

**Final
Cedar River Watershed
Habitat Conservation Plan**

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

City of Seattle

April 2000

**CEDAR RIVER WATERSHED
HABITAT CONSERVATION PLAN**

**FOR THE ISSUANCE OF A PERMIT TO ALLOW INCIDENTAL
TAKE OF THREATENED AND ENDANGERED SPECIES**

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List of Publications

Issued April 2000

Cedar River Watershed Habitat Conservation Plan for the Proposed Issuance of a Permit to Allow Incidental Take of Threatened and Endangered Species. April 2000.

Technical Appendices for the Cedar River Watershed Habitat Conservation Plan. April 2000.

Resource Maps for the Cedar River Watershed Habitat Conservation Plan. April 2000.

Issued May 27, 1999

Response to Public Comments on the Public Review Draft of the Environmental Assessment/ Environmental Impact Statement for the Proposed Issuance of a Permit to Allow Incidental Take of Threatened and Endangered Species. May 1999.

Environmental Assessment/Final Environmental Impact Statement for the Proposed Issuance of a Permit to Allow Incidental Take of Threatened and Endangered Species. May 1999.

Issued December 10, 1998

Draft Cedar River Watershed Habitat Conservation Plan for the Proposed Issuance of a Permit to Allow Incidental Take of Threatened and Endangered Species. Public Review Draft, December 1998.

Environmental Assessment/Draft Environmental Impact Statement for the Proposed Issuance of a Permit to Allow Incidental Take of Threatened and Endangered Species. Public Review Draft, December 1998.

Resource Maps from the Cedar River Watershed Habitat Conservation Plan and Environmental Assessment/Environmental Impact Statement. Public Review Draft, December 1998.

Executive Summary for the Draft Cedar River Watershed Habitat Conservation Plan and the Draft Environmental Assessment/Environmental Impact Statement. Public Review Draft, December 1998.

Technical Appendices for the Cedar River Watershed Habitat Conservation Plan and Environmental Assessment/Environmental Impact Statement. Public Review Draft, December 1998.

List of Resource Maps

All of the maps for the Cedar River Watershed Habitat Conservation Plan are contained in a separate document entitled “Resource Maps for the Final Cedar River Watershed Habitat Conservation Plan.” The numbering scheme/order is arranged by map category and does not necessarily reflect the order in which they are discussed in the particular documents.

| Map Number | Map Title |
|-------------------|--|
| 1 | Major and Minor Hydrological Subbasins |
| 2 | Cedar River Watershed and its Environs |
| 3 | Land Ownership |
| 4 | Regional Context |
| 5 | Existing Forest Age |
| 6 | Existing Habitat Coverage |
| 7 | Cover Types |
| 8 | Known Fish Distribution |
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| 10 | Mass Wasting/Landslide Potential |
| 11 | Surface Erosion Potential |
| 12 | Road Surface Erosion Potential |
| 13 | Transportation System: Current and Future |
| 14 | Projected Forest Seral Stages by Major Subbasin at Years 2020 and 2050 |
| 15 | Projected Distribution of Forest Seral Stages at Year 2050 |

Acronyms and Abbreviations

Acronyms and Abbreviations used in the Text

| | |
|---------|---|
| ACOE | United States Army Corps of Engineers |
| AFM | Anadromous Fish Mitigation |
| BIBI | Benthic Index of Biological Integrity |
| BLM | Bureau of Land Management |
| BMPs | Best Management Practices |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| CHU | Critical Habitat Unit; used in reference to the spotted owl |
| CMAI | Culmination of Mean Annual Increment |
| CML | Chester Morse Lake |
| CPUE | Catch Per Unit Effort |
| CRAFC | Cedar River Anadromous Fish Committee |
| CRIFC | Cedar River Instream Flow Committee |
| CWA | Cascades Water Alliance |
| dbh | diameter at breast height |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| EPA | United States Environmental Protection Agency |
| ESA | Endangered Species Act (of 1973) |
| FEMAT | Forest Ecosystem Management Assessment Team |
| FERC | Federal Energy Regulatory Commission |
| FRI | Fisheries Research Institute |
| GIS | Geographic Information Systems |
| HCP | Habitat Conservation Plan |
| IA | Implementation Agreement |
| ID Team | Interdisciplinary Team |
| IF | Instream Flows |
| IFA | Instream Flow Agreement |
| IFIM | Instream Flow Incremental Methodology |
| IHN | Infectious Hematopoietic Necrosis |
| IHNV | Infectious Hematopoietic Necrosis Virus |
| IRPP | Instream Resources Protection Program |
| ITP | Incidental Take Permit |
| kV | Kilovolt |
| LMA | Landsburg Mitigation Agreement |
| LWD | Large Woody Debris |
| MGD | Million Gallons per Day |
| MW | Megawatt |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| ODFW | Oregon Department of Fish and Wildlife |
| PCT | Precommercial Thinning |
| PEM | Palustrine Emergent (wetlands) |

