

CHAPTER 12: COMPREHENSIVE ACTION LISTS FOR ISSAQUAH

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR ISSAQUAH POPULATION (Tier 1 Subareas)	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: Issaquah, King County</p> <p>Growth pressures (inside UGA): Issaquah, unincorporated King Co (including Issaquah Potential Annexation Areas (PAAs)).</p> <p>Percent of basin inside UGA: UGA runs through reach 7/8 in Lower Issaquah subarea; UGA also runs through North Fork Issaquah Subarea and East Fork Subarea. 19% of all Tier 1 subareas combined is inside UGA.</p> <p>Program/mitigation opportunities: Issaquah Basin Plan, TMDL for fecal coliform, Taylor Mountain Forest Stewardship Plan</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • Lower Issaquah Subarea: Tier 1 - Core Chinook use; Moderate watershed function • Middle Issaquah Subarea: Tier 1 - Core Chinook use; High watershed function • Upper Issaquah Subarea: Tier 1 - Core Chinook use; High watershed function [Carey, Holder] • North Fork Issaquah Subarea: Tier 1 - Core Chinook use; High watershed function [need to revisit core designation per City of Issaquah] • East Fork Issaquah Subarea: Tier 1 - Core Chinook use; Moderate watershed function • Fifteenmile Subarea: Tier 1 - Core Chinook use; High watershed function <p>Watershed evaluation summary: See details in Appendix C.</p>

LAND USE ACTIONS FOR ISSAQUAH CREEK 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 City of Issaquah and King Co. 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.

In order to maintain existing high relative level of watershed function and hydrologic integrity (especially maintenance of sufficient baseflows), protect existing levels of forest cover, soil infiltrative capacity, wetland areas, and riparian forest and minimize increases in impervious surface and road crossings. Continued implementation of land use policies that protect forests and critical areas (including groundwater sources), and minimize impervious surface will contribute to the protection of critical chinook life stages.

Rural areas:

- I1 Consistent with GMA, rural King County should continue to protect resource lands and critical areas, and accommodate modest new growth. King County should continue to provide technical assistance to small forest landowners to encourage forest stewardship and improved forest management through forest stewardship plans.
- I2 Support provisions in the recently adopted King County CAO including: clearing restrictions, rural stewardship plans (allows flexibility while protecting and enhancing critical areas), rural aquatic buffers (165 ft), drainage review requirements, and low impact development BMPs. These provisions build on what has already been adopted and implemented through the 1996 *Issaquah Creek Final Basin and Nonpoint Action Plan*. Forest protection standards should account for site geology, soils, topography, and vegetation to maximize retention and infiltration.
- I3 Encourage low impact development (LID) through regulations, incentives, and education/training (see also details below under urban areas). Support steward/liaison position to set up training and information sharing among planners, developers, scientists about hands-on aspects of LID BMP implementation, including what works/doesn't work in terms of marketing, technical issues, etc. Local

permitting staff should be trained on LID BMPs, and look into ways to ease process for permitting such practices.

- I4 Promote comprehensive approach taken in Bear Creek basin during past decade which included regulatory protections (65% forest cover, 150 ft. stream buffers), King County basin steward doing targeted public outreach to streamside landowners, and a range of incentives (including acquisition through WaterWays 2000, current use taxation through PBRS program, conservation easements).
- I5 Offer existing and new incentives to continue to protect and restore conditions beyond those which are protected through regulations. Incentives include current use taxation programs (e.g. King County's Public Benefit Rating System – PBRS and Timberland Program), and transferable development rights programs.
- I6 Support ongoing funding and organizational arrangements/commitments to insure continuing maintenance of protected lands (upland and riparian) in the long term.
- I7 Support recommendations in King County's 2003 *Taylor Mountain Forest Stewardship Plan*. Goals include: protect, enhance and restore ecological systems; restore health and diversity of forest; demonstrate environmentally sound forest management; reduce unneeded roads and limit roads to minimum needed to manage land; provide passive recreational opportunities for public; enhance opportunities for environmental education.
- I8 Agricultural recommendations include (see also recommendations below under *restoring riparian function*):
 - ✓ Work with horse owners to steward (protect and restore) trails in similar manner proposed for Taylor Mountain Forest. Focus on education and stewardship (e.g., relocating trails out of sensitive areas, volunteering on projects to revegetate trails and roads, including those which have been closed).
 - ✓ Encourage new farmers to purchase and use land that is already cleared rather than clear forested lands.
 - ✓ Encourage landowners involved with horticulture to adopt and implement farm plans, which address water quality (including sediments, excess nutrients), and fish and wildlife habitat management and restoration.
- I9 Recognize importance of enforcement for these and all regulatory recommendations included below. Enforcement could be improved by expanding role of environmental inspectors. Note that public education about why regulations exist is key part of making enforcement more effective.
- I10 Aggressive water conservation measures should be employed by water purveyors in the basin (rural and urban) to reduce impacts of water withdrawals on the ecosystem. Water conservation measures should 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.
- I11 Potential impacts of Forest Practices Act (FPA) implementation in Issaquah subareas should be evaluated to determine if the FPA is sufficient to maintain hydrologic integrity, water quality, and other habitat conditions that support salmonids; this analysis should be conducted as part of the FPA's adaptive management process.

Urban areas:

- I12 Consistent with GMA, Issaquah should continue to absorb most new residential, commercial, industrial growth.
- I13 Control new development to minimize impacts on water quality, instream flows, and aquatic buffers (Issaquah is doing or considering many of these):
 - ✓ Encourage low impact development (LID) through 3-tiered approach: 1) revise existing codes, e.g., landscape ordinance; 2) provide technical information to developers about on-the-ground examples of what does and does not work in LID approaches; 3) promote demonstration projects through incentives, technical assistance, so that other planners and developers can see hands-on examples
 - ✓ Use existing examples to show developers and planners LID techniques (e.g., Issaquah Highlands, King County's three LID demonstration projects currently underway, Seattle's natural drainage program for retrofitting existing neighborhoods)
 - ✓ Consider incentives or requirements for LID in outer management zone (outside 100-foot stream buffer) for areas under Shoreline jurisdiction (based on Tri-County proposed inner and outer management zones).
 - ✓ Use transferable development rights to shift development to areas which are less sensitive.

- ✓ Support the Urban Forestry Program in King County and the City of Issaquah (including grants and technical assistance) to increase forest cover and forest health of public lands in urban areas.
- ✓ Note that nonconforming uses and regulatory flexibility are discussed below under *restoration of riparian function*.

I14 Recognize importance of enforcement for these and all regulatory recommendations. Improve enforcement by encouraging investigative inspections in addition to complaint driven inspections. Consider having different city staff enforce building-related codes versus environmental regulations, e.g., have a green inspector to enforce CAO, TESC, landscaping ordinance, etc. Green inspector would have different set of skills and training from building inspector. Note that public education about why regulations exist is key part of making enforcement more effective.

Identify and protect headwater areas, wetlands, and sources of groundwater (e.g. seeps and springs) to maintain hydrologic integrity and a temperature regime that supports Chinook life stages. Carey and Holder creeks are believed to be important cold water sources and should be protected.

Rural areas:

- I15 Do additional mapping and field monitoring to determine critical groundwater recharge areas to protect.
- I16 Maintain hydrologic integrity (including temperature and flows) through a variety of tools including wetland buffer protections, infiltration regulations, 65/10; note most of these provisions are in the recently adopted King County CAO and/or were adopted pursuant to 1996 *Issaquah Creek Final Basin and Nonpoint Action Plan*. Note that the KC CAO riparian buffers may not be adequate for maintenance of cold temperatures in smaller streams; see King County BAS document.
- I17 Consider using critical aquifer recharge area (CARA) protections more broadly to protect groundwater recharge for maintaining cold temperatures in fish bearing streams, rather than solely for groundwater quality protection (for domestic water supply).
- I18 Consider nominating Carey and Holder Creeks as “Outstanding Resource Waters” 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.

Urban areas:

- I19 Support Issaquah’s proposed CARA which incorporates groundwater quality protections in the well head capture zones and a broader protection area where infiltration will be required for groundwater recharge. The groundwater recharge area has been mapped based on general soil types and geologic units.
- I20 Require adequate infiltration through LID and other stormwater BMPs. Issaquah has adopted King County’s stormwater manual, and will automatically adopt future changes to KC’s manual.

Protect riparian function (including overbank flows, vegetated streambanks, and groundwater interactions) throughout the basin to protect key Chinook life stages.

Rural areas:

- See recommendations above for *protection of watershed function and hydrologic integrity* in rural areas.

Urban areas:

- See recommendations above for *protection of watershed function and hydrologic integrity* in urban areas.
- I21 Address nonconforming structures which are a significant challenge to protecting and restoring riparian function; see details below under *restoration of riparian function*.
- I22 Evaluate stream buffer protections in the recently updated King County CAO and revise if necessary. In the Executive proposal, stream buffer protections for Type S and F streams in unincorporated urban areas will provide only minimal protection for large woody debris recruitment and will not protect microclimate and other wildlife functions of the riparian area. Protection for Type N waters in the urban area will not protect the microclimate function of the riparian area and would likely need to be increased from the proposed 65 feet due to increased land use impacts in urban areas. Proposed buffers for Type O waters in the urban area are not consistent with best available science and will provide relatively little protection for most riparian functions. (For Type S and F streams in special urban habitat areas, 165 ft buffer would provide better protection of functions.)

Restore riparian function, including revegetation, to provide sources of LWD to improve channel stability, contribute to pool creation, to reduce peak water temperatures.

Rural areas:

- I23 Address encroachment into Native Growth Protection Easements. (See Table 1 for detailed discussion.)
- I24 Agricultural recommendations include (see also recommendations above under *protection of watershed function*):
- ✓ King County should continue to implement and enforce livestock ordinance and voluntary farm plans, making highest priority those areas that are most susceptible due to fine soils.
 - ✓ Promote use of King County fencing cost-share to keep livestock out of riparian corridor.
 - ✓ Partner with and support (e.g., through grants) programs like Horses for Clean Water, Livestock Masters Classes through WSU Cooperative Extension, King County Horse Council, and Backcountry Horsemen; this approach to providing education by other horse owners is most effective.
 - ✓ Determine priorities for King County's monies for riparian vegetation protection and restoration. Promote PBRs or other incentives for those farmers willing to increase riparian buffers beyond mandatory 25 feet or to plant riparian areas.

Urban areas:

- I25 Nonconforming uses are a tremendous challenge, and the degree of variances and nonconforming uses may limit jurisdictions' ability to achieve the technical goals of the Conservation Strategy. Many existing structures along the creek and tributaries 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), 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.
- I26 Continue to tighten regulations affecting riparian buffers, including more restricted application of buffer averaging, fewer allowable uses in buffers (e.g., not allowing stormwater facilities).
- I27 Support City's current practice to approve (on a case-by-case basis) administrative variances of development standards such as building setbacks, in order to avoid encroaching into a sensitive area buffer. This may become formalized into policy or regulations.
- I28 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.
- I29 Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement, particularly for redevelopment. However, buffer width reductions for new development even in exchange for riparian enhancement should be discouraged or restricted because one of the main issues for Issaquah Creek is development/encroachment in the floodplain and channel confinement, as identified in the "Stream Inventory and Habitat Evaluation Report" (Parametrix, 2003). Stream buffer enhancement is effective in addressing certain functions such as stream shading, microclimate control, and habitat diversity, but does not adequately address or offset impacts such as channel confinement, floodplain disconnectedness, and loss of channel complexity, which are documented concerns for City of Issaquah streams. Therefore, 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.
- I30 Offer incentives to encourage voluntary revegetation of riparian buffers and/or reconnection of floodplains. Incentives include:
- ✓ Provide expertise (e.g., provide templates for riparian planting plan)
 - ✓ 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 and streamline applications for tax breaks through programs such as the Public Benefit Rating System (PBRs), if landowner commits to stewardship activities (above and beyond regulatory protection requirements) through permit process. PBRs would likely provide most benefit to/be most appropriate for larger, suburban lots within urban areas.

Protect and improve water quality to prevent adverse impacts from fine sediments, metals (both in sediments and in water), and high temperatures to key Chinook life stages.

