SKAGIT WATERSHED COUNCIL
YEAR 2005 STRATEGIC APPROACH

NOTE: While this Strategic Approach prioritizes among salmon species and target areas in the Skagit and Samish basins as described below, the Council encourages and strives for a mixture of project types, objectives, and locations to comprise the portfolio of projects submitted to the SRFB each funding round. Our overall Strategy as well as our Approach are committed to landscape process restoration and protection that will benefit the long-term, sustainable recovery of habitat conditions utilized by multiple species. While the Skagit estuary is our top priority in terms of target areas for reasons described below, recovery of Skagit chinook as well as other target species will require actions throughout the basin, which is reflected in the targeting of other areas and project types outside the estuary in this Approach as well as the mixture of projects we strive to include in each portfolio of projects submitted to the SRFB.

Guiding Principles

PRINCIPLE #1: Using the best available information, target the most biologically important areas for salmon restoration and protection.

RATIONALE AND METHOD:

The overall strategy for salmon habitat restoration and protection for the Council is contained in our Strategy document (1998). We are focused on the restoration and protection of natural landscape processes rather than treating the symptoms of watershed degradation. The Strategic Approach laid out here is our effort for the year 2005 to provide a proactive method for meeting the goals of the Council's Strategy, updating the Council's Strategic Approach for 2004. Through many discussions, we have arrived on a Strategic Approach that identifies specific areas in the Skagit and Samish River basins to target our restoration and protection efforts. By targeting certain areas we consider to be most important for salmon habitat restoration and protection, we significantly advance our objective to be more strategic in our project identification and prioritization, as well as all the work we do.

Though the Council will encourage and give preference to projects that are consistent with this Strategic Approach and our Strategy, and located in target areas (*see attached map*), the Council will continue to accept for review projects

throughout the Skagit and Samish basins. We recognize that many valuable and effective projects may be proposed in non-target areas and that extremely valuable habitat for salmon exists in non-target areas. The main distinction between the target areas and the rest of the basin is that the Council, for the year 2005 and until the next revision, will use the target areas as guidance for high priority restoration and protection actions based on the rationale explained below and in the attached map explanation. All proposed projects, whether in the target areas or not, will still need to be reviewed by the Council for consistency with the Strategy and this Strategic Approach. There is no assumption that a project is valuable or not valuable simply because of its location inside or outside the delineated target areas. Only projects found to be consistent with the Council's Strategy *and* Strategic Approach will be prioritized as part of the list submitted to the Salmon Recovery Funding Board (SRFB) in September 2005.

To be added later: Paragraph on the status of recovery planning in Skagit and its linkage to the SWC Strategy with reference to other document(s).

Our method for identifying the target areas relies on the best information we have available on productivity and limiting factors for our top priority target species: wild Skagit chinook; more specifically, five of the six populations of wild Skagit chinook (see Target Area discussion below). These populations of chinook are our top priority or first tier target species because 1) they are classified as threatened under the Endangered Species Act **AND** 2) are classified as depressed in the state of Washington's 2003 SASSI/SaSI (WDFW and WWTIT 2003 draft). These populations of chinook are the lower Skagit, upper Skagit, lower Sauk, upper Sauk, and upper Cascade. Our second tier or secondary priority target species are bull trout, Suiattle chinook, and the Skagit winter steelhead population because they are either classified as threatened under ESA (Coastal-Puget Sound bull trout and Suiattle chinook) or are considered depressed in the current SASSI/SaSI classification (Skagit winter steelhead) but not both. While our overall long-term Strategy focuses on a multiple species approach to watershed and salmon habitat restoration and protection, the target species listed above will be given higher value in our project prioritization for Round 6 of SRFB funding. So all other anadromous salmonids in the Skagit and Samish basins, which are not listed under ESA or are considered healthy or unknown status by the state, essentially comprise a third tier of priority target species. This will be reflected in our project prioritization methods. A summary of the status of all salmonids in WRIAs 3 and 4 is contained in Table 1 below and in the Conservation Commission's Limiting Factors Analysis completed in 2003 (Washington Conservation Commission 2003). The lower Skagit chinook population has been classified as depressed in both the 1992 and the 2003 versions of SASSI/SaSI (WDFW et al. 1993; WDFW and WWTIT 2003 draft). The lower Skagit chinook spawns in the mainstem Skagit River and tributaries downstream of the Sauk River confluence with most of the spawning in the mainstem Skagit River between Sedro Woolley and the Sauk River (WDFW and

WWTIT 2003 draft). Upper Skagit chinook spawn in the mainstem Skagit River and tributaries upstream of the Sauk confluence. The lower Sauk chinook population spawns in the Sauk River from the mouth upstream to the Darrington Bridge (RM 21.2). Its status was classified as depressed in both the 1992 and 2003 population inventories (WDFW et al. 1993; WDFW and WWTIT 2003 draft). It is an earlier timed population compared to the mainstem Skagit populations with spawning beginning in late August and continuing to early October. Upper Sauk chinook spawn upstream of the Darrington Bridge and into the North and South Forks of the Sauk River. The status has changed from healthy in 1992 to depressed in 2003 (WDFW et al. 1993; WDFW and WWTIT 2003 draft). The spawn timing is early, from late July through early September. Suiattle chinook also have the same early spawn timing as upper Sauk chinook. They spawn in the mainstem Suiattle River and in Big, Tenas, Straight, Circle, Buck, Lime, Downey, Sulphur, and Milk Creeks. Its population status changed from depressed in 1992 to healthy in 2003.

