

PRELIMINARY DRAFT

SKAGIT BASIN THREE-YEAR WORK PLAN 2006

Overview

The *Skagit Basin Three-Year Work Plan* (Work Plan) identifies a comprehensive set of actions targeted at the recovery of Chinook salmon, bull trout, and steelhead populations in the Skagit watershed. This preliminary draft of a three-year plan was prepared by the *Skagit Watershed Council* (Watershed Council), the lead entity for WRIAs 3 and 4, with assistance from the Washington Department of Fish and Wildlife and Seattle City Light and with information provided by Skagit River System Cooperative, The Nature Conservancy, Skagit Land Trust, Skagit Fisheries Enhancement Group, Skagit Conservation District, Skagit County, US Forest Service and Western Washington Agricultural Association. This Work Plan has not yet been reviewed by the Watershed Council Board of Directors or vetted by the Restoration and Protection Committee – such review will occur over the next several months.

This Work Plan takes as its foundation the *Skagit Chinook Salmon Recovery Plan*, which was developed by the Skagit River System Cooperative (SRSC) and Washington Department of Fish and Wildlife (WDFW). Additional habitat and research projects, as well as community-building and outreach programs have been added as have considerations for Bull trout, which are listed as threatened under the Endangered Species Act (ESA) and steelhead, which have been proposed for listing as a threatened species by NOAA Fisheries. The proposed actions also provide valuable habitat benefits to non-listed species including pink, chum, and coho salmon.

Habitat

The Work Plan is based upon recognition that the Skagit watershed possesses the largest and most diverse landscape for salmon, bull trout, and steelhead in the Puget Sound. It can be divided into several key ecological areas (ecoregions) that possess unique topographical, geological, hydrological, and vegetative characteristics. The recovery strategy recognizes that the independent populations of Chinook salmon, bull trout, and steelhead trout have evolved with and are adapted to the unique habitat conditions, including flow patterns, water quality characteristics, and channel characteristics present in each area. Protecting and restoring the unique habitat characteristics in each sub basin or

ecoregion, including those ecological processes that form and maintain habitat, is the fundamental goal of this Work Plan.

There are seven ecoregions delineated within the Skagit watershed based upon physiography (topography, geology, and vegetation) characteristics, hydrology, and the spatial distribution of Chinook, bull trout, and steelhead populations in the watershed. These are:

- Marine nearshore areas including Skagit Bay;
- Skagit River delta including estuary and freshwater tidal areas;
- Lower and Middle Skagit River;
- Upper Skagit River;
- Sauk River;
- Suiattle River; and
- Cascade River.

The Skagit basin possesses 6 independent populations of chinook salmon, with a total of 22 independent chinook populations present in the Puget Sound. The Skagit chinook populations are comprised of a single fall stock (lower Skagit River), two summer stocks (upper Skagit and lower Sauk Rivers), and three spring stocks. The six populations are genetically unique, and have different spawning migration timings, habitat requirements, and life history traits. In setting chinook recovery objectives for the Puget Sound, the Puget Sound Technical Recovery Team (TRT) specified that all 22 populations of chinook “must improve from current conditions”. The TRT has identified that one of the Skagit early-run (i.e. spring) chinook populations needs to achieve low risk status to meet ESU recovery goals.

The Skagit possesses the 26 of the 52 local populations of bull trout populations present in the Puget Sound, as identified by the U.S. Fish and Wildlife Service’s Bull Trout Recovery Unit Team (RUT). Local populations of bull trout are determined by distinct spawning and juvenile rearing areas, which are located in tributaries with clean gravels and cold water in the upper Skagit, Sauk, Suiattle and Cascade river sub basins.

These are two basic life-history forms (or guilds) of salmonid fish in the Skagit watershed. The first are called "ocean-type" fish, and spawn in the main stem and tributary areas of the Skagit but rear in these areas for only a relatively short time (days to weeks) before migrating downstream as fry. Ocean-type fish include summer and fall Chinook salmon, chum salmon, and pink salmon. Because ocean-type juveniles spend relatively little time in their natal streams,

they are dependent upon channel margin habitats of the lower and middle main stem Skagit, and the distributary channels and blind sloughs of the Skagit delta and Skagit Bay, for foraging and rearing. The second basic life-history form are called "stream type" fish because they spawn in the middle reaches and headwater areas of the watershed, and then rear as juveniles in these areas for one or more years before migrating. Stream-type fish present in the Skagit watershed include spring chinook salmon, bull trout, and steelhead trout. Stream-type fish are better adapted to the habitat conditions present in the headwater areas of the watershed, including the cold winter temperatures and highly variable flows characteristic of snowmelt and glacial streams. Coho salmon also have a stream-type life history, but spawn and rear mainly in the floodplain areas of the watershed where they are the dominant fish species.

There is high degree of variability in life-history traits of Skagit salmonids that extend far beyond the basic delineation of "ocean-type" and "stream-type" fish. This variability is most evident in the two ESA-listed species: chinook salmon and bull trout. Ocean-type Chinook employ several life-history strategies in the Skagit, including parr migrants (rearing in mainstem river and freshwater tidal areas), estuary users (rearing in estuary sloughs and distributaries), and fry outmigrants (very limited freshwater and estuary rearing). Bull trout have four different life-history forms in the Skagit: stream resident (adults remain in headwater streams), fluvial (adults reside in mainstem rivers), adfluvial (adults reside in lakes), and anadromous (adults migrate into Puget Sound).

The fundamental objectives of this Work Plan are:

- 1) Improve the abundance of those species that are listed or proposed for listing under the ESA: chinook salmon, bull trout, and steelhead. This will be achieved by protecting and restoring those areas most important to the survival of these fish during critical periods in their life-history, including migration and foraging habitat in the middle and lower Skagit, and brackish water habitat important to growth and smoltification (i.e., physiological transition from freshwater to saltwater) provided the Skagit Delta, Skagit Bay, Swinomish Channel, and pocket estuaries.
- 2) Improve the strongest populations of chinook salmon to sustainable and harvestable numbers.
- 3) Sustain and improve life history variability and genetic diversity of chinook salmon, bull trout, and steelhead throughout the watershed. Protecting and restoring rearing habitat in the streams and rivers of the upper watershed areas will improve the abundance of stream-type fish including spring

chinook, bull trout, and steelhead. Restoring a broad range of historically important habitats will improve the life history diversity of chinook salmon, bull trout, and steelhead life by providing a wider variety of habitats to these species. Improving habitat diversity is the most important step towards improving life history diversity.