Rural areas:

- I31 Identify sources and adopt source control BMPs to reduce fine sediments and metals in mainstem and tributaries. Note that sediment sources include bed scouring high flows and construction activities.
- I32 Support King County's Phase 1 NPDES municipal stormwater permit as it will likely increase the flow control and water quality design standards included in the 1996 *Issaquah Creek Final Basin and Nonpoint Action Plan*, and include water quality source control standards as well. The permit will also define the extent of County programs necessary to properly apply and enforce these standards and to assure long term maintenance of the facilities/BMPs constructed under these standards.
- Agricultural recommendations: see recommendations listed above for *riparian restoration and protection of watershed function*.
- I33 Support implementation of actions listed in TMDL for bacteria (Dept. of Ecology's *Issaquah Creek Basin Water Cleanup Plan for Fecal Coliform Bacteria*, 5/04 draft). Summary Implementation Strategy identifies existing and planned activities (regulatory, education, on-site habitat restoration/preservation, monitoring) to address fecal coliform by City of Issaquah, King Co. DNRP, Dept. of Ecology, non-governmental organizations, KCD, others. Five stream segments in basin were listed as impaired for fecal coliform on state's 1998 303(d) list (2 in Issaquah Cr., 1 on North Fork, 2 in Tibbetts). While report focuses on 5 listed segments, it has recommendations for whole basin. Note that detailed implementation strategy will be developed by 8/05.
- I34 Support Ecology's development of TMDLs for temperature and dissolved oxygen in next few years. There is a 303(d) listing for temperature on Issaquah Creek located in Section 28, Township 24N, Range 6 East. There are also proposed listings for dissolved oxygen in Issaquah and Tibbetts Creeks on the Draft 2004 303(d) list.
- I35 Coordinate with DOE, Seattle-King County Dept. of Public Health, and others to identify and correct on-site septic failures, particularly in riparian areas.

Urban areas:

- I36 City of Issaquah has adopted current King County stormwater manual. Support Issaquah's goal to incorporate revised KC stormwater manual in their NPDES phase 2 municipal stormwater permit, and to adopt by code the revised King County manual upon approval by King County Council. The Phase 2 permit may incorporate the TMDL for bacteria, discussed above, by referencing the Detailed Implementation Plan.
- I37 Recognize and support state role in development of and compliance with NPDES permits. Support Dept. of Ecology in adding three stormwater staff at NWRO to oversee compliance with industrial and construction general permits in winter of 2004-05.

Adverse impacts from road runoff should be prevented through stormwater best management practices and the minimization of the number and width of roads in the basin. Opportunities to retrofit existing roadways with stormwater treatment BMPs should be pursued.

Rural and urban areas:

- I38 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, etc.
- I39 Adopt and implement Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines for maintaining existing roads and drainage systems.
- I40 Retrofit existing roads to improve water quality treatment. Need BMPs for herbicides and pesticides along roads and power lines.
- I41 Work with WSDOT to retrofit drainage systems on I-90 and SR-18 for water quality treatment and spill containment facilities. The threat of hazardous materials spills on I-90 presents a significant water quality threat in the basin.

Provide adequate stream flow to allow upstream migration and spawning. Restoration of seasonal low flows would support pre-spawning holding life stage in Issaquah Creek and in East and North Forks.

Rural and urban areas:

- I42 Address the issue of maintaining and restoring instream flows at all levels of government, recognizing that different aspects of the problem are controlled by different government agencies. (See also recommendations above under *headwater protection*.)
- I43 Determine extent of unauthorized withdrawals in all sectors (residential, agricultural, commercial, industrial). Develop and/or use existing database on extent of surface and groundwater withdrawals.
- I44 Work with Dept. of Ecology on education and enforcement of unauthorized water withdrawals (e.g., unpermitted withdrawals, permitted withdrawals that exceed authorized volumes). Note that the Greater Lake Washington basin is currently closed to new surface water withdrawals.
- I45 Certain groundwater withdrawals are exempt from Ecology regulation; these exempt wells include wells serving residences 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. In King County, Seattle-King Co. Dept. of Public Health regulates location and functionality of wells, including exempt wells. 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. [revisit per input from City of Issaquah]
- I46 Establish a position (through regional salmon or other funds) to educate property owners about illegal withdrawals in Issaquah Cr. basin. Note concern to keep education and enforcement functions separate.
- See recommendation for water conservation measures above under *maintaining watershed and hydrologic integrity*.
- I47 Adopt/enforce stormwater regulations and BMPs to address high and low flows, including forest retention, low impact development, infiltration standards.
- I48 Look into other water resource allocation processes that could suggest potential actions for this basin (e.g., 2514 processes elsewhere, state law on water conservation – 1338).

Road crossings should be minimized to maintain floodplain connectivity.

Rural areas:

- I49 Limit new development (including roads) in floodplains; develop and apply standards which minimize impacts to salmon.
- I50 Continue to buyout structures in floodplain.

Urban areas:

- See recommendations under *restoring riparian function* above.

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR LAKE SAMMAMISH (Migratory Tier 1) 9/30/04 DRAFT	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: Bellevue, Redmond, Sammamish, Issaquah, King County</p> <p>Growth pressures (inside UGA): Bellevue, Redmond, Sammamish, Issaquah, King County (including Planned Annexation Areas – PAAs – for Bellevue, Issaquah)</p> <p>Percent of basin inside UGA: 100%</p> <p>Program/mitigation opportunities: East Lake Sammamish Basin Plan, other basin plans? SWAMP? State Park redevelopment plans? I-405 mitigation?</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • <i>West Lake Samm.</i> Subarea: Tier 1 – Migratory area; Lower watershed function • <i>East Lake Samm.</i> Subarea: Tier 1 – Migratory area; Moderate watershed function <p>Watershed evaluation summary: Not applicable</p>

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

Notes:

- 4) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. The technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 5) Note that local jurisdictions in these subareas are doing or planning to do many of these actions.
- 6) 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 bank hardening by replacing bulkheads and riprap with gently sloped sandy beaches, and protect/restore overhanging riparian vegetation.

- I51 Use WRIA 8 Conservation Strategy as one of many “best available science” resources during current and future revisions to critical areas ordinances and Shoreline Master Programs. Recognize that softening or removal of bulkheads is the most important land use action to improve shoreline habitat. In addition, riparian and shoreline buffers should be increased to the extent practicable.
- I52 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 should 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. Note that Bellevue has just completed study to establish science-based OHWM; methodology may be useful to other lakeside jurisdictions.
- I53 Many bulkheads continue to be built and repaired without permits; enforcement of existing regulations is critical. [from June 8 project meeting basinwide recommendations]
- I54 Most of shoreline is developed, and many existing bulkheads, docks, and other structures are nonconforming with development and environmental regulations. The degree of nonconformity will become even greater as buffers, bulkhead standards, and other shoreline protections become more restrictive. In order to decrease the level of nonconformity over the long term (50-100 years), jurisdictions should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied, where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- I55 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

these 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 or modest increases in lot coverage or impervious area could be allowed if applicant removes, sets back or softens bulkhead and restores shoreline vegetation.
- ✓ 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 variances from front yard setbacks to avoid allowing variances from back yard setbacks and/or riparian buffers that would cause development to encroach further toward the lake.
- ✓ For developments with more than one lot, increased density or other tradeoffs could be allowed.

- I56 Offer incentives to shoreline property owners to voluntarily remove bulkheads, revegetate shoreline, improve habitat at creek mouths, change dock design. Incentives include:
- ✓ Provide expertise (e.g., provide templates for shoreline planting plans, bulkhead design and bioengineering options)
 - ✓ 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 and streamline applications for tax breaks through programs such as Public Benefit Rating System (PBRS) if landowner commits to stewardship activities (above and beyond regulatory protection requirements) through permit process. PBRS would likely provide most benefit to, and be most appropriate for, larger, suburban lots within urban areas.
- I57 Support development of federal/state/local specifications and streamlined permitting for salmon friendly bulkheads (similar to NOAA Fisheries joint effort on pier specifications described below under *dock impacts*.)
- I58 Address disincentive in Shoreline Management Act that can discourage shoreline restoration because OHWM can be moved landward as result of removal of 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 Part 6, Appendix D for examples of language jurisdictions can adopt in their Shoreline Master Programs. May require change at state level.
- I59 Explore need for regulation and/or education related to impacts of power boat speed near shorelines on bulkheads, shoreline vegetation. Power boats are getting bigger; determine if there is need to set guidance for boat speed within a certain distance of shoreline, depending on the location in the lake. Boats are regulated through a compact among jurisdictions around the lake; speed is set by individual jurisdictions.
- I60 Add more "no wake" buoys around the lake shore to protect from wave-induced damage from wakeboards and other boats. [from June 8 project meeting basinwide recommendations]
- I61 Offer landscape, bulkhead, or dock contractor training and certification programs.
- I62 Support education and demonstration programs so that shoreline property owners can see examples of how salmon friendly bulkheads, docks, etc. actually work, and better understand and accept regulations and incentives related to bulkheads and docks (see public outreach recommendations).
- I63 Local jurisdictions should share information among themselves about ordinance language, templates and specifications.
- I64 Jurisdictions should continue to apply shoreline restoration, appropriate use of pesticides, native landscaping, etc. in parks, street ends, and other publicly owned property.
- I65 Recognize that City of Sammamish is under pressure to develop additional active recreation areas (e.g., sports fields, swimming beaches) and related infrastructure, and at the same time the city wants to protect critical areas and water resources on public lands. Support the city's efforts to develop new parks and manage existing parks to balance active recreation uses with sustainable and low impact development features that protect ecological functions (e.g., salmon friendly shoreline features and docks, pervious pavements for trails, forest preservation).

Outmigration of juvenile Chinook would benefit from improved shoreline connectivity. Reduce impact of docks/piers to deter aggregation of predators (e.g., use of mesh surfaces and/or community docks).

- I66 Support joint effort by NOAA Fisheries, WDFW, USACOE, 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, 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;

Kitty Nelson met with Lake Sammamish jurisdictions in early July. Local jurisdictions should also provide expedited local permitting if docks meet NOAA Fisheries standards, and if they do not meet the standards, a biological evaluation should be required.

- I67 Many docks continue to be built and repaired without permits. Docks are getting bigger as homeowners purchase multiple boats. Enforcement of existing regulations is critical. Dock repairs which exceed a certain threshold should be considered a replacement and be required to meet the NOAA Fisheries standards.
- I68 Many docks may already be built below the mean high water line and therefore may be on public property. [from June 8 project meeting basinwide recommendations]
- I69 Provide incentives for establishment of community docks or mooring buoys, rather than individual lot docks. See related regulatory/incentive recommendations under *reduce bank hardening* above.

Reconnect and enhance small creek mouths as juvenile rearing areas. Historically these small creeks had sandy deltas at creek mouth and were associated with wetland complexes.

- I70 Strictly enforce aquatic and wetland buffer provisions at creek mouths through critical areas ordinances and Shoreline Master Programs.
- I71 Restrict barge anchoring at creek mouths, as a condition of shoreline permit. Barges used for dock building and repair are often left anchored for long periods of time near creek mouths; this practice should be eliminated. [from June 8 project meeting basinwide recommendations]

Protect and restore water quality in small tributaries.

- I72 Address stormwater impacts from residential and commercial uses through Phase 1 and 2 NPDES permit updates. Note that details on stormwater standards, ranging from Dept. of Ecology's 2001 Stormwater Management Manual to Tri-County guidance, are included in Appendix D. General stormwater recommendations include:
 - ✓ Promote low impact/sustainable development along shoreline and throughout tributary sub-areas; see details below.
 - ✓ 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 best management practices (BMPs) in Ecology's 2001 Stormwater Management Manual.
 - ✓ Address high stormwater runoff in urban creeks which drain into Lake Sammamish, through low impact development, on-site stormwater detention for new and redeveloped projects.
 - ✓ Address point sources that discharge directly into the lake.
- I73 Recognize that development in Sammamish plateau affects health of creeks and lake below; much new development will occur in plateau and should take advantage of low impact development approaches.
- I74 Encourage low impact development (LID) through regulations, incentives, and education/training, including:
 - ✓ 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. For example, local staff from fire, surface water management, building, and public works departments have different responsibilities related to public and private development, and need to find solutions which can support LID. Local staff should coordinate with Department of Ecology, Puget Sound Action Team, and Washington State Cooperative Extensive Service staff working on LID issues.
 - ✓ Analyze local road standards (including standards for pervious concrete) so that they promote, and don't discourage LID, in public and private roads. If LID features are incorporated and proved to be effective, there should be tradeoffs with engineered stormwater facilities.
 - ✓ Could offer a PBRS type tax benefit to developments which meet certain LID standards.
 - ✓ Provide technical information to developers about on-the-ground examples of what does and does not work in LID approaches; promote demonstration projects through incentives and technical assistance, so that other planners and developers can see hands-on examples. Benefits and tradeoffs (in terms of stormwater management, cost, marketability) need to be illustrated based on real life examples.
 - ✓ Monitor existing facilities (e.g., green roofs, permeable pavements, etc.) to improve understanding of and quantify benefits of LID techniques.

- ✓ 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.
- ✓ Investigate and implement low-cost stormwater control retrofit projects in key groundwater infiltration areas and where otherwise feasible to reduce stormwater runoff that contributes to overall pollution levels and scouring of streams due to associated high frequency peak flow events. This includes retrofitting existing properties with amended soils, rain gardens, rain barrels, and other known low cost tools that can be installed without the purchase of new land or development of new stormwater facilities.
- ✓ See Appendix D, Part 6 for references and additional information.

Restore Coho runs in smaller tributaries as control mechanism to reduce cutthroat population.

