

Fiscal Year 2011 Annual Report

U.S. Fish & Wildlife Service
Columbia River Gorge National Fish Hatchery Complex
Underwood, Washington

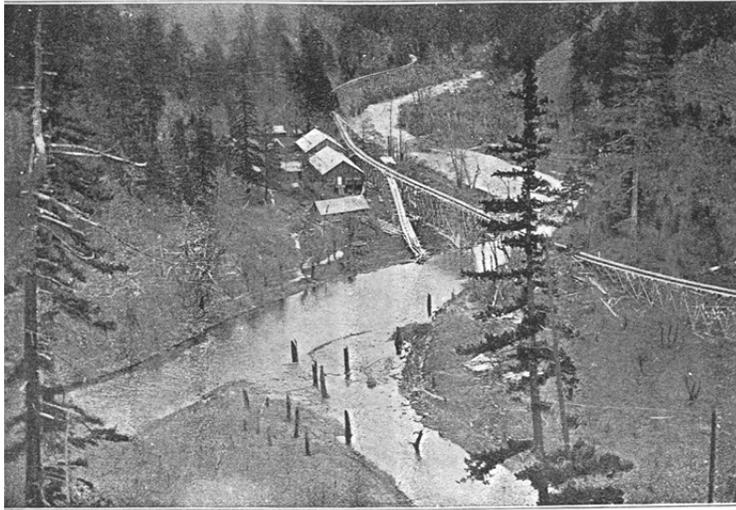


Capturing Efficiencies to Achieve Aquatic Conservation

The Columbia River Gorge National Fish Hatchery Complex – A Historical Perspective

“During the calendar year 1948 considerable change was made in operation of the three stations in the Lower Columbia River field. (Later reported in 1949) – Little White, being centrally located, is headquarters for the Lower Columbia River Field which now consists of Little White (Cook), Spring Creek (Underwood) and Tyee (Carson). It is expected that to these will be added the Upper Little White (Willard) and Husum station, making a total of five in the group. Each sub-station has its Superintendent and full fish culture crew. All contact between these stations and the Regional Office is through the Little White Station. A full set of files are maintained at Little White and much of the office work of the sub-stations is done at Little White. All their reports filter through here for approval. The Superintendent of Little White is in close contact with all three stations and coordinates their activities for the best interest of the field. The personnel is detailed around in the field as needed.”

Harry B. Cox
Superintendent
Little White Salmon National Fish Hatchery
1948 – 1963



LITTLE WHITE SALMON RIVER, SHOWING HATCHERIES AND LUMBER FLUME.

History has a way of repeating itself. As Superintendent of Little White Salmon National Fish Hatchery (NFH), Harry “Benny” Cox became the first superintendent to manage multiple hatcheries located in the Columbia River Gorge of Washington State. As reported in his Fiscal Year 1948 and 1949 annual reports, three of the Gorge hatcheries were placed under his oversight in the organization known as the Lower Columbia Field. Willard NFH became part of the complex following construction in 1952. This 4-hatchery complex operated as a congruent organization until Benny’s transfer to Spring Creek NFH in 1963. The historical record does not make reference to a formal dissolution of the hatchery complex known as the Lower Columbia Field although operations appeared to transition back to four independently operated facilities. Benny retired in 1967. Eight years later the U.S. Fish & Wildlife Service (Service) reinvigorated the multi-hatchery organization when Little White Salmon and Willard NFH’s were combined and managed as a single organization. This smaller complex operated from 1975 to 2011, a year marked by dramatic changes in the management of the Service’s Columbia River Gorge hatcheries. History repeated itself when four hatcheries were administratively combined forming the new Columbia River Gorge NFH Complex (Complex).

The Columbia River Gorge NFH Complex – Capturing Efficiencies to Achieve Aquatic Conservation

Four hatcheries were reorganized during the year into a multi-hatchery complex to capture efficiencies and eliminate redundant processes. The new organization accomplishes the production of over 20 million spring Chinook, fall Chinook, and Coho salmon through the sharing of staff and resources to

meet the Service's Fisheries mitigation, restoration, and tribal trust responsibilities. The new Complex consists of Spring Creek NFH, Little White Salmon NFH, Willard NFH, and Carson NFH. The Administrative headquarters for the Complex is located at the Spring Creek NFH in Underwood, WA. All four hatcheries are located within the Columbia River Gorge National Scenic Area. Carson NFH is the most distant from the Complex headquarters located 18 miles by road to the northwest of Spring Creek NFH on the Wind River. Both Little White Salmon and Willard NFH, formerly the Little White Salmon/Willard NFH Complex, are located on the Little White Salmon River approximately 7 miles west of the Complex Headquarters. In addition, the Big White station located on the White Salmon River is a substation of Spring Creek NFH. Each hatchery is located upstream of Bonneville Dam and have an important role in mitigating for lost fisheries and habitat associated with the operation of the Columbia River hydropower system.

Spring Creek

Spring Creek NFH produces tule fall Chinook salmon to mitigate for lost fisheries and habitat under authority of the Mitchell Act of 1938 and the Flood Control Act of 1950. The hatchery was authorized by Special Act 24 Stat.523, March 3, 1887 and Special Act 30. Stat.612, July 01, 1891 and placed into operation in 1901 primarily to support the commercial fishing industry. The hatchery was reauthorized by the Mitchell Act in May 11, 1938 and amended on August 8, 1946, (60 Stat.932) for conservation of fishery resources in the Columbia River. The hatchery was remodeled in 1948 to mitigate for lost fisheries and habitat following the construction of Bonneville Dam (Mitchell Act) and was expanded to its present size in 1972 by the U.S. Army Corps of Engineers (USACOE) for fish and habitat mitigation under the John Day Dam Flood Control Act of 1950.



Spring Creek National Fish Hatchery

Spring Creek NFH is located on the Columbia River in Underwood, Washington and is known as one of the largest anadromous fish production facilities in the Columbia River Basin. The hatchery is a water conservation facility. Water is reused through a complex series of biological filters that enhance water quality while minimizing the need for a large fresh water supply. The hatchery is mechanically complex and requires the use of numerous pumps, filters, and motor control centers to enhance operations.

The hatchery produces 10.5 million tule fall Chinook salmon annually for release into the Columbia River. This particular stock of fish is native to the lower Columbia River and its tributaries downstream of The Dalles Dam. This is the native stock inhabiting the White Salmon River located just upstream from the hatchery. During 1901 - 1938 adult tule fall Chinook were trapped by seining the mouth of the White Salmon River. The fish were spawned and eggs were transported to the hatchery for rearing and release. Following construction of Bonneville Dam in 1938 adult collections in the White Salmon River

became very difficult and by 1964 sufficient numbers of adult fish began returning to the hatchery that collection of adults in the White Salmon River was discontinued. The hatchery has a key role in maintaining the genetic integrity of this unique stock of fish. The Spring Creek tule fall Chinook stock is also an indicator stock for the US/ Canada Pacific Salmon Treaty, and tagged fish provide valuable information to help guide international harvest management decisions. The hatchery program is also an integral component of the U.S. v Oregon agreement that reaffirms Native American Treaty granted fishing rights under the Treaty of 1855.

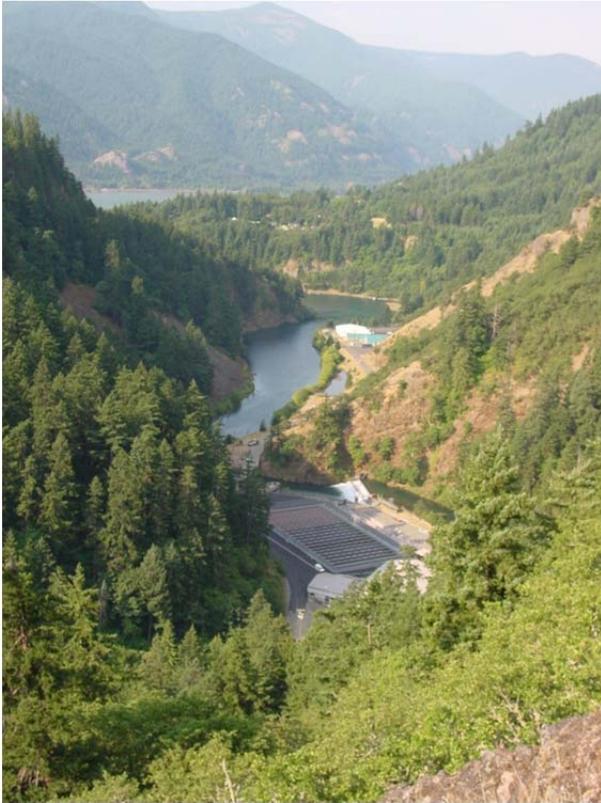
The Big White Ponds are an unmanned substation of the hatchery located on the White Salmon River. Constructed in the early 1950s, the facility sits on 42 acres of land approximately one mile upstream from the mouth of the White Salmon River. The ponds have been used to trap adult fish and for juvenile rearing. Since construction several species have been reared at the Big White Ponds for release into the White Salmon River including brown trout, chum, Coho and spring Chinook salmon. Juvenile production ended in 2002 when 170,500 spring Chinook salmon were released into the White Salmon River. The existing intake and screening does not comply with criteria necessary to protect Endangered Species Act (ESA) – listed fishes. The Big White Ponds consist of a water intake structure and pipeline, two raceways, a diversion rack in the river and a service building with water rights to 30 cfs from the White Salmon River. This year the installation of a resistance board weir allowed trapping of returning adult tule fall Chinook in the Ponds. Captured fish were transported and released upstream of Condit Dam to allow for natural spawning to preserve the 2011 brood year due to the decommissioning of the Dam and associated large release of sediment following dewatering of the upstream reservoir.

