Executive Summary

Bull Run Water Supply Habitat Conservation Plan

For the Issuance of a Permit to Allow Incidental Take of Threatened and Endangered Species

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Submitted by

City of Portland Water Bureau

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Introduction

The Bull Run Water Supply Habitat Conservation Plan (HCP) is a 50-year plan to protect and improve aquatic habitat while continuing to manage the Bull Run River watershed as a water supply for the City of Portland, Oregon. The HCP constitutes an application for a federal incidental take permit under Section 10 of the Endangered Species Act (ESA). The primary focus of the HCP is protection for ESA-listed anadromous fish under the jurisdiction of the National Marine Fisheries Service.

The HCP is designed to respond to the City's stewardship responsibilities for the Bull Run River ecosystem and for the water supply system. Water ratepayers will bear less than $2 million in average annual costs, or about $93 million over the HCP's 50-year term. Implementing the HCP will enable the City to continue operating the Bull Run water system while also avoiding and/or minimizing impacts to covered species as required by ESA.

The Bull Run Watershed

The Bull Run watershed is located in the foothills of the Cascade Mountains, northwest of Mt. Hood. The Bull Run River is a major tributary of the Sandy River; the Sandy River flows into the Columbia River. The Bull Run River is approximately 25 miles long, and the related watershed drains approximately 140 square miles. Most of the watershed is located within the Mt. Hood National Forest. The City of Portland owns the majority of the riparian land along the lower 6 miles of the Bull Run River.

The Bull Run Water Supply

The Bull Run watershed has been used by the City of Portland, Oregon, for water supply since 1895. The City's water system provides water to residents and businesses within the city limits of Portland (retail supply) as well as to a number surrounding communities (wholesale supply). As of June 2008, approximately 860,000 Oregonians receive all or part of their water supply from Bull Run.

The Bull Run water supply system is the largest municipal water supply system in the state. The City's secondary supply, the Columbia South Shore Well Field, is the second-largest system. The City has a statutory water right to the full flow of the Bull Run River. When Portland General Electric's Bull Run hydroelectric project is removed (as part of a planned decommissioning), the City of Portland will be the only entity diverting water from the Bull Run River and its tributaries.

Reservoir 1 and Dam 1 in the Bull Run Watershed

Background

Three key factors helped shaped the context for the City's decision to develop an HCP: ESA species listings, Clean Water Act compliance, and water supply reliability and affordability. Foremost were the listings of the anadromous fish and the associated ESA regulatory requirements. In addition to ESA, the City also has regulatory obligations under the federal Clean Water Act that are specific to the Bull Run River for water temperature. Maintaining the reliability of the Bull Run water supply and affordability of water rates are continuing issues for local retail and wholesale customers and will be significant considerations for the Portland City Council during implementation of the HCP.

Species Listings

In 1998, the National Marine Fisheries Service (NMFS) listed winter steelhead in the lower Columbia River Basin as a threatened species under the federal Endangered Species Act. Since then, Lower Columbia River Chinook (spring and fall runs), Lower Columbia River coho, and Columbia River chum salmon have also been listed as threatened species. In March 2008, NMFS announced its decision to initiate a status review for Pacific eulachon; a decision to list will occur by November 8, 2008. These listings are the primary regulatory motivation for the City to prepare this HCP and seek an incidental take permit for the Bull Run water supply.

As required by ESA, NMFS is preparing a Recovery Plan for Chinook salmon, winter steelhead and coho salmon. The City has been in ongoing communication with NMFS staff involved in preparation of the Recovery Plan. The City anticipates that the HCP will be consistent with the Recovery Plan and will provide an important building block for Recovery Plan implementation.

Clean Water Act Compliance

In 2002, the Oregon Department of Environmental Quality (ODEQ) listed the lower Bull Run River as a "water quality limited stream" due to summer water temperatures. ODEQ subsequently prepared a Total Maximum Daily Load (TMDL), under the authority of the Clean Water Act, to define requirements for the Bull Run River and other Sandy River stream segments. Because water temperature standards for the Bull Run River are set at a level to protect cold water fish species (including the listed fish), the City concluded that a coordinated plan to address both the ESA and the Clean Water Act requirements was needed. With this in mind, the City prepared the HCP to be consistent with the CWA requirements and also prepared a temperature management plan. The temperature management plan relies on the water temperature measures included in the HCP, and

is provided for reference as Appendix G of the HCP. The temperature management plan was approved by ODEQ in May 2008.