- I75 Protect and restore habitat conditions in tributaries, to protect/restore water quality, flows, riparian function, and forest cover to reduce effects of urbanization, and therefore reduce conditions which would encourage cutthroat. Specific actions are listed below.
- I76 Support City of Sammamish goal to integrate salmon conservation planning with related efforts including watershed and basin planning, water quality studies for Lake Sammamish and smaller lakes, implementation of the East Lake Sammamish Basin Plan, etc. Recognize that the salmon element is an important one, but only part of the picture. (Note this applies to all technical areas listed above.)
- I77 Adopt critical areas regulations and offer incentives to protect forest cover, wetlands, and headwaters, including:
- ✓ Manage new residential and commercial development to minimize impacts on forest cover, aquatic buffers, water quality, and instream flows, by emphasizing low impact development (see specific low impact development recommendations above under *water quality*).
 - ✓ Promote flexible development approaches, including: cluster development in order to preserve large contiguous natural areas; transferable development rights (TDRs) or environmental mitigation banking, to shift development to areas which are less environmentally sensitive and/or to mitigate impacts by restoring areas with highest ecological functions. 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.
 - ✓ Protect and restore forest cover through tree retention and tree replacement programs, landscaping guidelines, street tree programs, and urban reforestation programs. If a % forest retention standard is applied in some areas (e.g., like King County's 35% or 50% rural clearing restrictions), forest protection standards should take into account soils, substrate, topography, and vegetation in determining the impact of forest retention on hydrologic function.
 - ✓ Offer existing and new incentives to continue to protect and restore riparian and upland parcels beyond those that are protected through regulations. Incentives include current use taxation (e.g., Public Benefit Rating system – PBRs), Native Growth Protection Area programs, transferable development rights programs. Protection programs need a stewardship element 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 or by a non-profit organization, standards for review and enforcement should be established. If areas are privately managed, may be necessary to provide an inducement to private entities to provide maintenance (e.g., additional tax break) in addition to education about value of properties and importance of maintenance.
 - ✓ Where regulations and incentives are not sufficient, acquire key habitat as current opportunities for protection could be lost forever. Update basin plans to identify highest priority parcels for protection through acquisition or other means.
 - ✓ Identify and protect headwater areas, including seeps, springs, wetlands. Do additional mapping and field monitoring to determine critical groundwater recharge areas to protect. Consider using critical aquifer recharge area (CARA) protections more broadly to protect groundwater recharge for maintaining cold temperatures in fish bearing streams, rather than solely for groundwater quality protection for potable water supply.
 - ✓ Recognize importance of enforcement for all regulatory recommendations. Note that public education about why regulations exist is key part of making enforcement more effective. Effective enforcement must also include monitoring and adaptive management, so that effectiveness of regulations (and related mitigation projects) is measured, and adjustments are made over time.

- I78 Adopt regulations and incentives to protect and restore riparian function, including vegetation and channel complexity, including:
- ✓ 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.
 - ✓ Nonconforming uses are significant challenge in developed areas. Many existing structures along creeks encroach into required stream buffers and are nonconforming with development and environmental regulations. As noted above under *reduce bank hardening*, the degree of nonconformity could become even greater as buffers and other riparian protections become more restrictive, and should be addressed during redevelopment.
 - ✓ 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 restore stream functions. Restoration should include underplanting of conifers in riparian buffers. Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement, particularly during redevelopment. However, buffer width reductions – even in exchange for riparian enhancement - should be restricted where riparian function has been compromised by development/encroachment in the floodplain and channel confinement. Stream buffer enhancement through revegetation is effective in addressing certain functions such as stream shading, microclimate control, and habitat diversity, but does not adequately address or offset impacts such as channel confinement, floodplain disconnectedness, and loss of channel complexity. Therefore, 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 are discussed above for forest protection. In order for incentive and technical assistance programs to be effective, they must receive adequate funding and be supported by technically trained staff. Additional incentives to encourage voluntary revegetation of riparian buffers and/or reconnection of floodplains include: providing expertise (e.g., provide templates for riparian planting plan, assist private landowners with applications for grants to restore habitat), and expediting the permit process at local, state and federal levels.

PROTECTION: Prioritization of Site-Specific Protection Projects for Lower Issaquah Creek

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-based protection program (such as Waterways). Existing priorities for the Issaquah Waterways Program are shaded in following chart.

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reaches 7 & 9 Tied in Priority				
Reach 7: Water Intake Fish Ladder to Trib. 0199	I225	Additional South Issaquah Creek Greenway Acquisitions	H	H
Reach 9: Power line crossing to 15 Mile Creek	I233	Work with private property owners to increase stream buffer protection.	M	M/L
Reaches 1 & 2 Tied in Priority				
Reach 1: Mouth to confluence with North Fork	I204	Ensure that final Lake Sammamish State Park development plan adequately protects floodplain/riparian processes.	H	H
Reach 2: Confluence with North Fork to I-90 Bridge	I208	Acquire Bush Lane Properties (on both Issaquah and North Fork).	H	M
Reaches 6, 8 & 10 Tied in Priority				
Reach 6: Fish Hatchery Weir to Hatchery Water Intake Fish Ladder	I223	Acquisition of "Guano Acres" (8 acres).	H	H
	I222	Protect properties along Wildwood Blvd. Trail on west bank of creek.	H	M
Reach 8: Issaquah Creek from confluence with Trib 0199 to power line crossing near city boundary	I229	Seek conservation easements to protect and allow future restoration of properties between the publicly owned sections of Squak Valley Park.	M	H
Reach 10: Confluence with 15 Mile Creek to confluence with McDonald Creek	I238	Work with private property owners to increase stream buffer protection	M	L
Reaches 3, 4 & 5 Tied in Priority				
Reach 4: Juniper St. to confluence with East Fork	I215	Protect Anderson Property at confluence of Issaquah & East Fork Issaquah Creeks.	H	H
	I214	Acquisition of property upstream of Juniper St. (2 acres).	M	M
Reach 3: I-90 Bridge to Juniper St.	I210	Acquisition of 5 acres downstream of Juniper St. for future restoration.	M	M

PROTECTION: Prioritization of Site-Specific Protection Projects for Middle Issaquah Creek

Reach # (Listed in Priority Order)	Proj. #	Description Note: Shaded Projects are an existing priority in the Issaquah Waterways Program.	Benefits to Chinook	Ease of Implem.
Reach 11: McDonald Creek to Cedar Grove Rd	I244	Issaquah Creek Waterways, particularly Log Cabin Reach (RM 8.4-10, 155 acres).	H	H
Reach 12: Cedar Grove Rd to confluence with Holder and Carey Creeks	I250	Carey/Holder/Issaquah Creek Confluence: Secure conservation easement 120-acre site at confluence (spans Issaquah Reach 12 and Carey & Holder Reaches 1).	H	H
	I249	Issaquah Creek Waterways (SE 156th Street to 252nd Avenue SE). In particular acquire several large parcels adjacent to the Log Cabin acquisitions.	H	H/M

PROTECTION: Prioritization of Site-Specific Protection Projects for Carey & Holder Creeks

Reach # (Listed in Priority Order)	Proj. #	Description Note: Shaded Projects are an existing priority in the Issaquah Waterways Program.	Benefits to Chinook	Ease of Implem.
Holder Reach 2: 276th St to change in gradient	I261	Acquire 80-acre inholding in Taylor Mountain Forest.	L	H
Carey Reach 4: Taylor Ditch confluence to falls	I257	Issaquah Waterways: From the confluence with Issaquah Creek to Taylor Mountain.	H	H/M
	I258	Protect forest cover in the headwaters areas of Carey and Holder creeks to protect flow regime.	L	H
Holder Reach 3: Change in gradient to SR 18	I263	Issaquah Creek Waterways, particularly in Holder Creek (inholdings on Taylor and Tiger mountains).	H	H/M
	I264	Protect forest cover in the headwaters areas of Carey and Holder creeks to protect flow regime.	L	H/M
Carey Reaches 1, 2, 3 & Holder 1 Tied for 4th in Habitat Diversity Index				
Holder Reach 1: Mouth to 276th St.	I252	Carey/Holder/Issaquah Creek Confluence: Secure conservation easement on 120-acre site at confluence (spans Issaquah Reach 12 & Carey and Holder Reaches 1).	H	H
Carey Reach 1: Mouth to 276th St	I259	Carey/Holder/Issaquah Creek Confluence: Secure conservation easement on 120-acre site at confluence (spans Issaquah Reach 12 & Carey and Holder Reaches 1)	H	H
	I253	Issaquah Creek Waterways particularly in Carey Creek Reaches 1-4.	H	H/M
Carey Reach 2: 276th St to 204th	I254	Issaquah Creek Waterways particularly in Carey Creek Reaches 1-4.	H	H/M
Carey Reach 3: 204th crossing to Taylor Ditch confluence	I256	Issaquah Creek Waterways particularly in Carey Creek Reaches 1-4.	H	H/M

PROTECTION: Prioritization of Site-Specific Protection Projects for Fifteen Mile Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 2: Issaquah- Hobart Rd to 240th St	I269	Acquire additional forested areas along creek.	L	M
Reach 1: Mouth to Issaquah- Hobart Rd	I268	Acquire additional forested areas along creek.	L	M

PROTECTION: Prioritization of Site-Specific Protection Projects for the North Fork.

Please note: The headwater reaches of the North Fork were unranked by EDT Model because reaches are above Chinook distribution for North Fork. However, the WRIA 8 Technical Committee placed headwater reaches as top priority for protection because the headwater area affects all reaches downstream.

Reach # (Listed in Priority Order)	Proj. #	Description Note: Shaded Projects are an existing priority in the Issaquah Waterways Program.	Benefits to Chinook	Ease of Implem.
North Fork Headwaters	I281	Protect the headwater wetlands of North Fork.	M	M/L
Reach 1: Mouth to 64th St culvert	I274	Acquire Bush Lane Properties (on both Issaquah and North Fork).	H	M

PROTECTION: Prioritization of Site-Specific Protection Projects for the East Fork.

Reach # (Listed in Priority Order)	Proj. #	Description Note: Shaded Projects are an existing priority in the Issaquah Waterways Program.	Benefits to Chinook	Ease of Implem.
Reach 3: I-90 crossing to High Point	I290	Acquire additional forested areas along the East Fork.	L	M
Reach 2: Front St Bridge to I- 90 crossing	I288	Acquire additional forested areas along East Fork.	L	M
Reach 1: Mouth to Front St Bridge	I285	Protect Anderson Property at confluence of Issaquah & East Fork Issaquah Creeks.	H	H
	I286	Acquire additional forested areas along East Fork.	L	M

PROTECTION: Prioritization of Site-Specific Protection Projects for Lake Sammamish

Please note: Lake Sammamish was not prioritized using the EDT Model due to uncertainty. The WRIA 8 Technical Committee has prioritized the sections of Lake Sammamish in following order: Section 1, Section 6, and other Sections with stream mouths tied in priority. The potential projects have not been evaluated for their Benefits to Chinook or Ease of Implementation and are not prioritized within Sections.

Section # (Listed in Priority Order)	Proj. #	Description
Section 1: Lake Sammamish State Park	I292	Sammamish State Park Recreation Management: Changes in park management and enforcement are needed to protect site from human disturbance.
	I293	Designate Recreation Off-Limits Zones at creek mouths.
Section 6: North Lake Sammamish (Marymoor)	I307	Acquire 2 homes and remaining non-public property to ensure protection of ~4,000 ft of shoreline.
	I308	Protect semi-natural shoreline north of Weber Point.
Sections 2, 3, 4, 5 & 6 Tied in Priority		
Section 2: Southeast Lake Sammamish	I297	Protect Mallard Cove parcel just north of Sammamish State Park.
Section 3: Southwest Lake Sammamish (I-90, Tibbetts, Lewis)	I298	Designate Recreation Off-Limits Zones at creek mouths.
Section 4: Mid-Lake Sammamish South (Phantom Creek) (East Reaches 36, 12, West Reaches 27-31)	I300	Acquire large parcel at the mouth of Phantom Creek.
	I301	Acquire forested section of buffer in Reach 29.
Section 5: Mid-Lake Sammamish North (East Reaches 13-14, West Reaches 22-26)	I302	Pine Lake Creek monitoring and protection of former restoration site.
	I303	Protect semi-natural shoreline between Weber Point and Inglewood Hills Road.
	I304	Protect semi-natural shoreline between Weber Point and Inglewood Hills Road.
	I305	Protect Inglewood Hill shoreline at end of Inglewood Hills Road.
	I306	Protect Barret and Hughes Properties.

Preliminary DRAFT Issaquah Creek Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Lower Issaquah Creek Reaches 1-10

Basinwide Recommendations: Protection

Project #	Descriptions
I601	Stream Buffer Protection: Work with private property owners throughout watershed to develop PBRS or easements to increase stream buffer protection.
I602	Public Land Consolidation: Review publicly owned land with commercial potential and consider opportunities for selling/trading for land with higher ecological value to increase protection of riparian corridor along Issaquah Creek and its tributaries.
I603	Forest Cover Protection: Protect existing natural flow regime in the headwaters areas of Mainstem Issaquah Creek and its tributaries.