The hatchery produces 10.5 million tule fall Chinook for release during two different time periods. A total of 6.5 million fish are released during April followed by a 4.0 million fish release in May. Additional egg and fish transfers occur in support of the Spring Creek Reprogramming Memorandum of Agreement (MOA), an agreement between the Service, National Oceanic and Atmospheric Administration-Fisheries (NOAA-Fisheries), the USACOE, and the Bonneville Power Administration (BPA) with reference to the Oregon Department of Fish & Wildlife (ODFW). This multi-agency MOA supports the transfer of 3.0 million eyed eggs to the ODFW Bonneville Hatchery and 1.7 million juvenile fish to Little White Salmon NFH to boost the number of returning adult fish available for harvest, and to eliminate the need for an annual request during March to modify operations at Bonneville Dam to enhance fish survival.

The Spring Creek NFH tule fall Chinook make a significant contribution to ocean harvest and provide an extremely popular sport fishery at the mouth of the Columbia River. Today the Service operates this hatchery to mitigate for lost habitat, provide for commercial and sport harvest, meet tribal treaty and trust responsibilities, and to conserve this unique stock of tule fall Chinook salmon for future reintroduction to its native habitat. The hatchery is inextricably linked to future restoration efforts on the White Salmon River following the removal of Condit Dam.

Little White Salmon

The Little White Salmon National Fish Hatchery was established in 1898 (although production began in 1896 on an experimental basis) to address the decline of tule fall Chinook, the native salmon stock that returned to the Little White Salmon River. This site was selected since it was considered one of the principal spawning areas of the quinnat or Chinook salmon. Assistant U.S. Fish Commissioner William Ravenel, describing the significance of the hatchery site, noted in 1898 that, *“During the season, the salmon appeared in such large numbers below the rack that the Indians often speared two and three at one cast of the spear.”*



Little White Salmon National Fish Hatchery

The original hatchery was described as a rough wooden structure without a floor and lit by skylights. It was equipped with 50 troughs that were fed by water from a nearby stream. Other buildings included a mess-house and sleeping quarters for employees. Fall Chinook eggs were taken from adult fish that were captured in a downstream trap from mid-September through mid-October. It was noted in 1898 that the best “fishing” occurred at night about one hour after dark. Spawning began in the morning and continued until eggs had been removed from all ripe fish. Hatchery records indicate that an average 16.5 million eggs were taken annually between 1896 and 1915. These eggs were incubated in baskets, hatched and eventually released as fry. Once the fry were released the station was closed for the season. The cost of constructing and operating the hatchery during the first year was \$2,288.27.

Profound changes occurred in hatchery operations during the next 50 years. While the hatchery continued to produce the native tule fall Chinook salmon, production was expanded to include chum,

Coho, sockeye and spring Chinook salmon. The completion of Bonneville Dam in 1938 was probably the most significant event of the time. Not only was the hatchery flooded by the rising Bonneville pool, but the average annual egg take of tule fall Chinook declined by 44%. The natural spawning grounds of this fish were lost as habitat at the mouth of the river was inundated by the Bonneville pool. As shown on a map prepared by the USACOE in 1935, the mouth of the Little White Salmon River extended nearly an additional half mile out and downstream of its current location on the Columbia River. This prime spawning habitat essential to the survival of naturally spawning tule fall Chinook was permanently lost following the completion of Bonneville Dam in 1938. The original spawning gravel is now covered by excessive silt allowed to settle in the slack water of the Bonneville Pool. It was during this time that the hatchery became part of the Mitchell Act program, producing fish to mitigate for lost habitat that resulted from the construction and operation of the fledgling Columbia River hydro system.

The hatchery is located in south-central Washington on the Little White Salmon River approximately one mile upstream from the Columbia River. The Little White Salmon River joins the Columbia River at river mile 162. Drano Lake, a natural impoundment at the mouth of the river, is a popular sport and tribal fishing area. The hatchery encompasses 432.59 acres of land including easements. Service Division of Realty property files show that 211.39 acres were acquired by other federal agencies; 1.34 by devise or gift; 202.44 acres purchased by the Service; and 17.42 acres by agreement, easement or lease.

The Washington Department of Fish & Wildlife (WDFW) law enforcement office for the Columbia River Gorge is also located on the grounds of Little White Salmon NFH. In addition, five government residences are located on Chinook Drive approximately 2 miles from the hatchery area.

Willard

Construction began at Willard NFH in 1951. The Willard facility was authorized by an amendment to the Mitchell Act to mitigate for fisheries lost due to the construction and operation of hydroelectric dams on the Columbia River. The earliest reports available regarding the Willard hatchery indicate that it was planned and constructed as a fall Chinook salmon production facility.

Located above an impassable natural waterfall, migrating adult salmon were unable to reach the Willard facility. Adult fish were collected and spawned at Little White Salmon and eggs shipped to Willard to initiate fish production. Co-located with the former Western Fish Nutrition Laboratory, this fish culture station was responsible for making significant early advances in fish nutrition. The laboratory building is now occupied by the U.S. Geological Survey (USGS) Columbia River Research Laboratory, a substation of the Western Fisheries Research Center, Seattle, WA. In 1975, the Little White Salmon NFH and Willard NFH were administratively combined to form the Little White Salmon/Willard NFH Complex (Complex). Administration of the Complex occurs at the Little White Salmon facility. Complex facilities are managed, staffed, and budgeted as a single organization.



Willard National Fish Hatchery

Coho salmon returned to Drano Lake and the Little White Salmon River as a result of a successful Willard NFH production program. Coho were produced at Willard NFH between 1954 and 2004. Mitchell Act budget reductions led to the proposed closure of Willard NFH in 2004, a year that marked the last release of Coho salmon from the facility. A cost share agreement between the Yakama Nation and the Service led to a renewed production program at Willard NFH; however, Coho salmon are no longer released into the Little White Salmon River. Coho produced at Willard NFH originate from a locally adapted stock from the Wenatchee and Methow River watersheds in North Central Washington. Eggs are shipped to Willard NFH to initiate production and pre-smolts reared at Willard NFH are transferred back to their native watersheds to assist with the Yakama Nation Mid-Columbia River Coho reintroduction program.

Willard NFH is located on the Little White Salmon River approximately 5 miles upstream from the Little White Salmon facility. The hatchery includes 80.10 acres of land purchased by the Service, and an additional 3.70 acres acquired by agreement, easement, or lease. A laboratory and associated buildings are located on the hatchery grounds. These facilities are now occupied by the USGS, Columbia River Research Laboratory. In addition, nine government residences are located adjacent to the hatchery on Coho Loop.

Carson

Carson NFH is located 13 miles northwest of the town of Carson in Skamania County, Washington. It lies in a heavily forested valley within the Gifford Pinchot National Forest at the confluence of Tye Creek and Wind River. The hatchery sits on 20 acres of developed river-bottom at river mile (RM) 18 on the Wind River which enters the Columbia River 155 miles upstream from the Pacific Ocean and 10 miles upstream from Bonneville Dam.



Carson National Fish Hatchery

Carson NFH was authorized by Special Act 50 Stat. 220, May 28, 1937, and placed into operation in December 1937 to mitigate for the effects of federal water projects, primarily Bonneville Dam. The hatchery was reauthorized by the Mitchell Act (16 USC 755-757; 52 Stat. 345) May 11, 1938 and amended on August 8, 1946, (60 Stat. 932) for conservation of fishery resources in the Columbia River Basin. The hatchery was remodeled in 1956 to establish a hatchery spring Chinook run in the Wind River, and is currently used for adult collection, egg incubation and rearing of spring Chinook. It also provides eggs for spring Chinook reintroduction efforts in other Columbia River tributaries.

A Washington State operated fish hatchery established at the mouth of the Wind River in 1899 was closed in 1938 when the hatchery grounds and buildings were flooded by the backwaters of Bonneville Dam. The Service operated this facility for the production of fall Chinook during a two year period (1936-37). Following closure of the State

facility, a Special Use Permit issued by the U.S. Forest Service reserved 10 acres within the Gifford Pinchot National Forest for the purpose of establishing a fish cultural station. Construction of Carson NFH began in June 1937 and production was launched in December of that same year with the arrival of 3,000,000 fall Chinook salmon eggs from the Little White Salmon NFH.

Fall Chinook salmon were the dominate species reared at Carson NFH from 1937 to 1964. Rainbow trout, black spotted trout (Yellowstone cutthroat), brook trout, steelhead, spring Chinook salmon, Coho salmon, sockeye salmon (shipped as eyed eggs), and kokanee were raised intermittently in large numbers from 1938 through 1981 at which time production was switched exclusively to spring Chinook salmon. Nearly all of the fall Chinook and trout were released into Tye Creek or the Wind River. Coho were primarily released in the Wind and Columbia Rivers.

The fish ladder around Shipherd Falls is located approximately two miles from the mouth of the Wind River and was completed in 1955 as part of the Columbia River Fishery Development Program (Mitchell Act). Coincident to the construction of the fish ladder, was an extensive expansion of the hatchery. The goal of the expansion was to produce spring Chinook, fall Chinook, Coho, blue-back (sockeye) salmon, and steelhead to artificially enhance natural production of the Wind River Basin. Completion of the

Shipherd Falls fish passage facility is responsible for the successful production of spring Chinook at Carson NFH. While several species were reared in the past, spring Chinook was the only species produced following the expansion of the hatchery and continues today.

While habitat loss occurred throughout the Columbia River Basin as a result of Federal water resource development, the loss of spawning habitat in the Columbia River Gorge tributaries is quite notable. As a result, the purpose of the Complex fish production program is to mitigate for fish losses in the Columbia River caused from Federal hydropower projects and other Federal water resource development.

