Northwest Fisheries Science Center Processed Report

Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs

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TABLE OF CONTENTS

Executive Summary . . . . . ES - 1
ES.1 Introduction . . . . . ES - 1
ES.2 Background . . . . . ES - 2
ES.3 Framework for the 4(b)(2) Exclusion Process . . . . . ES - 4
ES.4 Framework for the Economic Analysis . . . . . ES - 9
Hydropower Projects . . . . . ES - 11
Non-Hydropower Dams and Water Supply Structures . . . . . ES - 11
Federal Land Management Activities (excluding grazing) . . . . . ES - 11
Livestock Grazing on Federal Land . . . . . ES - 11
Transportation projects . . . . . ES - 11
Utility Line Projects . . . . . ES - 11
Instream activities (excluding dredging) . . . . . ES - 11
Dredging projects . . . . . ES - 12
EPA NPDES-permitted Activities . . . . . ES - 12
Sand and Gravel Mining . . . . . ES - 12
Residential and Commercial Development . . . . . ES - 12
ES.5 Estimated Economic Impacts of Critical Habitat Designation . . . . . ES - 14

Section 1
Introduction and Background . . . . . 1 - 1
1.1 Introduction . . . . . 1 - 1
1.2 Background . . . . . 1 - 1
1.3 West Coast Salmon and Steelhead Biology and Habitat Use . . . . . 1 - 4
1.4 Overview of Report . . . . . 1 - 5

Section 2
Framework for the Economic Analysis . . . . . 2 - 1
2.1 Introduction . . . . . 2 - 1
2.2 General Analytical Framework . . . . . 2 - 1
2.2.1 Benefit-cost analysis . . . . . 2 - 1
2.2.2 Cost-effectiveness analysis . . . . . 2 - 2
2.3 Framework for the 4(b)(2) process . . . . . 2 - 4
2.4 Framework for analyzing economic impacts of critical habitat designation . . . . . 2 - 5
2.5 Summary . . . . . 2 - 12

Section 3
Baseline Information . . . . . 3 - 1
3.1 Introduction . . . . . 3 - 1
3.2 Geographic Scope of the Critical Habitat Designations . . . . . 3 - 1
3.3 Economic Baseline . . . . . 3 - 1
3.4 Statutory and Regulatory Baseline . . . . . 3 - 4

3.4.1 ESA habitat protections other than Section 7 . . . . . 3 - 4
3.4.2 Other laws and regulations that protect habitat . . . . . 3 - 8

Section 4
The Impacts of Section 7 on Habitat-Modifying Activities . . . . . 4 - 1
4.1 Introduction . . . . . 4 - 1
4.2 Consultation History . . . . . 4 - 1
4.3 Types of Activities . . . . . 4 - 5
4.3.1 Hydropower Dams . . . . . 4 - 5
4.3.2 Non-hydropower Dams and Other Water Supply Structures . . . . . 4 - 10
4.3.3 Federal Lands Management and Grazing Permits . . . . . 4 - 11
4.3.4 Transportation Projects . . . . . 4 - 12
4.3.5 Utility Line Projects . . . . . 4 - 12
4.3.6 Instream Activities, including Dredging . . . . . 4 - 13
4.3.7 National Pollutant Discharge Elimination System (NPDES) Permitted Activities . . . . . 4 - 14
4.3.8 Sand and Gravel Mining . . . . . 4 - 14
4.3.9 Residential and Commercial Development . . . . . 4 - 15
4.3.10 Agricultural Pesticide Applications . . . . . 4 - 17
4.4 The Costs of Section 7 Impacts . . . . . 4 - 17
4.4.1 Consultation Costs . . . . . 4 - 18
4.4.2 Per-project Costs and the Occurrence of Impacts . . . . . 4 - 26
4.4.2.1 Hydropower Projects . . . . . 4 - 27
4.4.2.2 Non-Hydropower Dams and Water Supply Structures . . . . . 4 - 35
4.4.2.3 Federal Land Management Activities . . . . . 4 - 37
4.4.2.4 Livestock Grazing on Federal Land . . . . . 4 - 38
4.4.2.5 Transportation projects . . . . . 4 - 39
4.4.2.6 Utility Line Projects . . . . . 4 - 40
4.4.2.7 Instream activities (excluding dredging) . . . . . 4 - 40
4.4.2.8 Dredging projects . . . . . 4 - 41
4.4.2.9 NPDES-permitted Activities . . . . . 4 - 42
4.4.2.10 Sand and Gravel Mining . . . . . 4 - 43
4.4.2.11 Residential and Commercial Development . . . . . 4 - 43
4.4.2.12 Agricultural Pesticide Applications . . . . . 4 - 44
4.5 Summary . . . . . 4 - 45

Section 5
The Economic Impacts of Critical Habitat Designation . . . . . 5 - 1
5.1 Introduction . . . . . 5 - 1
5.2 Aggregating Impacts Up to the Watershed Level . . . . . 5 - 1
5.3 Differentiating Types of Impacts . . . . . 5 - 3
5.4 Summary of the Results for 12 West Coast salmon and steelhead ESUs . . . . . 5 - 6
5.4.1 Puget Sound chinook salmon ESU . . . . . 5 - 8
5.4.1.1 Watershed Characteristics . . . . . 5 - 8

5.4.1.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . 5 - 8
5.4.1.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 8
5.4.1.4 Economic Impacts at the Watershed Level . . . . . 5 - 9
5.4.2 Lower Columbia River chinook salmon ESU . . . . . 5 - 10
5.4.2.1 Watershed Characteristics . . . . . 5 - 10
5.4.2.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 10
5.4.2.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 10
5.4.2.4 Economic Impacts at the Watershed Level . . . . . 5 - 11
5.4.3 Upper Willamette River chinook salmon ESU . . . . . 5 - 12
5.4.3.1 Watershed Characteristics . . . . . 5 - 12
5.4.3.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 12
5.4.3.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 12
5.4.3.4 Economic Impacts at the Watershed Level . . . . . 5 - 13
5.4.4 Upper Columbia River spring-run chinook salmon ESU . . . . . 5 - 14
5.4.4.1 Watershed Characteristics . . . . . 5 - 14
5.4.4.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 14
5.4.4.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 14
5.4.4.4 Economic Impacts at the Watershed Level . . . . . 5 - 15
5.4.5 Hood Canal summer-run chum salmon ESU . . . . . 5 - 16
5.4.5.1 Watershed Characteristics . . . . . 5 - 16
5.4.5.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 16
5.4.5.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 16
5.4.5.4 Economic Impacts at the Watershed Level . . . . . 5 - 17
5.4.6 Columbia River chum salmon ESU . . . . . 5 - 18
5.4.6.1 Watershed Characteristics . . . . . 5 - 18
5.4.6.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 18
5.4.6.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 18
5.4.6.4 Economic Impacts at the Watershed Level . . . . . 5 - 19
5.4.7 Ozette Lake sockeye salmon ESU . . . . . 5 - 20
5.4.7.1 Watershed Characteristics . . . . . 5 - 20
5.4.7.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 20
5.4.7.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 20
5.4.7.4 Economic Impacts at the Watershed Level . . . . . 5 - 21
5.4.8 Upper Columbia River steelhead ESU . . . . . 5 - 22
5.4.8.1 Watershed Characteristics . . . . . 5 - 22

5.4.8.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 22
5.4.8.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 22
5.4.8.4 Economic Impacts at the Watershed Level . . . . . 5 - 23
5.4.9 Snake River Basin steelhead ESU . . . . . 5 - 24
5.4.9.1 Watershed Characteristics . . . . . 5 - 24
5.4.9.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 24
5.4.9.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 24
5.4.9.4 Economic Impacts at the Watershed Level . . . . . 5 - 25
5.4.10 Lower Columbia River steelhead ESU . . . . . 5 - 26
5.4.10.1 Watershed Characteristics . . . . . 5 - 26
5.4.10.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 26
5.4.10.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 26
5.4.10.4 Economic Impacts at the Watershed Level . . . . . 5 - 27
5.4.11 Upper Willamette River steelhead ESU . . . . . 5 - 28
5.4.11.1 Watershed Characteristics . . . . . 5 - 28
5.4.11.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 28
5.4.11.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 28
5.4.11.4 Economic Impacts at the Watershed Level . . . . . 5 - 29
5.4.12 Middle Columbia River steelhead ESU . . . . . 5 - 30
5.4.12.1 Watershed Characteristics . . . . . 5 - 30
5.4.12.2 Economic Impacts of Critical Habitat Designation for the Entire ESU . . . . . 5 - 30
5.4.12.3 Economic Impacts of Individual Activities for the Entire ESU . . . . . 5 - 30
5.4.12.4 Economic Impacts at the Watershed Level . . . . . 5 - 31
5.5 Aggregate Impacts for all ESUs . . . . . 5 - 32
5.5.1 Watershed Characteristics for all ESUs . . . . . 5 - 32
5.5.2 Economic Impacts of Critical Habitat Designation for all ESUs . . . . . 5 - 32
5.5.3 Economic Impacts of Individual Activities for all ESUs . . . . . 5 - 32
5.5.4 Economic Impacts at the Watershed Level for all ESUs . . . . . 5 - 33

APPENDICES

Appendix A
Estimating Section 7 Impacts and Costs . . . . . A - 10

A 1. Method for estimating annual expected modification costs . . . . . A - 11

A 2. Hydropower Dams . . . . . A - 14
A 2.1 Overview . . . . . A - 14
A 2.2 Background . . . . . A - 15
A 2.3 Cost Assessment . . . . . A - 17
A 2.4 Spatial and Temporal Distribution of Activity . . . . . A - 28
A 2.5 Annual Expected Modification Cost Estimates . . . . . A - 29
A 2.6 Assumptions and Potential Errors . . . . . A - 29

A 3. Non-hydropower Dams and other Water Supply Activities . . . . . A - 31
A 3.1 Overview . . . . . A - 31
A 3.2 Background . . . . . A - 32
A 3.3 Cost Assessment . . . . . A - 33
A 3.4 Spatial and Temporal Distribution of Activity . . . . . A - 39
A 3.5 Annual Expected Modification Cost Estimates . . . . . A - 40
A 3.6 Assumptions and Potential Errors . . . . . A - 40

A 4. Federal Lands Management (including grazing) . . . . . A - 41
A 4.1 Overview . . . . . A - 41
A 4.2 Background . . . . . A - 42
A 4.3 Cost Assessment . . . . . A - 43
A 4.3.1 Federal land management activities . . . . . A - 43
A 4.3.2 Livestock Grazing . . . . . A - 48
A 4.4 Spatial and Temporal Distribution of Activity . . . . . A - 49
A 4.4.1 Federal land management activities . . . . . A - 49
A 4.4.2 Livestock Grazing . . . . . A - 49
A 4.5 Annual Expected Modification Cost Estimates . . . . . A - 50
A 4.6 Assumptions and Potential Errors . . . . . A - 51

A 5. Transportation Projects . . . . . A - 52
A 5.1 Overview . . . . . A - 52
A 5.2 Background . . . . . A - 53
A 5.3 Cost Assessment . . . . . A - 54
A 5.4 Spatial and Temporal Distribution of Activity . . . . . A - 56
A 5.5 Annual Expected Modification Cost Estimates . . . . . A - 57
A 5.6 Assumptions and Potential Errors . . . . . A - 58

A 6. Utility Line Projects . . . . . A - 59

A 6.1 Overview . . . . . A - 59
A 6.2 Background . . . . . A - 60
A 6.3 Cost Assessment . . . . . A - 61
A 6.4 Spatial and Temporal Distribution of Activity . . . . . A - 61
A 6.5 Annual Expected Modification Cost Estimates . . . . . A - 62
A 6.6 Assumptions and Potential Errors . . . . . A - 62

A 7. Instream Activities (including Dredging) . . . . . A - 63
A 7.1 Overview . . . . . A - 63
A 7.2 Background . . . . . A - 64
A 7.3 Cost Assessment . . . . . A - 67
A 7.4 Spatial and Temporal Distribution of Activity . . . . . A - 68
A 7.5 Annual Expected Modification Cost Estimates . . . . . A - 69
A 7.6 Assumptions and Potential Errors . . . . . A - 69

A 8. National Pollutant Discharge Elimination System Permitted Facilities . . . . . A - 70
A 8.1 Overview . . . . . A - 70
A 8.2 Background . . . . . A - 71
A 8.3 Cost Assessment . . . . . A - 71
A 8.4 Spatial and Temporal Distribution of Activity . . . . . A - 72
A 8.5 Annual Expected Modification Cost Estimates . . . . . A - 72
A 8.6 Assumptions and Potential Errors . . . . . A - 72

A 9. Sand and Gravel Mining . . . . . A - 73
A 9.1 Overview . . . . . A - 73
A 9.2 Background . . . . . A - 74
A 9.3 Cost Assessment . . . . . A - 74
A 9.4 Spatial and Temporal Distribution of Activity . . . . . A - 75
A 9.5 Annual Expected Modification Cost Estimates . . . . . A - 76
A 9.6 Assumptions and Potential Errors . . . . . A - 76

A 10. Residential and Commercial Development . . . . . A - 77
A 10.1 Overview . . . . . A - 77
A 10.2 Background . . . . . A - 78
A 10.3 Cost Assessment . . . . . A - 80
A 10.4 Spatial and Temporal Distribution of Activity . . . . . A - 80
A 10.5 Annual Expected Modification Cost Estimates . . . . . A - 81
A 10.6 Assumptions and Potential Errors . . . . . A - 81

A 11. Agricultural Pesticide Applications . . . . . A - 82
A 11.1 Overview . . . . . A - 82
A 11.2 Background . . . . . A - 82
A 11.3 Cost Assessment . . . . . A - 83
A 11.4 Spatial and Temporal Distribution of Activity . . . . . A - 84
A 11.5 Annual Expected Modification Cost Estimates . . . . . A - 85

A 11.6 Assumptions and Potential Errors . . . . . A - 86

A 12. Summary . . . . . A - 86

Appendix B
Water Supply Impacts Related to Salmon and Steelhead . . . . . B - 1

B 1. Review of Selected Literature . . . . . B - 1
Literature . . . . . B - 1
B 1.2 Engineering Literature . . . . . B - 4

B 2. Description of Major Water Projects in Critical Habitat Areas . . . . . B - 8
B 2.1 Idaho . . . . . B - 8
B 2.2 Oregon . . . . . B - 11
B 2.3 Washington . . . . . B - 15

Appendix C
Potential Impacts for Individual Watersheds by Activity . . . . . C - 1

LIST OF TABLES

Table ES-1
Number of Watersheds by ESU and State . . . . . ES - 6
Table ES-2
Demographics for Counties and ESUs . . . . . ES - 7
Table ES-3
Income and Employment for Counties and ESUs . . . . . ES - 8
Table ES-4
Major Assumptions and Potential Errors . . . . . ES - 13
Table ES-5
Annual Total Potential Impact of Section 7 Implementation . . . . . ES - 16
Table ES-6
Annual Total Potential Impact by Type of Activity . . . . . ES - 19
Table ES-7
Annual Total Potential Impacts for Individual Watersheds . . . . . ES - 26
Table ES-8
Present Value of Annual Total Potential Impact over 20 Years
for Individual Watersheds . . . . . ES - 29
Table 2-1
Consultations for Snake River (SR) ESUs . . . . . 2 - 10
Table 3-1
Number of Watersheds by ESU and State . . . . . 3 - 2
Table 3-2
Watershed Size by ESU . . . . . 3 - 3
Table 3-3
Demographics for Counties and ESUs . . . . . 3 - 5
Table 3-4
Income and Employment for Counties and ESUs . . . . . 3 - 6
Table 4-1
Federal Agencies involved in 10 or more
West Coast salmon and steelhead consultations, NW Region, 2001-2004 . . . . . 4 - 2
Table 4-2
Federal Agencies involved in West Coast salmon and steelhead consultations, NW Region, 2001-2004 . . . . . 4 - 3
Table 4-3
West Coast salmon and steelhead consultations by type and ESU, NW Region, 2001-2004
. . . . . 4 - 4
Table 4-4
Actions involved in
West Coast salmon and steelhead consultations, NW Region, 2001-2004 . . . . . 4 - 6
Table 4-5
Actions involved in West Coast salmon and steelhead consultations, NW Region, 2001-2004
. . . . . 4 - 7

Table 4-6
Consultations covering Multiple Projects . . . . . 4 - 19
Table 4-7
Consultation costs (per consultation) by activity and consultation type
for West Coast salmon and steelhead . . . . . 4 - 21
Table 4-8
Annual Consultation Costs by activity and consultation type
for West Coast salmon and Steelhead . . . . . 4 - 25
Table 4-9
Costs of Fish & Wildlife Modifications to Major (non-FCRPS) Hydropower Dams . . . 4 - 30
Table 4-10
Bonneville Power Administration (BPA) Fish & Wildlife Costs
for the FCRPS, 1995 - 2004[1] . . . . . 4 - 32
Table 4-11
BPA Fish & Wildlife Projected Costs for the FCRPS, 2007-2009 . . . . . 4 - 34
Table 4-12
Summary of Activity Cost Estimation . . . . . 4 - 46
Table 5-1
Industry Groups and Critical Habitat Designation Impacts . . . . . 5 - 4
Table 5-2
Activity Types with Local and Non-Local Impact . . . . . 5 - 5
Table 5-3
Activity Types and Location . . . . . 5 - 6

Table A-1
Estimated Costs of Project Modifications for Hydropower Dams . . . . . A - 20
Table A-2
Costs of Fish & Wildlife Modifications to Major (non-FCRPS) Hydropower Dams . . A - 23
Table A-3
Bonneville Power Administration (BPA) Fish & Wildlife Costs
for the FCRPS, 1995 - 2004[1] . . . . . A - 25
Table A-4
BPA Fish & Wildlife Projected Costs for the FCRPS, 2007-2009 . . . . . A - 27
Table A-5
Estimated Annual Expected Per-Project Costs for Hydropower Dams . . . . . A - 29
Table A-6
Hydropower Dams: Assumptions and Potential Errors . . . . . A - 30
Table A-7
Case Studies of Operational Modification Costs for Nonhydropower Dams . . . . . A - 33
Table A-8
Snake River Flow Augmentation from Annual Contracts, 1995-2004 . . . . . A - 36
Table A-9
Snake River Flow Augmentation from
Long Term Contracts and Permanent Purchases, 1995-2004 . . . . . A - 38

Table A-10
Estimated Annual Expected Per-Project Costs for Non-hydropower Dams . . . . . A - 40
Table A-11
Nonhydropower Dams: Assumptions and Potential Errors . . . . . A - 40
Table A-12
Estimated Costs of Project Modifications for Federal Land Management Activities (excluding Grazing) . . . . . A - 44
Table A-13
Assessment Regions for National Forests and BLM Districts . . . . . A - 46
Table A-14
Estimated Modification Costs for Federal Lands Management Projects . . . . . A - 48
Table A-15
Estimated Modification Costs for Grazing Land Management (Fencing) . . . . . A - 49
Table A-16
Estimated Annual Expected Costs for Federal Lands Management and Grazing . . . . . A - 51
Table A-17
Federal Lands Management: Assumptions and Potential Errors . . . . . A - 51
Table A-18
Typical Project Modifications for Transportation Projects . . . . . A - 54
Table A-19
Estimated Costs of Project Modifications for Transportation Projects . . . . . A - 55
Table A-20
Summary of Transportation Projects Affected by Critical Habitat . . . . . A - 57
Table A-21
Estimated Annual Expected Per-Project Costs for Transportation Projects . . . . . A - 58
Table A-22
Transportation Projects: Assumptions and Potential Errors . . . . . A - 58
Table A-23
Typical Project Modifications for Utility Line Projects . . . . . A - 60
Table A-24
Estimated Per-Project Costs of Project Modifications for Utility Line Projects . . . . . A - 61
Table A-25
Estimated Annual Expected Per-Project Costs for Utility Line Projects . . . . . A - 62
Table A-26
Utility Line Projects: Assumptions and Potential Errors . . . . . A - 62
Table A-27
Typical Project Modifications for Instream Activities (including Dredging) . . . . . A - 65
Table A-28
Estimated Per-Project Costs of Modifications for Instream Activities (including Dredging) . . . . . A - 67
Table A-29
Estimated Annual Expected Per-Project Costs for Instream Activity Projects . . . . . A - 69
Table A-30
Instream Activities and Dredging: Assumptions and Potential Errors . . . . . A - 69

Table A-31
Estimated Per-Project Costs of Modifications for NPDES-permitted Facilities . . . . . A - 72
Table A-32
Estimated Annual Expected Per-Project Costs for NPDES-permitted activities . . . . . A - 72
Table A-33
NPDES-permitted Facilities: Assumptions and Potential Errors . . . . . A - 73
Table A-34
Estimated Annual Expected Per-Project Costs for Sand and Gravel Mining . . . . . A - 76
Table A-35
Sand and Gravel Mining: Assumptions and Potential Errors . . . . . A - 76
Table A-36
Estimated Per-Project Costs of Modifications for Development Projects . . . . . A - 80
Table A-37
Estimated Annual Expected Per-Project Costs for Residential and Commercial Development
. . . . . A - 81
Table A-38
Development Projects: Assumptions and Potential Errors . . . . . A - 81
Table A-39
Net Operational Dollar Gain by Crop Type and County . . . . . A - 84
Table A-40
Estimated Annual Expected Per-Project Costs for Agricultural Pesticide Applications
. . . . . A - 85
Table A-41
Agricultural Pesticide Applications: Assumptions and Potential Errors . . . . . A - 86
Table A-42
Summary of Activity Cost Estimation . . . . . A - 87

Table B-1
Five Management Scenarios . . . . . B - 2
Table B-2
Summary of Effects on Agricultural Production and Value . . . . . B - 3
Table B-3
Summary of Economic Impacts of Agricultural Section Expansion . . . . . B - 3
Table B-4
National Economic Effects on Agriculture (Direct Costs) . . . . . B - 5
Table B-5
Regional Economic Effects on Agriculture . . . . . B - 6
Table B-6
Environmental Water Account Funding . . . . . B - 8

Table C-1
Annual Potential Total Impact . . . . . C - 1

Table C-2
Annual Potential Hydropower Impact . . . . . C - 24
Table C-3
Annual Potential Non-hydropower Impact . . . . . C - 45
Table C-4
Annual Potential Federal Lands Management (Non-wilderness) Impact . . . . . C - 66
Table C-5
Annual Potential Federal Lands Management (Wilderness) Impact . . . . . C - 87
Table C-6
Annual Potential Federal Grazing Lands Impact . . . . . C - 107
Table C-7
Annual Potential Transportation Project Impact . . . . . C - 127
Table C-8
Annual Potential Utility Line Project Impact . . . . . C - 147
Table C-9
Annual Potential Instream Activity Impact . . . . . C - 167
Table C-10
Annual Potential Dredging Projects Impact . . . . . C - 187
Table C-11
Annual Potential NPDES-Permitted Activity Impact . . . . . C - 207
Table C-12
Annual Potential Mining Impact . . . . . C - 227
Table C-13
Annual Potential Development Impact . . . . . C - 247
Table C-14
Annual Potential Agricultural Pesticide Application Impact . . . . . C - 267

LIST OF FIGURES

Figure ES-1 . . . . . ES - 5

Executive Summary
Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs

ES.1 Introduction

The National Marine Fisheries Service (NOAA Fisheries) is designating critical habitat for four species of West Coast salmon and steelhead (Onchorynchus spp.) listed under the Endangered Species Act (ESA). The designations address 19 evolutionarily significant units (ESUs) of these species in the states of Washington, Oregon, Idaho, and California.

Section 4(b)(2) of the ESA requires NOAA Fisheries to consider the economic, national security, and other impacts of designating a particular area as critical habitat. NOAA Fisheries may exclude an area from critical habitat if it determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless it also determines that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

West Coast salmon and steelhead migrate through a broad range of interconnected habitats. For that reason, implementation of section 7 of the ESA has potentially large economic and other impacts. Federal agencies and other parties that are federally funded, have a federal permit, or otherwise have a "nexus"[1] with a federal agency, must modify actions that potentially jeopardize listed salmon and steelhead or adversely modify habitat designated as critical. These modifications have economic costs and other negative impacts, ranging in magnitude from modest to hundreds of millions of dollars. To the extent that the modifications enhance salmon and steelhead habitat, they also have beneficial impacts, to the fish species and possibly to other species and elements of the affected ecosystems.

For reasons discussed later, this report focuses on the economic costs of critical habitat designation. This focus does not mean that the beneficial and non-economic impacts of critical habitat designation have been overlooked and not incorporated into the designation process. NOAA Fisheries has chosen to express the benefits of designation in terms of the conservation value of designating a particular area as critical habitat. These benefits are gauged with a biological metric and are the subject of a separate report (NMFS 2005a). Some of the other impacts are covered in separate reports, including impacts on tribes and Department of Defense lands in Washington, Oregon, and Idaho (NMFS 2005g, NMFS 2005f).

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1. We use the term "federal nexus" or "nexus" to refer to activities or projects that the Federal government carries out or funds, or for which it issues a permit.

ES.2 Background

NOAA Fisheries is responsible for determining whether species, subspecies, or distinct population segments of West Coast salmon and steelhead are threatened or endangered, and which areas constitute critical habitat for them under the ESA (16 U.S.C. 1531 et seq). To be considered for listing under the ESA, a group of organisms must constitute a "species." Section 3 of the ESA defines a species as follows: "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." The agency has determined that a group of Pacific salmon or steelhead populations qualifies as a distinct population segment if it is substantially reproductively isolated and represents an important component in the evolutionary legacy of the biological species. A group of populations meeting these criteria is considered an "evolutionarily significant unit" (ESU) (56 FR 58612, November 20, 1991). In its ESA listing determinations for West Coast salmon and steelhead, NOAA Fisheries has treated an ESU as a distinct population segment and to date has identified six species comprised of 52 ESUs in Washington, Oregon, Idaho, and California.

Section 4(b)(2) of the ESA requires NOAA Fisheries to designate critical habitat for threatened and endangered species "on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security and any other relevant impact, of specifying any particular area as critical habitat." This section grants the Secretary [of Commerce] discretion to exclude any area from critical habitat if he determines "the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat." The Secretary's discretion is limited, as he may not exclude areas if it "will result in the extinction of the species."

The ESA defines critical habitat under section 3(5)(A) as:

> (I) the specific areas within the geographical area occupied by the species, at the time it is listed . . ., on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
> (ii) specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species.

Once critical habitat is designated, section 7 of the ESA requires federal agencies to ensure they do not fund, authorize, or carry out any actions that will destroy or adversely modify that habitat. This requirement is in addition to the section 7 requirement that federal agencies ensure their actions do not jeopardize the continued existence of listed species.

On February 16, 2000, NOAA Fisheries published final critical habitat designations for 19 ESUs, thereby completing designations for all 25 ESUs listed at the time (65 FR 7764). The 19 designations included more than one hundred and fifty river subbasins in Washington, Oregon, Idaho, and California. Within each occupied subbasin, NOAA Fisheries designated as critical habitat those lakes and river reaches accessible to listed fish along with the associated riparian zone,

except for reaches on Indian land. Areas considered inaccessible included areas above long-standing natural impassable barriers and areas above impassable dams, but not areas above ephemeral barriers such as failed culverts.

In considering the economic impact, NOAA Fisheries determined that the critical habitat designations would impose very little or no additional requirements on federal agencies beyond those already imposed by the listing of the species themselves. The ESA's prohibition against adversely modifying critical habitat applies only to federal agencies, which under section 7 of the ESA are also prohibited from jeopardizing the continued existence of listed species. NOAA Fisheries reasoned that since it was designating only occupied habitat, there would be few or no actions that adversely modified critical habitat that also did not jeopardize the continued existence of the species. Therefore, there would be no economic impact as a result of the designations (65 FR 7764, 7765, February 16, 2000).

The National Association of Homebuilders (NAHB) challenged the designations in District Court in Washington, D.C. as having inadequately considered the economic impacts of the critical habitat designations (National Ass'n of Homebuilders v. Evans, 2002 WL 1205743 No. 00-CV-2799 (D.D.C.). NAHB also challenged NOAA Fisheries' designation of Essential Fish Habitat (EFH) (Pacific Coast Salmon Fishery Management Plan, 2000). While the NAHB litigation was pending, the Court of Appeals for the 10th Circuit issued its decision in New Mexico Cattle Growers' Association v. U.S. Fish and Wildlife Service, 248 F.3d 1277 (10th Cir. 2001) (NMCA). In that case, the Court rejected the FWS approach to economic analysis, which was similar to the approach taken by NOAA Fisheries in the final rule designating critical habitat for 19 ESUs of West Coast salmon and steelhead. The Court ruled that "Congress intended that the FWS conduct a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes." Subsequent to the 10th Circuit decision, NOAA Fisheries entered into and sought judicial approval of a consent decree resolving the NAHB litigation. That decree provided for the withdrawal of critical habitat designations for the 19 salmon and steelhead ESUs and dismissed NAHB's challenge to the EFH designations. The District Court approved the consent decree and vacated the critical habitat designations by Court order on April 30, 2002 (National Ass'n of Homebuilders v. Evans, 2002 WL 1205743 (D.D.C. 2002).

On September 3, 2003, the Pacific Coast Federation of Fishermen's Associations (PCFFA), Institute for Fisheries Resources, the Center for Biological Diversity, the Oregon Natural Resources Council, the Pacific Rivers Council, and the Environmental Protection Information Center (PCFFA et al., filed a complaint alleging NOAA Fisheries's failure to timely designate critical habitat for the 19 ESUs. NOAA Fisheries filed with the D.C. District Court an agreement resolving that litigation and establishing a schedule for designation of critical habitat.

In keeping with the Consent Decree, on December 14, 2004 (69 FR 74572), NOAA Fisheries published proposed critical habitat designations for 8 ESUs of salmon and 5 ESUs of O. mykiss. (For the latter ESUs NOAA Fisheries used the species' scientific name rather than "steelhead" because at the time they were being proposed for revision to include both anadromous (steelhead) and resident (rainbow/redband) forms of the species - see 69 FR 33101, June 14, 2004). The 13

ESUs addressed in the proposed rule were: (1) Puget Sound chinook salmon; (2) Lower Columbia River chinook salmon; (3) Upper Willamette River chinook salmon; (4) Upper Columbia River spring-run chinook salmon; (5) Hood Canal summer-run chum salmon; (6) Columbia River chum salmon; (7) Ozette Lake sockeye salmon; (8) Oregon Coast coho salmon; (9) Upper Columbia River O. mykiss; (10) Snake River Basin O. mykiss; (11) Middle Columbia River O. mykiss; (12) Lower Columbia River O. mykiss; and (13) Upper Willamette River O. mykiss. The comment period for the proposed critical habitat designations was originally open until February 14, 2005. On February 7, 2005 (70 FR 6394), NOAA Fisheries announced a court-approved Amendment to the Consent Decree which revised the schedule for completing the designations and extended the comment period until March 14, 2005, and the date to submit final rules to the Federal Register as August 15, 2005.