- 4) Develop and implement a set of rapid recovery actions that reduce the extinction risk of the weakest populations in the watershed.
- 5) Build organizational capacity among project sponsoring organizations.
- 6) Develop broad-based partnerships and community support for salmon recovery through public outreach and education.
- 7) Improve the watershed's capacity to fund and complete large-scale protection and restoration projects by fostering long-term partnerships among agencies, tribes, conservation groups, and other local stakeholders.
- 8) Support a strong research and monitoring program that will guide the recovery process in the future.
- 9) Implement an adaptive management process that will continually refine and redirect recovery actions.

The combined set of actions included in the Work Plan is targeted at meeting the Viable Salmon Population (VSP) recovery elements established by the Puget Sound Chinook TRT. The objectives outlined above are intended to meet the recovery goals defined for the Skagit watershed by the TRT.

These actions are also consistent with the bull trout recovery guidelines identified for the Skagit watershed in the Puget Sound Bull Trout Recovery Plan. Recovery actions for bull trout are targeted for protecting and improving habitat conditions for key spawning populations in the upper Skagit, upper Sauk, Suiattle, and Cascade sub basins. The spawning and rearing areas for bull trout also represent key spawning and rearing areas for spring chinook salmon and steelhead trout. The habitat protection and restoration actions targeting these sub basins will therefore benefit all three species

Hatcheries

The Skagit River hatchery at Marblemount produces spring, summer, and fall chinook for indicator stock purposes only. Indicator stocks are important to evaluate where harvest is occurring and to help evaluate marine survival of wild chinook stocks. Natural origin recruits (NORs) and hatchery origin recruits (HORs) are integrated in the summer and fall stocks, meaning that natural origin brood stock are introduced into the hatchery egg take. Integrated stocks are

maintained to mimic natural stocks as closely as possible and to preserve the native gene pool. In light of the sensitivity of the spring stocks the spring chinook program is segregated, meaning that the stock is maintained purely as a hatchery stock in order to reduce HOR and NOR interaction on the spawning grounds. There are no proposed plans to modify or create new chinook hatchery programs on the Skagit; however, a contingency conservation plan is proposed. This plan will specify: the population-specific criteria under which artificial production programs would be initiated to rebuild or preserve the populations; the scope of the programs; the criteria for determining whether artificial production releases would be on-station or off-station; the need for the construction of additional artificial production facilities; and other factors related to the initiation of conservation hatchery programs.

Additionally funds are needed for capital improvements at the Marblemount hatchery and to support ongoing operations and maintenance.

Harvest

Historically, Skagit chinook harvest has taken place locally in the terminal areas of Skagit Bay and the Skagit River, and in the off-shore areas in Canadian waters. In light of the diminishing stock, the terminal fishery has been reduced to tribal ceremonial fisheries and research related fisheries. During years when a large return of hatchery origin fish are expected, recreational fishing has been allowed but tailored specifically to the harvest of the hatchery recruits. Exploitation of Skagit chinook is in large part conducted in Canadian waters thus harvest management of Skagit River chinook is primarily dictated by the Pacific Salmon Treaty (PST) between the US and Canada. The PST depends upon information collected in the affected watersheds and information on harvest. With this information the treaty is negotiated and modified to accommodate harvest while preventing the over-exploitation of the stocks. Harvest related funding identified on the three year plan is intended to fund staff to participate in the PST negotiations, to fund staff to implement PST recommendations and to enforce chinook harvest regulations.

Habitat Projects

Habitat projects identified in the Work Plan are ordered geographically from the nearshore and estuary to the mountainous headwaters. The narrative below describes the relative importance of each of the geographical categories and is not intended to imply that work done in one habitat type will provide recovery

on its own. On the contrary, habitat work from the bay to the mountains is key to reestablishing viable Skagit chinook populations and ensuring their viability into the future.

The estuary and nearshore habitats have been identified as key to the recovery of Skagit chinook. Research studies and smolt outmigration monitoring indicate that the greatest portion of chinook in the watershed have an ocean type life history. The brackish estuary and nearshore areas have been found to be extremely productive areas, crucial to the success of Skagit chinook. As juveniles, the fish spend a period of weeks to months gradually adapting to the saltwater and foraging, gaining strength for their next life stage in the saltwater environment. Observations indicate that the estuary areas are filled to capacity and that a portion of the broods are forced to bypass the Skagit delta and seek rearing habitats elsewhere. Although a saltwater fry life history type has been shown to be present, information on the origin of returning adults confirms that individuals able to rear in the brackish delta areas are much more likely to return successfully. Skagit scientists has discovered that the smaller nearshore embayments associated with small freshwater systems provide an alternate rearing area to fish that are unable to find room in the estuary – and have termed these areas “pocket estuaries.”

Nearshore

Projects planned in the nearshore are intended to restore and retain pocket estuary habitats, and to restore and preserve the natural geological beach processes that create and maintain nearshore forage fish habitats. Research studies have found that the nearshore areas of the Skagit watershed provide important migratory and foraging habitat to Chinook salmon juveniles and bull trout. A *Spartina* eradication project is also included.

The proposed nearshore projects are intended to protect and restore key ecological processes to nearshore habitats, including:

- Restore connectivity among nearshore areas and marsh habitats ;
- Address water quality and ditching in the headwater wetlands;
- Protect sediment source beaches;
- Restore inter tidal pocket estuary habitat by removing fill and creating a new outlet channels
- Protect and restore sediment source beaches.

The cost of the nearshore projects under the Skagit three-year plan is \$980,000. Of this amount, \$590,000 of capital funds has been secured, while \$390,000 is still needed.