Mitigation Production – Producing Fish for Harvest

Spring Chinook Salmon

The current spring Chinook salmon propagation programs at Carson and Little White Salmon NFH are entirely funded by the Mitchell Act, funding received from NOAA-Fisheries to help mitigate for fisheries lost due to the construction and operation of the Columbia River hydropower system. The original Mitchell Act funding agreements for the operation of Carson, Little White Salmon and Willard NFH include the original Mitchell Act, 52 Stat. 345, 05/11/1938 and an amendment to the Act, 60 Stat. 932, 08/08/1946.

From 1955 thru 1964 approximately 500 spring Chinook salmon were trapped annually at Bonneville



Sport anglers pursuing spring Chinook in Drano Lake

Dam on the Washington side of Columbia River and transported to the holding ponds at Carson NFH. Genetic data indicate that the Carson stock was derived from a mixture of upper Columbia and Snake River populations passing Bonneville Dam. The adult fish were held and spawned, with their progeny reared and released at Carson. Although small numbers of spring Chinook were counted past the newly constructed Shipherd Falls fishway on Wind River during 1956 - 1958, the first returns to Carson NFH did not occur until 1959 when 107 fish entered the hatchery. This run of spring Chinook has been maintained since then and continues to flourish.

Production of spring Chinook at Little White Salmon NFH began in 1967 when fish of unknown origin returned to the hatchery. They were considered strays or descendants of previous releases (McKenzie River - 1916, Salmon River - 1925, and Carson stock reared at Willard - 1964). Others releases were made into the Little White Salmon River from a variety of sources, however, the current stock is considered a derivative of Carson stock spring Chinook. The Carson stock originated from collections of spring Chinook salmon at Bonneville Dam in the 1950s, which presumably contained a mixture of fish migrating to various tributaries above the point of collection (primarily Snake River, Upper Columbia River tributaries, John Day River, Deschutes River, and Yakima River).

While propagation of this species is intended to mitigate for lost fisheries and habitat, it has in more recent times become an essential component of negotiations to reaffirm Native American Treaty-granted fishing rights in the Columbia River Basin. As a result, spring Chinook salmon are released into the Little White Salmon and the Wind Rivers to help fuel and intensive sport and tribal fishery. The reliable return of adult spring Chinook to the Columbia River and the Gorge tributaries is recognized as a major contributor to these popular fisheries. In addition, spring Chinook reared at Carson NFH are transferred as pre-smolts for acclimation in the South Fork Walla Walla River for the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and to the Hood River for the Confederated Tribes of the Warm Springs Reservation (CTWSR). Both tribes release these fish following acclimation to continue tribal reintroduction efforts.

Upriver Bright and Tule Fall Chinook Salmon

Fall Chinook salmon are produced using mitigation funds from both the U.S. Army Corps of Engineers (John Day Dam Mitigation) and NOAA–Fisheries (Mitchell Act). The tule fall Chinook is the stock native to the White Salmon and Little White Salmon River. Production of this species began in 1896 at Little White Salmon NFH and in 1901 at Spring Creek NFH and was an essential production component of the original and amended Mitchell Act programs. Production of tule fall Chinook continued until 1985 as the hatchery began to transition to the production of upriver bright fall (URB) Chinook.



Kim Hubbard, Fisheries – Portland, OR, helps spawn tule fall Chinook at Spring Creek NFH

The 1980's were a time of dramatic change with regard to Columbia Basin fisheries management. The USACOE ramped up hatchery construction and production to begin the process of mitigating for lost fisheries and habitat resulting from the construction of John Day Dam (completed in 1971). Part of that construction included the modernization of Spring Creek NFH in 1972 when the hatchery was rebuilt by the USACOE. Unique to Spring Creek was the recycled spring water supply used to produce approximately 15 million tule fall Chinook. Recognizing that the hatchery was located near the upstream limit of the historic tule fall Chinook range, the Treaty tribes requested that the USACOE diversify the hatchery program to also include the production of upriver bright fall Chinook, an upriver stock that seemed most appropriate for consideration as the species necessary to help achieve in-kind/in-place mitigation. While both stocks are of the same species, the run timing of tule and upriver bright adult fish can vary by as much as 2 months, with the tules returning and spawning earlier than the upriver bright fish. This results in fry and juvenile fish of disproportionate size. Reared on a recycled water supply, the smaller-sized juvenile fish (upriver brights) did not fare as well as their older and larger counterparts (tules) due to the metabolic load created by the recycled water system. The end result

was a serious outbreak of bacterial gill disease that decimated the upriver bright population at Spring Creek NFH. Recognizing that only one stock could be reared on the Spring Creek NFH recycled water supply, a decision was made to transfer the responsibility of producing upriver bright fall Chinook to Little White Salmon NFH. In return, the responsibility of producing native tule fall Chinook at Little White Salmon was transferred to Spring Creek NFH creating a one-species production program using the hatchery recycled water supply. The transition was completed in 1988 when the upriver bright program was moved to Little White Salmon NFH. While the production programs were swapped, the funding tied to those programs remained at their respective stations. As a result, both hatcheries currently use a mix of funds received from the USACOE (John Day Dam mitigation) and NOAA-Fisheries (Mitchell Act) to accomplish program mitigation objectives.



Yakama Nation staff help spawn upriver bright fall Chinook at Little White Salmon NFH

Both stocks are major contributors to ocean harvest, ranging as far north as coastal British Columbia and Alaska. Tule fall Chinook are extremely important to the fishing economies of coastal Washington (e.g. Ports of Chinook, Ilwaco, Westport) and provide a tremendous sport fishery at Buoy 10 located at the mouth of the Columbia River. The Spring Creek tules are also an index stock as part of the U.S./Canada Treaty. Likewise, Little White Salmon NFH upriver brights migrate further north to provide contribution to coastal British Columbia and Alaska fisheries. Two floy tags were recovered from returning upriver bright fall Chinook collected at Little White Salmon NFH in 1995. Data

obtained from the returned tags revealed that these fish, originating from Little White Salmon NFH, were caught in experimental gear and tagged near Coho Point, Langara Island, Queen Charlotte Islands B.C. on August 27 & 28, 1995. Both tags were recovered at Little White Salmon NFH on November 8 & 13, 1995.

The Little White Salmon NFH upriver bright fall Chinook are Pool Upriver Brights, a subcomponent of the Mid-Columbia Bright stock of fall Chinook that represent fish reared and released between Bonneville and McNary Dams. Beginning in 1977, upriver bright fall Chinook were trapped from Bonneville Dam fish ladder and spawned at Bonneville Hatchery. These trapped fish were used to establish a brood stock and evaluate their use in mitigating loss of spawners in the John Day Pool. As a result, the current stock at Little White Salmon NFH is a mix of fish originating from above Bonneville Dam.

Reprogrammed Upriver Bright and Tule Fall Chinook

The fall Chinook mitigation program at Spring Creek and Little White Salmon NFHs changed dramatically in 2009 as a result of the Spring Creek Reprogramming MOA, a collaborative partnership between the BPA, USACOE, NOAA-Fisheries, ODFW, and the Service. It is now obvious that production at both Little White Salmon and Spring Creek NFHs is inextricably linked to fisheries and habitat mitigation in the

lower Columbia River. In this case fish production programs were redefined for three hatcheries to eliminate the continued need to request spill at Bonneville Dam to enhance the survival of outmigrating Spring Creek tules. Spill is generally believed to be the most benign route of passage at dams for outmigrating juvenile salmon. Elevated rearing densities involved with rearing 15 million tule fall Chinook on the recycled water system at Spring Creek NFH necessitates three release periods with the first occurring in early March. This release historically occurred before the April Biological Opinion-mandated spill operations at Bonneville Dam to promote the survival and outmigration of ESA-listed fish. As a result, the Service had to request special spill conditions every year to help move the Spring Creek March release fish downriver. This led to contentious negotiations since the Action Agencies, namely the USACOE, BPA and Bureau of Reclamation) felt that spill outside the normal spring spill program for ESA-listed fish has the potential to prove harmful by:

- Creating elevated total dissolved gas levels that can harm ESA-listed chum salmon that spawn and rear naturally as well as other aquatic organisms in shallow water habitat below Bonneville Dam
- Increasing river flow volumes that could be reserved for later ESA species flow management needs,
- Decreasing the survival of hatchery released Spring Creek fish, and
- Reducing power generation revenue.



Reprogrammed tule fall Chinook at Spring Creek NFH are loaded onto a distribution truck for transfer, acclimation, and release at Little White Salmon NFH

The Spring Creek Reprogramming MOA is the resulting management proposal crafted by all of the involved agencies, a document that balances the need for power and fish. In essence, the fish production programs at three hatcheries were redefined, moving the March release group of tule fall Chinook from Spring Creek to Bonneville Hatchery. These fish are released below Bonneville Dam and do not require spill as a means to enhance survival. To offset the rearing of additional fish at Bonneville Hatchery, a similar number of URB fall Chinook, displaced by the Spring Creek fish, were moved to Little White Salmon NFH (an increase of 2.5 million upriver bright fall Chinook at Little White Salmon NFH). An additional group of tule

fall Chinook are transferred from Spring Creek to Little White Salmon as well to maintain overall tule production numbers within the Basin (an additional program and increase of 1.8 million tule fall Chinook at Little White Salmon NFH). While there is a substantial increase in the Little White Salmon NFH fall Chinook production program, the most significant change will be the increase in returning adult fall Chinook that will include two different stocks with overlapping run timing. This will seriously complicate fall hatchery operations at Little White Salmon NFH with the first return of these fish in 2013.

