

May 15, 2008

**Enhancing Implementation of Programmatic Actions
to Protect and Restore Habitat in the Lake Washington,
Cedar, Sammamish Watershed (WRIA 8)**

*Report to the Washington Department of Ecology
under DOE grant #G-0700302*

Project Completion Report

Funding for this project has been provided in part through EPA Grant Number X-096028501 to the Department of Ecology from the United States Environmental Protection Agency. The Department of Ecology allocates and administers funding for this project. The contents of this document do not necessarily reflect the views and policies of either the United States Environmental Protection Agency or the Department of Ecology, nor does the mention of trade names or commercial products constitute endorsement or recommendation for their use.

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Introduction

The central goal of this project is to enhance implementation activities of programmatic components of the 10-year Lake Washington/Cedar/Sammamish (WRIA 8) Chinook Salmon Conservation Plan (hereafter the WRIA 8 Plan). The WRIA 8 Plan's "Start List" contains over 170 of the highest-priority recommendations, both project and programmatic, selected from the Plan's 1200 comprehensive recommendations. The Start List recommendations address ecosystem needs in the watershed including water quality, water quantity, forest protection, and habitat protection and restoration.

This project, funded through a U.S. EPA grant (administered by the Washington Department of Ecology), had three main elements:

1. Analyze similarities between the WRIA 8 Plan priority programmatic recommendations and actions called for in other important regional programs and planning efforts, and recommend approaches to integrate, prioritize and sequence watershed actions within WRIA 8. This element was addressed primarily through analysis of nine significant broad-scale programs and policies (listed below), together with the creation of a database of Plan recommendations.
2. Identify actions in the WRIA 8 Plan that contribute to the U.S. EPA's National Estuary Program objectives (as stated in the 2000 *Puget Sound Water Quality Management Plan* and 2007-2009 *Puget Sound Conservation and Recovery Plan*). This element was addressed through programmatic analysis as part of element 1 and through consultation with representatives of the Puget Sound Partnership.
3. Identify actions in the WRIA 8 Plan that need improved state and federal resource agency support. This element was addressed through consultation with WRIA 8 staff, Technical/Implementation Committee members (stakeholders), and others.

Programmatic linkages – We focused our analysis on identifying linkages between the WRIA 8 Plan and the following programs and policies:

- National Pollution Discharge Elimination System (NPDES) Phase II Permitting process
- Critical Areas Ordinances Updates
- Shoreline Master Program Updates
- King County Flood Hazard Management Plan
- Growth Management Act and comprehensive land use planning policies
- National Estuary Program and Puget Sound conservation and recovery planning
- King County Groundwater Protection Program
- Regional Water Supply Planning process
- Cedar River Habitat Conservation Plan

Identification of overlapping priorities will help us leverage implementation of the WRIA 8 Plan through partnerships with these programs, or through the mechanisms called for in

their processes, as well as help determine where the barriers or opportunities exist for creating such partnerships as we implement the plan. In addition, the database can serve as the foundation for tracking and implementing programmatic recommendations throughout the watershed.

Deliverable 1.1: Areas of overlap and recommended approaches for integrating, prioritizing, and sequencing watershed actions within WRIA 8

There is a high degree of overlap between the WRIA 8 Plan and the programs analyzed for this project. Of the 171 Start List recommendations, 131 (77%) have connections to one or more of the programs analyzed (Figure 1), while the remainder are capital projects. The following section summarizes the highest-priority linkages between WRIA 8 Plan recommendations and related programmatic activities. (Appendix B contains the full text of our separate analyses.)

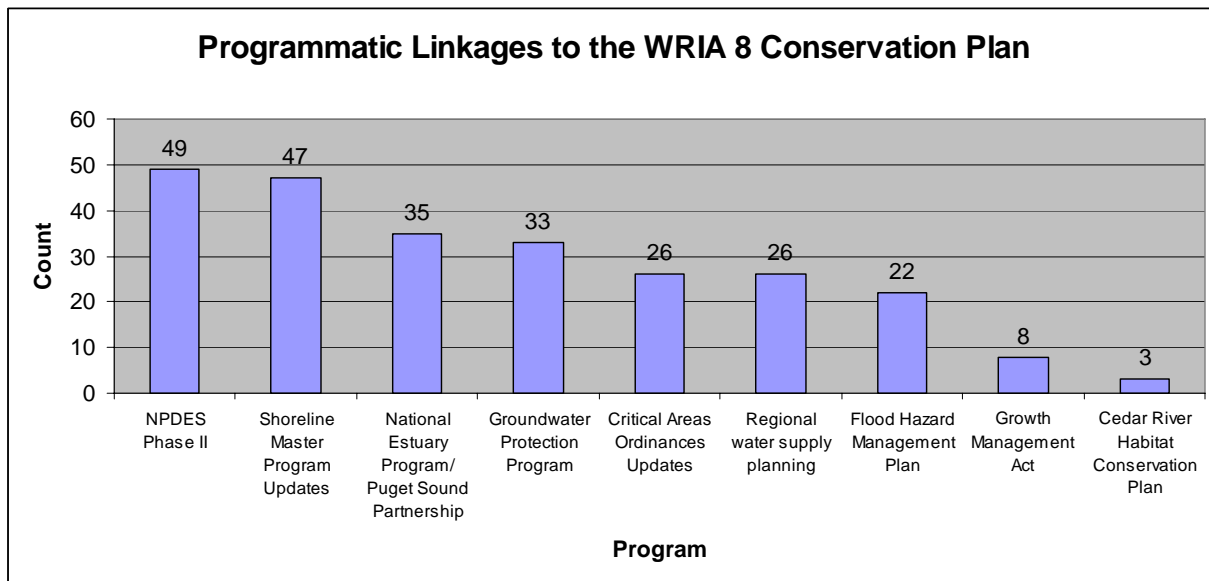
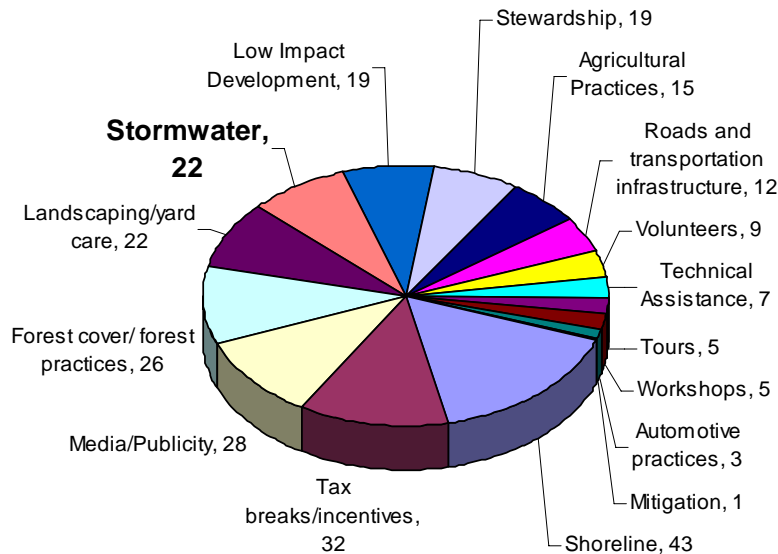


Figure 1. Programmatic linkages to the WRIA 8 Salmon Conservation Plan. The Plan Start List (Chapter 9) contains 171 recommendations. The number above each bar is the number of recommendations in the Start List with links to that program. Some recommendations contain linkages to more than one program.

National Pollution Discharge Elimination System (NPDES) Phase II Permit - The Western Washington Phase II Municipal Stormwater Permit regulates stormwater runoff and discharges from “small” municipal separate storm sewer systems (i.e. systems serving a population over 1,000 but less than 100,000). In accordance with Section 5 of the permit, each permitted jurisdiction must develop and implement a Stormwater Management Program to protect water quality and reduce pollutant discharge to the “maximum extent practicable.” This requirement is significant, as 21 of the 27

jurisdictions in WRIA 8 are subject to the requirements of Phase II. (Another three jurisdictions – King County, Snohomish County and the city of Seattle – are subject to Phase I requirements.) Stormwater management is also a recurring theme in the WRIA 8 Start List, with at least 22 recommendations addressing the topic (Figure 2).

Figure 2. WRIA 8 Plan recommendations by keyword.



Overlapping recommendations: Key areas of overlap between the NPDES Phase II permit and the WRIA 8 Plan fall under the general categories of education and outreach, regulatory activities, and collaboration.

- *Education and Outreach* – A regionally or locally-developed public outreach and education program is a requirement of the permit under Phase II; similar activities are also recommended in the WRIA 8 Plan. Three broad groups are most often targeted in the WRIA 8 Plan:
 - Homeowners, landscapers, and property managers;
 - The general public; and
 - Engineers, contractors, developers, review staff, and land use planners.
 The following activities offer significant opportunities to achieve both WRIA and NPDES objectives:
 - Activities related to home and business landscaping practices (including design and maintenance),
 - Low impact development techniques,
 - General stormwater BMPs, and
 - Reduction of runoff on lands owned by permittees by educating municipal operations and maintenance staff.
- *Regulatory Activities* – Regulatory activities as defined here involve the modification of existing regulations or the enforcement of current regulations.

Within the WRIA 8 Start List, the regulatory-focused recommendations with ties to Phase II permitting seek to:

- Improve water quality through the reduction of sediment inputs and flashy flows,
- Reduce the bed-scouring effects of flashy flows, and
- Increase the practice of low impact development.
- *Collaboration / Coordination* – Creating effective partnerships with other governmental agencies, stakeholder groups, and citizens is critical to the success of salmon conservation and recovery in the WRIA. The majority of such actions in the WRIA 8 Plan call for coordination with local businesses to promote low impact development; best management practices for private property, car washing, pet waste, and lawn chemicals; and collaboration to protect and restore forest cover and native vegetation. The NPDES Phase II permit specifically calls for coordinated efforts among permittees to achieve objectives of individual stormwater management programs.

Critical Areas Ordinances – By statute, the purpose of designating critical areas is to protect the natural environment and public health/ safety, including measures needed to preserve or enhance “unique, fragile and valuable elements of the environment,” with special consideration to actions that preserve or enhance anadromous fisheries. Consequently, critical areas ordinances offer significant potential for achieving salmon conservation objectives in WRIA 8. Critical areas ordinances can help achieve the following high priority salmon recovery objectives:

- Protection of aquatic areas
- Protection of riparian buffers and nearshore vegetation
- Protection of forest cover
- Protection of wetlands
- Protection of water quality (through ordinances, groundwater protection)

Overlapping recommendations: Key recommendations in the WRIA 8 Plan with linkages to CAOs suggest strict enforcement of existing regulations to protect riparian buffers, aquatic areas, forest cover, wetlands and nearshore vegetation.

Shoreline Management Act and Shoreline Master Programs – The primary goal of the Shoreline Management Act (SMA) is “to prevent the inherent harm in an uncoordinated and piecemeal development of the state’s shorelines.” Local governments administer the SMA largely through local Shoreline Master Programs (SMPs). The preparation of master programs should “consider all plans...made or being made by federal, state, regional, or local agencies...dealing with pertinent shorelines of the state” (RCW 90.58.100). Given the WRIA 8 Plan’s significant focus on shoreline habitat, broad overlap exists between the WRIA 8 Plan and the requirements of local SMPs.

The state Department of Ecology outlines the schedule for SMP updates. Fifteen WRIA 8 jurisdictions are due to complete their updates by 2011.

Jurisdictions are also required by the state to prepare characterizations of their shorelines and the ecological functions of these shorelines, as well as address shoreline restoration. As a component of their discussion of shoreline ecological functions, jurisdictions must consider attributes such as:

- Water quality
- Woody debris recruitment
- Sediment regime
- Flow variability
- Watershed connectivity
- Habitat required by anadromous fish

Overlapping recommendations: The primary linkages between the WRIA 8 Plan and the requirements of SMPs are tied to forest cover and riparian buffers, and significant opportunities exist to meet the recommendations called for in the Start List through the mechanisms of the Shoreline Master Programs. Examples include:

- *Regulatory mechanisms* – Enforcement of aquatic buffers and limiting of variances is cited in the Start List as a priority. Enforcement activities could commence under policies developed through SMPs, and shoreline regulations could disallow variances in all but the most exceptional circumstances;
- *Incentives* – Incentives are discussed in the Start List as a means to protect or restore riparian buffers and are likewise listed as a policy approach in the King County SMP (through transfer of development rights or the Public Benefit Ratings System);
- *Education* – WRIA 8 or King County staff should provide information to jurisdictions that are in the process of characterizing their shorelines about those areas most important to the recovery of salmon in the watershed. While not education in the traditional sense, education of this variety can promote WRIA 8's priority shorelines, which could in turn give them higher visibility in jurisdictions' SMP updates;
- *Restoration Projects* – Shoreline restoration is an important element of Shoreline Master Programs, and salmon recovery projects are an identified policy approach under the Shoreline Management Act. Thus, incorporating restoration of high priority shorelines into WRIA 8 jurisdictions' SMP restoration plans would not only meet SMA requirements, but would accomplish salmon recovery objectives as well.

Addressing buffers and forest cover, especially in “shorelines of the state,” will have positive feedback effects on water quality, woody debris, and stream flow, all of which could improve salmonid habitat generally.

Flood Hazard Management Plan – The King County Flood Hazard Management Plan was adopted in January 2007 as a 10-year strategy to help the region prepare for and minimize the impacts of future floods. Plan priorities are:

- Improve public safety and reduce property damages;
- Reduce the risk of levee and revetment failures by completing high priority capital improvement projects for flood protection facilities;
- Continue the targeted acquisition of repetitive loss properties and other at-risk floodplain properties to minimize the need for flood protection facilities in locations where river and floodplain confinement is infeasible or no longer a public priority;
- Further expand the regional Flood Warning Center operations and public education and outreach;
- Support ongoing updates to existing FEMA floodplain maps and other technical studies in support of effective implementation of floodplain regulations;
- Expand partnership and collaboration opportunities with other floodplain stakeholders, including but not limited to cities, private property owners, tribes, and watershed forums;
- Provide for ongoing risk assessments in support of an adaptive management approach to hazard identification, solutions development, and Plan implementation.¹

The Flood Plan explicitly advocates efforts that support natural hydrologic processes as well as flood hazard management; therefore, a connection exists between the Flood Plan and those actions in the WRIA 8 Plan that contribute to protecting or restoring watershed processes. The Flood Plan also recommends a number of capital projects that are similar or identical to projects in the WRIA 8 Plan. These site-specific recommendations include acquiring repetitive-loss properties in the flood plain and setting back levees to allow more natural hydraulic processes to operate along parts of the river corridor.

Overlapping recommendations: The majority of funding and attention related to overlapping linkages between the Flood Plan and WRIA 8's Conservation Plan is focused on capital projects (see Appendix B). The newly established King County Flood Hazard Management District is planning a large number of projects that will help protect and restore floodplain areas and therefore will also advance WRIA 8 Plan objectives. A number of these projects are located along the Cedar and (to a lesser extent) Sammamish Rivers and so directly affect salmon recovery efforts. Opportunities to collaborate in developing hydrologic models and wood budgets for the Cedar and Sammamish Rivers could aid adaptive management efforts. Efforts to communicate to the public that more "natural" floodplains can be more resilient during flooding could benefit both programs' objectives.

Growth Management Act – While CAOs (discussed above) are a major component of growth management legislation, there are also relevant aspects of the Growth

¹ King County. 2006. *Flood Hazard Management Plan: King County, Washington*. King County Department of Natural Resources and Parks, Water and Land Resources Division, Seattle, Washington.

Management Act (GMA) with other linkages to salmon recovery. Under the GMA, counties must designate “Urban Growth Areas,” or UGAs. Such designation involves the creation of policy planning boundaries “within which urban growth shall be encouraged and outside of which growth can occur only if it is not urban in nature” (RCW 36.70A.110). The WRIA 8 Plan calls for growth to be managed in such a way that negative impacts on salmon are minimized.

Overlapping recommendations: A fundamental recommendation in the WRIA 8 Plan is the maintenance of existing UGA boundaries, unless altering the boundary would be beneficial for salmon species. Two sub-areas identified in the plan as particularly critical in this regard are Bear/Cottage Lake Creek and Little Bear Creek.

Other recommendations related to urban growth area designation include:

Within UGAs:

- Manage growth to minimize impacts on water quality, forest cover, and flows.
- Promote low impact development.

Outside UGAs:

- Promote livestock best management practices to protect ecological functions.
- Use incentive programs to protect forest cover and buffers.
- Ensure properties protected through acquisitions or easements are maintained over the long-term.

National Estuary Program – (See also Deliverable 2.2.) The National Estuary Program (NEP) was established by the U.S. Congress in 1987 in amendments to the Clean Water Act. Its primary objective is to protect ‘estuaries of national significance’ that are threatened by degradation caused by human activity. The program is administered by the U.S. Environmental Protection Agency, which provides funding and technical support to local NEPs. There are currently 28 estuaries of national significance in the U.S. Administration of the NEP for Puget Sound is the responsibility of the Puget Sound Partnership.

Overlapping recommendations: There is a very high degree of overlap between National Estuary Program and WRIA 8 salmon recovery objectives; most recommendations in the WRIA 8 Start List have clear connections to broader Puget Sound priorities. The most direct linkages and priorities include the following:

- *Low impact development* – Jurisdictions should continue to adopt or revise regulations to encourage the use of low impact development techniques. Partners should support high-visibility LID projects and provide information to developers, the public, and other jurisdictions. Promote LID through design competitions, media outreach and other mechanisms.
- *Stormwater* – As part of the NPDES permitting process, continue to adopt and enforce stormwater regulations and best management practices consistent with (or exceeding) Washington Department of Ecology’s 2001 Stormwater Management

Manual. Take steps to increase stormwater infiltration (including low impact development) to augment base flows and groundwater recharge.

- *Education and outreach* – Educate homeowners, vehicle owners, small-acreage landowners, and local government staff in maintenance and management practices to reduce harm to water bodies from runoff, toxic substances, nutrients, and other sources.
- *Transportation runoff* – State/local transportation departments should address stormwater runoff from roads and road projects, including retrofits and new construction.
- *Habitat protection and restoration* – Protect ecologically important acreage. Identify and carry out highest priority restoration projects.

Groundwater Protection Program – Until late 2007, the King County Groundwater Protection Program worked to protect the quality and quantity of groundwater for human use and to preserve fish and wildlife habitat. This program sought to integrate groundwater protection with the protection of all water resources, as well as incorporate groundwater protection into other public health and safety efforts. In addition, the program helped local communities integrate groundwater issues with other local planning efforts. The program is unfunded for 2008.

Overlapping recommendations: The following items are key linkages between the Groundwater Protection Program and the WRIA 8 Plan:

- Encourage low-impact development and natural drainage systems to promote groundwater recharge.
- Protect stream flow and hydrologic integrity (including headwaters) through regulations, incentives and acquisitions.
- Educate the public about the importance of groundwater for human health, fish and wildlife, and ecosystem processes.

Regional Water Supply Programs – (Also reported in Deliverable 1.5.) The regional water supply planning process is a multi-jurisdiction effort to develop regional technical information on current and emerging water resource management issues in and around King County. Participants include the Washington Departments of Ecology, Health, and Fish & Wildlife, King County, the Puget Sound Partnership, the Muckleshoot Indian Tribe, various cities and utility districts in King and Pierce Counties, business and environmental groups, and others. The work of this planning process is expected to produce information and recommendations in seven topic areas: climate change impacts, reclaimed water, small water systems, source exchange strategies, tributary stream flows, water demand forecast, and water supply alternatives. Technical committees are preparing reports on these topic areas; the reports are scheduled to be published in 2008.

Overlapping recommendations: Key linkages between the Water Supply Planning Process and WRIA 8 salmon recovery recommendations fall into the following general categories:

- Protect and restore groundwater resources through regulations, incentives, outreach, easements and acquisitions (including site-specific projects);
- Increase water conservation measures (including outreach);
- Improve stormwater management to promote groundwater recharge;
- Coordinate efforts with local and regional partners (including research);
- Address streamflow issues through new and existing regulations and programs.

Limitations: While the recent regional water supply planning process considered future municipal needs and surface water withdrawals, over 1,500 small wells have been permitted since 2000 in King County, and new permits are issued at a rate of ~150 per year. The potential impacts of small wells on future water quantity for salmon conservation and recovery remain uninvestigated.

Cedar River Habitat Conservation Plan (HCP) – The Cedar River HCP is a 50-year plan designed to conserve 83 species of fish and wildlife potentially affected by the operations of Seattle Public Utilities. The primary components of the HCP are:

- Mitigation for blockage of fish passage at the Landsburg diversion dam;
- Management of instream flows to provide a flow regime capable of supporting salmon and steelhead in the Cedar River mainstem;
- Forest and land management within the upper Cedar River watershed to provide habitat for a wide variety of species.

Overlapping recommendations: Overlaps between the Cedar River HCP and the WRIA 8 Plan include the following:

- *Habitat protection* – Protect forest cover, riparian buffers, and channel complexity;
- *Habitat restoration* – Add large woody debris to restore channel complexity; decommission roads to restore floodplain connectivity; conduct other aquatic and riparian habitat restoration projects;
- *Protect and restore instream flows* – Provide adequate flows for all anadromous fish.

Deliverable 1.2: Project methods

The project team analyzed the programs discussed in the preceding section for connections to WRIA 8 Start List recommendations by comparing documented program goals and objectives with relevant programmatic elements to the WRIA 8 Plan, and coding each Start List action to reflect linkages to these external programs. The team also analyzed each Start List recommendation for connections to one or more “programmatic themes” and keywords reflected in the recommendation.

Programmatic themes used in this analysis are as follows (see Appendix A for more details):

- Outreach and education
- Regulatory actions
- Incentives
- Acquisition
- Stewardship
- Best management practices (BMPs)
- Study/monitor
- Collaborate/coordinate
- Protection
- Restoration

Keywords used in this analysis are:

- Agricultural Practices
- Automotive practices
- Forest cover/ forest practices
- Landscaping/yard care
- Low Impact Development
- Mitigation
- Media/Publicity
- Roads and transportation infrastructure
- Shoreline
- Stormwater
- Technical Assistance
- Tax breaks/incentives
- Tours
- Volunteers
- Workshops

Database Creation

Parallel to the programmatic analyses describe above, the team created a Microsoft Access database to enable detailed searching and sorting of Plan recommendations. The database allows for querying and sorting Start List recommendations in a variety of ways, including by program, affected jurisdiction, programmatic theme, limiting factor and keyword. More detailed discussion of the technical aspects of the database is contained in Appendix A.

Deliverable 1.3: Actions best implemented through an integrated approach

As outlined previously in this report, broad areas of overlap exist between the WRIA 8 Plan and the programs and policies analyzed in this project. Actions that are best implemented through an integrated approach include:

- Actions where multiple partners working together will be more effective than a single jurisdiction or agency working alone (for example, where an opportunity exists for peer to peer learning and information sharing between jurisdictions working towards similar goals).
- Actions where greater consistency in regulations and/or practices between jurisdictions would make all implementers more effective.
- Technically difficult actions needing new techniques, research and innovation where jurisdictions can pool resources to advance the best available practices.
- Outreach and education actions where consistent messages between partners can help everyone's message to be more effective and where pooled resources can lead to more effective educational campaigns.

