

5 Inventory of Existing Activities

This Chapter evaluates existing legal protections, projects, plans, and activities against actions needed to address the limiting factors for native fish and wildlife populations identified in the Assessments for the both Hood River Subbasin and the Lower Oregon Columbia Gorge Tributaries.

5.1 Existing Legal Protection

This section describes legal protections that apply to specific geographic areas or waterways such as stream buffers, land use ordinances, conservation designations, or water resources protection.

- Land Protection Status Analysis

The results of a GIS analysis using Land Protection Status map data prepared by the Northwest Habitat Institute (NWHI) for the subbasin planners are shown in Table 38. Analysis results are presented by land cover type are provided in Appendix C, Table 1.

Table 38. Overall percentage of land in each Land Protection Status category based on NWHI map layers and definitions (www.nwhi.org/ibis).

Planning Area	High	Medium	Low	None
Hood River Subbasin	11	0	45	44
Lower Oregon Columbia Gorge Tributaries	51	2	33	14

The following definitions are used by NWHI to determine land protection status:

High: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, intensity, and legacy) are allowed to proceed without interference or are mimicked through management. *Note: This category includes designated federal Wilderness.*

Medium: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive uses or management practices that degrade the quality of existing natural communities, including suppression of natural disturbance.

Low: An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type (e.g., logging) or localized intense type (e.g., mining). It also confers protection to federally listed endangered and threatened species throughout the area. *Note: NWHI includes Forest Service and County-owned forest lands here.*

None: No known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types. The area generally allows conversion to unnatural land cover throughout. *Note: NWHI includes all private-owned land.*

- Hood River County Zoning Ordinance

The Zoning Ordinance implements policies of the County Comprehensive Land Use Plan (amended March 2004) that identifies areas zoned as forest land and where protection articles apply (Appendix A, Map13). Zoning especially relevant to fish and wildlife includes:

- a) Article 35- Natural Area Zone (NA) is designed to protect identified natural areas by allowing only uses that will not adversely impact or destroy the Natural Area. Timber, mining, and farm uses including buildings are permitted conditional uses subject to approval criteria.
- b) Article 44 – Floodplain Zone (FP) is for the protection of life and property from natural disasters and hazards. Key section is Section 44.55 (C) Water Course Setbacks, which states that all buildings shall be set back 100 feet from the ordinary high water line except for water-dependent uses.
- c) Article 43 – Environmental Protection Zone (EP) is for protection and maintenance of soil stability, water quality, watersheds, natural drainage areas, fish and wildlife habitat, and natural areas. Low intensity recreation, agriculture, and irrigation water uses are allowed, as are utilities and road crossings provided floodplain alteration does not occur or compliance with Article 44 is met. Other development may be allowed if a finding is made that the proposal complies with conditions including approval by a registered engineer, geologist or architect.
- d) Article 45 – Geologic Hazard Zone (GH) identifies existing or potential geological hazards and related precautions or development restrictions.
- e) Article 75 - National Scenic Area Ordinance has additional requirements for protection of wetlands, streams, and natural areas.
- f) Article 42- Stream Protection Overlay Zone became effective in March 2004 with passage of Ordinance No. 253, and regulates land use within a 50-foot buffer zone along all fish bearing streams except the Hood River, where 75-foot buffers apply (Appendix A, Map 3). Native vegetation removal is prohibited inside the buffer with certain exceptions. Activities on farm or forest zoned lands regulated by the Forest Practices Act are exempt, as are agricultural activities regulated under State Senate Bill 1010. Activities along fishless streams were not addressed. The article helps meet county obligations under the DEQ Hood Basin TMDL and the Statewide Planning Goal 5 for Natural Resources.

- Riparian Areas Protected under the Oregon State Forest Practices Act

OAR 629-Division 600 to 680 and ORS 527 regulates commercial timber production and harvest on state and private lands. It establishes riparian management area widths of 50, 70 and 100 feet on fish bearing streams depending on stream size and where specific vegetation retention standards apply.

- USFS Northwest Forest Plan Riparian Reserves

The Aquatic Conservation Strategy (ACS) in the *Standards and Guidelines for Management of Habitat for Late Successional and Old-Growth Forest Related Species*

Within the Range of the Northern Spotted Owl (1994) set forth Riparian Reserves on National Forest lands with widths of 300 feet slope distance from either side of the stream channel on all fish-bearing streams, 150 feet on perennial non fish-bearing streams, and 100 feet along intermittent streams, small wetlands, and unstable areas (Appendix A, Map 3). Activities inside the reserves must not prevent or retard attainment of ACS objectives. Timber harvest is allowed only where thinning or other harvest measures help attain ACS objectives. The Riparian Reserves offer the most comprehensive riparian habitat protection in the subbasin.

▪ Designated Wilderness Areas

Approximately 22,000 acres of the Hood River Subbasin on the north upper slopes of Mt Hood are within the federal Mt Hood Wilderness, encompassing numerous glaciers and headwaters of the West and Middle Fork Hood River, and part of the East Fork Hood River. About 32,099 acres are included in the Mark Hatfield Wilderness in the Lower Oregon Columbia Gorge planning area. These areas are withdrawn from timber harvest. Management goals are to preserve and perpetuate wildlife, solitude, watershed protection, scenic, and related values.

▪ Designated Drinking Water Watershed Areas

Approximately 4,000 acres of National Forest in the headwaters of Dog River are within The City of The Dalles Municipal Watershed. Human access restrictions and timber harvest controls protect drinking water quality under 1912 and 1972 agreements with the USDA Forest Service, which benefits wildlife and water quality on the affected lands.

▪ Columbia River Gorge National Scenic Area Act

One of the purposes of the 1986 Scenic Area Act is to protect and enhance natural resources including fish and wildlife. The lower 3 miles of the Hood River and its adjacent canyon walls are inside the Scenic Area boundaries and proposed land use is subject to review by the Forest Service to insure consistency with the Scenic Area Management Plan. The Scenic Area Management Plan includes protection standards for sensitive wildlife and plant species buffer zones, riparian and wetland buffer zones.

▪ Hood River Agricultural Water Quality Management Area Rules

OAR chapters 603-095-1100 to 1160 established rules as directed under State Senate Bill 1010 that apply to agricultural activities in the subbasin. These rules address streamside vegetation in 603-095-1140(2): “...*agricultural activities must allow the establishment, growth and maintenance of vegetation along streams. Vegetation must be sufficient to control water pollution by moderating solar heating, minimizing streambank erosion, filtering sediments and nutrients from overland flows, and improving the infiltration of water into the soil profile. The streambank should have sufficient vegetation to resist erosion during high streamflows, such as those reasonably expected to occur once every 25 years*”; and waste management in 603-095-1140(3): “...*no person shall violate any provision of ORS 468B.025 or 468B.05*”. The latter refers to existing state statutes addressing waste discharges, including that no person shall “*cause pollution of any waters of the state or place or cause to be placed any wastes in a location where such wastes are likely to escape or be carried into the waters of the state by any means*”.

▪ Water Resources Protection

Instream water rights are established at 7 locations in the Hood River Subbasin and in Lindsey Creek (Table 39). OAR 690-033-0115 through 690-033-0140 limits new water appropriations between April 15 to September 30 for the purpose of consistency with the Columbia River Basin Fish and Wildlife Program. ORS 538.200-210 names 11 streams forming waterfalls near the Columbia River Highway as withdrawn from appropriation, although vested and riparian rights are not affected (State Water Resources Board, 1965). Minimum instream flow requirements are included as federal or state hydropower license conditions at 3 subbasin locations: (1) Below Clear Branch Dam: minimum flow is 3 c.f.s. May 15 - August 31; 15 c.f.s. September 1-15, and 30 c.f.s. September 16 until reservoir refill; (2) Green Point Creek: minimum flow is 20 c.f.s. October 15 - December 31, and 40 c.f.s. January 1 - April 15; (3) Hood River below Powerdale Dam: 140 c.f.s. January-December; 220 c.f.s. February-March; 250 c.f.s. May-October; 220 c.f.s. November.