Regardless, benefits of the MOA and resulting production changes at Spring Creek and Little White Salmon NFH include:

- Provides greater tribal access to upriver bright fall Chinook and more fully achieves John Day Dam mitigation “in-place/in-kind” responsibilities with additional upriver bright production released above Bonneville Dam.
- March spill/special flow operations are ended saving power generation revenues.
- Production levels for all fall Chinook stocks (tules and upriver brights) are maintained within the Basin.
- Uses existing/proven facilities for best suited stocks and minimizes additional costs of the program (e.g. maintains tules at Spring Creek NFH and upriver brights are expanded at Little White Salmon NFH; tules have performed well at the Bonneville Hatchery in the past).
- Maintains a reduced upriver bright fall Chinook program at Bonneville SH as a contingency backup brood stock collection location in years of low return.
- Provides the potential to reduce hatchery impacts on ESA listed stocks of concern (e.g., reducing impacts from out-of-ESU upriver bright fall Chinook strays) via brood stock collection and tributary fishery management strategies (targeted terminal fisheries) in Drano Lake and at Little White Salmon NFH.
- Creates a funding and management partnership between the Action Agencies and fishery co-managers to achieve mutual objectives.

This mitigation program is an excellent example of how a hatchery complex can rear multiple species of Pacific salmon, for multiple purposes, to help resolve a contentious fishery issue and continue to provide harvest opportunities resulting from the operation of the Columbia River hydropower system.

Coho Salmon

Coho salmon production currently occurs at Willard NFH. The original Coho salmon production program, peaking at 2.5 million smolts annually, was the direct result of mitigation funding obtained through the Mitchell Act Columbia River Fishery Development Program. Adult Coho were collected at Little White Salmon NFH, spawned, and eyed eggs shipped to Willard NFH to initiate production. Prior to 1994 freshly fertilized Coho eggs collected at Little White Salmon NFH were shipped to Carson Depot Springs to circumvent the cold water temperatures characteristic of Willard NFH. Carson Depot Springs is a separate substation of the Little White Salmon/Willard NFH Complex. Located approximately 9 miles west of Little White Salmon NFH, this facility has a water supply and space for egg incubation. The U.S. Fish and Wildlife Service has an indefinite lease with Burlington Northern Railroad for use of this 55' X 100' land parcel. This area includes a spring water supply and a small building equipped with 50 -16 tray incubators for egg incubation. Carson Depot Springs historically had been used for incubation of Coho salmon eggs prior to shipment to Willard NFH and for various research activities requiring egg isolation (quarantine to prevent the spread of fish disease for eggs from outside the Little White Salmon River watershed). Rehab of the Little White Salmon NFH well during 1995 produced an adequate supply of groundwater for the early incubation of Willard NFH Coho salmon eggs. The additional warmer groundwater available at the Little White Salmon facility precluded the need to use Carson Depot Springs in support of Willard operations.

The Willard NFH Coho production program designated for release into the Little White Salmon River was reduced to 2.0 million smolts and then later to 1.0 million smolts because of high rearing density concerns and in recognition of Mitchell Act funding cuts. Mitchell Act funding continued to degrade,

and the Coho mitigation production program at Willard NFH was terminated in 2004. As a result, there are no Coho salmon releases into the Little White Salmon River; however, Coho are still produced at Willard NFH for off-station transfer and release in support of other mitigation programs.

The current Coho salmon propagation effort at Willard NFH supports the Yakama Nation Mid-Columbia Coho Reintroduction Project. Following the termination of the Willard NFH on-station release, the Service and Yakama Nation negotiated a cost share agreement using BPA and Mitchell Act funds to cover operational costs at Willard NFH. Currently adult Coho are collected in the upper Columbia and spawned at either Winthrop or Leavenworth NFH and the resulting eyed eggs are shipped to Willard NFH for hatching and rearing. Pre-smolts are transferred back to upper Columbia River sites for acclimation and release. While this effort is meant to restore an extirpated species of fish to the upper Columbia River and tributaries, adult fish have to circumvent 7 main stem Columbia River dams to reach the Wenatchee River Basin (Leavenworth NFH) and 9 main stem dams to reach the Methow River Basin (Winthrop NFH). These fish passage obstacles combined with program funding received (in part) by the BPA reinforce the continued mitigation effort at Willard NFH.

Complex Fish Production Program



Sorting spring Chinook at Carson NFH

The salmon runs in the Columbia River Gorge tributaries, part of the middle Columbia River basin, were of prime importance historically to the Native Americans (Yakama Nation ceded territory) and to the sport and commercial fisherman who now utilize this resource. Habitat destruction, dam construction, and over harvest led to a decline in these important stocks that threatened to destroy them. The Spring Creek tule fall Chinook represent the furthest upriver population of this unique strain of Chinook whose genetic traits have been preserved in captivity to coincide with the remnant ESA-

listed population in the White Salmon River. These fish are a unique genetic reserve that will be used to recolonize the White Salmon River following the removal of Condit Dam. Constructed in 1913, Condit Dam has blocked 33 miles of fish habitat serving as a fish passage barrier to all upstream migrants. In preparation for full removal, this fish passage barrier was breached in 2011. The Little White Salmon and Carson NFH spring Chinook populations fuel an intensive sport and tribal fishery in both the Wind River and Drano Lake, an impoundment at the mouth of the Little White Salmon River. As a result, the Complex spring Chinook fisheries provide sport fisher harvest opportunity, reaffirm Native American Treaty granted fishing rights, and are important to the local economies of the Columbia River Gorge.

The current Complex production program is guided by specific fish production goals identified in the recently negotiated 2008-2017 United States v. Oregon Management Agreement. The purpose of the Management Agreement is to provide a framework within which the Parties (the State of Washington,

the State of Oregon, the State of Idaho, the United States, the Shoshone Bannock Tribes, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, and the Confederated Tribes and Bands of the Yakama Nation) may exercise sovereign powers in a coordinated and systematic manner in order to protect, rebuild, and enhance upper Columbia River fish runs while providing harvests for both treaty Indian and non-treaty fisheries. The primary goals of the Parties are to rebuild weak runs to full productivity and fairly share the harvest of upper river runs between treaty and non-treaty fisheries in the ocean and Columbia River Basin. As a means to accomplish this purpose, the Parties intend to use habitat protection authorities, enhancement efforts, and artificial production techniques as well as harvest management to ensure that Columbia River fish runs continue to provide a broad range of benefits in perpetuity. Fish production goals specific to the Complex and agreed to by the Parties include:

Spring Creek NFH

- 10.5 million sub-yearling tule fall Chinook salmon released on site.
- 2.8 million sub-yearling tule fall Chinook released at the ODFW Bonneville Hatchery following receipt of eggs from Spring Creek NFH.
- 1.7 million sub-yearling tule fall Chinook for transfer, acclimation, and release at Little White Salmon NFH.

Little White Salmon NFH

- 750,000 yearling spring Chinook salmon released on site.
- 150,000 endangered White River spring Chinook pre-smolts for transfer, acclimation, and release into Lake Wenatchee/White River.
- 4.5 million sub-yearling URB fall Chinook released on site.
- 1.7 million sub-yearling URB fall Chinook for transfer to the Yakama Nation Prosser Hatchery.
- 4.5 million URB fall Chinook eggs for transfer to the Yakama Nation Klickitat Hatchery.
- 1.7 million sub-yearling tule fall Chinook salmon released on site.
- 3 year classes of endangered White River spring Chinook captive brood stock for spawning, second generation juvenile production, and to prevent the extinction of this population of fish.

Willard NFH

- 650,000 Coho salmon pre-smolts for transfer, acclimation and release into the Wenatchee and Methow River watersheds.
- 250,000 yearling spring Chinook released on site.

Carson NFH

- 1.17 million yearling spring Chinook released on site.
- 250,000 spring Chinook pre-smolts for transfer, acclimation, and release into the SF Walla Walla River.
- 45,000 spring Chinook pre-smolts for transfer, acclimation, and release into the Hood River.

Producing Fish for ESA Recovery

The White River (Washington) spring Chinook spawning aggregation is severely depressed and persistently experiences escapement levels below critical population thresholds. This population is within the Upper Columbia River Spring-run Chinook Salmon ESU which is listed as Endangered (FR Vol.

64, No. 56, March 24, 1999). The goal of this program is to prevent the extinction of, conserve, and ultimately restore the naturally spawning White River spring Chinook salmon spawning aggregation (Wenatchee River watershed). This recovery program has been incorporated into the mitigation responsibilities of Public Utility District No. 2 of Grant County (Grant County PUD) through their Biological Opinion (dated May 3, 2004). Grant County PUD, through the Priest Rapids Coordinating Committee – Hatchery Subcommittee (PRCC_HSC), requested Service assistance to rear fish for this recovery



Using ultrasound technology at Little White Salmon NFH to determine stage of maturation in White River F1 captive broodstock

program. Due to recent program changes at Willard NFH, the Little White Salmon NFH had adequate space to assume responsibility for rearing up to 150,000 White River spring Chinook pre-smolts and multiple brood years of captive brood stock to assist with recovery efforts.