| | |
|--------|---|
| PHS | Priority Habitats and Species |
| PMF | Probable Maximum Flood |
| PPI | Parr Production Index |
| PSS | Palustrine Scrub/Shrub (wetlands) |
| RCW | Revised Code of Washington |
| RM | River Mile |
| SDWA | Safe Water Drinking Act |
| SEPA | State Environmental Policy Act |
| SIS | Stand Information System |
| SMA | Special Management Area |
| SNAP | Scheduling and Network Analysis Program |
| SPS | Stand Projection System |
| SPU | Seattle Public Utilities; formerly the Seattle Water Department (SWD) |
| SWD | Seattle Water Department |
| SWTR | Surface Water Treatment Rule |
| T&E | Threatened and Endangered (species) |
| TOC | Total Organic Carbon |
| TSI | Tacoma-Seattle Intertie |
| USDA | United States Department of Agriculture |
| USDC | United States Department of Commerce |
| USDI | United States Department of the Interior |
| USFS | United States Forest Service |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| WAC | Washington Administrative Code |
| WDF | Washington Department of Fisheries |
| WDFW | Washington Department of Fish and Wildlife |
| WDNR | Department of Natural Resources (Washington State) |
| WDOE | Washington Department of Ecology |
| WDOH | Washington Department of Health |
| WDW | Washington Department of Wildlife |
| WM | Watershed Management |
| WUA | Weighted Usable Area |
| WWIRPP | Western Washington Instream Resources Protection Program |

Acronyms and Abbreviations used in the Watershed Assessment Prescriptions

| | |
|--------|---|
| CHA | Channel Hazard Areas |
| H | Hydrology |
| HLP | High Landslide Potential (areas) |
| HSEH | High Erosion Hazard (areas) |
| IG | Inner Gorges |
| RE | Road Erosion |
| SORZ&W | Streams, Riparian Zones, Wetlands and Open Water Bodies |
| WQ | Water Quality |



List of Technical Appendices

Bound with HCP

Appendix 1. Implementation Agreement for the City of Seattle's Cedar River Watershed Habitat Conservation Plan. April 21, 2000.

Bound separately

Original Appendices Issued December 1998:

- Appendix 2. Cooperation Agreements between the City of Seattle and the State of Washington for the Cedar River Interim Sockeye Salmon Restoration Project.
- Appendix 3. Sockeye Salmon Escapement Goal for the Cedar River. Washington Department of Fisheries. May 16, 1977.
- Appendix 4. Potential Sockeye Salmon Escapement for the Cedar River Above Landsburg. Washington Department of Fisheries. July 1997.
- Appendix 5. Analysis of Water Quality Impacts of Allowing Anadromous Fish Above Landsburg. CH2M HILL. 1996.
- Appendix 6. Landsburg Fish Passage Facilities Planning Report. Montgomery Watson. 1996.
- Appendix 7. Sockeye Hatchery Conceptual Design. Montgomery Watson. 1996.
- Appendix 8. Estimated Accretion Flows in the Cedar River.
- Appendix 9. Long Range Regional Water Conservation Plan. Seattle Water Department. Conservation Office. 1996.
- Appendix 10. Water Shortage Contingency Plan. Seattle Water Department. 1993.
- Appendix 11. City of Seattle Water Claim for the Cedar River.
- Appendix 12. City of Seattle Ordinance #114632. Cedar River Watershed Secondary Use Policies.