Estuary and Freshwater Tidal Area

The estuary and freshwater tidal areas of the Skagit watershed include the Skagit River delta, Skagit Bay, and Swinomish channel. These habitat areas have been a central focus of protection and restoration efforts within the Skagit watershed. The estuary represents the most productive and one of the most ecologically diverse habitat areas in the watershed. Freshwater tidal areas in the Skagit delta represent historically abundant habitat that provides rearing and refuge habitat to out-migrating chinook. Ocean-type chinook salmon juveniles are dependent upon these habitats for growth and survival. The estuary and freshwater tidal areas of the Skagit are also used as foraging habitat by anadromous bull trout, which are a dominant life history form of this listed species in the Skagit.

Projects planned in the estuary and freshwater tidal areas are aimed at restoring access to isolated habitats, re-establish migration pathways among existing habitats, and restoring the hydrological and ecological processes that form and maintain these habitat areas. Specific estuary and tidal wetland project objectives include:

- Removing hydraulic controls that limit the development of channel networks and native vegetation;
- Improving habitat connectivity and capacity (e.g., restoring the connectivity between the Swinomish Channel and the North Fork of the Skagit River);
- Restoring riverine tidal wetland habitats for juvenile rearing;
- Expand estuarine emergent marsh rearing habitat.

Many of projects estuary and freshwater tidal projects identified in the Work Plan are presently underway, and have been successfully developed through the partnership of organizations including SWC, SRSC, WDFW, TNC, Western Washington Agriculture Association, and U.S. Fish and Wildlife Service. The estimated capital cost for these projects during the three-year period is \$16,593,313, with \$4,081,000 secured.

Lower / Middle Skagit

Historically the lower Skagit River migrated and flowed across a wide floodplain characterized by diverse off channel wetlands, complex side channels, and low energy sloughs. Since about the turn of the last century efforts have been made to confine the river into a single channel thereby completely eliminating off channel habitat or cutting off migration to that which remained. Observations show that these lost habitats are important to many of the life history types of each of the Skagit chinook stocks. Life history types that depend on the estuary have been observed to migrate between the estuary and upriver to productive off channel areas. Juvenile chinook, juvenile steelhead, and sub adult bull trout depend on the productive slow-velocity margin, side-channel, and off channel habitats for feeding, and as refuge habitat from the high velocities found in the main stem river. Adult bull trout actively forage in main stem margin and side channel habitats of the main stem Skagit. The primary strategy for habitat restoration in the middle and lower Skagit is to re-establish hydraulic connectivity to disconnected side-channel habitats, to re-establish access to off-channel habitats, and to restore the habitat quality of main stem margin habitats. The latter habitats have been widely impacted by diking and bank armoring in the lower and middle Skagit.

Proposed projects seek to:

- Restore historic riverine wetland to increase the availability of floodplain rearing, foraging, and refuge habitat;
- Set back major sections of levees to re-establish floodplain habitats;
- Restore riparian corridors and floodplain corridors by planting native vegetation and removing noxious weeds;
- Restore hydraulic connectivity to artificially isolated side-channels and off-channel areas.
- Remove fish barriers to tributaries and off-channel floodplain habitats;
- Remove bank hardening and restore natural hydraulic process that form and sustain side channels;
- Improve habitat complexity within islanded (multiple channels) areas of the river;
- Reduce sediment and temperature impacts to major tributaries (e.g., Finney Creek and Day Creek) through improved forest practices and road stabilization projects, re-establishing native vegetation, a restoring natural channel processes;
- Protect and restore alluvial fans.

Partner organizations involved in restoration projects in the lower and middle Skagit include the Skagit River System Cooperative, Upper Skagit Tribe, Skagit Fisheries Enhancement Group, U.S. Forest Service, Skagit County, Washington Dept. of Fish and Wildlife, the Skagit Watershed Council and Seattle City Light.

The lower and middle Skagit is a key focus area of protection projects including conservation land purchases and easements. Protection will remain a central component to the three-year recovery plan in this area of the watershed. The area of the watershed is more impacted by land-use disturbance, channel modifications, and hydrological modifications than the sub basins in the upper parts of the watershed. Consequently, most of the protection projects in the lower and middle Skagit will become restoration projects over time. Partner organization active in conservation land acquisitions and easements in the lower and middle Skagit include the Skagit Land Trust, U.S. Forest Service, The Nature Conservancy, and the Washington Dept. of Fish and Wildlife.

For the proposed three-year plan, the total cost for capital projects in the lower and upper Skagit would be \$29,260,000. The capital cost in lower and middle Skagit is the highest of the Skagit watershed sub basins. This area of the Skagit possess the greatest amount of main stem habitat area in the watershed (i.e., over 60 river miles), and has been one of the most impacted areas of the Skagit by human disturbance. The lower and middle provides critical spawning habitat to fall chinook, rearing habitat to most life history forms of chinook, steelhead spawning and rearing habitat, and serves as migration and foraging habitat for fluvial and anadromous trout.

Upper Skagit Sub basin

The upper Skagit Sub basin includes a 26-mile section of the main stem Skagit River that provides supports the greatest number of native chinook salmon, chum salmon, and pink salmon spawners in the Puget Sound. This sub basin possesses some of the most important bull trout spawning streams in the Skagit watershed, including Bacon Creek and Illabot Creek. Much of the upper sub basin is in excellent condition due to protections provided by wilderness designations in North Cascades National Park and National Forest lands. Habitat protection has been also been a focus along the main stem section of the river adjacent land holdings. The partner organizations involved in protection projects in the upper Skagit sub basin include Seattle City Light, The Nature Conservancy, and the U.S. Forest Service. Protection projects remain a key component to the three-year recovery plan.