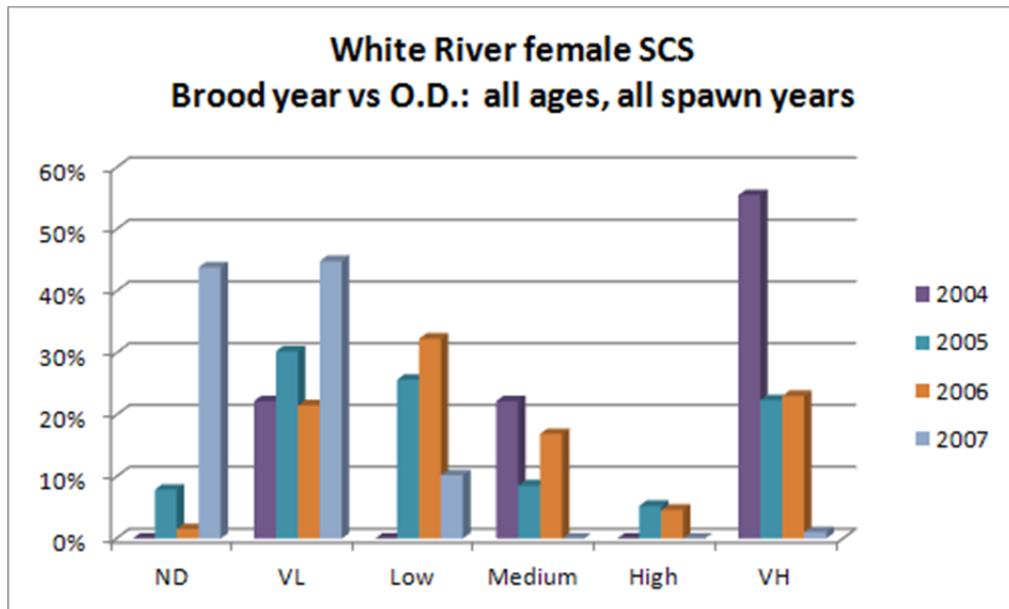
The White River spring Chinook production program was initiated at Little White Salmon NFH following the transfer of juvenile fish from AquaSeed, Inc., Rochester, WA during May 2006. These fish were subsequently reared at Little White Salmon NFH and produced the first viable release of second generation juveniles derived from captive brood stock since the program began in 1998. Current production is initiated following the spawning of F1 generation captive brood stock. The transfer of the entire captive brood program from AquaSeed to Little White Salmon NFH was completed in 2009. Two additional captive brood years were established (Brood year 2008 and 2009) following receipt of eyed eggs following the collection of eggs from wild spring Chinook redds in the White River. The last spawn of ESA-listed captive broodstock at Little White Salmon NFH is expected to occur in 2014.

Grant County PUD is fully reimbursing the Service for fish production, health services, and marking to support this recovery program. As a result, in addition to the Little White Salmon NFH, the Columbia River Fishery Resource Office and Lower Columbia River Fish Health Center provide support for the White River spring Chinook program. Service involvement in the multi-partner White River spring Chinook program is aligned with ESA recovery objectives that are an essential component of the Service mission. This has diversified a traditional mitigation facility to include the production of an ESA-listed stock to achieve recovery.

This year's highly successful spawning season is directly attributable to the use of salmon gonadotropin releasing hormone analog (s-GnRHA) to alleviate the partial maturation and loss of eggs experienced during the previous spawning season. Thanks to Fish Biologist Casey Risley's literature search and recommendation to the PRCC-HSC, her administration of Oviplant to maturing broodstock resulted in almost 100% full maturation at the time of spawning. In addition, overall frequency of high titer

bacterial kidney disease (BKD) females was greatly reduced from historic levels, a direct result of segregated rearing and disease control during the hatchery production cycle at Little White Salmon NFH.

The table below shows the reduction in frequency of the higher titer enzyme linked immunosorbent assay (ELISA), i.e. the ELISA optical densities (ND=not detected; VL=very low; Low, Medium, High, VH=very high refer to incidence of BKD) have declined with each brood year. This trend correlates to rearing time at Little White, i.e. the 2007 F1 generation captive brood have been at Little White Salmon NFH the longest.



Providing Tribal Harvest Opportunities



Drano Lake tribal gillnet fishery downstream of Little White Salmon NFH

A projected strong return of tule fall Chinook to Spring Creek NFH during September 2011 resulted in the fishing of more than 600 tribal gillnets in the Bonneville Pool on a single day during the fall tribal fishing season. While Little White Salmon NFH expected a good return of late migrating URB fall Chinook to the hatchery, the Yakama Nation cancelled their Drano Lake fall lottery gillnet fishing due to concerns over potential B-run steelhead harvest impacts. Regardless, the Tribe had a successful spring Chinook gillnet fishery.

The annual spring tribal fishery in Drano Lake resulted in the harvest of

5,436 fish. The Service has encouraged the Yakama Nation to hold these Drano Lake lottery gillnet fisheries during the spring and fall to help reduce the number of fish that are excess to hatchery escapement goals. In addition, terminal area fisheries similar to the Drano Lake spring and fall tribal fisheries emphasize the harvest of hatchery fish while avoiding the potential impacts on wild and ESA-listed stocks that occurs in main stem Columbia River mixed stock fisheries. The Yakama Nation lottery fishery occurs one day per week (Tuesday night thru Wednesday noon) coincident with a one day sport fishing closure. A total of 20 randomly drawn tribal fishermen are limited to 150-feet of gillnet during each fishing period. The following summarizes the spring Chinook tribal gillnet fishery in Drano Lake during 2011:

<u>Fishing Date</u>	<u>Spring Chinook</u>
11-May	1,292
18-May	2034
25-May	1,558
<u>1-Jun</u>	<u>552</u>
Total Harvest	5,436

For comparison, Yakama Nation preseason projected catch for the Drano Lake fishery totaled 6,200 fish. A total of 380 spring Chinook were projected to be caught in the Wind River tribal dip net fishery downstream of Carson NFH. The Wind River subsistence tribal fishery (using dipnets, setbag nets or hook and line) was scheduled for March 7 – June 25 below Shipperd Falls and during May 2 – June 25 above Shipperd Falls. Actual harvest included 242 hatchery and 30 wild adult Chinook.

In addition, 25,647 fall Chinook, Coho, and spring Chinook salmon carcasses were donated to the Yakama Nation, Confederated Tribes of the Warm Springs Reservation, and Coastal Harvest Food Bank. This included 1,968 spring Chinook, fall Chinook, and Coho salmon excess to hatchery needs to support the Yakama Nation and Warm Springs tribal nutrition programs.



Tribal fishing platforms constructed on Drano Lake during May 2011

On May 31, 2011 the Yakama Nation Fish, Wildlife and Law and Order Committee authorized the construction of tribal fishing platforms along the shoreline of Drano Lake. The tribal opening of the platform/hook & line fishery, in addition to the existing spring and fall lottery gillnet fishery, is intended to maximize harvest opportunity for spring Chinook especially when there are surplus fish returning to Little White Salmon NFH and available for harvest in Drano Lake. Several platforms had been constructed on Service-owned

land downstream of the existing sport fishing boundary within a few days of the tribal council action. Needless to say, phone calls to Little White Salmon NFH increased dramatically as concerned sport

fishers called to voice their objection to the new Drano Lake tribal platform fishery. U.S. Congressman Doc Hasting's office staff also asked for an update on the issue given the increase in constituent calls from both within and outside of the congressman's district.



Tribal fishing platforms constructed on the "Social Security Beach" public fishing area on Drano Lake, the site for construction of an ADA compliant wheelchair access ramp

An additional complication of the newly created platform fishery involved the construction of two platforms on the public fishing area commonly known as "Social Security Beach", an area intensely used by sport bank fisherman. During October 2010 the Service initiated engineering design work to construct an Americans with Disabilities (ADA) compliant wheelchair access ramp at the social security beach fishing area. Unfortunately the two tribal platforms presented a formidable obstacle to disabled individuals wishing to fish from the Drano Lake shoreline.

Service staff held discussion with

representatives from both WDFW and the Yakama Nation to help achieve shared use of this popular bank fishing area. As a result, the Yakama Nation Fish, Wildlife and Law and Order Committee took official action on August 25, 2011 to prohibit tribal fishing scaffolds within 50-feet of "Social Security Beach" on Drano Lake. A description of the formal action taken by the tribal council follows:

"Social Security Beach" at Drano Lake is so-called because its low bank provides the only access to elders and handicapped wishing to participate in the bank fishery. The construction of two scaffolds at that site has greatly reduced the limited space available to elders and disabled bank fishers at Drano Lake and may interfere with the planned construction of a fishing dock for disabled and wheelchair-bound fishers. In respect for the ability of elders and disabled to have an opportunity to fish, the Yakama Nation hereby prohibits the presence of fishing scaffolds within 50 feet of "Social Security Beach" on Drano Lake.

The open dialogue between representatives of the Service, WDFW, and Yakama Nation leading to the Yakama Nation resolution is most notable. This is an excellent example of the strong agency partnership that exists in the Columbia River Gorge. This partnership effort not only shows a willingness to constructively work together for shared use of scarce bank fishing areas upstream of Bonneville Dam, it also assures equally bank fishing opportunities for all Americans regardless of their physical limitations.

Fish Released & Transferred During the Year – Assuring the Return of Future Generations

	Species	Number	Weight	Release Site or Receiving Facility	Agency	State	Program Goal
<i>Spring Creek – Fish Distribution</i>	Fall Chinook (tule)	10,861,292	108,594	Columbia River	USFWS	WA	Mitigation
	Fall Chinook (tule)	1,811,252	9,438	Little White Salmon NFH	USFWS	WA	Mitigation
Spring Creek Total		12,672,544	118,032				
<i>Little White Salmon – Fish Distribution</i>	Spring Chinook	600,733	39,343	Little White Salmon River (Drano Lake)	USFWS	WA	Mitigation
	Spring Chinook	257,315	214	Willard NFH (for Drano Lake release)	USFWS	WA	Mitigation
	Spring Chinook	113,737	6,409	Lake Wenatchee	GPUD	WA	Recovery
	Fall Chinook (URB)	1,700,662	4,026	Yakima River, Prosser Hatchery	YN	WA	Mitigation
	Fall Chinook (URB)	4,475,868	55,746	Little White Salmon River (Drano Lake)	USFWS	WA	Mitigation
	Fall Chinook (tule)	1,807,188	16,436	Little White Salmon River (Drano Lake)	USFWS	WA	Mitigation
Little White Salmon Total		8,956,045	122,174				
<i>Willard – Fish Distribution</i>	Coho	490,868	24,543	Wenatchee River Basin	YN	WA	Mitigation
	Spring Chinook	399,953	25,888	Little White Salmon River (Drano Lake)	USFWS	WA	Mitigation
Willard Total		890,821	50,431				
<i>Carson – Fish Distribution</i>	Spring Chinook	1,058,771	61,088	Wind River	USFWS	WA	Mitigation
	Spring Chinook	232,654	13,219	S.F. Walla Walla River	CTUIR	OR	Mitigation
	Spring Chinook	44,517	1,564	Hood River	CTWSR	OR	Mitigation
Carson Total		1,335,942	75,871				
Complex Total – Fish		23,855,352	366,508				
<i>Spring Creek – Egg Distribution</i>	Fall Chinook	3,000,000		Bonneville Hatchery	ODFW	OR	Mitigation
<i>Little White Salmon – Egg Distribution</i>	Fall Chinook	4,888,373		Klickitat Tribal Hatchery	YN	WA	Tribal Trust
Complex Total – Eggs		7,888,373					