Upper Cascade chinook spawn in the mainstem Cascade River above RM 7.8, in the lower reaches of the North and South Forks of the Cascade River, and in Marble, Found, Kindy, and Sonny Boy Creeks. Its population status has changed from unknown in 1992 to depressed in 2003. The population is an early timed population, spawning from late July through early September.

In 1992, six populations of steelhead were described in the Skagit Basin: three populations of winter steelhead and three populations of summer steelhead. All of the winter steelhead populations are listed as being native origin with wild production, and the Skagit winter steelhead population has declined from a healthy status in 1992 to a depressed status in 2003 (WDFW et al. 1993; WDFW and WWTIT 2003 draft).

We recognize that the target areas identified do not encompass all the important areas for all salmon in our basin. To attempt to do so would result in target areas covering all or nearly all the basin affecting the anadromous zone. Such a targeting strategy would have little value for prioritizing restoration and protection actions for the Council. One example of an area in the basin that is not currently targeted using the rationale developed for this Strategic Approach is the Baker River system. Yet, we recognize the value of this area to salmon and its unique status at the moment because of the pending negotiations related to the dam relicensing (see attached map explanation).

The method for identifying target areas is expected to be periodically revised as information improves, short-term objectives of the Council change, and long-term goals for salmon recovery in the Skagit and Samish evolve through Council discussion and regulatory mandates (e.g., 4(d) rules, ESA status, etc.)

PRINCIPLE #2: Within the target areas:

1) Protect the highest quality habitat first; and
2) Establish (by means of restoration) key habitat

RATIONALE AND METHOD:

The Council's Strategy as well as numerous studies, reports, peer-reviewed journal articles and books, describe the importance of protecting those remaining areas of habitat that still retain a substantial measure of their historic, natural productivity for salmon. These areas are variously known as refugia, source areas, anchor areas, and other names. In the Council's Strategy, these areas are generally referred to as key habitat. Specifically, the Strategy defines key habitat*, under pristine conditions*, as a habitat type critical for at least one life stage combination considered or is a preferred habitat type by a majority of life stage combinations considered. The Strategy defines habitat as key, *under disturbed habitat conditions*, when all the landscape screening results (e.g., riparian function, sediment supply) we use in the Strategy Application are rated as functioning. Protecting these highly functioning habitats through various tools (e.g., fee-simple acquisition, easements) is: 1) essential for anchoring highly productive spawning and rearing areas for long-term recovery, and 2) generally more cost-effective than attempting to restore degraded habitats to highly functioning areas.

However, given the degree of salmon habitat degradation locally as well as regionally, protecting key habitat/refugia alone will not be sufficient to ensure long-term survival or recovery of salmon. So, we also encourage the reestablishment of key habitat/refugia in the target areas through a variety of restoration tools (e.g., sediment reduction, riparian planting and fencing, isolated habitat reconnection, water quality enhancement, acquisition, easements, etc.) to occur simultaneous with protection efforts in order to 1) expand on the existing key habitat, and 2) restore key habitat/refugia in places in the basin where these habitats have been largely removed, and are therefore considered to be limiting factors for various species. We recognize that depending on the current conditions in our target areas, different combinations of restoration and protection tools will be appropriate. In some areas, protection actions will be dominant, while in more degraded areas, restoration actions may be dominant. We also recognize that the variety of tools to achieve restoration and protection are almost endless, however the Council's scope for project review and prioritization remains in voluntary actions and does not extend to regulatory or mandatory actions.

PRINCIPLE #3: Do the most cost-effective projects first.

RATIONALE AND METHOD:

In order to ensure the best and most efficient use of funds for projects identified in these target areas, we propose continuing to prioritize projects determined to be consistent with our Strategy based on cost-benefit formulas. Until a single formula is developed that can effectively rank projects of all types, we will utilize formulas developed by the Council for restoration and protection projects. For project types for which formulas have not been developed (e.g., assessments, monitoring programs, outreach) we will need to prioritize based on the collective agreement of a working committee of the Council. In order to meet the SRF Board's request to submit a single prioritized list of projects, final decisions for prioritization will need to be made by a working committee and the full Council using our guiding principles in combination with our approved prioritization methods, which includes use of our cost-effectiveness formulas. As always, our prioritization method will be subject to improvement as we work with it and receive feedback from members and outside reviewers.