This report supports the final designation of critical habitat for 12 West Coast Northwest ESUs: (1) Puget Sound chinook salmon; (2) Lower Columbia River chinook salmon; (3) Upper Willamette River chinook salmon; (4) Upper Columbia River spring-run chinook salmon; (5) Hood Canal summer-run chum salmon; (6) Columbia River chum salmon; (7) Ozette Lake sockeye salmon; (8) Upper Columbia River steelhead; (9) Snake River Basin steelhead; (10) Middle Columbia River steelhead; (11) Lower Columbia River steelhead; and (12) Upper Willamette River steelhead.[2]

ES.3 Framework for the 4(b)(2) Exclusion Process

Under section 4(b)(2) of the ESA, the Secretary of Commerce may exclude a “particular area” from critical habitat designation based on a comparison of the benefits of excluding that area and the benefits of including it. The 4(b)(2) exclusion process therefore operates at a geographic scale that (potentially) divides the area(s) under consideration into smaller subareas. The statute does not specify the exact geographic scale of these subareas, nor does it dictate the form of the economic analysis and the nature of the impacts to be included in the analysis.

For the purposes of this report, a "particular area" is defined as a standard watershed unit, as mapped by the U.S. Geological Service and designated by fifth field hydrologic unit codes, or HUC5s, referred to below as “watersheds.” We also defined a set of nearshore marine areas and include them in the analysis. Finally, the Columbia River estuary, which is not part of an identified HUC5, was assessed as part of a lower Columbia River habitat area extending from the mouth at the Pacific Ocean upstream to its confluence with the Sandy and Washougal rivers. Figure ES-1 shows the HUC5 watersheds and nearshore areas for all 12 ESUs combined. Table ES-1 below lists the number of watersheds by state for each ESU. Tables ES-2 and ES-3 give other demographic and economic information at the ESU level. These tables include all watersheds and nearshore areas considered for critical habitat designation, not just those that are part of the final designation.

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2. NMFS is not issuing a final critical habitat designation for the Oregon Coast coho salmon ESU because it is only proposed for listing at this time (70 FR 37217, June 28, 2005). On June 28 NMFS published a notice that it was extending the final determination for that ESU by six months because of scientific disagreement.

Figure ES-1

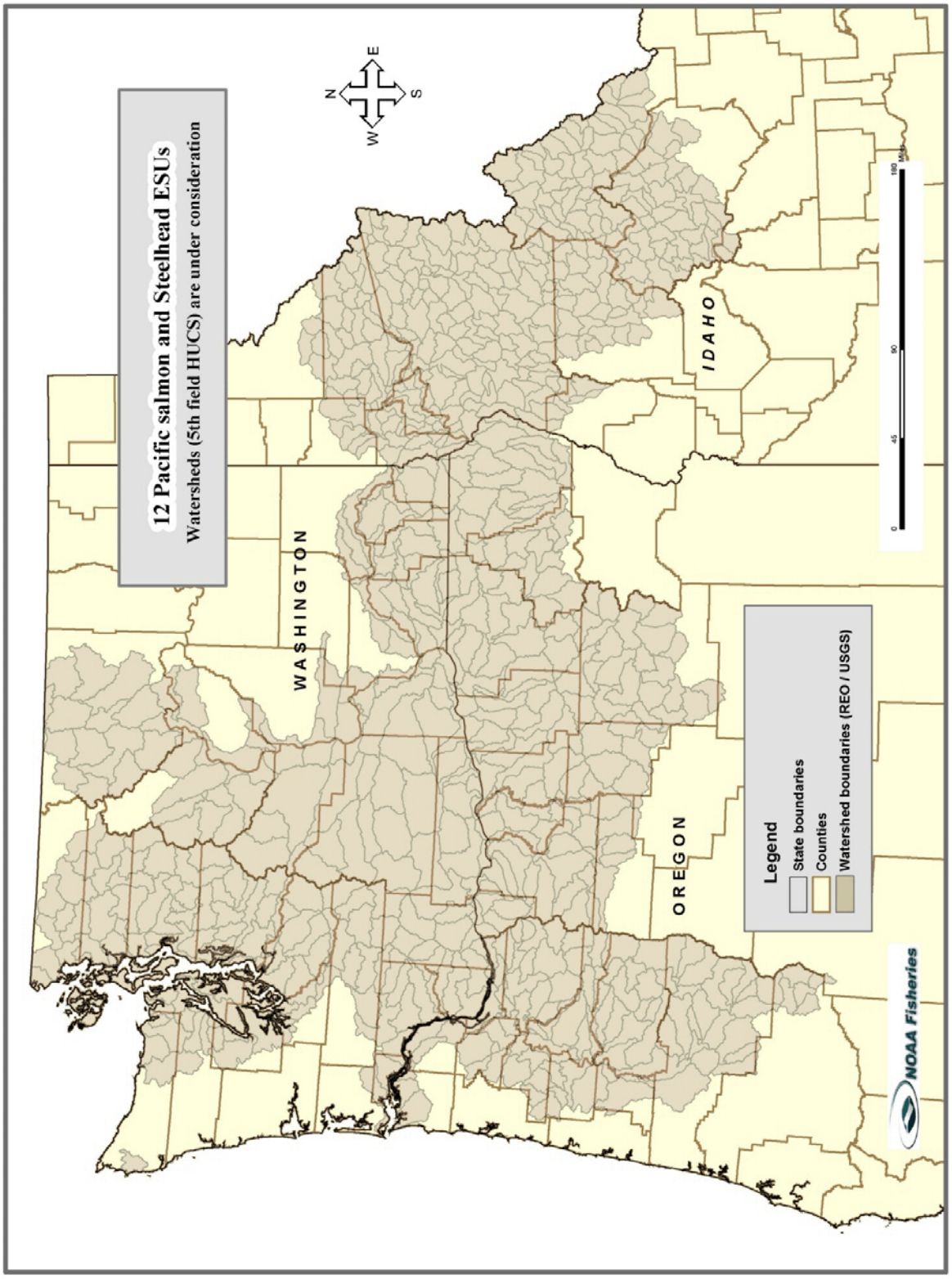
12 Pacific salmon and Steelhead ESUs
Watersheds (5th field HUCS) are under consideration
N
W
E
S
WASHINGTON
IDAHO
OREGON
Legend
State boundaries
Counties
Watershed boundaries (REO / USGS)
0
45
90
180
NOAA Fisheries

Table ES-1 Number of Watersheds by ESU and State				
ESU	**Idaho**	**Oregon**	**Washington**	**Total[1]**
Puget Sound chinook salmon[2]	0	0	80	80
Lower Columbia River chinook salmon[3]	0	24	28	48
Upper Willamette River chinook salmon[3]	0	60	1	60
Upper Columbia River chinook salmon[3]	0	10	31	31
Hood Canal summer-run chum salmon[4]	0	0	17	17
Columbia River chum salmon[3]	0	5	19	20
Ozette Lake sockeye salmon	0	0	1	1
Upper Columbia River steelhead[3]	0	10	42	42
Snake River Basin steelhead[3]	235	43	30	289
Lower Columbia River steelhead[3]	0	23	23	42
Upper Willamette River steelhead[3]	0	38	1	38
Middle Columbia River steelhead[3]	0	83	45	114

[1]The total number of watersheds in an ESU may be less than the sum of the state totals because a watershed can span more than one state.
[2]The number of watersheds for the Puget Sound chinook salmon ESU includes 19 nearshore marine areas.
[3]The number of watersheds for these ESUs includes the Columbia River estuary.
[4]The number of watersheds for the Hood Canal summer-run chum salmon ESU includes 5 nearshore marine areas.

Table ES-2
Demographics for Counties and ESUs

ESU	Population		Area (sq. miles)		Population Density	
	Counties	ESU	County	ESU	County	ESU
Puget Sound chinook salmon	4,147,091	3,379,772	24,794	11,242	167.3	300.6
Lower Columbia River chinook salmon	3,421,465	1,476,278	25622	7,671	133.5	192.4
Upper Willamette River chinook salmon	3,091,459	1,818,957	29,028	9,870	106.5	184.3
Upper Columbia River chinook salmon	2,094,151	268,854	44,013	7,855	47.6	34.2
Hood Canal summer-run chum salmon	371,852	78,325	4,910	1,509	75.7	51.9
Columbia River chum salmon	1,567,086	487,997	18,018	3,753	87.0	130.0
Ozette Lake sockeye salmon	64,525	85	1,739	101	37.1	0.8
Upper Columbia River steelhead	2,094,151	313,938	44,013	10,995	47.6	28.6
Snake River Basin steelhead	2,120,961	305,307	78,836	28,552	26.9	10.7
Lower Columbia River steelhead	3,421,465	1,384,814	25,622	6,694	133.5	206.9
Upper Willamette River steelhead	2,991,531	1,888,380	23,856	5,442	125.4	347.0
Middle Columbia River steelhead	4,175,117	625,883	58,843	25,252	71.0	24.8

Table ES-3 Income and Employment for Counties and ESUs				
	Personal Income ($1000)		Total Employment	
ESU	County	ESU	County	ESU
Puget Sound chinook salmon	$154,737,948	$129,756,223	2,839,671	2,354,111
Lower Columbia River chinook salmon	$96,523,650	$44,371,043	1,924,398	878,379
Upper Willamette River chinook salmon	$90,372,394	$53,726,950	1,851,416	1,141,311
Upper Columbia River chinook salmon	$56,602,587	$6,419,887	1,290,727	148,626
Hood Canal summer-run chum salmon	$10,250,032	$2,174,793	189,277	40,345
Columbia River chum salmon	$45,425,156	$14,116,907	1,008,133	243,619
Ozette Lake sockeye salmon	$1,587,944	$2,092	31,902	42
Upper Columbia River steelhead	$56,602,587	$7,368,344	1,290,727	174,372
Snake River Basin steelhead	$57,663,210	$7,193,963	1,318,166	170,399
Lower Columbia River steelhead	$96,682,790	$41,928,103	1,926,628	828,307
Upper Willamette River steelhead	$89,266,871	$59,195,021	1,822,746	1,227,957
Middle Columbia River steelhead	$147,956,052	$14,124,686	2,932,846	327,382

Economic analyses of regulatory actions commonly use a standard benefit-cost framework. Conceptually, the "benefits of exclusion," which is essentially the language used in section 4(b)(2) of the ESA, are identical to the "costs of inclusion," and so estimates of these costs could be used in a benefit-cost framework. For reasons discussed here and in NMFS (2005c), NOAA Fisheries has chosen a framework more akin to a cost-effectiveness one for the purpose of conducting a portion of the 4(b)(2) exclusion process. Ideally, a cost-effectiveness analysis would first quantify the benefits of designating a watershed as critical habitat using, for example, a biological metric such as the percent reduction in extinction risk, percent increase in productivity, or increase in numbers of fish. Given the state of the science, it is difficult to quantify the benefits of critical habitat designation reliably. It is possible, however, to differentiate among habitat areas based on their relative contribution to conservation. For example, habitat areas can be rated as having a high, medium, or low conservation value. Such a rating is based on best professional judgment.

The qualitative ordinal evaluations of conservation value can be combined with estimates of the economic costs of including an area in the critical habitat designation in a framework that essentially adopts that of cost-effectiveness. Individual habitat areas can then be assessed for possible exclusion using both their biological evaluation and economic cost, so that areas with high conservation value and low economic cost have a higher priority for designation and areas with a low conservation value and high economic cost have a higher priority for exclusion.

ES.4 Framework for the Economic Analysis

Because the 4(b)(2) process does not utilize monetized estimates of the benefits of critical habitat designation, this analysis focuses on the monetized costs of designation. The analysis follows the standard approach to regulatory analysis: The regulation under consideration changes the state of the world and any resulting changes in economic activity are then attributed to the regulation. This approach has been called the "baseline approach." It does not assume the world will remain unchanged in the absence of regulation. Instead, it projects a future course of the world as a baseline, one which may involve substantial changes in economic and other conditions. It then projects another course in which the regulation has taken effect. The impacts of the regulation are then analyzed in terms of the differences between the two courses. Changes that would exist in the absence of the regulation are included in the baseline, and so do not add to the regulation's benefits or costs.

Applying this approach to the designation of critical habitat takes the following steps:

1. Identify the baseline of economic activity and the statues and regulations that constrain that activity in the absence of the critical habitat designation;
2. Identify the types of activities that are likely to be impacted by critical habitat designation;
3. Estimate the costs of modifications needed to bring the activity into compliance with the ESA's critical habitat provisions;
4. Project over space and time the occurrence of the activities and the likelihood they will in fact need to be modified; and
5. Aggregate the costs up to the watershed level.

Each ESU is considered separately. The 4(b)(2) process addresses the following question: For that ESU, do the benefits of excluding a particular watershed as critical habitat (which we refer to as the costs of designation) outweigh the benefits of designating that watershed? If the answer is affirmative, the watershed is considered for exclusion.[3]

Although the economic analysis laid out in this report is best suited for a regulatory decision at this watershed-level, it is possible to use the results to estimate impacts at the ESU or even aggregate (that is, all ESUs) level. We present results below for both of these levels.[4]

In considering the first step of this framework, we note that the critical habitat areas under consideration for the 12 ESUs of West Coast salmon and steelhead cover over 25 million acres in Idaho, Oregon, and Washington. For this analysis, each ESU is analyzed separately. We have also aggregated many of the results for the 12 ESUs considered together. Because some watersheds are in more than one ESU, this involves more than just summing the results across ESUs, which would double-count the results from such a watershed.

For the second step, we examined the history of NOAA Fisheries consultations for the 12 ESUs of West Coast salmon and steelhead under consideration. Between 2001 and 2004, the NW region of NOAA Fisheries engaged in over 3000 consultations for salmon and steelhead, involving 30 different Federal agencies. This consultation history provides a rich source of information on the types of activities that are likely to be affected by critical habitat designation.

From this consultation record, we derived the following set of activity types for the economic analysis:

- Hydropower dams[5]
- Non-hydropower dams and other water supply structures
- Federal lands management, including grazing (considered separately)
- Transportation projects
- Utility line projects
- Instream activities, including dredging (considered separately)
- EPA NPDES-permitted activities

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3. NMFS (2005c) provides the full details on the 4(b)(2) exclusion process.

4. To obtain aggregate impacts, we sum watershed-level impacts across all watersheds under consideration, rather than sum the estimated impacts across ESUs. This is because some watersheds are in more than one ESU, so that a sum of the ESU-level impacts would double-count those watersheds' impacts. If the estimated impact for a watershed was different for two or more ESUs, we took the highest estimate for the summation.

5. The Federal Columbia River Power System (FCRPS) is a system of 31 federally-owned hydropower projects in the Columbia and Snake River basins. The impacts of critical habitat designation and implementation of section 7 of the ESA on the FCRPS are included in this analysis but treated as a separate type of hydropower activity.

- Sand & gravel mining
- Residential and commercial development
- Agricultural pesticide applications[6]

This set does not cover all possible activities but covers both the majority of consultations and a high proportion of the impacts.

Below, we summarize our cost estimates (including a high-low range) for each type of activity:

Hydropower Projects

Projects with installed capacity of less than 5MW: $2.1 million ($24,000 to $4.2 million).

Projects with installed capacity ranging from 5 to 20 MW: $5.76 million ($0 to $11.5 million).

Projects with installed capacity of greater than 20 MW that do not have but may require, fish passage facilities: $73.85 million ($11.5 million to $136 million).

Projects with installed capacity of greater than 20 MW that have, or will not require, fish passage facilities: $45.23 million ($11.5 million to $79.1 million).

Costs of dam removal: $24 million.

Dams with known/planned modification costs: varies.

Non-Hydropower Dams and Water Supply Structures

Infrastructure costs: $2.1 million ($24 thousand to $4.2 million).

Operation of water projects (e.g., flow regime, withdrawal constraints): Not quantified on a per-project basis.

Federal Land Management Activities (excluding grazing)

Land management activities on non-wilderness lands: $0.68 to $8.71 annual costs per acre, depending on region.

Land management activities on wilderness lands: $0.04 to $0.44 annual costs per acre, depending on region.

Livestock Grazing on Federal Land

Livestock grazing: $1,157 per stream mile ($1,006 to $1,308)

Transportation projects

Bridge and culvert projects: $41,778 to $98,278 per project (depends on project mileage).

Road projects: $36,778 - 85,278 per project (range depends on project mileage).

Utility Line Projects

Outfall structure projects and pipelines: $101,000 ($100,000 to $102,000).

Instream activities (excluding dredging)

Boat dock, boat launch, and bank stabilization projects: $54,500 ($25,000 to $84,000).

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6. In January 2004, the Environmental Protection Agency (EPA) was enjoined from authorizing the application of a set of pesticides within certain distances from "salmon-supporting waters" (Washington Toxics Coalition, et al., v. EPA, C01-0132 (W.D. WA), 22 January 2004). The basis for this injunction was the EPA's failure to consult with NOAA Fisheries concerning possible adverse effects of pesticide applications on salmon and steelhead protected under the ESA. Because the injunction is based on section 7 of the ESA, we include agricultural pesticide applications as an activity even though it is largely absent from the consultation record.

Dredging projects

Dredging: $821,000 ($332,000 to $1,310,000).

EPA NPDES-permitted Activities

Temperature Management Plan Compliance activities for major projects: $630,467 ($476,483 to $784,457).

Temperature Management Plan Compliance activities for minor projects: $72,039 ($0 to $144,078).

Sand and Gravel Mining

Sand and gravel mining: $676,532 ($0 to $1,353,065).

Residential and Commercial Development

Residential and commercial development: $235,000 ($230,000 to $240,000).

Agricultural Pesticide Applications

Agricultural pesticide applications: $0 to $6,517 per acre, depending on crop type and county.

For the fourth step, we used spatial data on the location of projects for each activity type and estimated the annual level of an activity type in a particular watershed. Where an activity has different sub-types or scales, we estimated a separate level for each.

Appendix A discusses in more detail the important assumptions for each activity, the violation of which could introduce error into our estimation; we also list the likely direction(s) of the error(s), should it exist. Table ES-4 lists some of these assumptions.

Finally, the fifth step consisted of calculating the economic impact of critical habitat designation for each watershed, using the following formula:

$$\text{Aggregate Annual Impact for Watershed (\$/yr)} = \text{Sum (over all Activity Types)} \left[\text{Annual Activity Level} \times \text{Per-project Impact Cost} \right]$$

This watershed-level annual impact then constitutes the potential cost of designating the watershed as critical habitat, recognizing that it includes co-extensive impacts, or those impacts that are associated with habitat-modifying actions covered by both the jeopardy and adverse modification standards.

Table ES-4 Major Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
For most types of activities, we count project modifications recommended in biological opinions as an impact of section 7 implementation, even if they appear to overlap particular baseline elements, such as fish passage provisions.	+
Costs associated with implementing past consultations are the most reasonable predictor of future costs.	+/-
The historic locations of USACE permits, stormwater permits, and other activities in which the Federal government carries out, funds, or issues a permit are reasonable predictors of future locations of projects that will be impacted by section 7 implementation.	+/-
Hydropower and non-hydropower projects may be required to provide additional instream flow for salmon and steelhead and, as a result, may experience economic impacts to the extent that increased flow results in decreased or redistribution of power generation, lost agricultural value, or other impacts. The likelihood of a particular project being required to provide flow for salmon and steelhead will depend on many factors, including biological significance of the dam project to salmon/steelhead survival and recovery, the seasonality of flow, the economic importance of the dam project, whether there is public concern over the project, and other factors. Any flow changes that may be required are also the result of an examination of factors that may span more than one watershed. For these reasons, costs associated with flow requirements are not included in the cost estimates attributed to a particular watershed.	-
For Federal lands management activities, we assume that each acre of Federal land within critical habitat areas is subject to section 7 implementation. In fact, many projects may not affect salmon and steelhead habitat.	+
We assume that Federal land management agencies carry out land management activities consistently within geographical areas. Real variations in geography and management could result in different management activities in each management unit.	+/-
We assume that per-project costs of modifications to specific land management activities are uniform across geographic areas.	+/-

Table ES-4 Major Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
The long-term effects of modifying transportation projects in critical habitat areas on regional transportation functions (such as congestion and air pollution) are not included in this analysis. If projects occur that are not included in state transportation plans, this analysis may understate costs.	-
We assume that section 7 implementation will not result in any net reduction in utility transmission capability. The same amount of utility lines will be constructed, although potentially at a higher cost and/or in a different location.	-
We assume that substitute sites are unavailable to sand and gravel mining companies who are required to reduce mining efforts in salmon and steel-head critical habitat areas.	+
We assume that the court-ordered injunction barring pesticide spraying represents the likely outcome of section 7 consultations for this activity. Future consultation may find more flexible ways to avoid jeopardy and adverse modification.	+
We assume that no adjustments in cropping or pesticide practices are possible nor are there alternative beneficial uses of land where section 7 implementation constrains agricultural pesticide applications, implying that these constraints will result in the loss of any net revenue earned from the affected land.	+
- : May result in an underestimate of costs + : May result in an overestimate of costs +/- : Has an unknown effect on estimates	

ES.5 Estimated Economic Impacts of Critical Habitat Designation

Below, we present a series of tables that summarize the results of the analysis for the 12 West Coast salmon and steelhead ESUs. The results are presented for six different cases, where we combine three levels of cost estimates[7] (Low, Mid-range, High) and two discount rates (7% and 3%).[8] Table

7. As described in more detail in Appendix A, our cost estimation produced a range of possible per-unit costs (and sometimes a range in the level of an activity). We take the middle of this range (referred to as the mid-range) as the representative cost estimate, but also present results using the

ES-5 gives the annual total potential impact and the present value of the impact over a 20 year period for each ESU; Table ES-6 gives the annual total impact and the present value of the impact over a 20 year period for each type of activity and for each ESU (for the mid-range cost estimate, 7% discount rate case); and Tables ES-7 and ES-8 list the average, median, maximum, and minimum annual total impact and present value of the impact over 20 years (respectively) for the individual watersheds in each ESU.

In assessing the aggregate cost of the 12 critical habitat designations, the figures given below for the individual ESUs cannot be added together to obtain an aggregate annual impact for all ESUs. As we noted above, some watersheds are included in more than one ESU and so a summation of the ESU totals would double-count the impacts for these watersheds. We have therefore included in each table the aggregate impacts for all 12 ESUs, using the highest impact for any watershed that is in more than one ESU. These tables are based on the full set of watersheds identified as candidates for critical habitat designation.

Lastly, we emphasize that the impacts listed in these tables and many of the other tables in this report are those that stem from the implementation of section 7 for activities that modify habitat, and are not just the incremental impacts of critical habitat designation alone. As noted above and discussed later in the report, the NMCA decision called for an analysis of "all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes."[9] The estimates of impacts should then be interpreted as the sum of two types of impacts:

- Co-extensive impacts, or those that are associated with habitat-modifying actions covered by both the jeopardy and adverse modification standards; and
- Incremental impacts, or those that are solely attributable to critical habitat designation and would not occur without the designation.

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low and high end of the range.

8. The 4(b)(2) exclusion process used one of these cases – mid-range cost estimate, 7% discount rate – to weigh the benefits and costs of designation.

9. New Mexico Cattle Growers' Association v. U.S. Fish and Wildlife Service, 248 F.3d 1277 (10th Cir. 2001).

Table ES-5 Annual Total Potential Impact of Section 7 Implementation			
Discount Rate	**Cost Estimate**	**Annual Total Potential Impact**	**Present Value over 20 years**
Puget Sound chinook salmon ESU			
7%	High	$144,621,601	$1,639,371,931
	Mid-range	$93,228,558	$1,056,801,201
	Low	$41,825,315	$474,114,839
3%	High	$136,180,244	$2,086,798,699
	Mid-range	$87,872,409	$1,346,539,147
	Low	$39,555,745	$606,144,288
Lower Columbia River chinook salmon ESU			
7%	High	$52,512,142	$595,256,384
	Mid-range	$37,630,372	$426,562,665
	Low	$22,744,058	$257,817,434
3%	High	$52,302,561	$801,473,943
	Mid-range	$36,875,994	$565,080,324
	Low	$21,449,904	$328,694,017
Upper Willamette River chinook salmon ESU			
7%	High	$46,651,839	$528,826,365
	Mid-range	$33,498,745	$379,728,213
	Low	$20,342,834	$230,598,136
3%	High	$43,708,704	$669,783,392
	Mid-range	$31,639,453	$484,836,629
	Low	$19,567,277	$299,845,025
Upper Columbia River spring-run chinook salmon ESU			
7%	High	$28,037,801	$317,825,160
	Mid-range	$20,466,821	$232,003,601
	Low	$12,895,842	$146,182,042
3%	High	$28,109,965	$430,751,460
	Mid-range	$20,489,167	$313,971,886
	Low	$12,868,370	$197,192,312
Hood Canal summer-run chum salmon ESU			
7%	High	$10,678,404	$121,046,071
	Mid-range	$7,123,487	$80,748,966
	Low	$3,569,730	$40,465,019
3%	High	$11,818,820	$181,109,224
	Mid-range	$7,773,694	$119,122,518
	Low	$3,731,700	$57,183,814

Table ES-5 Annual Total Potential Impact of Section 7 Implementation			
Discount Rate	**Cost Estimate**	**Annual Total Potential Impact**	**Present Value over 20 years**
Columbia River chum salmon ESU			
7%	High	$24,337,077	$275,875,258
	Mid-range	$17,062,592	$193,414,636
	Low	$9,788,107	$110,954,014
3%	High	$23,739,563	$363,780,299
	Mid-range	$16,425,546	$251,701,774
	Low	$9,111,530	$139,623,248
Ozette Lake sockeye salmon ESU			
7%	High	$5,445	$61,724
	Mid-range	$2,723	$30,862
	Low	$0	$1
3%	High	$5,445	$83,441
	Mid-range	$2,723	$41,721
	Low	$0	$1
Upper Columbia River steelhead ESU			
7%	High	$43,545,515	$493,614,332
	Mid-range	$29,587,340	$335,390,115
	Low	$15,618,275	$177,042,442
3%	High	$40,891,417	$626,611,853
	Mid-range	$28,127,247	$431,016,277
	Low	$15,356,247	$235,316,047
Snake River Basin steelhead ESU			
7%	High	$42,226,875	$478,666,766
	Mid-range	$32,324,426	$366,416,612
	Low	$22,421,977	$254,166,458
3%	High	$42,135,092	$645,669,686
	Mid-range	$32,210,228	$493,583,057
	Low	$22,285,361	$341,496,400

Table ES-5 Annual Total Potential Impact of Section 7 Implementation			
Discount Rate	**Cost Estimate**	**Annual Total Potential Impact**	**Present Value over 20 years**
Lower Columbia River steelhead ESU			
7%	High	$51,093,809	$579,178,734
	Mid-range	$36,647,051	$415,416,134
	Low	$22,202,305	$251,676,347
3%	High	$50,204,542	$769,324,313
	Mid-range	$35,719,741	$547,362,138
	Low	$21,239,681	$325,472,609
Upper Willamette steelhead ESU			
7%	High	$24,437,129	$277,009,402
	Mid-range	$16,481,661	$186,829,441
	Low	$8,526,194	$96,649,480
3%	High	$24,420,503	$374,214,876
	Mid-range	$16,391,243	$251,176,113
	Low	$8,361,983	$128,137,350
Middle Columbia River steelhead ESU			
7%	High	$57,644,299	$653,432,441
	Mid-range	$43,873,890	$497,336,655
	Low	$30,102,391	$341,228,523
3%	High	$56,407,209	$864,372,739
	Mid-range	$42,711,282	$654,499,110
	Low	$29,014,671	$444,614,994
All 12 NW West Coast salmon and steelhead ESUs			
7%	High	$349,394,894	$3,960,599,100
	Mid-range	$243,709,179	$2,762,588,606
	Low	$137,995,677	$1,564,263,144
3%	High	$334,547,297	$5,126,535,575
	Mid-range	$233,834,722	$3,583,236,301
	Low	$133,105,108	$2,039,675,929

Table ES-6 Annual Total Potential Impact by Type of Activity			
Type of Activity	**Annual Total Potential Impact**	**Present Value over 20 years**	**% of total**
Puget Sound chinook salmon ESU			
Hydropower Dams	$24,405,997	$276,656,502	26.2%
Non-hydropower Dams	$3,869,913	$43,867,762	4.2%
Federal Lands (non-wilderness)	$7,692,047	$87,193,934	8.3%
Federal Lands (wilderness)	$113,056	$1,281,554	0.1%
Grazing	$0	$0	0.0%
Transportation Projects	$1,467,824	$16,638,658	1.6%
Utility Line Projects	$2,020,000	$22,897,902	2.2%
Sand & Gravel Mining	$608,448	$6,897,115	0.7%
Instream Activities	$37,891,125	$429,518,456	40.6%
Dredging	$12,725,500	$144,251,117	13.6%
Residential & Commercial Development	$368,809	$4,180,670	0.4%
EPA NPDES-permitted Activities	$1,199,090	$13,592,400	1.3%
Agricultural Pesticide Applications	$866,750	$9,825,130	0.9%
Lower Columbia River chinook salmon ESU			
Hydropower Dams	$8,436,850	$95,636,720	22.4%
Non-hydropower Dams	$1,579,773	$17,907,662	4.2%
Federal Lands (non-wilderness)	$8,176,188	$92,681,956	21.7%
Federal Lands (wilderness)	$62,792	$711,787	0.2%
Grazing	$0	$0	0.0%
Transportation Projects	$1,410,757	$15,991,769	3.7%
Utility Line Projects	$378,876	$4,294,788	1.0%
Sand & Gravel Mining	$969,009	$10,984,295	2.6%
Instream Activities	$6,208,504	$70,377,086	16.5%
Dredging	$8,422,434	$95,473,300	22.4%
Residential & Commercial Development	$919,596	$10,424,169	2.4%
EPA NPDES-permitted Activities	$855,623	$9,698,995	2.3%
Agricultural Pesticide Applications	$209,970	$2,380,139	0.6%