Administration: The Business Side of Rearing Fish

The Complex had 25 employees at the end of the fiscal year. The following table summarizes Complex staffing by organization during the last year:

Columbia Gorge Complex (organization 13200)

<u>Name of Employee</u>	<u>Functional Title</u>	<u>Grade</u>	<u>Period Worked</u>
Speros Doulos	Complex Manager	GS-482-13	10/1/10 – 9/30/11
Cheri Anderson	I & E Specialist	GS-1001-11	10/1/10 – 9/30/11
Jennifer Rowlen	Park Ranger	GS-025-06	10/1/10 – 9/30/11
Lori Orr	Administrative Officer	GS-341-09	10/1/10 – 9/30/11
Debra Hogberg	Fisheries Program Asst.	GS-303-07	10/1/10 – 9/30/11
Erik Anderson	Fisheries Program Asst.	GS-303-06	10/1/10 – 9/30/11

Spring Creek NFH (organization 13255)

Mark Ahrens	Hatchery Manager	GS-482-12	10/1/10 – 9/30/11
Casey Risley	Fish Biologist	GS-482-09	10/1/10 – 9/30/11
John Meduna	Maintenance Mechanic	WG-4749-10	10/1/10 – 9/30/11
Ron Armstrong	Maintenance Worker	WG-4749-08	10/1/10 – 8/27/11
Scott Zirjacks	Fish Culturist Leader	WL-5048-05	10/1/10 – 9/30/11
Mark Doulos	Fish Culturist	WG-5048-05	10/1/10 – 9/30/11
Chris Hankin	Fish Culturist	WG-5048-05	10/1/10 – 9/30/11
Brittany Ingram	Fish Culturist (Temp)	WG-5048-02	1/1/11 – 5/7/11

Little White Salmon NFH (organization 13230)

Jim Rockowski	Hatchery Manager	GS-482-12	10/1/10 – 9/30/11
Peter Long	Fish Biologist	GS-482-09	10/1/10 – 9/30/11
Larry Leighton	Maintenance Worker	WG-4749-08	10/1/10 – 9/30/11
David Frost	Fish Culturist	WG-5048-05	10/1/10 – 9/30/11
Tyson Lankford	Fish Culturist	WG-5048-05	10/1/10 – 9/30/11

Willard NFH (organization 13232)

Steve Wingert	Hatchery Manager	GS-482-12	10/1/10 – 9/30/11
Bryan Charlton	Fish Culturist	WG-5048-05	10/1/10 – 9/30/11
Pat Cushman	Fish Culturist	WG-5048-05	10/1/10 – 9/30/11

Carson NFH (organization 13215)

Larry Zeigenfuss	Hatchery Manager	GS-482-12	8/28/11 – 9/30/11
Thomas Hogan	Asst. Hatchery Manager	GS-482-11	10/1/10 – 6/4/11
David Burbank	Fish Biologist	GS-482-07	8/14/11 – 9/30/11
Jeff Blaisdell	Maintenance Mechanic	WG-4749-09	10/1/10 – 9/30/11
Randy Berge	Motor Vehicle Operator	WG-5703-06	10/1/10 – 9/30/11
Nathan Sweeney	Fish Culturist	WG-5048-05	10/1/10 – 9/30/11

Notable personnel actions this year included the retirement of Ron Armstrong, Maintenance Worker at Spring Creek NFH, at the end of August 2011. Carson NFH Assistant Hatchery Manager transferred with promotion to assume the duties of Hatchery Manager at Lahontan NFH, NV during the beginning of June 2011. The new Complex organization was formally recognized during the year when the Service's Corporate Master Table included the new organization code 13200. Several reassignment actions were completed following the designation of the Complex headquarters at Spring Creek NFH in Underwood, WA (Doulos and Orr reassigned from the Little White Salmon/Willard NFH Complex to the Gorge Complex; Hogberg, C. Anderson, and Rowlen reassigned from Spring Creek NFH to the Gorge Complex; and E. Anderson reassigned from Carson NFH to the Gorge Complex).

The Fiscal Year 2011 budget for the Complex totaled \$ 3,424,079 from all fund sources. Reimbursable funds from other agencies accounted for the entire operational budget with most of these funds (53%) coming from the NOAA - Fisheries Mitchell Act appropriation. These funds reimburse the operating agencies (in this case the U.S. Fish & Wildlife Service) for fish production to mitigate for fish losses associated with the operation of hydroelectric dams on the Columbia River. Remaining reimbursable funds are for fish reared for specific programs such as the Bonneville Power Administration reimbursed Mid-Columbia Coho Reintroduction and Hood River Projects; U.S. Army Corps of Engineers John Day mitigation program; and the Grant County PUD-funded White River Recovery program. Additional funds were received from the Service's deferred maintenance account to help correct maintenance deficiencies at each of the Complex facilities.

The following table summarizes Complex funds and expenditures during Fiscal Year 2011. Note that Little White Salmon and Willard NFH continue to be managed and funded as a single entity.

Fund Source	Spring Creek	Little White Salmon/Willard	Carson	Total
NOAA - Mitchell Act	\$459,785	\$669,810	\$547,786	\$1,677,381
COE – John Day Mitigation	741,841	157,966		899,807
Grant PUD		385,576		385,576
Bonneville Power Administration		189,614	10,428	200,042
USFWS Deferred Maintenance	54,463	117,686	89,124	261,273
Total	\$1,256,089	\$1,520,652	\$647,338	\$3,424,079

Fish hatchery expenditures focus on three critical areas and include staff salaries, fish food, and maintenance of facilities required to maintain an adequate and healthy rearing environment. Salaries and fish food alone comprised 75.6% of the Complex budget during Fiscal Year 2011.

Construction and Maintenance: Providing a First Class Environment for Fish

Numerous deferred maintenance projects were completed during the year using several sources of maintenance funding including projects funded by the Service's Regional deferred maintenance account. Accompanied by Service engineering support, Regional deferred maintenance projects are priority ranked in a five year plan to assure that mission critical assets are maintained in optimum working order. The replacement of the Spring Creek NFH alarm system and incubation building lighting are excellent examples projects that are necessary to support mission critical fish production operations.



Construction of the Spring Creek NFH Interpretive Trail along the banks of the Columbia River

The following table summarizes major maintenance projects at the Complex completed during Fiscal Year 2011 from a variety of fund sources:

Facility	Project	Cost
Spring Creek	Interpretive trail construction	\$72,328
	Interpretive trail mitigation plan	4,806
	Replace lagoon (effluent) pumps	96,424
	Install new alarm system	150,472
	Replace incubation building lighting and asbestos abatement	84,211
	Subtotal	\$408,241
Little White Salmon	Construct ADA compliant wheelchair access ramp on Drano Lake fishing beach	\$76,760
	Restoration of native forest and grassland habitat – Phase II	50,000
	Install new overhead phone line, poles, and high speed internet to upper hatchery	26,983
	Purchase new incubators	24,889
	Subtotal	\$178,632
Willard	Install variable speed drive on well pump	\$7,691
	Subtotal	\$7,691
Carson	Install new heat pumps on administrative and hatchery buildings – abandon oil furnaces/tanks	\$54,571
	Purchase new vehicles (Ford Escape & Ranger)	45,358
	Install new phone system	12,877
	Purchase new EZ-GO utility vehicle	12,092
	Hatchery building radon mitigation – Phase II	3,893
	Displays and interpretive design for new visitor center	15,500
	Subtotal	\$144,291
	Total	\$738,855

In addition, the following government residence maintenance projects were completed during the year:

Carson – Paint Quarters (Q) #1, 3, & 4		\$12,882
Spring Creek, Willard, Carson – Quarters improvements as follows:		80,972
Spring Creek	Q1 – New doors, countertop, correct driveway drainage issue Q2 – new doors and bathroom remodel Q3 – new windows and bathroom remodel Q5 – new doors Project also included a new window in the Administration building bio. Office	
Willard	Q3 – Kitchen remodel	
Carson	Q1 – Kitchen remodel	
Little White Salmon	Q5 & 7 asbestos abatement Q3 basement bedroom window escape; new doors Q3, 4, & 6	24,158
Total		\$118,012

Columbia Gorge Information and Education Office



The Columbia Gorge Information and Education Office (I&E) generates increased public awareness through expanded community outreach efforts and on-site visits. The I&E Manager continues to participate in off-site natural resource education events which generates support for Service programs. Our Service programs strive to meet the needs of our local and visiting public. The office provides outreach services for the Columbia River Gorge National Fish Hatchery (NFH) Complex which includes: Carson, Little White, Spring Creek and Willard National Fish Hatcheries and the Lower Columbia River Fish Health

Center. The I&E staff coordinates with the Columbia River Fisheries Program Office on special projects and events.

The I&E Office is staffed by one full-time Information and Education Manager, Cheri Anderson; and a part-time Park Ranger (Visitor Services), Jennifer Rowlen.

Management of the I&E program encompasses several offices including hatcheries, refuges, ecological services, fishery resource office and a fish health center. Complexity is compounded by the full reimbursement of hatchery operations by other agencies (non-Service funding), the location of the Gorge Complex within the boundaries of two states (Oregon and Washington); six counties and within the Columbia Gorge National Scenic Area. A variety of communication strategies are essential to seek innovative ways to educate people, work with a variety of special interest groups, political and media representatives and organizations to gain understanding and support for Service programs.