Table 39. Instream water rights established by the State of Oregon in Hood River County.

Instream Water Rights in the Hood River Subbasin (Cubic Feet per Second)											
Location	OCT	NOV	DEC	JAN TO MAR	APR	MAY	JUN	JUL	AUG	SEP	Priority Date
Hood R. below Powerdale Dam	45 100	45 100	45 170	45 270	45 270	45 170	45 130	45 100	45 100	45 100	9/22/65 11/3/83*
W. Fork Hood R	100 195	100 255	100 280	100 150	100 255	100 255	100 255	100 150	100 180	100 176	9/22/65 12/6/91*
Lake Branch	35.7	67	67	67	168	113	66.9	44.8	38.6	37.1	2/6/91
E. Fork Hood R. abv M. F.	150	150	150	100	150	150	150	100	100	100	11/3/83
Neal Creek	20	20	13	13	20	20	20	13	13	5	11/3/83
Dog River	7.79	14.7	12	12	20	20	20	12	7.01	6.05	12/6/91
M. Fork Hood R.	10	10	10	10	10	10	10	10	10	10	9/22/65
Lindsey Cr (Gorge)	3.1	6.7	7.3	13 15.3 15.7	16.2	7.8	3.2	1.6	1.3	1.8	12/6/91

**Flows listed include flows established by earlier dated instream water rights.*

▪ Special Area Angling Restrictions

The Oregon Fish & Wildlife Commission closed the Hood River above Powerdale Dam to all salmon and steelhead angling in 1998 to protect threatened steelhead and bull trout,

and closed the West Fork Hood River to all angling to maximize protection of juvenile and adult steelhead. Special angling regulations are in effect in Laurance Lake to protect bull trout. The Columbia River Inter-Tribal Fisheries Enforcement (CRITFE) monitors tribal fisheries and enforces fishing regulations in the Columbia River between Bonneville and McNary Dams.

- Oregon Removal-Fill Law

Oregon Division of State Lands, under Removal-Fill Law (ORS 196.795-990) and the U.S. Army Corps of Engineers, under Section 404 of the Clean Water Act, regulate the removal and filling of materials in wetlands and waterways. Under state law, permits are required for projects involving 50 or more cubic yards of material in wetlands and streams. Permit applications are reviewed by ODFW and may be modified or denied based on project impacts to fish. Projects that may affect ESA-listed species require consultation with NOAA Fisheries or the US Fish and Wildlife Service to insure compliance with the Endangered Species Act. The Oregon Removal-Fill Law requires a permit for most removal and fill activities in areas designated by the state as essential indigenous salmonid habitat (<http://statelands.dsl.state.or.us>). Essential salmonid habitat is defined as the habitat necessary to prevent the depletion of native salmon and trout species during their life history stages of spawning and rearing. The designation applies to species listed as Sensitive, Threatened or Endangered by a state or federal authority.

5.2 Existing Plans

Current plans in the Lower Oregon Columbia Gorge and in the Hood River Subbasin that specifically and directly address local fish and wildlife populations are summarized below. Plans are categorized by the headings of Land Use, Water Resources and Watersheds, or Fish and Wildlife.

Land Use

- Hood River County Comprehensive Land Use Plan

Amended in March 2004, the Comprehensive Plan guides land use on private and County-owned lands in the subbasin in accordance with statewide goals and requirements, with oversight from the Land Conservation and Development Commission. The Hood River County Comprehensive Plan consists of the: 1) County Policy Document; 2) County Comprehensive Plan Map; 3) Zoning Map, and Zoning and Subdivision Ordinances; 4) Background Reports; and 5) Exceptions Document. Pertinent policy goals are to a) Conserve open space and protect natural and scenic resources, b) Conserve and/or preserve fish, wildlife, and their habitat areas, and c) Insure protection and provision of adequate habitat for wildlife species native to the area.

- Northwest Forest Plan and Mt. Hood Forest Plan

Land allocation, management standards, and guidelines are specified in *Mt. Hood National Forest Land and Resource Management Plan* (USFS 1990) and the *Northwest Forest Management Plan Standards and Guidelines for Management of Habitat for Late Successional and Old-Growth Forest Related Species Within the Range of the Northern*

Spotted Owl (1994). The Northwest Forest Plan includes an Aquatic Conservation Strategy to maintain and restore the health of watersheds and aquatic ecosystems on public lands. Components riparian reserves, key watersheds, watershed analysis and watershed restoration, are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems on federal lands. All existing and proposed USFS management activities in the subbasin are designed to meet ACS objectives. The West Fork Hood River is designated a Key Watershed in the Plan.

▪ Columbia River Gorge National Scenic Area Management Plan

The CRGNSA Management Plan (Columbia River Gorge Commission and USDA Forest Service, 1992) is implemented by the USFS and the Columbia Gorge Commission to insure that land use is consistent with the Scenic Area Act. The lower 3 miles of the Hood River are in the Scenic Area boundary. Proposed land use is subject to review by the County and the Gorge Commission for consistency with the Management Plan, elements of which address fish and wildlife habitat protection. [summary needed here].

Water Resources and Watershed Plans

▪ Powerdale Hydroelectric Project Interim Operations and Decommissioning Plan

An interagency Settlement Agreement was submitted to FERC regarding PacifiCorp-owned Powerdale Hydroelectric Project FERC No. 2659 (PacifiCorp et al., June 2003). Key provisions include dam removal in 2010 and partial removal of flowline structures, and interim measures to improve habitat conditions for listed and other fish. Interim measures include minimum instream flow increases from May-November in the Hood River below the dam, and an April 15-June 30 annual diversion shutdown to protect fish in lieu of fish screen replacement. Hydroelectric water rights will be transferred to an Instream Water Right pursuant to ORS 543A.305. Approximately 500 acres of land along the lower Hood River and a \$154,000 land stewardship fund (2003 dollars) will be transferred to a yet-to-be-named public agency or land trust for the purpose of preserving fish and wildlife habitat and maintaining low-intensity recreation access. If no suitable landowner is found by 2012, then Pacificorp may sell the land. A working group of state, local, and tribal representatives was formed to resolve the lands transfer issue.

▪ Oregon Plan for Salmon and Watersheds

Approved by the Oregon legislature in 1997, Oregon Plan for Salmon and Watersheds and the 1998 Steelhead Supplement outlines a statewide approach to ESA concerns based on watershed restoration, ecosystem management, coordination among state agencies, and local solutions to protect and improve salmon and steelhead habitat. The Oregon Watershed Enhancement Board provides grant funds and technical support for the Hood River Watershed Group and others to help implement the Oregon Plan locally.

▪ Hood River Watershed Action Plan (HRWG, 2002)

A 5-year Watershed Action Plan was developed by the Hood River Watershed Group, a voluntary conservation organization made up of irrigators and water districts, landowners, and federal, state, local, and tribal government agencies. Plan development was sponsored by the Oregon Watershed Enhancement Board, irrigation districts, and the

Tribes. The Action Plan identifies projects, strategies, and priorities to improve water quality and fish populations based on a 1999 Hood River Watershed Assessment. Measures address fish passage, stream flow restoration, water quality, habitat protection and restoration, and public awareness using cooperative partnerships. In its first year of implementation 18 of a total 67 projects were completed. Plan goals are to (1) protect stream reaches in good condition; (2) restore stream reaches in degraded condition but have the potential for high-quality habitat, and impacts and opportunities are known; (3) collect data to monitor trends or fill information gaps; and (4) educate the public about watershed stewardship and best management practices.