Basinwide Recommendations: Restoration

Project #	Descriptions
I604	Riparian Restoration: Work with private landowners to remove exotic plant species and improve riparian cover
I605	Water Quality Management: Coordinate with Dept. of Ecology and others to identify on-site sewer failures, particularly in riparian areas.
I606	Lawn Care Water Quality Management: Continue to work with private landowners to reduce water quality inputs associated with lawn care practices.
I607	City of Issaquah Floodway Restoration Program: Continue City of Issaquah's floodway restoration program in reaches 2, 3, 4, 5 and 7, plus the North Fork and East Fork reaches. Many small parcels along Issaquah Creek have been identified for acquisition and have owner interest in selling.
I608	Issaquah Creek Habitat Restoration Program: The City of Issaquah currently conducts many small-site restoration activities on City-owned parcels along reaches 2, 3, 4, 5 and 7, plus the North Fork and East Fork reaches in the City of Issaquah. Program includes riparian vegetation restoration, bank de-hardening, floodway improvement, and LWD placement. (\$120K/yr)
I609	Restoration Site Maintenance: There are currently 180 acres of restored riparian and upland lands that the City of Issaquah maintains and monitors for up to five years or as permits specify. Sites are located throughout reaches 2, 3, 4, 5 and 7, plus the North Fork and East Fork reaches in the City of Issaquah. Funding is needed for continuing maintenance in the long-term in the face of competing priorities and budget shortfalls. (\$75K/yr)
I610	Protect/Restore Instream Flows to North Fork and Issaquah Creek

Reach 1: Issaquah Creek from mouth to confluence with NF Issaquah Creek Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I201	1	Issaquah 8	I-90 Stormwater Improvements: I-90 has few water-quality treatment facilities or water detention/detention facilities for the hundreds of acres of impervious surfaces that flow directly into the East Fork, North Fork, and mainstem of Issaquah Creek. Work with Washington Department of Ecology and Washington State Department of Transportation to provide detention, water quality improvements and spill containment facilities. The risk of a major contaminant spill caused by highway accident is probably the greatest concern.		Requires participation by WSDOT who controls limited access right-of-way. Future TMDL/NPDES permit implications may help address some of these concerns. City of Issaquah estimates there are 85 acres of impervious surfaces in the I-90 right of way in the City alone.		
I202	1	new	Sammamish State Park Restoration: Vast (50 acres within shoreline buffer) and largely undisturbed area within State Park at mouth of Issaquah Creek. Former farmland with somewhat poor habitat conditions: incised channel, extensive non-native vegetation. Potential projects include stream, riparian, floodplain, lakeshore and wetland restoration on Issaquah Creek, Tibbetts Creek, and along Lake Sammamish lakeshore. Good connectivity to adjacent restoration projects upstream in City.		State Parks will be conducting restoration assessment starting in 2004, in support of Park redevelopment program. Planning has not yet begun. WSDOT may be in need of a mitigation site in the area due to I-405 improvements, and could be a source of funding. There are large degraded wetlands in reach that could be restored/reconnected to creek. However, wetland restoration may not benefit Chinook - could increase bass predation on Chinook. Channel is quite active in this area, and any park development should be conducted so as to allow for continued meandering. Some work could be done to reduce incision of creek and reconnect it with the floodplain in the uppermost portion of the site.		
I203	1	new	Predator Control: Explore predator control, particularly bass, in backwater reaches of Issaquah Creek.		The area is currently closed for fishing.		

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I204	1		new	Sammamish State Park Development Protection: Several proposals exist pertaining to planned park development options, including marina development with gas facilities. An effort should be made to ensure that the final park development plan adequately protects floodplain/riparian processes.			H	H

Reach 2: Issaquah Creek from confluence with NF Issaquah Creek to I-90 Bridge**Restoration****Technical Hypothesis:**

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I205	2	Issaquah 8	I-90 Stormwater Improvements: I-90 has few water-quality treatment facilities or water detention/detention facilities for the hundreds of acres of impervious surfaces that flow directly into the East Fork, North Fork, and mainstem of Issaquah Creek. Work with Washington Department of Ecology and Washington State Department of Transportation to provide detention, water quality improvements and spill containment facilities. The risk of a major contaminant spill caused by highway accident is probably the greatest concern.		Requires participation by WSDOT who controls limited access right-of-way. Future TMDL/NPDES permit implications may help address some of these concerns. City of Issaquah estimates there are 85 acres of impervious surfaces in the I-90 right of way in the City alone.		
I206	2	new	Bush Lane Properties: 12.5 acres of Issaquah Creek and North Fork Issaquah Creek floodplain, located between confluence of these two stream and Darst Park (just north of I-90). Stream, riparian, and floodplain restoration on 1,200 feet of Issaquah Creek east bank. Project could include stream and riparian restoration, side channel creation, and wetland restoration. Existing habitat is poor due to residential development. Stream/buffer enhancements can be combined with other public use of upland area of site, such as active recreation.	\$1.1m	Currently under private ownership, but is for sale. Property spans from Issaquah Creek to the North Fork. Issaquah Creek - Pickering Reach is located on opposite (west) bank, and a previous City restoration site is located just downstream. Much of the property is located in the 100 yr. Floodplain, and is therefore not at high risk for development. Site includes hardened banks and a confined channel that should be restored/revegetated. There is no LWD in this reach. It may also be possible to restore wetlands on site which could facilitate recharge of de-watered section of the North Fork. This is both a potential Corps project as well as a potential WSDOT mitigation site.		
I207	2	new	Issaquah Creek – Pickering Reach: Located between SE 56th Street and I-90. Stream restoration along 1,800 feet of west bank Issaquah Creek within 200-foot shoreline setback. Restoration could include removal of hardened banks, floodplain restoration, side channels, riparian enhancements. Extension of restoration work conducted by City in 1998.		Private property, but City has utility easement that allows restoration work.		

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I208	2		new	Bush Lane Properties: 12.5 acres of floodplain lying between Issaquah Creek and North Fork Issaquah Creek are currently for sale. Includes 1,200 feet of east bank of Issaquah Creek and 900 feet of North Fork Issaquah Creek. Site currently has degraded habitat (older residential area) that offers excellent potential for restoration. Adjacent to City-controlled 200-foot buffer on west bank of Issaquah Creek, and Darst Park on the south that extends to I-90 on Issaquah Creek and 62nd Street (East Lake Sammamish Trail) on North Fork.		Property is for sale only as the entire 12.5-acre site. Currently under private ownership, but is for sale. Property spans from Issaquah Creek to the North Fork. Property is adjacent to City of Issaquah property. Much of the property is located in the 100 yr. floodplain, and is therefore not at high risk for development. This is both a potential Corps project as well as a potential WSDOT mitigation site (\$1.1m). Acquisition will be expensive.	H	M

Reach 3: Issaquah Creek from to I-90 Bridge to Juniper St (City of Issaquah)**Restoration**

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I209	3	new	Streamside Property Downstream of Juniper St.: Stream, riparian, wetland and floodplain restoration at undeveloped 5-acre parcel. Includes 370 feet of Issaquah Creek west bank just downstream of Juniper Street. Adjacent to residential medium density development.		Private land would require acquisition prior to restoration. Property is partially in the floodplain, but much of it is also above. There is a need for pools in this area. Restoration should also include reconnecting the creek to the floodplain.		

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I210	3		new	Issaquah Creek – Streamside Property Downstream of Juniper St.: Acquisition of property of restoration project above.		Acquisition of one of the few remaining large undeveloped parcels (5 acres) on lower Issaquah Creek. Site currently has degraded habitat that offers excellent potential for restoration. Owner has not been contacted to determine interest for selling property.	M	M

Reach 4: Issaquah Creek from Juniper St (City of Issaquah) to confluence with EF Issaquah Creek**Restoration****Technical Hypothesis:**

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I211	4	new	Issaquah Creek Park: Located in vicinity of confluence of Issaquah Creek and East Fork Issaquah Creek. Current City-owned land in this passive park includes Johnson and Bebee parcels. Site currently has degraded stream and riparian habitat that offers excellent potential for restoration.		Recent park acquisition with some restoration on the West side of creek, but none yet on the East side of creek.		
I212	4	new	Streamside Property Upstream of Juniper St. Stream: Riparian, wetland and floodplain restoration on 550 feet of Issaquah Creek just upstream of Juniper Street. Adjacent to residential medium density development.		Private land would require acquisition prior to restoration. Potential WSDOT mitigation funding available \$600k.		
I213	4	new	Anderson Property: Located at confluence of Issaquah Creek and East Fork Issaquah Creek. Two large parcels (3.9 acres total) on stream, located across from current City open space parcel. Site currently has degraded stream and riparian habitat that offers excellent potential for restoration. Removal of bank hardening on Anderson property would enhance stream functions.				

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I214	4		new	Streamside Property Upstream of Juniper St.: Acquisition of one of the few remaining large undeveloped parcels (2 acres) on lower Issaquah Creek. Site currently has degraded habitat that offers excellent potential for restoration.		Owner has not been contacted to determine interest for selling property.	M	M
I215	4		new	Anderson Property: Located at confluence of Issaquah Creek and East Fork Issaquah Creek. City has had discussions with the property owner about acquisition of the two parcels, which would add to Issaquah Creek Park.			H	H

Reach 5: Issaquah Creek from confluence with EF Issaquah Creek to Fish Hatchery Weir**Restoration****Technical Hypothesis:**

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I216	5	new	Relocation of City Parks Maintenance Facility and Restoration of Site: Property is at confluence of Issaquah Creek and East Fork Issaquah Creek, adjacent to Issaquah Creek Park. Relocation of the maintenance facility and restoration of the stream and buffer offers excellent opportunity to restoring important sections of these two streams and is consistent with City of Issaquah parks planning goals.		Suitable site for maintenance facility must be identified and acquired prior to restoration. Site is location of original Issaquah sewage treatment plant, the debris of which may be buried at the site.		
I217	5	Issaquah 1	Issaquah Salmon Hatchery Management: Work with Issaquah Salmon Hatchery to evaluate and amend its management protocol on passing species of salmon over the hatchery weir.		This is a hatchery management issue that is currently under evaluation by Hatchery Science Review Group and Co-Managers in consultation with agencies		

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pool habitat (LWD, riparian function, and channel connectivity) should be maintained of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I218	5			No projects identified at this time				

Reach 6: Issaquah Creek from Fish Hatchery Weir to Hatchery Water Intake Fish Ladder**Restoration****Technical Hypothesis:**

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I219	6	new	Wildwood Blvd Trail: Located Between Wildwood Trail and Issaquah Creek along Wildwood Blvd Trail to hatchery intake dam. Private and City ownership. Mature shade canopy and native vegetation being lost due to English Ivy and other weed infestation. Small scale restoration to retain existing shade canopy through riparian vegetation enhancements on top of slope of west bank.				

I220	6	new	“ Guano Acres ”: Located on Johnson parcel on South Front Street, just south of Newport Way. Immediately downstream of fish hatchery intake dam. Considerable wetlands onsite impacted by invasive vegetation. This 600-foot reach of Issaquah Creek offers excellent floodplain restoration, wetland enhancement, side channels, riparian enhancement potential.		Private property will require acquisition.		
I221	6	Issaquah 1	Issaquah Salmon Hatchery Intake Dam : Design and implement improvements for fish passage. Corps of Engineers is currently working with WDFW on Section 206 project to make fish passage improvements.		Corps of Engineers project is underway and scheduled for construction in 2005, pending availability of Federal funds.		

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pool habitat (LWD, riparian function, and channel connectivity) should be maintained of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I222	6		new	Wildwood Blvd Trail : Located Between Wildwood Trail and Issaquah Creek along Wildwood Blvd Trail to hatchery intake dam. Project would consolidate City ownership of property along west bank using boundary line adjustments.		There are a lot of property owners.	H	M
I223	6		new	“ Guano Acres ”: Acquisition of one of the few remaining large undeveloped parcels (8 acres) on lower Issaquah Creek. Site currently has degraded habitat that offers excellent potential for restoration.		Owner has expressed interest in selling to City, but City funding is not available. Some KC CFT money may be available.	H	H

Reach 7: Issaquah Creek from Hatchery Water Intake Fish Ladder to confluence with Trib 0199

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I224	7	new	South Issaquah Creek Greenway : Located in Sycamore neighborhood downstream of Sycamore Drive bridge in large complex (35 acres) of City-owned open space, plus adjacent properties that may be acquired by City. Floodplain restoration, wetland enhancement, side channels, riparian enhancements along 3,500 feet of stream reach. Some improvements have been made (Issaquah Creek Habitat Enhancement - Sycamore site) but larger scale floodplain restoration is appropriate because stream was straightened and channelized in the 1960's for a development, significantly diminishing habitat value.		Restoration on this public land has support of City. Additional adjacent private properties would need to be acquired.		