Table ES-6 Annual Total Potential Impact by Type of Activity			
Type of Activity	**Annual Total Potential Impact**	**Present Value over 20 years**	**% of total**
Upper Willamette River chinook salmon ESU			
Hydropower Dams	$7,375,591	$83,606,718	22.0%
Non-hydropower Dams	$2,629,420	$29,806,041	7.8%
Federal Lands (non-wilderness)	$11,094,075	$125,757,946	33.1%
Federal Lands (wilderness)	$110,097	$1,248,014	0.3%
Grazing	$0	$0	0.0%
Transportation Projects	$727,376	$8,245,238	2.2%
Utility Line Projects	$623,549	$7,068,296	1.9%
Sand & Gravel Mining	$653,518	$7,408,013	2.0%
Instream Activities	$636,015	$7,209,609	1.9%
Dredging	$6,370,960	$72,218,624	19.0%
Residential & Commercial Development	$1,636,070	$18,545,827	4.9%
EPA NPDES-permitted Activities	$962,571	$10,911,313	2.9%
Agricultural Pesticide Applications	$679,503	$7,702,575	2.0%
Upper Columbia River Spring-run chinook salmon ESU			
Hydropower Dams	$63,615	$721,114	0.3%
Non-hydropower Dams	$986,033	$11,177,265	4.8%
Federal Lands (non-wilderness)	$7,954,708	$90,171,349	38.9%
Federal Lands (wilderness)	$111,469	$1,263,573	0.5%
Grazing	$6,650	$75,380	0.0%
Transportation Projects	$433,946	$4,919,039	2.1%
Utility Line Projects	$328,376	$3,722,340	1.6%
Sand & Gravel Mining	$428,167	$4,853,526	2.1%
Instream Activities	$4,714,250	$53,438,830	23.0%
Dredging	$3,492,329	$39,587,625	17.1%
Residential & Commercial Development	$40,416	$458,145	0.2%
EPA NPDES-permitted Activities	$324,305	$3,676,188	1.6%
Agricultural Pesticide Applications	$1,582,557	$17,939,228	7.7%

Table ES-6 Annual Total Potential Impact by Type of Activity			
Type of Activity	**Annual Total Potential Impact**	**Present Value over 20 years**	**% of total**
Hood Canal Summer-run chum salmon ESU			
Hydropower Dams	$525,490	$5,956,745	7.4%
Non-hydropower Dams	$402,895	$4,567,055	5.7%
Federal Lands (non-wilderness)	$1,323,147	$14,998,654	18.6%
Federal Lands (wilderness)	$11,622	$131,747	0.2%
Grazing	$0	$0	0.0%
Transportation Projects	$40,917	$463,819	0.6%
Utility Line Projects	$50,500	$572,448	0.7%
Sand & Gravel Mining	$112,675	$1,277,244	1.6%
Instream Activities	$2,915,750	$33,051,762	40.9%
Dredging	$1,642,000	$18,613,047	23.1%
Residential & Commercial Development	$9,220	$104,517	0.1%
EPA NPDES-permitted Activities	$82,961	$940,418	1.2%
Agricultural Pesticide Applications	$6,309	$71,511	0.1%
Columbia River chum salmon ESU			
Hydropower Dams	$1,579,683	$17,906,650	9.3%
Non-hydropower Dams	$614,945	$6,970,768	3.6%
Federal Lands (non-wilderness)	$2,365,498	$26,814,323	13.9%
Federal Lands (wilderness)	$14,743	$167,120	0.1%
Grazing	$0	$0	0.0%
Transportation Projects	$833,584	$9,449,167	4.9%
Utility Line Projects	$227,250	$2,576,014	1.3%
Sand & Gravel Mining	$338,026	$3,831,731	2.0%
Instream Activities	$5,708,875	$64,713,496	33.5%
Dredging	$4,860,320	$55,094,620	28.5%
Residential & Commercial Development	$80,764	$915,504	0.5%
EPA NPDES-permitted Activities	$370,299	$4,197,555	2.2%
Agricultural Pesticide Applications	$68,606	$777,688	0.4%

Table ES-6 Annual Total Potential Impact by Type of Activity			
Type of Activity	**Annual Total Potential Impact**	**Present Value over 20 years**	**% of total**
Ozette Lake sockeye salmon ESU			
Hydropower Dams	$0	$0	0.0%
Non-hydropower Dams	$0	$0	0.0%
Federal Lands (non-wilderness)	$0	$0	0.0%
Federal Lands (wilderness)	$0	$0	0.0%
Grazing	$0	$0	0.0%
Transportation Projects	$0	$0	0.0%
Utility Line Projects	$0	$0	0.0%
Sand & Gravel Mining	$0	$0	0.0%
Instream Activities	$0	$0	0.0%
Dredging	$0	$0	0.0%
Residential & Commercial Development	$0	$0	0.0%
EPA NPDES-permitted Activities	$2,720	$30,833	99.9%
Agricultural Pesticide Applications	$3	$29	0.1%
Upper Columbia River steelhead ESU			
Hydropower Dams	$4,085,136	$46,307,447	13.8%
Non-hydropower Dams	$2,374,960	$26,921,585	8.0%
Federal Lands (non-wilderness)	$9,321,088	$105,660,082	31.5%
Federal Lands (wilderness)	$111,672	$1,265,868	0.4%
Grazing	$10,634	$120,537	0.0%
Transportation Projects	$460,753	$5,222,912	1.6%
Utility Line Projects	$353,626	$4,008,564	1.2%
Sand & Gravel Mining	$585,912	$6,641,667	2.0%
Instream Activities	$5,381,875	$61,006,757	18.2%
Dredging	$3,697,579	$41,914,256	12.5%
Residential & Commercial Development	$45,027	$510,403	0.2%
EPA NPDES-permitted Activities	$344,705	$3,907,438	1.2%
Agricultural Pesticide Applications	$2,814,373	$31,902,598	9.5%

Table ES-6 Annual Total Potential Impact by Type of Activity			
Type of Activity	**Annual Total Potential Impact**	**Present Value over 20 years**	**% of total**
Snake River Basin steelhead ESU			
Hydropower Dams	$381,690	$4,326,683	1.2%
Non-hydropower Dams	$1,887,245	$21,393,045	5.9%
Federal Lands (non-wilderness)	$14,734,674	$167,026,300	45.7%
Federal Lands (wilderness)	$388,227	$4,400,779	1.2%
Grazing	$370,820	$4,203,468	1.2%
Transportation Projects	$715,669	$8,112,529	2.2%
Utility Line Projects	$513,585	$5,821,792	1.6%
Sand & Gravel Mining	$315,491	$3,576,282	1.0%
Instream Activities	$5,953,239	$67,483,512	18.5%
Dredging	$5,750,079	$65,180,565	17.9%
Residential & Commercial Development	$230,956	$2,618,026	0.7%
EPA NPDES-permitted Activities	$429,975	$4,874,022	1.3%
Agricultural Pesticide Applications	$538,127	$6,099,987	1.7%
Lower Columbia River steelhead ESU			
Hydropower Dams	$9,776,668	$110,824,353	26.7%
Non-hydropower Dams	$1,410,133	$15,984,691	3.8%
Federal Lands (non-wilderness)	$9,386,212	$106,398,296	25.6%
Federal Lands (wilderness)	$66,238	$750,841	0.2%
Grazing	$0	$0	0.0%
Transportation Projects	$1,357,505	$15,388,126	3.7%
Utility Line Projects	$378,876	$4,294,788	1.0%
Sand & Gravel Mining	$743,658	$8,429,808	2.0%
Instream Activities	$4,282,814	$48,548,250	11.7%
Dredging	$7,258,666	$82,281,303	19.8%
Residential & Commercial Development	$860,670	$9,756,205	2.3%
EPA NPDES-permitted Activities	$694,274	$7,870,009	1.9%
Agricultural Pesticide Applications	$431,337	$4,889,463	1.2%

Table ES-6 Annual Total Potential Impact by Type of Activity			
Type of Activity	**Annual Total Potential Impact**	**Present Value over 20 years**	**% of total**
Upper Willamette steelhead ESU			
Hydropower Dams	$421,769	$4,780,999	2.6%
Non-hydropower Dams	$2,056,885	$23,316,016	12.5%
Federal Lands (non-wilderness)	$1,609,818	$18,248,240	9.8%
Federal Lands (wilderness)	$13,330	$151,099	0.1%
Grazing	$0	$0	0.0%
Transportation Projects	$712,099	$8,072,061	4.3%
Utility Line Projects	$522,423	$5,921,970	3.2%
Sand & Gravel Mining	$630,983	$7,152,564	3.8%
Instream Activities	$636,015	$7,209,609	3.9%
Dredging	$6,370,960	$72,218,624	38.7%
Residential & Commercial Development	$1,885,640	$21,374,852	11.4%
EPA NPDES-permitted Activities	$832,255	$9,434,111	5.0%
Agricultural Pesticide Applications	$789,486	$8,949,296	4.8%
Middle Columbia River steelhead ESU			
Hydropower Dams	$3,591,565	$40,712,527	8.2%
Non-hydropower Dams	$2,989,905	$33,892,353	6.8%
Federal Lands (non-wilderness)	$18,529,151	$210,038,961	42.2%
Federal Lands (wilderness)	$139,912	$1,585,983	0.3%
Grazing	$277,097	$3,141,056	0.6%
Transportation Projects	$912,484	$10,343,544	2.1%
Utility Line Projects	$633,270	$7,178,492	1.4%
Sand & Gravel Mining	$450,702	$5,108,974	1.0%
Instream Activities	$4,008,611	$45,439,995	9.1%
Dredging	$7,079,073	$80,245,501	16.1%
Residential & Commercial Development	$103,918	$1,177,974	0.2%
EPA NPDES-permitted Activities	$599,896	$6,800,175	1.4%
Agricultural Pesticide Applications	$4,558,307	$51,671,119	10.4%

Table ES-6 Annual Total Potential Impact by Type of Activity			
Type of Activity	**Annual Total Potential Impact**	**Present Value over 20 years**	**% of total**
Aggregate Potential Impacts for all 12 West Coast salmon and steelhead ESUs			
Hydropower Dams	$45,636,822	$517,320,548	18.7%
Non-hydropower Dams	$14,801,090	$167,779,165	6.1%
Federal Lands (non-wilderness)	$65,582,982	$743,422,136	26.9%
Federal Lands (wilderness)	$885,039	$10,032,448	0.4%
Grazing	$659,378	$7,474,446	0.3%
Transportation Projects	$4,715,539	$53,453,445	1.9%
Utility Line Projects	$4,219,654	$47,832,287	1.7%
Sand & Gravel Mining	$2,704,211	$30,653,846	1.1%
Instream Activities	$55,773,869	$632,230,008	22.9%
Dredging	$31,578,739	$357,963,801	13.0%
Residential & Commercial Development	$3,146,107	$35,662,997	1.3%
EPA NPDES-permitted Activities	$3,613,511	$40,961,298	1.5%
Agricultural Pesticide Applications	$10,277,683	$116,503,655	4.2%

Table ES-7 Annual Total Potential Impacts for Individual Watersheds					
Discount Rate	**Cost Estimate**	**Annual Total Potential Impact**			
		Average	**Median**	**Maximum**	**Minimum**
Puget Sound chinook salmon ESU					
7%	High	$1,807,770	$889,468	$23,532,481	$2,865
	Mid-range	$1,165,357	$584,677	$15,308,987	$1,445
	Low	$522,816	$310,256	$7,085,494	$25
3%	High	$1,702,253	$888,036	$23,532,481	$2,865
	Mid-range	$1,098,405	$585,880	$15,308,988	$1,445
	Low	$494,447	$310,257	$7,085,494	$25
Lower Columbia River chinook salmon ESU					
7%	High	$1,094,003	$702,502	$6,011,754	$50,062
	Mid-range	$783,966	$549,208	$3,932,625	$34,162
	Low	$473,835	$287,444	$2,118,441	$16,545
3%	High	$1,089,637	$702,502	$6,007,977	$50,062
	Mid-range	$768,250	$547,958	$3,923,577	$34,162
	Low	$446,873	$318,860	$1,839,178	$16,545
Upper Willamette River chinook salmon ESU					
7%	High	$777,531	$404,661	$7,068,726	$2,815
	Mid-range	$558,312	$320,406	$4,236,484	$1,454
	Low	$339,047	$199,875	$1,577,678	$93
3%	High	$728,478	$403,229	$5,508,711	$2,815
	Mid-range	$527,324	$318,588	$3,536,035	$1,454
	Low	$326,121	$198,861	$1,563,360	$93
Upper Columbia River spring-run chinook salmon ESU					
7%	High	$904,445	$559,334	$4,655,418	$33,862
	Mid-range	$660,220	$487,740	$2,948,332	$24,454
	Low	$415,995	$354,401	$1,379,472	$4,853
3%	High	$906,773	$559,334	$4,649,691	$33,526
	Mid-range	$660,941	$487,740	$2,942,604	$24,454
	Low	$415,109	$354,401	$1,379,460	$4,853
Hood Canal summer-run chum salmon ESU					
7%	High	$628,141	$329,310	$2,250,820	$54,104
	Mid-range	$419,029	$255,018	$1,452,160	$54,104
	Low	$209,984	$156,250	$653,500	$44,678
3%	High	$695,225	$339,852	$2,532,912	$54,104
	Mid-range	$457,276	$260,289	$1,645,373	$54,104
	Low	$219,512	$156,250	$761,333	$44,678

Table ES-7 Annual Total Potential Impacts for Individual Watersheds					
Discount Rate	**Cost Estimate**	**Annual Total Potential Impact**			
		Average	**Median**	**Maximum**	**Minimum**
Columbia River chum salmon ESU					
7%	High	$1,216,854	$611,033	$6,009,618	$50,062
	Mid-range	$853,130	$405,922	$3,931,381	$49,791
	Low	$489,405	$254,337	$2,118,441	$17,350
3%	High	$1,186,978	$617,508	$6,005,841	$50,062
	Mid-range	$821,277	$408,443	$3,922,333	$49,791
	Low	$455,576	$254,337	$1,838,825	$17,350
Ozette Lake sockeye salmon ESU					
7%	High	$5,445	$5,445	$5,445	$5,445
	Mid-range	$2,723	$2,723	$2,723	$2,723
	Low	$0	$0	$0	$0
3%	High	$5,445	$5,445	$5,445	$5,445
	Mid-range	$2,723	$2,723	$2,723	$2,723
	Low	$0	$0	$0	$0
Upper Columbia River steelhead ESU					
7%	High	$1,036,798	$689,331	$8,162,283	$33,862
	Mid-range	$704,460	$496,921	$4,735,387	$24,454
	Low	$371,864	$241,512	$1,382,349	$4,853
3%	High	$973,605	$694,259	$5,400,447	$33,526
	Mid-range	$669,696	$498,239	$3,235,670	$24,454
	Low	$365,625	$241,512	$1,382,337	$4,853
Snake River Basin steelhead ESU					
7%	High	$146,114	$68,351	$3,808,844	$99
	Mid-range	$111,849	$58,467	$2,402,363	$88
	Low	$77,585	$45,803	$995,881	$0
3%	High	$145,796	$67,738	$3,803,117	$70
	Mid-range	$111,454	$57,749	$2,396,635	$62
	Low	$77,112	$45,355	$990,154	$0

Table ES-7 Annual Total Potential Impacts for Individual Watersheds					
Discount Rate	**Cost Estimate**	**Annual Total Potential Impact**			
		Average	**Median**	**Maximum**	**Minimum**
Lower Columbia River steelhead ESU					
7%	High	$1,216,519	$727,297	$6,026,569	$50,185
	Mid-range	$872,549	$600,919	$3,941,426	$49,953
	Low	$528,626	$357,756	$1,856,282	$49,722
3%	High	$1,195,346	$727,297	$6,022,793	$50,185
	Mid-range	$850,470	$599,487	$3,932,378	$49,953
	Low	$505,707	$375,931	$1,841,964	$49,722
Upper Willamette steelhead ESU					
7%	High	$643,082	$312,163	$5,480,862	$2,815
	Mid-range	$433,728	$185,430	$3,529,270	$1,454
	Low	$224,374	$110,493	$1,577,678	$93
3%	High	$642,645	$305,004	$5,508,711	$2,815
	Mid-range	$431,348	$183,999	$3,536,035	$1,454
	Low	$220,052	$108,772	$1,563,360	$93
Middle Columbia River steelhead ESU					
7%	High	$505,652	$263,296	$3,808,845	$2,237
	Mid-range	$384,859	$201,580	$2,402,363	$1,408
	Low	$264,056	$149,328	$2,118,441	$6
3%	High	$494,800	$264,344	$3,803,117	$2,237
	Mid-range	$374,660	$202,354	$2,396,636	$1,408
	Low	$254,515	$147,512	$1,478,726	$6
All 12 West Coast salmon and steelhead ESUs					
7%	High	$573,719	$164,166	$23,532,481	$99
	Mid-range	$400,179	$131,204	$15,308,987	$88
	Low	$226,594	$92,239	$7,085,494	$0
3%	High	$549,339	$164,844	$23,532,481	$70
	Mid-range	$383,965	$132,533	$15,308,988	$62
	Low	$218,563	$92,239	$7,085,494	$0

Table ES-8 Present Value of Annual Total Potential Impact over 20 Years for Individual Watersheds					
Discount Rate	**Cost Estimate**	**Present Value over 20 years**			
		Average	**Median**	**Maximum**	**Minimum**
Puget Sound chinook salmon ESU					
7%	High	$19,151,541	$9,423,034	$249,303,438	$30,353
	Mid-range	$12,345,808	$6,194,073	$162,183,629	$15,310
	Low	$5,538,725	$3,286,861	$75,063,821	$266
3%	High	$25,325,227	$13,211,732	$350,103,901	$42,626
	Mid-range	$16,341,495	$8,716,421	$227,759,082	$21,500
	Low	$7,356,120	$4,615,833	$105,414,262	$374
Lower Columbia River chinook salmon ESU					
7%	High	$11,589,883	$7,442,318	$63,688,605	$530,358
	Mid-range	$8,305,348	$5,818,313	$41,662,286	$361,916
	Low	$5,019,810	$3,045,189	$22,442,791	$175,282
3%	High	$16,211,043	$10,451,459	$89,383,527	$744,797
	Mid-range	$11,429,618	$8,152,236	$58,372,924	$508,249
	Low	$6,648,342	$4,743,839	$27,362,322	$246,154
Upper Willamette River chinook salmon ESU					
7%	High	$8,237,171	$4,286,980	$74,886,179	$29,817
	Mid-range	$5,914,770	$3,394,387	$44,881,374	$15,404
	Low	$3,591,871	$2,117,481	$16,713,940	$990
3%	High	$10,837,919	$5,999,025	$81,955,704	$41,873
	Mid-range	$7,845,253	$4,739,788	$52,607,274	$21,632
	Low	$4,851,861	$2,958,550	$23,258,845	$1,391
Upper Columbia River spring-run chinook salmon ESU					
7%	High	$10,252,425	$6,340,386	$52,771,935	$383,846
	Mid-range	$7,483,987	$5,528,819	$33,421,095	$277,197
	Low	$4,715,550	$4,017,348	$15,637,137	$55,011
3%	High	$13,895,208	$8,571,125	$71,250,928	$513,749
	Mid-range	$10,128,125	$7,474,024	$45,091,879	$374,724
	Low	$6,361,042	$5,430,774	$21,138,566	$74,366
Hood Canal summer-run chum salmon ESU					
7%	High	$6,654,539	$3,488,714	$23,845,221	$573,183
	Mid-range	$4,439,195	$2,701,663	$15,384,205	$573,183
	Low	$2,224,575	$1,655,315	$6,923,190	$473,318
3%	High	$10,343,188	$5,056,135	$37,683,341	$804,937
	Mid-range	$6,803,114	$3,872,440	$24,478,993	$804,937
	Low	$3,265,780	$2,324,605	$11,326,714	$664,694

Table ES-8 Present Value of Annual Total Potential Impact over 20 Years for Individual Watersheds					
Discount Rate	**Cost Estimate**	**Present Value over 20 years**			
		Average	**Median**	**Maximum**	**Minimum**
Columbia River chum salmon ESU					
7%	High	$12,891,367	$6,473,294	$63,665,981	$530,358
	Mid-range	$9,038,067	$4,300,344	$41,649,104	$527,486
	Low	$5,184,767	$2,694,447	$22,442,791	$183,805
3%	High	$17,659,238	$9,186,956	$89,351,754	$744,797
	Mid-range	$12,218,533	$6,076,607	$58,354,412	$740,764
	Low	$6,777,828	$3,783,889	$27,357,069	$258,124
Ozette Lake sockeye salmon ESU					
7%	High	$57,686	$57,686	$57,686	$57,686
	Mid-range	$28,843	$28,843	$28,843	$28,843
	Low	$1	$1	$1	$1
3%	High	$81,010	$81,010	$81,010	$81,010
	Mid-range	$40,506	$40,506	$40,506	$40,506
	Low	$1	$1	$1	$1
Upper Columbia River steelhead ESU					
7%	High	$11,752,722	$7,813,980	$92,524,333	$383,846
	Mid-range	$7,985,479	$5,632,894	$53,678,432	$277,197
	Low	$4,215,296	$2,737,682	$15,669,745	$55,011
3%	High	$14,919,330	$10,638,685	$82,755,370	$513,749
	Mid-range	$10,262,292	$7,634,909	$49,582,756	$374,724
	Low	$5,602,763	$3,700,881	$21,182,647	$74,366
Snake River Basin steelhead ESU					
7%	High	$1,656,286	$774,797	$43,175,517	$1,124
	Mid-range	$1,267,878	$662,760	$27,232,212	$994
	Low	$879,469	$519,199	$11,288,907	$0
3%	High	$2,234,151	$1,037,997	$58,278,198	$1,072
	Mid-range	$1,707,900	$884,935	$36,725,558	$949
	Low	$1,181,648	$695,013	$15,172,918	$1

Table ES-8 Present Value of Annual Total Potential Impact over 20 Years for Individual Watersheds					
Discount Rate	**Cost Estimate**	**Present Value over 20 years**			
		Average	**Median**	**Maximum**	**Minimum**
Lower Columbia River steelhead ESU					
7%	High	$12,887,822	$7,704,997	$63,845,562	$531,657
	Mid-range	$9,243,795	$6,366,140	$41,755,522	$529,204
	Low	$5,600,275	$3,790,072	$19,665,483	$526,751
3%	High	$17,783,734	$10,820,345	$89,603,945	$746,621
	Mid-range	$12,652,846	$8,918,848	$58,503,859	$743,176
	Low	$7,523,639	$5,592,903	$27,403,772	$739,731
Upper Willamette steelhead ESU					
7%	High	$6,812,823	$3,307,064	$58,064,327	$29,817
	Mid-range	$4,594,920	$1,964,453	$37,389,133	$15,404
	Low	$2,377,016	$1,170,560	$16,713,940	$990
3%	High	$9,560,932	$4,537,692	$81,955,704	$41,873
	Mid-range	$6,417,376	$2,737,434	$52,607,274	$21,632
	Low	$3,273,821	$1,618,257	$23,258,845	$1,391
Middle Columbia River steelhead ESU					
7%	High	$5,731,864	$2,984,622	$43,175,522	$25,352
	Mid-range	$4,362,602	$2,285,025	$27,232,218	$15,959
	Low	$2,993,233	$1,692,726	$24,013,787	$70
3%	High	$7,582,217	$4,050,756	$58,278,205	$34,272
	Mid-range	$5,741,220	$3,100,828	$36,725,566	$21,574
	Low	$3,900,132	$2,260,451	$22,659,700	$94
All 12 West Coast salmon and steelhead ESUs					
7%	High	$6,503,447	$1,860,920	$266,754,679	$1,124
	Mid-range	$4,536,270	$1,487,280	$173,536,483	$994
	Low	$2,568,577	$1,045,580	$80,318,288	$0
3%	High	$8,417,957	$2,526,040	$360,607,018	$1,072
	Mid-range	$5,883,803	$2,030,905	$234,591,854	$949
	Low	$3,349,222	$1,413,447	$108,576,690	$1

Section 1
Introduction and Background

1.1 Introduction

The National Marine Fisheries Service (NOAA Fisheries) is designating critical habitat for four species of West Coast salmon and steelhead (Onchorynchus spp.) listed under the Endangered Species Act (ESA). The designations addresses 19 evolutionarily significant units (ESUs) of these species in the states of Washington, Oregon, Idaho, and California.

Section 4(b)(2) of the ESA requires NOAA Fisheries to consider the economic, national security, and other impacts of designating a particular area as critical habitat. NOAA Fisheries may exclude an area from critical habitat if it determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless it also determines that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

This report analyzes the economic impacts of designating a particular area as critical habitat, based on the best scientific data available.[1] The report covers 12 ESUs in Washington, Oregon, and Idaho. In this section, we give background information on the critical habitat designations and discuss the biology and habitat use of Pacific salmon and steelhead. The section finishes with an overview of the rest of the report.

1.2 Background

NOAA Fisheries is responsible for determining whether species, subspecies, or distinct population segments of Pacific salmon and steelhead are threatened or endangered, and which areas constitute critical habitat for them under the ESA (16 U.S.C. 1531 et seq). To be considered for listing un der the ESA, a group of organisms must constitute a "species." Section 3 of the ESA defines a species as "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." The agency has determined that a group of Pacific salmon or steelhead populations qualifies as a distinct population segment if it is substantially reproductively isolated and represents an important component in the evolutionary legacy of the biological species. A group of populations meeting these criteria is considered an "evolutionarily significant unit" (ESU) (56 FR 58612, November 20, 1991). In its ESA listing determinations for West Coast salmon and steelhead, NOAA Fisheries has treated an ESU as a distinct population segment and to date has identified six species comprised of 52 ESUs in Washington, Oregon, Idaho, and California.

Section 4(b)(2) of the ESA requires NOAA Fisheries to designate critical habitat for threatened and endangered species "on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security and any other relevant impact,

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1. The primary data for this report were gathered by Industrial Economics, Inc., which also prepared supplementary material for sections 3, 4, 5, and Appendices A and B of the report.

of specifying any particular area as critical habitat." This section grants the Secretary [of Commerce] discretion to exclude any area from critical habitat if he determines "the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat." The Secretary's discretion is limited, as he may not exclude, "based on the best scientific and commercial data available," an area if it "will result in the extinction of the species."

The ESA defines critical habitat under section 3(5)(A) as:

> (I) the specific areas within the geographical area occupied by the species, at the time it is listed . . ., on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
> (ii) specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species.

Once critical habitat is designated, section 7 of the ESA requires federal agencies to ensure they do not fund, authorize, or carry out any actions that will destroy or adversely modify that habitat. This requirement is in addition to the section 7 requirement that federal agencies ensure their actions do not jeopardize the continued existence of listed species.

On February 16, 2000, NOAA Fisheries published final critical habitat designations for 19 ESUs, thereby completing designations for all 25 ESUs listed at the time (65 FR 7764). The 19 designations included more than one hundred and fifty river subbasins in Washington, Oregon, Idaho, and California. Within each occupied subbasin, NOAA Fisheries designated as critical habitat those lakes and river reaches accessible to listed fish along with the associated riparian zone, except for reaches on Indian land. Areas considered inaccessible included areas above long-standing natural impassable barriers and areas above impassable dams, but not areas above ephemeral barriers such as failed culverts.

In considering the economic impact, NOAA Fisheries determined that the critical habitat designations would impose very little or no additional requirements on federal agencies beyond those already imposed by the listing of the species themselves. The ESA's prohibition against adversely modifying critical habitat applies only to federal agencies, which are also prohibited under section 7 of the ESA from jeopardizing the continued existence of listed species. NOAA Fisheries reasoned that because it was designating only occupied habitat, there would be few or no actions that adversely modified critical habitat that also did not jeopardize the continued existence of the species. Therefore, there would be no economic impact as a result of the designations (65 FR 7764, 7765, February 16, 2000).

The National Association of Homebuilders (NAHB) challenged the designations in District Court in Washington, D.C. as having inadequately considered the economic impacts of the critical habitat designations (National Ass'n of Homebuilders v. Evans, 2002 WL 1205743 No. 00-CV-2799 (D.D.C.). NAHB also challenged NOAA Fisheries' designation of Essential Fish Habitat (EFH)

(Pacific Coast Salmon Fishery Management Plan 2000). While the NAHB litigation was pending, the Court of Appeals for the 10th Circuit issued its decision in New Mexico Cattle Growers' Association v. U.S. Fish and Wildlife Service, 248 F.3d 1277 (10th Cir. 2001) (NMCA). In that case, the Court rejected the FWS approach to economic analysis, which was similar to the approach taken by NOAA Fisheries in the final rule designating critical habitat for 19 ESUs of West Coast salmon and steelhead. The Court ruled that "Congress intended that the FWS conduct a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes." Subsequent to the 10th Circuit decision, NOAA Fisheries entered into and sought judicial approval of a consent decree resolving the NAHB litigation. That decree provided for the withdrawal of critical habitat designations for the 19 salmon and steelhead ESUs and dismissed NAHB's challenge to the EFH designations. The District Court approved the consent decree and vacated the critical habitat designations by Court order on April 30, 2002 (National Ass'n of Homebuilders v. Evans, 2002 WL 1205743 (D.D.C. 2002).

On September 3, 2003, the Pacific Coast Federation of Fishermen's Associations (PCFFA), Institute for Fisheries Resources, the Center for Biological Diversity, the Oregon Natural Resources Council, the Pacific Rivers Council, and the Environmental Protection Information Center (PCFFA et al., filed a complaint alleging NOAA Fisheries's failure to timely designate critical habitat for the 19 ESUs. NOAA Fisheries filed with the D.C. District Court an agreement resolving that litigation and establishing a schedule for designation of critical habitat.

In keeping with the Consent Decree, on December 14, 2004 (69 FR 74572), NOAA Fisheries published proposed critical habitat designations for 8 ESUs of salmon and 5 ESUs of O. mykiss. (For the latter ESUs NOAA Fisheries used the species' scientific name rather than "steelhead" because at the time they were being proposed for revision to include both anadromous (steelhead) and resident (rainbow/redband) forms of the species - see 69 FR 33101, June 14, 2004). The 13 ESUs addressed in the proposed rule were: (1) Puget Sound chinook salmon; (2) Lower Columbia River chinook salmon; (3) Upper Willamette River chinook salmon; (4) Upper Columbia River spring-run chinook salmon; (5) Hood Canal summer-run chum salmon; (6) Columbia River chum salmon; (7) Ozette Lake sockeye salmon; (8) Oregon Coast coho salmon; (9) Upper Columbia River O. mykiss; (10) Snake River Basin O. mykiss; (11) Middle Columbia River O. mykiss; (12) Lower Columbia River O. mykiss; and (13) Upper Willamette River O. mykiss. The comment period for the proposed critical habitat designations was originally open until February 14, 2005. On February 7, 2005 (70 FR 6394), NOAA Fisheries announced a court-approved Amendment to the Consent Decree which revised the schedule for completing the designations and extended the comment period until March 14, 2005, and the date to submit final rules to the Federal Register as August 15, 2005.