Essential Elements

In addition to these guiding principles, the following, *in no particular order*, are other factors that we refer to as essential elements that are critical for our strategic approach:

- Comprehensive and current information (e.g., updates of Strategy Application data; fish productivity data)
- Fully functioning organizational infrastructure, including communication strategy, data management system, monitoring program, and reporting methods.
- Sufficient capacity within Council and member organizations
- Willing landowners within target areas
- Knowledgeable, supportive community

Target Areas:

The following is a description of our target areas for the Strategic Approach 2005. The target areas fall into three tiers or priorities: the Skagit estuary (1st Tier); mainstem Skagit floodplain, identified historic and current pocket estuaries in the nearshore, and selected sub-basins/watershed process target areas (2nd Tier); and the Samish basin and selected sub-basins/watershed process target areas (3rd Tier). Please see Table 2 below for summary of Target Areas and Target Area map for locations (attached). These target areas and the priority objectives

listed for these areas are used as a proactive guide for the types of actions the Council seeks to meet our objectives for the recovery of our targeted species in terms of voluntary habitat restoration and protection. However, the Council is well aware that the specifics of individual projects are critical to the value and prioritization of projects when it comes to compiling a portfolio of prioritized projects for SRFB funding.

Therefore we have developed a rigorous project review and prioritization process as well as a set of prioritization questions for each project all of which reflect the priorities described in our Strategy and Strategic Approach. Both our project review process and our prioritization process attempt to discern project specifics that go well beyond location in a particular target area or the generalities that are captured in a watershed strategy and list of priority objectives. While we would expect our project prioritization to be generally consistent with the priorities described for our target areas (i.e., 1st tier above 2nd tier above 3rd tier), this may not always be exactly true due to the complexities and specifics of individual projects as well as the realities of project development, landowner willingness, and many other factors that combine to form the list of projects the Council submits in a given funding round. It is our intention to explain the rationale for any departures from this three-tiered prioritization, if it occurs, when we submit our project portfolio.

1st TIER

The first tier of target areas is composed of one target area: the Skagit Estuary. This area is considered of highest value in terms of potential benefit to our top priority target species: Skagit wild chinook. This value is reflected in the scoring process for project prioritization.

Skagit Estuary Target Area

Target Area Description:

This area includes the historic extent of the following tidally influenced habitat types in the Skagit River watershed as delineated by Collins (2000): Estuarine emergent wetland zone; Estuarine scrub-shrub wetland zone; riverine tidal forested wetland zone; and riverine tidal scrub-shrub wetland zone. The current and historic estuarine areas adjacent to Skagit Bay and the North and South forks of the Skagit River form the top priority 1st Tier target area because of the importance of this area for Skagit wild chinook (see below).

Rationale for target:

Conversion of land and wetlands to agriculture and residential uses in the Skagit delta since the mid-1800s has led to extensive habitat losses and adverse impacts on a number of species that utilize these habitats including chinook salmon. The Skagit basin has lost approximately 72% of historic estuarine delta habitat, including a loss of 68% of estuarine emergent habitat, 66% of transitional estuarine forested habitat, and 84% of riverine tidal habitat (Beamer et al., 2002a, Collins and Montgomery 2001). Extensive research over the last 10 years by Skagit System Cooperative and others points to the conclusion that wild Skagit chinook extensively use the delta for rearing *and* current habitat conditions in the Skagit estuary are limiting the production of delta-rearing chinook salmon (Beamer, E., 2003; Beamer et al., 2002a, Beamer et al., 2000b; Congleton et al., 1981). This research has found that when smolt population increases, the number of chinook juveniles that migrate quickly from the estuary increases and the fish that remain to rear in the estuary delta are smaller (Beamer et al. 2002a, WCC 2003). Survival to adult is much lower for non-estuary rearing chinook (Reimers 1973; Levings et al., 1989). Also, two habitat types contained in this area – blind channels and estuarine emergent marsh - were determined to be "critical" habitat for chinook in the Skagit Watershed Council's Strategy (SWC 1998). Habitat loss of blind channels has been particularly significant in the Skagit bayfront between the forks where there is currently an average of 6% blind channel habitat per marsh area compared to nearly 12% in the North and South fork areas (WCC 2003). The Skagit delta has lost approximately 75% of its distributary channel habitat (Beechie et al., 2001). There are numerous other scientific reports documenting the importance of estuarine habitats to chinook and other salmon, including: Aitkin 1998; Hayman et al., 1996, Healy 1980, MacDonald et al., 1988, Phillips et al., 1980, Phillips et al., 1981, Shreffler et al. 1992, Simenstad et al. 1982.

Priority objectives:

- Restore fish passage and a more gradual fresh to saline transition zone in the Swinomish Channel area by addressing the physical and physiological barriers created by the McGlinn Island Causeway and the associated jetty.
- Restore functioning tidal estuarine emergent and scrub-shrub wetlands that are directly connected to the North or South Fork Skagit River and/or a major distributary channel.
- Restore functioning distributary channel(s) connecting the North or South Fork of the Skagit River to the Skagit bayfront.
- Restore functioning riverine tidal forested and scrub shrub wetland habitat through actions such as dike removal/set back.
- Implement actions to improve water quality in areas identified as impaired based on field-collected data (e.g., the 303(d) list).
- Protection of existing high quality habitat through acquisition or permanent conservation easement.

- Acquisition of land, whether currently functioning or not, identified as critical to high priority restoration actions listed above and in coordination with appropriate restoration actions.

