addition to popular magazine merit awards. Continue to recognize businesses that carry out procedures or use products that protect watershed health.</p> <p>Promote through design competitions and media coverage the use of “rain gardens” and other low impact development practices that mimic natural hydrology. Combine a home/garden tour or “Street of Dreams” type event featuring these landscape /engineering treatments</p>	Medium	AIA, ASLA, Sunset Magazine, and Seattle Times Home and Garden awards, King County Enviro Stars.	Low
C749	Water quality degraded by metals, toxins, pesticides, and nutrient overloads	Protect and improve water quality	General Public	<p>Create a program that addresses impact of car maintenance and offers alternatives that help protect watershed health and water quality.</p> <p>More actively distribute – poster series developed by multi-jurisdictional Water Quality Consortium. Series depict water quality implications of everyday activities such as car washing, ignoring car maintenance, pet wastes.</p> <p>Work with auto parts retailers and gas stations to increase potential for collection of used motor oil/transmission fluids.</p>	Medium	<p>King County Local Hazardous Waste Mgmt Program</p> <p>Water Quality Consortium, Businesses for Clean Water</p>	variable

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
				Make outreach materials available to non-English speakers.			
C750	Water Quality degraded by toxics and metal fines	Protect and restore water quality	General Public	Build partnerships and seek outreach opportunities with commute trip reduction programs to convey the impacts of automobiles on water quality and salmon habitat. Encourage alternative transportation choices.	Medium	Commute Trip Reduction Programs	Low - Medium
C751	Water Quality degraded by toxics and metal fines degraded by metals and toxins	Protect and restore water quality	General Public, schools/non-profits and Charity groups – and business that offer to host a carwash.	Coordinate with local business community to encourage the use of commercial car washes over washing at home on street or in parking lots. Encourage alternatives to charity cash washes via commercial car wash coupon books or extend car wash kits throughout entire watershed. Make requirement that all charity car washes use coupons or car wash storm drain kit. Distribute “alternative community fundraising idea” brochure to volunteer fundraisers.	Medium - High	Yes, various cities’ car wash kit programs. Puget Sound Carwash Association	Low
C752	Water quality degraded by metals and toxins	Protect and restore water quality	Businesses, property management companies, homeowners associations.	Educate and support retail business and homeowner associations on stormwater best management practices specifically related to parking lot cleaning, storm drain maintenance, and boat cleaning.	Medium	Ongoing programs by various jurisdictions within WIRA, e.g. Issaquah, Redmond	Low
C753	Reduced baseflows from streams that feed into lake and subsequent elevated water temperatures in lake	Protect and restore sources of cool water	High end water users and general public	Extend availability of water conservation incentive programs such as rebates for efficient toilets, appliances, soaker hoses, free indoor conservation kits, or free landscape irrigation audits to decrease household and commercial water consumption.	High	Smart & Healthy Landscapes, Water Cents, and other utility incentive programs	Low