All of the areas of overlap between the WRIA 8 Plan and other programs and policies analyzed in this report would likely benefit from an integrated approach. Based on ideas given above, actions that would have the greatest benefit from being implemented through an integrated approach are:

- Increase the use of low impact development practices throughout the watershed.
- Adopt and enforce stormwater regulations and best management practices meeting (or exceeding) Washington Department of Ecology's 2001 Stormwater Management Manual.
- Educate the public regarding practices that reduce harm to water bodies from runoff, toxic substances, nutrients, and other sources.
- Address stormwater runoff from roads and road projects.
- Support local/regional groundwater protection programs.
- Increase water conservation measures.
- Educate professionals, especially municipal operations and maintenance staff, on methods and policies to prevent or reduce pollutant runoff.
- Use existing incentive programs or develop new incentive structures to protect and restore riparian areas, shorelines, and forest cover.

Deliverable 1.4: Activities in WRIA 8 currently supporting low impact development

Seven WRIA 8 jurisdictions promoted LID in 2007, and another seven jurisdictions intend to promote LID in 2008. Additionally, all jurisdictions responding to a December 2007 survey (20 of 27) reported having stormwater regulations or a stormwater management program in place, and low impact development is cited as being a component of those regulations in thirteen of the jurisdictions.

A major step in supporting the broad implementation of low impact development is the creation of the multi-jurisdictional effort known as the Stormwater Outreach for Regional Municipalities (STORM). Led by staff at King County, this effort brings together the expertise of nearly three dozen jurisdictions to develop consistent regional messages about stormwater management. STORM recently received a grant to conduct their work, and WRIA 8 is listed as a focal area in the grant, especially Lake Washington and Lake Sammamish.

In addition, sixteen jurisdictions in WRIA 8 jointly applied for a grant through EPA to promote implementation of LID practices in the watershed. The group proposed to develop a website to share the latest LID information, create new tools/information to make LID more feasible, and coordinate policies and codes across jurisdictions to make it easier for developers to use LID practices. Participating jurisdictions also proposed to recommend new incentives and pilot projects, as well as create a partnership with WSU Extension Pierce County to conduct LID training sessions for staff, elected officials, and LID designers. The grant was not funded in early 2008, but the jurisdictions intend to re-apply in the next round.

Deliverable 1.5: Recommendations for integration of regional water supply and groundwater plans with WRIA 8 actions

Background. The regional water supply planning process is a multi-jurisdiction effort to develop regional technical information on current and emerging water resource management issues in and around King County. Participants include the Washington Departments of Ecology, Health, and Fish & Wildlife, King County, the Puget Sound Partnership, the Muckleshoot Indian Tribe, various cities and utility districts in King and Pierce Counties, business and environmental groups, and others.

The work of this planning process recently produced information and recommendations in seven topic areas: climate change impacts, reclaimed water, small water systems, source exchange strategies, tributary stream flows, water demand forecast, and water supply alternatives. The following five committees have completed their analyses.

Climate change: Forecasts suggest the Puget Sound region will be warmer in summer as well as winter. The number of days above 90 degrees in the summer are projected to greatly increase, and there will much less precipitation and streamflow in summer, combined with less snowpack in winter (more precipitation in winter, but it will fall as rain). The committee published a number of technical memoranda in association with the University of Washington Climate Impacts Group, including a literature review of the impacts of climate change on groundwater, focusing on studies that may be relevant to the Puget Sound lowlands region.

Reclaimed water: The reclaimed water committee assessed the use, cost, and benefit of reclaimed water as a feasible source of supply for non-potable purposes. The final report from the committee is not yet available.

Small water systems: This committee addressed three issues: (1) provision of “timely and reasonable” service to new customers within a water utility’s service area; (2) small water system water quality sampling and enforcement; and (3) receivership of failing small water systems.

Source exchange: Source exchange is the temporary or permanent shift of water extraction from a source related to low instream flows (or high stream temperatures, or impaired water quality) to an alternate source. Significant committee findings included that relatively small flow quantities (i.e., ½ cfs) could potentially provide significant benefits to small streams. The committee report details issues and questions that a utility should consider when deciding on the feasibility and desirability of initiating a source exchange project. While the investigation was motivated by potential benefits to fish, there are significant costs involved and potential uncertainties regarding water rights issues. In addition, some utilities might feel that collecting and publishing detailed information related to source exchange could increase their exposure to regulatory action or liability under the ESA.

Tributary streamflow: The tributary streamflow committee created list of prioritized streams that would benefit from streamflow restoration, limiting their analysis to those streams that would conceivably benefit from a small (2-3 cfs) improvement. In WRIA 8, highest likelihood of benefit would be in these streams:

- Bear Creek
- East Fork Issaquah Creek
- Issaquah Creek
- Rock Creek (lower)

The following streams would exhibit a moderate likelihood of benefit:

- Sammamish River (benefit would be higher for higher flow rates)
- North Fork Issaquah Creek
- Cottage Lake Creek

The committee did not consider streams with existing flow agreements (even if those other agreements didn’t explicitly give priority to fish).

Linkages to WRIA 8 Salmon Conservation Plan. Twenty-six of 171 Start List recommendations (15%) have direct linkages to regional water supply issues. Key actions fall into the following general categories:

- Protect and restore groundwater resources through regulations, incentives, outreach, easements and acquisitions (including site-specific projects).
- Increase water conservation measures (including outreach).
- Improve stormwater management to promote groundwater recharge.

- Coordinate efforts with local and regional partners (including research).
- Address streamflow issues through new and existing regulations and programs.

Protect and restore groundwater resources through regulations, incentives, outreach, easements and acquisitions

- **Basinwide.** Protect headwaters and wetlands through critical areas ordinances, critical aquifer recharge area (CARA) provisions, stormwater infiltration regulations (including low-impact development) and best management practices, incentives (e.g., tax breaks, expedited permitting), conservation easements, and acquisition where regulation and incentives are not sufficient.
- Promote public support of protection measures with outreach to convey reasons behind regulations, consequences of not employing them, and ultimate benefits to environment and people.
- Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted instream grading and wood removal.

Site-specific projects:

- **North Lake WA & Sammamish River.** Where necessary, acquire parcels to protect headwaters on Bear, Cottage Lake, Cold, Little Bear, and North Creeks.
- **Issaquah Creek and Tributaries.** Where necessary, acquire parcels to protect headwaters on North Fork Issaquah, Carey and Holder Creeks.

Increase water conservation measures (including outreach)

- **Basinwide.** Promote water conservation education and incentive programs (e.g., rebates for efficient toilets, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8.
- **North Lake WA & Sammamish River.** Expand groundwater protection outreach messages to include the relationship between ground and surface water and the interconnectedness of all hydrologic systems. Include messages in water utility billings, newspaper articles, and school curricula; explore opportunities to partner with business such as local bottled water company.
- **North Lake WA & Sammamish River.** Increase outreach about illegal water withdrawals, including information about exempt wells (who and what purposes qualify), and maximum quantities that may be withdrawn per day. Clarify distinction between withdrawals taken from wells and diversions taken from the river without a water rights permit. Create citizen-based watchdog groups to watch for people drawing directly from creeks and streams.

Improve stormwater management to promote groundwater recharge

- **Basinwide.** Adopt and enforce stormwater provisions to address high flows and protection of base flows, including forest retention and low impact development best management practices. Encourage rainwater harvesting and graywater

capturing for reuse in landscaping irrigation through demonstration projects, workshops and educational materials.

Coordinate efforts with local and regional partners (including research)

- **Basinwide.** Work with Washington Department of Ecology and local health departments on regulations, incentives, and education related to impacts of surface and groundwater withdrawals, including illegal withdrawals and exempt wells. Develop public information about exempt wells and differences between water drawn from wells versus water diverted from streams without water rights permits, and support enforcement through development of citizen-based watchdog groups.
- **Cedar River.** Work with City of Seattle, Cedar River Instream Flow Commission, and other stakeholders on policies and procedures related to effects of flow on habitat restoration.
- **Cedar River – Rock Creek.** Work with the City of Kent to establish instream flows that are protective of Chinook through their Habitat Conservation Plan process.
- **Sammamish River – Bear Creek and tributaries.** Determine source of the Cold Creek groundwater springs in Cottage Lake Creek as a prerequisite to protection efforts.

Address stream flow issues through new and existing regulations and programs

- **Basinwide.** Address flow issues (i.e. quantity and timing) through new and existing regulations/programs including: critical aquifer recharge area (CARA) protections, land use regulations, groundwater management plans, stormwater regulations, and best management practices for infiltration, low impact development, etc.
- Control new development to minimize impacts on water quality, instream flows, and riparian buffers by encouraging low impact development through 3-tiered approach: 1) revise existing codes; 2) provide technical information to developers; 3) promote demonstration projects through incentives, technical assistance.

Recommendations. Water quantity issues need further scrutiny, especially related to wells and groundwater withdrawals in the Issaquah-Sammamish basin and their current and future impacts on streamflows. While the recent regional water supply planning process considered future municipal needs and surface water withdrawals, over 1,500 small wells have been permitted since 2000 in King County, and new permits are issued at a rate of ~150 per year. The potential impacts of small wells on future water quantity for salmon conservation and recovery remain uninvestigated. In addition, a groundwater protection program for the area was recently eliminated, and the effect of this on groundwater protection is uncertain.

Deliverable 1.6: WRIA 8 actions needing additional support and tools identified to address the gap in support

The complex, multi-jurisdictional and multifaceted nature of salmon decline requires an equally multifaceted approach to conservation and recovery. The preceding sections have outlined ways in which WRIA 8 Plan implementation is linked to other regional programs and policies. Now that these linkages have been identified, we must use the information gained and work collaboratively to improve salmon conservation. Some of the ways that WRIA 8 jurisdictions are already collaborating include the following:

- Jurisdictions working on Shoreline Master Program (SMP) updates meet regularly, with facilitation by the Washington Department of Ecology. At these meetings staff share information and address common issues. The meetings have proven so useful that jurisdictions around Lake Washington and Lake Sammamish have begun meeting regularly to discuss lakeshore issues.
- The WRIA 8 Implementation Committee hosts special-topic meetings open to the public. For example, in the past year the committee has held two meetings focused on lakeshore topics and the SMP; these meetings went beyond regulations to discuss issues related to working with private property owners, information sharing, and working together on outreach and education.
- In December 2007, WRIAs 7, 8 and 9 convened a cross-watershed assembly to discuss a collaborative legislative agenda and areas for cross-watershed collaboration. The attendees identified their top three areas for collaboration to be: developing a joint legislative agenda to seek funding for salmon plan implementation and monitoring; working together on education and outreach; and increasing incentives for low impact development for both existing and new development.
- As described in greater detail in Deliverable 1.4 page 12), sixteen WRIA 8 jurisdictions applied for an EPA grant in February 2008 to advance low impact development in the WRIA 8 watershed. Their proposal was not funded in the first round, but they hope to reapply.
- The WRIA 8 Communications Committee hosted a well-attended workshop in February 2008 on social marketing and changing environmental behaviors to help community groups, non-profit organizations as well as government staff from local, state and federal agencies improve their environmental programs and measure the effectiveness of their programs. Attendees also networked and shared information about their programs and lessons learned.

Additional work within the WRIA is needed to identify where further integration or collaboration across jurisdictions would be most beneficial. Potential topics or opportunities include:

- **LID.** Encouraging low impact development is a common theme within the WRIA. WRIA 8 jurisdictions will continue to seek opportunities and funding to work together to advance LID in new and existing development in WRIA 8.

- **Stormwater research.** Jurisdictions could pool efforts to promote new research and innovations in stormwater management and road runoff.
- **Funding collaboration.** Partners could collaborate in seeking new sources of regional funding for implementing salmon plans and for monitoring. Given the strong linkages between salmon conservation and other regional programs summarized in this report, implementation of regional salmon conservation plans would have great benefits to regional water quality, other aquatic species, and the overall health of Puget Sound.

Deliverable 2.1: WRIA 8 Plan actions contributing to the next update of the Puget Sound Conservation and Recovery Plan (or Puget Sound Partnership 2020 Agenda)

The WRIA 8 Salmon Conservation Plan is the product of nearly five years' collaborative work to create science-based priorities for protecting and restoring the physical and biological processes that support the recovery of Chinook salmon in the watershed. Implementing this and other NOAA-approved watershed plans will be the foundation upon which successful Puget Sound-scale recovery will be built, by restoring a key prey species for the endangered Puget Sound orca whale, improving water quality, enhancing the management of stormwater runoff, and engaging citizens in the protection and restoration of the shorelines and waters around Puget Sound. As such, the entire WRIA 8 Plan can be considered an integral part of Puget Sound conservation and recovery.

Additionally, WRIA 8 is the most populous and heavily urbanized watershed in the Puget Sound region, and serves as a glimpse into a possible future for other urbanized or urbanizing watersheds around Puget Sound. As the region continues to grow, other watersheds may look to WRIA 8 for ways to maintain and restore the natural processes upon which the health of Puget Sound depends. The substantial technical capacity that continues to focus our efforts here can be a model for work in other rapidly growing areas.

Deliverable 2.2: WRIA 8 actions contributing to outcomes for National Estuary Program

There is broad overlap between the goals and objectives of the WRIA 8 Salmon Conservation Plan and the Puget Sound National Estuary Program goals and objectives. In fact, implementation of the Puget Sound Salmon Recovery Plan is a stated goal of the 2007-2009 Puget Sound Conservation and Recovery Plan. The following action items from the 2007-2009 Puget Sound Conservation and Recovery Plan have the strongest parallels in WRIA 8 Start List recommendations.

- **Species protection**
 - *Implement the Puget Sound Chinook Salmon Recovery Plan* (and other plans).

- **Habitat protection and restoration**
 - Preserve functioning habitats through a variety of conservation tools.
 - Effectively update and implement regulations that protect functioning habitats.
 - Integrate and implement local watershed, salmon recovery and other plans.
 - Develop a network of sustainable resources to support Sound-wide education and stewardship.
 - Restore degraded habitats by restoring habitat-forming processes.
 - Plan and undertake large-scale nearshore restoration initiatives through the Puget Sound Nearshore Partnership.

- **Stormwater**
 - Increase the number of communities managing stormwater under NPDES permits.
 - Increase the number of communities implementing the comprehensive stormwater management program as outlined in the Puget Sound Water Quality Management Plan.
 - Increase the use of low impact development practices.
 - Manage runoff from state highways.

- **Toxics**
 - Reduce the use and generation of toxic chemicals.
 - Reduce the release of toxic chemicals to the environment.
 - Educate residents to change behaviors to reduce toxic contamination.

- **Nutrients and pathogens**
 - Support effective and innovative regulatory and non-regulatory nutrient/pathogen management approaches.
 - Educate and involve residents and others to enhance stewardship activities.

Recommendations. Given the broad overlap between National Estuary Program and WRIA 8 salmon recovery objectives, most recommendations in the WRIA 8 Chinook Conservation Plan Start List have clear connections to broader Puget Sound priorities. The most direct linkages and priorities fall into the following categories:

- **Emphasize low impact development.** Adopt or revise regulations to allow for or encourage the use of low impact development techniques. Support high-visibility LID projects and provide information to developers, the public, and other jurisdictions. Promote LID through design competitions, media outreach and other mechanisms. LID-related actions are found in 19 Start List recommendations.

- **Focus on stormwater.** As part of the NPDES permitting process, jurisdictions should adopt and enforce stormwater regulations and best management practices consistent with (or exceeding) Washington Department of Ecology's 2001 Stormwater Management Manual. Take steps to increase stormwater infiltration to augment base flows and groundwater recharge, including low impact development (see above). Stormwater issues appear in 22 Start List recommendations.
- **Education and outreach.** Educate homeowners, vehicle owners, small-acreage landowners, and local government staff in maintenance and management practices to reduce harm to water bodies from runoff, toxic substances, nutrients, and other sources.
- **Transportation runoff.** State/local transportation departments should address stormwater runoff from roads and road projects, including retrofits and new construction.
- **Habitat protection and restoration.** Protect ecologically important acreage. Identify, support and carry out the highest priority restoration projects. The WRIA 8 Start List includes approximately 160 high priority protection and restoration projects throughout the Lake Washington/Cedar/Sammamish watershed.

Deliverable 3.1: Recommended actions to improve State and Federal support of local watershed planning and implementation

The funding strategy ratified by the WRIA 8 Salmon Recovery Council relied upon funding increases of 50% or more from some State, Federal and regional sources, yet in many cases funding levels have actually declined well below 2004 averages. For example, State and Federal contributions to Salmon Recovery Funding Board (SRFB) funds for WRIA 8 have decreased from \$1.4 M in 2004 to \$610,000 in 2007. U.S. Army Corps of Engineers funds, which were projected to increase to \$2 M annually, were approximately \$310,000 in 2007. Lack of sufficient funding jeopardizes recovery of Chinook salmon in this and other watersheds. Financial and technical support is needed for habitat protection and restoration, capacity building at the watershed level for plan implementation, technical assistance, monitoring and adaptive management, and coordination with regional Puget Sound efforts.

The following common priorities would benefit from closer integration with and support from State, Federal or Puget Sound-wide sources:

- **Funding habitat protection and restoration.** Habitat protection and restoration projects are currently funded at only a small fraction of the amount called for in the WRIA 8 priority action list for salmon recovery, even though the Puget Sound Technical Recovery Team's approval of the plan assumes implementation

of the entire suite of priority actions over 10 years.² While WRIA 8 partners should continue to seek out every opportunity to coordinate salmon recovery with other programs and objectives (e.g., King County Flood Control Zone District projects), this coordination requires staff time and resources. WRIA 8 would benefit from continued efforts to locate and secure additional funding sources.

- **Enhance programmatic capacity.** General support is needed for increased capacity for cross-program efforts (including across our 27 partner jurisdictions, across WRIAs, and within the Puget Sound Partnership). At current staffing levels, additional meetings and training sessions to share information and brainstorm creative ways to accomplish program goals are necessary but problematic.
- **Promoting low impact development.** LID efforts would benefit from regional research documenting the most appropriate and effective LID methods for Puget Sound climate, hydrology and geology, which would feed into state and county guidance on best practices and standards. Research is also needed to document appropriate practices for retrofitting existing infrastructure to maximize their environmental benefit. Consistent, proven, and clearly-written standards would help minimize confusion and resistance from developers or local planning departments. LID outreach and education efforts focused on the general public are likely to be most effective with watershed-scale coordination of a common message. Staff who oversee and implement the standards at the local level need clear guidance and training.
- **Promoting environmentally responsible behavior.** Education and outreach would be more effective if coordinated to create consistent messages at regional, watershed and local levels. Outreach practitioners are engaged and highly motivated; however, messages to the public have not created a sufficient sense of urgency to change deeply ingrained habits.
- **Addressing stormwater runoff (especially road runoff).** Stormwater-related efforts appear to be best directed through encouraging low impact development, the NPDES permitting process, and Department of Transportation best management practices. A vigorous regional research and monitoring effort to validate and improve current standards would help ensure the effectiveness of these standards for salmon recovery in the watershed. Jurisdictions need support for staff training and technical assistance.
- **Supporting local groundwater protection programs.** Groundwater protection efforts would benefit from watershed scale coordination. However, coordination at this level in WRIA 8 was recently suspended due to fiscal constraints.
- **Improved collaboration with agencies, jurisdictions and others.** The regional scope and interdisciplinary nature of salmon recovery, combined with limited funding opportunities, require that more attention be paid to collaborative efforts.

² National Marine Fisheries Service, 2006. Final Supplement to the Shared Strategy's Puget Sound Salmon Recovery Plan. p. 31

How to achieve greater integration and collaboration is a challenge given current work program demands.

- **Educating municipal operations and maintenance staff on methods and policies to prevent or reduce pollutant runoff.** Priority at the regional level should be to ensure local jurisdictions (e.g., planners, inspectors, road maintenance personnel) have the skills to implement the new polices and programs.
- **Enforcing aquatic buffer rules and limiting variances along shorelines.** There is no regional or watershed-based tracking mechanism to accurately quantify the number of aquatic buffer or shoreline permit variances presently allowed, and their effects upon ecosystem processes and salmon conservation. Research is needed to determine the extent and severity of this issue and its consequences. In addition, agencies responsible for enforcement lack staff to expand their activities.
- **Using incentives to protect and restore riparian areas, shorelines, and forest cover.** Programs such as the Public Benefit Rating System and the King County Rural Stewardship Planning program are useful tools for protecting sensitive areas. However, staff time is needed to identify sensitive areas and link programs to willing landowners. In addition, development of new incentive structures may be beyond the capabilities of most local jurisdictions; more appropriately, new incentives could be developed at the state or Puget Sound regional level.
- **Monitoring and adaptive management (AM).** Support is needed for monitoring and adaptive management, including monitoring/AM plan development and implementation. Adaptive management and monitoring are critical to determining whether our efforts are successful, yet these activities are severely under funded. Regional scale efforts must be compatible with local efforts.
- **Data management.** In the short time the WRIA 8 database has been in existence, it has proven highly useful in helping to organize and manage the information contained in the watershed's Salmon Recovery Plan, and promises to be instrumental in tracking future implementation of Start List recommendations. However, there is a large body of information residing in the Plan that has been sampled only superficially. Additional funding is needed for further programmatic analysis and to link all 1200 comprehensive list recommendations to key words, limiting factors, priority level, and programmatic connections. The next step would be to fully convert the database into a tool for tracking Plan implementation.

Appendix A. Database Description

The relational database created during this project is a series of linked tables created in Microsoft Access. (Refer to Figure A-1.) Cross-reference tables (not described below) contain the relational linkages. These linkages were identified through analysis of the programs and policies described in Appendix B of this report.

