

7.0 CUMULATIVE EFFECTS

7.1 INTRODUCTION

Cumulative effects, as defined in 50 CFR Section 402.02, include the effects of future state, Tribal, local, or private actions that are reasonably certain to occur within the action area. Future Federal actions require separate consultations pursuant to Section 7 of the Endangered Species Act (ESA) and are therefore not considered here. The consultation regulations require that the effects of the action, including those of the environmental baseline, be considered together with any cumulative effects when determining jeopardy or adverse modification of critical habitat. See 50 CFR § 402.14(g).

In the main, Comanagers focused on beneficial actions and did not report any adverse actions, such as authorization of state timber sales, harvest, grazing, or land use-activities that met the reasonable certain to occur test. The preamble to the consultation regulations indicate that one of the main functions of the cumulative effects test is to ensure that Federal activities do not bear an increased conservation burden due to speculative future state and private actions which are not reasonably certain to occur.

The Comanagers have not identified any adverse activities that meet this “reasonably certain to occur” test. Accordingly, NOAA Fisheries must presume that watersheds that were historically limited by such state-regulated activities will not be so limited in the future. If NOAA Fisheries were to assume that these state and private factors were going to end because they were voluntary or because they depended on uncertain funding or because they depended on some future renewal of some government authorization (as may be required by the reasonable certain to occur test), then NOAA Fisheries may have to presume that the condition of these watersheds will substantially improve in the coming years. This, in turn, could mean that the future environmental baseline against which the future effects of the FCRPS are being judged for the purposes of this consultation may well be overly pessimistic by orders of magnitude.

Give the time available and absent more information from the Comanagers, NOAA Fisheries is presenting an analysis of numerous potential state and private impacts (both beneficial and adverse) but has not yet determined whether any of the adverse effects meet the reasonable certain to occur test.

7.2 CUMULATIVE EFFECTS INVESTIGATION

In a memorandum dated November 26, 2003 (NMFSc, 2003), NOAA Fisheries asked the state and Tribal fisheries Comanagers for help in discovering any non-Federal actions in the action area for this consultation that would affect listed fish or their habitat in either a positive or negative manner and were reasonably certain to occur. The Comanagers were asked to consider the following as indicators of actions that were reasonably certain to occur: approval of the action by state, Tribal, or local agencies or governments (e.g., permits, grants); indications by state, Tribal, or local agencies or governments that granting authority for the action is imminent;

the project sponsors' assurance that the action would proceed; obligation of venture capital; or initiation of contracts. The Comanagers were also asked to consider the following questions:

- Has adequate funding been secured, or is there written documentation demonstrating that funding is imminent?¹
- Have needed authorizations and/or permits been obtained, or is there written documentation demonstrating that such authorizations and permits are imminent?
- Is there other evidence, such as agreements, issued contracts, or other binding commitments, that demonstrates the action is "reasonably certain to occur," despite a lack of authorization or funding?

These situations were to be considered on a case by case basis.

The Nez Perce Tribe responded with a list of actions that NOAA Fisheries had already included in the environmental baseline. The State of Idaho provided a summary, which included the conservation agreements for the Lemhi and Upper Salmon subbasins. These conservation agreements described partnerships to address land and water needs in the basins of the Salmon River drainage. Parties to the agreements intend to participate in a long-term program for the conservation of fish and fish habitat, in which individuals may voluntarily participate and receive, in return, appropriate incidental take authorization and protection under the ESA for activities associated with water diversion. Although significant conservation benefits may flow from these voluntary agreements, the implementation of specific actions with immediate benefit to salmonids has not progressed to the point where they can be included within the environmental baseline. The State of Washington referred NOAA Fisheries to its salmon recovery Web site (<http://www.governor.wa.gov/gsro/sosreport/2002/partthree.pdf>), which identifies projects, plans, and assessments proposed, developed, or implemented by the State of Washington through 2001. Although direct or indirect conservation benefit is likely to accrue from the listed projects that are reasonably certain to occur, there is, in the aggregate, insufficient information to conclude a measurable change in status of the ESU or in the condition of the environmental baseline in the action area. The State of Oregon stated that all its actions had been previously reported under the Pacific Coast Salmon Recovery Fund (PCSRF) reporting requirements. PCSRF-funded projects have a Federal nexus, which requires consultation under Section 7 of the ESA. Thus, the potential benefits of future projects in the state of Oregon is considered in Section 5.0 (Environmental Baseline) in this Opinion.