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas. Pool habitat and the habitat features that support the creation of pool habitat (LWD, riparian function, and channel connectivity) should be maintained.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I225	7		new	Additional South Issaquah Creek Greenway Acquisitions: Large parcels adjacent to the South Issaquah Creek Greenway offer additional potential for open space preservation, riparian and wetland enhancements, instream restoration, and side channels. Includes Fowler Site , located on 320 feet of Issaquah Creek between Fish Hatchery intake dam and South Issaquah Creek Greenway; Mohl Property , located immediately downstream of Sycamore Drive on west bank; and other properties.	\$450k or more per multi-acre property.	Property owners have expressed interest in selling to City.	H	H

Reach 8: Issaquah Creek from confluence with Trib 0199 to power line crossing near city boundary**Restoration**

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I226	8	Issaquah 4	Squak Valley Park Restoration: The U.S. Army Corps of Engineers and the City of Issaquah working on a Section 206 project to create off-channel habitat for salmon rearing and refuge along Issaquah Creek, in the area upstream of the Sycamore neighborhood. Site is approximately 7 acres; design consists of removing portions of an existing levee to allow high flows into two side channel, providing large woody debris, and planting riparian vegetation.	\$1.6m (Corps?)	Corps of Engineers project scheduled for construction in 2005, pending availability of Federal funds.		
I227	8	new	Squak Valley Park South: Located inside City at southern city limits. Lower portion of City-owned parcel is 4 acres of undevelopable wetlands suitable for floodplain restoration, wetland enhancement, side channels, riparian enhancements.		Restoration on this public land has support of City.		
I228	8	new	Explore Private Property Restoration: Explore opportunities for restoration at two properties with large floodplains set well below their homes. Properties are between the publicly owned sections of Squak Valley Park. Acquisition may not be required, as easements may be appropriate.		One owner has expressed interest in granting easement for restoration (and for trail corridor between two park sites), but the other has not. The long-term interest of the City is to acquire properties to link two park sites.		

Protection

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

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I229	8		new	Explore Easement on Private Property: Seek conservation easements to protect and allow future restoration of two properties with large floodplains set well below their homes. Properties are between the publicly owned sections of Squak Valley Park. Acquisition may not be required, as easements may be appropriate.			M	H

Reach 9: Issaquah Creek from power line crossing near city boundary to confluence with 15 Mile Creek**Restoration**

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I230	9	Issaquah 6a, 6b & 6d	Potential Sites for Removal of Bank Hardening: Confluence of Issaquah Creek and Fifteenmile Creek, and between RM 7.4 and 7.7.		Sites include expensive homes that would need to be protected. This includes several sites that were identified in the NTAA as having potential for removing bank hardening.		
I231	9	new	Glassen Creek: Explore opportunities for removal of bank hardening to reconnect creek and floodplain. Need to maintain stable bank due to flooding concerns. Good site for bio-engineering/low impact stabilization techniques.		Some plantings done at this site in the past, but now very overgrown by blackberry. Check if is just a tributary project or an Issaquah floodplain project. May not have chinook benefit.		
I232	9	new	Work with Private Property Owners to Restore Habitat: This is a good reach to work with property owners to restore habitat including riparian restoration, low impact bank stabilization (bioengineering with LWD), removal of bank hardening and implementing best management practices to reduce water quality impacts.				

Protection

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

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I233	9		new	Stream Buffer Protection: Work with private property owners specifically in this reach to develop PBRS or easement to increase stream buffer protection.			M	M/L

Reach 10: Issaquah Creek from confluence with 15 Mile Creek to confluence with McDonald Creek**Restoration****Technical Hypothesis:**

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I234	10	Issaquah 6f	Potential Sites for Removal of Bank Hardening: Issaquah Creek confluence with McDonald Creek.		Site includes several expensive thomes that would need to be protected.		
I235	10	new	Cedar Hills Water Quality Inputs: Examine water quality data to ensure that landfill is not impacting water quality in this reach and McDonald Creek.		Historically there was a problem with leaching into this reach. Changes at the landfill may have addressed this problem.		
I236	10	new	Work with Private Property Owners to Restore Habitat: This is a good reach to work with property owners to restore habitat including riparian restoration, low impact bank stabilization (bioengineering with LWD), removal of bank hardening and implementing best management practices to reduce water quality impacts.				
I237	10	new	Water Quality Management: Coordinate with Dept. of Ecology and others to identify on-site sewer failures, particularly in riparian areas.		Although fecal coliform does not appear to be a direct threat to Chinook, household chemicals, heavy metals, and high temps associated with failed septics may be problematic for fish.		

Protection

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

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I238	10		new	Stream Buffer Protection: Work with private property owners specifically in this reach to develop PBRS or easement to increase stream buffer protection.			M	L

Preliminary DRAFT Issaquah Creek Chinook Population - Tier I - Initial Habitat Project List

Includes Potential Restoration and Protection Projects by Reach.

Middle Issaquah Creek Reaches 11-12

Reach 11: Issaquah Creek from confluence with McDonald Creek to Cedar Grove Rd

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I239	11	Issaquah 5	Log Cabin Site Restoration (RM 8.4-10): Minor restoration needed for this protected site. Remove non-native plants and plant with native vegetation. Potential site for removal of bank hardening in upper portion of property.		Addition of LWD initially called for in NTAA, but reach has extensive LWD and additional LWD may not be needed. Some old riprap exists in the upper portion of this site.		
I240	11	Issaquah 6e	Potential Sites for Removal of Bank Hardening: Four Creek subdivision.		Site includes several expensive homes that would need to be protected.		
I241	11	new	Water Quality Management: Coordinate with Dept. of Ecology and others to identify on-site sewer failures, particularly in riparian areas.		Although fecal coliform does not appear to be a direct threat to Chinook, household chemicals, heavy metals, and high temps associated with failed septics may be problematic for fish.		
I242	11	new	Lawn Care Water Quality Management: Continue to work with private landowners to reduce water quality problems associated with lawn care practices.				
I243	11	new	Riparian Restoration: Work with private landowners to remove exotic species and improve riparian cover.				

Protection

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

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I244	11		2a/h	Habitat Protection: Continue to implement Issaquah Creek/Lake Sammamish Waterways Program to protect best remaining habitat including Mainstem Issaquah Creek/Log Cabin Reach (RM 8.4-10, 155 acres).		Project funded (SRFB, CFT). 118 acres acquired. 2 Additional parcels are currently in process of acquisition.	H	H

Reach 12: Issaquah Creek from Cedar Grove Rd to confluence with Holder and Carey creeks

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I245	12	new	Agricultural Water Quality Management/Buffers: Work with private property owners of grazing land to expand riparian buffers. Potential to work with King Conservation District to implement BMPs and Farm Plans.		Concern was expressed that Farm Plan buffers may be insufficient, and that efforts should be made to buffers more appropriate to the meandering nature of Issaquah Creek. Therefore >25ft buffers should be encouraged.		
I246	12	new	Riparian Restoration: Work with private landowners to remove exotic plant species and improve riparian cover.				
I247	12	new	Water Quality Management: Coordinate with Dept. of Ecology and others to identify on-site sewer failures, particularly in riparian areas.		Although fecal coliform does not appear to be a direct threat to Chinook, household chemicals, heavy metals, and high temps associated with failed septics may be problematic for fish.		
I248	12	new	Carey/Holder/Issaquah Creek Confluence: 120 acre site proposed for conservation easement. Once protected, restore riparian vegetation, add livestock fencing, and implement other best management practices for livestock.				

Protection

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

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I249	12		2e	Habitat Protection: Continue to implement Issaquah Creek/Lake Sammamish Waterways Program to protect best remaining habitat including Issaquah Mainstem (SE 156th Street to 252nd Avenue SE). In particular acquire several large parcels adjacent to the Log Cabin acquisitions.			H	H/M
I250	12		2f	Carey/Holder/Issaquah Creek Confluence: 120 acre site proposed for a conservation easement. Plan includes increased fenced buffers (100 ft for named tributaries and 50 ft. for unnamed tributaries), and restricted access to the riparian corridor. Same project as called out in Reach 1 of Carey and Holder Creeks.	\$1.3 million (KC, SRFB, CFT)		H	H

Preliminary DRAFT Issaquah Creek Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Carey/Holder Creek Reaches

Carey Creek Reaches 1-4

Reach 1: Carey Creek from mouth to 276th St Crossing (culvert looks like juvenile barrier)

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I251	1	new	Fish Passage at 276th St. Crossing - Investigate whether or not this crossing poses a barrier to fish passage and correct if is a barrier.		Culvert appears to be a juvenile Chinook barrier.		

Protection

Technical Hypothesis: *Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.*

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I252	1	Y	2f	Carey/Holder/Issaquah Creek Confluence: 120 acre site proposed for a conservation easement. Plan includes increased fenced buffers (100 ft for named tributaries and 50 ft. for unnamed tributaries), and restricted access to the riparian corridor. Same project in Issaquah Reach 12.			H	H
I253	1	Y	2c	Habitat Protection: Continue to implement Issaquah Creek and Lake Sammamish Waterways Program to protect best remaining habitat in Carey Creek Reaches 1-4.		Project is partially complete; one property protected in reach. Confluence reach proposed for conservation easement, funding being sought.	H	H/M

Reach 2: Carey Creek from 276th St Crossing (culvert looks like juvenile barrier) to 204th crossing (passable culvert)

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	2		No projects identified at this time.				

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I254	2	Y	new	Habitat Protection: Continue to implement Issaquah Creek and Lake Sammamish Waterways Program to protect best remaining habitat in Carey Creek Reaches 1-4.			H	H/M

Reach 3: Carey Creek from 204th crossing (passable culvert) to Taylor Ditch confluence

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I255	3	new	Fish Passage Improvements: Replace the culvert at 298th St. within Taylor Mountain Park, which is a partial barrier at low water.	\$150,000	Site identified as potential mitigation for school being built nearby. Potentially \$100k as mitigation.		

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas. Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I256	3	Y	new	Habitat Protection: Continue to implement Issaquah Creek and Lake Sammamish Waterways Program to protect best remaining habitat in Carey Creek Reaches 1-4.			H	H/M

Reach 4: Carey Creek from Taylor Ditch confluence to falls

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	4		No projects identified at this time.				

Protection

Technical Hypothesis: *Habitat forming features (LWD, riparian function, and channel connectivity) that provide cover and refuge for critical life stages should be protected and maintained.*

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I257	4	Y	new	Habitat Protection: Continue to implement Issaquah Creek and Lake Sammamish Waterways Program to protect best remaining habitat in Carey Creek Reaches 1-4.			H	H/M
I258	4	Y	3a	Forest Cover Protection: Protect existing natural flow regime in the headwaters areas of Carey and Holder creeks, which are in the Tiger Mountain State Forest and Taylor Mountain County Forest vicinity, by acquiring forest property, development rights/conservation easements.		Supported by the WRIA 8 Flow Subcommittee's report on changes in hydrology in WRIA 8 that highlighted Upper Issaquah Creek as having minimal impact from land cover change, water withdrawal, and sewers. The report is included in the Salmon and Steelhead Habitat Limiting Factors Report for Cedar-Sammamish Basin in the chapter that discusses change in hydrologic regime. Most of area is already in protective ownership.	L	H

Holder Creek Reaches 1-3

Reach 1: Holder Creek from mouth to 276th St crossing (start forested)

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	1		No projects identified at this time.				

Protection

Technical Hypothesis: *Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.*

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I259	1	Y	2f	Carey/Holder/Issaquah Creek Confluence: 120 acre site proposed for a conservation easement. Plan includes increased fenced buffers (100 ft for named tributaries and 50 ft. for unnamed tributaries), and restricted access to the riparian corridor. Same project in Issaquah Reach 12.	\$1.3m (KC, SRFB, CFT)		H	H

Reach 2: Holder Creek from 276th St crossing (start forested) to change gradient

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I260	2	new	Prevent Future Sediment Events: There is a beaver dam complex in the Taylor Mountain inholding with a history of failing of breaching which has caused large scale sediment events. Identify and implement restoration project to prevent future sedimentation problems.		Repeated failures of the beaver dam on this site has resulted in huge sedimentation events that were detectable all the way to the fish hatchery.		

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I261	2	Y	new	Habitat Acquisition: Acquire 80 acre inholding in Taylor Mountain Forest.			L	H

Reach 3: Holder Creek from change gradient to SR 18 crossing (described as partial barrier)

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I262	3	new	Fish Passage Improvements/ Highway 18: Install a bridge at the Highway 18 crossing which is currently a partial fish passage barrier.		Since the Highway is being widened at this location, there may be funding to address problem.		