- Western Hood Subbasin TMDL & Water Quality Management Plan (Department of Environmental Quality, 2001)

The TMDL (Total Maximum Daily Load) and Plan addresses stream temperatures that exceed water quality standards in the subbasin. The Plan describes strategies to achieve temperature TMDL allocations and attainment of water quality standards.

Table 40. Proposed measures to meet TMDL load allocations and management agencies designated by DEQ for implementation (B. Lamb, DEQ, 2004).

Management Agency	Key Management Measures to Meet TMDL	Timeline or Mechanism
City of Hood River	Riparian corridor vegetation protection	Implementation Plan due by June 31, 2004
Hood River County	Riparian corridor vegetation protection	Implementation Plan due by June 31, 2004
Middle Fork Irrigation District	Reservoir water quality management plan to control temperature impacts of Laurance Lake	Data collection through spring, 2004; computer modeling and development of plan to occur after that time
Oregon Dept. of Agriculture	Riparian corridor vegetation protection	Agricultural Water Quality Management Area Plan and Rules (2001), subject to biennial review
Oregon Dept. of Transportation	Road maintenance and construction, stormwater practices	Statewide NPDES MS4 waste discharge permit (2000) and Road Maintenance Water Quality and Habitat Guide (1999)
ODF	Riparian vegetation protection, forestry best management practices	Forest Practices Act
BPA	Transmission system vegetation management	BPA Transmission System Vegetation Management Program Final Environmental Impact Statement (2000)
USFS	Riparian reserves and other riparian vegetation protection	Mt. Hood National Forest Plan (1990) and Northwest Forest Plan (1994)
DEQ	NPDES wastewater permits and 401 Certifications	Renewal of permits and re-certification of 401 projects

- Hood River Agricultural Water Quality Management Area Plan (ODA et al, 2001)
Under State Senate Bill 1010, a local advisory committee, the Oregon Department of Agriculture, and the Hood River SWCD identified strategies and best management practices to reduce agricultural pollution. OAR chapters 603-095-1100 to 1160 established Area Rules adopted in the plan that apply to agricultural activities (see Legal Protection). Recommended best management practices address runoff, soil erosion,

pesticides, irrigation, and riparian vegetation. The SWCD is the local implementing agency. ODA is responsible for enforcement of the Area Rules. Plan review occurs every 2 years, including a DEQ review to assess success in meeting TMDL and other goals.

- Water Conservation and Management Plans: Water Conservation Plans promote efficient use of the state's water resources and future supply planning. Farmers Irrigation District *Water Conservation and Management Plan* (1995) and *Sustainability Plan* (2000) outline objectives and opportunities for the irrigation system serving the west side of the subbasin, including instream flow and watershed restoration projects. This Plan proposes construction of a fully piped collection system and distribution network to replace remaining open canals and ditches. A goal is to increase streamflow in Green Point Creek and the Hood River through system and on-farm efficiency improvements, while maintaining adequate water supply for agriculture and hydropower generation at the district's 2 small hydro plants. Future increases in irrigation demand will be met through efficiency gains rather than increased storage or diversion, and conserved water will be left instream. Specific goals are to improve metering, modify reservoir storage, enhance fish screen facilities, educate water users, maintain and enhance agency interaction, restore watersheds, and develop conservation incentive programs. The Middle Fork Irrigation District and East Fork Irrigation District are drafting conservation plans for approval by the Oregon Water Resources Department.

Fish and Wildlife Plans

- Bull Trout Recovery Plan

A Bull Trout *Salvelinus confluentus* Draft Recovery Plan, Chapter 6, Hood River Recovery Unit (U.S. Fish and Wildlife Service, 2003) was prepared with input from a local working group, and many of its elements have been incorporated into this subbasin plan. The overall goal for bull trout in the Hood Recovery Unit is to increase their population stability and potential for long term persistence to the point where they are no longer likely to become an endangered species in the foreseeable future. Four objectives addressing distribution, abundance, habitat, and genetics are established to accomplish this goal. Prioritized tasks are identified to target water quality, upland habitat, research and monitoring, fish passage, interactions with nonnative fish, harvest and incidental angling mortality, and educational needs, and recovery criteria are established.

- Hood River Subbasin Salmon and Steelhead Production Plan

Initial planning for the current hatchery supplementation, habitat protection and restoration was developed as part of Columbia Basin System Planning (ODFW and CTWS, 1990). BPA is funding this plan and related activities in the ongoing Hood River Production Program jointly implemented by ODFW and CTWS. Activities in support of this plan were initiated in 1991 and capital facilities completed in 1999.

- Hatchery Genetics Management Plans

Regional federal, state and tribal fishery managers are collaborating to adopt Hatchery and Genetic Management Plans (HGMP) for anadromous fish artificial production programs by March 2004. Hood River Subbasin HGMPs for spring chinook, native

summer and winter steelhead, and Skamania/Foster summer steelhead were provided in electronic form to the NWPPC as part of this subbasin plan. The goal is to ensure that production activities comply with the ESA, and identify reforms to reduce risks to naturally spawning populations and improve survival of natural and artificially produced fish. Reforms include hatchery modifications intended to better define and achieve production and harvest objectives not necessarily related to ESA. Congress mandated that NWPPC review all artificial production facilities and programs in the Columbia Basin. The Council's Artificial Production Review and Evaluation (APRE) is in progress. The HGMP process will take into account APRE recommendations and agreements made in the US v Oregon proceedings.

- Fisheries Enforcement Plans

Oregon State Police and ODFW develop annual action plans to focus enforcement effort in specific areas and to resource priorities identified by ODFW. These areas have included Herman Creek, Laurance Lake, West Fork Hood River, and Hood River below Powerdale Dam.

- Fishery Management Evaluation Plan

The Hood River Fishery Management Evaluation Plan (FMEP) (Oregon Department of Fish and Wildlife, 2003) was prepared for NOAA Fisheries to ensure that sport harvest activities comply with the Endangered Species Act and to identify reforms to reduce risks to naturally spawning populations and improve survival of naturally produced steelhead. The Hood River FMEP specifies that ODFW shall maintain the angling regulations currently in effect for the Hood River, because the existing regulations do not appreciably reduce the likelihood of survival and recovery of listed steelhead in the Hood River. The monitoring and evaluation tasks specified in the FMEP will assess the catch of wild fish, fishery mortality, the abundance of hatchery and wild fish, and angler compliance. NOAA Fisheries and ODFW will review the FMEP at a specified interval to evaluate whether the FMEP objectives are being met.

- Hood River Habitat Protection, Restoration and Monitoring Plan

This Plan (CTWSRO 2000) was prepared by the Confederated Tribes of the Warm Springs Reservation in support of tribal fisheries goals. Based on watershed assessment and federal watershed analysis reports, the Plan identified primary habitat needs as (1) improved fish screening and fish passage at water diversions; (2) improved instream habitat structure and diversity; and (3) improved water quality and riparian conditions. The Plan outlines projects and strategies to protect existing high quality habitat, correct known fish survival problems, and improve natural production capacity to meet HRPP goals. Many of the Plan's approaches have since been incorporated into the Hood River Watershed Action Plan (HRWG, 2001).

5.3 Existing Management Programs

This section identifies public or private management programs that have a significant effect on fish, wildlife, water resources, riparian or upland areas.