In a separate effort, NOAA Fisheries collaborated with technical contacts from the states and Tribes to review information that local subbasin planners had developed for the Northwest Power Planning and Conservation Council's Subbasin Planning Process. These subbasin summaries and assessments describe both adverse and beneficial ongoing and future actions.

At the time of this draft biological opinion, NOAA Fisheries does not know of any future projects in the mainstem, estuary, plume, or tributary portions of the action area that can be considered as cumulative effects.

¹ NOAA Fisheries has included projects that were submitted for financial support from the Pacific Coast Salmon Restoration Fund as part of the environmental baseline.

7.3 CUMULATIVE EFFECTS

State, Tribal, and local government actions will likely be in the form of legislation, administrative rules, policy initiatives, or permitting activities. However, such amorphous actions are unlikely to meet the reasonably certain to occur test. The more state, Tribal, or local administrative discretion remaining to be exercised, the less NOAA Fisheries can be reasonably certain that the project will be authorized or that the activity will occur. Government actions might include changes in private ownership and use of land and water resources, any of which could adversely or beneficially affect listed species or their habitat. While specific government actions are subject to political, legislative, and fiscal uncertainties, significant changes in the economy that have occurred in the last 15 years and are likely to continue will result in less large-scale resource extraction, more targeted extraction, and significant growth in other economic sectors. Growth in new businesses, primarily in the technology sector, is creating urbanization pressures and increased demand for buildable land, electricity, water supplies, waste-disposal sites, and other infrastructure. Economic diversification has contributed to population growth and movement, and this trend is likely to continue. Such population trends will result in greater demands for electricity, water, and buildable land in the action area, and will increase the need for transportation, communication, and other infrastructure. These economic and population demands will probably affect habitat features such as water quality and quantity, which are important to the survival and recovery of the listed species. The overall effect on the listed species and their habitat will likely be negative, unless there is careful planning, avoidance, or mitigation.

7.3.1 Mid-Columbia River Steelhead

7.3.1.1 Walla Walla

The majority of private actions in the Walla Walla subbasin (WWSB) are agricultural use of floodplain and upslope areas, roads, and riparian development. These activities affect fish by altering the rate, extent, and quality of the natural ecological processes that create and sustain fish habitat at levels that meet the needs of the affected fish. Examples of such changes include water quality alteration, changes in physical features, and alteration of ecologically normal instream flows. Conversely, many of the agricultural landowners in the watershed are participating in cooperative, voluntary programs to improve riparian conditions on their lands.

Farming has played a major role in the economies of communities throughout the WWSB since the early 1800s. Very few diversions are metered, and water rights are severely over-allocated. Farmers and ranchers are not likely to give up their water rights, because any water that is left in the river will most likely be consumed by irrigators further downstream (Watermaster Bill Neve, 1998, personal communication). Though many farmers and ranchers have taken measures to increase water use efficiency on their land with the aid of techniques such as drip irrigation, portions of some rivers such as the Little Walla Walla River are likely to continue to be essentially dry during certain periods of the year. Adverse impacts to fish resulting from the over-allocation of water rights and subsequent diversion of flows from the Little Walla Walla River include increased water temperatures, low instream flows, high levels of sediment and

pollution, potential stranding of fish, and the fragmentation of aquatic habitat. Recently, there has been some conversion to low-till agricultural methods, which will decrease sedimentation over the long term.

Non-Federal activities within the action area are expected to increase with a projected 34% increase in human population over the next 25 years in Oregon (Oregon Department of Administrative Services 1999). Thus, NOAA Fisheries expects that future private and state actions will continue within the action area at increasingly higher levels as population density climbs.

The Walla Walla Basin tributaries are generally over-appropriated. This condition is unlikely to worsen as the State of Washington continues to clarify water rights through the adjudication process. Furthermore, the state is engaged, through the Departments of Ecology and Fish and Wildlife, in programs to improve instream flows in places like Blue Creek. In the Walla Walla there is a high degree of participation in the CREP program for riparian enhancement, which should yield a gradual improvement in the flow situation over the next ten years.