Issues/challenges:

A major challenge in the near term in this target area will be to achieve the community support necessary to realize significant habitat gains in areas that impact privately owned lands (most of which has been heavily invested in agricultural production for many years) because of the social and political complexities as well as the need for more clear information on the potential impacts on land use of these restoration actions both from a physical (e.g., salt water intrusion, drainage/hydrology) and regulatory perspective (e.g., ESA recovery planning, Safe Harbor, etc.) Further work over the next year or two in ESA recovery planning may provide much clearer objectives for this target area that will help identify specific actions and better guide prioritization.

2ND TIER

The second tier of target areas is composed of the following three target areas described below: Nearshore Marine, Floodplain, and Watershed Process. These three target areas are considered of equal value within the second tier in terms of project scoring in the Council's prioritization process.

Nearshore Marine Target Area

Target Area Description:

Pocket estuaries are small sub-estuaries within the larger Skagit Bay estuary that form behind spit or barrier beach landforms at submerged, tectonically- or glacially-derived valleys or at small creek deltas. Recent research has identified 113 pocket estuaries in the Whidbey Basin, more than two thirds of which have been completely lost to juvenile salmon use and the remaining one third have been reduced in size by about 50% (Beamer et al. 2005). Research indicates that to maximize recovery benefits for Skagit chinook salmon in terms of pocket estuarine habitat, it is important to prioritize restoring and protecting pocket estuaries with a high degree of connectivity to the Skagit Delta. Based on this rationale, five pocket estuaries in WRIA 3 (Smik Beach, Turners Bay, Kiket Lagoon, Lone Tree Lagoon, SneeOosh Lagoon) have been identified as high

priority for restoration by Skagit River System Cooperative (SRSC) (Beamer et al., 2005). These pocket estuaries form the current nearshore target area.

Rationale for target:

Research by SRSC, NOAA, USGS and others have found that pocket estuaries are clearly utilized by wild juvenile fry migrant chinook during late winter through early spring (Beamer et al., 2003). These habitats appear to provide extended rearing and growth opportunities for these chinook as well as refuge from predatory species. Research indicates that density dependence in the Skagit delta results in the displacement of juvenile chinook into Skagit Bay and these habitats. Eighty nine percent of the total historic pocket estuary area is currently inaccessible to non-natal salmon use and the habitat forming forces of tidal hydrology. Restoration and protection of this habitat would clearly benefit the fry migrant life history type known to use these habitats and possibly help alleviate the effects of overcrowding in the Skagit delta. *

Priority objectives:

- Protect and/or restore natural landscape processes, connectivity, and habitat functions at the identified pocket estuaries in WRIA 3, which includes acquisition of land necessary to achieve this objective.
- Continue research to assess current habitat conditions and salmon habitat use throughout the nearshore in order to understand the processes and conditions that may be limiting salmon production so that we can prioritize the most effective salmon restoration and protection actions in this target area.

Issues/challenges:

* The nearshore marine areas of the Skagit and Samish basins includes considerably more habitat than these identified pocket estuaries, primarily vegetated and unvegetated intertidal flats, subtidal flats, rocky reefs, the pelagic food web, beaches, backshore areas and marine riparian zones. Most of the research to date in the Skagit nearshore focuses on habitat inventories and assessments, while detailed research linking specific habitat conditions and landscape processes in the nearshore to salmon production is limited. However, a recent NOAA study (Greene et al., 2003) that uses environmental data and adult returns of wild Skagit chinook has shown that factors present during the nearshore life stage significantly influence adult spawning recruitment, which supports our priority objective to better understand the nearshore system and its role in salmon recovery in the Skagit. Given this priority for more research, it is the Council's decision at this time to focus habitat restoration/protection actions in the nearshore on pocket estuaries because of the quality of research that indicates restoration and protection of these habitats would have direct and

immediate benefits to wild chinook. It should be mentioned that recommended actions in the estuary target area will have direct benefits in the nearshore environment (e.g., restoration of tidal wetlands and distributary channels).

Floodplain Target Area

Target Area Description:

All the mainstem river floodplain reaches and tributary fans for the Skagit, Sauk, Suiattle, and Cascade rivers as delineated for the Council's Strategy Application (Beamer et al., 2000a) based on analysis of field-collected data and 1998 digital orthophotos from the Washington Department of Natural Resources. These floodplain areas are included in our 1st Tier target areas.

Rationale for target:

In addition to several key tributaries outside this target area, the mainstem (Skagit, Sauk, Suiattle, and Cascade) floodplain represents the core spawning area for all six independent chinook salmon populations in the Skagit River basin. Chinook and bull trout, in addition to other salmon, also utilize these habitats extensively for migration, refuge and rearing. These floodplain habitats have been significantly altered over the past 100+ years due to road building, bank hardening, hydropower operations, timber harvest in riparian zones and contributing upland areas, rural development, etc. Upstream of the delta, 32 miles (62%) of the mainstem channel edge was found to be hardened with riprap, diked within about 200 feet of the channel's edge, or both (Beamer et al., 2000a). The Skagit basin has lost approximately 45% of the historic side channel habitat (424,200 m^2) that provide critical rearing and refuge functions in the floodplain (Beechie et al. 1994). A screening of riparian vegetation conditions in these floodplain habitats throughout the Skagit basin found significant impairment in most of the reaches surveyed (Beamer et al., 2000a). Recent research in the Skagit has found the junctions between tributaries and mainstem channels where fans are formed to be biological "hot spots" for habitat diversity and salmon utilization (Kiffney et al. 2003). Many of these fans have been delineated and are included in this target area.