Water Supply Reliability and Affordability

From the City's point of view, a reliable and affordable water supply is a critical element in Portland's livability and economic vitality. The City's challenge is to continue to meet its safe drinking water mission while also meeting new ESA and Clean Water Act responsibilities. Careful attention was given when developing the HCP to the implications the habitat conservation commitments might pose for water supply, including day to day operation, long term supply availability, and costs to ratepayers. Proactive water conservation programs and groundwater supply play important continuing roles in ensuring the City's ability to supply enough water to meet customer needs.

Water Supply System Components and Impacts

The Bull Run water supply system comprises the most significant man-made feature affecting aquatic habitat in the Bull Run River watershed. The primary facilities covered in the HCP are introduced in this section and are described more fully in Chapters 2 and 3. The presence and operation of the water system infrastructure creates impacts on habitat for several species of listed fish as well as other aquatic and terrestrial species. The three key effects of the water system involve river flow, river temperature, and aquatic and riparian habitat, which are briefly summarized in this section along with a list of the covered species and the other species addressed in the HCP. These species and the City's impacts on them are described in more detail in Chapters 5 and 8.

Bull Run Water Supply System Components

The primary components of the water supply system are two dams and the related reservoirs, located at approximately river mile (RM) 6.0 and RM 11.1 on the Bull Run River. The HCP is primarily focused on the known or possible aquatic and riparian impacts associated with operating the dams and reservoirs. The HCP specifically excludes water system components located outside the Sandy River Basin, including the distribution portion of the system which delivers water directly to homes and businesses.

Aquatic and Riparian Impacts of the Bull Run Water Supply System

The three primary categories of water system impacts are river flow, river temperature and aquatic/riparian habitat.

Bull Run River Flow

The City diverts approximately 20 percent of the total annual flow of the Bull Run River for water supply. During the summer, the diversion has historically been almost all of the natural flow leaving little water in the river for fish. Reduced flow results in decreased habitat for spawning and rearing, as well as increased water temperatures.

Bull Run River Temperature

Although temperatures in the Bull Run River are naturally warm in the summer months due to the bedrock substrate and the east-west midday sun exposure, storage of water in the reservoirs causes further warming. The existing configuration of the infrastructure also limits the City's ability to store cold water for release later in the summer. Warm temperatures stress rearing and spawning fish.

Aquatic and Riparian Habitat

The Bull Run dams trap gravels and wood. The trapped gravel reduces the amount of gravel in the lower river that fish use for spawning. The trapped wood reduces the complexity of habitat in the lower river, reducing the ability of fish to rest and hide from predators. The dams also block access to upstream habitat for spawning and rearing.

Covered Species

The HCP requests ESA coverage for the following species:

- Lower Columbia River Chinook Salmon (Spring and Fall)
- Lower Columbia River Steelhead(Winter)
- Lower Columbia River Coho Salmon
- Columbia River Chum Salmon
- Pacific Eulachon

Photo courtesy of Bonneville Power Administration.

The HCP also includes conservation measures and effects analyses for 18 species under the jurisdiction of the US Fish and Wildlife Service. The species included are those most likely to be affected by water system operations and/or benefited by measures designed for the anadromous fish.

The 18 species are listed below. One of the species, northern spotted owl, is currently listed as threatened. The bald eagle was recently delisted under ESA but is still protected under other federal statutes. The City will not seek ESA coverage for the USFWS species at this time. However, the City believes the HCP provides protection for these species and their habitats that avoids or mitigates any significant impacts.

Fish

- Rainbow Trout
- Coastal Cutthroat Trout
- Pacific Lamprey
- River Lamprey
- Western Brook Lamprey

Amphibians and reptiles

- Cope's Giant Salamander
- Cascade Torrent Salamander
- Clouded Salamander
- Oregon Slender Salamander
- Coastal Tailed Frog
- Northern Red-legged Frog
- Cascades Frog
- Western Toad
- Western Painted Turtle
- Northwestern Pond Turtle

Birds and mammals

- Bald Eagle
- Northern Spotted Owl
- Fisher

Development of the HCP

A more than ten-year process has culminated in the HCP. This process has included a partnership effort involving a dozen or more public and private organizations and detailed technical work. The partnership approach and technical foundation are briefly introduced in this section and described further in Chapter 2. Key themes emerged from this work that guided development of the HCP. These themes are introduced in this section. More specific goals and objectives developed from these themes are described in Chapters 6 and 9.