The State of Washington has various strategies and programs designed to improve the habitat of listed species and assist in recovery planning. Washington's 1998 Salmon Recovery Planning Act provided the framework for developing watershed restoration projects and established a funding mechanism for local habitat restoration projects. The Watershed Planning Act, also passed in 1998, encourages voluntary planning by local governments, citizens, and Tribes for water supply and use, water quality, and habitat at the Water Resource Inventory Area or multi-Water Resource Inventory Area level. Washington's Department of Fish and Wildlife and Tribal Comanagers have been implementing the Wild Stock Recovery Initiative since 1992. The Comanagers are completing comprehensive species management plans that examine limiting factors and identify needed habitat activities.

Water quality improvements will be proposed through development of Total Maximum Daily Loads (TMDLs). The State of Washington is under a court order to develop TMDL management plans on each of its 303(d) water-quality-listed streams. It has developed a schedule that is updated yearly; the schedule outlines the priority and timing of TMDL plan development. These efforts should help improve habitat for listed species. Washington State closed the mainstem Columbia River to new water rights appropriations in 1995 but lifted this moratorium in 2002. The state has proposed to mitigate the effects of new water appropriations by purchasing or leasing replacement water when Columbia River flow targets are not met. However, the efficacy of this program is unknown at the present time.

7.3.1.2 John Day River

As discussed in Section 5.0, Environmental Baseline, the John Day Subbasin is an overwhelmingly rural area with relatively low populations. Many of these towns were historically sawmill towns. Large mills remain today in John Day and Prairie City. Over 95% of the lands within the subbasin are zoned for agriculture and forestry. Private and Federal lands are used mainly for livestock grazing and forage production. Urban lands make up only 0.3% of the land base. Ownership of the John Day Subbasin is 59% private, 31% USFS, 9% BLM/miscellaneous

Federal, and 1% state. Private ownership is primarily in the lower subbasin. The USDA Forest Service manages much of the higher elevations in the subbasin. The Umatilla, Wallowa-Whitman, Malheur, and Ochoco national forests together make up 31% of the subbasin's total area. There is an increasing trend towards fragmentation of large private land holdings and associated rural development, ranging from hunting cabins to small subdivisions. Water withdrawals have reduced streamflows, especially during summer, and contribute to higher water temperature. Grazing, mining, timber harvest, and maintenance of pushup dams have reduced riparian vegetation and shade, also contributing to higher water temperatures and reducing habitat diversity. Pushup dams and reduced flows have created physical and thermal obstacles to fish movement. The John Day Subbasin, particularly along the Upper Mainstem and South Fork John Day rivers, experienced numerous and intensive stream channelization, flow modification and drainage (including some tiling of drainage ditches) projects between 1943 and 1951.

Significant improvement in Mid-Columbia River (MCR) steelhead reproductive success outside of Federally administered land is unlikely without changes in grazing, agricultural, and other practices occurring within non-Federal riparian areas in the JDR basin.

7.3.1.2.1 Upper John Day. Analysis of cumulative effects for this subbasin is not available for this draft.

7.3.1.2.2 Middle Fork John Day. Analysis of cumulative effects for this subbasin is not available for this draft.

7.3.1.3.3 North Fork John Day. Road building and maintenance, timber harvest, mining, livestock grazing, and agriculture are all considered significant threats to MCR steelhead due to the lack of adequate regulatory control over these activities and uncertainty about their potential effects. In addition to the mining that occurs on Federal lands in the action area, there is also a significant amount of mining occurring on private lands throughout the watersheds of the NFJDR subbasin. The Granite Creek watershed includes the Alamo Mining District, which is characterized by many placer and lode mines. The extent of private mining actions is not specifically analyzed here, but field reviews by NOAA Fisheries biologists suggest that a significant amount of private land mining activity still takes place.

Another non-Federally regulated activity that takes place in the Granite Creek, Upper NFJDR, and NFJDR watersheds is small-scale recreational suction dredging. Although this activity is regulated by the State of Oregon, it can still have adverse effects on MCR steelhead or their habitat. The presence of a small number of recreational dredges would not likely disrupt stream processes, but the combined effects of a large number of recreational dredges operating in a stream within a single season could have significant adverse effects.

7.3.2 Upper Columbia Steelhead and Spring/Summer Chinook

The State of Washington has various strategies and programs designed to improve the habitat of listed species and assist in recovery planning. Washington's 1998 Salmon Recovery Planning Act provided the framework for developing watershed restoration projects and established a funding mechanism for local habitat restoration projects. The Watershed Planning Act, also

passed in 1998, encourages voluntary planning by local governments, citizens, and Tribes for water supply and use, water quality, and habitat at the Water Resource Inventory Area or multi-Water Resource Inventory Area level. Washington's Department of Fish and Wildlife and tribal co-managers have been implementing the Wild Stock Recovery Initiative since 1992. The Comanagers are completing comprehensive species management plans that examine limiting factors and identify needed habitat activities. The state is also establishing the Lower Columbia Fish Recovery Board to begin drafting recovery plans for the lower Columbia region.