Area media continue their support of hatchery programs and events through public service announcements, news stories and photos.

The Columbia Gorge National Fish Hatcheries and Pacific Region Hatchery Review Team websites meet the required Pacific Region Website Content Accuracy and Accountability standards. Website hits are outlined below.

FY011 Website Statistics

Month	Total Visitors (www.fws.gov/gorgefish)	Carson NFH Visitors	% of Total	Little White Salmon NFH Visitors	% of Total	Spring Creek NFH Visitors	% of Total	Willard NFH Visitors	% of Total
October	854	121	14%	152	18%	123	14%	52	6%
November	940	133	14%	153	16%	90	10%	62	7%
December	459	88	19%	100	22%	81	17%	32	7%
January	509	88	17%	116	23%	73	14%	32	6%
February	577	104	18%	109	19%	103	18%	40	7%
March	n/a	n/a		n/a		n/a		n/a	
April	n/a	n/a		n/a		n/a		n/a	
May	n/a	n/a		n/a		n/a		n/a	
June	n/a	n/a		n/a		n/a		n/a	
July	n/a	n/a		n/a		n/a		n/a	
August	n/a	n/a		n/a		n/a		n/a	
September	n/a	n/a		n/a		n/a		n/a	
Total	3,339	534	16%	630	19%	470	14%	218	7%

Website usage reports stopped being produced in March 2011 due to a software change in the Denver Office. It is unclear when statistics will resume on website usage. For the statistics available, most activity on our website is accessed through the main Lower Columbia River National Fish Hatcheries page. Little White Salmon NFH and Spring Creek NFH are the next popular pages closely followed by Carson NFH. The Amphibian and Reptile Report for the Little White Salmon NFH is the most downloaded file in the months where stats were generated; followed by various station annual reports and hatchery updates. The majority of our website visitors are from the United States followed by Canada, France and Germany. The majority of site visit referrals are through Google; followed by the

Columbia River Gorge Visitor Association; reinforcing our membership and involvement with this valuable association.

The I&E Manager continued outreach efforts of maintaining and updating the Pacific Region Hatchery Review website.

We continue to be a subchapter with the 503(c) non-profit *Friends of Northwest Hatcheries*, based at the Leavenworth NFH. *Friends* financially supported Carson and Spring Creek NFH Open Houses with their annual \$200 contribution per station to purchase supplies and refreshments. *Friends* also financially supported Water Jam, a multi-partner gorge event, with \$300 going toward overall expenses. The I&E Manager participates in quarterly board meetings via conference call and attends the annual meeting in Leavenworth, WA each fall.

Friends of Northwest Hatcheries



Partnerships

Intra-agency partnerships include:

- Ecological Services field offices
- Fish Health Center
- Fishery Program Office
- National Fish Hatchery Program
- Regional Office
- Refuge field offices
- U.S. Geological Survey – Columbia River Research Lab

Inter-agency and NGO Partnerships:

- Bureau of Indian Affairs
- Benton County Conservation District
- Bonneville Power Administration
- Boy Scouts of America
- Chambers of Commerce (Mt. Adams, Skamania, Hood River, The Dalles)
- Clark County Public Utilities
- Columbia Gorge Community College
- Columbia Gorge Ecology Institute
- Columbia Gorge Visitor's Association
- Columbia River Intertribal Fish Commission
- Confederated Tribes of the Warm Springs
- Educational Service District 112 in Washington
- Educational Service District 74 in Oregon
- Environmental Information Coop (EIC)
- Grant County Public Utility District
- Lower Columbia Fisheries Enhancement Group
- Mid-Columbia Fisheries Enhancement Group
- Mid-Columbia Salmon Enhancement Board
- Mount Hood Community College

- News media
- NOAA Fisheries
- Northwest Service Academy
- Oregon Department of Fish and Wildlife
- Port of Skamania
- U.S. Army Corps of Engineers (COE)
- U.S. Forest Service (USFS)
- Underwood Conservation District (UCD)
- Universities of Idaho, Oregon and Washington
- Vancouver Water Resource Education Center
- Washington Department of Fish and Wildlife
- Yakama Greenways Foundation
- Yakama Nation Fisheries Program

Education

Connecting People with Nature

The I&E Manager remains active on the Regional Connecting People With Nature Team. This team stems from the National Children and Nature Work Group and remains a top priority for the Service. This nationally inspired effort prompted by the book *Last Child in the Woods* considers the harsh reality that people, especially children, are spending less time outdoors. The I&E Manager participates in bimonthly team conference calls. Key issues this past year were exploring new ways to better connect people with nature, realizing and implementing innovative ways in which this group could incorporate Climate Change into our messages, keeping in the line the Service commitment to this important issue; and fulfilling the Youth in the Great Outdoors national initiative in our region.

As part of Connecting People with Nature: Ensuring the Future of Conservation initiative Whitson Elementary School students continue to benefit from various Schoolyard Habitat projects. Schoolyard Habitat continues to be highly supported by the I&E Office and Spring Creek NFH staff.

E3 - Washington

The I&E Manager remains current with the e3-Washington effort for Southwest Washington. This statewide initiative serves to broaden and strengthen environmental education in the state. The initiative aims to provide both decision-makers and citizens with the knowledge and skills to make informed choices that sustain healthy communities and environmental quality.

Salmon in the Classroom

I&E staff continue to be active and involved in area schools. Spring Creek NFH houses six aquariums/chillers for loan to area schools for a "Salmon in the Classroom" program. This program provides an opportunity for students to rear salmon in their classroom. Participating teachers present a six week cross curriculum unit with assistance from I & E staff. Each aquarium/chiller is loaned out for a three to four month period twice a year for maximum utilization. In addition, several area schools have purchased their own aquarium/chillers to participate in this program. A total of 25 classrooms participated in this program for the 2010/2011 school year.



Students release salmon fry into the Columbia River culminating their Salmon in the Classroom unit.

As part of the Salmon in the Classroom program, schools rearing salmon in the fall receive a hatchery tour of Little White Salmon or Spring Creek National Fish Hatcheries at the start of their unit. Schools that rear during the winter have their hatchery tour at the culmination of their unit and tour either Little White Salmon or the Klickitat Hatchery. Various other tours occur during the year as requested.

A partnership with the Yakama Nation Fisheries Program (YNFP) continues to provide six tanks/chillers to schools in the Klickitat Basin. Schools benefitting from this program include: Lyle, Klickitat, Wishram and Goldendale Primary and Middle Schools. Programs were presented in partnership with Jeanette Burkhardt with the YNFP.

As part of the Salmon in the Classroom program, I&E staff visit mid-Columbia Region classrooms to provide a series of hands-on educational activities. Fashion-A-Fish is an adaptation lesson designed to allow students the opportunity to create their own unique fish and develop an appropriate habitat. Fish dissection explores internal and external anatomy of salmon. To enhance the Land and Water required curriculum by Washington State, watershed model presentations augment learning about watershed health, forest ecology and the importance of healthy ecosystems to salmon. In addition, many classes request talks about the history of the Columbia River fishery and associated declines in salmon populations.



Stream Surveys

I&E staff continue to assist area schools with Adopt-A-Stream and Watershed Health projects. They assist Whitson Elementary fourth graders with water quality monitoring of Jewett Creek each month. Wind River Middle School, Outdoor Education class enters its ninth year of watershed assessments of the Wind River. These students are performing an extensive monitoring project at the former Hemlock Lake site in Stabler, WA. Students monitor stream flow, stream profile, macro-invertebrates, water quality and riparian vegetation. This is a fabulous opportunity for students to monitor Trout Creek, formerly Hemlock Lake which was formed in 1913 by the construction of Hemlock Dam. The USFS removed Hemlock Dam in the summer of 2009. Our office, USFS, COE and UCD provide in-class learning about watersheds, the importance of healthy streams and how this affects salmon in our region.

Students have an in-class introduction, two field days and a final wrap-up field day for this unique learning experience.

Outdoor Learning Days

Water Jam continued into its third year with over 375 students attending at the Underwood Community Center. This water themed event is a culmination of the Salmon in the Classroom program offered throughout the gorge. Funding for this event comes mainly from Klickitat County Solid Waste, the U.S. Forest Service, Friends of Northwest Hatcheries and Discover Your Northwest. Various other agencies



and non-profit groups make this valuable outdoor learning day possible. Recycled pop-bottle T-shirts are provided to all students in addition to an amazing lunchtime concert by Portland based Recycle Man and the Dumpster Divers. Seeing all the Water Jam T-shirts walking around these small communities for years to come really leaves a positive, lasting impression on the people of these communities.

I&E staff participated in the Seeds of Discovery Learning Day for The Museum at Warm Springs. Over 350 fourth and fifth graders gained a better understanding of salmon life cycle and the trials salmon face in their migration to and from the ocean through the activity Hooks and Ladders.

A six year partnership between Conboy Lake National Wildlife Refuge and the I&E Office provided an outdoor learning experience for over 100 second grade students from Whitson Elementary School. The field day provided a hike where students took a closer look at forest and aquatic habitats and a larger wetland ecosystem. Summer School programs were also offered at Conboy refuge for Glenwood School students. In addition, assistance was provided to Conboy refuge for their first annual Open House this fall. Displays were provided and our office facilitated Glenwood School participation of the event by providing student art, students performing living history demonstrations and providing period food for public tasting.

The seventh annual Bass Lake Field Day inspired 100 Kindergarteners from Whitson Elementary in spring 2011. This unique learning experience provides hands on activities in stream, forest and meadow ecosystems. Students culminate the day at Bonneville Dam to view returning salmon and complete activity books for reinforced learning. This is a partnership between USFWS, COE and Whitson Elementary School. The same curriculum is utilized for Camp Wa-Ri-Ki (a Skamania County residential camp) presented to 75 fifth graders from Carson Elementary.

