

## Table of Contents

### **1994 COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM**

#### **SECTION 1**

##### **INTRODUCTION: COLUMBIA RIVER BASIN FISH AND WILDLIFE AND THE NORTHWEST POWER ACT .....** 1-1

##### **1.1 The Northwest Power Act and the Region's Fish and Wildlife .....** 1-1

##### **1.2 Historical Perspective .....** 1-4

1.2A Key Principles from the Power Act .... 1-4

1.2B Program Development ..... 1-5

1.2C Role of the Council and Other  
Agencies..... 1-6

1.2D Lessons of the Past Decade ..... 1-7

1.2E Expanded Focus ..... 1-10

##### **1.3 Costs and Responsibilities .....** 1-10

1.3A Principles Governing Costs ..... 1-10

1.3B Three Types of Costs..... 1-12

1.3C Regional Funding and Staffing..... 1-13

##### **1.4 Council Commitments .....** 1-13

##### **1.5 Other Responsibilities.....** 1-14

##### **1.6 Indian Rights.....** 1-14

##### **1.7 Water Rights .....** 1-15

##### **1.8 Assuring the Region an Adequate, Efficient, Economical and Reliable Power Supply.....** 1-15

##### **1.9 Summary.....** 1-18

#### **SECTION 2**

##### **SYSTEMWIDE GOAL AND FRAMEWORK .....** 2-1

##### **2.1 Systemwide Goal: A Healthy Columbia River Basin.....** 2-1

2.1A	Assess Ecological Health of Columbia River Basin.....	2-2
<b>2.2</b>	<b>Systemwide Policies.....</b>	<b>2-2</b>
2.2A	Support Native Species in Native Habitat.....	2-2
2.2B	Assess Program Measures.....	2-2
2.2C	Share Costs.....	2-2
2.2D	Avoid Passage at Natural Barriers.....	2-2
2.2E	Columbia River Basin Reservoir Operation and Accounting Procedure...	2-3
2.2F	Budget Planning Target for Resident Fish and Wildlife .....	2-4
2.2G	Funding for Actions that Address Transboundary Species .....	2-5
2.2H	The Need to Learn from Implementation .....	2-5

#### **SECTION 3**

##### **COORDINATED IMPLEMENTATION, RESEARCH, MONITORING AND EVALUATION.....** 3-1

<b>3.1</b>	<b>Coordinate Implementation of Fish and Wildlife Program .....</b>	<b>3-1</b>
3.1A	Basin Oversight Group .....	3-1
3.1B	Implementation and Monitoring .....	3-2
3.1C	Management and Coordination.....	3-4
3.1D	Subregional Process.....	3-5
3.1E	Management Review .....	3-7

<b>3.2</b>	<b>Monitoring and Evaluation.....</b>	<b>3-7</b>
3.2A	Program Monitoring .....	3-8
3.2B	Independent Scientific Evaluation.....	3-9
3.2C	Key Uncertainties.....	3-9
3.2D	Endangered Species Act Monitoring and Coordination.....	3-10
3.2E	Prioritization and .....	