Water quality improvements will be proposed through development of Total Maximum Daily Loads (TMDL). The State of Washington is under a court order to develop TMDL management plans on each of its 303(d) water-quality-listed streams. It has developed a schedule that is updated yearly; the schedule outlines the priority and timing of TMDL plan development. These efforts should help improve habitat for listed species. Washington State closed the mainstem Columbia River to new water rights appropriations in 1995, but lifted this moratorium in 2002. The state has proposed to mitigate the effects of new appropriations by purchasing or leasing replacement water when Columbia River flow targets are not met. The efficacy of this program is unknown at this time.

7.3.2.1 Methow

Generally, local conservation efforts and habitat restoration projects will continue to improve conservation and restoration of spring chinook salmon and steelhead habitat on non-Federal land in the region of the proposed action. Furthermore, improvements such as infrastructure upgrades planned for other water diversions in the Chewuch and Methow basins will probably reduce the contribution of those diversions to future habitat degradation.

Other non-Federal diversions in the Chewuch River contribute to cumulative adverse effect on instream flows for fish. For example, the two other sizable diversions are Chewuch Canal (31 cfs) and Fulton Canal (20 cfs) located downstream of the Skyline Ditch at RM 8.0 and RM 0.7, respectively. Because these diversions do not constitute a Federal action, no ESA consultation will be done and withdrawals in accordance with established water rights are expected to continue at similar levels into the immediate future. However, the above-mentioned entities, together with the Skyline Ditch Company, have formed the Chewuch Basin Council to cooperatively seek efficiency improvements to their water delivery systems and to seek flow plan and habitat improvements to maintain adequate instream flows.

Existing studies report that conversion of water use from irrigation to domestic use is related to real estate development in the Methow Basin (Peterson and Jackson 1990; EMCON 1993; Methow Valley Planning Committee 1994). Continuing real estate development (especially for residential use) is expected to continue into the foreseeable future. The precise effects of expected development on in-stream flows during low flow periods, late summer/early fall and winter, have not been documented. However, estimates from these reports show that if only six percent of the saved water from total irrigable acres in the basin (12,900 acres) is converted to domestic use, an additional 950 homes could be built in the basin, which could support approximately 2,800 people. The basin's current population is only about 4,500. Using water saved from irrigation to support development in the face of an expanding population in the basin

will maintain habitat that is not properly functioning to adequately meet the biological requirements of the listed ESUs.

One measure of potential cumulative impacts is the number and magnitude of applications for water rights within the action area on the Chewuch River. As of 2000, there were 25 applications to Washington Department of Ecology for groundwater wells totaling 6.7 cfs (3,005.3 gpm), and one application to withdraw 0.0002 cfs (0.11 gpm) of surface water. The trend toward increasing groundwater claims is expected to continue. Increasing demand for groundwater would contribute to maintaining habitat that is not properly functioning to adequately meet the biological requirements of the listed ESUs.

7.3.2.2 Entiat

Current land uses within the Entiat include agriculture (primarily pear and apple orchards), livestock production and grazing, timber harvest, residential housing, and recreation. The U.S. Forest Service (USFS) manages approximately 83% of lands within the subbasin. Wilderness, old growth reserves, wildlife and riparian reserves make up 63% of the USFS land designation, which includes some areas in the lower valley that currently do not fall within the other land use categories. Irrigated agriculture land area is 0.4% of the watershed and, with developed recreation areas (including trails) and residential areas, makes up approximately 1% of the total land area, most of which is along the riparian corridor. The Entiat River Subbasin Salmon and Steelhead Production Plan identified water withdrawals, both agricultural and domestic, as an issue of concern relative to their potential to exacerbate normal low flows of late summer in the Entiat River (Entiat Subbasin Plan 2004).

7.3.2.3 Wenatchee

Agricultural activities are presently the main land use in the action area. Summer low flows are modified by irrigation diversions, and riparian buffers contain little woody vegetation. Consistent instream flows are essential for fish survival. Given the patterns of riparian development in the action area and rapid human population growth of Chelan County (27.5% from 1990-2000, U.S. Census Bureau), it is reasonably certain that some riparian habitat will be impacted in the future by non-Federal activities.