Priority objectives:

- Restore/reconnect natural floodplain functions through actions such as removing hydromodifications; reconnecting and/or restoring isolated off-channel sloughs, ponds, wetlands, and tributaries; reconnecting and/or restoring distributary sloughs; restoring riparian vegetation functions; removing impervious areas; improving water quality through source or non-point source improvements; removing or improving man-made structures or roads that restrict natural floodplain and fan functions, etc.

- Permanent protection of high priority parcels through acquisition or conservation easements based on benefits to salmon and cost-effectiveness using the results of the Middle and Upper Skagit Assessments or an equivalent approach as determined by the Council for parcels outside these assessment study areas but within the floodplain target area.
- Acquisition of land identified as critical to high priority restoration actions listed above and in coordination with appropriate restoration actions.

Issues/challenges:

One objective for future Strategic Approach revisions will be to develop an acceptable criteria for prioritizing among the targeted floodplain reaches. One system might focus on current or historic utilization by specific chinook populations and consider their status/health. Another system might focus more on landscape process condition or, alternatively, potential restoration/protection opportunities or potential habitat capacity. Further work over the next year or two in ESA recovery planning may provide much clearer objectives for this target area that will help identify specific actions and better guide prioritization.

Watershed Process Target Area

Target Area Description:

Sub-basins targeted for 2nd Tier watershed process restoration/protection in the Skagit were identified based on meeting four criteria: 1) contain significant tributary habitat for our top priority target species (Skagit chinook; though there is extensive overlap with bull trout and coho); 2) have been identified as impaired for watershed processes using the Council's Strategy Application and/or updated sediment supply analysis (Beechie et al., 2003) or contain an identified land use hazard (e.g., high risk for road failure, mass wasting event, delivery of excessive sediment) in close proximity to important spawning or rearing habitat based on a site-specific analysis; *OR* 3) meet the first criteria but not the second yet warrant actions to preserve functioning watershed processes based on current condition (e.g., identified as functioning for watershed processes in Council's Strategy Application) and threat of degradation due to ownership or land use (i.e., not adequately protected). *

Rationale for target:

The SWC's Strategy Application found that 23% and 46% of the basin is likely impaired with respect to peak flow hydrology and sediment supply, respectively. Numerous sub-basins and tributaries in the lower Skagit have been found to have poor or degraded riparian, peak flow, road density, and sediment supply conditions in both the Conservation Commission's Limiting Factors report and the SWC's Strategy Application (Beamer et al., 2000a, WCC 2003). These assessments also found degraded conditions in the Upper Skagit sub-basins, particularly for sediment supply and riparian conditions, but not to the same extent as the lower Skagit, primarily because of less intense human development and the extensive amount of federally protected land. Large increases in coarse sediment supply tend to fill pools and aggrade channels, resulting in reduced habitat complexity and reduced rearing capacity for some salmonids (Beechie et al., 2003). Large increases in total sediment supply to a channel also tend to increase the proportion of fine sediments in channel beds, which may reduce survival of incubating eggs and change benthic invertebrate production (Beechie et al., 2003). Increased peak flows result in an increased frequency of channel forming and bed mobilizing flow events leading to channel destabilization (widening, aggradation, or incision), less complex habitat, and increased bed scour depths significantly affecting salmonid and other aquatic organisms (SWC 1998). Research shows these impaired watershed processes (sediment supply and peak flow hydrology) are limiting egg to fry survival for chinook and likely other species (Seiler et al, 1998; Beamer and Pess 1999; Beamer et al., 2000a).

In order to achieve a more focused target area than including all WAUs that have been identified as having impaired watershed process conditions as a 1st Tier target area, we have narrowed this target area to specific sub-basins that meet criteria (above) that we believe deserve our most immediate attention in the near term (next 10 years). Justification for this more focused approach is in part due to the use of a finer scale for sub-basin delineation than the WAU delineation, which can lead to a larger target area than necessary depending on the size of the WAU, the location and density of the hazard areas requiring attention and/or restoration, and the location of the significant habitat within the WAU.

Priority objectives:

- Identify and repair, relocate, or remove roads, bridges, culverts and other man-made structures that are contributing or at high risk to contribute to significantly increased sediment input or peak flow hydrology.
- Reforest impaired riparian zones in order to restore natural riparian functions including shade, hydrology, soil stabilization, and large woody debris recruitment.

Issues/challenges:

Interpretation and refinement of the criteria to identify target sub-basins for this overall target area will be an ongoing process and will always be improved by more scientific research, field-verified studies, and better understanding of the true impacts of land use decisions, regulations, and enforcement. Further work over the next year or two in ESA recovery planning may provide much clearer objectives for this target area that will help identify specific actions and better guide prioritization.