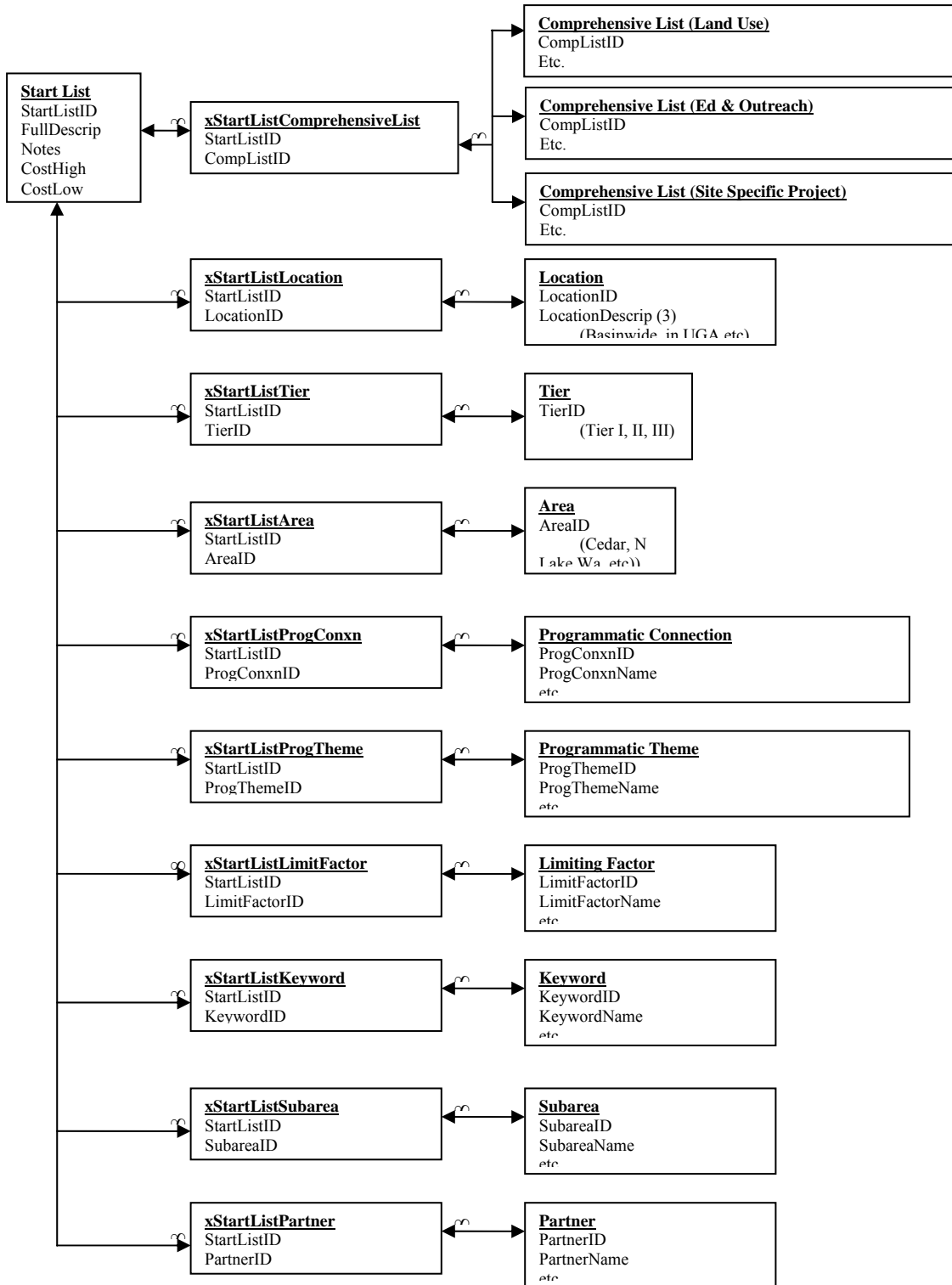
Description of Tables

- Start List – Contains each Start List action and description as it appears in Chapter 9 of the WRIA 8 Plan. Start List recommendations were numbered in the order in which they appear in the Plan. The full text of the recommendation is included as well as any notes present in the original electronic document but not included in the print version of the Plan. Cost estimates are given where such information is available. Recommendations were imported into Access from the original Excel spreadsheets used when creating the list. All fields in the original spreadsheets were imported.
- Comprehensive List – Three tables house the comprehensive list of actions outlined in the WRIA 8 Plan. These tables are organized by land use actions, education and outreach, and site specific projects. Each table contains information as it appears in the original document. That is, the categories of data in each of the three tables mirror the categories in the WRIA 8 Plan. Tables were imported into Access from Excel spreadsheets. All fields in the original spreadsheets were imported.
- Location – Provides information from the plan on the spatial extent of a given Start List recommendation: actions can be either basinwide, within the Urban Growth Area, or outside the Urban Growth Area.
- Tier – Priority level of the recommendation, as defined in the plan (I, II, or III).
- Area – Links each Start List recommendation to one or more of the four WRIA 8 basins as defined in the plan (Cedar, North Lake Washington, Issaquah, and Migratory Areas).
- Programmatic Connection – List of nine programs determined by the WRIA 8 Team to have important implications for salmon recovery and with opportunities for integration with actions called for in the WRIA 8 Plan:
 - National Pollution Discharge Elimination System (NPDES) Phase II Permitting process
 - Critical Areas Ordinances Updates
 - Shoreline Master Program Updates
 - King County Flood Hazard Management Plan
 - Growth Management Act and comprehensive land use planning policies
 - National Estuary Program/Puget Sound Partnership
 - King County Groundwater Protection Program
 - Regional Water Supply Planning process
 - Cedar River Habitat Conservation Plan
- Programmatic Theme – Programmatic themes included in this table are: outreach and education, regulatory actions, incentives, acquisition, stewardship, best management practices (BMPs), study/monitor, collaborate/coordinate, protection, and restoration.

- Limiting Factor – Habitat limiting factors used in the Pacific Coastal Salmon Recovery Fund (PCSRF) assessments and the statewide Habitat Work Schedule: fish passage, floodplain connectivity/function, channel structure/complexity, riparian areas/LWD, stream substrate, stream flow, water quality, estuary/nearshore, and predation/competition/disease. The limiting factors table contains the name of each factor, a brief definition, and a possible indicator for each that would reflect changes in conditions from PCSRF documents.³
- Keyword – The keyword table contains a list of terms of potential interest for targeting, tracking, and reporting purposes. An effort was made to include those terms offering the most explanatory power, as well as those most important to the WRIA 8 team and jurisdictions alike:
 - Agricultural Practices
 - Automotive practices
 - Forest cover/ forest practices
 - Landscaping/yard care
 - Low Impact Development
 - Mitigation
 - Media/Publicity
 - Roads and transportation infrastructure
 - Shoreline
 - Stormwater
 - Technical Assistance
 - Tax breaks/incentives
 - Tours
 - Volunteers
 - Workshops
- Subarea – Location of the action as defined in the Start List:
 - Cedar Mainstem
 - Cedar Tier 2 Sub-Areas
 - Bear/Cottage Lake/Cold Creek
 - Sammamish River
 - Little Bear
 - North Creek
 - Issaquah Creek and Tributaries
 - Lake Washington (including Union Bay) and Lake Sammamish
 - Lake Union, Ship Canal and Locks
 - Estuary and Nearshore
- Partner – Implementers of salmon conservation actions: the 27 jurisdictions in WRIA 8 who have ratified the Plan, as well other agencies and NGOs involved in salmon recovery activities in WRIA 8.

³ <http://webapps.nwfsc.noaa.gov/pcsrfdoc/PCSRF-Perf-Framework.pdf>

Figure A-1. Database Structure.



Appendix B. Programmatic Analyses

The following Appendix contains the full text of the synthesis documents created during our analysis of the targeted programs and policies.

King County Flood Control Zone District and Flood Hazard Management Plan

Background. The 2006 King County Flood Hazard Management Plan (Flood Plan) was adopted in January 2007 as a 10-year strategy to help the region prepare for and minimize the impacts of future floods. Plan priorities are:

- Improve public safety and reduce property damages;
- Reduce the risk of levee and revetment failures by completing high priority capital improvement projects for flood protection facilities;
- Continue the targeted acquisition of repetitive loss properties and other at-risk floodplain properties to minimize the need for flood protection facilities in locations where river and floodplain confinement is infeasible or no longer a public priority;
- Further expand the regional Flood Warning Center operations and public education and outreach;
- Support ongoing updates to existing FEMA floodplain maps and other technical studies in support of effective implementation of floodplain regulations;
- Expand partnership and collaboration opportunities with other floodplain stakeholders, including but not limited to cities, private property owners, tribes, and watershed forums;
- Provide for ongoing risk assessments in support of an adaptive management approach to hazard identification, solutions development, and Plan implementation.⁴

Flood hazard policies outlined in the plan are consistent with current King County code and do not result in new regulations. Funding for the programs and projects will be raised through a property tax levy and is subject to approval by the King County Board of Supervisors.

Linkages to WRIA 8 Salmon Conservation Plan. The Flood Plan acknowledges that protecting and restoring natural hydrologic processes is a component of flood hazard management; therefore, a connection exists between the Flood Plan and those actions in the Salmon Conservation Plan that contribute to protecting or restoring watershed processes. In total, 22 of the 171 Start List recommendations (13%) have linkages with the King County Flood Plan, either through specific flood plain capital projects, through overlapping priorities to protect and restore watershed processes, or through overlapping programmatic priorities (Table 1).

Capital projects. Of the capital project recommendations on the Flood Plan's 10-year project list that are located within WRIA 8, over half (14/22) match projects in the WRIA 8 Salmon Conservation Plan (Table 2). These include acquiring repetitive-loss properties in the flood plain and setting back levees to allow more natural hydraulic processes to

⁴ King County. 2006. *Flood Hazard Management Plan: King County, Washington*. King County Department of Natural Resources and Parks, Water and Land Resources Division, Seattle, Washington.

function along parts of the river corridor. While the Flood Plan also includes capital projects on the Sammamish River and Issaquah Creek, most of the Flood Plan projects in WRIA 8 are along the mainstem of the Cedar River: in the Cedar basin, 78% of the total projected cost for mainstem projects will benefit salmon while also protecting human life and property.

Flood District staff, WRIA 8 staff and other agencies and municipalities will continue to identify capital projects that meet the objectives of both the Salmon Recovery Plan and the Flood Hazard Management Plan. Those projects with benefits to both programs should be expedited through collaboration between WRIA 8 and Flood District staff.

Programmatic overlap. The following programmatic recommendations in the Flood Plan could contribute to WRIA 8 salmon recovery activities:

- **Mapping and technical studies.** Recommendations include mapping landslide risks, commissioning a LWD assessment and wood budget for Cedar and Sammamish rivers, and modeling hydrologic changes to watersheds in response to land use changes.
- **Collaboration.** The Flood Plan suggests participation in salmon recovery and other projects to avoid/minimize flood related risks caused by those projects. Recommends considering other programs' objectives when selecting acquisition targets and management strategies. Recommends working with others to ensure land uses in the flood zone are compatible with natural flood conveyance. Staff role as described in the Flood Plan includes providing technical assistance and consultation to other entities. Plan also recommends cooperation and partnerships with cities for flood hazard planning.
- **Regulatory actions.** The plan observes that "frequently flooded areas" (aka "flood hazard management areas") are required to be protected under the GMA, (KC CAO 21A.24), though specific regulatory activities are not identified. The plan clearly states, however, that the policies recommended in the document do not result in new regulations.

Programmatic Recommendations. While the majority of funding and attention related to the overlap between the two plans is focused on capital projects (Table 2), WRIA 8 could also advance its programmatic objectives through collaboration with Flood Plan objectives. The highest priority actions related to overlapping objectives between the WRIA 8 Salmon Recovery Plan and the King County Flood Hazard Management Plan are as follows:

- **Mapping and technical studies.**
 - WRIA 8 could collaborate with Flood Plan technical staff in developing and promoting models that link land use change and hydrologic changes in the basin. (**Basinwide**)
 - Conduct study to identify locations where large woody debris should be added to Cedar mainstem and to explore feasibility of passing large woody debris over the Landsburg dam. (**Cedar River Basin: Start List #17**)

- Study options to protect in-stream habitat in Reach 4 (which has extensive large woody debris) and reduce flooding and erosion in Ron Regis Park (such as adding setback levee and large woody debris for bank stability).
(Cedar River Basin: Start List #20)
- **Outreach and education.** WRIA 8 staff and other agencies/municipalities could explore the opportunity to collaborate with Flood District staff in the following outreach projects to deliver the message that natural processes build in greater resilience to flooding.
 - Do a demonstration project in publicly accessible area with riverfront property owner(s) willing to replace bulkheads, levees, or stream bank armoring with more ecologically friendly design. Project should contain elements doable by average property owner and illustrate costs and benefits. **(Cedar River Basin: Start List #16)**
 - Increase public awareness about the value of large woody debris and native vegetation for flood protection, salmon habitat, and healthy streams. Convey through media (e.g., local papers, community newsletters); signage along publicly accessible “model” shoreline; brochures such as King County’s Large Woody Debris and River Safety; and other outreach venues such as festivals, local cable channels, and the Cedar River Naturalists program. **(Cedar River Basin: Start List #18)**
 - Given the high public use of the Sammamish River trail, restoration projects on the Sammamish River are highly visible and provide good public outreach opportunities. Enhance interpretive efforts on projects and encourage media coverage. Continue to use citizen volunteers to assist in restoration and maintenance of project sites. **(Sammamish River Basin: Start List #87)**
- **Collaboration and consultation.** WRIA 8 staff and other agencies/municipalities should collaborate with Flood District staff when implementing Start List actions to consider the objectives of both programs. Flood District staff may be able to provide technical assistance when objectives coincide. In addition, it would be prudent for WRIA 8 and other agencies/municipalities to consult with Flood District staff when considering land use in the flood zone to make sure those uses are compatible with natural flood conveyance processes.

Link to flood management plan document:
<http://dnr.metrokc.gov/wlr/flood/fhmp/index.htm>

Table 1. Start List recommendations with connections to the Flood Hazard Management Plan		
Start List #	Description	SubArea Name
15	Limit new development in floodplains and channel migration zones; develop and apply standards which minimize impacts to salmon. State and local transportation plans should minimize new road crossings. (C17, C18)	Cedar Mainstem
16	Do a demonstration project in publicly accessible area with riverfront property owner(s) willing to replace bulkheads, levees, or stream bank armoring with more ecologically friendly design. Project should contain elements doable by average property owner and illustrate costs and benefits. (C715)	Cedar Mainstem
17	Conduct study to identify locations where large woody debris should be added to Cedar mainstem and to explore feasibility of passing large woody debris over the Landsburg dam. (C601, C260)	Cedar Mainstem
18	Increase public awareness about the value of large woody debris and native vegetation for flood protection, salmon habitat, and healthy streams. Convey through media (e.g., local papers, community newsletters); signage along publicly accessible "model" shoreline; brochures such as King County's Large Woody Debris and River Safety; and other outreach venues such as festivals, local cable channels, and the Cedar River Naturalists program. (C716)	Cedar Mainstem
19	Explore redevelopment and restoration options in Reach 2 and 3, particularly in area of industrial use in Reach 3 that is likely to be redeveloped in the near future. Jurisdictions could offer regulatory flexibility or other incentives to encourage buffer and floodplain improvements during redevelopment. (C204, C206)	Cedar Mainstem
20	Study options to protect in-stream habitat in Reach 4 (which has extensive large woody debris) and reduce flooding and erosion in Ron Regis Park (such as adding setback levee and large woody debris for bank stability). (C213, C214)	Cedar Mainstem
21	Explore opportunities to remove impervious surface area and bank hardening, and restore riparian buffer in area of multi-family residential use in Reach 3. (C207)	Cedar Mainstem
22	Explore opportunities for flood buyout in the Maplewood neighborhood in Reach 3 and restore floodplain. (C208)	Cedar Mainstem
23	Continue Cedar River Legacy Program to protect best remaining habitat (see notes). (C228, C232, C244, C245, C263, C247, C249, C222, C224)	Cedar Mainstem
24	Continue Bucks Curve buyouts and restore floodplain in Reach 5. (C215)	Cedar Mainstem
25	Restore side-channel on Renton Lions Club in Reach 10. (C233)	Cedar Mainstem
26	Carry out Dorre Don area flood buyouts and floodplain restoration in Reach 14. (C252)	Cedar Mainstem
36	Protect Dorre Don Meanders Reach – acquire ~71 acres in Reach 13 and 14 (C250, C253).	Cedar Mainstem
84	Encourage bank regrading and revegetation of riparian buffers (on mainstem and tributaries) during new construction and redevelopment in exchange for regulatory flexibility and incentives, such as providing expertise, expediting permitting, and tax breaks. (N42-43)	Sammamish River
85	Pursue opportunities to regrade banks, create flood benches at or below	Sammamish

Table 1. Start List recommendations with connections to the Flood Hazard Management Plan		
Start List #	Description	SubArea Name
	high-water mark, and remove non-native plants and plant banks and benches with native vegetation in Reach 5 from NE 90th to NE 100th and Reach 3. Also consider lowering benches from earlier restoration projects in Reach 5 (e.g., Mammoth Sammamish north of Willows Creek on west side and Willows Creek outfall). (N356, N343)	River
86	Restore Transition Zone in Marymoor Park - Restore the left meander below the weir in Reach 6. Restoration elements could include: excavation of new channel, creation of pools, and an overflow bench with wetland vegetation; placement of gravel substrate in new channel; connection to capture hyporheic flows; and revegetation of riparian and wetland areas with native plants. (N358)	Sammamish River
87	Given the high public use of the Sammamish River trail, restoration projects on the Sammamish River are highly visible and provide good public outreach opportunities. Enhance interpretive efforts on projects and encourage media coverage. Continue to use citizen volunteers to assist in restoration and maintenance of project sites. (N710, N711)	Sammamish River
88	Enhance and connect wetlands and remnant side channels to the river in Reach 2 adjacent to the 102nd Avenue bridge on both on the right and left banks. (N337, N338)	Sammamish River
89	Sammamish River mouth wetland restoration in Reach 1 - restore wetlands on King County property near mouth and on island. (N332)	Sammamish River
90	Enhance and reconnect riparian wetlands to river at Wildcliff Shores in Reach 1, across from Swamp Creek. Restore riparian vegetation. (N334)	Sammamish River
91	Restore large, publicly owned wetland complex at the confluence of Swamp Creek and the Sammamish River, creating a diversity of wetland elevations and habitats in the floodplain. Purchase parcel to the east of Swamp Creek Regional Park for inclusion in restoration project in Reach 1. (N335, N336)	Sammamish River
93	Continue and expand projects such as Sammamish Re-Leaf and Redmond River Walk to plant early successional riparian vegetation that provide shade, particularly in Reaches 4 and 6. Support riparian restoration in agricultural areas through King County's agriculture programs. Riparian vegetation restoration projects must be sequenced and coordinated with projects to regrade river banks and create flood benches. (N37, N351, N362, N361)	Sammamish River

Table 2. Flood Hazard Management Plan (FHMP) capital projects overlapping WRIA 8 Salmon Conservation Plan recommendations.

Start List #	WRIA 8 Comprehensive List #	Basin	FHMP Ref #	Project Name	Project Description
26, 36	C250,251,252,253	Cedar R.	17	Dorre Don Meanders Phase 1 Acquisition	Acquire flood-prone properties in lower Dorre Don area and modify levees and restore floodplain where feasible to reconnect areas of the floodplain with the river for conveyance. (Note: general Dorre Don area -- specifics to be determined.)
26	C/216,252	Cedar R.	35	Cedar River Repetitive Loss Mitigation	Purchase or otherwise mitigate flood risks to nine repetitive loss properties (Note: actually <u>ten</u> parcels/properties spread from Elliott reach through Dorre Don area.)
22	C208	Cedar R.	45	Maplewood Acquisition and Levee Setback	Explore possible flood buyouts in this neighborhood and opportunities to restore floodplain. Explore options for bioengineering and softening bank hardening.
24	C215	Cedar R.	61	Lower Jones Road Setback	Purchase the homes and property and set back road and associated revetment to improve conveyance and capacity.
23	C222;224	Cedar R.	70	Cedar Rapids Levee Setback	Set back levee to improve flood conveyance and capacity. Complete project design, permits, and construction. Funding will cover the grant match and project management costs.
86	N358	Samm. R.	80	Willowmoor Floodplain Restoration	Improve conveyance at the outlet of Lake Sammamish for flood risk reduction purposes.
3yr list	C236	Cedar R.	23	Cedar Grove Mobile Home Park Acquisition	Purchase homes and property in this neighborhood of homes which is subject to extreme flooding. Project is partially grant funded. Funding will cover grant match and project management costs as well as relocations.
3yr list	C235	Cedar R.	69	Rainbow Bend Levee Setback and Floodplain Reconnection	Setback levee to achieve improved conveyance and floodplain capacity.
	C254,257	Cedar R.	52	Orchard Grove	Pursue flood buyouts in the Orchard Grove and restore floodplain where possible. Buyouts should include the 'BN Nose' property upstream of revetment.

Start List #	WRIA 8 Comprehensive List #	Basin	FHMP Ref #	Project Name	Project Description
	C219,220	Cedar R.	53	Riverbend Mobile Home Park Acquisition and Levee Setback	Purchase property underlying 19 mobile homes nearest river, recontour existing over steepened revetment to reduce erosion, flood damage and improve flood conveyance, thereby reducing risk to downstream areas. Funding will also cover relocations.
	C216	Cedar R.	63	Elliott Bridge Levee Setback and Acquisition	Complete hazard mitigation projects (buyouts, levee setback, etc) for a repetitive loss area reach currently constrained by armored banks that do not offer adequate flood risk reduction
	C239?	Cedar R.	65	Lower Lions Club	Acquire flood-prone homes, including two repetitive loss properties. Adjacent to completed flood buyout and private land managed for educational and conservation purposes. (Parcel just upstream of Lions Club property and behind Lions Club revetment according to GIS)
	C241	Cedar R.	72	Jan Road-Rutledge Johnson Levee Setbacks	Remove portions of both levees that solely protect open space land. Segments of existing levees constrict conveyance and direct erosive flood flows into the Cedar River Trail and SR-169.
	C218,219,220	Cedar R.	74	Herzman Levee Setback & Floodplain Reconnection	Set back levee to reduce erosive forces on the Cedar River Trail and SR-169.

National Estuary Program (USEPA, Puget Sound Partnership)

Background. The National Estuary Program (NEP) was established by the U.S. Congress in 1987 in amendments to the Clean Water Act. Its primary objective is to protect ‘estuaries of national significance’ that are threatened by degradation caused by human activity. The program is administered by the U.S. Environmental Protection Agency, which provides funding and technical support to local NEPs. There are currently 28 estuaries of national significance in the U.S. The Puget Sound Partnership manages the NEP for Puget Sound.

Each estuary in the National Estuary Program must have a federally approved Comprehensive Conservation and Management Plan (CCMP). The 2000 *Puget Sound Water Quality Management Plan* is the current CCMP for Puget Sound under the NEP. Plan objectives are to:

- preserve and restore wetlands and aquatic habitats and the natural processes and functions that created them
- prevent increases in the introduction of pollutants to the Sound and its watersheds
- reduce and ultimately eliminate harm from the entry of pollutants to the waters, sediments and shorelines of Puget Sound.⁵

A work plan is prepared biennially to identify actions to maintain and improve Puget Sound’s health during the next two-year state funding cycle. Work plan actions are guided by CCMP long-term goals. The *2007-2009 Puget Sound Conservation and Recovery Plan* is the latest two-year work plan. Local governments are required to implement local elements of the work plan subject to the availability of appropriated funds or other funding sources (RCW 90.71.070).

NOTE: Both the 2000 Puget Sound Water Quality Management Plan and the 2007-2009 Puget Sound Conservation and Recovery Plan will form a partial basis for, and will be superseded by, the Puget Sound Partnership’s 2020 Action Agenda once it is completed and adopted in 2008.