- Hood River Production Program (HRPP)

The HRPP is a major BPA-funded program initiated in 1991 as a mitigation measure for Columbia River hydrosystem impacts on anadromous fish. It is jointly implemented by CTWSRO and ODFW. The program consists of supplementation, research, monitoring, evaluation, and habitat improvements. Capital facilities located in the subbasin are the Powerdale Dam fish ladder trap and the Parkdale Fish Facility. Broodstock are collected at the Powerdale Dam Fish Trap and held at the Parkdale Fish Facility. Incubation and rearing occurs primarily at facilities on the Deschutes River. Spring chinook, summer steelhead and winter steelhead smolts are acclimated at 4 upriver sites and released annually. Monitoring and research includes migrant fish trapping, life history data collection, creel surveys, spawning surveys, electrofishing, radiotracking, and genetic sampling. Habitat projects have included riparian fencing, fish passage, irrigation ditch to pipe conversion, water quality monitoring, habitat assessment, and watershed council support. A detailed review of the HRPP was completed in 2003 for BPA by S.P. Cramer and Associates (Underwood, K. D. et al, 2003) and recommends specific program modifications.

- Oregon Department of Fish and Wildlife Programs

ODFW is responsible for protecting and enhancing fish and wildlife and their habitats for present and future generations. ODFW monitors and regulates sport fish harvest and hunting in the subbasin, assists agencies and the public in reviews of forest practices, fill-removal permits, land use proposals, habitat plans, and restoration activities. ODFW and CTWSRO jointly implement the BPA-funded Hood River Production Program. ODFW maintains offices in The Dalles and offers cost assistance for landowners for fish screens. Harvest and habitat management in the subbasin is guided by ODFW policies and federal and state legislation. ODFW policies and plans applicable to the subbasin include the Natural Production Policy (OAR 635-07-521 to 524), Wild Fish Management Policy Native Fish Conservation Policy (OAR 635-007-0502 to 635-007-0509, Oregon Guidelines for Timing In-Water Work to Protect Fish and Wildlife Resources (ODFW 1986) and Hood River Subbasin Salmon and Steelhead Production Plan (ODFW & CTWSRO 1990) and Natural Resource Damage Assessment Procedures (ORS 468B.060 and OAR 635-410-0000 to 0030).

- Confederated Tribes of the Warm Springs Reservation of Oregon Programs

The CTWSRO implements programs in the subbasin to protect and enhance treaty fish and wildlife resources and habitats for present and future generations. Tribal members have federally reserved treating fishing and hunting rights pursuant to the 1855 Treaty with the Tribes of Middle Oregon and affirmed in *United States v. Oregon* 1974. CTWSRO co-manages fish and wildlife with ODFW, and jointly implements the Hood River Production Program, where it acts as the program lead for habitat-related projects

and plans. In addition, CTWSRO reviews development proposals affecting treaty fish and wildlife resources in the subbasin.

- Oregon State Forest Practices Program

The Oregon Department of Forestry enforces the Oregon Forest Practices Act (OAR 629-Division 600 to 680 and ORS 527) regulating commercial timber production and harvest on state and private lands. The OFPA contains guidelines to protect forests and streams in forest management activities including road maintenance, road construction, chemical application, slash burning, timber harvest, and reforestation.

- US Forest Service Programs

The Hood River Ranger District in Parkdale works with the Mt Hood National Forest (MHNH) and Region 6 to implement forest plans and activities including fire, recreation, and forest management, road maintenance, fish and wildlife habitat restoration and protection, watershed analyses, and public education on federal lands. As funds and staffing allows, it provides technical or financial assistance on projects on non-federal lands, and participates in local partnerships and the Watershed Council. Stream surveys and wildlife inventories are conducted on federal lands in the subbasin. Forest management plans specify a forest road density goal of under 2.5 miles per square mile designed to protect wildlife and this is assumed to protect aquatic habitat as well. Several roads have been closed to reduce sedimentation and others obliterated. As funding allows, the USFS upgrades road drainage systems to reduce sediment runoff and landslide potential. Hydrologic recovery goals control cumulative risks of timber harvest activities on aquatic habitat such as aggravated rain on snow flood damage (USFS 1996a and 1996b). The MHNH budget has declined sharply in recent years.

- Department of Environmental Quality Water Quality Program

With oversight from the US Environmental Protection Agency, DEQ is responsible for implementing the 1972 Clean Water Act and enforcing water quality standards to protect aquatic life and other beneficial uses. DEQ administers the Clean Water Act through a number of programs, including the 303(d) List of impaired water bodies which is submitted to EPA every two years, the National Pollutant Discharge Elimination System permit program, and the development of TMDLs for water bodies included on the 303(d) List. Oregon Department of Agriculture has the lead enforcement role in agricultural water quality violations and implementation of TMDLs on agricultural lands. DEQ provides technical assistance, low-cost loans, and grants in the subbasin. DEQ maintains an ambient water quality monitoring site at the Hood River mouth, and has conducted mixing zone studies of fruit packing plants, wastewater treatment plants, and other point source discharges for NPDES program compliance.

- Enforcement of Angling and Hunting Regulations

Oregon State Police (OSP) enforces fishing and hunting regulations in the subbasin with special attention to ESA-listed salmonids through covert and overt patrols, and routine checks for licenses, tags, bag limits, weapon/gear type, area, season, and other regulations. Two Fish and Wildlife Law Enforcement Officers are based in Hood River, one of which is funded by the Oregon Plan for Salmon and Watersheds. The officers are part of a regional team of 7 covering a 5-county area. The Columbia River Inter-Tribal

Fisheries Enforcement (CRITFE) monitors tribal fisheries and enforces fishing regulations in the Columbia River between Bonneville and McNary Dams.

- Oregon Water Resources Program

The Oregon Water Resources Department (OWRD) regulates water use in the subbasin. OWRD acts as trustee for instream water rights issued to the state and held in trust for the people of the state. The Hood Basin Program and its amendments classify surface and ground water permitted uses, can establish preferences between uses, may withdraw water from future appropriation and reserve water for specific uses. Guidelines for appropriation (ORS 537) determine the maximum rate and volume of water that can be legally diverted.

- Endangered Species Act Programs

The U.S. Fish and Wildlife Service administers the Endangered Species Act (ESA) for listed species including spotted owl, bull trout, and bald eagle in the Hood River. NOAA Fisheries administers the ESA for listed anadromous fish including steelhead and chinook in the Hood River. These agencies prepare recovery plans for listed species. NOAA Fisheries hopes to use subbasin plans as the foundation for the freshwater habitat components of ESA recovery plans for salmon and steelhead. ESA consultations and requirements are imposed at a programmatic level for agency activities or a project-specific level where federal permits or funds are involved, or impacts to Essential Fish Habitat (EFH) may occur.

- Hood River Soil and Water Conservation District Programs

The Soil and Water Conservation District (SWCD) operates through a locally-elected Board of Directors and conducts activities to promote conservation and best management practices on private lands. The SWCD is the local management agency for the Hood River Agricultural Water Quality Management Area Plan pursuant to State Senate Bill 1010. It administers the OWEB small grant program, and is the fiscal sponsor for the Hood River Watershed Group (HRWG), a voluntary watershed council organization made up of landowners, agriculture, agencies, tribes, business, environmental, sports fishers, and other interests. The HRWG facilitates public awareness and cooperative partnerships to address resource issues in the subbasin. Its mission is to “*sustain and improve the Hood River watershed through education, cooperation, and stewardship.*”

- Natural Resource Conservation Service Programs

The NRCS provides technical assistance to agricultural landowners in the subbasin and distributes federal cost-share funds to improve environmental practices and assist agricultural production, and provides technical support to the Hood River SWCD. The NRCS currently employs a District Conservationist in Hood River to develop farm conservation plans, provide engineering support, and implement federal programs for resource protection and restoration on agricultural land. The main NRCS landowner cost-share program in the subbasin is the *Environmental Quality Incentives Program*.