7.3.3 Snake River Spring /Summer Chinook, Steelhead and Sockeye

7.3.3.1 Upper Salmon, Little Salmon, Lemhi

Non-Federal actions are likely to continue affecting ESA-listed fish species. The cumulative effects in the action area are difficult to analyze, given the broad geographic landscape covered by the action area, the uncertainties associated with non-Federal actions, and ongoing changes to the region's economy. Whether those effects will increase or decrease in the future is not known; however, based on the subpopulation and growth trends identified in this section, the adverse effects of non-Federal actions are likely to increase. NOAA Fisheries expects the environmental baseline to remain static or decrease slightly due to ongoing non-Federal actions. Predominant ongoing activities on state, Tribal, and private lands include timber harvest, range management

and grazing of domestic livestock, and road construction. Land uses also include limited amounts of cultivation and irrigation of hay fields and pastures, water diversions and water-right allocations, and residential development. State laws regulate these activities.

Potential adverse cumulative effects caused by home construction or other similar development on private property in the river corridor could affect the suitability of the habitat for chinook salmon and steelhead. In a best-case scenario, damage would be limited to loss of a few low bushes in the riparian corridor 150 feet from the river, with little or no effect on adult or juvenile chinook or steelhead.

State-administered logging and grazing is expected to contribute short-term adverse effects to spawning, rearing, and migration conditions for anadromous species.

Another example of less restrictive non-forest standards is the state land leased for grazing, which is currently operated under BMPs established under Grazing Management Plans overseen by the IDL. Grazing BMPs, as identified in the Idaho State Agricultural Pollution Abatement Plan (State Plan), are not mandatory but are recommended for private lands. Because compliance with the State Plan is not required on private lands, no monitoring plan is in place to evaluate potential direct and indirect impacts on ESA-listed fish species or designated critical habitat.

The populations of urban areas within the action area have been growing rapidly and are predicted to continue to grow. Rural areas, on the other hand have been fairly static, and populations are predicted to remain static or increase at a slower rate. As populations increase in urban and rural areas, Federal land ownership is likely to change little; therefore, it will be up to private and state lands to absorb the increase in population. However, cumulative effects from non-Federal lands are expected to be highest for chinook salmon and steelhead in the Little Salmon subbasin, which has a relatively high percentage of non-Federal land (31%). Cumulative effects on steelhead, sockeye, and chinook salmon in the Upper Salmon subbasin are also expected to be high. Although a much lower percentage of private and state lands are found in that subbasin, a wide variety of land uses occur and are expected to continue to occur.

Home and business construction is likely to continue along the Lemhi River along with agricultural use of the surrounding lands. Numerous water diversions from the Lemhi River and its tributaries alter the river's natural hydrograph and will likely continue to do so into the future. Potential adverse effects caused by these ongoing private activities could impact the suitability of habitat for chinook salmon and steelhead. The effects of these activities may include sediment delivery into the river from private roads, chemicals leaching into the river from yards or livestock pastures, livestock grazing that damages the riverbank or removes riparian vegetation, or low flow periods that reduce fish passage. There are some private landowners seeking opportunities to alter agricultural practices or improve equipment to reduce negative impacts on ESA-listed salmonids; these efforts will likely result in beneficial effects to chinook and steelhead habitat. However, NOAA Fisheries is not currently able to consider these as cumulative effects, because they are not yet reasonably certain to occur.

The IDEQ has established TMDLs in the Snake River basin, a program likely to have positive water quality effects. The TMDLs are required by court order, so it is reasonably certain that

they will be established. The Lemhi Subbasin has a TMDL that addresses water quality on the Lemhi River and seven tributary streams. The primary Lemhi River TMDL water quality concern is fecal coliform bacteria (IDEQ 1999). The State of Idaho has created an Office of Species Conservation to work on subbasin planning and to coordinate the efforts of all state offices addressing natural resource issues. Demands for Idaho's groundwater resources have caused groundwater levels to drop and reduced flow in springs for which there are senior water rights. The Idaho Department of Water Resources has begun studies and promulgated rules that address water right conflicts and demands on a limited resource. The studies have identified aquifer recharge as a mitigation measure with the potential to affect the quantity of water in certain streams, particularly those essential to listed species.