The *2007-2009 Puget Sound Conservation and Recovery Plan* identifies and addresses the following key priorities:

- Clean up contaminated sites and sediments (within ½ mile of the Puget Sound shoreline)
- Prevent toxic contamination
- Prevent harm from stormwater runoff
- Prevent nutrient and pathogen pollution
- Protect functioning marine and freshwater habitats
- Restore degraded marine and freshwater habitats
- Protect species diversity

⁵ Puget Sound Water Quality Action Team. 2000. Puget Sound Water Quality Management Plan. Olympia, WA. http://www.psp.wa.gov/publications/our_work/pscrp/MGMTPLAN.pdf

- Prepare for and adapt Puget Sound efforts to a changing climate.⁶

In addition, education and public involvement are integral to the plan, and actions in each priority area focus on informing and engaging the public.

Linkages to WRIA 8 Salmon Conservation Plan. There is broad overlap between the goals and objectives of the WRIA 8 Salmon Conservation Plan and the Puget Sound National Estuary Program goals and objectives. In fact, **implementation of the Puget Sound Salmon Recovery Plan is a stated goal of the 2007-2009 Puget Sound Conservation and Recovery Plan.** The following action items from the 2007-2009 Puget Sound Conservation and Recovery Plan have the strongest parallels in WRIA 8 Start List recommendations.

- **Species protection**
 - *Implement the Puget Sound Salmon Recovery Plan* (and other plans).
- **Habitat protection and restoration**
 - Preserve functioning habitats through a variety of conservation tools.
 - Effectively update and implement regulations that protect functioning habitats.
 - Integrate and implement local watershed, salmon recovery and other plans.
 - Develop a network of sustainable resources to support Sound-wide education and stewardship.
 - Restore degraded habitats by restoring habitat-forming processes.
 - Plan and undertake large-scale nearshore restoration initiatives through the Puget Sound Nearshore Partnership.
- **Stormwater**
 - Increase the number of communities managing stormwater under NPDES permits.
 - Increase the number of communities implementing the comprehensive stormwater management program as outlined in the Puget Sound Water Quality Management Plan.
 - Increase the use of low impact development practices.
 - Manage runoff from state highways.
- **Toxics**
 - Reduce the use and generation of toxic chemicals.
 - Reduce the release of toxic chemicals to the environment.
 - Educate residents to change behaviors to reduce toxic contamination.

⁶ Puget Sound Partnership. 2007. Puget Sound Conservation and Recover Plan. Olympia, WA. http://www.psp.wa.gov/our_work/pscrp.htm

- **Nutrients and pathogens**
 - Support effective and innovative regulatory and non-regulatory nutrient/pathogen management approaches.
 - Educate and involve residents and others to enhance stewardship activities.

Recommendations. Given the broad overlap between National Estuary Program and WRIA 8 salmon recovery objectives, most recommendations in the WRIA 8 Chinook Conservation Plan Start List have clear connections to broader Puget Sound priorities. The most direct linkages and priorities fall into the following categories:

- **Low Impact Development.** Local governments should adopt or revise regulations to allow for or encourage the use of low impact development techniques. Support high-visibility LID projects and provide information to developers, the public, and other jurisdictions. Promote LID through design competitions, media outreach and other mechanisms. (Start List #s 27, 34, 38, 40, 46, 49, 68, 71, 77, 81, 96, 104, 106, 108, 111, 123, 130, 140, 142)
- **Stormwater.** As part of the NPDES permitting process, jurisdictions should adopt and enforce stormwater regulations and best management practices consistent with (or exceeding) Washington Department of Ecology's 2001 Stormwater Management Manual. Take steps to increase stormwater infiltration to augment base flows and groundwater recharge, including low impact development (see above). (Start List #s 27, 34, 40, 68, 77, 81, 98, 123, 130, 140, 166)
- **Education and outreach.** Educate homeowners, vehicle owners, small-acreage landowners, and local government staff in maintenance and management practices to reduce harm to water bodies from runoff, toxic substances, nutrients, and other sources. (Start List #s 30, 38, 55, 70, 75, 81, 109, 125, 127, 128, 156, 169, 170, 171)
- **Transportation runoff.** State/local transportation departments should address stormwater runoff from roads and road projects, including retrofits and new construction. (Start List #s 28, 29, 69, 123)
- **Habitat protection and restoration.** Protect ecologically important acreage. Identify and carry out highest priority restoration projects. (All protection and restoration projects listed in the Start List, sorted by jurisdiction, are listed in Table ZZ.)

Nearshore recommendations

The following tables list all nearshore-related recommendations in the WRIA 8 Conservation Plan Start List or the 3-year list submitted to Shared Strategy in 2007.

Table 1. Nearshore-related recommendations in WRIA 8 Start List

Start List #	Description
148	Coordinate with local businesses to sponsor a shoreline revegetation campaign, incorporating environmental stewardship as part of redevelopment occurring within Ship Canal area. Extend message (and sponsorship) through signage along shore, in-store promotions (at business's discretion), and media recognition. (M707)
149	Bluffs on Magnolia and Discovery Park in Seattle are only ones in WRIA 8 that are not armored by the railroad and have some unarmored locations (publicly and privately owned). Prohibit bulkheads or any other form of armoring and development at these locations through Seattle's critical areas ordinance and Shoreline Master Program. (M1)
150	Support King County-funded sediment source study to: 1) establish where feeder bluffs were prior to the railroad, and 2) qualitatively assess rates of erosion and sediment contribution of those bluffs. Expect study completion by 3/05.(M3, M2)
151	Create an education campaign for property owners along bluff as well as general public: Have you fed your beach today? Define feeder bluffs, challenge the notion that all erosion is a bad thing. (M724)
152	Protect remaining nearshore vegetation (on low or high bluffs) through regulation and/or acquisition. Regulatory tools to protect vegetation and prevent further development on and near top of bluffs, include: steep slope ordinances, bald eagle protection ordinances, critical areas ordinances, and clearing ordinances. (M7)
153	Offer incentives to encourage bulkhead removal and revegetation along shoreline, including: allow regulatory flexibility during redevelopment, provide expertise (e.g., templates for shoreline planting plan, bulkhead design); expedite permitting at local, state and federal levels. (M8)
154	For areas with existing residential, commercial, and industrial development west of the railroad (e.g. Nakeeta Beach, Point Wells, Richmond Beach): a. Prohibit new development, at least in areas designated as conservancy. b. During redevelopment, reduce overall impacts to nearshore, e.g., limit additional riprap to that required to protect structures, require riparian revegetation, avoid construction in intertidal zone, use smallest feasible footprint for structures, redevelop industrial sites into less intensive uses. c. Promote pilot projects to better understand impacts of bank hardening in estuary and nearshore. As site specific projects are pursued to remove structures, fill and bulkheads through fee simple purchase of parcels, address any regulatory or programmatic actions in order to expedite these projects. (M4)
155	Commodore Park and Wolfe Creek Restoration: Explore feasibility of habitat restoration at Commodore Park, located immediately downstream of the Hiram M. Chittenden Locks on the south bank. Armored seawall should be removed and restored to a gentler vegetated slope. Project could be combined with daylighting of Wolf Creek to create a pocket estuary downstream of the locks. (M250)
156	Offer shoreline property owners a series of shoreline design workshops on: shoreline planting design/ noxious weed management; slope stabilization and erosion control using vegetation; natural yard care; porous paving options; alternatives to vertical wall bulkheads; salmon friendly dock design; and environmentally friendly methods of maintaining boats, docks, and decks. Offer professional workshops to marine contractors and design professionals on more environmentally friendly shoreline design. (M714, M716, M718, M719)
157	Prohibit new residential overwater structures. For new public facilities (e.g., ferry docks), incorporate salmon-friendly design features and mitigate for unavoidable impacts. Retrofit existing overwater structures with salmon friendly design features. Where applicant meets guidelines for marine overwater structures, offer expedited local/state/federal permitting (similar to concept being promoted for Lake Washington overwater

Table 1. Nearshore-related recommendations in WRIA 8 Start List

Start List #	Description
	structures by NOAA Fisheries and other agencies). (M10, M11, M13)
158	Remove overwater structures and pilings when possible; increase interpretive signage and media exposure at areas where structures are removed such as at Edmonds parks. Offer incentives to build community docks to replace individual docks in Salmon Bay. (M11)
159	Expand outreach about value of eelgrass beds as juvenile source of food and habitat – and the negative effects that docks, overwater structures, and bulkheads have on the eelgrass. Encourage combined docks or more salmon friendly designs that impede less sediment and let more light into water; involve community and youth in eelgrass replantings and monitoring studies. (M714, M716, M721)
160	Protect stream mouths and wetlands from further degradation through Shoreline Master Programs and critical areas ordinances. Once stream mouths and wetlands are restored, protect from impacts from development through buffer requirements and stormwater management programs. (M14, M17, M18)
161	Implement pilot projects to replace culverts with open bottom culverts or bridges/trestles wherever possible to allow for sand and gravel, large woody debris, and terrestrial inputs to contribute to the nearshore. (M16)
162	Big Gulch Culvert Replacement: Replacement of the undersized culvert under the railroad with a trestle system to restore system connectivity and improve sediment transport into the nearshore. (M222)
163	Implement projects to reconnect backshore areas. (see notes) (M233, M235, M236)
164	Combine above restoration efforts with increased interpretive signage and video documentation for airing on government cable TV; make copies available to neighborhood and stewardship associations and encourage their participation in hands-on projects. (M720)
165	Work with real estate community to help promote value of creek mouths to both property owners, environment, and shoreline community; encourage property owners to help restore them. Enlist help of neighborhood stewardship associations and Seattle Public Utility’s Creek Stewardship program. (M720)
166	Address stormwater impacts (water quality and flows) throughout sub-area and from development near tops of bluffs, by: revising Phase 1 and 2 NPDES permits (consistent with Washington Department of Ecology’s 2001 Stormwater Management Manual), requiring or encouraging low impact development, retrofitting existing developments using natural drainage systems (e.g., SEA Streets). (M19)
167	Determine extent to which residential structures along nearshore are on septic systems; determine if these systems are operating properly and if not require that they be fixed. Require that septic systems be inspected at time of sale. (M20)
168	Discourage or prohibit any further filling and dredging in nearshore except for essential public facilities, and where associated with shoreline restoration projects. (M21)
169	Promote boater/sea plane education campaign in order to improve and protect water quality compromised by fuel or toxic compounds from boat repairs, boat and sea plane maintenance. Carry out through signage at marinas, sea plane docks, boat yards, as well as messaging sent with boat/plane license registration. (M728)

Table 1. Nearshore-related recommendations in WRIA 8 Start List

Start List #	Description
170	Educate and support businesses, property management companies, and homeowners associations on stormwater best management practices, specifically related to parking lot cleaning, storm drain maintenance and road cleaning. (M730)
171	Train groundskeepers and property management companies about water polluting effects of landscape practices. Employ the “pride in workmanship” strategy, by placing signs that list who maintains the landscapes and parking lots along shorelines and the maintenance practices that they employ. (M729)

Table 2. Capital Project recommendations in WRIA 8 Start List

Start List #	Description	Comp List #	Comprehensive List Description	Notes
147	Explore ways to reduce predation in Portage Bay, Lake Union and Ship Canal. Conduct pilot projects to reduce predator habitat (such as reducing number of docks or removing in-water structures) or increase refuge for juvenile Chinook and apply lessons learned to future actions regarding docks and riparian vegetation. (M216, M214)	M214	Remove North Lake Union In-Water Structures: Project would remove in-water structures and debris (sunken boats, refrigerators, shopping carts, etc.) to reduce habitat for bass and other predators from the Freemont Cut to the Montlake Cut.	Project may also help reduce toxic leaching from some debris over time. More information on the scope of this project will be available soon from SPU, who is conducting bathymetry studies to map debris. Need to also consider appropriate depth(s) to focus on and also consider potential for contaminated soils in some areas.
147	Explore ways to reduce predation in Portage Bay, Lake Union and Ship Canal. Conduct pilot projects to reduce predator habitat (such as reducing number of docks or removing in-water structures) or increase refuge for juvenile Chinook and apply lessons learned to future	M216	Explore ways to reduce predation in Portage Bay.	Predation in Portage Bay is not well understood but may be high near the UW hatchery and near the mouth of the Montlake Cut. Further study should be conducted to evaluate the extent of predation in the area. Possible opportunities for reducing predation in the area could include an annual "Bass Derby" fishing event to reduce predator

Table 2. Capital Project recommendations in WRIA 8 Start List

Start List #	Description	Comp List #	Comprehensive List Description	Notes
	actions regarding docks and riparian vegetation. (M216, M214)			populations in June before Chinook smolt migration.
155	Commodore Park and Wolfe Creek Restoration: Explore feasibility of habitat restoration at Commodore Park, located immediately downstream of the Hiram M. Chittenden Locks on the south bank. Armored seawall should be removed and restored to a gentler vegetated slope. Project could be combined with daylighting of Wolf Creek to create a pocket estuary downstream of the locks. (M250)	M250	Commodore Park and Wolfe Creek Restoration: Explore feasibility of habitat restoration at Commodore Park, located immediately downstream of the Hiram M. Chittenden Locks on the south bank. Purpose of the project would be to increase the limited high-quality rearing/refuge habitat for millions of salmon smolts that migrate through and use this area as a critical transition between freshwater and saltwater. Armored seawall should be removed and restored to a more gentle vegetated slope. Project could be combined with daylighting of Wolfe Creek to create a pocket estuary downstream of the locks. Park recreational use should be maintained.	
162	Big Gulch Culvert Replacement: Replacement of the undersized culvert under the railroad with a trestle system to restore system connectivity and improve sediment transport into the nearshore. (M222)	M222	Big Gulch Culvert Replacement: Replacement of the undersized culvert under the railroad with a trestle system to restore system connectivity and improve sediment transport into the nearshore.	On 2008 3-year list. Concerns exist about toxics in the upstream portion of the Big Gulch system. The headwaters of Big Gulch Creek drain the western portion of Paine Field Airport. Chemical spills in the vicinity of Paine Field in 1993, 1996, and 2000 resulted in downstream fish kills. Concerns were also raised about drainage problems upstream that could complicate the project. It was recommended that the project be coordinated with the next project if it is done.
163	Implement projects to reconnect backshore areas. (see notes) (M233, M235, M236)	M236	Deer Creek Restoration or Culvert Replacement: Enhance the connectivity of Deer Creek and the associated estuarine	This option was considered by Sound Transit for its mitigation plan, but it was rejected for cost and logistical reasons. Site hosts several

Table 2. Capital Project recommendations in WRIA 8 Start List

Start List #	Description	Comp List #	Comprehensive List Description	Notes
			wetland with the nearshore by replacing the two concrete culverts with an oversized culvert or a trestle bridge. Sound Transit will be conducting some mitigation at this site for proposed track improvements including either vegetation enhancement OR the replacement of the existing culvert with a trestle.	small tidal lagoons upstream of tracks that could be improved. Significant amount of forested area in basin. Deer creek is too steep for fish passage. Some individuals expressed concern over installing a trestle on this site, which may actually eliminate the lagoon upstream of tracks. Several participants felt that this was probably not the best site for a trestle. Concern was also expressed about water quality from road runoff at the site being a threat to juvenile fish.
163	Implement projects to reconnect backshore areas. (see notes) (M233, M235, M236)	M233	Willow Creek Daylighting: Proposed mitigation project for nearby "Edmonds Crossing" development (including new ferry terminal). Daylighting creek through existing fuel pier (using box culverts) will improve connectivity with the Willow Creek Marsh, one of the largest remaining marsh areas in the WRIA 8 nearshore.	Possibility of also restoring vegetation at the outfall of Willow Creek as well. Good opportunities for public education at this site.
163	Implement projects to reconnect backshore areas. (see notes) (M233, M235, M236)	M235	Woodway Tidal Lagoon North: Potential culvert improvement project at an inter-tidal lagoon and mud flat where railroad was built offshore South of willow creek.	Potential fresh water seepage into lagoon could make for good shallow water habitat. Site should be investigated further, as little is currently known. Sound Transit is scheduled to conduct track improvements (widening) at the site soon, and culvert improvements or other accommodations could potentially be designed in to the project to improve connectivity of lagoon to nearshore. Potential Sound Transit mitigation site.

Table 3. The following project is not listed in the WRIA 8 Start List, but is part of the 3-year project list submitted to Shared Strategy for 2008.

Comp List #	Comprehensive List Description	Notes
M247	Salmon Bay Natural Area: Increase rearing/refuge area for millions of salmon smolts that migrate through and use this transition area between freshwater and saltwater. As proposed, project goals would be to acquire the property, plant native shoreline vegetation, remove riprap, re-slope shoreline, and add gravel/sands where appropriate. The Salmon Bay Natural Area is downstream of the Hiram M. Chittenden Locks on the north bank between Hiram's restaurant and the railroad bridge, and behind the U.S. Army Corps of Engineers' finger pier. Project partners include Groundswell Northwest, City of Seattle, and U.S. Army Corps of Engineers.	Acquisition funded and nearly complete. Upland restoration in process. In-water restoration in-design. National Fish and Wildlife Foundation, KCD, Seattle Public Utilities, ALEA, Neighborhood matching grants. Mitigation funding may be used for removal of over-water structures (dock and house). Riprap has fallen into the water. Uncertainty about funding available for riparian restoration. Good public education benefits.

King County Groundwater Protection Program

NOTE: The King County Groundwater Protection Program is unfunded for 2008 and will be discontinued. Nevertheless, since protecting groundwater and flows for salmon will be an ongoing priority for jurisdictions, the information in this analysis will continue to be relevant for planning future groundwater-related actions.

Background. The King County Groundwater Protection Program worked to protect the quality and quantity of groundwater for human use and to preserve fish and wildlife habitat. The program collaborated within King County government and with other local, state, federal and tribal agencies to leverage resources, integrate groundwater protection with the protection of all water resources, and to incorporate groundwater protection into other public health and safety efforts. In addition, the program helped local communities integrate groundwater issues with other local planning efforts including growth management. The program served as a clearinghouse for groundwater quality and quantity data (through databases and web-based interactive maps), and provided monitoring, analysis and documentation for planning and other purposes.

Other activities in which the program was engaged included developing and reviewing groundwater protection policies for King County, providing stewardship services related to groundwater protection, and education/outreach focused on groundwater issues in King County.

Linkages to WRIA 8 Salmon Conservation Plan. Of the 171 Start List recommendations, 33 (19%) have clear links to the Groundwater Protection Program (Table 1). Key linkages fall into the following general categories:

- Encourage low-impact development and natural drainage systems to promote groundwater recharge.
- Protect streamflow and hydrologic integrity (including headwaters) through regulations, incentives and acquisitions.
- Educate the public about the importance of groundwater for human health, fish and wildlife, and ecosystem processes.

Recommendations. The priority actions related to overlapping objectives between the WRIA 8 Salmon Recovery Plan and the King County Groundwater Protection program include the following recommendations:

Encourage low-impact development and natural drainage systems to promote groundwater recharge.

- Promote low-impact development through regulations, incentives, and outreach (including design competitions and media outreach). Support high-visibility LID projects and provide information to developers, the public, and other jurisdictions. **(All areas: Start List #s 34, 46, 49, 71, 77, 106, 108, 111, 130, 142)**

Protect streamflow and hydrologic integrity (including headwaters) through regulations, incentives and acquisitions.

- Work with Washington Department of Ecology and local health departments on regulations, incentives, and education related to impact of surface and groundwater withdrawals, including illegal withdrawals and exempt wells. Determine where illegal surface water withdrawals are occurring and follow-up with enforcement to ensure withdrawals do not continue. **(All areas: Start List #32, 78, 82, 129)**
- Continue to absorb majority of growth in urban areas, while protecting and restoring forest and promoting low impact development, to maintain and improve water quality and flows. Jurisdictions should not move the Urban Growth Area (UGA) boundary, unless such change is beneficial to salmon. **(All areas: Start List #49, 111)**
- Adopt and enforce stormwater provisions to address high flows and protection of base flows, including forest retention and low impact development best management practices. Encourage rainwater harvesting and graywater capturing for reuse in landscaping irrigation through demonstration projects, workshops and educational materials. **(All areas: Start List #77, 130)**
- Address flow issues through other regulations/programs including: critical aquifer recharge area protections, land use regulations, groundwater management plans, stormwater regulations, and best management practices for infiltration, low impact development, etc. **(Cedar River Basin: Start List #34)**
- Work with the City of Kent to establish instream flows that are protective of Chinook through their Habitat Conservation Plan process. Investigate and address other impacts to flows through stormwater management (e.g., low impact development), education and enforcement (e.g., for illegal and exempt withdrawals), etc. **(Cedar River Basin: Start List #38)**
- Support conservation efforts within the Cascade Water Alliance and work to coordinate the various water policy and decision makers. **(Issaquah Basin: Start List #131)**
- Adopt and strictly enforce stream/wetland buffers and forest cover protections through King and Snohomish counties' critical areas ordinance updates. Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. **(North Lake WA & Sammamish River Basin: Start List #52)**
- Support Issaquah's proposed critical aquifer recharge area (CARA) provisions that incorporate groundwater quality protections in well head capture zones and a broader protection area where infiltration will be required for groundwater recharge. **(Issaquah Basin: Start List #102)**
- Protect headwater wetlands, seeps, and groundwater recharge areas through critical areas ordinances, critical aquifer recharge area protections (CARAs), incentives, and acquisition. Support with appropriate public outreach to convey reasons behind regulations to protect groundwater sources, consequences of not employing them, and ultimate benefits to environment and people. **(Basinwide – Bear, Cottage Lake, Cold, Little Bear, North, Issaquah, Carey and Holder Creeks: Start List #42, 43, 97, 99, 102, 103, 104, 105)**

Educate the public about the importance of groundwater for human health, fish and wildlife, and ecosystem processes

- Continue and/or extend availability of water conservation incentive programs such as rebates for efficient toilets, appliances, free indoor conservation kits, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8. **(All areas: Start List #35, 80, 131)**
- Support conservation efforts within the Cascade Water Alliance and work to coordinate the various water policy and decision makers. **(Issaquah Basin: Start List #131)**
- Expand groundwater protection outreach messages to include the relationship between ground and surface water and inter-connectedness of all hydrologic systems. Include messages in water utility billings, newspaper articles, and school curricula; explore opportunities to partner with business such as local bottled water company. **(North Lake WA & Sammamish River: Start List #44).**
- Increase outreach about illegal water withdrawals, including information about exempt wells (who and what purposes qualify), and maximum quantities that may be withdrawn per day. Clarify distinction between withdrawals taken from wells and diversions taken from the river without a water rights permit. Create citizen-based watchdog groups to watch for people drawing directly from creeks and streams. **(North Lake WA & Sammamish River: Start List #79).**
- Bolster water conservation outreach in Sammamish watershed to increase and maintain summer base flows and reduce summer water temperatures. Carry out through incentive programs (e.g., rebates for efficient appliances, toilets, free landscape irrigation audits); classes on native drought-tolerant landscaping; and waterless carwash promotions. **(Issaquah: Start List #83).**
- Support steward/liason position to set up low impact development training and information transfer among planners, developers, and scientists. Local permitting staff should be trained on LID BMPs, and look into ways to ease the process for permitting such practices. *NOTE:* Could be expanded basinwide. **(Issaquah: Start List #106).**
- Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted instream grading and wood removal incidents. **(Issaquah: Start List #126).**

Link to the King County Groundwater Protection Program:

<http://dnr.metrokc.gov/wlr/wq/groundwater.htm>

Table 1. Start List recommendations with connections to the King County Groundwater Protection Program

Start List #	Description	SubArea Name
32	Work with Washington Department of Ecology and local health departments on regulations, incentives, and education related to impact of surface and groundwater withdrawals, including illegal withdrawals and exempt wells. Determine where illegal surface water withdrawals are occurring and follow-up with enforcement to ensure withdrawals do not continue. (C22)	Cedar Mainstem
34	Address flow issues through other regulations/programs including: critical aquifer recharge area protections, land use regulations, groundwater management plans, stormwater regulations, and best management practices for infiltration, low impact development, etc. (C19, C21, C20)	Cedar Mainstem
35	Promote availability of water conservation education and incentive programs (e.g., rebates for efficient toilets, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8. (C24, C708)	Cedar Mainstem
38	Provide enhanced flows for pre-spawning migrants - Work with the City of Kent to establish instream flows that are protective of Chinook through their Habitat Conservation Plan process. Investigate and address other impacts to flows through stormwater management (e.g., low impact development), education and enforcement (e.g., for illegal and exempt withdrawals), etc. (C73, C75, C76, C80, C351)	Cedar Tier 2 Sub-Areas
42	Protect headwater wetlands, seeps, and groundwater recharge areas through critical areas ordinances, critical aquifer recharge area protections (CARAs), incentives, and acquisition. Support with appropriate public outreach to convey reasons behind regulations to protect groundwater sources, consequences of not employing them, and ultimate benefits to environment and people. (N1, N722, N723)	Bear/Cottage Lake/Cold Creek
43	Determine source of the Cold Creek groundwater springs in Cottage Lake Creek and develop protective measures to adequately protect them. Cold Creek headwaters cross the Urban Growth Boundary; growth within Woodinville should be managed to minimize impacts. (N4)	Bear/Cottage Lake/Cold Creek
44	Expand groundwater protection outreach messages to include the relationship between ground and surface water and inter-connectedness of all hydrologic systems. Include messages in water utility billings, newspaper articles, and school curricula; explore opportunities to partner with business such as local bottled water company. (N722, N723, N724)	Bear/Cottage Lake/Cold Creek
46	Promote low impact development throughout Tier 1 and 2 subareas, to accommodate additional growth in urban and rural areas, while protecting ecological functions. Enlist help of builders practicing sustainable development to promote benefits of forest cover in protecting water quality. Provide recognition through media and professional awards to those using pervious paving, grass/green roofs, and other low impact development techniques. Work with the Snohomish Sustainable Development Task Force and other public and private stakeholders to plan and implement low impact development techniques. (N6, N91-93, N719, N720, N721)	Bear/Cottage Lake/Cold Creek
47	Increase outreach concerning the benefits of trees and basinwide forest coverage to protect water quality and maintain instream flows. Coordinate with nurseries, home improvement centers, and arborists to develop a marketing campaign promoting the benefit of trees to salmon and watershed health.	Bear/Cottage Lake/Cold Creek

Table 1. Start List recommendations with connections to the King County Groundwater Protection Program

Start List #	Description	SubArea Name
49	Continue to absorb majority of growth in urban areas, while protecting and restoring forest and promoting low impact development, to maintain and improve water quality and flows. (N5)	Bear/Cottage Lake/Cold Creek
52	Adopt and strictly enforce stream/wetland buffers and forest cover protections through King and Snohomish counties' critical areas ordinance updates. Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. (N10)	Bear/Cottage Lake/Cold Creek
71	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. (N720, N721)	Bear/Cottage Lake/Cold Creek
77	Adopt stormwater provisions to address high flows, flashiness, and protection of base flows, including forest retention and low impact development best management practices, to improve infiltration. (N20, N27)	Bear/Cottage Lake/Cold Creek
78	Work with Washington Department of Ecology, local health departments, and water suppliers on regulations, incentives, and education related to impact of surface and groundwater withdrawals, including municipal water withdrawals (e.g., City of Redmond), illegal withdrawals, and exempt wells on flow conditions throughout basin. Determine where illegal surface water withdrawals are occurring and follow-up with enforcement to ensure withdrawals do not continue. (N25-26)	Bear/Cottage Lake/Cold Creek
79	Increase outreach about illegal water withdrawals, including information about exempt wells (who and what purposes qualify), and maximum quantities that may be withdrawn per day. Clarify distinction between withdrawals taken from wells and diversions taken from the river without a water rights permit. Create citizen-based watchdog groups to watch for people drawing directly from creeks and streams. (N722)	Bear/Cottage Lake/Cold Creek
80	Promote availability of water conservation education and incentive programs (e.g., rebates for efficient toilets, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8. (N28, N723)	Bear/Cottage Lake/Cold Creek
82	Work with Washington Department of Ecology, local health departments, and water suppliers to address municipal water withdrawals, illegal withdrawals, exempt wells that impact Sammamish River flows and related high temperatures. Research potential for reclaimed water facilities, shifting of municipal water supply sources to maximize summer flows, and extent of impacts from agricultural, commercial, and industrial sectors. (N29-30, N33)	Sammamish River
83	Bolster water conservation outreach in Sammamish watershed to increase and maintain summer base flows and reduce summer water temperatures. Carry out through incentive programs (e.g., rebates for efficient appliances, toilets, free landscape irrigation audits); classes on native drought-tolerant landscaping; and waterless carwash promotions. (N733, N734)	Sammamish River
97	Protect headwaters, wetlands and forest cover through acquisitions or conservation easements, particularly in Reaches 10, 11, 12 and 9 (see notes). (N424,N427,N429,N422)	Little Bear
98	Inadequate base flows, flooding, and flashy hydrology pose serious problems in North Creek. Address these through stormwater management (e.g., improved retention of high flows and increased infiltration), improved	North Creek

Table 1. Start List recommendations with connections to the King County Groundwater Protection Program

Start List #	Description	SubArea Name
	information about and enforcement of surface and groundwater withdrawals, TMDL implementation, more aggressive water conservation, etc. (N107)	
99	Protect remaining forest cover and wetlands through critical areas ordinances, stormwater regulations and best management practices, incentives (e.g., tax breaks, expedited permitting), and acquisition where regulation and incentives are not sufficient protection. There are undeveloped forested areas and wetlands in the following reaches: Lower North reaches 4, 3, 2 and Upper North reaches 10, 9, 6, 7. (Note: Reaches listed in EDT priority order). (N71, N376, N372, N370, N371, N396, N393, N385, N389)	North Creek
102	Support Issaquah's proposed critical aquifer recharge area (CARA) provisions that incorporate groundwater quality protections in well head capture zones and a broader protection area where infiltration will be required for groundwater recharge. (I19)	Issaquah Creek and Tributaries
103	Protect the headwater wetlands of North Fork (Reach 2). (I281)	Issaquah Creek and Tributaries
104	Protect headwaters and groundwater through variety of tools: wetland buffers, CARA protections, stormwater infiltration regulations (including low impact development), forest clearing restrictions, recommendations in King County's 2003 Taylor Mountain Forest Stewardship Plan and forest stewardship plans. (I16-17)	Issaquah Creek and Tributaries
105	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. Provide enhanced incentives to retain and plant forest area environments (Carey Creek Reaches 3, 4 and Holder Creek Reach 3). (I5-7)	Issaquah Creek and Tributaries
106	Encourage low impact development (including low density livestock or garden enterprises) through regulations, incentives, and education/training. Support basin liaison position to set up training and information sharing among planners, developers, and scientists about hands-on aspects of low impact development best management practices, including marketing, permitting, and technical issues. (I3, I715, I719, I720, I722)	Issaquah Creek and Tributaries
108	Sponsor design competitions for innovative low impact development features, including clustered development, greater forest cover, reduced impervious pavement, green roofs. Combine a home/garden tour or "Street of Dreams" type event featuring these landscape/engineering treatments. (I720, I722)	Issaquah Creek and Tributaries
111	Consistent with the Growth Management Act, Issaquah will continue to absorb most new residential, commercial, industrial growth. Control new development to minimize impacts on water quality, instream flows, and riparian buffers by encouraging low impact development through 3-tiered approach: 1) revise existing codes; 2) provide technical information to developers; 3) promote demonstration projects through incentives, technical assistance. (I12-13)	Issaquah Creek and Tributaries
126	Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted instream grading and wood removal incidents. (I729)	Issaquah Creek and Tributaries
129	Work with Washington Department of Ecology, local health departments, and water suppliers on regulations, incentives, and education related to impact of	Issaquah Creek and Tributaries

Table 1. Start List recommendations with connections to the King County Groundwater Protection Program

Start List #	Description	SubArea Name
	municipal water withdrawals, illegal withdrawals, exempt wells on flow conditions throughout basin. Determine where illegal surface water withdrawals are occurring and follow-up with enforcement to ensure withdrawals do not continue. Develop public information about exempt wells, differences between water drawn from wells versus water diverted from streams without water rights permits, and support enforcement through development of citizen-based watchdog groups. (I44-46)	
130	Adopt and enforce stormwater provisions to address high flows and protection of base flows, including forest retention and low impact development best management practices. Encourage rainwater harvesting and graywater capturing for reuse in landscaping irrigation through demonstration projects, workshops and educational materials. (I47, I723, I728)	Issaquah Creek and Tributaries
131	Continue and/or extend availability of water conservation incentive programs (such as rebates for efficient toilets, appliances, free indoor conservation kits, free landscape irrigation audits); outreach on rainwater harvesting, and graywater capturing for reuse in landscape irrigation. Support conservation efforts within the Cascade Water Alliance and work to coordinate the various water policy and decision makers. (I721, I728)	Issaquah Creek and Tributaries
142	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. (C748)	Lake Washington (including Union Bay) and Lake Sammamish

Regional Water Supply Planning and the WRIA 8 Salmon Conservation Plan

Background. The regional water supply planning process is a multi-jurisdiction effort to develop regional technical information on current and emerging water resource management issues in and around King County. Participants include the Washington Departments of Ecology, Health, and Fish & Wildlife, King County, the Puget Sound Partnership, the Muckleshoot Indian Tribe, various cities and utility districts in King and Pierce Counties, business and environmental groups, and others. WRIA 8 jurisdictions participating in the process are listed in Table 1.

The work of this planning process recently produced information and recommendations in seven topic areas: climate change impacts, reclaimed water, small water systems, source exchange strategies, tributary stream flows, water demand forecast, and water supply alternatives. The following five committees have completed their analyses.

Climate change: Forecasts suggest the Puget Sound region will be warmer in summer as well as winter. The number of days above 90 degrees in the summer projected to greatly increase, and there will be much less precipitation and streamflow in summer, combined with less snowpack in winter (more precipitation in winter, but it will fall as rain). The committee published a number of technical memoranda in association with the University of Washington Climate Impacts Group, including a literature review of the impacts of climate change on groundwater, focusing on studies that may be relevant to the Puget Sound lowlands region.

Reclaimed water: The reclaimed water committee assessed the use, cost, and benefit of reclaimed water as a feasible source of supply for non-potable purposes. The final report from the committee is not yet available.

Small water systems: This committee addressed three issues: (1) provision of “timely and reasonable” service to new customers within a water utility’s service area; (2) small water system water quality sampling and enforcement; and (3) receivership of failing small water systems.

Source exchange: Source exchange is the temporary or permanent shift of water extraction from a source related to low instream flows (or high stream temperatures, or impaired water quality) to an alternate source. Significant committee findings included that relatively small flow quantities (i.e., ½ cfs) could potentially provide significant benefits to small streams. The committee report details issues and questions that a utility should consider when deciding on the feasibility and desirability of initiating a source exchange project. While the investigation was motivated by potential benefits to fish, there are significant costs involved and potential uncertainties regarding water rights issues. In addition, some utilities might feel that collecting and publishing detailed information related to source exchange could increase their exposure to regulatory action or liability under the ESA.

Tributary streamflow: The tributary streamflow committee created list of prioritized streams that would benefit from streamflow restoration, limited to those streams that would conceivably benefit from a small (2-3 cfs) improvement. In WRIA 8, highest likelihood of benefit would be in these streams:

- Bear Creek
- East Fork Issaquah Creek
- Issaquah Creek
- Rock Creek (lower)

The following streams would exhibit a moderate likelihood of benefit:

- Sammamish River (benefit would have been higher for higher flow rates)
- North Fork Issaquah Creek
- Cottage Lake Creek

The committee did not consider streams with existing flow agreements (even if those other agreements didn't explicitly give priority to fish). No further action is planned.

Linkages to WRIA 8 Salmon Conservation Plan. Twenty-six of 171 Start List recommendations (15%) have linkages to regional water supply issues (Table 2). Key linkages fall into the following general categories:

- Protect and restore groundwater resources through regulations, incentives, outreach, easements and acquisitions (including site-specific projects)
- Increase water conservation measures (including outreach)
- Improve stormwater management to promote groundwater recharge
- Coordinate efforts with local and regional partners (including research)
- Address streamflow issues through new and existing regulations and programs

Protect and restore groundwater resources through regulations, incentives, outreach, easements and acquisitions

- **Basinwide.** Protect headwaters and wetlands through critical areas ordinances, critical aquifer recharge area (CARA) provisions, stormwater infiltration regulations (including low-impact development) and best management practices, incentives (e.g., tax breaks, expedited permitting), conservation easements, and acquisition where regulation and incentives are not sufficient (**Start List #s 42, 43, 97, 99, 102, 103, 104, 105**).
- Promote public support of protection measures with outreach to convey reasons behind regulations, consequences of not employing them, and ultimate benefits to environment and people (**Start List # 42**).
- Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted instream grading and wood removal. (**Start List # 126**).

Site-specific projects:

- **North Lake WA & Sammamish River.** Where necessary, acquire parcels to protect headwaters on Bear, Cottage Lake, Cold, Little Bear, and North Creeks (**Start List #s 42, 43, 97, 99**).

- **Issaquah Creek and Tributaries.** Where necessary, acquire parcels to protect headwaters on North Fork Issaquah, Carey and Holder Creeks (**Start List #s 103, 105**).

Increase water conservation measures (including outreach)

- **Basinwide.** Promote water conservation education and incentive programs (e.g., rebates for efficient toilets, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8 (**Start List #s 35, 80, 131**).
- **North Lake WA & Sammamish River.** Expand groundwater protection outreach messages to include the relationship between ground and surface water and inter-connectedness of all hydrologic systems. Include messages in water utility billings, newspaper articles, and school curricula; explore opportunities to partner with business such as local bottled water company (**Start List # 44, 83**).
- **North Lake WA & Sammamish River.** Increase outreach about illegal water withdrawals, including information about exempt wells (who and what purposes qualify), and maximum quantities that may be withdrawn per day. Clarify distinction between withdrawals taken from wells and diversions taken from the river without a water rights permit. Create citizen-based watchdog groups to watch for people drawing directly from creeks and streams (**Start List # 79**).

Improve stormwater management to promote groundwater recharge

- **Basinwide.** Adopt and enforce stormwater provisions to address high flows and protection of base flows, including forest retention and low impact development best management practices. Encourage rainwater harvesting and graywater capturing for reuse in landscaping irrigation through demonstration projects, workshops and educational materials (**Start List #s 77, 98, 130**).

Coordinate efforts with local and regional partners (including research)

- **Basinwide.** Work with Washington Department of Ecology and local health departments on regulations, incentives, and education related to impact of surface and groundwater withdrawals, including illegal withdrawals and exempt wells. Develop public information about exempt wells, differences between water drawn from wells versus water diverted from streams without water rights permits, and support enforcement through development of citizen-based watchdog groups (**Start List #s 32, 78, 82, 129**).
- **Cedar River.** Work with City of Seattle, Cedar River Instream Flow Commission, and other stakeholders on policies and procedures related to effects of flow on habitat restoration (**Start List # 33**).
- **Cedar River.** Work with the City of Kent to establish instream flows that are protective of Chinook through their Habitat Conservation Plan process (**Start List # 38**).
- **North Lake WA & Sammamish River.** Determine source of the Cold Creek groundwater springs in Cottage Lake Creek as a prerequisite to protection efforts (**Start List # 43**).

Address stream flow issues through new and existing regulations and programs

- **Basinwide.** Address flow issues (i.e. quantity and timing) through new and existing regulations/programs including: critical aquifer recharge area (CARA) protections, land use regulations, groundwater management plans, stormwater regulations, and best management practices for infiltration, low impact development, etc. (**Start List #s 34, 38**).
- Control new development to minimize impacts on water quality, instream flows, and riparian buffers by encouraging low impact development through 3-tiered approach: 1) revise existing codes; 2) provide technical information to developers; 3) promote demonstration projects through incentives, technical assistance (**Start List # 111**).

Recommendations. Water quantity issues need further scrutiny, especially related to wells and groundwater withdrawals in the Issaquah-Sammamish basin and their current and future impacts on streamflows. While the recent regional water supply planning process considered future municipal needs and surface water withdrawals, over 1,500 small wells have been permitted since 2000 in King County, and new permits are issued at a rate of ~150 per year. The potential impacts of small wells on future water quantity for salmon conservation and recovery remain uninvestigated. In addition, a King County groundwater protection program for the area was recently eliminated, and the effect of this on groundwater protection is uncertain.

Link to regional water supply planning web page:
<http://www.govlink.org/regional-water-planning/index.htm>

Table 1. WRIA 8 jurisdictions involved in the regional water supply planning process.

Beaux Arts ¹ Bellevue ² Bothell ¹ Clyde Hill ¹ Hunts Point ¹ Issaquah ^{1,2} Kenmore ² Kent ¹ King County Kirkland ^{1,2} Lake Forest Park ¹	Maple Valley ¹ Medina ¹ Mercer Island ¹ Newcastle ¹ Redmond ^{1,2} Renton ¹ Samammish ¹ Seattle Public Utilities Shoreline ¹ Woodinville ¹ Yarrow Point ¹
¹ Through membership in Cascade Water Alliance ² Through membership in Suburban Cities Association	

Table 2. Start List recommendations with connections to regional water supply planning efforts

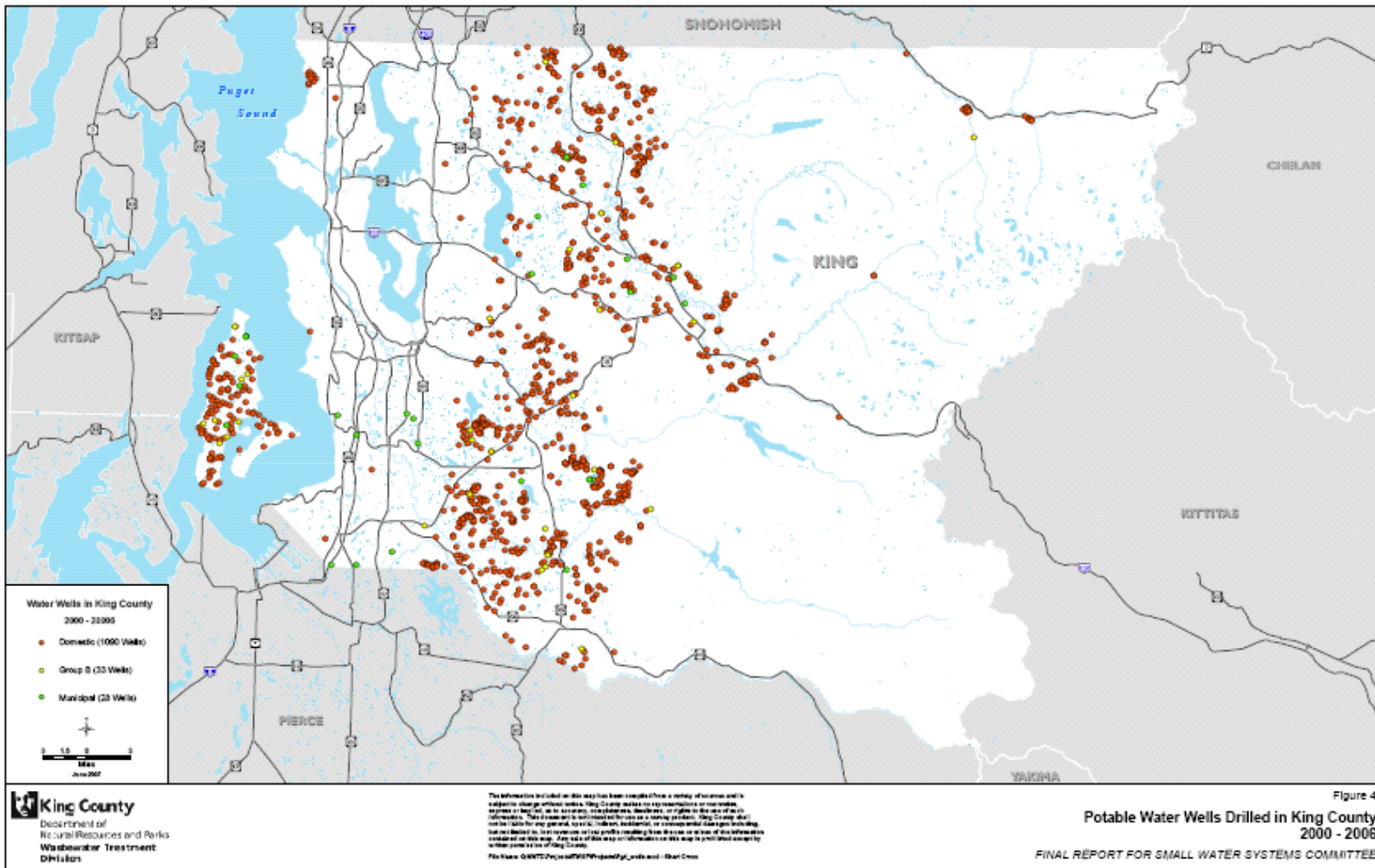
Start List #	Description	SubArea Name
32	Work with Washington Department of Ecology and local health departments on regulations, incentives, and education related to impact of surface and groundwater withdrawals, including illegal withdrawals and exempt wells. Determine where illegal surface water withdrawals are occurring and follow-up with enforcement to ensure withdrawals do not continue. (C22)	Cedar Mainstem
33	Work with City of Seattle, Cedar River Instream Flow Commission, and other stakeholders on policies, procedures and research related to effects of flow on habitat restoration. (C23)	Cedar Mainstem
34	Address flow issues through other regulations/programs including: critical aquifer recharge area protections, land use regulations, groundwater management plans, stormwater regulations, and best management practices for infiltration, low impact development, etc. (C19, C21, C20)	Cedar Mainstem
35	Promote availability of water conservation education and incentive programs (e.g., rebates for efficient toilets, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8. (C24, C708)	Cedar Mainstem
38	Provide enhanced flows for pre-spawning migrants - Work with the City of Kent to establish instream flows that are protective of Chinook through their Habitat Conservation Plan process. Investigate and address other impacts to flows through stormwater management (e.g., low impact development), education and enforcement (e.g., for illegal and exempt withdrawals), etc. (C73, C75, C76, C80, C351)	Cedar Tier 2 Sub-Areas
42	Protect headwater wetlands, seeps, and groundwater recharge areas through critical areas ordinances, critical aquifer recharge area protections (CARAs), incentives, and acquisition. Support with appropriate public outreach to convey reasons behind regulations to protect groundwater sources, consequences of not employing them, and ultimate benefits to environment and people. (N1, N722, N723)	Bear/Cottage Lake/Cold Creek
43	Determine source of the Cold Creek groundwater springs in Cottage Lake Creek and develop protective measures to adequately protect them. Cold Creek headwaters cross the Urban Growth Boundary; growth within Woodinville should be managed to minimize impacts. (N4)	Bear/Cottage Lake/Cold Creek
44	Expand groundwater protection outreach messages to include the relationship between ground and surface water and inter-connectedness of all hydrologic systems. Include messages in water utility billings, newspaper articles, and school curricula; explore opportunities to partner with business such as local bottled water company. (N722, N723, N724)	Bear/Cottage Lake/Cold Creek
77	Adopt stormwater provisions to address high flows, flashiness, and protection of base flows, including forest retention and low impact development best management practices, to improve infiltration. (N20, N27)	Bear/Cottage Lake/Cold Creek
78	Work with Washington Department of Ecology, local health departments, and water suppliers on regulations, incentives, and education related to impact of surface and groundwater withdrawals, including municipal water withdrawals (e.g., City	Bear/Cottage Lake/Cold Creek