- Hood River District Integrated Fruit Production Program

The Integrated Fruit Production (IFP) program promotes the economical production of high quality fruit using ecologically sound methods and minimize side effects and use of agricultural chemicals. This is a continually developing industry education program that covers orchard planting, fertilizer, soil, and irrigation management methods, spray application efficiency, integrated pest management, and the packing and marketing of tree fruit. It is implemented through the Hood River Grower-Shipper Association and the OSU Mid-Columbia Agricultural Research and Extension Center.

- Oregon State University Extension Service Hood River Program

This program in part maintains an Extension Horticultural Agent located in Hood River County to assist landowners, growers, and other groups with agricultural best management practices while conducting related research. The Agent provides critical assistance to the NRCS, the SWCD, the Watershed Council, growers, and the public.

- Hood River County Noxious Weed Control Program

Currently 23 invasive plant species are targeted for control or eradication by the County Weed and Pest Department, which controls noxious weeds, combining biological controls, herbicide use and mechanical mowing or removal. Hood River County serves as a coordinating agency and contracts with BPA, State Parks, Oregon Department of Transportation, and the U.S. Forest Service to control noxious weeds in the subbasin.

- Oregon Department of Transportation Routine Road Maintenance Program

ODOT road maintenance activities in the subbasin follow its Water Quality and Habitat Guide (ODOT, 1999) and it conducts related monitoring, employee training, and reporting. This program helps ODOT to fulfill its commitment to the Oregon Plan for Salmon and Watersheds by (1) maintaining and improving its roadway structures to facilitate the passage of salmon, and (2) ensuring that road maintenance activities have minimal impact on salmon bearing streams and sensitive areas. The program has been approved by NOAA Fisheries under the 4(d) rule. Activities are coordinated with ODFW, NOAA Fisheries, and other agencies as required.

- Bonneville Power Administration Powerline Corridor Vegetation Management

The Big Eddy-Ostrander transmission line traverses the subbasin from Bald Mountain to Lolo Pass in a 946 acre of right-of-way of 425 feet average width. Vegetation control methods include chain saw, mechanical mowing and hand-applied herbicide sprays. Herbicide is not allowed on the National Forest, so BPA manually cuts plants every 2 years. Since a 2000 EIS review, BPA has adopted an integrated vegetation management policy seeking to establish low-growing, native plant communities under power lines.

5.4 Existing Restoration and Conservation Projects

This section describes restoration and conservation projects completed since 1998 and earlier projects of special significance. This information is organized by limiting factor or ecological process and is displayed in maps, tables, or narrative text. Monitoring, research, and evaluation activities are briefly described as well.

Most of the projects completed since 1998 address resource needs or limiting factors that were identified in earlier subbasin assessments (USFS, 1996a and 1996b; HRWG, 1999).

- Fish passage and/or screening at dams, diversions, and road crossings
- Instream habitat structure and riparian function
- Water quality (temperature, sediment, nutrient enrichment, and pesticides)
- Instream flow restoration below diversions
- Reduced forest road density for wildlife and sedimentation

The Oregon Watershed Restoration Inventory database indicated that \$2,010,996 was spent on 33 restoration projects reported in the Hood River subbasin between 1996 and 2002. Over half the projects were road, riparian, and instream habitat improvements. The OWEB database does not include forest service projects. In 2002 and 2003, a sum of \$7.2 million in local, state, and federal funds was committed to initiate or complete 30 out of 67 projects identified in the Hood River Watershed Action Plan (HRWG 2002). Project costs have ranged from \$250 for a streamcare education brochure to \$3.5 million to convert an open irrigation ditch to a pipeline. The majority of Action Plan projects addressed water quality and fish passage.

The unnumbered tables on the following pages summarize on-the-ground habitat improvement projects categorized by the primary ecological process or limiting factor addressed, i.e., fish passage; instream and riparian function; water quality, and flow restoration. The locations of completed projects are shown in Appendix A, Map 4.

Hood River Subbasin Projects Summary

Limiting Factor/Ecological Process: Fish Passage						
Project Type	Name	Lead Entity	Year Completed	Funding Source	Relationship to other subbasin activities	Effectiveness or Outcome
Fish screen	Farmers Canal Fish Screen – Hood River (RM 11.0)	Farmers Irrigation District	2002	BPA OWEB FID NFWF USDA -FS	Improves survival of downstream migrant fish from 2/3 of subbasin, at significant (80 c.f.s.) water diversion	Early tests found no injury or delay of migrants, facility testing and annual fish salvage & monitoring in canal continuing
Fish screen	East Fork Irrigation District Diversion Fish Screen - East Fork Hood River (RM 8.6)	East Fork Irrigation District	1996	FEMA EFID	Critical to survival of steelhead produced in East Fork above diversion	Facility performance good. Annual fish salvages show declining entrainment into canal below the screen.
Fish Screen	Dee ID Canal West Fork Hood River (RM 6.0)	ODFW	1999	ODFW	Improved survival of downstream migrant spring chinook and summer steelhead.	Screen constructed to NMFS specifications, and believed to function effectively.
Fish Screen and Upstream Passage	Rock Weirs and Screen - Teiman Cr (RM 1)	ODFW HRWG	2003	OWEB Landowner BPA	Watershed Action Plan measure to improve habitat quality, passage, landowner awareness in lower East Fork Hood tributaries	Juvenile and adult fish passage restored over small private irrigation diversion dam.
Upstream Passage	Upper Teiman Cr Bridge (RM 3.6)	HR County Forestry	2003	OWEB	Replaced undersized culvert as part of area sediment control project	Cutthroat trout juvenile & adult passage restored between well utilized habitats, flood transport capacity increased under road
Upstream Passage	Pinnacle Cr Bridge (RM 0.07) Pinnacle Cr Culvert Removal (RM 1.2)	USFS	2001 1999	USFS	Part of bull trout recovery actions around Laurance Lake Reservoir	Upstream passage improved at all reservoir elevations Upstream passage for all life stages of fish restored

Limiting Factor/Ecological Process: Fish Passage						
Project Type	Name	Lead Entity	Year Completed	Funding Source	Relationship to other subbasin activities	Effectiveness or Outcome
Upstream Passage		USFS		USFS	Part of bull trout recovery actions around Laurance Lake	
Upstream Passage	Powerdale Dam Fish Ladder Attraction Hood River (RM 4)	Pacificorp	1998	Pacificorp	High priority fish passage remediation site	Fish ladder attraction appears to be good, with exception on radial gate operations.
Fish screen (operational change)	Powerdale Dam Seasonal Diversion Shutdown Hood River @ RM 4	Pacificorp	Initiated in 2003	Pacificorp	In set of interim measures in the FERC Powerdale Hydroelectric Project Interim Operations and Decommissioning Plan	Migrants protected from entrainment. Voluntary cessation of power generation between 4/15 and 6/30 annually
Dam Removal (3)	Evans Cr Fish Passage & WQ Improvement @ RM 1.6, 3.2, 5.0	Middle Fork Irrigation District	1998 -2003	BPA OWEB	Evans Cr is a high priority for passage remediation. Project compliments bridge at RM 0.9	Information not yet available
Upstream Passage	Lower Evans Cr Bridge @ RM 0.9	CTWSRO	2003	BPA OWEB	Highest priority culvert barrier for remediation in high priority Evans Cr	Juvenile and adult anadromous passage fully restored & flood capacity increased
Upstream Passage	Tony Cr @RM 0.75	CTWSRO	1999	BPA	Interim low-cost action in creek identified as a priority for fish passage remediation	Project needs review to determine effectiveness for juvenile migration
Trap & Haul	Clear Branch Dam	Middle Fork Irrigation District	1996	MFID	Part of bull trout recovery actions around Laurance Lake	No fish passed to date. Poor attraction or predation suspected. Investigation ongoing
Spillway Improvement	Clear Branch Dam	Middle Fork Irrigation District	1992	MFID	Effort to address spillway design problem and fish passage	Effectiveness uncertain, as no comprehensive tests were conducted
Upstream Passage	Punchbowl Falls Fish Ladder Maintenance – West Fork Hood R. @RM 0.1	CTWSRO	annually	BPA	Insures ability of spring chinook & steelhead to access prime spawning habitat	Continued good performance of facility with storm debris removal from ladder entrances