This report supports the final designation of critical habitat for 12 Pacific Northwest ESUs: (1) Puget Sound chinook salmon; (2) Lower Columbia River chinook salmon; (3) Upper Willamette River chinook salmon; (4) Upper Columbia River spring-run chinook salmon; (5) Hood Canal summer-run chum salmon; (6) Columbia River chum salmon; (7) Ozette Lake sockeye salmon; (8)

Upper Columbia River steelhead; (9) Snake River Basin steelhead; (10) Middle Columbia River steelhead; (11) Lower Columbia River steelhead; and (12) Upper Willamette River steelhead.[2]

1.3 West Coast Salmon and Steelhead Biology and Habitat Use

West Coast salmon and steelhead are anadromous fish, meaning adults migrate from the ocean to spawn in freshwater lakes and streams where their offspring hatch and rear prior to migrating back to the ocean to forage until maturity. The migration and spawning times vary considerably between and within species and populations (Groot and Margolis 1991). At spawning, adults pair to lay and fertilize thousands of eggs in freshwater gravel nests or "redds" excavated by females. Depending on lake/stream temperatures, eggs incubate for several weeks to months before hatching as "alevins" (a larval life stage dependent on food stored in a yolk sac). Following yolk sac absorption, alevins emerge from the gravel as young juveniles called "fry" and begin actively feeding. Depending on the species and location, juveniles may spend from a few hours to several years in freshwater areas before migrating to the ocean. The physiological and behavioral changes required for the transition to salt water result in a distinct "smolt" stage in most species. On their journey juveniles must migrate downstream through every riverine and estuarine corridor between their natal lake or stream and the ocean. For example, smolts from Idaho will travel as far as 900 miles from their inland spawning grounds. En route to the ocean the juveniles may spend from a few days to several weeks in the estuary, depending on the species. The highly productive estuarine environment is an important feeding and acclimation area for juveniles preparing to enter marine waters.

Juveniles and subadults typically spend from one to five years foraging over thousands of miles in the North Pacific Ocean before returning to spawn. Some species, such as chinook salmon, have precocious life history types (primarily male fish) that mature and spawn after only several months in the ocean. Spawning migrations known as "runs" occur throughout the year, varying by species and location. Most adult fish return or "home" with great fidelity to spawn in their natal stream, although some do stray to non-natal streams. Salmon species die after spawning, while steelhead may return to the ocean and make repeat spawning migrations. This complex life cycle gives rise to complex habitat needs, particularly during the freshwater phase (see review by Spence et al. 1996). Spawning gravels must be of a certain size and free of sediment to allow successful incubation of the eggs. Eggs also require cool, clean, and well-oxygenated waters for proper development. Juveniles need abundant food sources, including insects, crustaceans, and other small fish. They need places to hide from predators (mostly birds and bigger fish), such as under logs, root wads and boulders in the stream, and beneath overhanging vegetation. They also need places to seek refuge from periodic high flows (side channels and off channel areas) and from warm summer water temperatures (coldwater springs and deep pools). Returning adults generally do not feed in fresh water but instead rely on limited energy stores to migrate, mature, and spawn. Like juveniles, they also require cool water and places to rest and hide from predators. During all life stages salmon and

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2. NMFS is not issuing a final critical habitat designation for the Oregon Coast coho salmon ESU because it is only proposed for listing at this time (70 FR 37217, June 28, 2005). On June 28 NMFS published a notice that it was extending the final determination for that ESU by six months because of scientific disagreement.

steelhead require cool water that is free of contaminants. They also require rearing and migration corridors with adequate passage conditions (water quality and quantity available at specific times) to allow access to the various habitats required to complete their life cycle.

The homing fidelity of salmon and steelhead has created a meta-population structure with distinct populations distributed among watersheds (McElhany et al. 2000). Low levels of straying result in regular genetic exchange among populations, creating genetic similarities among populations in adjacent watersheds. Maintenance of the meta-population structure requires a distribution of populations among watersheds where environmental risks (e.g., from landslides or floods) are likely to vary. It also requires migratory connections among the watersheds to allow for periodic genetic exchange and alternate spawning sites in the case that natal streams are inaccessible due to natural events such as a drought or landslide.

1.4 Overview of Report

West Coast salmon and steelhead migrate through a broad range of interconnected habitats. For that reason, implementation of section 7 of the ESA has potentially large economic and other impacts. Federal agencies and other parties that are federally funded, have a federal permit, or otherwise have a "nexus" with a federal agency, must modify actions that have the potential to harm listed salmon and steelhead. These modifications have economic costs and other negative impacts, ranging in magnitude from modest to hundreds of millions of dollars. To the extent that the modifications enhance salmon and steelhead habitat, they also have beneficial impacts, to the fish species and possibly to other species and elements of the affected ecosystems.

For reasons discussed later, this report covers some of these impacts, focusing on the economic costs of critical habitat designation. This focus does not mean that the beneficial and non-economic impacts of critical habitat designation have been overlooked and not incorporated into the designation process. As explained in Section 2 below, NOAA Fisheries has chosen to express the benefits of designation in terms of the conservation value of designating a particular area as critical habitat. These benefits are gauged with a biological metric and are the subject of a separate report (NMFS 2005a). Some of these other impacts are covered in separate reports, including impacts on tribes and Department of Defense lands in Washington, Oregon, and Idaho (NMFS 2005g, NMFS 2005f).

Section 2 of this report outlines the framework for the economic analysis. In that section, we explain how the economic analysis fits into the process of designating critical habitat and outline the methods used to gauge the economic impacts. Section 3 describes the economic and legal conditions that account for the baseline of the analysis. This section includes socioeconomic descriptions of the areas covered by the critical habitat designations, as well as information on other laws and regulations that afford West Coast salmon and steelhead some level of habitat protection. Section 4 describes the types of activities affected by critical habitat designation and the costs of modifications needed to comply with section 7. In this part of the report, we also describe the methods used to project the occurrence of these activities over space and time. Finally, Section 5

summarizes the results of the analysis for each ESU. The report also contains a series of appendices that give the full set of results and greater details on other issues.

In most cases, we present the results of the analysis in two ways. First, the 4(b)(2) process is conducted at the level of a "particular area," which we have defined as a HUC5 watershed. The economic analysis estimates the annual potential impact of section 7 enforcement for each watershed, which is then used as a measure of the benefit of excluding that watershed from critical habitat designation. Second, we also present aggregated results at the ESU-level and for all ESUs combined. Regulatory determinations such as those imposed by the Regulatory Flexibility Act, E.O. 12866, and E.O. 13211 are conducted at the level of the regulation as a whole. The economic analysis supports these determinations by aggregating all the watershed-level impacts for each ESU to gauge the impacts at the ESU level. Similarly, we aggregated all watersheds regardless of the ESU to gauge the impacts for the entire extent of the 12 critical habitat designations. This latter aggregation is not the same as summing the ESU-level impacts because a watershed can be in more than one ESU, and so a simple summation would double-count such a watershed. Instead, we sum the annual potential impacts across all watersheds without regard to the ESU to which a watershed belongs. If a watershed belongs to more than one ESU, the estimated impact may vary, in which case we take the highest estimated watershed impact for the aggregation.

Section 2
Framework for the Economic Analysis

2.1 Introduction

The process of designating critical habitat under the ESA involves an analysis of the economic, national security, and other relevant impacts of the designation. The 4(b)(2) exclusion process is conducted for a "particular area," not for critical habitat as a whole. For that reason, the analysis should be conducted at a geographic scale that divides the area under consideration into smaller subareas, if such a division is undertaken. The statute does not specify the exact geographic scale of these subareas, nor does it dictate the form of the economic analysis and the types of impacts to be included in the analysis.

In this section, we present the framework NOAA Fisheries is using to analyze the economic impacts of critical habitat designation. We begin by discussing this framework in broad terms. Economic analyses of regulatory actions commonly use a standard benefit-cost framework. For reasons discussed here and in NMFS (2005c), NOAA Fisheries has chosen a framework more akin to a cost-effectiveness one, and so we begin with a discussion of this issue from an economic standpoint. We then outline the 4(b)(2) process, which utilizes biological, economic, and other information. Finally, we discuss the framework for this economic analysis, which is designed to support the 4(b)(2) process.

2.2 General Analytical Framework

When an economic activity has biological effects or other consequences for conservation, analyzing those consequences can take a number of approaches. Two possible approaches are benefit-cost analysis and cost-effectiveness analysis. Each of these approaches has strong scientific support as well as support from the Office of Budget and Management through its guidelines on regulatory analysis (OMB 2003). Each also has well known drawbacks, both theoretical and practical. Below, we discuss them in the context of critical habitat designation.

2.2.1 Benefit-cost analysis

Benefit-cost analysis (BCA) is the first choice for analyzing the consequences of a regulatory action such as critical habitat designation (OMB 2003). BCA is a well-established procedure for assessing the "best" course or scale of action, where "best" is that course which maximizes net benefits (Zerbe and Dively 1994). Because BCA assesses the value of an activity in that way, it requires a single metric – most commonly dollars – be used to gauge both benefits and costs.

Although the data and economic models necessary to estimate costs may be difficult or costly to gather and develop, expressing costs in dollars is straightforward for most regulatory actions. This is the case for critical habitat designation, which has direct impacts on activities carried out, funded, or permitted by the federal government. (Conceptually, the “benefits of exclusion,” which is essentially the language used in section 4(b)(2) of the ESA, are identical to the “costs of inclusion,”

and so estimates of these costs could be used in a benefit-cost framework.) These activities may be those of a federal agency itself, or those of a non-federal agency or private party that is federally funded, has a federal permit, or otherwise has a federal nexus. In many instances, those activities must be modified to comply with section 7 of the ESA. Assessing the cost of critical habitat designation and section 7 generally, then, is mainly a task of estimating the costs and levels of the modifications.[3]

Assessing the benefits of critical habitat designation in a BCA framework is also straightforward in principle but much more difficult in practice. To the extent that enforcement of section 7 of the ESA increases the protections afforded West Coast salmon and steelhead habitat, it produces real benefits to those species. In principle, these benefits can be measured first by a biological metric, and then by a dollar metric. A biological metric could take the form of the expected decrease in extinction risk, increase in number of spawners, increase in the annual population growth rate, and so forth. A BCA would then use this metric to assess the state of the species with and without critical habitat designation. This assessment would reveal the biological impact of designation, quantified in terms of the metric.

Preserving West Coast salmon and steelhead has a well-established economic value.[4] Again, in principle, the quantified biological benefits could be evaluated in terms of willingness-to-pay, the standard economic measure of value for BCA (Zerbe and Dively 1994), and the measure recommended by OMB (OMB 2003). This would produce a dollar estimate of the benefits of critical habitat designation, which could then be compared directly to the costs. Evaluating a number of alternatives in this way would reveal the one with the highest net benefits (among those compared).

Translating biological benefits into dollar estimates of value is difficult and costly, however. NOAA Fisheries has used a variety of measures to gauge the viability of West Coast salmon and steelhead. No previous study has estimated the monetary value of these species using these measures, and so no economic data are available that would support a BCA of critical habitat designation.

2.2.2 Cost-effectiveness analysis

Recognizing the difficulty of estimating economic values in cases like this one, OMB has recently acknowledged cost-effectiveness analysis (CEA) as an appropriate alternative to BCA:

> Cost-effectiveness analysis can provide a rigorous way to identify options that achieve the most effective use of the resources available without requiring

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3. As noted in the economic analysis of critical habitat designation, there may be other types of costs, such as those generated by what are called "trigger" or "stigma" effects. While identifying and estimating the extent of these costs is difficult, the process is still straightforward. We discuss stigma effects in the context of residential and commercial development in Section 4.3.9 of this report.

4. See, for example, Olsen et al. (1991), Loomis (1996), and Layton et al. (1999).

> monetization of all of [the] relevant benefits or costs. Generally, cost-effectiveness analysis is designed to compare a set of regulatory actions with the same primary outcome (e.g., an increase in the acres of wetlands protected) or multiple outcomes that can be integrated into a single numerical index (e.g., units of health improvement).[5]

Ideally, CEA quantifies both the benefits and costs of a regulatory action but uses different metrics for each. A common application of this method is to health care strategies, where the benefits of a strategy are quantified in terms of lives saved, additional years of survival, or some other quantitative, health-related measure.[6]

In principle, conducting a CEA of critical habitat designation would proceed along the same lines identified above for BCA, except that the last step of transforming biological benefits into economic (dollar) values would not be taken. Different configurations of critical habitat could be gauged by both metrics, with the cost-effectiveness (units of biological benefits/$ cost) evaluated in each case. If alternatives have the same level of biological benefits, the most cost-effective is the one with the highest ratio of biological benefits/$.

Standard CEA presumes that benefits can be measured with a cardinal[7] or even continuous measure. For critical habitat designation, however, constructing such a measure for the biological benefits is problematic. Although protecting habitat for West Coast salmon and steelhead has unquestionable benefits, it is not yet possible to quantify the benefits reliably with a single biological metric given the state of the science (Beechie et al. 2003). There are models for estimating numbers of salmon that might be produced from a watershed under different sets of environmental conditions.[8] While such models give quantified results, the accuracy of the quantified projections is unknown because data are not available both on the relationships between environmental conditions and numbers of fish and the actual conditions of habitat in a given area. This produces a heavy reliance on expert opinion for estimating habitat condition and the expected response of fish to changing environmental conditions in a specific location. Moreover, applying such models at the scale required for West Coast salmon and steelhead would be time-consuming and costly. Thus, applying CEA in its standard form is not possible.

An alternative form of CEA is one that develops an ordinal measure of the biological benefits of critical habitat designation. Although it is difficult to monetize or quantify benefits of critical habitat

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5. OMB (2003).

6. For a full discussion of CEA in this context, see Gold et al. (1996).

7. A cardinal measure has the important attribute of being susceptible to arithmetic operations. That is, if one object has a cardinal measure of "2", this can be compared directly to another object with a cardinal measure of "4", in that the second has "twice as much" of whatever is being measured as the first. Similarly, two objects with cardinal measure "2" would be equivalent to one object with a cardinal measure of "4".

8. For example, see Mobrand Biometrics, Inc. (1999).

designation, it is possible to differentiate among habitat areas based on their relative contribution to conservation. For example, habitat areas can be rated as having a high, medium, or low conservation value. Like the models discussed above, such a rating is based on best professional judgment. The simpler output (a qualitative ordinal ranking), however, may better reflect the state of the science for the geographic scale considered here than a quantified output, and can be done more easily with available information.

The qualitative ordinal evaluations can be combined with estimates of the economic costs of critical habitat designation in a framework that essentially adopts that of cost-effectiveness. Individual habitat areas can be assessed using both their biological evaluation and economic cost, so that areas with high conservation value and lower economic cost have a higher priority for designation and areas with a low conservation value and higher economic cost have a higher priority for exclusion. By proceeding in order of these priorities (either in terms of inclusion or exclusion), a critical habitat designation will be formed in a manner that (in principle) minimizes or at least (in practice) reduces the overall economic cost of achieving any given level of conservation.

This form of CEA has two limitations, one of which it shares with the standard form of CEA. First, all CEAs have an important limitation when the level of benefits varies across alternatives. Because CEA does not evaluate benefits and costs in the same metric, the analysis cannot assess whether a given change has benefits that, in monetary terms, are greater than costs. Thus, while CEA is a way of minimizing the cost of achieving any given level of benefits, the analysis alone cannot specify which among a set of possible levels of benefits is the "best" choice.

A second limitation of the modified form of CEA is the inability to discern variation in benefits among those areas that have the same conservation value rank. A likely outcome is that using the modified CEA will lead to an outcome with higher expected costs of achieving any given level of conservation than one produced with standard CEA or BCA. This limitation should be compared to the greater feasibility of the modified CEA, however.

As is seen in the next part of this section, NOAA Fisheries has chosen a framework for a portion of its 4(b)(2) process that is similar to what is described as the modified form of CEA. This has implications for the economic analysis of critical habitat designation, which we outline following a brief discussion of the 4(b)(2) process.

2.3 Framework for the 4(b)(2) process

Specific areas that satisfy the definition of critical habitat are not automatically designated as critical habitat. Section 4(b)(2) (16 U.S.C. 1533(b)(1)(A)) requires the Secretary to first consider the impact of designation and permits the Secretary to exclude areas from designation under certain circumstance. Exclusion is not required for any particular area:

> The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) of this section on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security

> and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

The approach NOAA Fisheries has taken (in part) to implement section 4(b)(2) involves these steps:

1 Identify particular areas for possible exclusion from critical habitat designation
2 Conduct a section 4(b)(2) analysis for each particular area:
    2.1 Determine the benefit of designation;
    2.2 Determine the benefit of exclusion (cost of designation);
    2.3 Determine whether the benefits of exclusion outweigh the benefits of designation
    2.4 Determine whether the exclusions (if any) will result in extinction of the species.

NMFS (2005c) discusses these steps in more detail.

2.4 Framework for analyzing economic impacts of critical habitat designation

The economic analysis of the impacts of critical habitat designation follows the standard approach to regulatory analysis. The regulation under consideration changes the state of the world and any resulting changes in economic activity are then attributed to the regulation. This approach has been called the "baseline approach."[9] It does not assume the world will remain unchanged in the absence of regulation. Instead, it projects a future course of the world as a baseline, one which may involve substantial changes in economic and other conditions. It then projects another course in which the regulation has taken effect. The impacts of the regulation are then analyzed in terms of the differences between the two courses. Changes that would exist in the absence of the regulation are included in the baseline, and so do not add to the regulation's benefits or costs.

Within the framework of the 4(b)(2) process, the analysis of economic impacts is limited to impacts that are not directly related to the conservation value of the particular area (and not among the "other relevant impacts" that are also being considered). This does not mean that the benefits of critical habitat designation are being overlooked or ignored. Expressing these benefits in terms comparable to the costs of designation was not possible because the full set of data was not available.[10] In

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9. This methodology is fundamental to economic analysis and not peculiar to the analysis of critical habitat designations or other forms of regulations. See EPA (2000).

10. Monetizing the benefits of critical habitat designation requires two types of data: estimates of the monetary value of improvements in salmon and steelhead habitat, and estimates of the likely improvements in that habitat stemming directly from designation. There are numerous estimates of the monetary value of improved salmon populations (see, for example, Alkire 1994; Bell *et al*. 2003; Davis and Radtke 1995; ECONorthwest 1999; Layton *et al.* 1999; Loomis 1996; Olsen *et al*.

principle, the economic analysis would still cover both economic benefits of inclusion as well as economic benefits of exclusion. The designation of critical habitat may have ancillary benefits unrelated to West Coast salmon and steelhead. Data on such ancillary benefits of inclusion, however, are not available at the level of the particular areas that are the focus of the 4(b)(2) process. For that reason, the economic analysis focuses on the economic benefits of a particular area being excluded from critical designation, which we sometimes refer to as the economic costs of designation.

Applying this approach to the designation of critical habitat takes the following steps:

1. Identify the baseline of economic activity and the statues and regulations that constrain that activity in the absence of the critical habitat designation;
2. Identify the types of activities that are likely to be impacted by critical habitat designation;
3. Estimate the costs of modifications needed to bring the activity into compliance with the ESA's critical habitat provisions; and
4. Project over space and time the occurrence of the activities and the likelihood they will in fact need to be modified; and
5. Aggregate the costs up to the watershed level.

As noted above, the 4(b)(2) process is conducted at the level of an individual area, not at the level of the critical habitat designation as a whole. For this reason, the steps outlined above take place for each of these areas. For West Coast salmon and steelhead, NOAA Fisheries used standard watershed units, as mapped by the U.S. Geological Service, designated by fifth field hydrologic unit codes, or HUC5s (this report refers to these HUC5s as "watersheds") for the purpose of delineating a "particular" area. Occupied estuarine and marine areas were also considered by the agency. Estuarine areas are crucial for juvenile salmonids given their multiple functions as areas for rearing/feeding, freshwater-saltwater acclimation, and migration (Simenstad et al. 1982, Marriott et al. 2002). In many areas, especially the Columbia River estuary, these habitats are occupied by multiple populations and ESUs. Nearshore areas also provide important habitat for rearing/feeding and migrating salmonids, and in Puget Sound support multiple populations of Puget Sound chinook and Hood Canal summer-run chum salmon (Beamish et al. 1998, WDFW and PNPTT 2000). Based on water resource inventory areas defined by the state of Washington, NOAA Fisheries identified 19 nearshore marine zones in Puget Sound (NMFS 2005a, WDFW 2003).

1991; Radtke *et al*. 1999; Radtke 1992; and Reading 2005). Relatively little of this literature, however, is conducted at the level of a particular ESU and even less at the watershed level. As documented in Layton *et al*. (1999), the marginal value of protecting salmon populations is not constant, so using an "average value per fish" derived from a "general" study of salmon populations is not appropriate. Moreover, none of this literature quantifies the biological improvements in salmon and steelhead habitat likely to stem from critical habitat designation. Without these estimates, assigning a monetary value to critical habitat designation or section 7 enforcement in general using the existing valuation literature is not possible.

In the remainder of this section, we briefly discuss each step in detail. The subsequent sections of the report provide the details of how the analysis was implemented and present the results of the analysis.

1. Identify the economic and statutory/regulatory baselines

The first part of identifying the baseline is to document the socioeconomic characteristics of the area covered by a critical habitat designation. Ideally, this part would include a projection of economic activity in this area over the time period under consideration. Adequate data are not available to make such projections for all activities, however, and so we present information on the region's current socioeconomic state.

The second part is to document existing legal and regulatory constraints on economic activity that are independent of critical habitat designation. In the case of critical habitat designation, the standard approach to regulatory analysis would describe a baseline that includes other forms of habitat protection, including those provided by other elements of the ESA. The NMCA decision, however, called this approach into question.[11] In that case, the Tenth Circuit Court of Appeals called for "a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes." Consistent with this decision, NOAA Fisheries will include the following in its analyses of the impacts of critical habitat designation:

- Co-extensive impacts, or those that are associated with habitat-modifying actions covered by both the jeopardy and adverse modification standards; and
- Incremental impacts, or those that are solely attributable to critical habitat designation and would not occur without the designation.

The economic impacts considered therefore include activities covered by the adverse modification standard of section 7 of the ESA, whether or not they are also covered by the jeopardy standard. We note that not all elements of the ESA are considered as co-extensive with critical habitat designation. In particular, section 9 of the ESA, which applies to both non-federal and federal parties, is considered a baseline protection. Also, federal actions that do not alter habitat but may instead harm the species directly (*e.g.*, harvest governed by federal regulations) are also not considered as co-extensive.

The laws and regulations that are considered for the baseline include the following:

- Areas with pre-existing critical habitat designations;
- ESA protections for the 12 West Coast salmon and steelhead ESUs outside section 7;
- ESA protections for other listed species; and
- Other federal and state statutes and regulations.

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11. New Mexico Cattle Growers' Association v. U.S. Fish and Wildlife Service, 248 F.3d 1277 (10th Cir. 2001) (following quote).

In many cases, the protections afforded by these laws are intertwined with those of section 7. In cases where we cannot make a clear separation, we have adopted the stance that the impacts of habitat protection are attributable to the designation of critical habitat and the implementation of section 7 for the West Coast salmon and steelhead ESUs under consideration.

2. Identify the types of activities likely impacted by critical habitat designation

Having specified the baseline economic conditions and legal/regulatory constraints, the next step is to identify the economic activity likely affected by critical habitat designation. Because section 7 directly applies only to federal actions, the majority of impacts will be borne by federal agencies, non-federal parties whose federally permitted activities are altered to avoid adverse modification, and those parties that are otherwise affected by the alteration of these activities. NOAA Fisheries maintains a substantial database covering consultations under section 7, and this database was used to derive a set of activity types for the analysis.

The designation of critical habitat may also trigger other impacts on non-federal activity, however. For example, state environmental laws may contain provisions that are triggered if a state-regulated activity occurs in federally-designated critical habitat. Another possibility is that critical habitat designation could have "stigma" effects, or impacts on the economic value of private land not attributable to any direct restrictions on the use of the land. All of these types of impacts are considered in the analysis, although quantitative estimates are not presented in every case.[12]

3. Estimate the costs of the necessary activity modifications

The next step in the analysis is to estimate the cost of modifying each type of activity to bring it into compliance with section 7. Where the federal agency's own project is the source of the potentially harmful effect, we assume sufficient expenditures are made to make the necessary modifications. Similarly, if the activity is one that is permitted or funded by a federal agency, we assume the non-federal party does the same. This assumption is strong, in that there are alternatives to modifying the project and incurring those costs. The party responsible could pursue the activity in a location that does not potentially harm the species or choose not to pursue the activity at all.

Estimating costs also involves discounting. Modifications to activities that affect West Coast salmon and steelhead habitat may involve costs that are spread out over time. These costs must be discounted, using standard guidance in guides such as that from the Office of Management and Budget (OMB 2003). In accordance with the latest guidelines, we evaluate costs using both a 7% and a 3% discount rate. The 4(b)(2) exclusion process uses the estimates based on a 7% discount rate.

As noted above, NOAA Fisheries is analyzing both the incremental and co-extensive impacts of critical habitat designation, in accord with the NMCA decision. It is still desirable, however, to separate the two types of costs. If an impact is co-extensive and not incremental, it will occur whether or not critical habitat is designated for a particular area. Weighing the benefits of inclusion

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12. We discuss stigma effects in the context of residential and commercial development in Section 4.3.9 of this report.

against the benefits of exclusion, then, is most easily accomplished if the focus is on incremental impacts.

The simplest case for distinguishing incremental from non-incremental impacts is when incremental impacts are (approximately) a constant proportion of the total section 7 impacts. This was the approach taken , for example, in the Fish and Wildlife Service's economic analysis of critical habitat designation for the northern spotted owl, which focused on the effects of section 7 implementation on federal timber sales:

> It was further assumed, based on [Fish and Wildlife] Service consultative experience, that of the total reduction in [timber] sales, 70 percent would be due to listing impacts through application of the jeopardy standard and take prohibitions and the remaining 30 percent would be due to application of the adverse modification standard.[13]

The FWS made similar assumptions in the economic analyses for two other critical habitat designations (Brookshire et al. 1993 and Brookshire et al. 1995).

In the case at hand, however, examination of the consultation record for West Coast salmon and steelhead provides no obvious way to distinguish incremental from co-extensive impacts in this way. Consultations that produce an outcome declaring adverse modification are exceptionally rare for these species. To see this, consider the consultation record, shown in Table 2-1, for three species of Snake River salmon (fall chinook, summer/spring chinook, and sockeye), which were listed and had critical habitat designated in the early 1990s.

The absence in the consultation record of purely adverse modification judgments does not mean that critical habitat designation has no impact. Clearly, a decision to make a final determination of either adverse modification or jeopardy is very rare. This is expected if the federal agency undertaking the action anticipates what modifications may be needed and implements them prior to consultation. But the absence of such clear cases means that deducing the incremental impacts of critical habitat designation is difficult and is unlikely to produce the simple approach taken in previous analyses where a specific proportion is used.

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13. Schamberger et al. (1992), at 34.

Table 2-1 Consultations for Snake River (SR) ESUs			
	Number of Outcomes		
Outcome of Consultation	**SR fall chinook**	**SR summer/ spring chinook**	**SR sockeye**
Adverse modification, no jeopardy	1	1	1
Jeopardy, no adverse modification	0	2	0
Likely to adversely affect, but no jeopardy or adverse modification	87	114	75
No effect	1	3	1
Not likely to adversely affect	155	260	115
No response needed	22	65	21
Technical assistance provided	19	28	19

Nevertheless, the consultation record for all West Coast salmon and steelhead does support, at least qualitatively, an assumption that the jeopardy standard and the adverse modification standard are applied for similar actions and in similar places. If critical habitat designation supplements the application of the jeopardy standard, then the concomitance in when and where they are applied is not inconsistent with an assumption that the incremental impacts are roughly proportional to the total (adverse modification + jeopardy) impacts.

If that is the case, providing information on total impacts provides useful information for the 4(b)(2) process, as long as the benefits of inclusion are judged in the same manner (that is, in terms of the total benefits of section 7, not just the incremental benefits of critical habitat protection). Both are biased upward, in that the true benefits of inclusion and of exclusion are less than the total benefits in each case. But if the incremental benefits and costs are roughly proportional to the total benefits and costs, respectively, it is still possible to ascertain, with a high likelihood, whether the benefits of inclusion are greater than the benefits of exclusion, even without knowledge of what that proportion may be.[14]

4. Project the occurrence of projects and likelihood of modification

The fourth step begins by projecting the occurrence over space and time of activities that are likely to be impacted by section 7 and critical habitat designation. Projecting the occurrence of projects is not the same as projecting the occurrence of consultations and concomitant modifications, however. We also consider the likelihood of a project triggering a consultation and requiring

14. Simply put, if $X > Y$, then $X/P > Y/P$ ($P>0$). Information on the relative sizes of total impacts thus provides useful information about the relative sizes of the incremental impacts even without information on the factor of proportionality (that is, P).

modifications. In some cases, we had relevant information on this likelihood for a specific project, while in most other cases we made assumptions about the distribution of that likelihood based on historical information or using best professional judgment.

5. Aggregate the costs for each watershed

Ideally, the estimation of the aggregate costs at the watershed level would focus on changes in consumer and producer surplus, the standard measure of regulatory impacts (EPA 2000, OMB 2003).[15] This is in keeping with the guidance of the Office of Management and Budget and in accord with E.O. 12866 (OMB 2003).

Data to support such an analysis are not available, however, and the geographic scope of the designations also makes this approach unfeasible. A simpler approach provides an acceptable alternative under a robust set of circumstances. In cases where the scale of the activity being impacted in a watershed is "small," the aggregate costs of modifications approximates the change in economic surplus. A "small" scale is one that does not (significantly) affect the market for the goods and services associated with the type of project or action. With few exceptions, the projects and actions covered in this analysis appear to meet this standard.[16]

Our basic approach, then, is to estimate aggregate costs by using the per-project modification cost and the forecasted level of projects in a watershed to calculate a total cost for that activity and watershed. This method does not allow for more dynamic responses to section 7 (for example, relocating activities or changing their frequency or timing) but is a good approximation of the true impacts under most circumstances.

Our framework assumes that the per-project costs are not affected by the amount of critical habitat designated for an ESU (or across ESUs). This is in accord with the focus of the analysis on a single unit (a watershed), implicitly assuming that no other units have been designated. Yet as areas are in fact designated, it is possible that economic impacts could accumulate to the level at which market-level effects are significant. This could then affect the costs (and benefits) of additional inclusions. For example, if critical habitat designation restricts the supply of a good in more than one area, the magnitude of the restriction's impact on a particular area may depend on the amount of critical habitat designated overall.

Another complication concerns the attribution of the impacts of critical habitat designation to an individual watershed. A large project may have biological effects that extend downstream, beyond

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15. Consumer surplus is the amount one would pay for a "good" over what one does pay, or over what cost one bears, rather than do without the good. Producer surplus is the amount that can be taken away from a producer or supplier without diminishing the amount produced or supplied. Zerbe and Dively (1994).