Table 2. Start List recommendations with connections to regional water supply planning efforts

Start List #	Description	SubArea Name
	of Redmond), illegal withdrawals, and exempt wells on flow conditions throughout basin. Determine where illegal surface water withdrawals are occurring and follow-up with enforcement to ensure withdrawals do not continue. (N25-26)	
79	Increase outreach about illegal water withdrawals, including information about exempt wells (who and what purposes qualify), and maximum quantities that may be withdrawn per day. Clarify distinction between withdrawals taken from wells and diversions taken from the river without a water rights permit. Create citizen-based watchdog groups to watch for people drawing directly from creeks and streams. (N722)	Bear/Cottage Lake/Cold Creek
80	Promote availability of water conservation education and incentive programs (e.g., rebates for efficient toilets, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8. (N28, N723)	Bear/Cottage Lake/Cold Creek
82	Work with Washington Department of Ecology, local health departments, and water suppliers to address municipal water withdrawals, illegal withdrawals, exempt wells that impact Sammamish River flows and related high temperatures. Research potential for reclaimed water facilities, shifting of municipal water supply sources to maximize summer flows, and extent of impacts from agricultural, commercial, and industrial sectors. (N29-30, N33)	Sammamish River
83	Bolster water conservation outreach in Sammamish watershed to increase and maintain summer base flows and reduce summer water temperatures. Carry out through incentive programs (e.g., rebates for efficient appliances, toilets, free landscape irrigation audits); classes on native drought-tolerant landscaping; and waterless carwash promotions. (N733, N734)	Sammamish River
97	Protect headwaters, wetlands and forest cover through acquisitions or conservation easements, particularly in Reaches 10, 11, 12 and 9 (see notes). (N424,N427,N429,N422)	Little Bear
98	Inadequate base flows, flooding, and flashy hydrology pose serious problems in North Creek. Address these through stormwater management (e.g., improved retention of high flows and increased infiltration), improved information about and enforcement of surface and groundwater withdrawals, TMDL implementation, more aggressive water conservation, etc. (N107)	North Creek
99	Protect remaining forest cover and wetlands through critical areas ordinances, stormwater regulations and best management practices, incentives (e.g., tax breaks, expedited permitting), and acquisition where regulation and incentives are not sufficient protection. There are undeveloped forested areas and wetlands in the following reaches: Lower North reaches 4, 3, 2 and Upper North reaches 10, 9, 6, 7. (Note: Reaches listed in EDT priority order). (N71, N376, N372, N370, N371, N396, N393, N385, N389)	North Creek
102	Support Issaquah’s proposed critical aquifer recharge area (CARA) provisions that incorporate groundwater quality protections in well head capture zones and a broader protection area where infiltration will be required for groundwater	Issaquah Creek and Tributaries

Table 2. Start List recommendations with connections to regional water supply planning efforts

Start List #	Description	SubArea Name
	recharge. (I19)	
103	Protect the headwater wetlands of North Fork (Reach 2). (I281)	Issaquah Creek and Tributaries
104	Protect headwaters and groundwater through variety of tools: wetland buffers, CARA protections, stormwater infiltration regulations (including low impact development), forest clearing restrictions, recommendations in King County's 2003 Taylor Mountain Forest Stewardship Plan and forest stewardship plans. (I16-17)	Issaquah Creek and Tributaries
105	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. Provide enhanced incentives to retain and plant forest area environments (Carey Creek Reaches 3, 4 and Holder Creek Reach 3). (I5-7)	Issaquah Creek and Tributaries
111	Consistent with the Growth Management Act, Issaquah will continue to absorb most new residential, commercial, industrial growth. Control new development to minimize impacts on water quality, instream flows, and riparian buffers by encouraging low impact development through 3-tiered approach: 1) revise existing codes; 2) provide technical information to developers; 3) promote demonstration projects through incentives, technical assistance. (I12-13)	Issaquah Creek and Tributaries
126	Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted instream grading and wood removal incidents. (I729)	Issaquah Creek and Tributaries
129	Work with Washington Department of Ecology, local health departments, and water suppliers on regulations, incentives, and education related to impact of municipal water withdrawals, illegal withdrawals, exempt wells on flow conditions throughout basin. Determine where illegal surface water withdrawals are occurring and follow-up with enforcement to ensure withdrawals do not continue. Develop public information about exempt wells, differences between water drawn from wells versus water diverted from streams without water rights permits, and support enforcement through development of citizen-based watchdog groups. (I44-46)	Issaquah Creek and Tributaries
130	Adopt and enforce stormwater provisions to address high flows and protection of base flows, including forest retention and low impact development best management practices. Encourage rainwater harvesting and graywater capturing for reuse in landscaping irrigation through demonstration projects, workshops and educational materials. (I47, I723, I728)	Issaquah Creek and Tributaries
131	Continue and/or extend availability of water conservation incentive programs (such as rebates for efficient toilets, appliances, free indoor conservation kits, free landscape irrigation audits); outreach on rainwater harvesting, and graywater capturing for reuse in landscape irrigation. Support conservation efforts within the Cascade Water Alliance and work to coordinate the various water policy and decision makers. (I721, I728)	Issaquah Creek and Tributaries



Critical Areas Ordinances and the WRIA 8 Chinook Conservation Plan

Background. The Growth Management Act in Washington State requires the protection of “critical areas,” which include environmentally sensitive areas (such as streams and wetlands), hazardous areas (steep slopes and floodplains), and areas important to groundwater resources. As the region’s population continues to grow, so too do problems with water quality, flooding, and loss of wildlife habitat; the designation of critical areas attempts to mitigate such problems.

Under Chapter 36.70A, Section 170 of the Revised Code of Washington, counties and cities in the state are to designate critical areas where appropriate, and the designation of these critical areas is to give special consideration to measures needed to preserve or enhance anadromous fisheries.⁷ Consequently, critical areas ordinances offer significant potential for achieving salmon conservation objectives in WRIA 8.

Overlap/Links to WRIA 8 Plan. Critical Areas Ordinances (CAOs) have a direct interaction with recommendations under the WRIA 8 Plan’s Start List, and twenty-seven of the 171 Start List actions (approximately 16%) contain at least some level of overlap with CAOs (Table 1). The following salmon recovery objectives comprise the majority of overlap:

- Protection of riparian buffers and nearshore vegetation
- Protection of forest cover
- Protection of wetlands
- Protection of water quality (through ordinances, groundwater protection)

In large part, the references to CAOs in the WRIA 8 Plan focus on the regulatory mechanisms available through the designation of critical areas as a tool to provide habitat protection, either through implementing new restrictions or tightening and enforcing existing restrictions and ordinances. Since the ordinances established through the critical areas updating process contain enforceable limits with well-defined quantitative measures, CAOs are a valuable instrument for achieving salmon conservation objectives.

In addition to regulation called for specifically through the CAO process, some actions in the Start List recommend working through clearing and grading ordinances or developing livestock ordinances, both of which work primarily to improve water quality. King County’s clearing and grading ordinance (Ordinance 15053) is considered a piece of the county’s critical areas package; thus, references to clearing and grading in the plan are considered in this analysis to be overlapping with CAOs.

Similarly, the Start List recommendations calling for adoption of a livestock ordinance are very similar in nature to the ordinances contained in the critical areas package and are focused on the areas most susceptible to water quality problems arising from the impacts

⁷ King County Ordinance 15051, http://www.metrokc.gov/council/cao/critical_areas_15051.pdf

of fine soils. Thus, while not falling under the CAO package per se, the livestock ordinance recommendations are closely related to CAOs and are consequently considered here as overlap.

Opportunities & Recommendations

- **Regulatory Enforcement**
 - *Use the regulatory mechanisms available in critical areas ordinances to protect riparian buffers.* The vast majority of the Start List items containing overlap with CAOs make reference to regulations (twenty of twenty-seven, or 74%). Likewise, nearly half of the overlapping actions reference buffers (twelve of twenty-seven—44%). These actions largely focus on protecting buffers or riparian cover through the use of enforcement; thus, enforcement of existing critical areas buffer requirements would contribute significantly to WRIA 8 salmon conservation efforts. **(Start List # 10, 13, 45, 52, 54, 104, 112, 113, 116, 119, 122, 141)**
 - *Use the regulatory mechanisms available in critical areas ordinances to protect forest cover and nearshore vegetation.* Along a similar line of thinking as above, regulations—accompanied by dedicated enforcement—are capable of protecting the forest cover and nearshore vegetation that are crucial to salmon habitat. **(Start List # 5, 45, 52, 77, 99, 112, 152)**
- **Regulatory Development** - The quality of both surface water and groundwater appear intermittently throughout the list of overlapping recommendations, and supporting the development of new regulations and ordinances can serve to protect surface water and groundwater quality. Developing livestock ordinances to address water quality or supporting proposed critical aquifer recharge areas (CARAs) are examples that would achieve this recommendation. **(Start List # 34, 42, 54, 75, 77, 81, 102, 124, 152)**
- **Habitat Protection** - Critical areas ordinances contain language regarding activities pertaining to or having an effect on wetlands, and wetlands are a priority within the Start List. As recommended here, protecting wetlands through CAOs involves working through existing regulations. **(Start List # 42, 52, 104, 141, 160)**

Table 1. Start List Recommendations with Connection to Critical Areas Ordinances

StartList #	Description	SubArea Name
5	Protection of forest cover in Tier 1 and Tier 2 subareas is a high priority land use action, so that existing levels of forest cover are not further degraded. King County should strictly enforce the clearing restrictions for rural areas adopted in 10/04 as part of the critical areas ordinance update, pursue acquisition and incentives, and provide forest stewardship plans. Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. (C2)	Cedar Mainstem
10	Protection of remaining riparian vegetation within Urban Growth Area is high priority; encourage replanting of riparian vegetation through incentives, and strictly enforce aquatic buffers and limit variances where vegetation still exists in sensitive areas. (C5)	Cedar Mainstem
13	Protect intact riparian buffers in Tier 1 and Tier 2 subareas through strict enforcement of buffer regulations, and offer incentives to restore degraded habitat buffers, recognizing that majority of riparian corridor is privately owned. Support King County forestry and agriculture programs including technical and financial assistance to landowners. Protection and restoration of riparian buffer on publicly owned lands is also a priority. (C5, C7)	Cedar Mainstem
34	Address flow issues through other regulations/programs including: critical aquifer recharge area protections, land use regulations, groundwater management plans, stormwater regulations, and best management practices for infiltration, low impact development, etc. (C19, C21, C20)	Cedar Mainstem
42	Protect headwater wetlands, seeps, and groundwater recharge areas through critical areas ordinances, critical aquifer recharge area protections (CARAs), incentives, and acquisition. Support with appropriate public outreach to convey reasons behind regulations to protect groundwater sources, consequences of not employing them, and ultimate benefits to environment and people. (N1, N722, N723)	Bear/Cottage Lake/Cold Creek
45	Continue approach taken in King County during past decade to protect forest cover and riparian buffers, including: enforcing existing regulations, providing a range of incentives and a basin steward working with streamside landowners, and providing forest stewardship plans. Support Snohomish County's incentive programs such as Transfer of Development Rights for farmlands and Reduced Drainage Discharge Demonstration Program. Properties protected through acquisition, easements, etc. must be maintained over long term. (N7, N701, N702, N704)	Bear/Cottage Lake/Cold Creek
52	Adopt and strictly enforce stream/wetland buffers and forest cover protections through King and Snohomish counties' critical areas ordinance updates. Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. (N10)	Bear/Cottage Lake/Cold Creek
54	Implement regulations and incentives to protect and restore riparian buffers, through critical areas ordinances and Shoreline Master Program updates; limit impacts of trails and other facilities in buffers. Implement riparian restoration by streamside landowners through King County Livestock Program, farm plans, and cost share. (N12)	Bear/Cottage Lake/Cold Creek
68	Identify sources and adopt source control of fine sediments and metals in mainstems and tributaries (e.g., from new	Bear/Cottage

Table 1. Start List Recommendations with Connection to Critical Areas Ordinances

StartList #	Description	SubArea Name
	construction, sand on roads, farms) through stormwater management and clearing and grading ordinances. Jurisdictions should adopt and enforce regulations and best management practices consistent with Washington Department of Ecology's 2001 Stormwater Management Manual (or beyond), as part of the NPDES Phase 1 and Phase 2 permit requirements. Water quality problems should be addressed through stormwater programs (including low impact development BMPs), current and future TMDLs, livestock management programs, and upgrade of stormwater facilities (where possible). (N18)	Lake/Cold Creek
75	Jurisdictions should implement and enforce livestock ordinances, making highest priority those areas that are most susceptible due to fine soils. Work with farmers to adopt and implement farm plans to address water quality and habitat management. Coordinate with other stewardship and education programs, (e.g., Horses for Clean Water). (N19, N702, N713)	Bear/Cottage Lake/Cold Creek
77	Adopt stormwater provisions to address high flows, flashiness, and protection of base flows, including forest retention and low impact development best management practices, to improve infiltration. (N20, N27)	Bear/Cottage Lake/Cold Creek
81	Address water quality issues, including temperature and pesticides/herbicides, through stormwater regulations (including NPDES permits), best management practices (including low impact development), education, and incentives targeted at agricultural, commercial, industrial, and residential landowners. (N34-37)	Sammamish River
99	Protect remaining forest cover and wetlands through critical areas ordinances, stormwater regulations and best management practices, incentives (e.g., tax breaks, expedited permitting), and acquisition where regulation and incentives are not sufficient protection. There are undeveloped forested areas and wetlands in the following reaches: Lower North reaches 4, 3, 2 and Upper North reaches 10, 9, 6, 7. (Note: Reaches listed in EDT priority order). (N71, N376, N372, N370, N371, N396, N393, N385, N389)	North Creek
102	Support Issaquah's proposed critical aquifer recharge area (CARA) provisions that incorporate groundwater quality protections in well head capture zones and a broader protection area where infiltration will be required for groundwater recharge. (I19)	Issaquah Creek and Tributaries
104	Protect headwaters and groundwater through variety of tools: wetland buffers, CARA protections, stormwater infiltration regulations (including low impact development), forest clearing restrictions, recommendations in King County's 2003 Taylor Mountain Forest Stewardship Plan and forest stewardship plans. (I16-17)	Issaquah Creek and Tributaries
107	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 and Timberland Program), transferable development rights programs. (I5, I701)	Issaquah Creek and Tributaries
112	Promote comprehensive approach taken in Bear Creek basin during past decade to include: strictly enforced regulations	Issaquah

Table 1. Start List Recommendations with Connection to Critical Areas Ordinances

StartList #	Description	SubArea Name
	(e.g., clearing restrictions, riparian buffers, and stewardship plans in King County's updated critical areas ordinance), King County basin steward doing targeted outreach to streamside landowners, and a range of incentives (i.e., acquisition, PBRs program, conservation easements). Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. (I2, I4, I727)	Creek and Tributaries
113	Protect riparian buffers through critical areas ordinances, offer incentives (Public Benefit Rating System, easements) for private property owners to protect buffers and/or revegetate and remove channel confinement. Protect and restore riparian corridors by implementing required fencing/set asides and options for planting and cost share provided by the King County Livestock Program. (I28, I30)	Issaquah Creek and Tributaries
116	Continue to tighten regulations affecting riparian buffers, including more restricted application of buffer averaging, fewer allowable uses in buffers. However, nonconforming uses will continue to be a great challenge; in order to decrease level of nonconformity over the long term, jurisdictions should encourage/require that development come into conformity, depending on degree of redevelopment. (I25-26)	Issaquah Creek and Tributaries
119	Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement during redevelopment. However, limit buffer width reductions for new development because a key issue for Issaquah Creek is encroachment into floodplain and channel confinement, and revegetation does not improve this riparian function. (I29)	Issaquah Creek and Tributaries
122	Issaquah Reach 9 and 10: Work with private property owners specifically in this reach to develop Public Benefit Rating System or easement to increase stream buffer protection. (I233, I238)	Issaquah Creek and Tributaries
124	King County should implement and enforce livestock ordinance, making highest priority those areas that are most susceptible due to fine soils. Work with farmers to adopt and implement farm plans which address water quality and fish and wildlife habitat management and restoration. Coordinate with other stewardship and education programs, e.g., Horses for Clean Water and Backcountry Horsemen. (I24, I712)	Issaquah Creek and Tributaries
141	Protect and restore water quality and other ecological functions in tributaries to reduce effects of urbanization and reduce conditions which encourage cutthroat. Protect and restore forest cover, riparian buffers, wetlands, and creek mouths by revising and enforcing critical areas ordinances and Shoreline Master Programs, incentives, and flexible development tools. (C38, N64, I75 C747, C748)	Lake Washington (including Union Bay) and Lake Sammamish
149	Bluffs on Magnolia and Discovery Park in Seattle are only ones in WRIA 8 that are not armored by the railroad and have some unarmored locations (publicly and privately owned). Prohibit bulkheads or any other form of armoring and development at these locations through Seattle's critical areas ordinance and Shoreline Master Program. (M1)	Estuary and Nearshore

Table 1. Start List Recommendations with Connection to Critical Areas Ordinances

StartList #	Description	SubArea Name
152	Protect remaining nearshore vegetation (on low or high bluffs) through regulation and/or acquisition. Regulatory tools to protect vegetation and prevent further development on and near top of bluffs, include: steep slope ordinances, bald eagle protection ordinances, critical areas ordinances, and clearing ordinances. (M7)	Estuary and Nearshore
160	Protect stream mouths and wetlands from further degradation through Shoreline Master Programs and critical areas ordinances. Once stream mouths and wetlands are restored, protect from impacts from development through buffer requirements and stormwater management programs. (M14, M17, M18)	Estuary and Nearshore

Shoreline Master Programs and Salmon Conservation in WRIA 8

Background. The goal of the Shoreline Management Act (SMA) is “to prevent the inherent harm in an uncoordinated and piecemeal development of the state’s shorelines.” The Act establishes a broad policy giving preference to uses that:

- protect the quality of water and the natural environment,
- depend on proximity to the shoreline (“water-dependent uses”), and
- preserve and enhance public access or increase recreational opportunities for the public along shorelines.

The SMA establishes a balance of authority between local and state government. Cities and counties are the primary regulators of shorelines and have primary responsibility for initiating shoreline planning, but the state (through the Department of Ecology) retains the authority to review local programs and permit decisions.

Local governments administer the SMA largely through local *Shoreline Master Programs* (SMPs). Every county in the state, as well as many cities and towns, have adopted SMPs to implement the SMA at the local level. The Department of Ecology acts in a supportive and review capacity in the SMP updating process, with their primary emphasis being on the provision of assistance to local governments and ensuring compliance with the SMA.

Ecology typically defers lead on enforcement actions to local governments, and the primary responsibility for enforcement falls to cities and counties as part of the local administration of the SMA. However, the state is interested in consistent enforcement of similar violations throughout the state and is authorized to enforce the SMA in the absence of local government action.

Since King County is the only jurisdiction in WRIA 8 to have issued a draft Shoreline Master Program update, the discussion in this document is focused on the overlap between the WRIA 8 Salmon Conservation Plan and King County’s SMP. Other jurisdictions are indeed relevant and will need to be considered as their updates become available.

Linkages to WRIA 8 Salmon Conservation Plan. King County’s draft SMP update is a comprehensive set of policies, regulations, and plans to manage the county’s shorelines. Since salmon recovery activities in King County are largely voluntary, the regulatory component of the SMP update offers a significant opportunity to achieve salmon recovery objectives. The following regulations (offered in King County’s May 2007 Shoreline Regulations draft) are consistent with actions outlined in the start list of the WRIA 8 salmon plan:

- Surface water management: county is to apply the King County Stormwater Design Manual, which is a topic covered in several sections of the start list (i.e. with regard to stormwater under the NPDES Phase II permit)
- Forest practices: shoreline regulations seek to enhance forest health or limit ecologically damaging harvest, which fits directly with the WRIA 8 technical priority of protecting and restoring forest cover
- Shoreline stabilization (including bulkheads): regulations attempt to limit shoreline stabilization, which ties into the WRIA 8 technical priority of protecting floodplain connectivity by limiting bank armoring. Shoreline regulations also specifically indicate stabilization should avoid feeder bluffs, salmonid habitat, and eelgrass beds.
- Docks and piers: fixed docks are prohibited along a shoreline with significant wetland vegetation, and protecting wetlands to maintain natural hydrologic processes is a technical priority. Construction standards also address freshwater anadromous lakes directly.
- Buffers (or shoreline setbacks): connected to the technical priority related to protection and restoration of riparian vegetation. The shoreline critical areas designations are to follow the existing critical areas designations with the following modifications: in the high intensity and shoreline residential environments, buffers should be 115 feet from the Ordinary High Water Mark (unless in High Basin Condition area on a CAO basin map); and buffers should be 165 feet in all other shoreline environments.
- Trails: related to buffers and protection and restoration of riparian vegetation; constructed trails allowed to Ordinary High Water Mark or upper edge of wetland, but maximum width is outlined, pervious materials are to be used, and all significant trees are to be left.

Opportunities to Achieve Start-List Objectives. As stated in RCW 90.58.020, “coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state.” RCW 90.58.100 continues by saying the preparation of master programs should “consider all plans...made or being made by federal, state, regional, or local agencies...dealing with pertinent shorelines of the state.” Given both of these statements, the need for master program updates to consider salmon recovery plans is evident, especially in the case of WRIA 8 since the shoreline environment within the watershed is so critical to the needs of salmon and is likewise heavily used and influenced by humans. Importantly, the King County SMP Restoration Plan notes the connectivity and consistency between the WRIA salmon plans and the SMP protection and restoration goals.

WRIA 8 is well-positioned to influence the SMP updates of relevant jurisdictions—many of the WRIA 8 jurisdictions are in the earliest phases of drafting their SMP updates. The statute outlining the SMP update schedule indicates an update deadline of *December 1, 2009*, for King County and the cities within King County with a population greater than 10,000. King County issued a draft update in May 2007, and another comment period will open in the fall of 2007 after the county receives feedback from the Department of Ecology.