High quality spawning habitat is abundant for chinook salmon and steelhead along the 26 main stem river miles in the upper Skagit Sub basin. This section of the river supports the upper Skagit summer run of chinook salmon, which is the most abundant and healthiest population of chinook in the watershed. This area of the river now supports over 80 percent of the total chinook spawning in the Skagit watershed. Although spawning habitat is abundant for chinook and steelhead, rearing habitat for these species is considered to be limiting because of the relative scarcity of low-velocity main stem margin, side-channel, and off-channel habitat. Restoration projects in this area of the watershed focus on improving juvenile salmon and steelhead rearing areas. Specific restoration objectives in the upper Skagit Sub basin include:

- Restoring hydraulic connectivity to side-channel and off-channel habitats;
- Constructing new ground-water fed channels to compensate for reductions in the natural formation of these channels by flood-control and hydroelectric operations;
- Restoring low-velocity rearing areas along the main stem margin by removal of bank armoring;
- Maintaining a flow-management program developed by SCL and coordinated with the Tribes and federal and state fish management agencies to minimize flow impacts of the Skagit Hydroelectric Project on spawning and rearing fish.

Partner organizations involved in restoration projects include the Skagit River System Cooperative, Upper Skagit Tribe, Seattle City Light, U.S. Forest Service, and Washington Dept. of Fish and Wildlife.

The cost of capital projects for the three-year plan in the upper Skagit is \$2,275,000, with an almost even-split in these funds between protection and restoration projects.

Sauk River Sub basin

The Sauk River sub basin includes two independent chinook salmon populations: lower Sauk summer chinook and upper Sauk spring chinook. The Sauk River has been a key area for protection projects in the Skagit watershed. Protection efforts will continue to focus on the spawning areas for summer chinook and diverse rearing habitat for spring chinook located on the main stem Sauk between the confluence of the Suiattle River and the town of Darrington.

This sub basin also provides important spawning and rearing habitat to steelhead and bull trout. Partner organizations involved in habitat protection projects in this sub basin include The Nature Conservancy, Seattle City Light, and U.S. Forest Service. The restoration projects in the three-year plan are sediment reduction projects. High sediment loads are a major threat to salmonid populations and habitat quality in the Sauk sub basin. The total cost of capital projects in the three-year plan for this sub basin is \$1,400,000.

Suiattle River Sub basin

The Suiattle River possesses one of the three independent spring chinook populations in the Skagit watershed. This sub basin provides is extensively used as spawning and rearing habitat by bull trout and steelhead. Glaciers in the upper watershed result in high levels of flow variability as well as high sediment loads to this system. Sediment resulting from forest land-management impacts combined with major flooding events in recent year represents the major threat to chinook, bull trout, and steelhead populations in this sub basin. For this reason, the restoration projects included in the three-year plan focus of sediment reduction. The total capital cost of projects for this sub basin in the three-year plan is \$1,680,000. Partner organizations that have been involved in protection and restoration actions in this sub basin include the U.S. Forest Service, Skagit River System Cooperative, Sauk-Suiattle River Tribe, The Nature Conservancy, and Seattle City Light.

Cascade River Sub basin

The Cascade River Sub basin is the least impacted of the major sub basins in the Skagit River due to long-term protections afforded by wilderness designations by the U.S. Forest Service in the headwater areas. This sub basin supports one of the three independent spring chinook salmon populations in the Skagit, and is extensively used for spawning and juvenile rearing by bull trout and steelhead. Resident forms of bull trout are likely present in this sub basin. Proposed recovery actions for the three-year plan include a major protection project (1000+ acres) involving the partnerships of the U.S. Fish and Wildlife Service, Washington Dept. of Natural Resources, Seattle City Light, and The Nature Conservancy. The U.S. Forest Service has been the leader for restoration efforts in this watershed, and will sponsor sediment control projects proposed in the three-year plan. The total capital cost for projects in this sub basin for the three-year plan is \$1,200,000.

Monitoring

Monitoring forms an essential component of the three-year recovery plan, and will provide information critical to the adaptive management process and guiding future recovery actions. Monitoring efforts will continue to represent "vital pulse measurements" for chinook salmon, bull trout, and steelhead populations in the Skagit. The Skagit monitoring program include continued spawning surveys for chinook salmon, bull trout, and steelhead trout, smolt outmigration monitoring by screw and incline traps for all three species, and beach-seine sampling of juveniles and adults in the estuary and marine nearshore areas of the watershed. In terms of cost, the most substantive monitoring effort is the indicator stock programs for fall, summer, and spring chinook. Indicator stock programs are critical for monitoring the survival and managing the harvest of chinook in ocean waters. Monitoring efforts of coded-wire tagged chinook in most Puget Sound watersheds involve hatchery fish, but must rely on wild fish tagging in the Skagit due to the focus on wild fish production in this watershed. The total non-capital cost for the monitoring program in the three-year plan is \$3,228 with \$1,868,000 already secured.

Research (Skagit Watershed)

The Skagit Watershed is home to some of the pre-eminent estuary researchers of the Pacific Northwest. Research conducted in the Skagit has dictated the direction of chinook and bull trout recovery both locally and region wide. Continued research in the Skagit is crucial to our understanding of what it will take to recover the species and to adapt our efforts to ensure their effectiveness. The proposed research in the three-year plan will help fill major gaps in our understanding of the life-history, migration behavior, habitat use, and spatial survival patterns of chinook salmon, bull trout, and steelhead among the ecoregions of the Skagit identified in this plan. The total non-capital costs for research for the three-year plan is \$1,450,000, \$600,000 of which is secured.

Regional Research (Whidbey Basin)

We are including the estimated costs of inter-watershed research programs that should be conducted within the Whidbey basin. These project focus on understanding the importance of estuary, nearshore, and open-water marine habitats throughout the basin that are critically important to chinook salmon, steelhead, anadromous bull trout in the Skagit and other watersheds. These wide-scale research efforts are intended to improve our understanding of the

relationship between climate, food resources, habitat conditions and constraints, and migratory behavior on the survival of juvenile chinook salmon, juvenile steelhead, and anadromous bull trout in the northern Puget Sound. Total non-capital costs for this regional research effort is \$3,925,000.