Partnership Approach

Convening the players involved in recovering the Sandy River populations of the listed fish was a key step toward developing the HCP. The participants included staff representing NMFS, USFWS, USDA Forest Service – Mt. Hood National Forest, USDI Bureau of Land Management, Oregon Department of Fish and Wildlife, Oregon Department of

Environmental Quality, Clackamas County, Metro Regional Government, Multnomah County, Clackamas County, Oregon Trout, Northwest Steelheaders, The Nature Conservancy, Western Rivers Conservancy, East Multnomah County Soil and Water Conservation District, Portland General Electric, as well as the Portland Water Bureau. The Partners developed a vision and a basin-wide restoration strategy to guide selection and implementation of projects. The Partners continue to meet and to work together on recovering native fish in the Sandy River Basin (www.sandyriverpartners.org).

The Bull Run HCP is a significant product of this partnership effort. The Partners helped assess opportunities in the Bull Run watershed and in the larger Sandy Basin, and provided feedback on measures the City selected for the HCP. Through the actions in the HCP, the City is seeking to complement and support the restoration efforts the Partners are implementing throughout the larger Sandy River Basin.

Technical Foundation

The technical work involved in developing the HCP focused on establishing a solid foundation of scientific information. Data were collected and compiled about the habitat used by the listed fish throughout the entire Sandy River Basin. Understanding the whole Basin helped the City and the Sandy River Basin Partners to better assess the role that the Bull Run River plays in providing salmon habitat. Technical products at the basin-wide scale include the following:

- Historical and current distribution maps for the listed fish
- A geographic information system (GIS) map layer catalog covering the entire Sandy Basin
- A database of 120 stream reaches covering the extent of historical use by anadromous fish
- A 46-attribute database of habitat conditions in those reaches, based on recent stream surveys
- An assessment of productivity, abundance and diversity throughout the 120 reaches
- An assessment of reaches currently providing the greatest productivity, known as "Anchor Habitats"
- A database of more than 150 opportunities (i.e., on-the-ground projects) to improve habitat conditions

The 46-attribute database formed the foundation of the Ecosystem Diagnosis and Treatment (EDT) model. The EDT model was used to evaluate productivity, abundance, and diversity. The Bull Run River was a component of each of these basin-wide analyses.

In addition to the basin-wide analyses, the City also analyzed the following technical information for the Bull Run River:

- Temperature data measurements and temperature modeling of the reservoirs and lower Bull Run River
- Flow measurements and available fish habitat (i.e., Weighted Useable Area)
- Habitat conditions in the lower Bull Run river (e.g., gravel, wood, substrate, riparian vegetation, shade)
- Fish presence in the Bull Run reservoirs
- Location of waterfalls upstream of the Bull Run dams and the likelihood that they were passable by fish historically
- Hydrologic variability over a 60-year period of available records (e.g., changes in flow due to year-to-year weather variation)
- Productivity, abundance and diversity (using the EDT model) that would result from proposed habitat conservation measures

The results provide the basis for the analysis of biological effects likely to result from implementing the HCP, as described in Chapter 8.

Key Themes for the HCP

Key themes emerged from discussions among the Partners and from the technical results. The City and the Partners recognized the need to:

- Minimize and mitigate impacts on the covered fish species
- Choose measures that are feasible, implementable, and compatible with ongoing operation of the water system
- Improve conditions in the Bull Run River where the City has direct impacts on habitat
- Improve conditions at targeted locations elsewhere in the Sandy River Basin for three primary reasons: 1) not all of the impacts of the drinking water system on the Bull Run River can be mitigated; 2) greater benefits for the species can be achieved by habitat improvements elsewhere in the Sandy Basin for a smaller cost; and 3) cooperation with Basin partners will create better overall results than the City acting alone
- Act in a timely fashion to help reverse declining trends in the Sandy River Basin fish populations
- Plan for and manage any HCP impacts to water system customers and ratepayers

Goals and objectives for the HCP are described in Chapters 6 and 9.