3.2F	Cost-Effectiveness.....	3-10	<b>4.3 Rebuilding Targets, Performance Standards and Monitoring .....</b>	<b>4-10</b>	
	Regional Analytical Methods		4.3A Snake River Chinook Rebuilding		
	Coordination .....	3-10	Elements .....	4-10	
3.2G	Disseminate Research and Monitoring Information.....	3-11	4.3B Development of Performance Standards .....	4-11	
			4.3C Population Monitoring.....	4-12	
<b>3.3</b>	<b>Develop Coordinated Information System and Prepare Monitoring Report.....</b>	<b>3-11</b>	<b>SECTION 5</b>		
3.3A	Fund Coordinated Information System.....	3-12	<b>JUVENILE SALMON MIGRATION..... 5-1</b>		
3.3B	Anadromous Fish Data Base .....	3-12	<b>5.0 Mainstem Passage Experimental Program.....</b>	<b>5-5</b>	
3.3C	Scientific Information Data Base .....	3-12	5.0A Adaptive Management Approach.....	5-5	
3.3D	Habitat Data Base .....	3-13	5.0B Purpose of the Experiment .....	5-6	
3.3E	Project Accounting Data Base.....	3-13	5.0C Oversight of the Experimental Program.....	5-7	
<b>SECTION 4</b>			5.0D Timeline for the Experiment.....	5-7	
<b>SALMON GOAL AND FRAMEWORK .....</b>			5.0E Mainstem Passage Hypotheses.....	5-7	
4-1			5.0F Research and Monitoring.....	5-13	
<b>4.0</b>	<b>Components of the Program Framework .....</b>	<b>4-2</b>	<b>5.1 Coordinate River Operations .....</b>	<b>5-15</b>	
4.0A	Program Goals.....	4-3	5.1A Fish Operation Executive Committee..	5-16	
4.0B	Rebuilding Targets and Schedules .....	4-3	5.1B Fish Passage Center .....	5-17	
4.0C	Biological Objectives.....	4-3	5.1C Coordinated Plan of Operation for Flow Augmentation.....	5-18	
4.0D	Performance Standards .....	4-3	5.1D Operating Rules for Flow Augmentation .....	5-19	
4.0E	Measures .....	4-3	<b>5.2 Improve Snake River Flow and Velocity .....</b>		
<b>4.1</b>	<b>Salmon and Steelhead Goal: Double Salmon and Steelhead Runs Without Loss of Biological Diversity .....</b>	<b>4-4</b>	5.2A Performance Standard: Snake River Spring Migrants .....	5-20	
4.1A	Salmon and Steelhead Rebuilding Principles .....	4-5	5.2B Summer Migrants .....	5-23	
4.1B	Basis for the Salmon and Steelhead Goal.....	4-6	5.2C Allocation of Power Losses at Brownlee Reservoir .....	5-23	
4.1C	Doubling Performance Standards .....	4-9	5.2D Pursue Snake River Water Efficiencies and Transactions .....	5-23	
4.1D	Biological Diversity Performance Standard.....	4-9	5.2E Additional Storage Projects.....	5-24	
<b>4.2</b>	<b>Salmon and Steelhead Research and Evaluation.....</b>	<b>4-9</b>	<b>5.3 Snake River Drawdown Strategy..</b>	<b>5-24</b>	
4.2A	Guiding Principles for the Columbia River Basin Salmon and Steelhead Research Program.....	4-9	5.3A Initial Lower Granite Drawdown.....	5-25	
			5.3B Additional Lower Snake River Drawdown.....	5-26	
			5.3C Mitigation and Assistance for Property Owners .....	5-28	