Limiting Factor/Ecological Process: Fish Passage						
Project Type	Name	Lead Entity	Year Completed	Funding Source	Relationship to other subbasin activities	Effectiveness or Outcome
Fish screens (10)	10 headwater streams in West Fk & Hood R	Farmers Irrigation District	1995-2000	FID	Led to further innovations by FID of horizontal screen designs	These are resident trout or fishless streams; some screens need upgrades
Fish Screen and Upstream Passage	Phoenix Pharms Trout Ponds Baldwin Cr @ RM 1.3	ODFW	2000	ODFW	Watershed Action Plan measure to improve habitat quality, passage, landowner awareness in lower East Fork Hood tributaries	Facilities appear to function as designed
Upstream Passage	Meadows Creek culvert replacement	USFS	2002	USFS	Also prevents future road washout	open bottom arch culvert installed after washout

Limiting Factor/Ecological Process: Instream and Riparian Function						
Project Type	Name	Lead Entity	Year Completed	Funding Source	Relationship to other subbasin activities	Effectiveness or Outcome
Floodplain Restoration	Robinhood Cr Levee Setback	USFS	1999	USFS	Addresses need to restore channel/floodplain interaction.	Flood capacity and interaction with floodplain increased
Large Woody Debris Placement & Riparian Plantings	Green Point Creek Restoration	Farmers Irrigation District	1994 and 2000	OWEB USFS	Improves habitat quality for steelhead in reach where further flow restoration is planned	6600 cedar plantings at 90% survivals. Cabled '94 LWD improved habitat. '00 LWD still in place but awaits flood scour to create desired effects. Physical monitoring only.
Floodplain Restoration & Side Channel Reconnection	Upper Clear Branch Restoration	USFS	2000	USFS	Addresses need to restore habitat diversity, including slow water habitats. Part of bull trout recovery actions	2 miles and 30 acres restored. Large increase in bull trout using the treated section of mainstem channel and increasing trend in the old growth side channel.
Side Channel Reconnection	Lower East Fork Hood River	ODFW	1999	ODFW BPA	Addresses need to restore habitat diversity, including slow water habitats	Year-round flow restored to a 3500 ft long abandoned channel 2 steelhead redds found in restored channel in 1999, 5 redds in 2000.
Large Woody Debris Placement	Lake Br; Upper East Fork Hood River, West Fork, McGee Cr	USFS	1983-2003	USFS BPA	Addresses need to restore habitat diversity, including slow water habitats	Over 12 miles treated with addition of in-channel and floodplain large wood. Later projects more effective due to lessons learned
Wetland Protection	Baldwin Cr Wetland Easement/ Perimeter Fence at Miller Road	HRWG CTWSRO	2001	Mt Hood Meadows Ski Resort, Inc. DEQ BPA	Watershed Action Plan measure to improve habitat quality, passage, landowner awareness in lower East Fork tributaries	Chronic wetland disturbance, including periodic ditching eliminated. Monitoring not included in project scope
Large Woody Debris Placement	West Fork Hood R	Longview Fibre Company	1999	Longview Fibre Company	Addresses need to restore habitat diversity, including slow water habitats	Treated 3,000 feet of stream, installing 5 structures 90 pieces of LWD. Monitoring needed
Large Wood Placement & Volun. Rip. Tree Retention	Laurel Creek, Greenpoint Cr	Longview Fibre Company	2001	Longview Fibre Company	Addresses need to restore habitat diversity, including slow water habitats	Monitoring not included in project scope

Limiting Factor/Ecological Process: Water Quantity/Flow Regime						
Project Type	Name	Lead Entity	Year Completed	Funding Source	Relationship to other subbasin activities	Effectiveness or Outcome
Streamflow Restoration	Powerdale Dam Hydroelectric Project Hood River Minimum Instream Flow Requirements @ RM 4	Pacificorp	2003	Pacificorp	Mitigation measure in the FERC Powerdale Dam Interim Operations and Decommissioning Plan, TMDL	April – November minimum instream flows increased by a maximum of 150% in 3 mile bypass reach (see Appendix)
Streamflow Restoration	Increased return flow/powerhouse discharge just above Powerdale dam – Hood River @ RM 4.05	Farmers Irrigation district	1994-2003	Farmers Irrigation district	Related to voluntary irrigation system efficiency improvements and on-farm water conservation programs	April - October Minimum powerhouse discharge increased to 20-25 cfs from only 12 cfs in 1993
Streamflow Restoration	East Fork Hood River below East Fork ID diversion	East Fork Irrigation District	1996-2003	East Fork Irrigation District	Result of voluntary irrigation system efficiency improvements in subbasin	Channel dewatered in 1994, since then a minimum 20-30 cfs maintained through 2001 and 2003 droughts
Streamflow Restoration	Steelhead incubation flow augmentation below Clear Branch Dam	Middle Fork Irrigation District	1998- present	Middle Fork Irrigation District	Result of voluntary irrigation system efficiency improvements in subbasin, steelhead recovery	Incubation survival improved for steelhead Flow augmented in excess of 3 c.f.s. minimum requirement by 15-20 c.f.s for up to six weeks in May and June

Limiting Factor/Ecological Process: Water Quality						
Project Type	Name	Lead Entity	Year Completed	Funding Source	Relationship to other subbasin activities	Effectiveness or Outcome
Forest road decommissioning	Clear Branch Watershed Restoration	USFS	2000	USFS	Help restore riparian areas, reduce sedimentation, reduce wildlife harassment. Part of bull trout recovery actions	2 miles decommissioned
Forest road closures	Clear Branch Watershed Restoration	USFS	2000	USFS	Same as above	3.5 miles closed
Forest road decommissioning	Various sites	USFS	1996-2003	USFS	Help restore riparian areas, reduce sedimentation & wildlife harassment.	Approximately 50 miles of road decommissioned throughout the basin.
Campsite relocation	Various sites	USFS	1996-2003	USFS	Same as above	Two campsites relocated out of the riparian area
Forest road obliteration and improvements	Upper Teiman Cr	Hood River County	2001	Hood River County	Help restore riparian area and reduce sedimentation	¼ mile native soil road bed ripped up, mulched and replanted with conifers
Forest road reconstruction and improvements	Upper Neal Cr, West Fork Hood R., Greenpoint Cr & Ditch Cr	Longview Fibre Company	1998 2001 2002	Longview Fibre Co.	Help reduce sedimentation	Road surface drainage improved, peak flow passage capacity improved
Bridge and road improvement	Greenpoint Creek Bridge		2000 2001	Longview Fibre Co.	Help reduce sedimentation	Road surface drainage improved, peak flow passage capacity improved
Ditch to pipe conversion	Evans Creek Fish Passage and Water Quality Improvement	Middle Fork Irrigation District	2003	OWEB BPA USDA-FS	Watershed Action Plan measure to eliminate interbasin transfer of glacial silt	Glacial sediment input eliminated. Results to be evaluated for streambed fines, turbidity, benthos
Livestock Fencing & Riparian Plantings	Various sites	CTWSRO HRSWCD USFS	1996-2003	OWEB BPA	Watershed Action Plan measure to improve riparian habitat and agricultural water quality, TMDL	5.12 miles treated. Plant survivals good where maintenance occurred.
Miscellaneous agricultural water quality projects	Various sites – piping, plantings, drainage, erosion control, manure management	HRSWCD NRCS	1998-2003	NRCS OWEB	Watershed Action Plan measure to improve riparian habitat and agricultural water quality, TMDL	Projects begin to address multiple nonpoint pollution sources. Long term monitoring needed to verify improvements.