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I263	3	Y	2b	Habitat Protection: Continue Issaquah Creek and Lake Sammamish Waterways Program to protect best remaining habitat, particularly in Holder Creek (inholding on Taylor and Tiger mountains).			H	H/M
I264	3	Y	3a	Forest Cover Protection: Protect existing natural flow regime in the headwaters areas of Carey and Holder creeks, which are in the Tiger Mountain State Forest and Taylor Mountain County Forest vicinity, by acquiring forest property, development rights/conservation easements. Also, provide enhanced incentives to retain and plant forest area environments.		Supported by the WRIA 8 Flow Subcommittee's report on changes in hydrology in WRIA 8 that highlighted Upper Issaquah Creek as having minimal impact from land cover change, water withdrawal, and sewers. The report is included in the Salmon and Steelhead Habitat Limiting Factors Report for Cedar-Sammamish Basin in the chapter that discusses change in hydrologic regime. Most of the area is already in protective ownership.	L	H/M

Preliminary DRAFT Issaquah Creek Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Fifteenmile Creek Reaches 1-2

Reach 1: Fifteen Mile Creek from mouth to Issaquah-Hobart Rd crossing
Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I265	1	new	Fish Passage Improvements: Improve fish passage at RM 1.5 where there is a barrier which consists of a bedrock cascade with an abandoned water supply dam on top.				
I266	1	new	Riparian Restoration: Work with private landowners to remove exotic species and improve riparian cover.				
I267	1	new	Lawn Care Water Quality Management: Continue to work with private landowners to reduce water quality inputs associated with lawn care practices.				

Protection

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

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I268	1		3b	Forest Cover Protection: Acquire additional forested areas along Fifteenmile Creek.			L	M

Reach 2: Fifteen mile Creek from Issaquah-Hobart Rd crossing to 240th St
Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
	2		No projects identified at this time				

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I269	2		3b	Forest Cover Protection: Acquire additional forested areas along Fifteenmile Creek.			L	M

Preliminary DRAFT Issaquah Creek Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach
North Fork Issaquah Creek Reaches 1-3

Reach 1: NF Issaquah from mouth to 64th St culvert
Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I270	1	new	Acquisition: Purchase Bush Lane properties, 12.5 acres of Issaquah Creek and North Fork Issaquah Creek floodplain, located between confluence of these two stream and Darst Park (just north of I-90). Stream, riparian, and floodplain restoration on 1200 feet of Issaquah Creek east bank. Project could include stream and riparian restoration, side channel creation, and wetland restoration. Existing habitat is poor due to residential development.		Currently under private ownership, but is for sale. Property spans from Issaquah Creek to the North Fork. Issaquah Creek - Pickering Reach is located on opposite (west) bank, and a previous City restoration site is located just downstream. Site includes hardened banks and a confined channel that should be restored/revegetated. There is limited LWD in this reach. This is both a potential Corps project as well as a potential WSDOT mitigation site (\$1.1m).		
I271	1	Issaquah 8	I-90 Stormwater Improvements: I-90 has few water-quality treatment facilities or water detention/detention facilities for the hundreds of acres of impervious surfaces that flow directly into the East Fork, North Fork, and mainstem of Issaquah Creek. Work with Washington Department of Ecology and Washington State Department of Transportation to provide detention, water quality improvements and spill containment facilities. The risk of a major contaminant spill caused by highway accident is probably the greatest concern.		Requires participation by WSDOT who controls limited access right-of-way. Future TMDL/NPDES permit implications may help address some of these concerns. City of Issaquah estimates there are 85 acres of impervious surfaces in the I-90 ROW in the City alone.		
I272	1	new	Increase Buffers and Restore Riparian Areas: Explore opportunities to increase stream buffers and restore riparian vegetation throughout North Fork.		The portion of the North Fork that goes through the lower portion of Lakeside Property has highly impacted buffers and non-conforming uses in close proximity to the stream (e.g., semi-permanent trailer parking for Lakeside employees, with no sanitation facilities). The City and County, through mine pit permitting, will be addressing this with Lakeside.		
I273	1	new	Protect/Restore Instream Flow: Explore opportunities to protect and restore instream flow to North Fork. Low flows and fish stranding occurs in North Fork.		Any added flows need to have good water quality.		

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pool habitat (LWD, riparian function, and channel connectivity) should be ma

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I274	1		new	Acquisition: Purchase Bush Lane properties, 12.5 acres of floodplain lying between Issaquah Creek and North Fork Issaquah Creek are currently for sale. Includes 1,200 feet of east bank of Issaquah Creek and 900 feet of North Fork Issaquah Creek. Site currently has degraded habitat (older residential area) that offers excellent potential for restoration. Adjacent to City-controlled 200-foot buffer on west bank of Issaquah Creek, and Darst Park on the south that extends to I-90 on Issaquah Creek and 62nd Street (East Lake Sammamish Trail) on North Fork. Stream/buffer enhancements can be combined with other public use of upland area of site, such as active recreation.	\$500k per acre	Property is for sale only as the entire 12.5-acre site. Currently under private ownership, but is for sale. Property spans from Issaquah Creek to the North Fork. Property is adjacent to City of Issaquah property. Much of the property is located in the 100 yr. Floodplain, and is therefore not at high risk for development. This is both a potential Corps project as well as a potential WSDOT mitigation site (\$1.1m).	H	M

Reach 2: NF Issaquah from 64th St culvert to 66th St (beginning ravine)

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I275	2	Issaquah 8	I-90 Stormwater Improvements: I-90 has few water-quality treatment facilities or water detention/detention facilities for the hundreds of acres of impervious surfaces that flow directly into the East Fork, North Fork, and mainstem of Issaquah Creek. Work with Washington Department of Ecology and Washington State Department of Transportation to provide detention, water quality improvements and spill containment facilities. The risk of a major contaminant spill caused by highway accident is probably the greatest concern.		Requires participation by WSDOT who controls limited access right-of-way. Future TMDL/NPDES permit implications may help address some of these concerns. City of Issaquah estimates there are 85 acres of impervious surfaces in the I-90 right of way in the City alone.		
I276	2	new	Fish Passage Improvements: Improve fish passage at the downstream end of wetland where a culvert is a partial barrier to fish passage at low water and near the Front St. interchange by reconfiguring the culverts under the road.		These culverts are undersized and have persistent sedimentation problems. New design should "cut the corner" and go directly into wetland rather than cross under road an additional two times as it currently is built.		
I277	2	new	Wetland Revegetation: Plant trees in the large wetland near the Front St. interchange to shade the creek as it flows through this section.				

I278	2	new	Increase Buffers and Restore Riparian Areas: Explore opportunities to increase stream buffers and restore riparian vegetation throughout North Fork.		The portion of the North Fork that goes through the lower portion of Lakeside Property has highly impacted buffers and non-conforming uses in close proximity to the stream (e.g., semi-permanent trailer parking for Lakeside employees, with no sanitation facilities). The City and County, through mine pit permitting, will be addressing this with Lakeside.		
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Protection
Technical Hypothesis: Pool habitat and the habitat features that support the creation of pool habitat (LWD, riparian function, and channel connectivity) should be maintained.

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

Reach 3: NF Issaquah from 66th St (beginning ravine) to bottom of ravine
Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I279	3	new	Reduce Sedimentation Problems: Project would explore opportunities for reducing sedimentation problems related to the gravel plant. Possible to implement source control and also push for larger riparian buffers through the gravel plant property.				
I280	3	new	Increase Buffers and Restore Riparian Areas: Explore opportunities to increase stream buffers and restore riparian vegetation throughout North Fork.		The portion of the North Fork that goes through the lower portion of Lakeside Property has highly impacted buffers and non-conforming uses in close proximity to the stream (e.g., semi-permanent trailer parking for Lakeside employees, with no sanitation facilities). The City and County, through mine pit permitting, will be addressing this with Lakeside.		

Protection

Technical Hypothesis: Pool habitat and the habitat features that support the creation of pool habitat (LWD, riparian function, and channel connectivity) should be ma

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I281	3		new	Headwater Wetland Protection: Protect the valuable headwater wetlands in this basin.		An important issue in the North Fork watershed are the impacts of impervious surfaces on base flows and the lack of water in the wetlands. Explore regulatory, land use or stormwater mechanisms to improve recharge to the aquifer in the North Fork watershed.	M	M/L

Preliminary DRAFT Issaquah Creek Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
East Fork Issaquah Creek Reaches 1-3

Reach 1: East Fork Issaquah Creek from mouth to Front St Bridge
Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I282	1	new	Relocation of City Parks Maintenance facility and Restoration of Site: Property is at confluence of Issaquah Creek and East Fork Issaquah Creek, adjacent to Issaquah Creek Park. Relocation of the maintenance facility and restoration of the stream and buffer offers excellent opportunity to restoring important sections of these two streams, and is consistent with City of Issaquah parks planning goals.		Suitable site for maintenance facility must be identified and acquired prior to restoration. Site is location of original Issaquah sewage treatment plant, the debris of which may be buried at the site.		
I283	1	new	Acquisition: Purchase Anderson property, located at confluence of Issaquah Creek and East Fork Issaquah Creek. Two parcels (3.9 acres total) on stream, located across from current City open space parcel. Site currently has degraded stream and riparian habitat that offers excellent potential for restoration. Removal of bank hardening on Anderson property would enhance stream functions.				
I284	1	Issaquah 8	I-90 Stormwater Improvements: I-90 has few water-quality treatment facilities or water detention/detention facilities for the hundreds of acres of impervious surfaces that flow directly into the East Fork, North Fork, and mainstem of Issaquah Creek. Work with Washington Department of Ecology and Washington State Department of Transportation to provide detention, water quality improvements and spill containment facilities. The risk of a major contaminant spill caused by highway accident is probably the greatest concern.		Impact from I-90 is highest in the East Fork. Requires participation by WSDOT who controls limited access right-of-way. WSDOT should also continue to maintain culverts under I-90 that are undersized and trap sediment. Future TMDL/NPDES permit implications may help address some of these concerns. City of Issaquah estimates there are 85 acres of impervious surfaces in the I-90 right of way in the City alone.		

Protection

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

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I285	1		new	Acquisition: Purchase Anderson property, located at confluence of Issaquah Creek and East Fork Issaquah Creek. City has had discussions with the property owner about acquisition of the two parcels, which would add to Issaquah Creek Park.		Also in Lower Issaquah Reach 4.	H	H
I286	1		3b	Forest Cover Protection: Acquire additional forested areas along East Fork.		Most of area is already in public ownership. There is very little in need of protection.	L	M

Reach 2: East Fork Issaquah Creek from Front St Bridge to I-90 crossing (beginning confined reach)

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I287		Issaquah 8	I-90 Stormwater Improvements: I-90 has few water-quality treatment facilities or water detention/detention facilities for the hundreds of acres of impervious surfaces that flow directly into the East Fork, North Fork, and mainstem of Issaquah Creek. Work with Washington Department of Ecology and Washington State Department of Transportation to provide detention, water quality improvements and spill containment facilities. The risk of a major contaminant spill caused by highway accident is probably the greatest concern.		Suitable site for maintenance facility must be identified and acquired prior to restoration. Site is location of original Issaquah sewage treatment plant, the debris of which may be buried at the site. Future TMDL/NPDES permit implications may help address some of these concerns. City of Issaquah estimates there are 85 acres of impervious surfaces in the I-90 right of way in the City alone.		

Protection

Technical Hypothesis: Pool habitats that provide cover and refuge for critical life stages should be protected and maintained, starting with the protection of existing off-channel and pool areas.

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I288	2		3b	Forest Cover Protection: Acquire additional forested areas along East Fork.		Most of area is already in public ownership. There is very little in need of protection.	L	M

Reach 3: East Fork Issaquah Creek from I-90 crossing (beginning confined reach) to High Point

Restoration

Technical Hypothesis:

Project #	Reach #	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I289		Issaquah 8	I-90 Stormwater Improvements: I-90 has few water-quality treatment facilities or water detention/detention facilities for the hundreds of acres of impervious surfaces that flow directly into the East Fork, North Fork, and mainstem of Issaquah Creek. Work with Washington Department of Ecology and Washington State Department of Transportation to provide detention, water quality improvements and spill containment facilities. The risk of a major contaminant spill caused by highway accident is probably the greatest concern.		Suitable site for maintenance facility must be identified and acquired prior to restoration. Site is location of original Issaquah sewage treatment plant, the debris of which may be buried at the site. Future TMDL/NPDES permit implications may help address some of these concerns. City of Issaquah estimates there are 85 acres of impervious surfaces in the I-90 ROW in the City alone.		