<b>5.4</b>	<b>Improve Columbia River Flow and Velocity.....</b>	<b>5-28</b>	6.1C	Improve Flows for Naturally Spawning Fall Chinook .....	6-3
5.4A	Performance Standard: Columbia River Spring Migrants .....	5-29	6.1D	Snake River Temperatures .....	6-4
5.4B	Summer Migrants .....	5-31	6.1E	Mid-Columbia Dams .....	6-5
<b>5.5</b>	<b>Conduct Additional Research and Monitoring .....</b>	<b>5-34</b>	6.1F	Maintenance Plans.....	6-6
5.5A	Impact of Salmon Measures on Resident Fish and Wildlife .....	5-34	6.1G	Structural Modifications to Adult Fishways .....	6-6
<b>5.6</b>	<b>Complete Installation of Bypass Systems .....</b>	<b>5-35</b>	<b>SECTION 7</b>		
5.6A	Improve Lower Columbia and Snake River Passage .....	5-36	<b>COORDINATED SALMON PRODUCTION AND HABITAT .....</b> 7-1		
5.6B	Mid-Columbia River Salmon Passage .....	5-38	<b>7.0</b>	<b>Coordinated Implementation of Habitat and Production Actions .....</b> 7-2	
5.6C	Spill.....	5-40	7.0A	Identify and Implement Emergency Production and Habitat Actions in 1995 and 1996.....	7-2
5.6D	Turbine Operating Efficiency.....	5-40	7.0B	Ten-Year Implementation Plan for Production and Habitat Projects.....	7-3
5.6E	Gas Supersaturation .....	5-40	7.0C	Regular Updating and Distribution of Subbasin Plans.....	7-4
5.6F	Develop and Implement Maintenance Plans.....	5-41	7.0D	Comprehensive Environmental Analysis of Federal Production Activities.....	7-5
<b>5.7</b>	<b>Reduce Predation and Competition .....</b>	<b>5-42</b>	<b>7.1</b>	<b>Ensure Biodiversity.....</b> 7-5	
5.7A	Performance Standards for Reducing Predation.....	5-42	7.1A	Evaluation of Carrying Capacity.....	7-6
5.7B	Predation Control Actions and Evaluations .....	5-43	7.1B	Conserve Genetic Diversity .....	7-7
<b>5.8</b>	<b>Transportation .....</b>	<b>5-46</b>	7.1C	Collection of Population Status, Life History and Other Data on Wild and Naturally Spawning Populations .....	7-7
5.8A	Transportation Implementation and Evaluation .....	5-47	7.1D	Wild and Naturally Spawning Population Policy .....	7-8
<b>5.9</b>	<b>Pursue Monitoring and Dispute Resolution.....</b>	<b>5-48</b>	7.1E	Population Vulnerability Analyses .....	7-9
5.9A	Monitoring.....	5-48	7.1F	Systemwide and Cumulative Impacts of Existing and Proposed Artificial Production Projects .....	7-9
5.9B	Dispute Settlement.....	5-49	7.1G	Adjust Total Number of Hatchery Fish Released to Stay Within Basin Carrying Capacity.....	7-10
<b>SECTION 6</b>			7.1H	Reprogramming of Existing Hatchery Stocks and Facilities .....	7-10
<b>ADULT SALMON MIGRATION.....</b> 6-1			7	.1I.....	Biodiversity Institute 7-11
<b>6.1</b>	<b>Improve Adult Salmon Survival.....</b>	<b>6-1</b>	<b>7.2</b>	<b>Improve Existing Hatchery</b>	
6.1A	Mainstem Operations and Facilities .....	6-1			
6.1B	Adult Salmon Research.....	6-2			

<b>Production.....</b>	<b>7-11</b>		
7.2A Hatchery Policies, Coordination and Operations.....	7-13	<b>7.6 Habitat Goal, Policies and Objectives.....</b>	<b>7-31</b>
7.2B Hatchery Evaluation.....	7-15	7.6A Habitat Goal.....	7-33
7.2C Creative Partnerships in Hatchery Production.....	7-16	7.6B Habitat Policies.....	7-33
7.2D Improved Propagation at Existing Facilities .....	7-16	7.6C Coordinated Habitat Planning.....	7-34
<b>7.3 Develop, Implement and Evaluate Supplementation Plans .....</b>	<b>7-17</b>	7.6D Habitat Objectives .....	7-37
7.3A Regional Assessment of Supplementation.....	7-17	7.6E Expedited Process for Funding Projects.....	7-39
7.3B Final Planning and Implementation of Proposed Additional High Priority Supplementation Projects.....	7-18	<b>7.7 Cooperative Habitat Protection and Improvement with Private Landowners .....</b>	<b>7-39</b>
<b>7.4 Pursue New Production Initiatives</b>	<b>7-19</b>	7.7A Coordination of Watershed Activities .	7-41
7.4A Identify, Evaluate and Implement New Production Initiatives.....	7-19	7.7B Model Watersheds .....	7-42
7.4B Develop Master Plans .....	7-19	<b>7.8 Implement State, Federal and Tribal Habitat Improvements .....</b>	<b>7-44</b>
7.4C Emergency Cases.....	7-20	7.8A Land Management.....	7-44
7.4D Captive Brood Stocks.....	7-21	7.8B Best Management Practices.....	7-45
7.4E Cryopreservation .....	7-22	7.8C Mining.....	7-45
7.4F Portable Facilities for Adult Salmon Collection and Holding, and for Juvenile Salmon Acclimation.....	7-22	7.8D Streambanks, Streambeds and Plant Nurseries.....	7-45
7.4G Ringold Hatchery Site Enhancement and Water Development.....	7-22	7.8E Land Exchanges, Purchases and Conservation Easements .....	7-46
7.4H Reintroduction of Anadromous Fish in the Upper Cowlitz River Basin .....	7-23	7.8F Water Regulation.....	7-46
7.4I Umatilla Production Facilities.....	7-23	7.8G Instream Flows for Salmon and Steelhead .....	7-47
7.4J John Day Acclimation Facilities .....	7-24	7.8H Water Conservation .....	7-48
7.4K Yakama Production Facilities.....	7-25	7.8I Water Resource Information Coordination and Development .....	7-49
7.4L Northeast Oregon Production Facilities.....	7-25	7.8J Water Availability .....	7-49
7.4M Nez Perce Tribal Hatchery.....	7-26	<b>7.9 Pursue Subbasin Water Projects ..</b>	<b>7-50</b>
7.4N Pelton Dam Fish Ladder.....	7-27	7.9A Willamette Subbasin .....	7-50
7.4O Small-Scale Production Projects.....	7-27	7.9B Umatilla Subbasin .....	7-51
<b>7.5 Specific Actions to Assist Weak Stocks.....</b>	<b>7-27</b>	7.9C Grande Ronde Subbasin .....	7-52
7.5A Snake River Sockeye Salmon .....	7-27	7.9D Lewis Subbasin.....	7-53
7.5B Snake River Fall Chinook Salmon.....	7-29	<b>7.10 Provide Passage and Protective Screens on Tributaries ..</b>	<b>7-53</b>
7.5C Lower Columbia River Coho Salmon..	7-29	7.10A Update Priorities and Continue to Fund and Implement and Accelerated Screening Passage Program.....	7-53
7.5D Columbia River Chum Salmon .....	7-30	7.10B Condit Dam.....	7-56
7.5E Columbia River Sea-Run Cutthroat Trout.....	7-30	7.10C Enloe Dam.....	7-56
7.5F Pacific Lamprey .....	7-31	7.10D Dryden Dam .....	7-57
		7.10E Green Peter Dam .....	7-57