3RD TIER

The third tier of target areas is composed of an estuary target area (estuarine portions of WRIA 3 not included in the top priority Skagit Estuary Target Area), a floodplain target area (mainstem floodplain of the Samish River and major tributaries); and the watershed process target area comprising the Samish River WAU and selected sub-basins in WRIA 4 that have been identified as impaired for one or more landscape process by SWC analysis but do not meet the criteria for second tier watershed process target areas described above. The priority objectives and scientific rationale for this third tier are the same as those listed for the first and second tier target areas. So, just as with the other two tiers, proposed projects must be consistent with these priority objectives and consistent with the Council's Strategy in order to be considered consistent with the Strategic Approach and moved forward for SRFB funding. Location within the target areas is not sufficient.

The primary rationale for the prioritization of this tier is that projects within this tier would be expected to have lower benefit or no benefit for the Council's top priority target species (Skagit wild chinook) than projects located in the first two tiers, generally speaking.

Within the Samish River WAU, the third tier floodplain target area includes the delineated floodplain for the Samish River and its major tributaries. The third tier watershed process target area is composed of the following WAUs in addition to the Samish River: Friday Creek, Rinker, Jordan-Boulder, Sauk Prairie and Dan Creek, which have been identified as impaired for one or more landscape process but do not meet the above criteria for the second tier.

The third tier estuary target area includes the historic extent of the estuarine and tidal habitats elsewhere in WRIA 3 (i.e., adjacent to Padilla and Samish bays), including the current and historic estuarine areas adjacent to Swinomish Channel because utilization by Skagit chinook of this area and the rearing habitat in Padilla Bay is currently restricted by the McGlinn Island Causeway and a jetty

south and west from the island. Recent research indicates that these structures create a significant fish blockage and also decrease freshwater input to the Swinomish Channel resulting in a physiological barrier for juvenile chinook (Yates 2001). Addressing these problems at the jetty and causeway are a top priority objective in this target area equivalent to restoration and protection in the Skagit estuary. Once these problems are addressed, the estuary target area will be reevaluated as a whole and reprioritized to reflect the enhanced habitat opportunities resulting from this work.

Baker River System

The Baker River system is **not** included as a target area, but warrants attention... The Baker River system is partially isolated from the Skagit by Lower Baker and Upper Baker hydroelectric dams (the Baker River Hydroelectric Project) which are entering the Federal Energy Regulatory Commission (FERC) relicensing process. The Baker basin (upstream of the Upper Baker Dam) contains numerous miles of high quality salmon habitat both in natural and moderately disturbed conditions. The basin is underutilized by anadromous fish at this time due to downstream passage problems. The time to address these concerns is during the relicensing period. The FERC licensee, Puget Sound Energy, is working with interested parties through various working groups to define the relicensing process and resolve concerns. The Council encourages the development of a more fish friendly passage system.

Table 1: Summary of Salmon Data for WRIAs 3 and 4 from Salmon and Steelhead Stock Inventory Data (WDF et al. 2002)

Stock	Origin	Production Type	Stock Status	
Chinook				
Samish/MS Nooksack	Non-native	Composite	Unknown	
Upper Skagit Mainstem/Tribs	Native	Wild	Depressed	
Lower Skagit Mainstem/Tribs	Native	Wild	Depressed	
Lower Sauk	Native	Wild	Depressed	
Upper Sauk	Native	Wild	Depressed	
Suiattle	Native	Wild	Healthy	
Upper Cascade	Native	Wild	Depressed	
Coho				
Samish	Mixed	Wild	Healthy	
Skagit	Native	Composite	Healthy	
Baker	Mixed	Composite	Healthy	
Chum-Fall				
Mainstem Skagit	Native	Wild	Healthy	
Sauk	Native	Wild	Healthy	
Lower Skagit Tribs	Native	Wild	Unknown	
Samish/ Independent	Mixed	Composite	Healthy	
Pink				
Skagit	Native	Wild	Healthy	
Sockeye				
Baker	Native	Cultured	Healthy	
Steelhead-Summer				
Finney Creek	Native	Wild	Unknown	
Sauk	Native	Wild	Unknown	
Cascade	Unknown	Wild	Unknown	
Steelhead-Winter				
Samish	Native	Wild	Healthy	
Mainstem Skagit/Tribs	Native	Wild	Depressed	
Sauk	Native	Wild	Unknown	
Cascade	Native	Wild	Unknown	