Protection

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

Project #	Reach #	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
I290	3		3b	Forest Cover Protection: Acquire additional forested areas along the East Fork.		Most of area is already in public ownership. There is very little in need of protection.	L	M

**Preliminary DRAFT North Lake Washington Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Lake Sammamish Sections 1-6**

Basinwide Recommendations:

Project #	Description
I611	Docks/Bulkhead Enforcement - Many docks and bulkheads continue to be built and repaired without permits. Enforcement of existing regulations is critical.
I612	Filling and Bank Hardening - There is a real need for BMPs and Design standards for single family residences which include bioengineering options and some vegetation requirements/suggestions. May be possible to use retailers to disseminate info/products.
I613	Bio-engineering Demonstration Projects - Demonstration projects showing technologies to reduce bank hardening should be built. Public properties should be used, although some private SF properties should also be targeted.
I614	Explore opportunities to reduce the number of private docks and increase riparian vegetation through assistance and incentive programs.
I615	Explore "management" practices at community beaches and investigate opportunities to reduce associated impacts.
I616	Protect Sandy shorelines where they exist.
I617	Restrict Barge Anchoring at Creek Mouths - The barge used for dock building and repair is often left anchored for long periods of time near the mouths of creeks. It is recommended that this practice be eliminated.
I618	Add more "no wake" buoys around the lake shore to protect from wave-induced damage from wakeboard and other boats.

Section 1: Lake Sammamish State Park, reaches 1-7

Restoration

Technical Hypothesis:

Project #	Sect. #	Section Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I291	1		new	Mouth of Issaquah Creek Habitat Enhancement: Project would primarily consist of bank and in-water revegetation at the mouth of the creek. Site is currently heavily impacted by human use.		Revegetation may not be successful unless human use of the site is reduced/eliminated.		

Protection

Technical Hypothesis:

Project #	Sect. #	Section Prot. Benefit Rank	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I292	1			new	Sammamish State Park Recreation Management: Significant changes in park management and enforcement are needed to protect site from human disturbance. Specific recommendations include enforcement of fishing regulations (particularly snagging) in the creek, eliminating motorized boat "beach landing" especially beach-side fueling, signage about salmon near creek, and hydro boat impacts from large events. Above should be integrated with park management plan.		There were mixed feelings about the benefits and or impacts of installing a fuel stop at the park. Currently, boaters fill up from gas cans all around the lake and are far more likely to cause spills than if a gas stop was developed. At the same time it might add even more use to this site which is already heavily overused. WDFW is responsible for fisheries management and should be notified about the fish snagging problem and be encouraged to better enforce regulations.		
I293	1			new	Recreation Off-Limits Zones at Creek Mouths: To minimize impacts to fish and vegetation, it was proposed that human use be eliminated from reaches 2,3 as well as 6,7,8 which include the mouths of Issaquah and Tibbits Creeks.				

Section 2: Southeast Lake Sammamish, reaches 29-34

Restoration

Technical Hypothesis:

Project #	Sect. #	Section Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I294	2		new	Laughing Jacobs Creek Mouth Restoration: Potential site restoration at the mouth of creek where lawns currently run to the edge of the lake, near wetland area.		Project may require acquisition of land, or possibly could be accomplished through other means. Unsure about landowner willingness. Some participants thought that the mouth of the creek was relatively functional and should simply be protected from further degradation.		
I295	2		new	No-Barge-Anchor-Zone: The mouth of Laughing Jacobs creek is a common barge anchor site. As with the basin-wide recommendation above, barges should not be permitted to anchor in front of creek mouth.				

I296	2		new		Beach Restoration at Creek North of Laughing Jacobs Creek: Private beach at the mouth of the creek north of Laughing Jacobs creek has a history of beach nourishment and drift, which is causing problems with the boat-lift at the site. Project could explore opportunity to work with landowner to address boat-lift problems as well as restore site.		Landowner may be willing to explore projects given the problems they are experiencing due to sand drift.		
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Protection

Technical Hypothesis:

Project #	Sect. #	Section Prot. Benefit Rank	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I297	2			1e	Protect Mallard Cove parcel just north of Sammamish State Park.		Parcel is proposed for a condo development. As a part of this development there was a proposal to include a fuel stop. More follow-up on the status of the project is necessary.		

Section 3: Southwest Lake Sammamish (I-90, Tibbetts, Lewis), reaches 8-11, 35

Restoration

Technical Hypothesis:

Project #	Sect. #	Section Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I298	3		new	Recreation Off-Limits Zones at Creek Mouths: To minimize impacts to fish and vegetation, it was proposed that human use be eliminated from reaches 2,3 as well as 6,7,8 which include the mouths of Issaquah and Tibbits Creeks.				

Protection

Technical Hypothesis:

Project #	Sect. #	Section Prot. Benefit Rank	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	3			new	No projects identified at this time				

Section 4: Mid-Lake Sammamish South (Phantom Creek) East reaches 36, 12, West reaches 27-31

Restoration

Technical Hypothesis:

Project #	Sect. #	Section Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I299	4		new	Vasa Creek Mouth Restoration: Potential site for restoration at the mouth of Vasa Creek which is owned by private beach park association.		Park association is assumed to be willing to cooperate and interested in possible funding sources available to assist with and expand project.		

Protection

Technical Hypothesis:

Project #	Sect. #	Section Prot. Benefit Rank	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I300	4			new	Phantom Creek Habitat Protection: One relatively large parcel exists at the mouth of Phantom Creek that would be ideal for acquisition and possible restoration.		Landowner was approached previously and was not willing to sell.		
I301	4			new	Forested Buffer Protection: Project would acquire private land to protect the forested section of buffer in reach 29.		Little is known about landowner willingness.		

Section 5: Mid-Lake Sammamish North, East reaches - 13-14, West reaches - 22-26

Restoration

Technical Hypothesis:

Project #	Sect. #	Section Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
			new	No projects identified at this time				

Protection

Technical Hypothesis:

Project #	Sect. #	Section Prot. Benefit Rank	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I302	5			new	Pine Lake Creek: Restoration work was conducted on this site previously but not maintained. Site should be monitored to ensure that benefits from restoration are being preserved.				
I303	5			1b	Protect semi-natural shoreline between Weber Point and Inglewood Hills Road.		Significant degradation ongoing at site including shoreline filling and hardening without permits.		
I304	5			1c	Protect semi-natural shoreline between Weber Point and Inglewood Hills Road.		Significant degradation ongoing at site including shoreline filling and hardening without permits.		
I305	5			1d	Protect Inglewood Hill shoreline at end of Inglewood Hills Road.				
I306	5			new	Protect Barret and Hughes Properties: Two large parcels exist in this section that have relatively intact sections of forested shoreline. The Barret property includes 450 ft of shoreline and the Hughes property includes 200 ft of shoreline.		Both parcels are being considered for subdivision.		

Section 6: North Lake Sammamish (Marymoor) reaches 14-21

Restoration

Technical Hypothesis:

Project #	Sect. #	Section Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	6			No projects identified at this time				

Protection

Technical Hypothesis:

Project #	Sect. #	Section Prot. Benefit Rank	Exist. Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
I307	6			new	Protect Shoreline Connectivity around NE Corner of Lake - Approximately 4,000 ft of shoreline exist in this area with only 2 homes. Project would acquire homes and remaining non-public property to ensure protection of area.		City of Sammamish bought two large sections of shoreline in this area, so much of this land is already in public ownership.		
I308	6			1a	Protect semi-natural shoreline north of Weber Point.				

Draft Proposed Outreach & Education Actions for the Issaquah Population (Tier 1 Subareas)
(by WRIA 8 Public Outreach Committee)

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority H, M, L	Proven Track Record/ Model	Level of Financial Commit.
I701	Smaller parcels lost to development without financial incentives offered to owners of larger parcels	Protect and improve salmon habitat	Commercial and residential shoreline and forest property owners	Expand existing private landowner incentive programs to include smaller, restoration-oriented properties not currently eligible under existing programs. Increase the local land trust activity in the Issaquah Basin to negotiate agreements.		Public Benefits Rating System, Open Space Current Use Tax (CUT)	High
I702	Riparian vegetation displaced by lawn, invasives, or exotics; water quality compromised by landscape practices; higher water use at times when flows lowest; habitat in threat of development or degradation.	Protect & restore salmon habitat, especially riparian vegetation as source of refuge and terrestrial food; protect & restore water quality, maintain instream flows	Residential shoreline property owners	Continue and expand Creekside Landowner Assistance Program including classes, technical and financial assistance in private restoration activities to entire Basin. Include information on conservation easement opportunities as well as land use options.		Yes, Snohomish County Streamside Courses, Creekside Living, Issaquah	Low
I703	Riparian vegetation displaced by invasives or low eco value plants; higher water use at times when flows lowest	Protect and improve riparian habitat to provide source of food & shelter, limit erosion, and reduce supplemental watering needs	Commercial and residential Shoreline property owners	Encourage commercial and residential streamside restoration & removal and replacement of non-native vegetation by reducing or eliminating local permit processes and fees.	Medium - High	?	?
I704	Riparian vegetation displaced	Protect & restore riparian vegetation to provide shelter and food; protect and restore water quality, maintain instream flows	Residential shoreline property owners; general public; youth	Update salmon-friendly behavior educational materials such as <i>Salmon Friendly Gardening Practices</i> , <i>Going Native</i> , <i>Watershed Waltz</i> and <i>Sammamish Swing</i> booklets and Water Quality Consortium posters. Print and distribute to the following prioritized audiences: 1) Shoreline landowners; 2) Community Meeting Spaces such as libraries, city halls, local festivals, etc.; and 3) K-12 classrooms.	Medium - High	Yes.	Low-Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority H, M, L	Proven Track Record/ Model	Level of Financial Commit.
I705	Lack of large woody debris as source of shelter, pools, riffles	Overcome public fear and resistance to providing and maintaining woody debris along shorelines and subsequent source of cover, pools, riffles	Shoreline property owners, general public, youth	Increase public awareness about the value of large woody debris and native vegetation for flood protection, salmon habitat, and healthy streams. Convey through media (local newspapers, community newsletters); displays, website, 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. Continue outreach at festivals such as Salmon Days and Sammamish Watershed Festival; via local cable channels; and hatchery docent presentations.	High for shoreline landowners / low for others	Yes. Existing King Co brochure, currently out of print.	Low
I706	Channel confinement, loss of riparian buffer and sources of large woody debris, pools, riffles, and terrestrial food source; 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	Increase interpretation (signs, tours) and directed visitation at restoration sites on public lands to better convey how practices observed can be tried on private lands.		Yes. Redmond River Walk, Juanita Beach, Classic Nursery, Lake Forest Park Stewardship Projects	Medium
I707	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	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.		Salmon Information TV,	Variable
I708	All conditions listed	Protect and	Shoreline and	Increase awareness of new landowners concerning	Medium	Yes. King	Medium /