Columbia Gorge Tributaries Projects Summary

Project Type	Project Name/ location	Lead Entity	Year Completed	Funding Source	Relationship to other subbasin activities	Effectiveness or Outcome
Adult and juvenile fish passage, wildlife crossing, monitoring	Culvert replacement /Perham Creek at I-84 crossing	ODOT	2002	FHWA	Compliments other fish passage improvements; part of bridge safety upgrades	Restored access to 1/4 mile of anadromous habitat for cutthroat, coho, steelhead, chinook. Spawning by cutthroat, steelhead, and coho was observed after project completion. Monitoring will continue through 2005.
Adult and juvenile fish passage, monitoring	Culvert retrofit /Viento Creek at I-84 crossing	ODOT	2002	ODOT	Compliments other fish passage improvements.	Restored access to 1/2 mile of habitat for cutthroat, coho, and steelhead. Spawning by steelhead and coho observed after project completion. Monitoring to continue through 2005.
Noxious weed control	Routine roadside maintenance	ODOT	1998-present	ODOT	Compliments other noxious weed control activities	Removal of noxious weeds in the highway clear zone, reseeding with locally adapted grasses to prevent weed invasion.
Road Stormproofing	Hood River County Roads	USFS	2003	USFS Payco	Road drainage improvements to reduce sediment and restore more natural flow regimes	6 miles of road was treated to improve drainage by increasing culverts sizes and armoring fill and surfaces to reduce erosion
Large Wood Debris Placement	Eagle Creek	USFS	2000	USFS	Addresses need to restore habitat diversity	Habitat complexity increased by addition of in-channel and floodplain large wood
Road Decommissioning	Wyeth Bench	USFS	2001	USFS	This action will help restore riparian areas, reduce sedimentation, reduce wildlife harassment.	3 miles of road was decommissioned
Fish Screen Improvement	Herman Creek Oxbow Hatchery Intake Screen	ODFW	2002	ODFW USFS	Improves juvenile survival/connectivity in downstream direction	Screen upgraded to meet state and federal criteria, upstream passage not fully addressed

Water Quality Monitoring

Water quality monitoring has been conducted throughout the subbasin under a variety of different programs.

- *DEQ Ambient Monitoring:* DEQ maintains an ambient monitoring site at the mouth of the Hood River. This site has generally been monitored every other month for a variety of biological and chemical parameters since 1993.
- *DEQ Mixing Zone Studies:* DEQ has conducted periodic mixing zone studies of fruit packing and wastewater treatment plants, and other point source discharges for the purpose of Clean Water Act/National Pollutant Discharge Elimination System (NPDES) program compliance. Studies have been conducted in Lenz, Neal, Odell, McGuire, Wishart, and Trout Creeks and the East Fork Hood River.
- *DEQ TMDL Monitoring:* DEQ conducted intensive baseline monitoring at 39 sites in the subbasin during 1998 for TMDL development. Sites were monitored for a variety of biological and chemical parameters during one week in June, August and October.
- *Stream Temperature Monitoring:* Continuous temperature data has been collected at up to 60 sites since the early 1990s by the USFS, CTWSRO, HRWG, Mt. Hood Meadows Ski Resort, and irrigation districts. Data is collected to identify trends and the effectiveness of TMDL implementation and ongoing restoration projects.
- *Laurance Lake Reservoir Temperature Study:* Middle Fork Irrigation District initiated this study in 2003 with DEQ and OWEB funds to address TMDL load allocations for the reservoir. Temperature, flow and weather data collection continues at sites in the lake, in Clear Branch, and in Pinnacle Creek. A computer model developed at Portland State University will be used to evaluate reservoir management options to reduce warming in the reservoir and heat discharges to Clear Branch Creek.
- *Pesticide Monitoring:* Pesticide monitoring and bioassay studies in Hood River tributaries were conducted from 1999 to 2003 by DEQ and Oregon State University in consultation with the Hood River Grower-Shippers Association. The purpose has been to identify baseline conditions and to gauge the effectiveness of pesticide best management practices. Future monitoring depends on funding availability.
- *Additional Baseline Studies:* Temperature, bacteria, and nutrients are monitored in streams as resources allow by the Hood River Watershed Group in consultation with DEQ. The County Health Department occasionally measures bacterial contamination in surface waters, most recently in 1999.

Biological Monitoring

Various monitoring activities for fish and wildlife populations are carried out by ODFW, CTWS, Forest Service, volunteer organizations, and others. ODFW, CTWS, and USFS conduct annual spawning surveys for anadromous fish and juvenile and adult surveys for bull trout.

Culvert and Road Surveys

The Hood River County Forestry Department completed a forest road hazard inventory in 2000 to identify fish passage, sedimentation, and drainage improvements needed in the county forest road system. In 1998, the Oregon Department of Transportation and ODFW completed a culvert fish passage survey on public non-forest roads. The survey identified 46 culverts for remediation, with 18 culverts ranking as a medium priority and the remainder as a low priority. A 2001 culvert survey by the Mt Hood National Forest identified 52 culverts for remediation. Fish passage remediation in the subbasin was prioritized geographically based the “old” 6th HUC subwatersheds (Asbridge, G. et al., 2002). ODFW inventoried small private and public diversions and pumps to assess upgrades needed to meet screening criteria (ODFW, 1999).

Wildlife Survey Activity	Locations	Lead Entity	Duration or Frequency
Bald Eagle Mid-Winter Survey	Columbia River	ODFW	1979- Present
Bald Eagle Nest Site Survey	Columbia River Gorge	US Forest Service	1982- Present
Black Swift Survey	Hood River and Gorge subbasins	American Bird Conservancy	2003- Present
Breeding Bird Survey	Hood River Subbasin	US Geological Survey	1969-1995 and 2002- Present
Carnivore Snow-Tracking & Camera-Set Surveys	Hood River Subbasin	US Forest Service	1996- Present
Christmas Bird Count Survey	Columbia River Gorge	National Audubon Society	1988- Present
Common Nighthawk Survey	Hood River Breeding Bird Survey Route	Local Volunteer Biologist	2002- Present
Deer and Elk Radio Telemetry	Hood and White River Management Units	ODFW	1997- Present
Harlequin Duck Brood Surveys	Hood River and tributaries	US Forest Service	1998- Present
Northern Spotted Owl Nest-Site Occupancy	National Forest	US Forest Service	1988 - 1994
Peregrine Falcon Nest-Site Survey	Columbia River Gorge	US Forest Service	1990- Present
Hawk Watch/ Raptor Fall Migration Survey and Banding	Bonney Butte	HawkWatch International, Inc.	1998- Present
Terrestrial Mollusk & Salamander Surveys	National Forest	US Forest Service	1996- Present
Sandhill Crane Breeding Surveys, & Nestbox Monitoring	Mt. Hood National Forest	US Forest Service	1988 - Present
Amphibian Surveys	Mt. Hood National Forest	US Forest Service	1988- Present

5.5 Gap Assessment of Existing Protections, Plans, Programs and Projects

This section evaluates gaps in projects or activities needed to address the limiting factors or threats to fish and wildlife populations identified in the assessment. The gaps were determined by evaluating the extent to which limiting factors or threats have been addressed or eliminated by the projects, legal protections, plans, and programs described in this chapter.

Fish Passage and Habitat Connectivity: Fish passage has been restored at numerous sites however a number of high priority fish passage projects affecting listed steelhead and bull trout remain to be completed.