Watershed-Wide Capacity

Over the next three years the Watershed Council will undertake the task of operationalizing and coordinating the implementation of this Work Plan. The Watershed Council will do so by drawing in all the key players, facilitating their participation and together developing the framework and processes necessary for effective interaction. It is anticipated that the collaborative model used over the past 7 years by the Watershed Council in fulfillment of its lead entity functions will serve as the foundation for this expanded role and revised as necessary to accommodate the additional considerations of the Recovery Plan. This section of the Work Plan addresses the question of capacity: 1) that of individual organizations to undertake projects of the volume, scale and complexity necessary for the recovery effort; 2) that of collective capacity to work together as a team in a collaborative partnership; 3) that of the community-at-large to understand and support an effort of the magnitude proposed and 4) that of the various regulatory agencies to develop and enforce the necessary regulations.

For the purposes of this Work Plan we have chosen to meet the question of capacity through funding for the equivalent of 14 additional FTEs: 2 for project development and review functions; 4 for project-sponsor functions such as landowner contact, project scoping and project management; 2 for community outreach and education; and 6 for regulatory program development and enforcement. This funding would underwrite: 1) existing staff in participating/responsible organizations; a centralized team of experts charged with providing specialized technical assistance; and new positions. Also proposed is an independent auditor, hired from outside this area, to develop a Report Card process that would allow for a bi-annual progress report, issued in 2008 or 2009. While information would need to be collected from the key players, an "arms length" accounting by an individual not associated with any of the "sides" would be politic and provide a trust-building opportunity.

There are also funds to underwrite the task of reviewing permits and implementing the Forest and Fish Agreement.

The estimated three year cost of implementation of what is termed “watershed wide capacity is \$5,250,000.

2006 Three-Year Implementation Salmon Plan for the Skagit Basin (Preliminary Draft)

Tier	Action	Action Type	Current Status	Estimated cost of			2007		2008		2009		Likely End Date	Additional funds needed after 2009
				first three years	Secured Funds	Unsecured Funding	Year 1 Scope	Year 1 Cost	Year 2 Scope	Year 2 Cost	Year 3 Scope	Year 3 Cost		
CAPITAL PROJECTS AND PROGRAMS														
Nearshore														
	Lone Tree lagoon	Restoration	Permitting	\$200,000	\$200,000	\$0	Construction	\$170,000	Monitoring	\$10,000	Monitoring	\$10,000	2010	\$10,000
	Turners Bay	Restoration	Feasibility	\$150,000	\$150,000	\$0	Data Collection	\$75,000	Report/Design	\$50,000	Permitting	\$25,000	2010	\$200,000
	Sneeoosh	Restoration	Scoping	\$150,000	\$0	\$150,000	Feasibility	\$35,000	g	\$25,000	Construction	\$90,000	2012	\$15,000
	South Skagit Spartina	Restoration	Ongoing	\$480,000	\$240,000	\$240,000	Construction	\$80,000	Construction	\$80,000	Construction	\$80,000	2016	-
	TOTAL NEARSHORE CP			\$980,000	\$590,000	\$390,000		\$360,000		\$165,000		\$205,000		\$225,000
Estuary / Tidal Delta														
	Milltown Island	Restoration	Permitting	\$375,000	\$300,000	\$75,000	Construction	\$200,000	Vegetation management	\$75,000	Monitoring	\$75,000	2011	\$75,000
	Rawlins	Restoration	Feasibility	\$3,980,000	\$0	\$3,980,000	Acquisition	\$800,000	g	\$180,000	Construction	\$3,000,000	2010	-
	Wiley Slough	Restoration	Permitting	\$3,000,000	\$2,300,000	\$700,000	Construction	\$2,000,000	Final Construction	\$930,000			2012	\$375,000
	McGlinn Causeway	Restoration	Feasibility	\$900,000	\$200,000	\$700,000	Finish Feasibility	\$150,000	Construction	\$600,000	Monitoring	\$75,000	2012	\$150,000
	Tom Moore Slough Levee Set-back	Restoration	Scoping	\$5,547,313	\$0	\$5,547,313	Feasibility	\$175,000	Acquisition	\$650,000	g	\$475,000	2010	-
	South Fork Off Channel	Restoration	Implementation	\$291,000	\$181,000	\$110,000	Acquisition	\$110,000	g	\$20,000	Construction	\$161,000	2010	-
	Fisher Slough	Restoration	Feasibility	\$1,500,000	\$100,000	\$1,400,000	Design	\$150,000	Permitting	\$50,000	Construction	\$1,300,000	2012	\$225,000
	Fisher Slough North	Acquisition	Feasibility	\$700,000	\$0	\$700,000	Acquisition	\$320,000	g	\$80,000	Construction	\$300,000	2010	-
	Sullivan Slough	Restoration		\$300,000	\$0	\$300,000			Feasibility/Acquisition	\$150,000	g	\$150,000	2010	
	Telegraph Slough	Restoration	Agreements	\$1,500,00	\$1,000,000	\$500,000	Agreements	\$50,000	g	\$100,000	Construction	\$1,350,00	2012	\$225,00
	TOTAL ESTUARY/TIDAL CP			\$16,593,313	\$4,081,000	\$13,512,313		\$3,955,000		\$2,835,000		\$5,536,000		\$825,000
Lower / Middle Skagit (Burlington to Sauk River confluence)														
	Skagit Forks	Restoration	Scoping	\$950,000	\$0	\$950,000	Feasibility / Acquisition	\$500,000	Design	\$150,000	Permit/Construct	\$275,000	2012	\$90,000
	South MV Levee Set-back	Restoration	Scoping	\$13,460,000	\$0	\$13,460,000	Feasibility	\$150,000	Acquisition	\$1,700,000	g	\$575,000	2016	\$11,035,000
	Nookachamps	Restoration	Scoping	\$2,000,000	\$0	\$2,000,000	Acquisition	\$1,200,000	Feasibility	\$200,000	g	\$600,000	2011	-
	Gilligan Floodplain	Restoration	Landowner Agreements	\$475,000	\$175,000	\$300,000	Hydraulic Modeling	\$75,000	Design/Permittin	\$100,000	Construction	\$300,000	2012	\$90,000
	Skiyou Slough	Restoration	Landowner Agreements	\$175,000	\$0	\$175,000	Hydraulic Modeling	\$25,000	Permitting	\$50,000	Construction	\$100,000	2010	\$30,000
	Cockreham Island	Restoration	Feasibility	\$4,000,000	\$0	\$4,000,000	Acquisitions	\$3,000,000	g	\$150,000	Construction	\$850,000	2012	\$150,000