16. The major exception is the Federal Columbia River Power System (FCRPS). This system of 31 hydropower dams on the Columbia River is treated as a separate type of activity because of its scale. The impacts of section 7 implementation on the FCRPS are considered at greater length in section 4.3.1 and Appendix A (section A2.3).

the boundaries of the watershed within which it is located. If this is the case, the designation of a watershed other than the project's home watershed can nevertheless have impacts on that project. For example, a major hydropower project can have biological effects tens or even hundreds of miles downstream. Designating any one of the downstream watersheds would be sufficient to force at least some modifications on the project. The incremental impact of designating more than one downstream watershed would be significantly less than the incremental impact of designating the "first " watershed. This makes it difficult conceptually to attribute the impacts of designation to a particular area, as there is no basis for identifying one watershed among many as the "first" to be designated.

2.5 Summary

The economic framework we use in this report is a straightforward one, summing project-level impacts to estimate the total impact of designating a watershed as critical habitat. We have noted limitations in this framework, and more are considered for each activity in Section 4 below and in Appendix A. Even with the limitations, the framework produces information that will allow the 4(b)(2) process to distinguish between areas that have a "high" benefit of exclusion and those that have a "low" benefit of exclusion. This information will support a cost-effectiveness approach to designating critical habitat.

Section 3
Baseline Information

3.1 Introduction

This section provides information on the economic, legal, and regulatory baselines for the economic analysis. The 12 West Coast salmon and steelhead ESUs cover parts of three states and intersect 11 counties in Idaho, 26 in Oregon, and 33 in Washington. These ESUs are protected by a complex web of other federal, state, and local laws and regulations. We begin with a brief overview of the geographic scope of the designations, and then discuss first the economic baseline and then the legal and regulatory baseline.

3.2 Geographic Scope of the Critical Habitat Designations

The critical habitat areas under consideration for the 12 ESUs of West Coast salmon and steelhead cover over 70 million acres in Idaho, Oregon, and Washington. Table 3-1 below lists the number of watersheds by state for each ESU, while Table 3-2 lists the average and range of the watershed size for each ESU. We note here and consider in more detail later that a watershed may be considered for designation in more than one ESU.

The geographic scope of the critical habitat designations and the number of watersheds are quite large. For this reason, we discuss issues such as the baselines (see below) and the methods we used in the analysis (see Section 4 of the analysis) in the body of the report, but the bulk of the results of the economic analysis is presented in a series of appendices.

3.3 Economic Baseline

In presenting baseline information on the economic characteristics of the watersheds in the 12 ESUs, we face a classic problem: Ecological and economic boundaries do not coincide. Census information is available at the county (or metropolitan area) level, but a county may be covered by several watersheds, and this coverage varies widely. Describing economic activity at the level of the entire county may be misleading, however, as the watersheds considered for critical habitat designation may only cover a small part of the county. For example, three counties in both Idaho and Oregon have less than five square miles in critical habitat areas being considered for one or more ESUs. Describing a baseline in terms of the socioeconomic characteristics of these counties would not be representative of the true baseline.

Table 3-1 Number of Watersheds by ESU and State				
ESU	**Idaho**	**Oregon**	**Washington**	**Total[1]**
Puget Sound chinook salmon[2]	0	0	80	80
Lower Columbia River chinook salmon	0	24	28	48
Upper Willamette River chinook salmon	0	60	1	60
Upper Columbia River chinook salmon	0	10	31	31
Hood Canal summer-run chum salmon[3]	0	0	17	17
Columbia River chum salmon	0	5	19	20
Ozette Lake sockeye salmon	0	0	1	1
Upper Columbia River steelhead	0	10	42	42
Snake River Basin steelhead	235	43	30	289
Lower Columbia River steelhead	0	23	23	42
Upper Willamette River steelhead	0	38	1	38
Middle Columbia River steelhead	0	83	45	114

[1]The total number of watersheds may exceed the sum of the state totals because a watershed can span more than one state.
[2]The number of watersheds for the Puget Sound chinook salmon ESU includes 19 nearshore marine areas.
[3]The number of watersheds for the Hood Canal summer-run chum salmon ESU includes 5 nearshore marine areas.

Table 3-2 Watershed Size by ESU			
	Size of watershed (square miles)		
ESU	**Average**	**Maximum**	**Minimum**
Puget Sound chinook salmon	149.7	347.4	4
Lower Columbia River chinook salmon	162.4	392.4	49
Upper Willamette River chinook salmon	166.4	411.2	53
Upper Columbia River chinook salmon	256.9	489.2	132
Hood Canal summer-run chum salmon	95.6	244.9	5
Columbia River chum salmon	193.8	392.4	117
Ozette Lake sockeye salmon[1]	101.2	101.2	101
Upper Columbia River steelhead	264.4	489.2	69
Snake River Basin steelhead	105.2	325.9	16
Lower Columbia River steelhead	162.3	274.3	54
Upper Willamette River steelhead	146.1	315.2	53
Middle Columbia River steelhead	222.5	850.0	59
[1]The Ozette Lake sockeye salmon ESU consists of a single watershed.			

One way to present a more accurate economic picture of the ESUs and their constituent watersheds is to apportion a county's economic activity between the part of the county that intersects the area being considered for an ESU's critical habitat designation and the part of the county that is not being considered. Using geographic area as the basis for this apportionment would necessarily assume that the density of economic activity is uniform throughout a county, an assumption that is untenable. A strong but more palatable assumption is that economic activity is constant throughout a county on a per-capita basis. Estimating the population within a watershed then provides the basis for estimating economic activity at the watershed level. If the watersheds under consideration cover only part of a county, this approach also produces a more accurate picture of the potential impacts on that county.

Using spatial data on county and watershed boundaries and 2000 U.S. Census block data, we estimated the population of each watershed and of the part of each county covered by one or more watersheds in an ESU. Using the assumption of constant per-capita economic activity, we then estimated economic activity at the watershed level and for each county-ESU intersection. This was

done by multiplying the value of per-capita economic activity by the estimated population in the watershed and in the county-ESU intersection.

Below, we present demographic and economic information in two ways: for the county as a whole and for the part of the county that intersects the watersheds in an ESU. Tables 3-3 and 3-4 summarize this information on an ESU-basis. In each case, we present a figure that sums over all the counties covered by an ESU by including the entire county, and then one that sums over all the counties in an ESU by including only that portion covered by the ESU.

3.4 Statutory and Regulatory Baseline

There are two broad types of legal and regulatory restrictions that can protect habitat even in the absence of critical habitat designation. The first is other parts of the ESA, including critical habitat designations for West Coast salmon and steelhead ESUs not covered by this proposal. The second is a law or regulation that protects habitat, whether or not that is its intent, and operates independently of the ESA. Both of these are discussed below.

3.4.1 ESA habitat protections other than Section 7

In the current state of the world, where critical habitat is not designated for the 12 ESUs, the ESA can still protect habitat in three ways:

- ESA sections other than section 7 for the 12 ESUs;
- Existing critical habitat designations for other West Coast salmon and steelhead that predate this proposal; and
- ESA protections for non-salmon and non-steelhead species where the habitat for those other species overlaps the habitat for the 12 ESUs and these protections provide ancillary benefits for West Coast salmon and steelhead.

Absent section 7 protections, West Coast salmon and steelhead habitat may still be protected by other parts of the ESA. For example, section 9's prohibition against “take” can curtail economic activity in an area occupied by a listed species. If there is no federal nexus – the federal government does not carry out, fund, or issue a permit for the activity – section 7 does not apply but the species and its habitat are still protected. The impacts engendered by section 9 and sections of the ESA other than section 7 are therefore included in the baseline and not considered in the analysis.

Table 3-3 Demographics for Counties and ESUs						
	Population		Area (sq. miles)		Population Density	
ESU	Counties	ESU	Counties	ESU	County	ESU
Puget Sound chinook salmon	4147091	3,379,772	24,794	11,242	167.3	300.6
Lower Columbia River chinook salmon	3,421,465	1,476,278	25622	7,671	133.5	192.4
Upper Willamette River chinook salmon	3,091,459	1,818,957	29,028	9,870	106.5	184.3
Upper Columbia River chinook salmon	2094151	268,854	44,013	7,855	47.6	34.2
Hood Canal summer-run chum salmon	371852	78,325	4,910	1,509	75.7	51.9
Columbia River chum salmon	1,567,086	487,997	18,018	3,753	87.0	130.0
Ozette Lake sockeye salmon	64,525	85	1739	101	37.1	0.8
Upper Columbia River steelhead	2,094,151	313,938	44,013	10,995	47.6	28.6
Snake River Basin steelhead	2,120,961	305,307	78,836	28,552	26.9	10.7
Lower Columbia River steelhead	3,421,465	1,384,814	25,622	6,694	133.5	206.9
Upper Willamette River steelhead	2,991,531	1,888,380	23,856	5,442	125.4	347
Middle Columbia River steelhead	4,175,117	625,883	58,843	25,252	71.0	24.8

Table 3-4 Income and Employment for Counties and ESUs				
	Personal Income ($1000)		Total Employment	
ESU	Counties	ESU	Counties	ESU
Puget Sound chinook salmon	$154,737,948	$129,756,223	2,839,671	2,354,111
Lower Columbia River chinook salmon	$96,523,650	$44,371,043	1,924,398	878,379
Upper Willamette River chinook salmon	$90,372,394	$53,726,950	1,851,416	1,141,311
Upper Columbia River chinook salmon	$56,602,587	$6,419,887	1,290,727	148,626
Hood Canal summer-run chum salmon	$10,250,032	$2,174,793	189,277	40,345
Columbia River chum salmon	$45,425,156	$14,116,907	1,008,133	243,619
Ozette Lake sockeye salmon	$1,587,944	$2,092	31,902	42
Upper Columbia River steelhead	$56,602,587	$7,368,344	1,290,727	174,372
Snake River Basin steelhead	$57,663,210	$7,193,963	1,318,166	170,399
Lower Columbia River steelhead	$96,682,790	$41,928,103	1,926,628	828,307
Upper Willamette River steelhead	$89,266,871	$59,195,021	1,822,746	1,227,957
Middle Columbia River steelhead	$147,956,052	$14,124,686	2,932,846	327,382

Similarly, restrictions on federal activities that jeopardize a listed species in ways that avoid modifying habitat are also embedded in the baseline. For example, in the 12 ESUs under consideration, NOAA Fisheries has conducted dozens of consultations over the past few years for activities such as harvest and hatchery operations, which may harm the species but not by modifying its habitat. Although the ESA may have substantial impacts on these activities, they are not related to section 7's constraints on habitat modification, and so are included in the baseline and not considered in the analysis.

A more challenging example is hydropower operations. The operation of hydropower dams can adversely modify spawning, rearing, and migratory habitat, but it can also directly harm West Coast salmon and steelhead by increasing mortality as the fish pass through a dam's turbines. Modifications that address the first set of effects properly fall within the scope of the economic analysis, while modifications that address the second set of effects belong, in principal at least, in the baseline. Distinguishing the effects of hydropower operations in this way, however, is not possible with the data available, and so all hydropower modifications are included in the analysis. This may result in an overestimate of the impacts of critical habitat.

A second source of habitat protection under the ESA stems from the fact that individuals from different ESUs may occupy the same geographic area, so that protecting habitat for one ESU may conserve the habitat of another ESU. This presents two cases for the establishment of the baseline, depending on whether the overlap is between new and existing areas or between new critical habitat areas.

The first case is for an overlap between the critical habitat designations in this proceeding and existing designations for West Coast salmon ESUs that are not part of this proposal. The Snake River Basin steelhead ESU overlaps the existing Snake River Basin fall chinook, spring-summer chinook, and sockeye salmon ESUs, which are not under consideration in the current proposal. The agency has stated its intention to revisit the existing critical habitat designations for Snake River ESUs, if appropriate, following completion of related rulemaking (67 Fed. Reg. 6215, Feb. 11, 2002). Given the uncertainty that these designations will remain in place in their current configuration, we have chosen not to include them in the baseline. Moreover, because of the cost-effectiveness framework we have adopted, so long as we also do not count these designations as part of the baseline when we consider the benefit of designation for each ESU, we will still have an accurate picture of the benefits of designation relative to the benefits of exclusion.

Overlap also exists among the ESUs that are under consideration. The resolution of this issue is more complicated. Ideally, where critical habitat proposals overlap and afford similar (but not necessarily identical) protections, the analysis should consider the designations jointly. When actions take place simultaneously, there is no way to assign economic effects individually unless there is a pre-ordained or some other logical order for the actions. If that is the case, an alternative is to analyze them sequentially: The effects of the "first" designation would be analyzed under an initial set of baseline conditions, and then any overlapping designations would be analyzed using a baseline that included the prior designation(s). This is not possible for the West Coast salmon and steelhead ESUs, however, as NOAA Fisheries is proposing to designate them as a package.

Because none of the 12 ESUs has critical habitat designated in the current state of the world, and because the probability exists (from the point of view of this analysis) that critical habitat in fact may not be designated for certain watersheds, we make the following assumption: Where two or more of the ESUs under consideration overlap in terms of critical habitat, the protections afforded by designating critical habitat for one ESU are not included in the baseline for the analysis of the impacts of the other ESUs.

Finally, other species listed under the ESA may occupy the same geographic area as West Coast salmon and steelhead, and thereby afford some protection to the latter's habitat. The range of bull trout, for example, overlaps with several West Coast salmon and steelhead ESUs, as does the critical habitat for the northern spotted owl and marbled murrelet. To the extent that the ESA protections for these species provide ancillary benefits to West Coast salmon and steelhead, those benefits should be included in the baseline. In at least one case (the Northwest Forest Plan, discussed below), these benefits may be significant.

A fundamental problem in incorporating these benefits into the baseline, however, is that they depend on the status of a species other than West Coast salmon and steelhead. If the status of that species improves, critical habitat could be revised but not based on any consideration of the status of West Coast salmon and steelhead. For that reason, we do not consider these benefits generally to be part of the baseline.

3.4.2 Other laws and regulations that protect habitat

Federal laws other than the ESA, and state and local laws and regulations can protect West Coast salmon and steelhead habitat in the absence of critical habitat designation. While these protections may not be as strong as those under section 7, they should still be included in the baseline. In many cases, a law or regulation directly affects an activity that also has the potential to adversely modify West Coast salmon and steelhead habitat. In those cases, we incorporate the economic impacts of these other measures into the baseline, in that we do not consider them even if section 7 also covers them. In other cases where the link is less clear or direct, we adopt a conservative stance and assume that the effects of the law or regulations and those of critical habitat designation do not overlap.

Below, we discuss the major sources of legal and regulatory baseline protection and note how we incorporated their effects into the analytical baseline. The "baseline status" notation is as follows:

- **Baseline status: No** – We explicitly considered this regulation in terms of its potential to offer baseline protection to the species, and determined that the regulation should not be assigned baseline status because: (1) its provisions for the protection of West Coast salmon and steelhead habitat were historically reinforced through section 7 consultation, and therefore considered to be coextensive with section 7; or (2) while the regulation encouraged behavior to protect West Coast salmon and steelhead habitat, it did not explicitly require these protections by law.
- **Baseline status: Partial** Certain protections for the species and habitat provided by this regulation are considered baseline; other protections are not. Using the Clean

Water Act as an example, compliance with current water quality standards are considered to be baseline protections for the species and habitat. In contrast, explicit consideration of West Coast salmon and steelhead associated with section 404 permitting, which requires a section 7 consultation, is considered to be a protection associated with the designation of critical habitat.

- **Baseline status: Yes** – The protections provided by this regulation to West Coast salmon and steelhead habitat are incorporated into the baseline, as the impacts would occur without section 7 consultation and therefore not included in our cost assessment.

We also list other laws and regulations that may constrain habitat-modifying federal actions but are unlikely to provide significant protection.

Clean Water Act **(33 U.S.C. 1251 et seq. 1987)**
Baseline status: Partial
The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States. It gives the Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for all contaminants in surface waters.

According to the CWA, it is unlawful for any person to discharge a pollutant from a point source into navigable waters, unless a permit is obtained under its provisions; this requires issuance of Section 404 permits from the USACE. As part of pollution prevention activities, the USACE may limit activities in waterways through its 404 permitting process, independent of salmon concerns. These reductions in pollution may benefit West Coast salmon and steelhead.

Under the National Pollutant Discharge Elimination System (NPDES) program, EPA sets pollutant-specific limits on the point source discharges for major industries and provides permits to individual point sources that apply to these limits.

Under the water quality standards program, EPA, in collaboration with States, establishes water quality criteria to regulate ambient concentrations of pollutants in surface waters. Under section 401 of the CWA, all applicants for a Federal license or permit to conduct activity that may result in discharge to navigable waters are required to submit a State certification to the licensing or permitting agency.

This analysis considers NOAA Fisheries's recommended modifications (as described in biological opinions) to USACE permit applications to be a section 7 impact. To the extent that NOAA Fisheries recommendations overlap with USACE's planned actions under the CWA, then this analysis may overstate the impact of section 7 impacts. In addition, it includes impacts related to water temperature control requirements implemented through the NPDES program. Other potential CWA protections that are not reinforced through section 7 (e.g., as project modifications in biological opinions) are considered baseline protections (which is the basis for the partial baseline status of this law).

National Forest Management Act (16 USC §§ 1600-1614 1976)

Baseline status: Partial

This Act requires assessment of forest lands, development of a management program based on multiple-use, sustained-yield principles, and implementation of a resource management plan for each unit of the National Forest System. The Act may provide protection to West Coast salmon and steelhead within National Forests, primarily through its authorization of the Northwest Forest Plan (NWFP) and PACFISH. NWFP and PACFISH provide numerous protections for salmon species related to Federal lands management activities (The NWFP and PACFISH are discussed in more detail below).

As stated below, this analysis considers NOAA Fisheries recommended alterations (as described in biological opinions) to planned USFS and BLM actions in these areas to be a section 7 impact. To the extent that NOAA Fisheries recommendations overlap NWFP provisions, this analysis may overstate the impact of section 7 implementation for West Coast salmon and steelhead. NWFP-dictated protections that are not reinforced through section 7 are considered baseline protections (which is the basis for the partial baseline status of this law).

Northwest Forest Plan (1994)[1]

Baseline status: Partial

The Northwest Forest Plan defines Standards and Guidelines (S&Gs) for forest use throughout the 24 million acres of Federal lands in its planning area (the range of the Northern spotted owl). Specifically, the NWFP provides S&Gs for management of timber, roads, grazing, recreation, minerals, fire/fuels management, fish and wildlife management, general land management, riparian area management, watershed and habitat restoration, and research activities on USFS and BLM lands. To accomplish its goals, the NWFP defines seven land allocation categories, including "matrix lands," which are areas where the majority of timber is to be taken, and Riparian Reserves and Key Watersheds, where distances from rivers are set within which many activities are restricted. The Aquatic Conservation Strategy (ACS) component of the plan specifically provides for fishery habitat, protection, and restoration.

All Federal lands management activities in the NWFP planning area are affected by the Northwest Forest Plan. As a result, some projects that would have affected salmon habitat will not be proposed, and therefore will not be subject to section 7 implementation. These changes in projects are considered baseline and are not included as an impact of section 7 in this analysis (which is the basis for the partial baseline status of this law). For section 7 consultations that do occur, they may include project modifications that would already have occurred under the NWFP. These modifications are nevertheless included in this analysis as section 7 impacts. As a result, this analysis may overstate the costs of section 7 implementation for West Coast salmon and steelhead.

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1. NOAA Fisheries and the Fish and Wildlife Service recently clarified their application of section 7 to the Northwest Forest Plan. See USFS and BLM (2004).

PACFISH (Interim strategies for managing anadromous fish-producing watersheds) (1995)
Baseline status: Partial
For anadromous fish-producing watersheds on Federal lands in eastern Oregon, Washington, Idaho and Northern California that are not covered by the Northwest Forest Plan (NWFP), USFS and BLM adopted a management strategy to arrest the degradation and begin the restoration of anadromous fish protection. This strategy was intended to be in place only for 18-months, beginning in February of 1995, but continues to be implemented.

Like the NWFP, PACFISH provides guidelines for timber, roads, grazing, recreation, minerals, fire/fuels management, lands, riparian area, watershed and habitat restoration, and fisheries and wildlife restoration. Standards and guidelines under PACFISH are nearly identical to those in the NWFP.

Federal lands management activities in the NWFP planning area are affected by PACFISH. As a result, some projects that would have affected salmon habitat will not be proposed, and therefore will not be subject to section 7 implementation. These changes in projects are considered baseline and are not included as a cost of section 7 in this analysis (which is the basis for the partial baseline status of this law). For section 7 consultations that do occur, they may include project modifications that would already have occurred under PACFISH. These modifications are nevertheless included in this analysis as section 7 impacts. As a result, this analysis may overstate the costs of section 7 implementation for West Coast salmon and steelhead.

Federal Power Act (16 U.S.C. § 800 1920, as amended)
Baseline status: No
The purpose of the Federal Power Act (FPA) was to establish a regulatory agency to oversee non-federal hydropower generation. The resulting Federal Energy Regulatory Commission (FERC), an independent Federal agency governing approximately 2,500 licenses for non-Federal hydropower facilities, has responsibility for national energy regulatory issues.

This Act may provide protection to West Coast salmon and steelhead habitat from hydropower activities. Section 10(j) of the Federal Power Act (FPA) was promulgated to ensure that FERC considers both power and non-power resources during the licensing process. More specifically, section 18 of the FPA states that FERC shall require the construction, operation, and maintenance by a licensee at its own expense of a fishway if prescribed by the Secretaries of Interior (delegated to the Fish and Wildlife Service) and Commerce (NOAA Fisheries).

The recommendation to install or improve a fish ladder may be brought about through consultation under section 7 of the ESA or through the FPA. In the absence of information on which regulation may serve as the causative factor, this analysis considers the cost of these modifications as section 7 impacts.

Northwest Electric Power Planning and Conservation Act (Northwest Power Act) (16 U.S.C. §§ 839-839h 1920, as amended)

Baseline status: Partial

This regulation provides for the protection, mitigation, and enhancement of fish and wildlife, including related spawning grounds and habitat, of the Columbia River and its tributaries. Hydropower activities in the Northwest Region are impacted through the Northwest Power Act's Fish and Wildlife Program directing the Northwest Power and Conservation Council to adopt programs to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, on the Columbia River system. This regulation has encouraged use of the Bonneville Power Administration's resources to mitigate and enhance fish and wildlife and habitat affected by the development and operation of hydroelectric projects in the Columbia River and its tributaries.

Through the Northwest Power Act, the Council is directed to consider recommendations from all stakeholders including Federal (including NOAA) and State agencies, tribes, and power customers in the region. Accordingly, it is difficult to determine whether modifications to hydropower activities in consideration of West Coast salmon and steelhead are ultimately precipitated by compliance with the Northwest Power Act or recommendations of section 7 consultation of the Endangered Species Act. This analysis, therefore, considers most of the hydropower modifications covered by the Northwest Power Act to be section 7 impacts. This likely results in an overestimate of impacts to the hydropower industry of critical habitat designation.

Fish and Wildlife Coordination Act (16 U.S.C.§§ 661-666 1934, as amended)

Baseline status: No

This regulation provides that, whenever the waters or channels of a body of water are modified by a department or agency of the U.S., the department or agency first shall consult with the U.S. Fish and Wildlife Service and with the head of the agency exercising administration over the wildlife resources of the State where modification will occur with a view to the conservation of wildlife resources.

The purpose of this Act is to ensure that fish and wildlife resources are equally considered with other resources during the planning of water resources development projects by authorizing NOAA Fisheries to provide assistance to Federal and State agencies in protecting game species and studying the effects of pollution on wildlife. This Act may offer protection to West Coast salmon and steelhead habitat by requiring consultation concerning the species with NOAA Fisheries for all instream activities with a federal nexus.

This analysis assumes that NOAA Fisheries's recommendations to Federal agencies through consultation under the FWCA are the same, or similar, to those provided through section 7 for West Coast salmon and steelhead. As a result, recommendations generated from FWCA are considered to be coextensive with section 7, and these costs are included in this analysis.

Rivers and Harbors Act (33 USC §§ 401 et seq. 1938)

Baseline status: Partial

The Rivers and Harbors Act (RHA) places Federal investigations and improvements of rivers, harbors and other waterways under the jurisdiction of the Department of the Army (USACE) and requires that all investigations and improvements include due regard for wildlife conservation.

This Act may provide protection to West Coast salmon and steelhead from instream construction activities. Under sections 9 and 10 of the RHA, the USACE is authorized to regulate the construction of any structure or work within navigable water. This includes, for example, bridges and docks.

To the extent that NOAA Fisheries's recommendations through section 7 overlap USACE regulated provisions for West Coast salmon and steelhead according to the RHS, this analysis overstates the impact of section 7 implementation for West Coast salmon and steelhead. RHA protections that are not reinforced through section 7 (e.g., as project modifications in biological opinions) are considered baseline protections.

National Environmental Policy Act (42 USC §§ 4321-4345 1969)

Baseline status: No

The National Environmental Policy Act (NEPA) requires that all Federal agencies conduct a detailed environmental impact statement (EIS) in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment.

The NEPA process may provide protection to West Coast salmon and steelhead for all activities that have Federal involvement, if alternatives are considered and selected that are less harmful to salmon and its habitat than others. For this analysis, however, NEPA provisions are not considered as a baseline element.

Wilderness Act (16 USC §§ 1131-1136 1964)

Baseline status: Yes

The Wilderness Act established the National Wilderness Preservation System. With a few exceptions, no commercial enterprise or permanent road is allowed within a wilderness area. Temporary roads, motor vehicles, motorized equipment, landing of aircraft, structures and installations are only allowed for administration of the area. Measures may be taken to control fire, insects and disease. Prospecting for mineral or other resources, if carried on in a manner compatible with the preservation of wilderness, is allowed.

The Wilderness Act may offer protections to West Coast salmon and steelhead by limiting land-disturbing activities in Wilderness Areas in National Forests. Human activity in wilderness areas is likely to be greatly reduced when compared to non-wilderness areas, which is likely to benefit salmon. As explained in the next section, we used Schedules of Planned Actions (SOPAs) from National Forests to determine expected activity levels in the future. To the extent that Wilderness Area designations have precluded human activity and plans for activity in critical habitat, then

Wilderness Area impacts are incorporated into the baseline. Where activities may still take place, we have accounted for the likely reduction in the level of those activities.

The Sikes Act Improvements Act (16 USC §670 1997)

Baseline status: N/A

The Sikes Improvement Act (SIA) requires military installations to prepare and implement an Integrated Natural Resources Management Plan (INRMP). The purpose of the INRMP is to provide for:

- the conservation and rehabilitation of natural resources on military installations;
- the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and nonconsumptive uses; and
- subject to safety requirements and military security, public access to military installations to facilitate the use of the resources.

INRMPs developed in accordance with SAIA may provide protection to West Coast salmon and steelhead habitat on military lands.

The recent National Defense Authorization Act for Fiscal Year 2004 (Public Law No. 108-136) amended the ESA, affecting areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(I) of the ESA (16 U.S.C. 1533(A)(3)) provides that: "The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation." The Act also added "national security" as an impact to be considered in the 4(b)(2) process.

NOAA Fisheries has contacted the Department of Defense for information on DOD INRMPs and the benefits they might afford West Coast salmon and steelhead, as well as the potential impacts on national security of the designations. These two areas are considered in a separate report, and therefore any impacts from the Sikes Act are not considered in this analysis, but will play a role in the 4(b)(2) process.

Washington Department of Ecology Minimum Requirements for Stormwater Management Impact on Land Use Activities Within Salmon and steelhead Critical Habitat

Baseline status: No

This guidance document's implementation is not required except in the case of municipal stormwater systems that require a NPDES permit. Implementation may also be required by local zoning laws or as other permit requirements. The analysis examines requirements under this guidance plan to estimate the types of costs likely to be borne for section 7 consultation stormwater consultation requirements.

Other statutes and regulations that apply to land use activities

While the following statutes and regulations may apply to the land within an ESU, they are unlikely to provide significant baseline protection and are not considered in the analysis.

Fish and Wildlife Conservation Act (16 USC §§ 2901-2911 1980, as amended) – The FWCA encourages States to develop, revise and implement, in consultation with Federal, State, local and regional agencies, a plan for the conservation of fish and wildlife, particularly species indigenous to the state.

Magnuson-Stevens Fishery Conservation and Management Act (16 USC §§ 1801-1882 1976, as amended) – This regulation requires identification of essential fish habitat in fishery management plans and consideration of actions to ensure the conservation and enhancement of habitat.

Fisheries Restoration and Irrigation Mitigation Act (16 USC § 777 2000) - The FRIMA directs the Secretary of Interior, in consultation with the heads of other appropriate agencies, to develop and implement projects to mitigate impacts to fisheries resulting from the construction and operation of water diversions by local government entities (including soil and water conservation districts) in the Pacific Ocean drainage area.

Water Resources Development Act (33 USC §§ 2201-2330 1986, as amended) - WRDA authorizes the construction or study of USACE projects and outlines environmental assessment and mitigation requirements.

Anadromous Fish Conservation Act (16 USC §§ 757 et seq. 1965) - The AFCA authorizes the Secretary of the Interior to enter into agreements with States and other non-Federal interests to conserve, develop and enhance the anadromous fish resources of the U.S.

Wild and Scenic Rivers Act (16 USC §§ 1271-1287 2001) - WSRA authorizes the creation of the National Wilderness Preservation System and prohibits extractive activities on specific lands.

North American Wetland Conservation Act (16 USC § 4401 et seq. 1989) - NAWCA encourages partnerships among public agencies and other interests to protect, enhance, restore and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife.

Federal Land Policy and Management Act (43 USC §§ 1701-1782 1976) – This Act requires the Bureau of Land Management to employ a land planning process that is based on multiple use and sustained yield principles

Executive Order 11988 and 11990 (1977) – These Executive Orders require, to the extent possible, prevention of long and short term adverse impacts associated with the occupancy and modification of floodplains and prevention of direct or indirect support of floodplain development wherever there is a practicable alternative.

Coastal Zone Management Act (16 USC §§ 1451 et seq. 1972) - CZMA establishes an extensive Federal grant program to encourage coastal States to develop and implement coastal zone management programs to provide for protection of natural resources, including wetlands, flood plains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife and their habitat.

Section 4
The Impacts of Section 7 on Habitat-Modifying Activities

4.1 Introduction

In this section we present the estimated impacts of section 7 on activities that may affect West Coast salmon and steelhead by modifying their habitat. The subsequent section presents estimates of impacts for all activities at the watershed level. Below, we first discuss the consultation history of the 12 West Coast salmon and steelhead ESUs. We then present the types of activities included in the analysis and the modifications typically needed to comply with section 7. For each type of activity, we then summarize the expected costs of these modifications and the methods we used to project the activity's occurrence over space and time. Appendix A gives a more detailed discussion of our methods for estimating impacts.