7.10F	Willamette Falls .....	7-57		Methods .....	8-10
7.10G	Clackamas River Dams.....	7-57	8.4E	Assess Genetic Implications of Harvest.....	8-11
7.10H	Leaburg and Waltermville Facilities.....	7-58			
7.10I	Foster Dam.....	7-59	<b>8.5</b>	<b>Pursue Other Harvest Measures.</b>	<b>8-11</b>
7.10J	Marmot Dam.....	7-59	8.5A	Review Sport Fishing Regulations .....	8-11
7.10K	Passage into Historic Habitat.....	7-59	8.5B	Account for Incidental Harvest of Salmon.....	8-11
<b>7.11</b>	<b>Yakima River Basin.....</b>	<b>7-59</b>	8.5C	Law Enforcement and Public Education on Impacts of Illegal or Wasteful Fisheries.....	8-12
7.11A	Additional Water Storage .....	7-61	8.5D	Inclusion of Idaho and Indian Tribes in Columbia River Compact.....	8-12
7.11B	Passage .....	7-62	8.5E	Unified Reporting of Harvest Data.....	8-12
7.11C	Flows.....	7-62	8.5F	U.S. and Canada Pacific Salmon Treaty.....	8-12
 <b>SECTION 8</b>					
	SALMON HARVEST .....	8-1			
<b>8.1</b>	<b>Develop Harvest Goals and Escapement Objectives.....</b>	<b>8-3</b>	  <b>SECTION 9</b>		
8.1A	Management Goals and Escapement Objectives .....	8-3	<b>MITIGATION FOR ADVERSE EFFECTS OF SALMON AND STEELHEAD MEASURES</b> 9-1		
8.1B	Rebuilding Schedules.....	8-3			
8.1C	Consultation.....	8-3			
<b>8.2</b>	<b>Adopt Exploitation Rates and Regimes .....</b>	<b>8-4</b>	<b>9.1</b>	<b>Share the Costs.....</b>	<b>9-1</b>
8.2A	Harvest Management.....	8-4	9.1A	Salmon Recovery Economic Transition and Renewal Panel.....	9-2
8.2B	Sockeye .....	8-5			
8.2C	Fall Chinook .....	8-5	  <b>SECTION 10</b>		
8.2D	Spring Chinook .....	8-6	<b>RESIDENT FISH.....</b> 10-1		
8.2E	Summer Chinook .....	8-6			
8.2F	Voluntary Harvest Reduction for All Fisheries.....	8-7	<b>10.1</b>	<b>Resident Fish Goal: Recover and Preserve Health of Native Resident Fish Injured by Hydropower System.....</b>	<b>10-1</b>
<b>8.3</b>	<b>Develop Alternative Harvest Opportunities.....</b>	<b>8-7</b>	10.1A	Mitigation Objectives, Rebuilding Schedules, Survival Targets and Performance Standards .....	10-2
8.3A	Live-Catch Technology and Known-Stock Fisheries .....	8-8	<b>10.2</b>	<b>Implement Resident Fish Policies</b> 10-2	
8.3B	Select Harvest Technologies.....	8-8	10.2A	Priorities.....	10-2
8.3C	Terminal Harvest Fisheries.....	8-8	10.2B	Natural and Artificial Propagation .....	10-3
<b>8.4</b>	<b>Stock Identification.....</b>	<b>8-9</b>	10.2C	Comprehensive Watershed Management .....	10-3
8.4A	Expand Genetic Stock Identification Sampling .....	8-9	10.2D	Project Implementation and Selection .	10-4
8.4B	Improve Genetic Stock Identification Data Base.....	8-9			
8.4C	Marking Hatchery Salmon.....	8-9	<b>10.3</b>	<b>Resident Fish Measures .....</b>	<b>10-4</b>
8.4D	Improve Stock Abundance Prediction				