Tier	Action	Action Type	Current Status	Estimated cost of			2007		2008		2009		Likely End Date	Additional funds needed after 2009
				first three years	Secured Funds	Unsecured Funding	Year 1 Scope	Year 1 Cost	Year 2 Scope	Year 2 Cost	Year 3 Scope	Year 3 Cost		
	Day Creek	Restoration	Feasibility	\$600,000	\$0	\$600,000	Construction Design	\$75,000	Permitting	\$50,000	Construction	\$475,000	2012	\$45,000
	Wiseman	Restoration	Feasibility	\$1,300,000	\$0	\$1,300,000	Acquisitions	\$700,000	Design/Permittin	\$120,000	Construction	\$480,000	2011	-
	Hamilton	Restoration	Scoping	\$1,850,000	\$0	\$1,850,000	Feasibility/Design	\$350,000	Acquisition/Permi	\$1,000,000	Construction	\$1,500,000	2016	-
	Janecki Bend	Acquisition	Scoping	\$350,000	\$0	\$350,000	Feasibility/Design	\$50,000	Permitting	\$25,000	Construction	\$275,000	2012	\$45,000
	Vandersar	Restoration	Implementation	\$185,000	\$185,000	\$0	Construction	\$185,000					2007	-
	Iron Mountain	Restoration	Implementation	\$180,000	\$180,000	\$0	Construction	\$180,000					2007	-
	Little Baker Channel	Restoration	Design	\$600,000	\$0	\$600,000	Feasibility/Design	\$100,000	Permitting	\$25,000	Construction	\$475,000	2010	-
	Hansen Creek Alluvial Fan	Restoration	Feasibility	\$1,200,000	\$0	\$1,200,000	Construction Design	\$125,000	Permitting	\$75,000	Construction	\$1,000,000	2012	\$90,000
	Finney Riparian	Restoration	Scoping	\$175,000	\$0	\$175,000	Agreements	\$10,000	Site Planning	\$25,000	Construction	\$140,000	2012	\$75,000
	Finney Roads	Restoration	Scoping	\$300,000	\$0	\$300,000	Construction	\$150,000	Construction	\$150,000				-
	Upper Skagit Floodplain Riparian	Restoration	Implementation	\$160,000	\$0	\$160,000	Site Planning and Prep	\$25,000	Construction	\$125,000	monitoring/maintenance	\$10,000	2013	-
	CREP	Restoration		\$400,000	\$0	\$400,000	Implementation	\$140,000	Implementation	\$130,000	Implementation	\$130,000	2016	?
	Middle Skagit Acquisitions	Protection	Ongoing	\$900,000	\$300,000	\$600,000	Acquisitions	\$300,000	Acquisitions	\$300,000	Acquisitions	\$300,000	2010	-
	TOTAL LOWER AND MIDDLE SKAGIT CP			\$29,260,000	\$840,000	\$28,420,000		\$7,340,000		\$4,375,000		\$7,485,000		\$11,650,000
Upper Skagit (Sauk River confluence to Newhalem)														
	Illabot Creek	Restoration	Design	\$395,000	\$25,000	\$370,000	Design/Permittin	\$75,000	Construction	\$200,000	Monitoring	\$30,000	2012	\$15,000
	Car Body Hole	Restoration	Scoping	\$350,000	\$0	\$350,000	Feasibility	\$50,000	Design/Permittin	\$50,000	Construction	\$250,000	2012	\$45,000
	Bacon Creek Roads	Restoration	Scoping	\$300,000	\$0	\$300,000	Construction	\$150,000	Construction	\$150,000			2008	-
	Diobsud Roads Erosion Control	Restoration	Scoping	\$230,000	\$0	\$230,000	Construction	\$115,000	Construction	\$115,000			2008	-
	Upper Skagit Acquisitions	Protection	Scoping	\$1,000,000	\$500,000	\$500,000	Acquisition	\$340,000	Acquisition	\$330,000	Acquisition	\$330,000	2010	-
	TOTAL UPPER SKAGIT CIP			\$2,275,000	\$525,000	\$1,750,000		\$730,000		\$845,000		\$610,000		\$60,000
Sauk River														
	Sauk Prairie Bridge	Restoration	Design	\$200,000	\$200,000	\$0	Design/Permittin	\$50,000	Construction	\$150,000			2008	-
	Sauk Roads	Restoration	Phase Two	\$200,000	\$0	\$200,000	Data Collection	\$15,000	Final Design	\$20,000	Construction	\$165,000	2009	-
	Sauk River Land Acquisitions	Protection	Feasibility	\$1,000,000	\$400,000	\$600,000	Acquisition	\$340,000	Acquisition	\$330,000	Acquisition	\$330,000	2010	-
	TOTAL SAUK RIVER CIP			\$1,400,000	\$600,000	\$800,000		\$405,000		\$500,000		\$495,000		
Suiattle River														
	Downey Creek Crossing	Restoration	Scoping	\$300,000	\$0	\$300,000	Design	\$50,000	Permitting	\$25,000	Construction	\$225,000	2010	-
	Boundary Bridge	Restoration	Scoping	\$275,000	\$0	\$275,000	Feasibility	\$75,000	Permitting	\$25,000	Design	\$175,000	2010	-
	Dearinger Campground	Restoration	Scoping	\$375,000	\$0	\$375,000	Feasibility	\$75,000	Permitting	\$25,000	Construction	\$275,000	2010	-
	Suiattle Roads	Restoration	Evaluation	\$730,000	\$40,000	\$690,000	Data Collection	\$70,000	Final Design	\$30,000	Construction	\$340,000	2010	\$25,000