4.2 Consultation History

Since 1998, NOAA Fisheries has compiled an extensive history of section 7 consultations for the 12 ESUs of West Coast salmon and steelhead under consideration. Between 2001 and 2004, the NW region of NOAA Fisheries conducted almost 2,700 consultations, involving 30 different Federal agencies, most notably the Army Corps of Engineers (1,280 consultations), Department of Transportation (373), Forest Service (335), and Bureau of Land Management (81). About 23% of the consultations were formal, about 76% were informal, and 1% were programmatic consultations.[1] Tables 4-1 through 4-3 provide more detailed information on the consultation history. We first list the Federal agencies that have been most often involved in West Coast salmon and steelhead consultations within the Northwest region of NOAA Fisheries during 2001-2004, followed by a shorter list for each ESU. We then give the breakdown of consultations by type for each ESU.[2]

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1. A formal consultation involves the issuance of a biological opinion and incidental take statement by either of the Services. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required, except when the Services concur, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat. [50 CFR §402.02, 50 CFR §402.14]. An informal consultation is an optional process that includes all discussions and correspondence between the Services and a Federal agency or designated non-Federal representative, prior to formal consultation, to determine whether a proposed Federal action may affect listed species or critical habitat. This process allows the Federal agency to utilize the Services' expertise to evaluate the agency's assessment of potential effects or to suggest possible modifications to the proposed action which could avoid potentially adverse effects. A programmatic consultation is a process where the required Section 7 consultation is conducted for certain types of work activities, rather than for the individual projects.

2. A single consultation can cover more than one ESU, so the sum of the columns in Table 4-3 is more than the total number of consultations for each type.

Table 4-1 Federal Agencies involved in 10 or more West Coast salmon and steelhead consultations, NW Region, 2001-2004	
Federal Agency	**Number of Consultations**
Corps of Engineers	1280
US Department of Transportation	373
Forest Service	335
National Marine Fisheries Service	91
Bonneville Power Administration	89
Bureau of Land Management	81
Housing and Urban Development	71
Environmental Protection Agency	58
US Fish and Wildlife Service	51
Bureau of Reclamation	44
Bureau of Indian Affairs	43
Natural Resources Conservation Service	42
Navy Department	29
Federal Energy Regulatory Commission	27
Federal Transit Administration	16
Federal Emergency Management Agency	14

Table 4-2 Federal Agencies involved in West Coast salmon and steelhead consultations, NW Region, 2001-2004		
Puget Sound chinook salmon Corps of Engineers (840) US Department of Transportation (179) Forest Service (78) Housing and Urban Development (42) National Marine Fisheries Service (36)	**Lower Columbia River chinook salmon** Corps of Engineers (182) US Department of Transportation (65) National Marine Fisheries Service (25) US Fish and Wildlife Service (16) Forest Service (13)	**Upper Willamette River chinook salmon** Corps of Engineers (157) US Department of Transportation (45) Forest Service (26) US Fish and Wildlife Service (17) Bureau of Land Management (16)
Upper Columbia River chinook salmon Corps of Engineers (163) US Department of Transportation (45) Forest Service (40) US Fish and Wildlife Service (13) Bonneville Power Administration (13)	**Hood Canal chum salmon** Corps of Engineers (65) Forest Service (16) National Marine Fisheries Service (13) Navy Department (9) US Department of Transportation (8)	**Columbia River chum salmon** Corps of Engineers (134) US Department of Transportation (40) National Marine Fisheries Service (21) US Fish and Wildlife Service (14) Forest Service (10)
Ozette Lake sockeye salmon National Marine Fisheries Service (7) National Park Service (4) Farm Service Agency (1) Federal Transit Administration (1) US Fish and Wildlife Service (1)	**Upper Columbia River steelhead** Corps of Engineers (169) US Department of Transportation (45) Forest Service (30) National Marine Fisheries Service (18) US Fish and Wildlife Service (16)	**Snake River steelhead** Corps of Engineers (194) Forest Service (134) US Department of Transportation (45) Bureau of Land Management (36) Bonneville Power Administration (33)
Lower Columbia River steelhead Corps of Engineers (177) US Department of Transportation (59) National Marine Fisheries Service (25) Forest Service (20) Housing and Urban Development of (15)	**Upper Willamette River steelhead** Corps of Engineers (138) US Department of Transportation (38) Housing and Urban Development (16) US Fish and Wildlife Service (14) Natural Resources Consrvtion Service (13)	**Middle Columbia River steelhead** Corps of Engineers (141) Forest Service (79) US Department of Transportation (67) Bonneville Power Administration (42) Bureau of Reclamation (35)

Table 4-3 West Coast salmon and steelhead consultations by type and ESU, NW Region, 2001-2004							
	Formal		Informal		Program-matic		Grand Total
ESU	**No.**	**%**	**No.**	**%**	**No.**	**%**	
Puget Sound chinook salmon	88	6.6%	1235	92.6%	10	0.8%	1333
Lower Columbia River chinook salmon	166	44.4%	188	50.3%	20	5.3%	374
Upper Willamette River chinook salmon	177	52.8%	141	42.1%	17	5.1%	335
Upper Columbia River chinook salmon	137	41.5%	179	54.2%	14	4.2%	330
Hood Canal summer-run chum salmon	20	15.7%	100	78.7%	7	5.5%	127
Columbia River chum salmon	104	38.8%	144	53.7%	20	7.5%	268
Ozette Lake sockeye salmon	6	40.0%	6	40.0%	3	20.0%	15
Upper Columbia River steelhead	150	44.2%	176	51.9%	13	3.8%	339
Snake River Basin steelhead	166	31.4%	340	64.4%	22	4.2%	528
Lower Columbia River steelhead	173	47.0%	175	47.6%	20	5.4%	368
Upper Willamette River steelhead	150	51.9%	123	42.6%	16	5.5%	289
Middle Columbia River steelhead	198	40.9%	261	53.9%	25	5.2%	484
All West Coast salmon and steelhead consultations*	615	22.8%	2044	75.8%	34	1.3%	2693
*A single consultation can cover more than one ESU, so the sum of the columns in Table 4-3 is more than the total number of consultations for each type.							

This consultation history provides a rich source of information on the types of activities that are likely to be affected by critical habitat designation.[3] Table 4-4 lists types that have been the subject of 50 or more consultation during 2001-2004, along with the number of consultations for that type of action.[4] The most common type of activity covered in the consultation record was breakwater,

3. Consultations are not the only source of information, of course, because direct impacts through section 7 consultations are not the only source of critical habitat designation and section 7 impacts. Impacts from other laws or regulations may be triggered by the designation, or the designation may have so-called "stigma" effects. The section 7 consultation record will not provide information to document these types of impacts.

4. A single consultation can cover multiple types of activities.

dock, or pier projects (453 consultations), followed by road construction or maintenance (317) and habitat restoration or improvement projects (241). Table 4-5 lists the five most common types of activities involved in salmon or steelhead consultations for each ESU during 2001-2004.

4.3 Types of Activities

From this consultation record, we derived the following set of activity types for the economic analysis:

- Hydropower dams
- Non-hydropower dams and other water supply structures
- Federal lands management, including grazing (considered separately)
- Transportation projects
- Utility line projects
- Instream activities, including dredging (considered separately)
- EPA NPDES-permitted activities
- Sand & gravel mining
- Residential and commercial development
- Agricultural pesticide applications[5]

This set does not cover all possible activities but covers both the majority of consultations and a high proportion of the impacts. We discuss each of these types below.

4.3.1 Hydropower Dams

Hydropower activities account for a relatively small percentage of section 7 consultations regarding West Coast salmon and steelhead in the past. The consultations that have occurred, however, have at times been controversial and costly. A number of hydropower actions have been covered in West Coast salmon and steelhead consultations, including licensing/relicensing of projects; review of operations plans; construction of new projects; modifications to structures of dams (e.g., installation of fish passage facilities); changes in operations (e.g., change in flow regime); and removal of dams. The major Federal agencies responsible for hydropower activities in the area covered by the 12 ESUs are the Federal Energy Regulatory Commission (FERC), U.S. Army Corps of Engineers (USACE), the U.S. Bureau of Reclamation (USBR) and the Bonneville Power Administration (BPA).

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5. The Environmental Protection Agency (EPA) was recently enjoined from authorizing the application of a set of pesticides within a certain distance from "salmon supporting waters" (Washington Toxics Coalition, et al., v. EPA, C01-0132 (W.D. WA), 22 January 2004). The basis for this injunction was the EPA's failure to consult with NOAA Fisheries concerning possible adverse effects of pesticide application on ESA-protected salmon and steelhead. The effect of this injunction is to create an additional set of activities to be considered in the analysis, in that the restrictions on pesticide use can be viewed as a habitat-related impact of section 7.

Table 4-4 Actions involved in West Coast salmon and steelhead consultations, NW Region, 2001-2004	
Type of Action	**No. of Consultations**
Breakwater/Dock/Pier	453
Road Construction/Maintenance	317
Habitat Restoration/Improvement	241
Bridge Repair/Construction	210
Culvert	187
Construction - Other	175
Pilings	135
Bank Stabilization	133
Dredging	128
Fish Passage/Trapping	126
Boat Ramp Repair/Construction	106
Riparian Work	95
Vegetation Management	88
Bulkhead	81
Permits	79
Recreation	74
Fill	70
Water Diversion	68
Rip-rap	66
Stormwater Drainage	57
Excavation/Mining	57
Trail and Campground Maintenance	55
Water Systems	52
Timber Harvest/Sales	52

Table 4-5 Actions involved in West Coast salmon and steelhead consultations, NW Region, 2001-2004, by ESU		
Puget Sound chinook salmon Breakwater/Dock/Pier (376) Road Construction/Maintenance (132) Construction - Other (107) Habitat Restoration/Improvement (91) Pilings (89)	**Lower Columbia River chinook salmon** Road Construction/Maintenance (52) Habitat Restoration/Improvement (49) Dredging (35) Bridge Repair/Construction (34) Culvert (34)	**Upper Willamette River chinook salmon** Habitat Restoration/Improvement (48) Road Construction/Maintenance (45) Bridge Repair/Construction (39) Breakwater/Dock/Pier (29) Pilings (29)
Upper Columbia River chinook salmon Breakwater/Dock/Pier (50) Road Construction/Maintenance (41) Habitat Restoration/Improvement (33) Dredging (32) Boat Ramp Repair/Construction (23)	**Hood Canal chum salmon** Breakwater/Dock/Pier (34) Road Construction/Maintenance (17) Habitat Restoration/Improvement (13) Pilings (12) Permits (11)	**Columbia River chum salmon** Habitat Restoration/Improvement (38) Road Construction/Maintenance (36) Dredging (31) Breakwater/Dock/Pier (27)
Ozette Lake sockeye salmon Permits (3) Research (3) Road Construction/Maintenance (3) Fish Passage/Trapping (2) Fishery (2)	**Upper Columbia River steelhead** Breakwater/Dock/Pier (50) Road Construction/Maintenance (36) Dredging (33) Habitat Restoration/Improvement (33) Bank Stabilization (24)	**Snake River steelhead** Road Construction/Maintenance (72) Habitat Restoration/Improvement (64) Culvert (47) Vegetation Management (45) Bridge Repair/Construction (44)
Lower Columbia River steelhead Road Construction/Maintenance (52) Habitat Restoration/Improvement (49) Dredging (35) Culvert (34) Breakwater/Dock/Pier (31)	**Upper Willamette River steelhead** Habitat Restoration/Improvement (43) Road Construction/Maintenance (38) Bridge Repair/Construction (29) Breakwater/Dock/Pier (27) Pilings (27)	**Middle Columbia River steelhead** Road Construction/Maintenance (68) Habitat Restoration/Improvement (58) Bridge Repair/Construction (47) Fish Passage/Trapping (39) Culvert (36)

FERC issues licenses for privately owned hydropower projects. These licenses are valid for between 30 and 50 years depending on the extent of proposed new development or environmental mitigation and enhancement measures. The USACE and USBR also own and operate hydropower projects within the critical habitat being designated for West Coast salmon and steelhead. A collaborative group comprised of the BPA, USACE, and USBR oversees operations of the 31 multipurpose dams of the Federal Columbia River Power System. (FCRPS). While there is no formal procedure for regular review of Federally-operated projects, any change in operations or existing infrastructure may generate consultation regarding impact to West Coast salmon and steelhead.

Multiple hydropower-related Federal and State regulations provide protection to West Coast salmon and steelhead. Specifically, section 10(j) of the Federal Power Act (FPA) was promulgated to ensure that FERC considers both power and non-power resources during the licensing process.[6] Further, section 18 of the FPA states that FERC shall require the construction, operation, and maintenance by a licensee at its own expense of a fishway if prescribed by the Secretaries of Interior (delegated to the FWS) and Commerce (NOAA Fisheries). The Northwest Power Act also incorporates a Fish and Wildlife Program directing the Northwest Power and Conservation Council to adopt programs to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, on the Columbia River system. BPA resources are utilized through this plan to mitigate and enhance fish and wildlife and habitat affected by the development and operation of hydroelectric projects in the Columbia River and its tributaries.[7]

Through the consultation process, NOAA Fisheries may recommend reasonable and prudent alternatives (RPAs) regarding hydropower projects. These RPAs, which we take to be representative of the modifications needed to comply with section 7, may be broadly divided into three major categories: capital, programmatic, and operational. Capital modifications involve direct investment in new or improved infrastructure, and require additional investment for regular operation and maintenance.[8] Programmatic changes include all other types of modification including monitoring of fish passage efficiency and water quality, data collection and research, operation of fish hatcheries, predator control, habitat improvements or restoration, and purchase of land and water

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6. Federal Power Act, 16 U.S.C. § 803(j) (1986).

7. Pacific Northwest Electric Power Planning and Conservation Act, 16 U.S.C. §§ 839-839h.

8. From a review of historical section 7 consultations regarding hydropower activities, capital modifications include: constructing and maintaining fish passage facilities (including ladders and screens where applicable); collection and transport of fish at particular sites; installing improved juvenile sampling facilities, surface bypass collectors, and/or spillway weirs.

rights.[9] Operational changes are changes in hydropower production level or method, and may be engendered by modification to the flow regime.[10]

Individual hydropower dams vary substantially in their potential for harming West Coast salmon and steelhead, and so the type and extent of necessary modifications varies accordingly. Characteristics such as size and location, as well as the presence or absence of previous modifications, help determine what the most likely range of modification will be. To reflect some of this variability, we divide hydropower dams into several categories, based on generating capacity and the nature of the impacts (modification *v.* removal). We then estimate capital and programmatic modification costs for each category.

Recommendations to augment flow or change the timing of flow through a project to facilitate fish passage can have significant economic impacts on a hydropower dam. Demand for power varies seasonally, thus the value of power changes throughout the year. To the extent that flow augmentation requires water to be passed at times of the year when it is less valuable, there may be an associated economic cost. Also, where fish passage through the dam is an issue, seasonal spill over the dam may be required to reduce the risk of fatality associated with passage through the turbines. In this case, the spilled water no longer passes through the turbines and therefore cannot be used to generate electricity. The costs of more expensive electricity may be passed on to the power consumers in the form of rate changes (Peters 2003).

The necessity, level, and method of flow regime changes to accommodate the biological needs of West Coast salmon and steelhead at a particular project are determined on a case by case basis. Further, the economic impact associated with a flow regime change is dependent upon the type of project. For example, replacing power generated by peaking projects (i.e., projects that produce hydropower during periods of highest demand) is more expensive than replacing base power production. Until a hydropower project operation is reviewed, the type and level of flow changes necessary and feasible for species and habitat protection is speculative, and so the data needed to estimate these impacts for all projects are not available. Moreover, changes in one project's flow regime may result in changes to other projects' flow regime, if multiple projects are linked and managed together. For this reason, flow regime impacts may span multiple watersheds.

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9. Programmatic changes from a review of a number of historical section 7 consultations include: implementing or improving capture and release programs (e.g., enlarging transport barge exits); monitoring, evaluation, and research programs; gas abatement programs; participation in research initiatives (e.g., investigating bypass improvement methods); managing riparian vegetation; controlling erosion and sediment; implementing timing constraints on instream construction; and increased pollution control standards.

10. From a review of historical section 7 consultations regarding hydropower activities, operational changes include recommendations to: improve and manage flows through additional flow augmentation; reduce flow diversions; provide spill to increase fish passage efficiency; operate pools within a specified range; operate turbines within a specified range of efficiency; shut down turbines seasonally; draw down reservoirs; and implement restrictions on ramping rates.

For these reasons, we do not estimate impacts of flow regime changes for the full set of hydropower projects within the area under consideration. Data are available for a few, larger hydropower projects, however. We use these data to illustrate the potential magnitude of these costs at the aggregate level of all 12 ESUs later in this section; we discuss this issue in more detail in Appendix A. We do not attribute these impacts to a particular watershed.

Finally, projects belonging to the Federal Columbia River Power System (FCRPS) comprise a unique type of hydropower activity. The U.S. Army Corps of Engineers (USACE) and the U.S. Bureau of Reclamation (USBR) are the owners and operators of the 31 FCRPS hydropower projects on the Columbia and Snake Rivers. The Bonneville Power Administration (BPA) markets and distributes the power generated from these federal dams. BPA also owns and operates about 75% of the Northwest's transmission system.

Of the 31 FCRPS hydropower projects, 22 fall within the boundaries of the potential critical habitat for West Coast salmon and steelhead, but all projects may adversely affect that habitat through their operations (USBR et al. 2003). The implementation of section 7 for the 12 West Coast salmon and steelhead ESUs under consideration has had significant impacts on the FCRPS, both in terms of capital structures and operations.[11] Attributing these impacts to the designation of critical habitat for a particular watershed, however, is problematic for reasons we discuss below in section 4.4.2.1.

4.3.2 Non-hydropower Dams and Other Water Supply Structures

Projects covered by this type of activity include water diversions dams and structures, water intake structures, flood control activities, pumping plants, and fish screen projects. Generally, Federal agencies, State agencies, regional public agencies, and regional private agencies supply water to end users by means of highly developed water systems consisting of dams and reservoirs, pumping plants, power plants and aqueducts. Agriculture relies on water diversion for irrigation of crops. Municipal suppliers provide water for both commercial and residential use.

Operation of Federal water projects is subject to section 7 consultation under the ESA. Any water supplier providing water via contract with U.S. Bureau of Reclamation (USBR) or using infrastructure owned or maintained by the USBR is subject to section 7 consultation under the ESA. Projects associated with privately owned diversions may require a Federal permit from USACE under sections 401 or 404 of the Clean Water Act.

As is the case for hydropower dams, potential modifications to non-hydropower dams and water supply structures can be broadly divided into three major categories: capital, programmatic, and operational. The most common modifications are capital (or maintenance to capital) and programmatic, including construction or improvement of dams, diversions, and intakes. Construction projects have been modified in their design, scope, maintenance requirements, or

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11. Section 7 of the ESA was first applied to the FCRPS in 1995, which predates the listing of the 12 ESUs under consideration. The ESUs covered in that biological opinion were Snake River sockeye salmon, Snake River spring/summer chinook salmon, and Snake River fall chinook salmon.

monitoring requirements in order to comply with section 7 for West Coast salmon and steelhead. NOAA Fisheries has also recommended adding additional components to a project. For example, to improve habitat in the area surrounding a project, the agency has required rock or woody debris be added to the site. NOAA Fisheries has requested monitoring devices be installed or additional data be collected by the Federal agency or permit applicant. As well, NOAA Fisheries has requested a suite of other minor facility operation and maintenance requirements.

Again as in the case for hydropower dams, the necessity, level, and method of operation or flow regime changes to accommodate the biological needs of West Coast salmon and steelhead at a non-hydropower or water supply structure are determined on a case by case basis. While historical data exist to inform our understanding of the value of forgone water or agricultural production, we lack data on water quantity changes attributable to section 7 consultations for all but a few cases. Currently, there is no apparent consensus concerning how varying flow requirements will be implemented throughout the designation (Huppert et al. 2004). For this reason, we cannot attribute estimates for flow regime changes to specific projects and therefore to specific watersheds.

4.3.3 Federal Lands Management and Grazing Permits

A federal nexus exists for all management activities occurring on Federal lands. The U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) have many similar land management goals and regulations, and frequently consult together. For these reasons, we have grouped the activities of the two agencies into one activity category. Activities conducted by the USFS and BLM are wide-ranging, but include fuel reduction activities, road construction, road obliteration, and road maintenance, maintenance of recreation facilities, fisheries programs, timber sales[12], permitting of livestock grazing[13], and permitting of various use permits. We have divided these activities into three activity types: General land management activities in non-wilderness areas, general land management activities in wilderness areas, and livestock grazing on Federal lands.

The recent consultation history shows that nearly 17 percent of section 7 consultations for West Coast salmon and steelhead are conducted with the USFS or the BLM on various land management activities. The outcomes of these consultations are likely influenced by several important baseline regulations. In particular, the Northwest Forest Plan and PACFISH guidelines provide numerous baseline protections to West Coast salmon and steelhead.

As noted in section 3 of this report, the Northwest Forest Plan defines Standards and Guidelines (S&Gs) for forest use throughout the 24 million acres of Federal lands in its planning area. Specifically, the NWFP provides S&Gs for management of timber, roads, grazing, recreation,

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12. The consultation history indicates that NOAA consults on timber sales on Federal lands, but not on similar sales on private or other non-Federal lands.

13. The consultation history indicates that NOAA consults on livestock grazing on Federal lands, but does not consult on similar activities on private or other non-Federal lands. The reason for this is that grazing on non-Federal lands rarely needs a federal permit, and thus does not have a federal nexus.

minerals, fire/fuels management, fish and wildlife management, general land management, riparian area management, watershed and habitat restoration, and research activities on USFS and BLM lands. To accomplish its goals, the NWFP defines seven land allocation categories, including "matrix lands," areas where the majority of timber is to be taken, and Riparian Reserves and Key Watersheds, where distances from rivers are set within which many activities are restricted.

For Federal lands in Oregon, Washington, and Idaho not covered by the NWFP, USFS and BLM adopted a management strategy specifically for anadromous fish protection.[14] Like the NWFP, PACFISH provides guidelines for timber, roads, grazing, recreation, minerals, fire/fuels management, lands, riparian area, watershed and habitat restoration, and fisheries and wildlife restoration. Standards and guidelines under PACFISH are nearly identical to those in the NWFP.

4.3.4 Transportation Projects

Transportation projects that affect West Coast salmon and steelhead habitat are wide ranging. They may include the widening of a road, the reconstruction of a bridge, or the restoration of a ferry terminal. These projects can produce environmental impacts that may directly kill or injure salmon, or may disturb habitat. The impacts can be direct (i.e., riparian destruction during a bridge replacement) or more ancillary (i.e., storm water run-off disturbance following a road widening.

The federal nexus for a transportation project may be through the permitting or funding provided by the Army Corps of Engineers (USACE), Federal Highways Administration (FHWA) and/or the Federal Aviation Administration (FAA). The USACE permits bridgework, roadwork, and railroad restoration projects that need Clean Water Act permits. FHWA funds bridgework, roadwork, railroad restoration projects, and ferry terminal maintenance, and the FAA permits aircraft/airport repair and maintenance. Roadwork, bridgework, and culvert projects encompass nearly 90 percent of all transportation projects that have been consulted upon.

Examination of biological opinions, case studies, and other data indicate that NOAA Fisheries requires similar project modifications for road, bridge, and culvert projects. Project modifications typically required for transportation projects include pre-construction surveys; the development and implementation of a site-specific spill prevention, containment, and control plan and removal of toxicants as they are released; water quality monitoring; use of boulders. rock, and woody materials from outside of the riparian area; monitoring and evaluation both during and following construction; and a variety of other measures.

4.3.5 Utility Line Projects

Activities classified as utility lines projects typically install or repair pipes or pipelines utilized to transport gas or liquids; cables, lines, or wires used to transmit electricity or communication; and outfall structures of utilities such as waste water treatment plants or powerplants. The projects

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14. This strategy was intended to be in place only for 18 months, beginning in February of 1995, but continues to be implemented.

associated with utility line activities that could impact salmon and steelhead include excavation, temporary sidecasting of excavated materials, backfilling of the trench, and restoration of the work site to pre-construction contours and vegetation.

The most common federal nexuses for utility lines include the Army Corps of Engineers (USACE) and FERC. USACE consults with NOAA regarding 404 Clean Water Act and/or Section 10 River and Harbors Act permits, while FERC consults on pipeline projects that have the potential to impact threatened and endangered species and their habitat.[15] For projects that may impact wetlands or cross water bodies, FERC maintains a list of construction and mitigation procedures. These mitigation procedures include the use of directional drilling, rather than open cut construction, and suggest mitigation activities during the proposal stage (FERC 2003). Therefore, some of the project modification costs estimated to be attributable to West Coast salmon and steelhead critical habitat may be overestimated as these measures may already be required.

4.3.6 Instream Activities, including Dredging

Actions associated with instream activities that could impact West Coast salmon and steelhead include construction or repair of breakwaters, docks, piers, pilings, bulkheads, boat ramp, and docks, and dredging. Although the projects are commonly undertaken by private or non-federal parties, in most cases they must obtain a USACE permit. That agency must then consult with NOAA Fisheries under section 7.

Turbidity associated with instream activities may interfere with the species' visual foraging, increase susceptibility for predation, and interfere with migratory behavior. Chemicals and waste materials including toxic organic and inorganic chemicals that accumulate in sediment may be directly toxic to aquatic life or a source of contaminants for bioaccumulation in the food chain. The release of ammonia, a common by-product produced in anaerobic sediments, may affect aquatic species as it is re-suspended in the water column. Instream activity impacts on invertebrate colonies may result in some loss of salmonid prey. Finally, entrainment of West Coast salmon and steelhead can occur during dredging when the fish are unable to overcome the water velocities near the draghead and are pulled into the hold of the ship.

For projects that cover boat docks and ramps, bank stabilization projects, and breakwater and bulkhead projects, the modifications typically needed to comply with the ESA include shoreline planting, construction materials restrictions, use of bubble curtains, habitat improvement, spill prevention contaminant control plan, erosion control, and timing restrictions. For dredging, the necessary modifications include work window constraints, extension of the prescribed work window, additional survey work, and mobilization costs.

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15. Robert Arvedlund, Federal Energy Regulatory Commission, personal communication, February 25, 2003

4.3.7 National Pollutant Discharge Elimination System (NPDES) Permitted Activities

The EPA and NOAA Fisheries recently authored guidance to States and tribes on the development of temperature criteria deemed protective of salmon and steelhead. As a result, facilities in the Pacific Northwest that require permits under the National Pollutant Discharge Elimination System (NPDES) must now ensure that effluent discharge does not raise the temperature in receiving waters above site-specific minimum temperature standards. (EPA 2003). The two agencies have consulted under Section 7 on various aspects of the EPA's approval of State Water Quality Standards. Since the West Coast salmon and steelhead ESUs were listed, 14 informal and one formal consultation have been completed. Specifically, activities for which NOAA has consulted with EPA in the past include development of Total Maximum Daily Loads (TMDLs), review of non-temperature related Water Quality Standards, clean up of Superfund sites, and review of pesticide applications. With the exception of pesticide applications, the majority of these activities do not represent a significant portion of the consultation record nor are they expected to increase in the future.

The only identified incremental standard motivated explicitly by concern for West Coast salmon and steelhead involves temperature controls. While NPDES-permitted facilities have always been required to adhere to certain temperature criteria associated with effluent discharge, the 2003 guidance has led to stricter standards where West Coast salmon and steelhead are known to spawn or rear. As a result, NPDES-permitted facilities in the Pacific Northwest are required to ensure that their effluent discharge does not raise the temperature in receiving waters above site-specific minimum temperature standards (EPA 2003). To comply with the salmon temperature criteria, NPDES-permitted facilities identify and employ a host of temperature control procedures through Temperature Management Plans (TMPs). Controls include process optimization, pollution prevention, land application, and cooling towers.

4.3.8 Sand and Gravel Mining

Mining activities that affect West Coast salmon and steelhead generally include the removal of sand and gravel from active river channels and floodplains for industrial purposes, such as for road construction material, concrete aggregate, fill, and landscaping (NMFS 2005i). Gravel mining is an activity permitted by USACE under sections 401 and 404 of the Clean Water Act, or under section 10 of the Rivers and Harbors Act of 1899.

There are three basic types of gravel mining in salmon habitat: dry-pit mining, wet-pit mining, and bar skimming or scalping. Wet-pit mining involves the use of a dragline or hydraulic excavator to remove gravel from below the water table and can directly destroy spawning habitat, increase turbidity, increase suspended sediment, and increase gravel siltation in salmon habitat areas. Gravel bar skimming typically occurs above the water table, but is also considered to significantly impact aquatic habitat by destabilizing the banks and increasing suspended sediment (NMFS 2005i). Dry-pit mining occurs outside the active stream channel, and typically is considered by NOAA Fisheries

to have fewer direct effects on salmon, though degrading the morphology of the channel is still a concern.[16]

Gravel mining may include impacts such as the loss or degradation of spawning beds and juvenile rearing habitat; migration blockages; channel widening, shallowing, and ponding; loss of hydrologic and channel stability; loss of pool/riffle structure; increased turbidity and sediment transport; increased bank erosion and/or stream bed downcutting; and loss or degradation of riparian habitat (NMFS 2005i).

4.3.9 Residential and Commercial Development

The potential for adverse economic impacts arising from constrained residential and related development is a frequent concern to communities in which critical habitat has been proposed for designation. The nature and magnitude of any economic impact attributable to critical habitat designation will depend upon baseline land and housing market conditions and the extent to which a designation distorts these initial conditions. A common concern is that the designation of critical habitat may reduce the overall amount of land available to the market, and increase the price of developed land and housing.

If critical habitat designation inhibits the development potential of some parcels, the supply of land available for development will be reduced. In areas that are already highly developed, or where developable land is scarce for other reasons (i.e., non-critical habitat-related regulations), this reduction in available land and the corresponding increase in price could be significant, and ultimately translate into fewer housing units being built within the affected market, affecting both producers and consumers. In areas where developable land is relatively plentiful, however, developers and builders will be able to identify substitute sites for projects, thereby limiting economic impacts to the owners of specific parcels that suffer a diminishment in their land's value.

Critical habitat designation may also have offsetting, beneficial impacts as well. If the designation creates open space as part of its impacts on residential and commercial development, the remaining property's value may be affected positively. There are no available data to estimate the magnitude or even existence of this link, however.