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority H, M, L	Proven Track Record/ Model	Level of Financial Commit.
	above	improve riparian and forest habitat	Forested Area property owners	sensitive areas and environmental stewardship options of streamside properties by educating local real estate agents. 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.		County Dept. of Development & Environmental Services real estate classes and notice on title.	Low
I709	Riparian vegetation displaced by lawn, invasives, or exotics; water quality compromised by landscape practices; higher water use at times when flows lowest	Protect and improve riparian and forest habitat; protect water quality. Increase watershed literacy and best management practices by shoreline property owners	Streamside and Forested Property owners	Create and distribute "Streamside / Forest Living Welcome Wagon" packages focused on shoreline and forested area stewardship. Include information water conservation incentive tools and erosion control techniques.	Medium	WaterTenders	Low/Medium
I710	Water quality degraded by leaks from septic systems, increased organics, hormones, toxics	Protect water quality from septic tank failures	Shoreline property owners, installation contractors, and real estate professionals	Increase outreach to shoreline homeowners on septic tanks about proper siting and maintenance of their waste systems. In addition to targeted mailings, offer free or low cost inspections and technical assistance.	Medium-High	Yes, King County Public Health Dept. Wastewater Training Programs for Homeowners, Realestate Professionals, and Contractors; Hood Canal Coordinating Council, Chesapeake Bay Cleanup Program	Medium
I711	All conditions listed	Protect forest cover; protect & restore wetlands,	General Public	Foster voluntary stewardship related to monitoring, restoration and public education. Support community organization or neighborhood capacity and partnership	High	Yes. Issaquah Basin Action Team, City of	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority H, M, L	Proven Track Record/ Model	Level of Financial Commit.
		headwaters, critical salmon habitat; increase public support for land acquisition and restoration efforts, as well as landuse policies		efforts throughout entire Issaquah Basin. Continue the Issaquah Basin Action Team and expand to include more community representation from the East Fork communities and the upper Issaquah Basin.		Issaquah Resource Conservation Office stewardship programs.	
I712	Water quality degraded by excessive nutrient inputs (and subsequent decrease in oxygen), erosion and sedimentation, grasses clogging channels	Protect and restore riparian vegetation, protect and restore water quality	Livestock owners (Horse farms)	Provide classes, tours, and assistance in implementing livestock operation best management practices. Increase number of properties that have adopted "Farm Management Plans". Gear classes to small "hobby farmers."	Medium	Yes. Horses for Clean Water and King Conservation District Programs	Low
I713	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; protect& restore water quality, maintain instream flows.	Landscape Contractors	Offer professional workshops to landscape designers/contractors on environmentally-friendly streamside landscaping. Include topics such as riparian design, plant selection, installation techniques, use of compost to build healthy soils, efficient watering techniques, role of LWD and erosion control. Determine need for training for non-English speaking participants. Increase likelihood of improving shoreline landscape conditions by bringing on-board the industry with large influence over the landscapes within watershed.	High	Yes. Washington Assoc. of Landscape Professionals (WALP) trainings	Low – Medium
I714	Native vegetation displaced by lawn, invasives, or exotics with low ecological value.	Provide food source for wildlife; reduce need for pesticides and supplemental landscape watering (once established)	Community	Increase number of native plant salvages where landowners can take plants back to their yards. Publicize opportunity to drop off unwanted native plants with the Mountains to Sound Greenway Trust nursery at Lake Sammamish State Park.	Low	King County Native Plant Salvage Program.	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority H, M, L	Proven Track Record/ Model	Level of Financial Commit.
I715	Loss of forest cover, increased impervious areas, decreased infiltration and ground water recharge, increased run-off and subsequent flashiness of floods	Protect forest cover and conditions that more closely mimic natural hydrology; reduce bed scour, provide source of cool water through groundwater seepage	General public, but property owners in particular	<p>Increase outreach concerning the benefits of trees and basin-wide forest coverage to protect water quality and maintain instream flows. Include information that links canopy cover to storm water issues.</p> <p>In urban areas, protect remaining trees and encourage reforestation through street tree programs, tree protection regulations, landscaping incentives, and redevelopment.</p> <p>Clarify hazardous tree issues. Suggest hazardous trees be replaced with new plantings.</p> <p>Consider developing a marketing campaign with nurseries and arborists, promoting the benefit of trees to salmon and watershed health.</p>	High in rural areas; Medium in urban/s uburban areas.	Yes, Sammamish ReLeaf; Mountains-to-Sound Greenway; City tree ordinances	Variable - Medium
I716	Loss of riparian vegetation, forest cover, creek mouth degradation, degraded water quality	Protect and improve riparian and forest habitat	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. Expand opportunities throughout the basin.	High	City of Issaquah Resource Conservation Office; King County Salmon Watcher program, Hatchery Docent program	Medium
I717	All conditions listed	Cultivate ethic of environmental stewardship; increase watershed awareness and links between manmade habitat and environmental health	Youth	Expand linkage environmental stewardship opportunities and community service requirements with the scouting community and K-12 and higher learning school community service requirements.	Medium	Yes. Environmental Portal Seattle, Mercer Slough Interns Prog, N. Shore Utility Tour, Water Tenders.	Low
I718	All conditions listed	Improve watershed awareness;	Youth; FISH Docents	Focus environmental/science curricula on local watershed issues, with particular emphasis on key factors limiting the Issaquah Basin subpopulation.	Medium	Yes	Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority H, M, L	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					
I719	Reduced forest cover, increased impervious areas, decreased infiltration and groundwater recharge	Mimic natural hydrology more closely; reduce flashiness of run-off with smaller yet more localized storage capacity	Developers, Architects, Engineers	Provide professional workshop and tours focusing on sustainable building / design practices to architects, landscape architects, engineers, and developers. Build partnerships with professional associations to highlight the benefits of design and building practices that maintain watershed health.	Medium	Yes. Idea House;	Low – Medium
I720	Instream Flows Water Quality; Habitat Quality	Protect and improve riparian and forest habitat quality and quantity, flows and water quality	Commercial Community	Recognize businesses that work to improve watershed health by using best management practices in construction or everyday business practices. Create and run an annual award that can publicize one business a year in a variety of means including local media, professional magazines, etc.	Medium	Yes. King County Business for Clean Water.	Low
I721	Insufficient instream Flows	Maintain adequate flows	High-end water users, general public	Promote availability of water conservation education and incentive programs (e.g., rebates for efficient toilets, appliances, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8. Support conservation efforts within the Cascade Water Alliance.	High	Yes. Smart & Healthy Landscapes, Water Cents, utility incentive programs.	Low
I722	Loss of forest cover, organic content in soils, increase in impervious areas and increased run-off, degraded water quality flashiness during flood conditions.	Protect and improve riparian and forest habitat protect and restore flows and water quality.	Developers, Architects, Engineers	Support the Built Green campaign that tracks demand among community residents for green homes. Assist in publicizing the results and recognizing sustainable design. 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.	Low - Medium	Yes. Built Green Program. AIA, ASLA, Sunset Magazine and Seattle Times Home and Garden Awards	Low
I723	Water quality	Protect and	General	Offer the Natural Yardcare Neighborhoods Program and	Medium-	Yes	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority H, M, L	Proven Track Record/ Model	Level of Financial Commit.
	compromised by garden chemicals, metals, sediment. Higher water use at times when flows lowest.	improve water quality; increase food and shelter for wildlife	public	other landscaping education opportunities to communities in the Issaquah Basin. Encourage more Basin residents to visit the Pickering Farm Community Teaching Garden.	High		
I724	Water quality degraded by toxics, oils, metal fines	Protect and improve water quality	General public; charity clubs; businesses	Encourage alternatives to charity cash washes and/or extend car wash kits beyond City of Issaquah and develop and distribute 'alternative community fundraising idea' brochure to volunteer fundraisers. Extend requirement that all charity car washes require car wash kit to entire Issaquah Basin. Educate businesses on this requirement. Encourage use of commercial car washes in Issaquah Basin.	Medium	City of Issaquah Car Wash Kit; Puget Sound Car Wash Association Coupons	Variable – Low
I725	Water quality degraded by toxics, oils, metal fines	Protect and improve water quality	Business; homeowner associations	Educate and support retail business and homeowners' associations on stormwater best management practices specifically related to parking lot cleaning, storm drain maintenance and road cleaning.	High		
I726	Water quality degraded by toxics, oils, metal fines	Protect and improve water quality	General Public	Evaluate effectiveness of storm drain stenciling program in City of Issaquah. If deemed effective, make Issaquah Basin-wide stenciling program..	Medium – Low	Yes.	Low
I727	Degraded forest cover, sensitive areas	Protect and improve riparian and forest habitat quality and quantity	Forested landowners, general public	Better education of landowners abutting Native Growth Protection Easements about allowable activities through local media, direct mail, presentations and government cable channels.	Medium	Sustainable Seattle?	Medium
I728	Insufficient instream Flows	Maintain Adequate flows	General Public	Encourage rainwater harvesting and greywater capturing for reuse in landscaping irrigation through demonstration projects, workshops and educational materials.	Medium	Pickering Farm Community Teaching Garden (Issaquah)	Medium
I729	Water quality degraded by toxics, pesticides, metals, increased nutrient loads, sediment; loss of rip. vegetation	Protect and restore water quality	General Public	Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted in-stream grading, and wood removal incidents.	High	Seattle Public Utilities Surface Water Pollution Prevention Hotline and website	Low

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

Proj #	Habitat Condition	Desired Outcome	Target Audience	Action	Priority	Proven Track Record/Model	Level of Financial Commit.
I730	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
I731	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; Creekside Property Owner workshops by Issaquah, Seattle Public Utilities, and Snohomish County; Natural Yard Care Neighborhoods	Medium-High
I732	Forested parcels threatened by development, 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	Save Lake Sammamish, Lake Forest Park Stewardship Foundation, Denny Creek Neighborhood Association	Low
I733	Riparian vegetation displaced by lawn,	Protect and improve rearing and	Lakeshore property	Update where necessary salmon-friendly educational materials such as <i>Sammamish</i>	Medium - High	Yes	Low-Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	invasives, or exotics; water quality compromised by garden chemicals, metals, sediment; elevated water temperatures due to increased water use at times when flows lowest.	migratory habitat; protect and restore water quality	owners, general public	<i>Swing, Salmon Friendly Gardening Practices, Going Native, and Watershed Waltz</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.			
I734	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
I735	Solid overwater surfaces that create sharp light contrast and dark shadows, conditions favored by predators.	Reduce severity of predation on juveniles	Lakeshore property owners	Promote mutual value of mesh docks, smaller piling sizes, and community docks to both salmon and property owners: reduced predation for fish; reduced maintenance for homeowners, opportunity to watch small 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.	High		Medium
I736	Sharp light contrast	Reduce severity of	Lakeshore	Offer financial incentives for community docks in	High		Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	and dark hiding spots created by overwater structures, conditions favored by predators	predation on juveniles by reducing number of docks.	property owners	terms of reduced: permit fees, loan fees/percentage rates, taxes and permitting time, in addition to reduced construction costs			
I737	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 .
I738	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> . 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.	High	Various Bert the Salmon Ad campaigns	
I739	Lack of appropriate shoreline vegetation, shoreline hardening by vertical wall bulkheads and rip rap walls; docks that create stark light contrast and	Reduce conditions favored by predator species by “softening” shoreline; increase shoreline buffer vegetation and	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	Medium – High	Redmond River Walk, Juanita Beach, Classic Nursery, Lark Forest Park Stewardship projects	Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	hiding spots for predators	sources for large and small woody debris, replace the many docks with more salmon friendly designs		contain elements that can be done by average shoreline property owner. Provide information on costs and advantages of alternate treatments.			
I740	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	Salmon Information TV	Variable
I741	Coarse substrate, steep slope, dark hiding spots for predators caused by bulkheads and solid surface docks.	Overcome resistance of shoreline property 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.	Lakeshore property owners, general public	Combine recreation and education. Organize a Bulkhead Alternatives and Salmon Friendly Dock Design tour to see good examples of design on a residential scale. 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.	Medium-Low	King County and People for Puget Sound shoreline homeowner workshops (pilot programs)	Variable
I742	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	Landscape Contractors	Offer professional workshops to landscape designers & contractors on environmentally-friendly <u>lakeshore</u> landscaping. Include topics such as shoreline buffer function and design, native plant selection (including ones that can handle large water level fluctuation of Lake Sammamish), 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

Proj #	Habitat Condition	Desired Outcome	Target Audience	Action	Priority	Proven Track Record/Model	Level of Financial Commit.
		instream flows upstream to provide source of cooler water					
I743	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. Extend outreach to retail nurseries which offer design seminars and can strengthen market for native/wetland plants.	Medium - High	1998 Lake Sammamish Shoreline Prop owners workshop Pilot Program King Conservation District programs	
I744	Lack of shoreline buffer vegetation, increased water use when levels lowest; increased perceived need for pesticides	Increase native vegetation and source of shelter and food for fish; reduce erosion and need for supplemental irrigation (once established)	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.	Medium - Low	King County Native Plant Salvage Program	
I745	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
I746	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
I747	Reduced forest and canopy cover; increased impervious	Protect and improve water quality; reduce quantity of water	General public, but property	Increase outreach concerning the benefits of trees and basin-wide forest coverage to protect water quality.	Medium-High	Sammamish ReLeaf; Mountains-to-	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	areas, decreased infiltration; more flashiness of floods due to intensity of runoff	entering lake: during flood conditions can mix with sanitary sewer flows and enter lake.	owners in particular	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.		Sound Greenway; City tree ordinances, King County Forestry Program	
I748	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 quality, habitat quality	Protect forest cover, reduce paving and impervious areas, increase infiltration and conditions that mimic natural hydrology, protect and restore 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 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. 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.	Medium – High	WALP Trainings by King County Local Hazardous Waste Management Program. Stoneway Concrete Council for Sustainable Development outreach on pervious pavement. Port Blakely Communities, Issaquah partnerships, Built Green, Sustainable Seattle, LEEDS	Variable
I749	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	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.	Medium	AIA, ASLA, Sunset Magazine, and Seattle Times Home and Garden awards, King County Enviro Stars.	Low
I750	Water quality degraded by metals,	Protect and improve water quality	General Public	Create a program that addresses impact of car maintenance and offers alternatives that help	Medium	King County Local Hazardous Waste	variable

Proj #	Habitat Condition	Desired Outcome	Target Audience	Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	toxins, pesticides, and nutrient overloads			<p>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> <p>Make outreach materials available to non-English speakers</p>		<p>Mgmt Program</p> <p>Water Quality Consortium, Businesses for Clean Water</p>	
I751	Water Quality degraded by toxics and metal fines	Protect and restore water quality	General Public	<p>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.</p>	Medium	Commute Trip Reduction Programs	Low - Medium
I752	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.	<p>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.</p>	Medium - High	Yes, various cities’ car wash kit programs. Puget Sound Carwash Association	Low
I753	Water quality degraded by metals and toxins	Protect and restore water quality	Businesses, property management companies, homeowners associations.	<p>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.</p>	Medium	Ongoing programs by various jurisdictions within WIRA, e.g. Issaquah, Redmond	Low
I754	Reduced baseflows from streams that feed into lake and subsequent elevated	Protect and restore sources of cool water	High end water users and general public	<p>Extend availability of water conservation incentive programs such as rebates for efficient toilets, appliances, soaker hoses, free indoor conservation kits, or free landscape irrigation</p>	High	Smart & Healthy Landscapes, Water Cents, and other utility incentive	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	water temperatures in lake			audits to decrease household and commercial water consumption.		programs	