Tier	Action	Action Type	Current Status	Estimated cost of			2007		2008		2009		Likely End Date	Additional funds needed after 2009
				first three years	Secured Funds	Unsecured Funding	Year 1 Scope	Year 1 Cost	Year 2 Scope	Year 2 Cost	Year 3 Scope	Year 3 Cost		
	TOTAL SUIATTLE CP			\$1,680,000	\$40,000	\$1,640,000		\$270,000		\$105,000		\$1,015,000		\$25,000
Cascade River														
	Cascade Roads Erosion Control	Restoration	Scoping	\$300,000	\$0	\$300,000	Construction	\$150,000	Construction	\$150,000			2008	-
	Cascade River Land Acquisitions	Protection	Landowner Agreement	\$900,000	\$750,000	\$150,000	Acquisition	\$300,000	Acquisition	\$300,000	Acquisition	\$300,000	2010	-
	TOTAL CASCADE RIVER CP			\$1,200,000	\$750,000	\$450,000		\$450,000		\$450,000		\$300,000		\$0
HATCHERY PRODUCTION														
	Implement HSRG Capital Improvement recommendations		Feasibility	\$512,000	\$0	\$512,000	Design	\$75,000	Permitting	\$37,000	Construction	\$400,000	2009	-
	TOTAL HATCHERY PRODUCTION			\$512,000	\$0	\$512,000		\$75,000		\$37,000		\$400,000		
TOTAL CAPITAL PROJECTS AND PROGRAMS				\$53,900,313	\$7,426,000	\$47,474,313		\$13,585,000		\$9,312,000		\$16,046,000		\$12,785,000
NON-CAPITAL NEEDS														
Watershed-wide capacity														
	Lead entity Functions Independent Environmental Auditor	Program	Ongoing	\$675,000	\$390,000	\$285,000	Staffing	\$225,000	Staffing	\$225,000	Staffing	\$225,000	Ongoing	Ongoing
	Regulatory Protection Programs	Program	Concept	\$80,000	\$0	\$80,000			Consultant	\$80,000				-
	Project Development & Review	Program	Concept	\$1,440,000	\$0	\$1,440,000	6 FTEs	\$480,000	6 FTEs	\$480,000	6FTEs	\$480,000	Ongoing	Ongoing
	Sponsor Capacity	Program	Concept	\$480,000	\$0	\$480,000	Staffing (2 FTEs)	\$160,000	Staffing (2 FTEs)	\$160,000	Staffing (2 FTEs)	\$160,000	Ongoing	Ongoing
	Community Outreach and Education	Program	Concept	\$960,000	\$0	\$960,000	Staffing (4 FTEs)	\$320,000	Staffing (4 FTEs)	\$320,000	Staffing (4 FTEs)	\$320,000	Ongoing	Ongoing
	Implementation	Program	Ongoing	\$300,000	\$0	\$300,000	Staffing (2 FTEs)	\$100,000	Staffing (2 FTEs)	\$100,000	Staffing (2 FTEs)	\$100,000	Ongoing	Ongoing
	Review of Permits	Program	Concept	\$240,000	\$0	\$240,000	Staff support	\$80,000	Staff Support	\$80,000	Staff Support	\$80,000	Ongoing	Ongoing
	Graduate Fellowships	Program	Concept	\$75,000	\$0	\$75,000	Fellowships	\$25,000	Fellowships	\$25,000	Fellowships	\$25,000	Ongoing	Ongoing
	Forest & Fish Agreement	Program	Ongoing	\$1,000,000	\$700,000	\$300,000	Staffing	\$100,000	Staffing	\$100,000	Staffing	\$100,000	Ongoing	Ongoing
	TOTAL LOCAL CAPACITY			\$5,250,000	\$1,090,000	\$4,160,000		\$1,490,000		\$1,570,000		\$1,490,000		
Assessments														
	Thein Farm	Assessment	Scoping	\$50,000	\$0	\$50,000					Feasibility assessment	\$50,000	2008	\$100,000
	Instream Flow Evaluation & Planning	Program	Ongoing	\$90,000	\$0	\$90,000		\$30,000		\$30,000		\$30,000	Ongoing	Ongoing
	Skagit Delta Hydraulic Model	Assessment	Feasibility	\$350,000	\$50,000	\$300,000	Study design/Data Collection	\$50,000	Data Collection/Analysis	\$150,000	Report and Conclusions	\$50,000	2009	Ongoing