10.3A	Hungry Horse Dam Resident Fish Mitigation .....	10-4	11.2A	Ratepayer Share of Funding .....	11-2																														
10.3B	Libby Dam Resident Fish Mitigation... 10-7		11.2B	Determine Allocation of Effort.....	11-2																														
10.3C	Dworshak Dam Resident Fish Mitigation .....	10-10	11.2C	Definition of Mitigation.....	11-2																														
10.3D	Big Fork Hydroelectric Project Resident Fish Mitigation .....	10-11	11.2D	Mitigation Plans and Agreements.....	11-3																														
10.3E	Other Projects .....	10-11	11.2E	Mitigation Priorities .....	11-4																														
<b>10.4</b>	<b>Sturgeon Mitigation.....</b>	<b>10-12</b>	<b>11.3</b>	<b>Implement Wildlife Measures.....</b>	<b>11-6</b>																														
10.4A	Study and Evaluate Sturgeon Populations .....	10-12	11.3A	Identify Measures Based on Losses...	11-6																														
<b>10.5</b>	<b>Bull Trout Mitigation.....</b>	<b>10-13</b>	11.3B	Cascade Hydropower Project.....	11-6																														
10.5A	Study and Evaluate Bull Trout Populations .....	10-13	11.3C	Develop Statements of Habitat Losses and Gains Due to Hydropower Operation .....	11-7																														
<b>10.6</b>	<b>Other Resident Fish Populations</b>	<b>10-13</b>	11.3D	Crediting Existing Mitigation .....	11-7																														
10.6A	Rainbow Trout in the Clearwater River.....	10-13	11.3E	Credit for New Actions .....	11-7																														
10.6B	Salmonids and Spiny-Rayed Fish in Pend Oreille River .....	10-14	11.3F	Short-Term Agreements.....	11-8																														
10.6C	Sturgeon and Burbot in Kootenai River.....	10-14	11.3G	Long-Term Agreements.....	11-8																														
10.6D	Kokanee in Banks Lake .....	10-14	11.3H	Complete and Implement Snake River Compensation Program.....	11-9																														
10.6E	Kokanee in Lake Pend Oreille .....	10-14	<b>11.4</b>	<b>Monitor and Evaluate Wildlife Efforts at Federal Dams .....</b>	<b>11-10</b>																														
<b>10.7</b>	<b>Provide and Evaluate Use of Shoreline Vegetation .....</b>	<b>10-15</b>	11.4A	Biennial Monitoring Report and Scientific Review .....	11-10																														
10.7A	Vegetation Plantings .....	10-15	<b>11.5</b>	<b>Monitor and Evaluate Wildlife Efforts at Non-Federal Projects..</b>	<b>11-10</b>																														
<b>10.8</b>	<b>Resident Fish Substitutions .....</b>	<b>10-15</b>	11.5A	Mitigation Considerations in Dam Licensing Decisions .....	11-11																														
10.8A	Resident Fish Substitutions Policy....	10-16	<b>SECTION 12</b>																																
10.8B	Above Chief Joseph Dam.....	10-16	<b>FUTURE HYDROELECTRIC DEVELOPMENT .....</b>																																
10.8C	Above Hells Canyon Dam.....	10-18			12-1																														
10.8D	Above Dworshak Dam .....	10-19																																	
10.8E	Above Pelton Dam .....	10-20	<b>12.1</b>	<b>Future Hydroelectric Development</b>	<b>12-1</b>	12.1A	Conditions .....	12-1	<b>12.2</b>	<b>Protected Areas .....</b>	<b>12-3</b>	12.2A	Protect Areas from New Hydropower Development .....	12-3	<b>12.3</b>	<b>Additional Protections and Consistency of Hydropower Development.....</b>	<b>12-5</b>	12.3A	Cumulative Effects .....	12-5	12.3B	Ensure Consistency with this Program	12-5	<b>SECTION 11</b>			<b>WILDLIFE.....</b>			<b>11.1</b>	<b>Wildlife Program Goal: Fully Mitigate for Wildlife Losses from Hydropower in the Columbia River Basin .....</b>	<b>11-2</b>	<b>11.2</b>	<b>Wildlife Program Policies .....</b>	<b>11-2</b>
<b>12.1</b>	<b>Future Hydroelectric Development</b>	<b>12-1</b>																																	
12.1A	Conditions .....	12-1																																	
<b>12.2</b>	<b>Protected Areas .....</b>	<b>12-3</b>																																	
12.2A	Protect Areas from New Hydropower Development .....	12-3																																	
<b>12.3</b>	<b>Additional Protections and Consistency of Hydropower Development.....</b>	<b>12-5</b>																																	
12.3A	Cumulative Effects .....	12-5																																	
12.3B	Ensure Consistency with this Program	12-5																																	
<b>SECTION 11</b>																																			
<b>WILDLIFE.....</b>																																			
<b>11.1</b>	<b>Wildlife Program Goal: Fully Mitigate for Wildlife Losses from Hydropower in the Columbia River Basin .....</b>	<b>11-2</b>																																	
<b>11.2</b>	<b>Wildlife Program Policies .....</b>	<b>11-2</b>																																	