Table 2: SWC Target Area Summary

Target Area Priority	Target Area	Description Refer to Target Area Map for Locations and Strategic Approach for More Details
Tier One	Skagit Estuary	Historic extent of following tidally influenced habit types in Skagit River watershed as delineated by Collins (2000): estuarine emergent wetland zone, estuarine scrub-shrub wetland zone; riverine tidal forested wetland zone and riverine tidal scrub-shrub wetland zone
Tier Two	Nearshore Marine	Priority pocket estuaries identified in WRIA 3 (Beamer et. al. 2005)
	Floodplain	All the delineated mainstem river floodplain reaches and tributary fans for the Skagit, Sauk, Suiattle and Cascade Rivers (Beamer et. al. 2000a)
	Watershed Process	Areas that meet 3-part criteria listed in Strategic Approach: Hansen Creek WAU; Nookachamps WAU; Carpenter Creek WAU; Gilligan Creek WAU; Alder Creek WAU; Portions of Day Creek, Loretta, Jackman, Illabot, Dan Creek, Lime Creek, Tenas, Diobsud, and Cascade Middle WAUs
Tier Three	Estuary	Historic extent of estuarine and tidal habitats in WRIA 3 outside Tier One Estuary target area
	Floodplain	Mainstem floodplain delineated for Samish River and major tributaries
	Watershed Process	Samish River, Friday Creek, Rinker, Jordan-Boulder, Sauk Prairie and Dan Creek WAUs, not including portions in Tier Two target areas

References

Aitkin, J.K., 1998. The importance of estuarine habitats to anadromous salmonids of the Pacific Northwest: A literature review. U.S. Fish and Wildlife Service, Aquatic Resources Division, in cooperation with the U.S. Fish and Wildlife Service, Puget Sound Program.

Beamer, E. and G. Pess. 1999. Effects of peak flows on chinook spawning success in two Puget Sound River Basins. Extended Abstract for American Water Resources Association National Conference, December 1999 in Seattle, Washington.

Beamer, E., T. Beechie, B. Perkowski and J. Klochak. 2000a. Application of the Skagit Watershed Council's Strategy. River basin analysis of the Skagit and Samish River Basins: tools for salmon habitat restoration and protection. Skagit Watershed Council, Mt. Vernon, Washington. 79 pages.

Beamer, E., J. Sartori, and K. Larsen. 2000b. Skagit Chinook Life History Study Progress Report #3. Skagit System Cooperative, La Conner, WA. 19 pages.

Beamer, E., R. Henderson, and K. Larsen. 2002a. Evidence of an estuarine habitat constraint on the production of wild Skagit chinook. Presentation at Western Division AFS Meeting in Spokane April 29-May1, 2002. Skagit System Cooperative. LaConner, Washington.

Beamer, E. R. Henderson, and K. Larsen. 2002b. Moving towards a more complete understanding of Skagit chinook production. Presentation made May 15, 2002 for the Salmon Habitat Modeling in the Puget Sound Basin workshop (Ray Hilborn, Mary Ruckleshaus, and Jeff Richey, instructors). University of Washington. Seattle, Washington.

Beamer, E., A. McBride, R. Henderson, K. Wolf. 2003. The importance of non-natal pocket estuaries in Skagit Bay to wild chinook salmon: An Emerging Priority for Restoration. Skagit River Tidings. Mt. Vernon, WA.

Beamer, E., A. McBride, C. Greene, G. Hood, K. Wolf, R. Henderson, and C. Rice. 2005. Delta and Nearshore Restoration for the Recovery of Wild Skagit River Chinook Salmon: Linking Estuary Restoration to Wild Chinook Salmon Populations. Skagit River System Cooperative. January 2005.

Beechie, T., E. Beamer, and L. Wasserman. 1994. Estimating coho salmon rearing habitat and smolt production losses in a large river basin, and implications for habitat restoration. North American Journal of Fisheries Management 14: 797-811

Beechie, T.J., B.D. Collins, and G.R. Pess. 2001. Holocene and recent geomorphic processes, land use, and salmonid habitat in two North Puget Sound River Basins. *In:* Geomorphic Processes and Riverine Habitat (Dorava, J.M., D.R. Montgomery, B.B. Palcsak, F.A. Fitzpatrick, eds.). Water Science and Application Volume 4, pp.37-54.

Beechie, T.J., G.R. Pess, E. Beamer, G. Lucchetti, and R.E. Bilby. 2003. Role of watershed assessments in recovery planning for salmon *In:* Restoration of Puget Sound Rivers. University of Washington Press. Pp. 194-225.

Bisson, P.A., T.P. Quinn, G.H. Reeves, and S.V. Gregory. 1992. Best management practices, cumulative effects, and long-term trends in fish abundance in Pacific Northwest river systems. Pp. 189-232 in R.B. Naiman, ed. Watershed Management: Balancing Sustainability and Environmental Change. Springer-Verlag, New York.

City of Seattle. 2001. Seattle's watersheds outside the municipal boundaries. In: Seattle's Urban Blueprint for Habitat Protection and Restoration. City of Seattle, Seattle Public Utilities, Seattle, Washington.

Collins, B. 2000. Mid-19th century stream channels and wetlands interpreted from archival sources for three north Puget Sound estuaries. Prepared for: Skagit System Cooperative, Bullitt Foundation, Skagit Watershed Council. Prepared by: Brian Collins, University of Washington, Seattle, WA. Aug. 1, 2000.

Collins, B.D. and D.R. Montgomery. 2001. Importance of archival and process studies to characterizing pre-settlement riverine geomorphic processes and habitat in the Puget lowland. *In*: Geomorphic Processes and Riverine Habitat (Dorava, J.M., D.R. Montgomery, B.B. Palcsak, and F.A. Fitzpatrick, eds.). Water Science and Application Volume 4, pp. 227-243.