In addition to the primary economic impacts identified above, commenters on previous economic analyses of critical habitat designation have described additional categories of economic and financial effects in residential and commercial development markets, generally falling into the category of regional economic impacts.[17] Regional economic impacts reflect changes in local output, employment and taxes. The principal category of potential regional impacts associated with critical habitat designation in areas of residential development involves changes in revenues and employment in construction-related firms and other industries that support builders and developers.

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16. Email communication with Erin Strange, NOAA Fisheries, Sacramento Office, December 9, 2003.

17. For example, see Elliott D. Pollack and Company (1999).

Specifically, commenters have suggested that if development activity decreases in a given area, these secondary industries are likely to suffer severe economic consequences.

A second category of regional impacts identified by commenters to past critical habitat analyses concerns the potential for forgone tax revenues associated with reduced residential development. That is, reduced development potential in an area may lead to lower real estate and other tax revenues. It is important to note, however, that in many cases any reduction in revenue may be offset by a reduction in municipal expenses. Thus, it is important that any estimated impacts in this category are net of these service expenditures.

Finally, in more extreme cases, concern has been expressed regarding the broader impact of critical habitat designation on regional economies. Specifically, some individuals have questioned whether designation will delay and/or impair an area's ability to realize economic growth by influencing development patterns. Whether further development of a region is, on net, desirable is a point of contention in many markets. Nonetheless, with the exception of cases in which critical habitat designation precludes a large proportion of available land from development, designation is unlikely to substantially affect the course of regional economic development. (Meyer 1998).

In some cases, the public may believe that critical habitat designation will depress private property values below the levels associated with anticipated project modifications described above. That is, the public may perceive that, all else being equal, a property that is designated as critical habitat will be stigmatized and have lower market value than an identical property that is not within the boundaries of critical habitat. Public attitudes about the limits and costs that critical habitat may impose can cause real economic effects to the owners of property, regardless of whether such limits are actually imposed.

The designation of critical habitat for the West Coast salmon and steelhead ESUs under consideration is unlikely to increase costs to developers, reduce revenues, impose mitigation costs, or result in project delays, at least in significant amounts. There are two reasons significant impacts are not anticipated. First, unlike terrestrial species, habitat for West Coast salmon and steelhead is not itself part of the supply of developable land. For this reason, protection of the aquatic habitat need not take the form of supplanting development if the impacts of the development (whatever they might be) can be mitigated. As a result, section 7 consultations regarding the ESUs for real estate developments are usually limited to specific components of the development and are expected to have no direct impact on the supply of land or housing. Second, as seen in the next part of this section, project modification costs are expected to be modest (anticipated to range from $230,000 to $240,000 per project) and, according to NOAA Fisheries personnel, consultations regarding development projects are rare.[18]

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18. Personal communication with DeeAnn Kirkpatrick, NOAA Puget Sound Habitat Conservation Division, Fishery Biologist Southern Puget Sound Region, October 31, 2003. Personal communication with Eric Shott, NOAA Fisheries Santa Rosa Field Office Section 7 Coordinator, November 5, 2003

This assessment is supported by the consultation history. There have been three formal and four informal consultations regarding residential and related development in recent years. More importantly, none of the formal consultations on development have evaluated the entire project. Past consultations have addressed only the specific activities with a federal nexus that have the potential to affect West Coast salmon and steelhead, such as stormwater outfall structures. Project modifications have included timing restrictions for instream work, BMPs, vegetation replacement, filtration systems, and water quality monitoring.

For this reason, the available data also do not support an expectation of significant stigma effects. Section 7 has no strong historical connection to restrictions on private property, and there is no expectation that this lack of a connection will change in the future. If such stigmatization does occur, it seems likely that experience with the actual strictures of critical habitat designation will remove any (negative) premium that might be characterized as a stigma effect.

4.3.10 Agricultural Pesticide Applications

Under the Endangered Species Act, the Environmental Protection Agency (EPA) must consult with the Fish and Wildlife Service and NOAA Fisheries to ensure that the registration of products under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) complies with section 7 of the ESA. Because of the complexity of examining the effects of pest-control products on West Coast salmon and steelhead, there have been almost no consultations completed in the past decade.

In January 2004, the Environmental Protection Agency (EPA) was enjoined from authorizing the application of a set of pesticides within certain distances from "salmon-supporting waters".[19] The basis for this injunction was the EPA's failure to consult with NOAA Fisheries concerning possible adverse effects of pesticide applications on salmon and steelhead protected under the ESA. Because of this past failure to consult, the impact of section 7 on this activity, unlike the others described in this report, cannot be discerned from the consultation record.

The court in Washington Toxics v. EPA imposed two types of restrictions on applications of pesticides covered in the lawsuit. For aerial applications, no pesticides can be applied within 100 yards of "salmon-supporting waters"; for ground applications, the distance is 20 yards. We use these restrictions as a proxy for the types of modifications section 7 is likely to have.

4.4 The Costs of Section 7 Impacts

Enforcing section 7 can have two types of impacts. First, the consultation process itself imposes costs both on NOAA Fisheries and on the Federal agency or other party (or both) responsible for the activity. As explained below, our framework's focus on individual projects and watersheds makes an accurate estimate of these costs at the watershed level problematic. Nevertheless, we

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19. Washington Toxics Coalition, et al., v. EPA, C01-0132 (W.D. WA), 22 January 2004; Washington Toxics Coalition, et al., v. EPA, CV-01- 00132 (9th Cir.) June 29, 2005 _____ F3d_____(2005).

discuss them on a general level and present some results for the 12 ESUs combined. Second, modifying a project to bring it into compliance with section 7 can be costly. These costs can occur following consultation, if the party responsible for the activity adopts whatever measures NOAA Fisheries specifies, or they can occur prior to consultation, if the responsible party modifies the activity (either routinely or on a case-by-case basis) in anticipation of the consultation. We account for both cases by assuming that a project located in a critical habitat area will bear these costs, without specifying whether they are incurred prior to or subsequent to consultation.

Because the necessary data are not available, particularly at the geographic scale of the critical habitat designations, we do not consider two other possible avenues for impacts to occur. We assume that activities located in critical habitat will incur the modification costs identified (with the probabilities we have estimated). Alternatively, the project could be moved (if possible) to a location that does not affect West Coast salmon and steelhead, or the project could be cancelled. A basic assumption underlying any economic analysis, including this one, is that economic actors choose the least costly avenue for their actions. If relocation or cancellation is less costly (accounting for potentially fewer project benefits as well), one of those alternatives would likely be chosen. Therefore, our assumption that projects will not be relocated or cancelled means that our approach likely overstates the cost of section 7 impacts.

4.4.1 Consultation Costs

In addition to the costs of modifying activities to comply with section 7 of the ESA, there are costs borne by NOAA Fisheries and other agencies from the act of consultation itself. The geographic scope of the West Coast salmon and steelhead designations and the nature of the available data preclude a watershed-by-watershed accounting of these costs. Instead, we discuss these costs in the aggregate but do not attribute costs to particular watersheds.

The data utilized in this analysis account for the level of projects that may be modified subsequent to or in anticipation of a section 7 consultation. While the cost of a consultation is a real impact of section 7, it is not easily allocated to a specific area given our methods for assessing project levels for the following reasons.

First, a single consultation can cover more than one project, sometimes tens or even hundreds. During 2001-2004, formal consultations averaged 3.26 projects per consultation, and covered as many as 430. Informal consultations averaged 1.45 projects per consultation and ranged up to 227. Table 4-6 shows the distribution of the number of projects covered in a consultation by the type of consultation for West Coast salmon and steelhead consultation during 2001-2004. While more than 90% of all consultations cover a single project, those consultations cover only about one-half the total number of projects affected during those years.

Table 4-6 Consultations covering Multiple Projects				
	Type of Consultation			
Number of Projects*	Formal	Informal	Programmatic	All Types
1	534	1970	22	2530
2-5	47	44	3	94
6-10	16	5	5	26
More than 10	18	25	4	47
All Consultations	615	2044	34	2697

*In the case of a programmatic consultation, the number of projects sometimes refers to the number of project types. The projects themselves can number in the hundreds.

Moreover, because programmatic consultations determine how a type or types of project, not the projects themselves, can be modified to ensure they comply with section 7, they typically cover a large number of projects. For example, one programmatic consultation covers culvert replacements by the Forest Service in Washington State and eastern Oregon National Forests (NMFS 2003k). The consultation covers up to 120 projects per year. Another programmatic consultation covers land management practices by the Forest Service and Bureau of Land Management in northwestern Oregon (NMFS (2003j). The consultation extends to projects located in 3.9 million acres of Federal land and accounts for thousands of individual projects.

While programmatic consultations are likely to be more costly, their per-project cost is likely to be significantly lower than the per-project cost for non-programmatic consultations. For that reason, applying a constant per-project cost estimate would significantly inflate the estimated level of consultation cost. Moreover, when multi-project consultations occur, they are likely to cover a wide geography. This makes it difficult to attribute those consultation costs to a particular area such as a single watershed.

A second difficulty stems from the method we have used in this analysis to measure the level of Federal lands management activities, which are a significant source of cost impacts. Based on an analysis of programmatic consultations, we have used a per-acre cost estimate, rather than a per-project estimate. Because of this, there is no way to gauge the number of consultations associated with the level of activity in a particular area. In any case, given that many of these activities are in fact covered by programmatic consultations, using the number of projects to estimate consultation costs would be inaccurate. For both of these reasons, we do not estimate consultation costs for each particular area.

Although the estimation of consultation costs at the watershed level is not feasible, we are able to estimate these costs at the aggregate level for all 12 West Coast salmon and steelhead ESUs, broken down by activity type, type of consultation (formal, informal, programmatic, and technical advice or pre-consultations) and agency (NOAA Fisheries and other Federal agencies). To estimate costs borne by NOAA Fisheries, NOAA biologists in the Northwest regional office estimated time in weeks spent on individual salmon and steelhead consultations during 2004. We then sorted these estimates by activity type and translated them into typical dollar amounts per consultation for all

types of activity. To estimate per-consultation costs borne by other Federal agencies that participate in consultations, we contacted relevant staff at agency offices across the region that are involved in salmon consultations. Agencies that provided data for this effort include:

- U.S. Army Corps of Engineers, Seattle District and Walla Walla Districts
- Bureau of Land Management, Salem District
- U.S. Bureau of Reclamation, Mid-Pacific Region Division of Environmental Affairs
- Federal Energy Regulatory Commission, Hydropower Compliance Division
- Federal Aviation Administration, Office of Environment
- U.S. Forest Service, Pacific NW Region
- Washington Department of Transportation, Threatened and Endangered Species Department

Table 4-7 presents estimates of these per-consultation costs that resulted from the interviews with NOAA Fisheries and other federal and state agency personnel. We note that agencies have learning curves, which may affect consultation costs over time. If an agency repeatedly engages in consultations with NOAA Fisheries for West Coast salmon and steelhead, they are likely to become more familiar with the process and to incorporate salmon concerns earlier in the project planning process, thereby streamlining future administrative costs. Thus, these estimates are likely to overstate future administrative costs to these agencies.

Using these per-consultation cost estimates, we estimated annual consultation costs for the 12 West Coast salmon and steelhead ESUs by multiplying the number of annual past consultations, for each activity (e.g. hydropower) and type (e.g. informal), by their estimated cost per consultation.[20] By assuming the distribution of consultation types is the same across the types of activities, we find that annual consultation costs range from $5.7 million to $ 27.2 million, or $8.3 million using the median estimates for each consultation type, as shown in Table 4-8.

20. This estimation was based on an analysis of the consultation record between 2001 and 2003. To the extent that the number of consultations or their distribution across activity types changes, the actual level of consultation costs could be higher or lower than the estimated level in this section.

Table 4-7 Consultation costs (per consultation) by activity and consultation type for West Coast salmon and steelhead				
		Formal Consultations		
Activity	Cost range	NOAA Costs	Action Agency Costs	Total
Hydropower dams	Minimum	$18,400	$3,200	$21,600
	Maximum	$55,100	$2,200,000	$2,255,100
	Median	$36,700	$6,300	$43,000
Non-hydropower dams and water supply projects	Minimum	$6,900	$3,200	$10,100
	Maximum	$68,900	$2,200,000	$2,268,900
	Median	$37,900	$6,300	$44,200
Federal Lands Management	Minimum	$13,800	$1,000	$14,800
	Maximum	$20,700	$5,800	$26,500
	Median	$17,200	$3,800	$21,000
Transportation	Minimum	$2,300	$16,300	$18,600
	Maximum	$11,500	$34,900	$46,400
	Median	$6,900	$20,200	$27,100
Utility Lines	Minimum	$3,400	$2,800	$6,200
	Maximum	$18,400	$30,300	$48,700
	Median	$10,900	$12,200	$23,100
Instream Projects	Minimum	$1,400	$2,800	$4,200
	Maximum	$4,600	$12,200	$16,800
	Median	$3,000	$3,700	$6,700
Mining	Minimum	$26,400	$2,800	$29,200
	Maximum	$79,200	$240,000	$319,200
	Median	$52,800	$82,100	$134,900
Development	Minimum	$9,200	$2,800	$12,000
	Maximum	$9,200	$70,500	$79,700
	Median	$9,200	$25,600	$34,800
Other	Minimum	$0	$0	$0
	Maximum	$9,200	$9,200	$18,400
	Median	$4,600	$4,600	$9,200

Table 4-7 Consultation costs (per consultation) by activity and consultation type for West Coast salmon and steelhead				
		Informal Consultations		
Activity	Cost range	NOAA Costs	Action Agency Costs	Total
Hydropower dams	Minimum	$600	$3,200	$3,800
	Maximum	$600	$30,000	$30,600
	Median	$600	$16,600	$17,200
Non-hydropower dams and water supply projects	Minimum	$1,100	$3,200	$4,300
	Maximum	$6,900	$30,000	$36,900
	Median	$4,000	$16,600	$20,600
Federal Lands Management	Minimum	$2,300	$1,000	$3,300
	Maximum	$4,600	$2,500	$7,100
	Median	$3,400	$1,800	$5,200
Transportation	Minimum	$700	$16,300	$17,000
	Maximum	$9,200	$16,300	$25,500
	Median	$4,900	$16,300	$21,200
Utility Lines	Minimum	$500	$2,800	$3,300
	Maximum	$6,900	$2,800	$9,700
	Median	$3,700	$2,800	$6,500
Instream Projects	Minimum	$1,100	$2,800	$3,900
	Maximum	$2,900	$2,800	$5,700
	Median	$2,000	$2,800	$4,800
Mining	Minimum	$1,100	$2,800	$3,900
	Maximum	$1,100	$2,800	$3,900
	Median	$1,100	$2,800	$3,900
Development	Minimum	$1,400	$2,800	$4,200
	Maximum	$1,400	$2,800	$4,200
	Median	$1,400	$2,800	$4,200
Other	Minimum	$0	$0	$0
	Maximum	$4,600	$4,600	$9,200
	Median	$2,300	$2,300	$4,600

Table 4-7 Consultation costs (per consultation) by activity and consultation type for West Coast salmon and steelhead				
		Programmatic Consultations		
Activity	Cost range	NOAA Costs	Action Agency Costs	Total
Hydropower dams	Minimum	$18,400	$2,200,000	$2,218,400
	Maximum	$55,100	$2,200,000	$2,255,100
	Median	$36,700	$2,200,000	$2,236,700
Non-hydropower dams and water supply projects	Minimum	$6,900	$2,200,000	$2,206,900
	Maximum	$68,900	$2,200,000	$2,268,900
	Median	$37,900	$2,200,000	$2,237,900
Federal Lands Management	Minimum	$13,800	$31,000	$44,800
	Maximum	$20,700	$54,000	$74,700
	Median	$17,200	$20,500	$37,700
Transportation	Minimum	$2,300	$34,900	$37,200
	Maximum	$11,500	$34,900	$46,400
	Median	$6,900	$34,900	$41,800
Utility Lines	Minimum	$3,400	$30,300	$33,700
	Maximum	$18,400	$30,300	$48,700
	Median	$10,900	$30,300	$41,200
Instream Projects	Minimum	$1,400	$12,200	$13,600
	Maximum	$4,600	$12,200	$16,800
	Median	$3,000	$12,200	$15,200
Mining	Minimum	$26,400	$240,000	$266,400
	Maximum	$79,200	$240,000	$319,200
	Median	$52,800	$240,000	$292,800
Development	Minimum	$9,200	$70,500	$79,700
	Maximum	$9,200	$70,500	$79,700
	Median	$9,200	$70,500	$79,700
Other	Minimum	$0	$0	$0
	Maximum	$9,200	$0	$9,200
	Median	$4,600	$0	$4,600

Table 4-7 Consultation costs (per consultation) by activity and consultation type for West Coast salmon and steelhead				
		Technical Advice/Pre-Consultation		
Activity	**Cost range**	**NOAA Costs**	**Action Agency Costs**	**Total**
Hydropower dams	Minimum	$600	--	$600
	Maximum	$600	--	$600
	Median	$600	--	$600
Non-hydropower dams and water supply projects	Minimum	$0	--	$0
	Maximum	$6,900	--	$6,900
	Median	$3,400	--	$3,400
Federal Lands Management	Minimum	$2,300	--	$2,300
	Maximum	$18,400	--	$18,400
	Median	$10,300	--	$10,300
Transportation	Minimum	$500	--	$500
	Maximum	$9,200	--	$9,200
	Median	$4,800	--	$4,800
Utility Lines	Minimum	$200	--	$200
	Maximum	$200	--	$200
	Median	$200	--	$200
Instream Projects	Minimum	$1,100	--	$1,100
	Maximum	$20,700	--	$20,700
	Median	$10,900	--	$10,900
Mining	Minimum	$1,100	--	$1,100
	Maximum	$1,100	--	$1,100
	Median	$1,100	--	$1,100
Development	Minimum	$200	--	$200
	Maximum	$200	--	$200
	Median	$200	--	$200
Other	Minimum	$4,600	--	$4,600
	Maximum	$4,600	--	$4,600
	Median	$4,600	--	$4,600

Table 4-8
Annual Consultation Costs by activity and consultation type for West Coast salmon and Steelhead

Activity	Cost range	Annual Cost Estimates				
		Formal	Informal	Program-matic	Technical Advice/Pre-consultation	Total
Hydropower dams	Minimum	$91,700	$57,700	$495,400	$1,600	$646,400
	Maximum	$9,569,100	$464,700	$503,600	$1,600	$10,539,000
	Median	$182,500	$261,200	$499,500	$1,600	$944,800
Non-hydro-power dams and water sup-ply projects	Minimum	$24,900	$38,000	$286,900	$0	$349,800
	Maximum	$5,604,200	$326,200	$295,000	$10,800	$6,236,200
	Median	$109,200	$182,100	$290,900	$5,300	$587,500
Federal Lands Management	Minimum	$409,600	$326,900	$65,300	$40,300	$842,100
	Maximum	$733,400	$703,300	$108,800	$321,800	$1,867,300
	Median	$581,200	$515,100	$54,900	$180,200	$1,331,400
Transportation	Minimum	$387,600	$1,267,700	$40,800	$6,900	$1,703,000
	Maximum	$966,800	$1,901,600	$50,900	$121,400	$3,040,700
	Median	$564,700	$1,581,000	$45,800	$63,500	$2,255,000
Utility Lines	Minimum	$4,700	$9,000	$1,300	$100	$15,100
	Maximum	$37,000	$26,400	$1,900	$100	$65,400
	Median	$17,600	$17,700	$1,600	$100	$37,000
Instream Pro-jects	Minimum	$258,000	$857,400	$44,000	$43,300	$1,202,700
	Maximum	$1,032,000	$1,253,200	$54,300	$803,800	$3,143,300
	Median	$411,600	$1,055,300	$49,100	$423,600	$1,939,600
Mining	Minimum	$94,400	$45,100	$45,300	$2,300	$187,100
	Maximum	$1,032,000	$45,100	$54,300	$2,300	$1,133,700
	Median	$436,200	$45,100	$49,800	$2,300	$533,400
Development	Minimum	$68,400	$85,700	$23,900	$800	$178,800
	Maximum	$454,300	$85,700	$23,900	$800	$564,700
	Median	$198,400	$85,700	$23,900	$800	$308,800
Other	Minimum	$0	$0	$0	$32,800	$32,800
	Maximum	$206,300	$369,100	$5,400	$32,800	$613,600
	Median	$103,100	$184,600	$2,700	$32,800	$323,200
All Activities	Minimum	$1,339,300	$2,687,500	$1,002,900	$128,100	$5,157,800
	Maximum	$19,635,100	$5,175,300	$1,098,100	$1,295,400	$27,203,900
	Median	$2,604,500	$3,927,800	$1,018,200	$710,200	$8,260,700

4.4.2 Per-project Costs and the Occurrence of Impacts

For each type of activity, we developed estimates of the costs for modifying a project to comply with section 7, and of the level of the activity in each watershed. These two estimates are the basic elements of the approach used in the analysis. Our method for making these estimates takes the following steps:

1) Estimate the cost of typical project modifications. For most activity types, modification costs are borne in one year and so no discounting is needed (for this step). For others, expenditures on modifications are likely to take place over a number of years. In these cases, we discounted the stream of expenditures using both a 3% and 7% discount rate. For the purposes of the discussion in this report, we sometimes give only the results for the 7% discount rate.[21]

2) Determine a forecast period. Traditionally, an economic analysis uses a single time frame over which all impacts and costs are estimated. The data sources we used, however, vary widely in the length of time covered. For that reason, we used individual time periods over which to forecast an activity type's occurrence. In some cases, we used a period of one year, as we have estimates of the annual level of an activity. In other cases, the period is longer, sometimes set by the periodicity of permits or other considerations.

3) Estimate the probability that a project will be modified during the forecast period. In some cases, we assumed modifications are certain to take place in a particular year (e.g., the year of a FERC license renewal). In other cases, we used the consultation record to estimate a probability distribution over the forecast period. In still others, where no information on the probability distribution is available, we assumed it is uniformly distributed through the forecast period.

4) Calculate the annual expected cost of project modifications. The cost estimate obtained in the first step is the certain cost of modifying the project. In the third step, however, we recognize that the need to modify a project is uncertain, and so this last step incorporates the probabilities estimated in that step. We first calculated the expected cost of modifications for a particular year (the probability that the modification will take place in a given year × the cost of modification) for each year in the forecast period. We then discounted each year's expected cost (again, we used both a 3% and 7% discount rate) and took their sum to obtain the present value of the expected modification costs. Because the forecast period varies across activity types, however, using the present value will

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21. In many instances, changing the discount rate does not change the cost estimate because we report annualized costs and the cost stream is uniform. For many activities, modification costs are assumed borne in one year and the probability the costs will be borne in a given year is assumed to be distributed uniformly over the forecast period. Under these assumptions, the annual expected value is constant, and is therefore equal to the annualized expected cost regardless of the discount rate.

give relatively high costs for those activities with longer forecast periods. For that reason, we annualized this present value to obtain an annual expected modification cost.[22]

In almost all cases, we present a range of possible modification costs. Because our data sources for the cost estimates do not constitute a random sample, we chose not to use an average over the set of estimated costs in our data as the "representative" estimate. Instead, we assumed that the endpoints of the range represent the minimum and maximum values of a symmetric cost distribution, and used the mid-range as the representative cost estimate.

In the remainder of this section, we summarize the methods for deriving cost estimates for that activity's modifications, as well as give the estimates and their ranges (assuming a 7% discount rate). Following that, we describe how the spatial and temporal occurrence of the activity was estimated. Finally, for each activity we present some of the potential limitations of the analysis. The discussion below is summarized in Table 4-12, with more detail in Appendix A.

4.4.2.1 Hydropower Projects

Cost Estimates

Capital and programmatic modifications. For hydropower dams, the magnitude of potential modification costs varies widely across dams. To account for some of this variation, we divided this activity type into several categories.

- Projects with installed capacity of less than 5MW: $2.1 million ($24,000 - $4.2 million). According to FERC guidelines, hydroelectric projects with an installed capacity of less than five megawatts (MW) may be exempted from the licensing process. Because these projects are not currently generating power, or are generating power in small amounts, estimated costs are based on the project modification costs of non-hydropower dams, which are anticipated to range from $24,000 to approximately $4.2 million.
- Projects with installed capacity ranging from 5 to 20 MW: $5.75 million ($0 to $11.5 million). The high-end of this estimate comprises: 1) Capital costs, such as facilities improvements, of $8 million, from a survey of 17 hydropower projects in the Northwest United States; 2) Species surveys at $2,600 per year for ten years (BPA 1992), 3) Research on species survival and passage efficiency at $150,000 per year for ten years (Huppert et. al. 1996); and 4) Water quality monitoring at $200,000 per year for ten years (Huppert et. al. 1996). These costs represent the suite of project modifications most likely to be recommended at medium-sized hydropower projects.
- Projects with installed capacity of greater than 20 MW that do not have but may require, fish passage facilities: $73.85 million ($11.5 million to $136 million). The high-end of the cost range is the high-end cost for project modifications to a hydropower project from a survey of utility companies and Public Utility Districts in the Pacific Northwest. The estimate includes annual costs of fish-related operations (hatchery and spawning operations, predator control studies, fish ladders

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22. Taking the expected cost over time produces an estimate of the *average* cost over the forecast period. The actual level of costs, however, may be zero for all years but one, and very high in that one year. Because the one year of the actual costs is uncertain, expressing costs as an expectation enables us to compare levels of costs across activities with different probability distributions.

and operations, fish survival studies, etc.), fish-related maintenance (fish ladder and bypass maintenance), and associated debt services (surface collector, diversion screens, juvenile fish bypass system, etc.) projected over ten years.

- Projects with installed capacity of greater than 20 MW that have, or will not require, fish passage facilities: $45.23 million ($11.5 million to $79.1 million). The Pacific Northwest Hydrosite Database (PNHD) used for the hydropower analysis includes information on the status of fish passage facilities at each project, specifying that facilities are present, not required, not present, or unknown. Where passage facilities were determined to be present or not required, the average costs of related operations and maintenance of these facilities was removed from the high-end estimate in the cost range (i.e., high-end estimate of $136 million less approximately $57 million over ten years for fish passage-related costs).
- Costs of dam removal: $24 million. The analysis found that 4 dams are likely to be removed in the future due to salmon concerns. The cost estimate for dam removal is based on estimated cost of removal of Bull Run Dam on Sandy River from a NWR survey. Costs include capital costs of deconstruction and land donation.
- Dams with known/planned modification costs: various. In the course of the hydropower analysis, multiple utility companies and Public Utility Districts were interviewed regarding the costs of anticipated project modifications to comply with the Endangered Species Act for the salmon. Where project-specific costs were available, these costs were applied in the analysis (for 17 projects in the Northwest Region). Per project total nominal costs resulting from the survey range from approximately $162,000 to $136 million.

Operational modifications (forgone power revenues and power purchases). Whether or not flow regime changes are necessary for West Coast salmon and steelhead at a particular project, and the level and method of change required, is determined on a case-by-case basis. Historically, while economic impacts associated with changes to flow regimes to accommodate West Coast salmon and steelhead (or their habitat) have been substantial, these impacts may vary by orders of magnitude depending upon the particular hydropower project and specific flow regime recommendation. If direct spill is requested, spilled water no longer passes through the turbines and therefore cannot be used to generate electricity. This may result in losses in profits to producers and/or welfare impacts to power consumers resulting from replacing lost electricity production with more expensive energy sources (for example, coal or gas turbine generation). Alternatively, seasonal changes to flow through turbines may be requested. While this water may still pass through the turbines, demand for power varies seasonally, thus the value of power changes throughout the year. To the extent that flow change recommendations require water to be passed at times of the year when it is less valuable, there may be an associated economic cost.

Power generation is a function of multiple parameters related to the specific infrastructure characteristics of the dam and the hydrology of the river system. Estimating impacts prospectively at a specific project is possible only if the following key pieces of information are available: site-specific minimum instream flow requirements for West Coast salmon and steelhead; the method of augmenting/changing flows at a specific project; and project-specific operational models. . In the case that these data were available for all projects within the region, the impacts modeling exercise would be possible, though massive and complex. For hydraulically-coupled dams like the FCRPS,

however, the estimation of impacts is possible only by developing a dynamic, regional hydrological model. Flow changes implemented at upstream dams will affect the level of flow change necessary for salmon and steelhead conservation at downstream projects. Importantly, this means that even impoundments located outside of the proposed critical habitat may affect flow within the designation and therefore may require modification to operations. Because the same water flows through each of these projects, attributing the impacts of changes in operation of any one critical habitat area is complicated, if not impossible.

Until a hydropower project operation is reviewed, then, the flow changes necessary and feasible for species and habitat protection are speculative, and so the estimation of impacts is not possible. For this reason, we do not estimate flow regime changes for the full set of hydropower projects and therefore do not attribute impacts to the designation of a particular watershed. Data are available for a few, larger hydropower projects, however, and we present them in Table 4-9. We use these data to illustrate the potential magnitude of these costs at the aggregate level of all 12 ESUs.

The Federal Columbia River Power System (FCRPS). Projects belonging to the FCRPS comprise a unique type of hydropower activity for the Pacific Northwest, both in scale and in the extent to which the projects are hydraulically-coupled. Of the 31 FCRPS hydropower projects, 22 fall within the boundaries of the potential critical habitat for West Coast salmon and steelhead, but all projects may adversely affect that habitat through their operations (USBR et al. 2003). The implementation of section 7 for the 12 West Coast salmon and steelhead ESUs under consideration has had significant impacts on the FCRPS, in terms of capital structures, programmatic expenses, and operational changes.[23] Table 4-10 presents these expenses over the period 1995-2004; Table 4-11 gives projections for the period 2007-2009.

Attributing these impacts to the designation of critical habitat for a particular watershed, however, is problematic for at least three reasons. First, NOAA Fisheries implements section 7 for the FCRPS at the system level, in that the agency applies the jeopardy standard to the system as a whole, not to the operation of individual constituent projects. Because the system spans dozens of watersheds, it is not possible to assign section 7 impacts on a watershed-by-watershed basis.[24]

Second, the FCRPS is operated as an optimized system subject to constraints, where the optimization involves multiple objectives. The impact of section 7 of the ESA is to add a set of constraints on the system's operation. Because the scale of the FCRPS is so large, this constraint cannot be viewed as one imposed on an individual watershed. Changing the amount or timing of flow at one dam, for example, will produce changes at other dams as the system is adjusted in light of a new constraint.

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23. Section 7 of the ESA was first applied to the FCRPS in 1995, which predates the listing of the 12 ESUs under consideration. The ESUs covered in that biological opinion were Snake River sockeye salmon, Snake River spring/summer chinook salmon, and Snake River fall chinook salmon.