An additional opportunity lies in the need for jurisdictions to prepare characterizations of their shorelines and the ecological functions of these shorelines. As a component of their discussion of shoreline ecological functions, jurisdictions must consider attributes such as:

- water quality
- woody debris recruitment
- sediment regime
- flow variability
- watershed connectivity
- habitat required by anadromous fish

Ultimately, the characterization and analysis following from this requirement should be used to craft policies achieving “no net loss” in shoreline ecological function, and the habitat protection and restoration projects outlined in the WRIA 8 Plan and accompanying habitat assessments offer resources that can be used to inform the development of shoreline characterizations under the SMP.

Recommendations. While the overlap extends to a range of topics, the primary categories of overlap are forest cover and riparian buffers, and significant opportunities exist to meet the recommendations called for in the Start List through the mechanisms of the Shoreline Master Programs. High opportunity recommendations include:

- **Regulatory mechanisms** – Enforcement of aquatic buffers and limiting of variances is cited in the Start List as a priority. Enforcement activities could commence under policies developed through SMPs, and shoreline regulations should disallow variances in all but the most exceptional circumstances. (**Start List # 10, 13, 15, 45, 52, 54, 60, 113, 116, 117, 119, 141, 152, 160**)
- **Incentives** – Incentives are discussed in the Start List as a means to restore buffers and are likewise listed as a policy approach in the King County SMP (through transfer of development rights or the Public Benefit Ratings System). Use existing incentive programs or develop new incentive structures to both protect and restore riparian and shoreline areas. (**Start List # 5, 6, 10, 13, 45, 54, 81, 84, 96, 99, 112, 113, 132, 133, 135, 141, 153, 158**)
- **Education** – Supply information to jurisdictions that are in the process of characterizing their shorelines about those areas important to the recovery of salmon in WRIA 8. While not education in the traditional sense of educating the public, education of this variety can promote WRIA 8’s priority shorelines, which hopefully will in turn be given higher standing in jurisdictions’ SMP updates.

Addressing buffers and forest cover, especially in “shorelines of the state,” will have positive feedback effects on water quality, woody debris, and stream flow, the combination of which will improve salmonid habitat generally.

Table 1. Start List Recommendations with Connection to Shoreline Master Programs

StartList #	Description	SubArea Name
2	Employ basinwide stewards to work with property owners, land trusts, and agencies in order to identify and secure forested, wetland, and riparian areas, and to encourage the best management practices for those held in private ownership. Encourage neighborhood and community protection associations to foster the ethic of voluntary stewardship and build bridges between property owners, agencies, and local governments. (C703, C716, C720, C721)	Cedar Mainstem
4	In urban areas, protect remaining trees and encourage reforestation through street tree and urban forestry programs, tree protection regulations, landscaping incentives, and redevelopment. (C3)	Cedar Mainstem
5	Protection of forest cover in Tier 1 and Tier 2 subareas is a high priority land use action, so that existing levels of forest cover are not further degraded. King County should strictly enforce the clearing restrictions for rural areas adopted in 10/04 as part of the critical areas ordinance update, pursue acquisition and incentives, and provide forest stewardship plans. Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. (C2)	Cedar Mainstem
6	Offer regulatory flexibility and incentives to encourage property owners to restore riparian function and remove impervious areas during redevelopment of public or private properties. (C6, C7)	Cedar Mainstem
10	Protection of remaining riparian vegetation within Urban Growth Area is high priority; encourage replanting of riparian vegetation through incentives, and strictly enforce aquatic buffers and limit variances where vegetation still exists in sensitive areas. (C5)	Cedar Mainstem
13	Protect intact riparian buffers in Tier 1 and Tier 2 subareas through strict enforcement of buffer regulations, and offer incentives to restore degraded habitat buffers, recognizing that majority of riparian corridor is privately owned. Support King County forestry and agriculture programs including technical and financial assistance to landowners. Protection and restoration of riparian buffer on publicly owned lands is also a priority. (C5, C7)	Cedar Mainstem
15	Limit new development in floodplains and channel migration zones; develop and apply standards which minimize impacts to salmon. State and local transportation plans should minimize new road crossings. (C17, C18)	Cedar Mainstem
31	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. (C713)	Cedar Mainstem
42	Protect headwater wetlands, seeps, and groundwater recharge areas through critical areas ordinances, critical aquifer recharge area protections (CARAs), incentives, and acquisition. Support with appropriate public outreach to convey reasons behind regulations to protect groundwater sources, consequences of not employing them, and ultimate benefits to environment and people. (N1, N722, N723)	Bear/Cottage Lake/Cold Creek
45	Continue approach taken in King County during past decade to protect forest cover and riparian buffers, including: enforcing existing regulations, providing a range of incentives and a basin steward working with streamside landowners, and providing forest stewardship plans. Support Snohomish County's incentive programs such as Transfer of Development Rights for farmlands and Reduced Drainage Discharge Demonstration Program. Properties protected through acquisition, easements,	Bear/Cottage Lake/Cold Creek

Table 1. Start List Recommendations with Connection to Shoreline Master Programs

StartList #	Description	SubArea Name
	etc. must be maintained over long term. (N7, N701, N702, N704)	
48	Employ basinwide stewards to work with property owners, land trusts, and agencies in order to identify and secure forested, wetland, and riparian areas. Encourage neighborhood and community protection associations that foster the ethic of voluntary stewardship, enlist community support to purchase forest tracts and build bridges between property owners, agencies, and local governments. (N702, N704)	Bear/Cottage Lake/Cold Creek
52	Adopt and strictly enforce stream/wetland buffers and forest cover protections through King and Snohomish counties' critical areas ordinance updates. Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. (N10)	Bear/Cottage Lake/Cold Creek
54	Implement regulations and incentives to protect and restore riparian buffers, through critical areas ordinances and Shoreline Master Program updates; limit impacts of trails and other facilities in buffers. Implement riparian restoration by streamside landowners through King County Livestock Program, farm plans, and cost share. (N12)	Bear/Cottage Lake/Cold Creek
60	Limit new development in floodplains; develop and apply standards which minimize impacts to salmon. Minimize number and width of new roads through transportation planning and implementation. (N15)	Bear/Cottage Lake/Cold Creek
72	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. (N731)	Bear/Cottage Lake/Cold Creek
81	Address water quality issues, including temperature and pesticides/herbicides, through stormwater regulations (including NPDES permits), best management practices (including low impact development), education, and incentives targeted at agricultural, commercial, industrial, and residential landowners. (N34-37)	Sammamish River
84	Encourage bank regrading and revegetation of riparian buffers (on mainstem and tributaries) during new construction and redevelopment in exchange for regulatory flexibility and incentives, such as providing expertise, expediting permitting, and tax breaks. (N42-43)	Sammamish River
87	Given the high public use of the Sammamish River trail, restoration projects on the Sammamish River are highly visible and provide good public outreach opportunities. Enhance interpretive efforts on projects and encourage media coverage. Continue to use citizen volunteers to assist in restoration and maintenance of project sites. (N710, N711)	Sammamish River
92	Restore shoreline as part of redevelopment of Lake Pointe Property in Reach 1, a 45-acre property on Lake Washington at right bank of Sammamish River mouth that is targeted for cleanup. (N45, N333)	Sammamish River
93	Continue and expand projects such as Sammamish Re-Leaf and Redmond River Walk to plant early successional riparian vegetation that provide shade, particularly in Reaches 4 and 6. Support riparian restoration in agricultural areas through King	Sammamish River

Table 1. Start List Recommendations with Connection to Shoreline Master Programs

StartList #	Description	SubArea Name
	County's agriculture programs. Riparian vegetation restoration projects must be sequenced and coordinated with projects to regrade river banks and create flood benches. (N37, N351, N362, N361)	
96	Tremendous growth pressure exists in Little Bear subarea. Jurisdictions should not move the Urban Growth Area (UGA) boundary, unless such change is beneficial to salmon. Jurisdictions should protect remaining watershed function by managing any additional growth in rural areas through incentives and regulations for forest retention, low impact development, clustering to protect natural areas, transferable development rights, etc. and acquisition where regulation and incentives do not provide sufficient protection. (N67)	Little Bear
99	Protect remaining forest cover and wetlands through critical areas ordinances, stormwater regulations and best management practices, incentives (e.g., tax breaks, expedited permitting), and acquisition where regulation and incentives are not sufficient protection. There are undeveloped forested areas and wetlands in the following reaches: Lower North reaches 4, 3, 2 and Upper North reaches 10, 9, 6, 7. (Note: Reaches listed in EDT priority order). (N71, N376, N372, N370, N371, N396, N393, N385, N389)	North Creek
104	Protect headwaters and groundwater through variety of tools: wetland buffers, CARA protections, stormwater infiltration regulations (including low impact development), forest clearing restrictions, recommendations in King County's 2003 Taylor Mountain Forest Stewardship Plan and forest stewardship plans. (I16-17)	Issaquah Creek and Tributaries
109	Employ basinwide stewards and farm planners/livestock stewards to work with property owners, land trusts, and agencies in order to identify and secure forested, wetland, and riparian areas, and to encourage the best management practices for those held in private ownership. (I701, I702)	Issaquah Creek and Tributaries
112	Promote comprehensive approach taken in Bear Creek basin during past decade to include: strictly enforced regulations (e.g., clearing restrictions, riparian buffers, and stewardship plans in King County's updated critical areas ordinance), King County basin steward doing targeted outreach to streamside landowners, and a range of incentives (i.e., acquisition, PBRs program, conservation easements). Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration. (I2, I4, I727)	Issaquah Creek and Tributaries
113	Protect riparian buffers through critical areas ordinances, offer incentives (Public Benefit Rating System, easements) for private property owners to protect buffers and/or revegetate and remove channel confinement. Protect and restore riparian corridors by implementing required fencing/set asides and options for planting and cost share provided by the King County Livestock Program. (I28, I30)	Issaquah Creek and Tributaries
116	Continue to tighten regulations affecting riparian buffers, including more restricted application of buffer averaging, fewer allowable uses in buffers. However, nonconforming uses will continue to be a great challenge; in order to decrease level of nonconformity over the long term, jurisdictions should encourage/require that development come into conformity, depending on degree of redevelopment. (I25-26)	Issaquah Creek and Tributaries

Table 1. Start List Recommendations with Connection to Shoreline Master Programs

StartList #	Description	SubArea Name
117	Limit new development and roads in floodplains; develop and apply standards which minimize impacts to salmon. Planning for new roads, and maintenance and retrofitting of existing roads, should minimize impacts on floodplains and water quality. (I38-40, I49)	Issaquah Creek and Tributaries
119	Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement during redevelopment. However, limit buffer width reductions for new development because a key issue for Issaquah Creek is encroachment into floodplain and channel confinement, and revegetation does not improve this riparian function. (I29)	Issaquah Creek and Tributaries
126	Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted instream grading and wood removal incidents. (I729)	Issaquah Creek and Tributaries
132	Encourage salmon friendly shoreline design during new construction or redevelopment by offering incentives and regulatory flexibility to improve bulkhead and dock design and revegetate shorelines. Increase enforcement and address nonconforming structures over long run by requiring that major redevelopment projects meet current standards. (C27-29, N50, N52-53, I54-56)	Lake Washington (including Union Bay) and Lake Sammamish
133	Discourage construction of new bulkheads; offer incentives (e.g., provide expertise, expedite permitting) for voluntary removal of bulkheads, beach improvement, riparian revegetation. (C30, N51, I52)	Lake Washington (including Union Bay) and Lake Sammamish
134	Support joint effort by NOAA Fisheries and other agencies to develop dock/pier specifications to streamline federal/state/local permitting; encourage similar effort for bulkhead specifications. (C32-33, N55-56, I57, I66)	Lake Washington (including Union Bay) and Lake Sammamish
135	Promote value of light-permeable docks, smaller piling sizes, and community docks to both salmon and landowners through direct mailings to lakeshore landowners or registered boat owners sent with property tax notice or boat registration tab renewal. Offer financial incentives for community docks in terms of reduced permit fees, loan fees/percentage rates, taxes, and permitting time, in addition to construction cost savings. (C734, C735)	Lake Washington (including Union Bay) and Lake Sammamish

Table 1. Start List Recommendations with Connection to Shoreline Master Programs

StartList #	Description	SubArea Name
141	Protect and restore water quality and other ecological functions in tributaries to reduce effects of urbanization and reduce conditions which encourage cutthroat. Protect and restore forest cover, riparian buffers, wetlands, and creek mouths by revising and enforcing critical areas ordinances and Shoreline Master Programs, incentives, and flexible development tools. (C38, N64, I75 C747, C748)	Lake Washington (including Union Bay) and Lake Sammamish
148	Coordinate with local businesses to sponsor a shoreline revegetation campaign, incorporating environmental stewardship as part of redevelopment occurring within Ship Canal area. Extend message (and sponsorship) through signage along shore, in-store promotions (at business's discretion), and media recognition. (M707)	Lake Union, Ship Canal and Locks
149	Bluffs on Magnolia and Discovery Park in Seattle are only ones in WRIA 8 that are not armored by the railroad and have some unarmored locations (publicly and privately owned). Prohibit bulkheads or any other form of armoring and development at these locations through Seattle's critical areas ordinance and Shoreline Master Program. (M1)	Estuary and Nearshore
150	Support King County-funded sediment source study to: 1) establish where feeder bluffs were prior to the railroad, and 2) qualitatively assess rates of erosion and sediment contribution of those bluffs. Expect study completion by 3/05.(M3, M2)	Estuary and Nearshore
152	Protect remaining nearshore vegetation (on low or high bluffs) through regulation and/or acquisition. Regulatory tools to protect vegetation and prevent further development on and near top of bluffs, include: steep slope ordinances, bald eagle protection ordinances, critical areas ordinances, and clearing ordinances. (M7)	Estuary and Nearshore
153	Offer incentives to encourage bulkhead removal and revegetation along shoreline, including: allow regulatory flexibility during redevelopment, provide expertise (e.g., templates for shoreline planting plan, bulkhead design); expedite permitting at local, state and federal levels. (M8)	Estuary and Nearshore
154	For areas with existing residential, commercial, and industrial development west of the railroad (e.g. Nakeeta Beach, Point Wells, Richmond Beach): a. Prohibit new development, at least in areas designated as conservancy. b. During redevelopment, reduce overall impacts to nearshore, e.g., limit additional riprap to that required to protect structures, require riparian revegetation, avoid construction in intertidal zone, use smallest feasible footprint for structures, redevelop industrial sites into less intensive uses. c. Promote pilot projects to better understand impacts of bank hardening in estuary and nearshore. As site specific projects are pursued to remove structures, fill and bulkheads through fee simple purchase of parcels, address any regulatory or programmatic actions in order to expedite these projects. (M4)	Estuary and Nearshore
157	Prohibit new residential overwater structures. For new public facilities (e.g., ferry docks), incorporate salmon-friendly design features and mitigate for unavoidable impacts. Retrofit existing overwater structures with salmon friendly design features. Where applicant meets guidelines for marine overwater structures, offer expedited local/state/federal permitting (similar to concept being promoted for Lake Washington overwater structures by NOAA Fisheries and other agencies). (M10, M11,	Estuary and Nearshore

Table 1. Start List Recommendations with Connection to Shoreline Master Programs

StartList #	Description	SubArea Name
	M13)	
158	Remove overwater structures and pilings when possible; increase interpretive signage and media exposure at areas where structures are removed such as at Edmonds parks. Offer incentives to build community docks to replace individual docks in Salmon Bay. (M11)	Estuary and Nearshore
159	Expand outreach about value of eelgrass beds as juvenile source of food and habitat – and the negative effects that docks, overwater structures, and bulkheads have on the eelgrass. Encourage combined docks or more salmon friendly designs that impede less sediment and let more light into water; involve community and youth in eelgrass replantings and monitoring studies. (M714, M716, M721)	Estuary and Nearshore
160	Protect stream mouths and wetlands from further degradation through Shoreline Master Programs and critical areas ordinances. Once stream mouths and wetlands are restored, protect from impacts from development through buffer requirements and stormwater management programs. (M14, M17, M18)	Estuary and Nearshore
167	Determine extent to which residential structures along nearshore are on septic systems; determine if these systems are operating properly and if not require that they be fixed. Require that septic systems be inspected at time of sale. (M20)	Estuary and Nearshore
168	Discourage or prohibit any further filling and dredging in nearshore except for essential public facilities, and where associated with shoreline restoration projects. (M21)	Estuary and Nearshore

National Pollution Discharge Elimination System (NPDES) Phase II Permit

Background. The Western Washington Phase II Municipal Stormwater Permit regulates stormwater runoff and discharges from *small* municipal separate storm sewer systems (MS4s). Phase II extends the NPDES stormwater policy to certain communities not covered by the Phase I program. More specifically, permitted jurisdictions must own and operate a storm drain system, discharge to surface waters, be located in an urbanized area, and have a population greater than 1,000.⁸

Per section 5 of the Phase II permit, each permitted jurisdiction must develop and implement a Stormwater Management Program (SWMP) to protect water quality and reduce pollutant discharge to the “maximum extent practicable.” Six elements must be addressed in the SWMP, which together seek to reduce pollutant discharge. The six elements are:

- Public Education and Outreach
- Public Participation and Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post-Construction Site Runoff Control
- Pollution Prevention/Good Housekeeping

Phase II and Salmon Conservation in WRIA 8. Given the structure of the Phase II permit, there exists significant overlap between this program and the salmon recovery recommendations presented in the WRIA 8 Chinook Conservation Plan. Analysis shows that forty-nine (of 171) start list actions contain substantive overlap with the NPDES Phase II permit. Identifying the specific areas of overlap will uncover opportunities for synergy between these two separate, yet interrelated, planning programs and will ultimately inform efficient implementation of some of the highest priority activities called for in the WRIA 8 Plan’s start list. The following items identify such relationships.

- **Public Education and Outreach** - A regionally or locally-developed public outreach and education program is a requirement of the SWMP under Phase II, and activities of this variety are a primary focus of the WRIA 8 Plan. Of the forty-nine total start list actions intersecting the NPDES Phase II permit, thirty-three (sixty-seven percent) can be categorized as containing an outreach and education component. Within these thirty-three recommendations, three broad groups are referenced most frequently—homeowners, landscapers, and property managers; the general public; and engineers, contractors, developers, review staff, and land use planners. Along with these audiences, three subject area categories appear most often: activities related to home and business landscaping practices

⁸ WA Dept. of Ecology, <http://www.ecy.wa.gov/programs/wq/stormwater/municipal/ph2-introduction.html>, Accessed September 11, 2007.

(including design and maintenance), low impact development techniques, and general stormwater BMPs.

- **Regulatory Activity** - Regulatory activity as defined here involves the modification of existing regulations, as well as enforcement of regulations. Thirty-five percent of the NPDES-related start list actions involve regulatory approaches of one form or another. Within the WRIA 8 start list, the regulatory-focused actions under the Phase II permit seek to: improve water quality through the reduction of sediment inputs and flashy flows, reduce the bed-scouring effects of flashy flows, and increase the practice of low impact development.
- **Collaboration / Coordination** – Partnering with and working with other governmental agencies, stakeholder groups, and citizens in WRIA 8 is critical to the success of salmon conservation and recovery in the WRIA, and this thematic category refers to partnerships as a means to achieve conservation objectives. Concerning the start list actions intersecting with the NPDES permit, twenty-two percent involve collaboration or coordination with an entity other than those represented in the WRIA council of governments. The majority of such actions in the WRIA 8 Plan call for coordination with local businesses to promote low impact development; best management practices for private property, car washing, pet waste, and lawn chemicals; and the benefits associated with forest cover and native vegetation.