Elements of the HCP

The contents of an HCP are in part prescribed by federal regulations (16 USC 1531-1544). An HCP also includes descriptive information to provide context and rationale. This executive summary does not attempt to list and summarize each and every element. The key elements are the habitat conservation measures, the measures defined to monitor the effectiveness of the HCP and adapt to change as necessary, and the analysis of the biological outcomes likely to result from implementing the HCP.

Habitat Conservation Measures

The HCP includes 49 measures to protect and improve habitat and to avoid or minimize the impacts of the Bull Run water supply system. As a whole, these measures were designed to address the flow, temperature, and habitat impacts described above. Specific performance criteria dealing with timing, location, quantity, and procedures are prescribed for each measure. The measures are listed in Table ES-1.

Table ES-1. Habitat Conservation Measures

Category	Identifying Codes[a]	Watershed Location	Measure Names[b]
Bull Run River Flow	F-1	Bull Run	Minimum Instream Flows, Normal Water Years
	F-2	Bull Run	Minimum Instream Flows, Water Years with Critical Seasons
	F-3	Bull Run	Flow Downramping
	F-4	Bull Run	Little Sandy Flow Agreement
Bull Run River Temperature	T-1	Bull Run	Pre-Infrastructure Temperature Management
	T-2	Bull Run	Post-Infrastructure Temperature Management
Bull Run River Habitat	H-1	Bull Run	Spawning Gravel Placement
	H-2	Bull Run	Riparian Land Protection
	P-1	Bull Run	Walker Creek Fish Passage
	R-1	Bull Run	Reservoir Operations
	R-2	Bull Run	Cutthroat Trout Rescue
	R-3	Bull Run	Reed Canarygrass Removal

Table continued on next page.

Table ES-1. Habitat Conservation Measures, continued

Category	Identifying Codes[a]	Watershed Location	Measure Names[b]
Water System Operation and Maintenance	WS O&M-1	Bull Run	Bull Run Infrastructure Operation and Maintenance
	WS O&M-2	Bull Run	Bull Run Spill Prevention
Offsite Sandy Basin Aquatic and Riparian Habitat	H-3	Bull Run (Little Sandy)	Little Sandy 1 and 2 Large Wood Placement
	H-4	Lower Sandy	Sandy 1 and 2 Log Jams
	H-5	Lower Sandy	Gordon 1A and 1B Large Wood Placement
	H-6	Lower Sandy	Trout 1A Large Wood Placement
	H-7	Lower Sandy	Trout 2A Large Wood Placement
	H-8	Lower Sandy	Sandy 1 Reestablishment of River Mouth
	H-9	Lower Sandy	Sandy 1 Channel Reconstruction
	H-10	Lower Sandy	Turtle Survey and Relocation
	H-11	Lower Sandy	Sandy 1 Riparian Easement and Improvement
	H-12	Lower Sandy	Sandy 2 Riparian Easement and Improvement
	H-13	Lower Sandy	Gordon 1A/1B Riparian Easement and Improvement
	F-5	Middle Sandy	Cedar Creek Purchase Water Rights
	H-14	Middle Sandy	Sandy 3 Riparian Easement and Improvement
	H-15	Middle Sandy	Cedar 2 and 3 Riparian Easement and Improvement
	H-16	Middle Sandy	Alder 1A and 2 Riparian Easement
	H-17	Middle Sandy	Cedar 2 and 3 Large Wood Placement
	P-2	Middle Sandy	Alder 1 Fish Passage
	P-3	Middle Sandy	Alder 1A Fish Passage
	P-4	Middle Sandy	Cedar Creek 1 Fish Passage

Table continued on next page.

Table ES-1. Habitat Conservation Measures, continued

Category	Identifying Codes[a]	Watershed Location	Measure Names[b]
Offsite Sandy Basin Aquatic and Riparian Habitat	H-18	Upper Sandy	Sandy 8 Riparian Easement and Improvement
	H-19	Salmon	Salmon 1 Riparian Easement and Improvement
	H-20	Salmon	Salmon 2 Riparian Easement and Improvement
	H-21	Salmon	Salmon 3 Riparian Easement and Improvement
	H-22	Salmon	Boulder 1 Riparian Easement and Improvement
	H-23	Salmon	Salmon 2 Miller Quarry Acquisition
	H-24	Salmon	Salmon 2 Miller Quarry Restoration
	H-25	Salmon	Salmon 2 Carcass Placement
	H-26	Salmon	Boulder 0 and 1 Large Wood Placement
	H-27	Zigzag	Zigzag 1A Channel Design
	H-28	Zigzag	Zigzag 1A and 1B Riparian Easement and Improvement
	H-29	Zigzag	Zigzag 1A, 1B, and 1C Carcass Placement
	H-30	Multiple	Habitat Fund
Terrestrial Habitat	W-1	Multiple	Minimize Impacts to Spotted Owls
	W-2	Multiple	Minimize Impacts to Bald Eagles
	W-3	Multiple	Minimize Impacts to Fishers