**SECTION 13****AMENDMENT PROCESS .....** 13-1**13.1 Future Amendments .....** 13-1

13.1A Amendment Proposals on the  
Council's Own Motion..... 13-1  
13.1B Mandatory Review ..... 13-1  
13.1C Form of Recommendations ..... 13-1  
13.1D Council Review ..... 13-2  
13.1E Protected Areas Amendments..... 13-3  
13.1F Promising New Ideas for Improving  
Salmon Survival..... 13-3

**APPENDIX E****Minority Opinion****APPENDIX F****Response to Comments**

**Please note: A cross reference chart of  
program reference numbers will be  
distributed as soon as it is prepared.**

**SECTION 14****DISCLAIMERS .....** 14-1**Disclaimers .....** 14-1**Scope .....** 14-1**Validity .....** 14-1

E:\PHASEIV\TOC\TC-1222B.DOC

**SECTION 15**

FINDINGS ON THE RECOMMENDATIONS  
FOR AMENDMENTS TO THE  
ANADROMOUS FISH PORTIONS OF THE  
1994 FISH AND WILDLIFE PROGRAM .... 15-1

**GLOSSARY .....** G-1**APPENDIX A****Recommendations Regarding Habitat  
Objectives and Funding Sources****APPENDIX B****Summary of Hydropower Costs and Impacts  
of the Mainstem Passage Actions****APPENDIX C****Assuring an Adequate, Efficient, Economical  
and Reliable Power Supply****APPENDIX D****Staff Analysis of Biological Benefits of  
Mainstem Passage Actions**