Specific Opportunities and Recommendations

- **Education and Outreach** – *Educate professionals, especially municipal operations and maintenance staff, to prevent or reduce pollutant runoff on lands owned by permittees.* Properties included in this recommendation are parks, open space, road right-of-way, maintenance yards, stormwater treatment and flow control facilities, and other applicable properties. Policies should address yard care, landscaping and vegetation management, trash management, sediment and erosion control, and building washing and maintenance. **(Start List # 8, 28, 29, 40, 46, 56, 69, 115, 128, 170, 171)**
- **Regulatory Development** - *Develop a regulatory mechanism to prohibit discharges from lawn watering and irrigation runoff.* Such runoff is to be minimized through public education at a minimum, but other water conservation policies can augment education efforts. **(Start List # 27, 68, 81, 130, 140)**
- **Policy Development** - *Develop policies for use of Low Impact Development (LID).* Promote LID through education and outreach and address runoff from new development / redevelopment and construction sites through LID provisions. **(Start List # 27, 34, 38, 40, 46, 77, 81, 104, 106, 123, 130, 140, 166)**

Table 1. Start List Recommendations with Connection to the NPDES Phase II Permit

StartList #	Description	SubArea Name
1	Enlist help of builders practicing sustainable development to promote benefits of forest cover in protecting water quality. (C706, C707, C720, C722)	Cedar Mainstem
2	Employ basinwide stewards to work with property owners, land trusts, and agencies in order to identify and secure forested, wetland, and riparian areas, and to encourage the best management practices for those held in private ownership. Encourage neighborhood and community protection associations to foster the ethic of voluntary stewardship and build bridges between property owners, agencies, and local governments. (C703, C716, C720, C721)	Cedar Mainstem
7	Expand outreach to streamside property owners about shoreline landscape design, maintenance, and streambank armoring alternatives. Convey through direct mailing of brochures (e.g., Streamside Savvy, Going Native); videos (Natural Lawn Care); shoreline homeowners kits given when home purchased; or, through workshops, including expansion of Natural Yard Care Program to include guidelines specific to shoreline residents. (C701, C702, C709, C714, C716, C722)	Cedar Mainstem
8	Offer educational opportunities to landscape designers/contractors on riparian design/installation, alternatives to invasive species, and use of compost. (C705, C706, C707)	Cedar Mainstem
9	Encourage neighborhood garden tours of salmon-friendly gardens to help residents visualize alternatives to traditional, less eco-friendly landscape treatments. Offer neighborhood organizers assistance with publicity, signage, and volunteer docents. (C722, C707)	Cedar Mainstem
27	Jurisdictions should adopt and enforce stormwater regulations and best management practices, consistent with Washington Department of Ecology's 2001 Stormwater Management Manual (or beyond), as part of the NPDES Phase 1 and Phase 2 permit requirements. These regulations and BMPs should reduce sediment inputs from bed-scouring high flows and from non-point sources, including roads, development, agriculture, and other activities. Water quality problems should be addressed through stormwater programs (including low impact development BMPs), current and future TMDLs, livestock programs, and upgrade of stormwater facilities (where possible). (C12)	Cedar Mainstem
28	Explore options to improve stormwater management in developed areas, e.g., through development of regional stormwater facilities and natural drainage systems (e.g., SEA Streets). Promote stormwater best management practices related to parking lot cleaning, storm drain maintenance and road cleaning. (C13)	Cedar Mainstem
29	State/local transportation departments should address runoff from all roads and retrofit existing roads as part of major maintenance, expansion or upgrade projects; road maintenance actions should be consistent with Tri-County guidelines. Stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years) should be addressed. Washington Department of Transportation should improve stormwater management on SR 169. (C14, C15, C16)	Cedar Mainstem

Table 1. Start List Recommendations with Connection to the NPDES Phase II Permit

StartList #	Description	SubArea Name
30	Coordinate with local business community and non-profits to encourage the use of commercial car washes and carwash kits. Reprint and distribute water quality poster series depicting impacts of everyday practices: washing car, driving car without maintenance, leaving pet wastes unattended, and improperly using lawn chemicals. (C710)	Cedar Mainstem
31	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. (C713)	Cedar Mainstem
34	Address flow issues through other regulations/programs including: critical aquifer recharge area protections, land use regulations, groundwater management plans, stormwater regulations, and best management practices for infiltration, low impact development, etc. (C19, C21, C20)	Cedar Mainstem
38	Provide enhanced flows for pre-spawning migrants - Work with the City of Kent to establish instream flows that are protective of Chinook through their Habitat Conservation Plan process. Investigate and address other impacts to flows through stormwater management (e.g., low impact development), education and enforcement (e.g., for illegal and exempt withdrawals), etc. (C73, C75, C76, C80, C351)	Cedar Tier 2 Sub-Areas
40	Adopt and enforce stormwater regulations and best management practices to reduce stormwater flows that have increased bed scour and deposition of fine sediments. Flashy flows should be addressed through forest cover retention, low impact development techniques, erosion control during construction, improved stormwater management on new and existing roads. (C64)	Cedar Tier 2 Sub-Areas
46	Promote low impact development throughout Tier 1 and 2 subareas, to accommodate additional growth in urban and rural areas, while protecting ecological functions. Enlist help of builders practicing sustainable development to promote benefits of forest cover in protecting water quality. Provide recognition through media and professional awards to those using pervious paving, grass/green roofs, and other low impact development techniques. Work with the Snohomish Sustainable Development Task Force and other public and private stakeholders to plan and implement low impact development techniques. (N6, N91-93, N719, N720, N721)	Bear/Cottage Lake/Cold Creek
47	Increase outreach concerning the benefits of trees and basinwide forest coverage to protect water quality and maintain instream flows. Coordinate with nurseries, home improvement centers, and arborists to develop a marketing campaign promoting the benefit of trees to salmon and watershed health.	Bear/Cottage Lake/Cold Creek
48	Employ basinwide stewards to work with property owners, land trusts, and agencies in order to identify and secure forested, wetland, and riparian areas. Encourage neighborhood and community protection associations that foster the ethic of voluntary stewardship, enlist community support to purchase forest tracts and build bridges between property owners, agencies, and local governments. (N702, N704)	Bear/Cottage Lake/Cold Creek
55	Expand outreach to streamside property owners about shoreline landscape design, maintenance, and streambank armoring alternatives, through direct mail brochures, videos, shoreline homeowners kits (including expansion of	Bear/Cottage Lake/Cold Creek

Table 1. Start List Recommendations with Connection to the NPDES Phase II Permit

StartList #	Description	SubArea Name
	"Streamside Living Welcome Wagon"), and workshops (including expansion of Natural Yard Care Program). (N703, N707, N708, N709, N725)	
56	Offer educational opportunities to landscape designers/contractors on riparian design/installation, alternative to invasive species, and promote use of compost. (N714, N721)	Bear/Cottage Lake/Cold Creek
68	Identify sources and adopt source control of fine sediments and metals in mainstems and tributaries (e.g., from new construction, sand on roads, farms) through stormwater management and clearing and grading ordinances. Jurisdictions should adopt and enforce regulations and best management practices consistent with Washington Department of Ecology's 2001 Stormwater Management Manual (or beyond), as part of the NPDES Phase 1 and Phase 2 permit requirements. Water quality problems should be addressed through stormwater programs (including low impact development BMPs), current and future TMDLs, livestock management programs, and upgrade of stormwater facilities (where possible). (N18)	Bear/Cottage Lake/Cold Creek
69	Work with Washington Department of Transportation and local jurisdictions to pursue opportunities to retrofit existing roadways with stormwater best management practices to improve water quality and flows. Stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years) should also be addressed. (N21-22)	Bear/Cottage Lake/Cold Creek
70	Coordinate with local business community and non-profits to encourage the use of commercial car washes and carwash kits. Reprint and distribute water quality poster series depicting impacts of everyday practices: washing car, driving car without maintenance, leaving pet wastes unattended, and improperly using lawn chemicals. Promote stormwater best management practices related to parking lot cleaning, storm drain maintenance, and road cleaning. (N726, N727, N729, N731)	Bear/Cottage Lake/Cold Creek
71	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. (N720, N721)	Bear/Cottage Lake/Cold Creek
72	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. (N731)	Bear/Cottage Lake/Cold Creek
73	Commercial/industrial areas should be investigated for water quality and runoff issues and potential stormwater facilities planned and built. (N23)	Bear/Cottage Lake/Cold Creek
74	Add water quality treatment for stormwater runoff from freeway in Bear Creek Reach 1. (N202)	Bear/Cottage Lake/Cold Creek
77	Adopt stormwater provisions to address high flows, flashiness, and protection of base flows, including forest retention and low impact development best management practices, to improve infiltration. (N20, N27)	Bear/Cottage Lake/Cold Creek

Table 1. Start List Recommendations with Connection to the NPDES Phase II Permit

StartList #	Description	SubArea Name
81	Address water quality issues, including temperature and pesticides/herbicides, through stormwater regulations (including NPDES permits), best management practices (including low impact development), education, and incentives targeted at agricultural, commercial, industrial, and residential landowners. (N34-37)	Sammamish River
98	Inadequate base flows, flooding, and flashy hydrology pose serious problems in North Creek. Address these through stormwater management (e.g., improved retention of high flows and increased infiltration), improved information about and enforcement of surface and groundwater withdrawals, TMDL implementation, more aggressive water conservation, etc. (N107)	North Creek
99	Protect remaining forest cover and wetlands through critical areas ordinances, stormwater regulations and best management practices, incentives (e.g., tax breaks, expedited permitting), and acquisition where regulation and incentives are not sufficient protection. There are undeveloped forested areas and wetlands in the following reaches: Lower North reaches 4, 3, 2 and Upper North reaches 10, 9, 6, 7. (Note: Reaches listed in EDT priority order). (N71, N376, N372, N370, N371, N396, N393, N385, N389)	North Creek
104	Protect headwaters and groundwater through variety of tools: wetland buffers, CARA protections, stormwater infiltration regulations (including low impact development), forest clearing restrictions, recommendations in King County's 2003 Taylor Mountain Forest Stewardship Plan and forest stewardship plans. (I16-17)	Issaquah Creek and Tributaries
106	Encourage low impact development (including low density livestock or garden enterprises) through regulations, incentives, and education/training. Support basin liaison position to set up training and information sharing among planners, developers, and scientists about hands-on aspects of low impact development best management practices, including marketing, permitting, and technical issues. (I3, I715, I719, I720, I722)	Issaquah Creek and Tributaries
108	Sponsor design competitions for innovative low impact development features, including clustered development, greater forest cover, reduced impervious pavement, green roofs. Combine a home/garden tour or "Street of Dreams" type event featuring these landscape/engineering treatments. (I720, I722)	Issaquah Creek and Tributaries
109	Employ basinwide stewards and farm planners/livestock stewards to work with property owners, land trusts, and agencies in order to identify and secure forested, wetland, and riparian areas, and to encourage the best management practices for those held in private ownership. (I701, I702)	Issaquah Creek and Tributaries
114	Continue and expand Creekside Landowner Assistance Program including classes, technical and financial assistance in shoreline landscape design, maintenance, and streambank armoring alternatives. In addition to workshops, convey through direct mailing of brochures, videos, and expansion of "Streamside Living Welcome Wagon" where residents welcome new home owners and provide information concerning salmon-friendly yard care, etc. (I702, I704, I709)	Issaquah Creek and Tributaries
115	Offer educational opportunities to landscape designers/contractors on riparian design/installation, alternatives to	Issaquah Creek

Table 1. Start List Recommendations with Connection to the NPDES Phase II Permit

StartList #	Description	SubArea Name
	invasive species, and use of compost. (I713)	and Tributaries
117	Limit new development and roads in floodplains; develop and apply standards which minimize impacts to salmon. Planning for new roads, and maintenance and retrofitting of existing roads, should minimize impacts on floodplains and water quality. (I38-40, I49)	Issaquah Creek and Tributaries
123	Identify water quality problems and address through stormwater management programs (including low impact development best management practices), current and future TMDLs, livestock management programs, upgrade of stormwater facilities (where possible), and retrofit of existing roadways to improve water quality and flows (e.g., SR-18, I-90). Jurisdictions should adopt and enforce regulations and best management practices consistent with Washington Department of Ecology's 2001 Stormwater Management Manual (or beyond), as part of the NPDES Phase 1 and Phase 2 permit requirements. (I31-32, I36, I41)	Issaquah Creek and Tributaries
125	Run Natural Yard Care Neighborhoods Program and other landscaping education opportunities in communities in the Issaquah Basin. Increase visitation of basin residents to Pickering Farm Community Teaching Garden. (I723)	Issaquah Creek and Tributaries
126	Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted instream grading and wood removal incidents. (I729)	Issaquah Creek and Tributaries
127	Coordinate with local business community and non-profits to encourage the use of commercial car washes and carwash kits. Reprint and distribute water quality poster series depicting impacts of everyday practices: washing car, driving car without maintenance, leaving pet wastes unattended, and improperly using lawn chemicals. (I724)	Issaquah Creek and Tributaries
128	Educate and support businesses, property management companies and homeowners associations on stormwater best management practices, specifically related to parking lot cleaning, storm drain maintenance, and road cleaning. (I725)	Issaquah Creek and Tributaries
130	Adopt and enforce stormwater provisions to address high flows and protection of base flows, including forest retention and low impact development best management practices. Encourage rainwater harvesting and graywater capturing for reuse in landscaping irrigation through demonstration projects, workshops and educational materials. (I47, I723, I728)	Issaquah Creek and Tributaries
136	Develop workshop series specifically for lakeshore property owners on lakeside living: natural yard care, alternatives to vertical wall bulkheads, fish friendly dock design, best management practices for aquatic weed control, porous paving, and environmentally friendly methods of maintaining boats, docks, and decks. Related efforts include creation of a website to convey workshop material, an awareness campaign, "Build a Beach," to illuminate impact of bulkheads on development of sandy beaches. (C729, C730, C736)	Lake Washington (including Union Bay) and Lake Sammamish
140	Address water quality and high flow impacts from creeks and shoreline development through NPDES Phase 1 and Phase 2 permit updates, consistent with Washington Department of Ecology's 2001 Stormwater Management	Lake Washington (including Union

Table 1. Start List Recommendations with Connection to the NPDES Phase II Permit

StartList #	Description	SubArea Name
	Manual, including low impact development techniques, on-site stormwater detention for new and redeveloped projects, and control of point sources that discharge directly into the lakes. Stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years) should be addressed. Encourage low impact development through regulations, incentives, education/training, and demonstration projects throughout subarea. (C39, N63, I72, I74)	Bay) and Lake Sammamish
142	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. (C748)	Lake Washington (including Union Bay) and Lake Sammamish
160	Protect stream mouths and wetlands from further degradation through Shoreline Master Programs and critical areas ordinances. Once stream mouths and wetlands are restored, protect from impacts from development through buffer requirements and stormwater management programs. (M14, M17, M18)	Estuary and Nearshore
166	Address stormwater impacts (water quality and flows) throughout sub-area and from development near tops of bluffs, by: revising Phase 1 and 2 NPDES permits (consistent with Washington Department of Ecology’s 2001 Stormwater Management Manual), requiring or encouraging low impact development, retrofitting existing developments using natural drainage systems (e.g., SEA Streets). (M19)	Estuary and Nearshore
170	Educate and support businesses, property management companies, and homeowners associations on stormwater best management practices, specifically related to parking lot cleaning, storm drain maintenance and road cleaning. (M730)	Estuary and Nearshore
171	Train groundskeepers and property management companies about water polluting effects of landscape practices. Employ the “pride in workmanship” strategy, by placing signs that list who maintains the landscapes and parking lots along shorelines and the maintenance practices that they employ. (M729)	Estuary and Nearshore

Washington's Growth Management Act and WRIA 8 Salmon Conservation

Background. The Washington State Growth Management Act (GMA) was adopted in 1990 by the state legislature to limit uncoordinated and unplanned growth, which together threatens the environment, sustainable economic development, and quality of life in the state⁹. Comprehensive land use planning is used under the GMA to address the potential problems associated with growth, and components of comprehensive planning include the identification and protection of critical areas and natural resource lands and the designation of urban growth areas. The designation of critical areas has particular importance for the conservation and recovery of salmonids in Puget Sound (see earlier section titled "Critical Areas Ordinances and the WRIA 8 Chinook Conservation Plan"); however, other aspects of the GMA are relevant as well. The salmon-relevant aspects of GMA, excluding critical areas, are the focus of this section.

The Revised Code of Washington (RCW), Chapter 36.70A.040, specifies which counties are required to plan under the GMA, and planning also extends to the cities contained within those counties. King and Snohomish Counties fall under the purview of the GMA planning requirement, and as such, the counties and their cities must develop comprehensive plans to guide growth. Comprehensive plans are necessarily broad in scope, including such elements as land use, housing, utilities, and transportation.

Comprehensive Planning. Planning at both the city and county level is required under the terms of the GMA, and RCW 36.70A.210 mandates cities and counties work together in the development of countywide planning policies to serve as a framework guiding individual county and city comprehensive plans.

A primary task of the GMA is the requirement of every county planning under the Act to designate "Urban Growth Areas," or UGAs. Such designation involves the creation of policy planning boundaries "within which urban growth shall be encouraged and outside of which growth can occur only if it is not urban in nature" (RCW 36.70A.110). Each city must be included within a UGA, and a particular UGA can include more than one city. By using population projections developed by the state, urban growth areas should be sufficient to accommodate the urban growth forecast for the area for a twenty year period.

The state statute is clear in indicating cities are to propose the locations of urban growth areas and that cities and counties must strive for agreement on these locations. However, the authority to designate such boundaries ultimately rests with counties.

Countywide Planning Policies in King and Snohomish Counties. Thirty-four cities within King County, along with the county itself, are addressing growth management. A countywide vision exists in the form of the "King County Countywide Planning

⁹ <http://www.gmhb.wa.gov/gma/>

Policies,” and each city’s comprehensive plan must be consistent with these overarching policies. Designation of the UGA boundary—and concurrently, of the rural areas existing outside of the UGA—is a fundamental objective of King County’s Countywide Planning Policies. According to land use policy six in the Countywide Planning Policies document, “King County, with the cooperation of the cities, shall be responsible for designating Rural Areas consistent with the Growth Management Act” (16).

Snohomish County, likewise, possesses countywide planning policies, which the county and the twenty-two cities within the county must adhere to in their comprehensive plans. The countywide planning policies document outlines policies specific to the implementation of urban growth areas, including criteria to be applied when expansion of a particular UGA is considered. In short, the countywide policy is to not permit expansion of UGAs unless such expansion is compliant with GMA and is supported by a land capacity analysis, as well as meets additional pre-determined criteria. Regarding natural areas, the policy indicates expansion is permitted if, in so doing, significant natural features are permanently preserved (including rivers, water bodies, unique wildlife habitat, or fish and wildlife conservation areas).

Linkages to WRIA 8 Plan Actions. Growth management legislation has regional implications for salmon conservation and recovery. When considering the activities called for under the WRIA 8 Plan’s Start List containing an identifiable relationship with the GMA, the prevalent theme is that of land use, especially as it pertains to areas in the urban/rural fringe. Excluding the recommendations specifically linked to critical areas, only eight of the 171 Start List actions fall under the growth management programmatic connection label, with the focus being on salmon habitat threatened by growth pressure.

The WRIA 8 Plan recommends minimizing negative impacts to salmon through growth management. A fundamental element of this goal is the maintenance of existing UGA boundaries, unless altering the boundary is beneficial for salmon species. Two sub-areas are particularly critical in this regard: Bear/Cottage Lake Creek and Little Bear Creek.

Additionally, certain types of recommendations are given for areas within urban growth areas, while other recommendations are made for areas lying outside of UGAs.

Within UGA:

- Manage growth to minimize impacts on water quality, forest cover, and flows.
- Promote low impact development.

Outside UGA:

- Promote livestock best management practices to protect ecological functions.
- Use incentive programs to protect forest cover and buffers.
- Ensure properties protected through acquisitions or easements are maintained over the long-term.

Recommendations

- **Habitat Protection** – Use the mechanisms of the Growth Management Act to protect land outside of UGAs, primarily by not shifting the UGA boundary. Also, consistent with the GMA, continue to protect acquisitions and easements over time and manage growth in such a way to protect water quality, forest cover, and flows. **(Start List # 3, 43, 45, 49, 51, 96)**
- **Incentives** – Use incentives to protect forest cover and buffers in sensitive areas, thus mitigating the effects of growth. **(Start List # 45, 96, 111)**
- **Best Management Practices** – Promote best practices, both within and outside of UGAs, as a means to protect ecological functions. Examples are the use of low impact development in areas experiencing growth or farming best management practices in rural areas. **(Start List # 46, 49, 51, 96, 111)**

Table 1. Start List Recommendations with Connection to the Growth Management Act

StartList #	Description	SubArea Name
3	Consistent with Growth Management Act, Renton and potential annexation areas should absorb most growth so that rural habitat resources can be protected; growth should be managed to minimize impacts on forest cover, water quality, and flows. (C1)	Cedar Mainstem
43	Determine source of the Cold Creek groundwater springs in Cottage Lake Creek and develop protective measures to adequately protect them. Cold Creek headwaters cross the Urban Growth Boundary; growth within Woodinville should be managed to minimize impacts. (N4)	Bear/Cottage Lake/Cold Creek
45	Continue approach taken in King County during past decade to protect forest cover and riparian buffers, including: enforcing existing regulations, providing a range of incentives and a basin steward working with streamside landowners, and providing forest stewardship plans. Support Snohomish County's incentive programs such as Transfer of Development Rights for farmlands and Reduced Drainage Discharge Demonstration Program. Properties protected through acquisition, easements, etc. must be maintained over long term. (N7, N701, N702, N704)	Bear/Cottage Lake/Cold Creek
46	Promote low impact development throughout Tier 1 and 2 subareas, to accommodate additional growth in urban and rural areas, while protecting ecological functions. Enlist help of builders practicing sustainable development to promote benefits of forest cover in protecting water quality. Provide recognition through media and professional awards to those using pervious paving, grass/green roofs, and other low impact development techniques. Work with the Snohomish Sustainable Development Task Force and other public and private stakeholders to plan and implement low impact development techniques. (N6, N91-93, N719, N720, N721)	Bear/Cottage Lake/Cold Creek
49	Continue to absorb majority of growth in urban areas, while protecting and restoring forest and promoting low impact development, to maintain and improve water quality and flows. (N5)	Bear/Cottage Lake/Cold Creek
51	There is considerable growth pressure in Bear/Cottage Lake creeks outside the Urban Growth Area (UGA), as urban-type development and related infrastructure continue to expand (e.g., Maltby UGA, Redmond Ridge UPD, city parks). Jurisdictions should not move the UGA boundary unless such change is beneficial to salmon; they should encourage low impact development, clustering, low density livestock or garden enterprises with appropriate best management practices, and other measures to protect environmental functions in rural areas. It may be necessary to acquire high quality rural properties to insure their long-term protection. (N6)	Bear/Cottage Lake/Cold Creek
96	Tremendous growth pressure exists in Little Bear subarea. Jurisdictions should not move the Urban Growth Area (UGA) boundary, unless such change is beneficial to salmon. Jurisdictions should protect remaining watershed function by managing any additional growth in rural areas through incentives and regulations for forest retention, low impact development, clustering to protect natural areas, transferable development rights, etc. and acquisition where regulation and incentives do not provide sufficient protection. (N67)	Little Bear
111	Consistent with the Growth Management Act, Issaquah will continue to absorb most new residential, commercial,	Issaquah Creek

Table 1. Start List Recommendations with Connection to the Growth Management Act

StartList #	Description	SubArea Name
	industrial growth. Control new development to minimize impacts on water quality, instream flows, and riparian buffers by encouraging low impact development through 3-tiered approach: 1) revise existing codes; 2) provide technical information to developers; 3) promote demonstration projects through incentives, technical assistance. (I12-13)	and Tributaries

Cedar River Habitat Conservation Plan

Background. Section 10 of the Endangered Species Act allows for the issuance of permits covering the incidental “take” of individuals of a listed species, as long as the take is incidental and occurs through the course of conducting otherwise lawful activities. A major component of the application for an incidental take permit is a Habitat Conservation Plan (HCP), which outlines the impacts likely to result from the proposed taking and the measures to mitigate these impacts and conserve the species included in the plan. In essence, an HCP is designed to provide regulatory certainty to the landowner applying for the take permit.

The Cedar River HCP is a 50 year plan designed to conserve 83 species of fish and wildlife potentially affected by the operations of Seattle Public Utilities. At the same time, the HCP provides regulatory certainty for the City of Seattle’s municipal water supply and hydroelectric operations on the Cedar River. The primary components of the HCP are:

- Mitigation for blockage of fish passage at the Landsburg diversion dam
- Management of instream flows to provide a flow regime capable of supporting salmon and steelhead in the Cedar River mainstem
- Forest and land management within the watershed to provide habitat for a wide variety of species

Linkages to WRIA 8 Plan Start List. The Cedar River HCP contributes significantly to WRIA 8’s salmon recovery objectives in the Cedar River action area. Major topics in the HCP related to high priority recovery actions contained in the start list fall into the following categories:

- Habitat protection – Protect forest cover, riparian buffers, and channel complexity
- Habitat restoration – Add large woody debris to restore channel complexity; decommission roads to restore floodplain connectivity; conduct other aquatic and riparian habitat restoration projects
- Protect and restore instream flows – Provide adequate flows for all anadromous fish

Recommendations. WRIA 8 should continue to support the protection and restoration activities outlined within the Cedar River HCP. Doing so will enhance conditions for salmon in the municipal watershed but will also have implications for species recovery in the mainstem downstream of the municipal watershed boundaries.

Likewise, the City of Seattle should follow through on their commitments outlined within the HCP to ensure protection of salmon habitat and provide beneficial conditions for salmon over the long-term.

Table 1. Start List Recommendations with Connections to the Cedar River Habitat Conservation Plan

Start List #	Description	SubAreaName
17	Conduct study to identify locations where large woody debris should be added to Cedar mainstem and to explore feasibility of passing large woody debris over the Landsburg dam. (C601, C260)	Cedar Mainstem
33	Work with City of Seattle, Cedar River Instream Flow Commission, and other stakeholders on policies, procedures and research related to effects of flow on habitat restoration. (C23)	Cedar Mainstem
37	Study where and how to add large woody debris to upper Cedar River mainstem and implement program. Must address dam safety in large woody debris placement. (C607)	Cedar Tier 2 Sub-Areas