Instream habitat structure, floodplain and riparian function and processes : Available information indicates that woody debris placement in riparian and instream areas, especially projects completed in the last 5 years, have been effective in assisting physical processes needed to restore and improve habitat structure, including pools and hiding cover for fish. The EDT model suggests that increasing habitat diversity would have a strong effect on fish production. Additional stream reaches are in need of treatment or evaluation. The County floodplain ordinance and stream protection overlay zone may not sufficiently prevent incompatible development in natural channel migration areas along the East Fork Hood River. Portions of the East Fork Hood River are subject to channel avulsion, debris flows, and frequent channel changes. The East Fork Hood River channel migration zone was partially mapped by Hood River County Planning Department. Development in floodplains has sometimes been allowed if criteria including certified engineer approval is met. County stream corridor and riparian vegetation standards apply to fish bearing streams only and do not address vegetation protection on non-fish bearing and intermittent streams. Vegetation removal along these smaller channels will affect downstream areas in the fish bearing portions of streams.

Water Quality: While many projects have been and continue to be completed, nonpoint source pollution occurs at dispersed sites over time and is a continuing effort. Resources for continued pesticide monitoring and agricultural extension programs are needed.

Instream Flow Restoration: Opportunities exist to return water instream by continuing to assist irrigation districts in converting open ditches and canals to pipe, and to promote on-farm and user efficiency through technology and education. Field data has not been collected recently about the instream flow needs of fish in the Hood River subbasin. Existing instream water rights were established several decades ago. Since that time, instream flow assessment methodologies have evolved a great deal. Instream flow field studies would help gage the adequacy of existing instream water rights or future flow restoration targets based on field data collection. Resources are needed to continue voluntary instream flow restoration below diversions.

More information is needed to quantify the amount of water being diverted by non-water system users to insure that legal limits are not being exceeded and that opportunities to eliminate waste are acted upon. Most domestic and irrigation water systems report their diversion or consumption amounts. Although private irrigators use small amounts of water relative to the public systems, most private users divert or pump from the small streams where the effect may be significant. Water conservation plans are not completed by all districts and water providers. Conservation is not actively promoted except by the largest irrigation districts and agricultural organizations. Smaller water and irrigation systems have limited resources to commit to these purposes, or their water rights substantially exceed current use levels and conservation planning is considered a low priority.

Wildlife Habitat Protection and Monitoring: Legislated changes in Oregon’s Land Conservation and Development Commission periodic review requirements no longer require Hood River County local governments to update Statewide Planning Goal 5 requirements to inventory and protect wildlife habitat and wetlands. As part of Goal 5 periodic review, a wildlife habitat and wetland inventory was prepared for the City of Hood River and included lands located inside the urban growth boundary (Joel Shaich, PWS, Wetland Consulting, Portland, OR) but protection standards for these habitat areas were not adopted. A lack of current wildlife habitat information on non-federal lands is a significant gap since areas of high biodiversity exist outside of the MHNH, and many of these areas face development. Such information would help in long range planning, in development reviews, and in voluntary strategies including conservation easements or acquisitions to maintain wildlife populations and diversity. Similarly, the only other wetland information available is limited to the 1984 National Wetland Inventory that is viewed as non-comprehensive, and may prevent identification of opportunities to protect or restore other potentially significant wetland habitats. The Hood River County Comprehensive Plan includes policy goals such as “*conserve and/or preserve fish, wildlife, and their habitat areas*” and “*insure protection and provision of adequate habitat for wildlife species native to the area*”, but it is uncertain how effectively these goals are being met, particularly for wildlife. Continued development in the forest zone and other undeveloped natural areas likely will result in habitat loss, fragmentation, disturbance, and other impacts to wildlife. No mechanism is in place to monitor whether state or local natural resource policy goals are being met over time as additional development occurs.

Education and Awareness of Wildlife Habitat: There is a gap in awareness and education about needs and opportunities to maintain or improve wildlife habitat in rural residential properties. The loss of historic conifer forest to agriculture and development has resulted in a net loss of shelter for resident birds and mammals, especially in winter, at elevations under 2,500 feet. Missing in many rural residential properties are damaged live trees, standing dead trees, and large downed trees that supply nesting cavities, scanning perches, and insect-feeding substrate for birds and other wildlife.

Land Conservation Strategies for Important Habitat Areas: No voluntary conservation, acquisition, or incentive programs or plans address preservation of

remaining high-value low elevation wildlife habitat or migration corridors in critical habitat areas such as Hood River Mountain/Old Dalles Road, Middle Mountain, Fir Mountain, and the Whiskey Creek drainage. No site-specific wildlife mitigation projects have been funded by BPA in the Hood subbasin. Voluntary opportunities exist for private and public landowners, regional land trusts, local governments, and local non-profit organizations to work together to acquire, enhance, restore, or protect significant wildlife habitat areas. Opportunities will diminish over time if no action is taken.

Coordinated Plan for Forest Fuels Reduction: Wildfire hazard and forest fuels reduction planning needs to be addressed in a coordinated manner for all land ownerships, with adequate consideration of wildlife habitat needs as well as forest health, prevention of catastrophic watershed damage, and protection of life and property. The potential to mimic the effects of natural wildlife on forest communities using thinning and other techniques can be examined.

Coordinated Plan to Minimize Recreational Impacts to Wildlife: Increasing use and demand for forest and back-country recreation require a coordinated plan for multiple ownerships that addresses erosion and stream sedimentation, trail proliferation, and wildlife disturbance. Recreation use of forest roads, trails, shorelines, and backcountry areas is rising with regional population growth, tourism, the proliferation of new forms of recreation, and technological advances in recreation equipment and vehicles. Access to publicly-owned lands is a large part of the appeal of the Columbia River Gorge area. In recent years, county and private forest lands have experienced significant increases in both motorized and non-motorized trail use, including unauthorized construction of trails, stream crossings, and ramp structures. Trail and off-trail backcountry use on National Forest lands have increased at the same time. There is a need to involve wildlife biologists, land managers, local communities, recreation groups and businesses, environmentalists, and elected officials in developing a Columbia Gorge-wide plan to identify the needs of wildlife and to manage trail, backcountry, and shoreline recreation activities and developments in a manner that is sensitive to wildlife populations. The goal of such a plan would be to have and enjoy recreational opportunities that are compatible with the long term maintenance of healthy wildlife communities. Concerns about diminishing USFS budgets to maintain trails and facilities and manage recreation impacts. Impacts to wildlife from chronic recreational disturbance may range from direct mortality, habitat loss or degradation, to changes in behavior including avoidance and displacement from breeding and foraging habitat, habituation or changes in distribution leading to conflicts with humans, or attraction to humans as a source of food (www.montanacws.org). Access to certain areas may need to be controlled spatially or seasonally to minimize disturbance to wildlife and fish habitat, and insure that wildlife can continue to utilize historic forage and breeding areas. Moving recreation activities back from lake and stream shorelines could further improve conditions (USFS 1998).

Forest Management and Maintenance: Appropriated funds for forest road maintenance on National Forest lands have declined over the last 10 years in part because of declining timber sales. It is estimated that the Mt Hood National Forest is underfunded by more

than 50% (\$2 million in needs vs. \$800,000 budget) to maintain the current road network to full objective maintenance-level standards.

Additional Resources for Knotweed Control: As of May 2004, 28 sites with Japanese knotweed have been identified in Hood River County. A multi-year inventory and control effort is needed to keep knotweed from infesting and taking over fish and riparian wildlife habitats in the planning area.

Public Awareness of Local and Regional Fish and Wildlife Efforts: There is a need to improve awareness, education, coordination, and communication between local communities and agencies regarding the goals of the Columbia Fish and Wildlife Program, ESA, CWA, NWFP, NSAMP, and Oregon Plan for Salmon and Watersheds. A large proportion of the public is unaware of the goals or existence of these programs.