- Appendix 13. Forest Management Guidelines for the Cedar River Watershed.
(appendix deleted)
- Appendix 14. Dates and Lists of Participants for Workshops Conducted by the City of Seattle to Develop the Cedar River Habitat Conservation Plan.
- Appendix 15. Summary of the Cedar River Watershed Assessment.
- Appendix 16. Watershed Assessment Prescriptions for the Cedar River Watershed.
- Appendix 17. Cedar River Watershed Transportation Plan Summary.
- Appendix 18. List of Experts who Contributed Taxonomic Input for the Species of Concern.
- Appendix 19. Summary of the Fish Entrainment in Masonry Pool Report by Foster Wheeler Environmental Corporation.
- Appendix 20. Executive Summary of Wetland Monitoring Studies, Chester Morse Lake. Raedeke and Associates.
- Appendix 21. Temperature Graphs of the Upper Cedar and Rex Rivers. Seattle Public Utilities. 1998.
- Appendix 22. Chester Morse Lake Level Elevations and Upper Watershed Streamflow Graphs. Seattle Public Utilities. 1998.
- Appendix 23. 1997 Fish Survey of the Walsh Lake Basin. Seattle Public Utilities. 1998.
- Appendix 24. Select Definitions from the Washington Administrative Code.
- Appendix 25. Technical Memorandum on Upgrading the Interim Sockeye Hatchery for Alternative AFM-4.
- Appendix 26. Summary of Sockeye Salmon Technical Committee Meeting on the Relative Strengths and Weaknesses of a Hatchery and Spawning Channel. Cedar River Technical Committee. December 1995.
- Appendix 27. Instream Flow Agreement for the Cedar River. November April 21, 2000.
- Appendix 28. Landsburg Mitigation Agreement for the Fish Migration Barrier at the Landsburg Diversion Dam. April 21, 2000.
- Appendix 29. Memorandum from Robin Waples, NMFS, to Bill Robinson, NMFS, July 24, 1998, Regarding the Cedar River Watershed Habitat Conservation Plan.
- Appendix 30. HCP Activities Compliance Reports.

Appendices Issued April 2000 with Final HCP:

- Appendix 31. Water Conservation Potential Assessment, Executive Summary. Seattle Public Utilities. May 1998.
- Appendix 32. Regional Water Conservation Accomplishments, 1990-1998. Seattle Public Utilities and Purveyor Partners. 1998.
- Appendix 33. City Ordinance # 115204.
- Appendix 34. Notes from February 11, 1999, Sockeye Technical Committee.
- Appendix 35. Statements received in response to requests regarding applicability of IFIM and extent of present use.
- Appendix 36. Expected flows under the HCP.
- Appendix 37. Habitat Duration Analyses Based on Collaborative PHABSIM Results Applied to Expected Flows und the HCP, IRPP, and Unregulated Conditions.
- Appendix 38. Analytical Evaluation of Reservoir Elevations under Current and HCP Flow Regimes with Respect to Potential Impacts on Bull Trout.

List of Supporting Documents

- (1) The Cedar River Watershed Assessment
 - Basin Condition Reports, Prescriptions, and Restoration Opportunities (Seattle Water Department 1995)
 - Stream Channel and Fish Habitat Assessment for the Cedar River Watershed (Cupp and Metzler 1995)
 - Mass Wasting and Surface Erosion Assessment (Foster Wheeler Environmental Corp. 1995c)
- (2) Workshops
 - Cedar River Watershed Bull Trout Workshop Meeting Minutes, November 18, 1994 (Foster Wheeler Environmental Corp. 1995d)
 - Cedar River Watershed Conservation Biology Workshops: Meeting Minutes – August 24, 1995, and October 16, 1995 (Foster Wheeler Environmental Corp. 1995a)
- (3) Scoping Report for the Cedar River Watershed Habitat Conservation Plan Environmental Assessment/Environmental Impact Statement (Seattle Public Utilities 1997)
- (4) Mayor's Recommended Changes to the Draft Cedar River Watershed Habitat Conservation Plan. May 1999.
- (5) City of Seattle City Council Resolution 29977, July 12, 1999, with Exhibit A ("Adopted Changes to the Cedar River Watershed Habitat Conservation Plan").
- (6) City of Seattle City Council Resolution 30091, December 14, 1999.
- (7) Cascades Environmental Services, Inc. 1991. Final report: Cedar River instream flow and salmonid habitat utilization study. Report prepared for Seattle Water Department, Seattle, Washington, by Cascade Environmental Services, Inc., Bellingham, Washington.

NOTE ON LYNX

On March 24, 2000, the Canada lynx (*Lynx canadensis*) was listed as threatened under the Endangered Species Act (Fed. Reg. Vol. 65, No. 56, pp. 16052-16086). The listing occurred after the Habitat Conservation Plan (HCP) documents had been finalized, and the status of the lynx has not been updated in this HCP. The lynx is a species covered by the HCP and the incidental take permit, and mitigation is provided as described in Chapter 4 of the HCP. The U. S. Fish and Wildlife Service completed a biological opinion for the lynx in its process to approve the HCP and incidental take permit.