Other Educational Opportunities

The White Salmon River Experiential Learning Project was a learning opportunity for students in the local area to learn about Condit Dam and Northwestern Lake prior to its removal in October 2011.

The goal of this project was to provide a science-based, locally relevant, experiential education program focused on removal of Condit Dam. Various learning opportunities were available to interested teachers, including:

- Field trips to Condit Dam facilities and Northwestern Lake co-led by dam owner. Bussing costs were paid for by grant funding.
- In-class presentations on the past, present and future of the White Salmon River and Condit Dam.
- Water quality monitoring and habitat surveys – both before and after- dam removal.
- After dam removal we will facilitate habitat restoration opportunities, where students and volunteers can help re-plant the newly exposed riverbanks to help stabilize sediments and increase riparian cover.



Our goal was to provide information to engage and support the students in analytical thinking about the important questions surrounding removal of Condit Dam and other natural resource issues. Presentations presented a balanced view of the choices and compromises involved in natural resource decisions and dam removal. Presentations included socio-economic and cultural issues, as well as topics in engineering, hydrology, fisheries and water resources. Presentations were tailored to the needs and interests of individual schools, teachers, grade levels and curricula to help support grade-level learning goals.

This project was funded by a Pacific Coastal Salmon Recovery Fund grant, administered by the Yakama Nation Fisheries Program in partnership with Mid-Columbia Fisheries Enhancement Group and the U.S. Fish and Wildlife Service.

River Camp, a week long teacher training was offered in August 2011 in partnership with U.S. Army Corps of Engineers and the City of Vancouver to 15 area teachers. Educators traveled to various sites

throughout the gorge gaining a better understanding of salmon, energy, wetlands and formation of the gorge.

A Memorandum of Understanding (MOU) continued with Conboy Lake National Wildlife Refuge and the Columbia Gorge Ecology Institute. This MOU states that Conboy Lake NWR will be utilized by all partners as an outdoor learning space and that all partners will support each other in their outreach efforts.

A *Nature Of Learning* grant was obtained by the Columbia Gorge Ecology Institute to further outdoor learning at Conboy Lake NWR and at the Spring Creek NFH. Monies from this grant provided transportation to the refuge/hatchery to support ongoing outreach efforts by all partners.

Other education programs offered this year include: Macro-invertebrate in-class study in preparation for the Conboy Lake NWR field days, flower anatomy lesson to enhance Whitson Elementary first grade New Plants unit, a salmon life cycle lesson presented at Bambinos Bilingual Learning Center Summer Camp in White Salmon, WA.

The Lewis and Clark Learning Trunk remains in use throughout the school year and into the summer with special camps. This trunk traveled to eight schools offering more than 325 students historical learning opportunities.

Special Events

Annual events in which the I&E Office participates include:



- 13th Annual Carson NFH Disabled Fishing Day (50 contacts)
- 13th Annual Carson NFH Kid's Fishing Day (700 contacts)
- Benton County Salmon Summit, Richland, WA (400 contacts)
- Clark County Home and Garden IDEA Fair, Vancouver, WA (6,000 contacts)
- Hood River County Fair, Odell, OR (300 contacts)
- HUGS (Health and Safety) Fair, White Salmon, WA (700 contacts)
- National Go Outside Day (3,000 contacts)
- Spring Creek NFH Open House (325 contacts)
- Trout Lake Community Fair, Trout Lake, WA (75 contacts)
- Trout Lake U.S. Forest Service Free Fishing Day (600 visitors)
- Wagon to Wildflowers, Dallesport, WA (100 contacts)
- Warm Springs Museum Seeds of Discovery Learning Day (350 contacts)
- Water Jam '10 (375 contacts)

- Wenatchee River Salmon Festival, Leavenworth, WA (1000 contacts)

Tenacity Games

Athletes For Cancer, based Hood River, held their 4th Annual July fund-raising multi-day event known as the Tenacity Games. The Big White Pond site was a safe start point for this competitive kite-boarding and paddle-boarding event.



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The Athletes For Cancer mission is fund-raising to help cancer-survivors restart their lives and

learn to take on the challenges of living vigorous lives again. They help coordinate and fund survivorship camps designed for cancer survivors ages 18-40 to foster self-confidence and strengthen survivorship through life-changing outdoor adventure experiences. All entry fees go toward this cause so expanding the competitor opportunities by adding a kayak event was one way to grow.

We issued a FWS Special Use Permit for the event day July 10th and their event coordinator ran everything perfectly with a turnout of approximately 25 kayakers ready to race.

Everyone's lives are touched by the harsh realities of cancer these days and we were happy to be a help toward growing their event for such a worthy cause. They raised over \$100,000 dollars with over 200 athletes competing.

Information

I&E Manager and Spring Creek Manager continued to inform district Congressmen in Washington and Oregon and area County Commissioners about hatchery issues (i.e. mass marking, Mitchell Act, hatchery reform/operations, sport and tribal fisheries etc.).

The I&E Manager remains active on the Columbia River Gorge Visitor Association attending quarterly meetings.

The I&E Manager participates in bi-monthly Connecting People with Nature Regional Team conference calls.

The Complex and I&E Manager provided a tour of the Little White Salmon NFH to Bryan Arroyo, Assistant Director for Fisheries and Habitat Conservation, as he was on his way to the Directorate gathering in Richland, WA. He was interested in gaining a better understanding of our programs in the gorge.

The Complex and I&E Manager provided a comprehensive tour of the Complex for Mike Carrier, Assistant Regional Director – Fisheries, in early July. The tour was directed at him gaining a better understanding of the complexity of our operations, our role in restoration after Condit Dam removal and the diversity of our projects.

The I&E Manager offered assistance to Eagle Creek and Warm Springs NFH as needed in an ongoing effort to offer complete and quality programming to the public.

I&E and hatchery staff continue to be present and show support at Jewett Creek Streamkeepers, White Salmon River Management Committee, Wind River Technical Advisory Committee, and Wind River Watershed Council monthly/quarterly meetings.

I&E staff continue to photo document the area around the Big White Pond facility on the White Salmon River. Three photo stations are located in the vicinity of the facility. Photos are taken in the spring and fall each year and randomly when significant weather events occur.

I&E Manager creates and distributes the annual Columbia Gorge Outreach Notes in conjunction with Hatchery Data Sheets created by the Columbia River Fisheries Program Office. These informational documents are mailed electronically each fall to over 80 recipients.

Hatchery Improvements

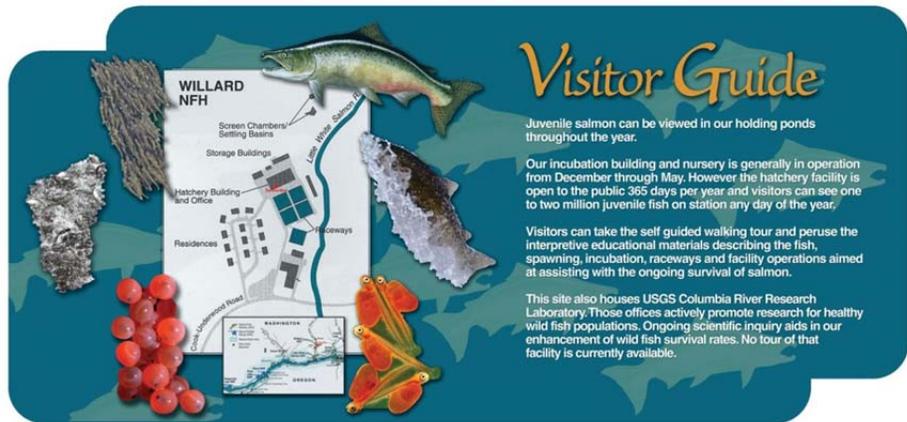
The Carson NFH Visitor Contact Station interpretive panels and design was awarded to 1+2 Design Inc. Work has started on the information gathering and conceptual design for the station. Anticipated completion for this project is April 2012.

Spring Creek NFH Visitor Facility Enhancement Interpretive Trail and Accessible Fishing Area Project continues to move ahead. The contract was awarded to P.F. Pepiot Inc. The U.S. Forest Service National Scenic Area permit was approved in July; work on this project began in late November 2011.



Final phases of computer and touch screen programming for the Spring Creek NFH Visitor Center improvements, which began in 2010, were completed summer 2011.

Support was provided to Willard NFH for interpretive panels as part of a Visitor Facility Enhancement sign improvement package for FY10. Nine new interpretive and orientation panels will be displayed around the hatchery to improve the visitor experience at Willard NFH.



Volunteers



A Youth Conservation Crew (YCC) from Conboy NWR was once again loaned to the Complex for a week during July 2011. The four person crew plus crew leader provided valuable assistance to the Complex on a variety of projects. They began their week at the Carson NFH where they cleared shrubs and debris away from Tye Springs. From there they moved to Spring Creek where they continued their efforts of clearing debris from springs and cleaning out the Big White Ponds in preparation for the upcoming Salvage Project. They also spent a considerable amount of time refurbishing/painting the Migration Golf – Links to the Sea miniature

golf course. The work performed by this group of youth is amazing, appreciated and invaluable.

To assist with spawning and to allow Regional Office employees a valuable field experience, we once again coordinated hands-on educational day-trips to the hatchery. About 25 people from various Regional Office Departments – Human Resources, Division of Budget and Finance, Refuges, Fisheries, and several Regional Office High School interns from the Portland area schools came out to assist with some facet of spawning. Everyone thoroughly enjoyed the chance to see what we do and appreciated the opportunity.

Mount Hood Community College's aquaculture class participated in spawning operations on September 28. Twenty-eight students had the opportunity to experience all phases of the operation from sorting fish, collecting eggs to washing and placing eggs into incubators.

Photographs: All photo by U.S. Fish & Wildlife Service staff.