Congleton, J.L., S.K. Davis, and S.R. Foley. 1981. Distribution, abundance and outmigration timing of chum and chinook salmon fry in the Skagit salt marsh, pages 153-163. In: E.L. Brannon and E.O. Salo (eds). Proceedings of the Salmon and Trout Migratory Behavior Symposium. School of Fisheries, University of Washington, Seattle, WA.

Greene, C., G. Pess, E. Beamer, A. Steele, and D. Jensen. 2003. Effects of stream, estuary and ocean conditions on density-dependent return rates in chinook Salmon. Draft Manuscript. NOAA Fisheries, Northwest Fisheries Science Center, Seattle, WA.

Hayman R., E. Beamer, R. McClure. 1996. FY 1995 Skagit River chinook research.. Skagit System Cooperative chinook restoration research progress report #1, NWIFC Contract #3311 for FY95. Skagit System Cooperative, La Conner, WA.

Healey, M.C. 1980. Utilization of the Nanaimo River estuary by juvenile chinook salmon, Oncorhynchus tshawytscha. Fishery Bulletin 77:653-668.

Kiffney, P., C. Greene, and J. Hall. 2003. Network connections: Implications for salmon conservation. In press?

MacDonald, J.S., C.D. Levings, C.D. McAllister, U.H.M. Fagerlund, and J.R. McBride. 1988. A field experiment to test the importance of estuaries for chinook salmon (Oncorhynchus tshawytscha) survival: short-term results. Canadian Journal of Fisheries and Aquatic Sciences 45: 1366-1377.

Montgomery, D.R., E.M. Beamer, G.R. Pess, T.P. Quinn. 1999. Channel Type and Salmonid Spawning Distribution and Abundance. Can. J. Fish. Aquat. Sci. 56: 377-387.

North Cascades Institute. 2002. Skagit Watershed Education Project. North Cascades Institute. 2105 State Route 20, Sedro-Woolley, WA.
Pacific Fishery Management Council. 1997. Puget Sound Salmon Stock Review Group Report.

Phillips C., W. Freymond. D. Campton, and R. Cooper. 1980. Skagit River salmonid studies, 1977-1979. Washington Department of Game. 132 pages.

Phillips C., R. Cooper, T. Quinn. 1981. Skagit River salmonid studies, 1977-1981. Washington Department of Game and U.S. Fish and Wildlife Service. 104 pages.

Reeves, G.H., F.H. Everest, and T.E. Nickelson. 1989. Identification of physical habitats limiting the production of coho salmon in western Oregon and Washington. U.S. Forest Service General Technical Report PNW-245.

Reimers, P.E. 1973. The length of residence of juvenile fall chinook salmon in Sixes River, Oregon. Research Reports of the Fish Commission of Oregon 4: 1-42.

Seiler, D., L. Kishimoto, and S. Keuhauser. 1998. 1997 Skagit River wild 0+ Chinook production evaluation. Washington Department of Fish and Wildlife, Olympia, WA. 57 pp.

Shapiro, S. and S. Matthews. 1999. On the question of harvest in the Skagit River. Skagit Watershed Council. Skagit Watershed Council. Mt. Vernon, WA.

Shreffler, D., C.A. Simenstad, R.M. Thom. 1992. Foraging by juvenile salmon in a restored estuarine wetland. Estuaries. Vol. 15, No. 2, p. 204-213.

Simenstad, C.A., K.L. Fresh, E.O. Salo. 1982. The role of Puget Sound and Washington coastal estuaries in the life history of Pacific salmon: An

unappreciated function, p. 343-364. In. V.S. Kennedy (ed.), Estuarine Comparisons. Academic Press, New York.

Skagit Watershed Council. 1998. Habitat Protection and Restoration Strategy. Skagit Watershed Council, PO Box 2856, Mount Vernon, WA 98273. 56 pages.

Washington Conservation Commission. 2003. Salmon and Steelhead Habitat Limiting Factors Water Resource Inventory Areas 3 and 4, the Skagit and Samish Basins. Washington State Conservation Commission. Lacey, WA.

WDF, WDW, and Western Washington Treaty Indian Tribes. 1993. 1992 Washington State Salmon and Steelhead Stock Inventory.

WDFW 1998 (Washington Department of Fish & Wildlife. 1998). 1998 Washington State Salmonid Stock Inventory. Appendix Bull Trout and Dolly Varden. July 1998. WDFW, Olympia, WA. 437pp

WDFW (Washington Department of Fish and Wildlife) and WWTIT (Western Washington Treaty Indian Tribes). 2003 draft. SaSI 2002. Washington state salmon and steelhead stock inventory. WDFW. Olympia, Washington.

Yates, S. 2001. Effects of Swinomish Channel jetty and causeway on out migrating chinook salmon (Oncorhynchus tshawytscha) from the Skagit River Washington. Master of Science Thesis, Western Washington University, Bellingham, Washington. 65 pp.

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