[a] The code letters refer to flow (F), temperature (T), habitat (H), passage (P), reservoir operations (R), water system operation and maintenance (WS O&M), and wildlife (W).

[b] The numbers in the measure names refer to the river "reach" where the measure will be implemented. See Appendix B for definitions of these river reaches.

Monitoring, Research and Adaptive Management Programs

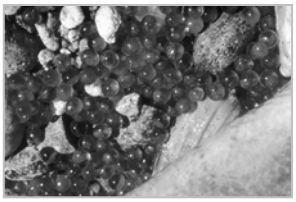

Photo courtesy of Bonneville Power Administration.

The HCP includes monitoring measures to track the implementation and effectiveness of the habitat conservation measures described above. Monitoring will include the preparation of annual reports as well as data collection efforts tied to specific performance objectives ("measurable habitat objectives"). The research effort includes four habitat and population studies in the lower Bull Run River as well as participation in a partnership research effort on juvenile salmonids in the larger Sandy River Basin.

The HCP also incorporates a framework for responding to new information and the likelihood that some reconsideration and adaptation will be necessary over the 50-year term. The Adaptive Management program involves the basin-wide restoration strategy developed by the Sandy River Basin Partners, an HCP Implementation Committee, and a framework to guide decision-making. The Adaptive Management program incorporates two dedicated sources of funding: $4 million from the Habitat Fund and a separate $3 million Insurance Fund to address adaptive management needs, if necessary.

In addition, the HCP also includes provisions (Changed Circumstances, Chapter 10) for dealing with changes that might occur over the 50-year term of the HCP, including the potential impacts of climate change.

Analysis of Biological Outcomes

The HCP provides a detailed analysis of the effects likely to result from implementing the habitat conservation measures. The most detailed analyses are provided for the "four primary covered species" (fall Chinook, spring Chinook, winter steelhead, and coho) for which the City had the most available information. Effects for these species are presented in terms of the lower Bull Run River habitat conservation measures, the offsite Sandy Basin habitat conservation measures, and the Sandy River Basin populations. Effects analyses are also provided for each of the other species listed above, including the three listed species: Columbia River chum, eulachon (smelt), and the northern spotted owl. In each case, the City concludes that the HCP measures, taken as a whole, will avoid or minimize impacts to the degree required by ESA.

Alternatives to the HCP

The HCP represents the City's approach for achieving ESA and CWA compliance. The City considered two primary alternatives to the HCP and dismissed those alternatives because they did not offer the combination of resource benefit, regulatory certainty and cost-effectiveness provided by the HCP. The No Action alternative would continue a limited number of actions to comply with Clean Water Act temperature requirements in the lower Bull Run River. No other actions would be taken. The Fish Passage alternative would provide new facilities to enable fish to reach habitat upstream of the Bull Run dams but would not include the offsite Sandy Basin measures described in the HCP. Both of these alternatives are evaluated in detail in the accompanying environmental impact statement (EIS).

Funding the HCP

The HCP is anticipated to cost about $93 million to implement over the 50-year term, which is equivalent to less than $2 million per year on average. These costs will be paid by water system ratepayers. The costs are for implementing the variety of habitat conservation measures and the associated monitoring. Some of the measures include installation of new infrastructure; the largest and most expensive of these are the proposed new multiple level intakes at Dam 2 to better manage water temperatures in the Bull Run River below the dams. Approximately one-third of the estimated total costs of the HCP are related to pumping groundwater from the Columbia South Shore Well Field. As has been the case since the City began providing fish flows in 2000, groundwater will be necessary in some years to enable the City to meet customer demands and release water into the Bull Run River for fish. Only the anticipated groundwater costs directly related to the release of water for fish are included in the HCP.