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	Mainstem Floodplain Assessment	Assessment	Concept	\$50,000	\$0	\$50,000	Assessment	\$50,000				2007	Ongoing	
	Riprap inventory	Assessment	Update	\$50,000	\$0	\$50,000	Assessment	\$50,000				2007	Ongoing	
	Floodplain Productivity Assessment	Assessment	Concept	\$150,000	\$0	\$150,000	Study design/Data Collection	\$50,000	Data Collection/Analysis	\$50,000	Report and Conclusions	\$50,000	2009	Ongoing
	TOTAL ASSESSMENTS			\$740,000	\$50,000	\$690,000		\$230,000		\$230,000		\$180,000		
Harvest Management														
	Renegotiate expiring PST annexes	Program	Ongoing	\$250,000	\$125,000	\$125,000	Staffing (.5FTE)	\$60,000	Staffing (.5FTE)	\$62,500	Staffing (.5FTE)	\$65,000	Ongoing	Ongoing
	Implement 1999 PST annex	Program	Ongoing	\$250,000	\$125,000	\$125,000	Staffing (.5FTE)	\$60,000	Staffing (.5FTE)	\$62,500	Staffing (.5FTE)	\$65,000	Ongoing	Ongoing
	Implement Comprehensive Chinook Plan	Program	Ongoing	\$60,000	\$30,000	\$30,000	Staffing	\$10,000	Staffing	\$10,000	Staffing	\$10,000	Ongoing	Ongoing
	Enforcement Support	Program	Ongoing	\$500,000	\$200,000	\$300,000	Staffing	\$100,000	Staffing	\$100,000	Staffing	\$100,000	Ongoing	Ongoing
	TOTAL HARVEST MANAGEMENT			\$1,060,000	\$480,000	\$580,000		\$230,000		\$235,000		\$240,000		
Hatchery Production														
	Hatchery Operations	Program	Ongoing	\$450,000	\$450,000	\$0	O&M	\$150,000	O&M	\$150,000	O&M	\$150,000	Ongoing	Ongoing
	Hatchery Contingency Plan	Planning	Ongoing	\$30,000	\$0	\$30,000	Staffing	\$15,000	Staffing	\$15,000		\$0	2008	Ongoing
	TOTAL HATCHERY PRODUCTION			\$480,000	\$450,000	\$30,000		\$165,000		\$165,000		\$150,000		
Monitoring														
	Adaptive Mngt.	Program	Concept	\$720,000	\$0	\$720,000	3 FTEs	\$240,000	Staffing	\$240,000	Staffing	\$240,000	Ongoing	Ongoing
	Delta nearshore chinook monitoring	Program	Ongoing	\$350,000	\$309,000	\$41,000							2015	Ongoing
	Screw Trap Operations	Program	Ongoing	\$700,000	\$300,000	\$400,000	O&M	\$225,000	O&M	\$225,000	O&M	\$250,000	Ongoing	Ongoing
	Stream gauge O&M	Program	Ongoing	\$290,000	\$200,000	\$90,000	O&M	\$30,000	O&M	\$30,000	O&M	\$30,000	Ongoing	Ongoing
	Annual Chinook Spawner Surveys	Program	Ongoing	\$150,000	\$75,000	\$75,000		\$25,000		\$25,000		\$25,000	Ongoing	Ongoing
	Catch Sampling / monitoring / reporting	Program	Ongoing	\$171,000	\$150,000	\$21,000	Staffing	\$55,000	Staffing	\$57,000	Staffing	\$59,000	Ongoing	Ongoing
	Summer Indicator Stocks	Program	Ongoing	\$177,000	\$171,000	\$6,000	Staffing		Staffing		Staffing		Ongoing	Ongoing
	Fall Indicator Stocks	Program	Ongoing	\$160,000	\$153,000	\$7,000	Staffing		Staffing		Staffing		Ongoing	Ongoing
	Spring Indicator Stocks	Program	Ongoing	\$450,000	\$450,000	\$0	Staffing	\$150,000	Staffing	\$150,000	Staffing	\$150,000	Ongoing	Ongoing
	FERC Compliance	Program	Concept	\$60,000	\$60,000	\$0	Staffing	\$20,000	Staffing	\$20,000	Staffing	\$20,000	Ongoing	Ongoing
	TOTAL MONITORING			\$3,228,000	\$1,868,000	\$1,360,000		\$745,000		\$747,000		\$774,000		
Regional Research Studies (Whidbey Basin)														
	Trophic relationships	Research	Scoping	\$750,000	\$0	\$750,000	Implementation	\$325,000	Implementation	\$325,000			2008	Ongoing
	Juvenile Salmonid Origin	Research	Proposed	\$700,000	\$0	\$700,000	Implementation	\$350,000	Implementation	\$350,000			2008	Ongoing
	Global Warming Impacts	Research	Project	\$375,000	\$375,000	\$0	Implementation	\$200,000	Implementation	\$175,000			2008	Ongoing
	Chinook use of pocket estuaries	Research	Ongoing	\$300,000	\$300,000	\$0	Implementation	\$150,000	Implementation	\$150,000			2008	Ongoing
	SRT Evaluation	Research	Scoping	\$300,000	\$100,000	\$200,000	Implementation	\$150,000	Implementation	\$150,000			2008	Ongoing
	Nutrient Dynamic and salmon food Research	Research	Scoping	\$150,000	\$0	\$150,000	Implementation	\$75,000	Implementation	\$75,000			2008	Ongoing
	Forage Fish ecology	Research	Scoping	\$900,000	\$150,000	\$750,000	Implementation	\$300,000	Implementation	\$300,000	Implementation	\$300,000	2009	Ongoing

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	Nearshore / Offshore salmon and bull trout migration study	Research	Ongoing	\$450,000	\$200,000	\$250,000	Implementation	\$225,000	Implementation	\$225,000		2008	Ongoing	
	TOTAL REGIONAL STUDIES			\$3,925,000	\$1,125,000	\$2,800,000		\$1,775,000		\$1,750,000	\$300,000			
	Research (Skagit Watershed)													
	Yearling Chinook Research	Research	Scoping	\$300,000	\$50,000	\$250,000	Study design / Data Collection	\$100,000	Data collection	\$100,000	Reporting	\$100,000	2009	Ongoing
	Chinook Life Histories & Marine Survival Hatchery/Wild Fish Interactions	Research	Ongoing	\$300,000	\$300,000	\$0	Implementation	\$100,000	Implementation	\$100,000	Implementation	\$100,000	2009	Ongoing
	Bull trout population monitoring and habitat use	Research	Scoping	\$100,000	\$0	\$100,000	Implementation	\$50,000	Implementation	\$50,000		2008	Ongoing	
	Steelhead life history and survival	Research	Ongoing	\$250,000	\$100,000	\$150,000	Implementation	\$125,000	Implementation	\$125,000		2008	Ongoing	
	Salmon habitat and agriculture research	Research	Scoping	\$300,000	\$150,000	\$150,000	Implementation	\$150,000	Implementation	\$150,000		2008	Ongoing	
	TOTAL RESEARCH			\$1,450,000	\$600,000	\$850,000		\$625,000		\$625,000	\$200,000			
	TOTAL NON-CAPITAL			\$16,133,000	\$5,663,000	\$10,470,000		\$5,260,000		\$5,322,000	\$3,334,000			
	TOTAL CAPITAL AND NON-CAPITAL			\$70,033,313	\$13,089,000	\$57,944,313		\$18,845,000		\$14,634,000	\$19,380,000			