24. This is true for other, multiple-project hydropower systems, although not on the same scale as the FCRPS.

Table 4-9
Costs of Fish & Wildlife Modifications to Major (non-FCRPS) Hydropower Dams

Dam	River	Annual Fish & Wildlife Costs	
		Capital and Programmatic*	Forgone Power Revenues
1. Ariel Dam (Lake Merwin)	Lewis River	$7,729	$0
2. Baker River	Baker River	$11,749,000	$1,925,900
3. Faraday Dam	Clackamas River	$339,046	$0
4. Oak Grove (Timothy Lake)	Clackamas River, Oak Grove Fork	$339,046	Unknown
5. Priest Rapids	Columbia River	Unknown	$31,550,547
6. Oregon City (Smurfit)	Willamette River	$101,714	Unknown
7. Pelton Dam	Deschutes River	$1,281,593	Unknown
8. Pelton Reregulating Dam	Deschutes River	$244,113	Unknown
9. River Mill	Clackamas River	$339,046	Unknown
10. Rock Island	Columbia River	$427,668	$9,069,365
11. Rocky Reach	Columbia River	$6,476,778	$7,601,885
12. Round Butte Dam	Deschutes River	$1,525,706	Unknown
13. Swift No 1	Lewis River	$7,729	$0
14. Swift No 2	Lewis River	$7,729	$0
15. T W Sullivan (PGE)	Willamette River	$101,714	$0
16. West Linn (Simpson)	Willamette River	$101,714	$0
17. Yale Dam	Lewis River	$7,729	
Total for 17 Dams (known costs)		$23,058,054	$50,147,697

*These costs are included in the estimates of impacts of section 7 implementation for the particular watershed in which the dam is located.

Sources

1. Communication with Pacificorps, November & December 2003. Estimate includes cost of fish collection and transport over 10 years
2. Puget Sound Energy, 2004. Baker River Hydroelectric Project, FERC No. 2150, Application for New License, Major Project—Existing Dam, Volume I, Part 1 of 2, Exhibits A, B, C, D and H, 18 CFR, Part 4, Subpart F, Section 4.51.
3. Communication with Portland General Electric (PGE), November & December, 2003. Costs include changes to facilities and mitigation costs, 4% of costs each year for 2004-2018, 2% of costs each year from 2019-2033, and 0.5% of costs each year from 2034-2053. Through a phone interview, PGE assumed that there would be no lost energy production at Faraday

Table 4-9 Costs of Fish & Wildlife Modifications to Major (non-FCRPS) Hydropower Dams
associated with salmon conservation. 4. Same as 3. Through a phone interview, PGE offered that to estimate energy losses, one could "assume that the ESA will force" a 15% reduction in energy reduction at Oak Grove Dam. Average annual generation is 29 aMW. This was also assumed to be an underestimate as it does not consider any lost capacity at the project. 5. FERC Reports from Grant County PUD received through communication with Grant County PUD, November 2003. 6. Same as 3. 7. Same as 3. 8. Same as 3. 9. Same as 3. 10. Communication with Chelan County PUD, February 2004. Power revenue cost estimate is average annual market value of lost power generation due to fish spill implementation from 1998 through 2002 ($2004). 11. Communication with Chelan County PUD, February 2004. Cost impact estimate is average annual market value of lost power generation due to fish spill implementation from 1998 through 2002 ($2004). 12. Same as 3. 13. Cost estimate from communication with Pacificorps in December 2003. Estimate includes cost of fish collection and transport over 10 years. Swift No1, Swift No 2, Yale Dam and Ariel Dam are four hydropower dams of Pacificorps' Lewis River hydro projects. In a November 2003 phone interview, Pacificorps noted that ESA compliance associated with these projects was about $4.8 million and included purchase of lands to protect anadromous salmon, and fish collection and transport (annual costs through license period). Pacificorps specifically stated that there were no operational impacts, e.g., lost generation. 14. Same as 13. 15. Same as 3. 16. Same as 3. 17. Same as 13.

Finally, while there is a rich historical record for the FCRPS covering capital and programmatic, expenditures on conservation projects and the cost of power generation lost or replaced due to conservation measures, this record does not clearly distinguish impacts attributable to the implementation of section 7 from impacts attributable to other conservation measures such as the Northwest Power Act . Moreover, NOAA Fisheries has issued a revised biological opinion covering

the FCRPS that is the subject of ongoing litigation.[25] Thus, identifying past and future modifications for the FCRPS attributable to section 7 implementation is particularly problematic.

Table 4-10
Bonneville Power Administration (BPA) Fish & Wildlife Costs for the FCRPS, 1995 - 2004[1]

Cost Element	Fiscal Year					
	1995	1996	1997	1998	1999	2000
Capital Investments[2]						
BPA Fish and Wildlife	$38.2	$30.0	$32.0	$24.8	$16.3	$15.1
Associated Projects (Federal Hydro)	$46.2	$52.1	($48.5)	$0.0	$15.6	$50.9
Total Capital Investments	$84.5	$82.1	($16.5)	$24.8	$31.9	$66.0
Program Expenses						
BPA Direct Fish & Wildlife Program	$84.0	$79.1	$93.6	$118.1	$119.9	$117.3
Supplemental Mitigation Program Expenses[3]	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Lower Snake River Hatcheries (O&M)	$14.9	$13.3	$13.4	$12.8	$14.4	$13.4
Corps of Engineers (O&M)	$20.9	$21.0	$21.5	$20.8	$22.1	$21.4
Bureau of Reclamation (O&M)	$1.5	$1.7	$1.7	$3.0	$2.9	$2.0
Other (NW Power and Conservation Council)	$5.1	$4.9	$4.2	$4.2	$3.8	$4.0
Program Related Fixed Expenses[4]	$74.8	$84.4	$86.9	$83.4	$84.3	$82.7
Total Program Expenses	$201.3	$204.5	$221.3	$242.4	$247.4	$240.7
Forgone Revenues and Power Purchases						
Foregone Revenues	$8.4	$94.4	$122.7	$131.1	$219.2	$209.3
Power Purchases For Fish Enhancement	$74.7			$6.1	$52.8	$70.2
Total Foregone Revenues and Power Purchases	$83.1	$94.4	$122.7	$137.2	$272.0	$279.5
Total Program Expenses, Foregone Revenues, & Power Purchases[5]	$284.4	$298.8	$344.0	$379.6	$519.4	$520.2

25. National Wildlife Federation, et al., and Oregon v. National Marine Fisheries Service, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation, CV 01-640-RE (Lead Case), and Columbia Snake River Irrigators Association and Eastern Oregon Irrigators Association v.Gutierrez, NOAA Fisheries and Lohn, CV 05-23-RE (Consolidated Cases).

Table 4-10, continued
Bonneville Power Administration (BPA) Fish & Wildlife Costs for the FCRPS, 1995 - 2004

Cost Element	Fiscal Year costs ($millions)[1]				10-year Ave-rage
	2001	2002	2003	2004	
Capital Investments[2]					
BPA Fish and Wildlife	$17.4	$6.4	$11.9	$8.5	$20.1
Associated Projects (Federal Hydro)	$6.6	$9.2	$70.1	$75.9	$27.8
Total Capital Investments	$24.0	$15.5	$81.9	$84.4	$47.9
Program Expenses					
BPA Direct Fish & Wildlife Program	$106.9	$142.8	$144.1	$137.9	$114.4
Supplemental Mitigation Program Expenses[3]	$3.1	$7.4	$6.7	$7.8	$6.2
Lower Snake River Hatcheries (O&M)	$13.4	$15.5	$15.5	$17.3	$14.4
Corps of Engineers (O&M)	$24.4	$29.4	$31.0	$32.3	$24.5
Bureau of Reclamation (O&M)	$3.2	$4.0	$3.2	$3.9	$2.7
Other (NW Power and Conservation Council)	$3.9	$4.2	$4.1	$3.7	$4.2
Program Related Fixed Expenses[4]	$82.7	$58.9	$58.1	$85.4	$78.2
Total Program Expenses	$237.6	$262.1	$262.7	$288.3	$240.8
Forgone Revenues and Power Purchases					
Foregone Revenues	$122.5	$13.1	$81.1	$21.7	$102.4
Power Purchases For Fish Enhancement	$1,469.2	$153.9	$175.2	$191.0	$219.3
Total Foregone Revenues and Power Purchases	$1,591.7	$167.1	$256.4	$212.7	$321.7
Total Program Expenses, Foregone Revenues, & Power Purchases[5]	$1,829.3	$429.2	$519.1	$501.0	$562.5

[1]Costs are in 2004 dollars.
[2]Capital Investments include both BPA's direct Fish and Wildlife Program capital investments, funded by BPA's Treasury borrowing, and "Associated Projects", which include capital investments at Corps of Engineers' and Bureau of Reclamation projects, funded by appropriations and repaid by BPA. The negative amount in FY 1997 reflects a decision to reverse "plant-in-service" investment that was never actually placed into service. The annual expenses associated with these investments are included in "Program-Related Fixed Expenses", below.
[3]Includes High Priority and Action Plan Expenses and other supplemental programs including the BPA Power Business Line's contribution to Pikeminnow reward program.
[4]"Fixed Expenses" include depreciation and interest on investment on the Corps of Engineers' projects, and amortization and interest on the investments associated with BPA's direct Fish and Wildlife Program.
[5]Capital investments are not added to this total because their annual cost is more accurately reflected as an amortization, not an expenditure in a particular fiscal year.
Source: Roger Schiewe, Bonneville Power Administration, personal communication, June 27, 2005.

Table 4-11 BPA Fish & Wildlife Projected Costs for the FCRPS, 2007-2009	
Category	**FY2007-2009 Projection ($millions/year)**
Annual Average Hydropower Operations Effects	$356.9
Integrated Fish & Wildlife Program	$139.0
Northwest Power and Conservation Council	$4.6
Lower Snake River Hatcheries (O & M)	$19.8
Corps of Engineers (O & M)	$37.5
Bureau of Reclamation (O & M)	$4.2
Total repayment obligations for current & past F&W investments	$129.6
Total	$691.6
Source: BPA (2005)	

For these reasons, we have included the impacts of section 7 implementation and other conservation measures on the FCRPS in this analysis but do not apportion those impacts on a watershed-by-watershed basis nor attribute a subset of them to section 7 implementation. As a result, these impacts are treated as an extreme upper bound for the impacts of section 7 for the designation of critical habitat, but not as an impact of designating a *particular* watershed as critical habitat.

Spatial Distribution

- We used latitude/longitude data from the Pacific Northwest Hydrosite Database (Bonneville Power Association) and the USACE National Inventory of Dams for all hydroelectric projects in the NWR to locate hydropower projects. We did not include the FCRPS projects in this projection. These locations were used to attribute capital and programmatic impacts to particular watersheds.

Temporal Distribution

- For Federal Energy Regulatory Commission (FERC) licensed dams, section 7 consultation and subsequent project modification is anticipated to begin concurrent with the expiration of the current FERC license.
- Federal dams are not subject to FERC relicensing and, as such, operations may not be reviewed on a standard schedule. Some Federal hydroelectric projects undergo an operations review approximately every ten years. This analysis assumes that consultation for Federal dams will occur sometime within the next ten years for each Federal hydropower project. An equal probability is assigned to this consultation beginning in each year over the next ten years (i.e, a consultation has a ten percent probability of occurring in any given year).

- Dams with installed capacity less than 5MW are assumed to have a ten percent probability of incurring modification costs during the next twenty years, with the probability distributed uniformly over the period.
- Where the licensing information is not available, this analysis assumes that consultation will occur sometime over the next 30 years, due to the fact that FERC licenses typically last 30 to 50 years. This analysis assigns an equal probability to this consultation beginning in each year over the next 30 years.
- Costs of project modifications to hydropower projects are assumed to be incurred uniformly over a ten year time period beginning in the year of potential section 7 consultation.

Caveats
- Spatial data for hydropower projects may vary according to data source. This is due to the fact that data sources may map the location of any number of components of the project, including dam infrastructure, turbine, powerhouse, afterbay, or forebay. To the extent possible, this analysis uses the location of dam infrastructure for the spatial analysis. No comprehensive dam location and attribute data layer exists, however. Certain instances have been identified where dam locations vary across different data sources. The location of every dam in the data layers has not been independently corroborated.
- No comprehensive forecast for consultations at hydropower dams exists. To estimate the expected start date for future consultation, this analysis employs a combination of methods based upon FERC relicensing schedules, operating review schedules for certain Federal dams, and a 30 year uniform probabilistic distribution of consultation for the remaining dams. In addition, it is assumed that once consultation and modifications commence, related expenditures will occur uniformly over a ten year time frame following consultation. In reality, start dates, duration, and distribution of consultations and modifications across all dams may vary from these assumptions.
- Hydropower projects may be required to provide additional flow for West Coast salmon and steelhead, and as a result may experience significant economic impacts to the extent that increased flow results in decreased or redistribution of power generation. Specific dam projects that will be required to provide this flow, and how (e.g., spill) the flow augmentation may be achieved, are difficult to predict. The likelihood of a particular project being required to provide flow for salmon will depend on many factors, including biological significance of the dam project to West Coast salmon and steelhead survival and recovery, the seasonality of flow, the economic importance of the dam project, whether there is public concern over the project, and other factors. As a result, costs associated with flow requirements are not included in estimates of modification costs for hydropower projects assigned to a particular watershed.

4.4.2.2 Non-Hydropower Dams and Water Supply Structures

Cost estimates
- Capital and programmatic costs: $2.1 million ($24 thousand to $4.2 million). For dams other than hydropower projects, capital (and maintenance) costs to accommodate salmon and steelhead needs were estimated from several case studies of municipal water intake projects (estimated to range from $24,000 to $670,000). Using PNHD data, costs to install fish passage and fish screens were estimated to range from $92,000 to $4.2 million. Because dam projects may bear any combination

of the costs estimated, costs are estimated to range from $24,000 to $4.2 million for dams that are required by section 7 consultation to accommodate West Coast salmon and steelhead needs. The current analysis assumes that all federally regulated non-hydropower dams and dams with large reservoirs (defined as dams in the 90th percentile or higher of reservoir storage capacity) are certain to bear costs associated with salmon needs at some point over the next 20 years. This time frame reflects the past rate of formal consultation on non-hydropower related projects in our consultation record (approximately 10 per year). Other non-hydropower dams are assumed to have a ten percent probability of consultation and modification during this period.

- Operational (flow regime) costs (no estimates for a particular watershed). Costs to provide additional water flow for salmon are difficult to estimate because reliable data on water quantity changes attributable to section 7 consultation, now and in the future, do not exist. There also does not appear to be a consensus of how varying flow requirements will be implemented throughout the designation. We provide more detail in Appendix A, section A3.

Spatial Distribution

- We used latitude/longitude data for dams other than hydroelectric projects from the USACE National Inventory of Dams to locate non-hydropower dams and other water supply structures. In addition, we also included dams in the Pacific Northwest Hydrosite Database that are not currently producing hydropower and have a purpose in addition to hydropower (e.g. flood control or recreation). These locations were used to attribute capital and programmatic impacts to particular watersheds.

Temporal Distribution

- Limited data exist regarding maintenance schedules for non-hydropower projects. This analysis assumes that a consultation, if it occurs, will occur sometime over the next 20 years, based on the historic frequency of consultation of these project types.
- We assume that Federally regulated dams and dams with large reservoirs are certain to face consultation and modification during a twenty year period, with the probability distributed uniformly across this period. Other non-hydropower project dams are assigned a probability of incurring costs related to West Coast salmon and steelhead of ten percent.

Caveats

- Spatial data for dam projects other than hydropower projects may vary according to data source. This is due to the fact that data sources may map the location of any number of components of the project, including dam infrastructure, as separate features. To the extent possible, this analysis uses the location of dam infrastructure for the spatial analysis. Certain instances have been identified where dam locations vary across different data sources. The location of every dam in the data layers has not been independently corroborated.
- No comprehensive forecast for consultations at non-hydropower dams exists. Consultations at particular non-hydropower projects are assumed to occur with uniform probability over the next 20 years.
- While non-hydropower dam and water supply projects may be required to provide additional flow for salmon and steelhead, the specific dam projects that will be required to provide this flow are difficult to predict. The likelihood of a particular project being required to provide flow for salmon

will depend on many factors, including biological significance of the dam project to salmon survival and recovery, the seasonality of flow, the economic importance of the dam project, whether there is public concern over the project, and other factors. As a result, costs associated with providing additional flow for West Coast salmon and steelhead are not included in estimates of modification costs for non-hydropower and water supply projects assigned to a particular watershed.

4.4.2.3 Federal Land Management Activities

Cost estimates

- Land management activities: $1.26 to $5.89 annual cost per acre (non-wilderness areas) and $0.07 to $0.29 annual cost per acre (wilderness areas), depending on region. Programmatic activities of the BLM and USFS are grouped into one category because they have similar land management goals and regulations, and because they frequently consult together. Locations of future USFS projects are projected using data from quarterly Statement of Proposed Actions (SOPAs) released by national forests. Within each of three regions (Idaho, Eastern Oregon/Washington, Western Oregon/Washington), SOPA projects are grouped into ten activity categories. To create an estimated frequency of these activities, a regional average number of activities from SOPAs was estimated on an annual basis. Projects occurring on BLM lands are assumed to occur with the same relative frequency as those occurring on national forest lands within the same region.
- Based on discussions with agency personnel, we adjusted the frequency of occurrence of each category of project for wilderness lands.[26]
- For each category of activity, past section 7 consultation project modifications were documented and costs were estimated. We developed per-acre estimates of project modification costs using the average annual number of projects for each forest divided by forest acreage. Nominal annual cost estimates for each region are 1) Idaho: $1.26 ($0.68 to $1.84) per non-wilderness acre and $0.07 ($0.04 to $0.10) per wilderness acre; 2) Eastern Oregon/Washington: $3.30 ($1.62 to $4.98) per non-wilderness acre and $0.15 ($0.07 to $0.24) per wilderness acre ; and 3) Western Oregon/Washington: $5.89 ($3.08 to $8.71) per non-wilderness acre and $0.029 ($0.15 to $0.44) per wilderness acre.
- Costs of project modifications to programmatic Federal land management projects are incurred in one year.

Spatial Distribution

- The locations of future USFS projects are projected using data from Statement of Proposed Actions (SOPAs) released by specific National Forest Units. This analysis identifies acres of land within BLM Districts and National Forests per watershed within each of the three regions (Idaho, Eastern Oregon/Washington, Western Oregon/Washington). Data from representative SOPAs are averaged to provide an estimate of the types of projects that may occur on these Federal lands. The number of activities projected to occur is then based on the acreage of Federal lands in each watershed.

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26. Interviews with Bob Ruediger, BLM Salem District, March 7, 2005; Data from Wade Sims, USFS Willamette and Siuslaw National Forests, March 7, 2005; Diane Cross, Fire Management specialist, Los Padres National Forest on March 21, 2005; Bruce Smith, Fisheries Biologist, Salmon-Challis National Forest March 21, 2005; Ken Stauffer, Recreation Coordinator, Salmon-Challis National Forest March 21, 2005.

- Projects occurring on BLM lands are assumed to occur with the same relative frequency as those occurring on USFS lands within the same region.
- We identified wilderness areas using spatial data (National Special Designated Areas) from the USFS, including both National Wilderness areas and Wilderness Study areas.

Temporal Distribution
- On average, the number of projects listed in each SOPA generally represents the number of projects that will occur on a national forest in a given year.

Caveats
- This analysis assumes that the SOPA lists all proposed and ongoing activities occurring within each national forest, and that these activities tend to occur with seasonal regularity.
- This analysis assumes that the amount of Federal lands management activity within each watershed that is impacted by section 7 is related to the amount of Federal land within that watershed.

4.4.2.4 Livestock Grazing on Federal Land

Cost estimate
- Livestock Grazing $1,157 per stream mile ($1,006 to $1,308). Grazing on Federal lands requires a permit from the appropriate land management agency. Direct costs of compliance with section 7are estimated by grazing allotment on a per-stream-mile basis. These costs are then distributed according to the amount of stream miles likely to be impacted by grazing on Federal land allotments in each watershed. We assume the modification costs are composed of capital improvements (fencing) to the grazing land and annual maintenance costs.

Spatial Distribution
- We identified Federal grazing lands by intersecting spatial coverages for statewide grazing allotments with a USFS and BLM ownership coverage in the area under consideration. The analysis employs the Interior Columbia Basin Ecosystem Management Project (ICBEMP) spatial data for grazing. Based on discussions with NOAA Fisheries and other biologists, we excluded allotments identified as having only sheep or horses. We then identified and measured (in miles) stream reaches on these Federal grazing lands that are likely to trigger section 7 consultation.
- Based on an analysis of actual stream mileage with fencing in several Snake River watersheds,[27] we assume that a proportion (20%) of the stream miles on Federal grazing lands (as identified above) will bear modification costs for section 7 consultations related to West Coast salmon or steelhead. Based on the same analysis, we assume that this proportion can range between 10% and 50%, and we use this figures for the Low and High cost-estimates cases, respectively. Finally, we assumed that 50% of the affected stream mileage would require fencing on one side, and 50% would require fencing on both sides.

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27. The analysis was based on data gathered on 12 HUC5 watersheds, from Garry Seloske, Dave Mays, Wayne Paradis, and Steve Hiebert, Nez Perce National Forest; Craig Johnson, Cottonwood District, BLM; and Pat Murphy, Clearwater National Forest.

Temporal Distribution
- Fencing is treated as a capital improvement to the grazing allotment, and is assumed to occur immediately. We amortized the cost of the fencing over 30 years, and assumed annual maintenance costs of 2% of the capital cost.[28]

Caveats
- This analysis assumes that each stream mile on Federal grazing land has the same probability of affecting salmon or steelhead and therefore requiring the appropriate modifications. In fact, this probability may vary across watersheds and ESUs.

4.4.2.5 Transportation projects

Cost estimates
- Bridge and Culvert Projects: $42,938 - $99,438 per project (range depends on project mileage). Transportation projects are typically required to have a consultation when they involve permitting or funding by the Army Corps of Engineers (USACE), Federal Highways Administration (FHWA) and/or the Federal Aviation Administration (FAA). We developed per-project estimates of the direct costs of compliance with section 7 using cost per project miles for variable costs combined with per project fixed costs. Project modification costs include bank stabilization, monitoring and evaluation, habitat improvement, spill prevention contaminant control plan, erosion control, and timing restrictions, and so forth.
- Road Projects: $37,938 - $86,438 per project (range depends on project mileage). Transportation projects are typically required to have a consultation when they involve permitting or funding by the Army Corps of Engineers (USACE), Federal Highways Administration (FHWA) and/or the Federal Aviation Administration (FAA). Per project estimates of the direct costs of compliance with section 7 are developed using cost per project mile for variable costs combined with per project fixed costs. Project modification costs include bank stabilization, monitoring and evaluation, habitat improvement, spill prevention contaminant control plan, erosion control, and timing restrictions, etc.
- All costs of project modifications to transportation projects are assumed to be borne in one year.

Spatial Distribution
- The location of transportation projects is based on spatial data from transportation plans for Washington (2003 to 2007), Idaho (2002 to 2005), and Oregon (2002 to 2005) that identify locations of historic and future projects.

Temporal Distribution
- Although the transportation plans vary in scope (four and five years), it is assumed that the point locations of these projects represent "typical" locations of transportation projects initiated and completed over a five year time horizon.

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28. Personal communication, Mike Montgomery, Oregon Department of Fish and Wildlife.

Caveats
- According to the transportation plans, the vast majority of projects are forecast to occur within a five-year time frame. This analysis therefore employs a forecast period of five years for transportation projects and assumes that all scheduled projects will occur within this forecast period. In reality, a number of these projects may occur beyond the forecast period. In these instances, this analysis overstates the costs of these projects.
- Spatial data identifies the location of specific transportation projects expected to occur over a given time period. Because the time frame of transportation plans do not match the 2003 to 2008 forecast period for the analysis, the actual locations of future projects may differ slightly from those listed in the transportation plans, but are expected to occur in similar geographic areas (e.g., urban centers).

4.4.2.6 Utility Line Projects

Cost estimates
- Outfall Structure and Pipelines: $101,000 ($100,000 to $102,000). Utility line projects are typically required to have a consultation through a connection with USACE permits for outfall structure and pipeline projects. This estimate represents the midpoint of a range of costs for modifications typically found in consultations. These modifications include erosion control measures, directional drilling, construction site restoration and cleanup, timing restrictions, and so forth.

Spatial Distribution
- The location of utility projects is based on the latitude and longitude of historic USACE permits for utility line and outfall structure projects. Permit data were collected from the Portland, Seattle, and Walla Walla USACE Districts. The data include locations of permits from approximately 1996 to 2003, and vary by district.

Temporal Distribution
- This analysis assumes that consultation related to projected permit applications is certain to occur and that modifications costs are borne in one year.

Caveats
- We assume that the historic location of USACE permits for utilities is the most reasonable predictors of future locations available.

4.4.2.7 Instream activities (excluding dredging)

Cost estimates
- Boat Dock, Boat Launch, Bank Stabilization: $54,500 ($25,000 to $84,000). Boat dock, boat launch, and bank stabilization projects are typically required to have a consultation through a connection with USACE permits. This estimate represents the midpoint of a range of costs for modifications typically found in consultations. These costs include shoreline planting, construction

materials restrictions, use of bubble curtains, habitat improvement, spill prevention contaminant control plan, erosion control, and timing restrictions, and so forth.

Spatial Distribution
- The location of instream projects is based on the latitude and longitude of historic USACE permits excluding 1) activities likely to be captured elsewhere in the analysis (e.g., roads, bridges, dredging), and 2) activities not included in the analysis (e.g., restoration). Permit data were collected from the Portland, Seattle, and Walla Walla USACE Districts. The data include permits from 1996 to 2003, and vary by district.

Temporal Distribution
- This analysis assumes that consultation related to projected permit applications is certain to occur and that modifications costs are borne in one year.

Caveats
- We assume that the historic location of USACE permits for utilities is the most reasonable predictors of future locations available.

4.4.2.8 Dredging projects

Cost estimates
- Dredging: $821,000 ($332,000 to $1,300,000). Dredging projects are typically required to have a consultation through a connection with USACE permits. This estimate represents the midpoint of a range of costs for modifications typically found in consultations. These costs include work window constraints, extension of the prescribed work window, additional survey work, and mobilization costs.

Spatial Distribution
- The location of dredging projects is based on the latitude and longitude of historic USACE dredging permits. Permit data were collected from the Portland, Seattle, and Walla Walla USACE Districts. The data include permits from 1996 to 2003, and vary by district.

Temporal Distribution
- This analysis assumes that consultation related to projected permit applications is certain to occur and that modifications costs are borne in one year.

Caveats
- We assume that the historic location of USACE permits for utilities is the most reasonable predictors of future locations available.

4.4.2.9 NPDES-permitted Activities

Cost estimates

- Temperature Management Plan Compliance activities for Major Projects: $630,467 ($476,483 to $784,457). National Pollutant Discharge Elimination System (NPDES) permitted facilities are required to ensure effluent discharge does not raise the temperature in receiving waters above site-specific minimum temperature standards. The section 7 consultation record indicates salmon concerns have produced more restrictive measures for temperature controls. The high end of the range includes annual operation and maintenance costs of up to $35,000 and total capital costs of $425,000. This range in costs represent direct compliance costs for "major" NPDES facilities, defined as those facilities discharging greater than one million gallons per day based on an EPA economic assessment of four major NPDES-permitted facilities in Oregon (Science Applications International Cooperation 2003).
- Temperature Management Plan Compliance activities for Minor Projects: $72,039 ($0 - $144,078). The high end of the range includes annual operation and maintenance costs of up to $6,800. The range in costs represent direct compliance costs for "minor" NPDES facilities, defined as those facilities discharging less than one million gallons per day based on an EPA economic assessment of a sample of five minor NPDES-permitted facilities in Oregon.

Spatial Distribution

- The location of future consultation regarding compliance with temperature water quality criteria is based on the latitude and longitude of major and minor National Pollutant Discharge Elimination System (NPDES) permitted facilities within a watershed. This analysis assumes facilities will undertake various measures to ensure the temperature of surrounding waterways do not exceed regulatory standards developed specifically to protect West Coast salmon and steelhead.
- Permit data were collected from the Washington Department of Ecology, Oregon Department of Environmental Quality, EPA Region 10, and EPA Region 9 and represent the location of facilities as of 2003 or 2004.
- Based on the historical section 7 consultation record, not all NPDES-permitted facilities are likely to undergo section 7 consultation. Accordingly, the analysis assumes that 25 percent of major facilities and 20 percent of minor facilities will incur costs, based on an EPA study examining the economic impact to facilities of the temperature regulations. The level count of activities per watershed is adjusted to reflect this probability.

Temporal Distribution

- The analysis assumes that consultations related to temperature compliance will occur immediately (with the probabilities specified above).

Caveats

- EPA's study assumed that facilities in designated spawning and rearing watersheds would incur temperature management costs.
- Due to lack of sufficient location data (i.e., specific latitude and longitude of facilities) for Idaho, permit location is based on the centroid of the relevant facility zip codes.

4.4.2.10 Sand and Gravel Mining

Cost estimates

- Sand and gravel mining: $1,352,106. Sand and gravel mining activities typically require USACE permits under section 401 and 404 of the Clean Water Act. Using a case study, this analysis estimates the cost of reductions in the volume of gravel production due to section 7 implementation using a case study. In this case study, we estimated the loss in net revenues to be approximately $11,000 per mile annually, assuming no substitution of alternate sites, for a present value of $1.35 million for the whole site over the life of the permit. Because some projects are unlikely to require modifications for salmon (for example, if they occur on non-fish-bearing streams or outside the West Coast salmon and steelhead spawning season), we assume that each site has a 50% probability of being required to modify its operations.

Spatial Distribution

- Locations of ongoing and potential mining sites were identified using latitude/longitude data from the USGS "Active Mines and Mineral Plants" (1997).

Temporal Distribution

- This analysis assume there exists an equal probability of consultation beginning in each year over the next 30 years.

Caveats

- This analysis may overstate the likelihood of consultations on sand and gravel mining because not all active and potential mine sites are likely to bear costs for salmon conservation measures. The likelihood of future consultation at a particular site depends on the several factors including the season in which mining activity occurs and the proximity of the mine to fish-bearing streams.

4.4.2.11 Residential and Commercial Development

Cost estimates

- Residential and Commercial Development: $235,000 ($230,000 to $240,000). Development projects are typically required to have a consultation through a connection with stormwater permits. This estimate represents the midpoint of a range of costs associated with constructing a stormwater management plan that conforms with salmon requirements. This includes costs of the stormwater pollution prevention plan, permanent stormwater site plan, and stormwater best management practice operation and maintenance.
- Based on the section 7 consultation record, not all permit applications undergo section 7 consultation. Accordingly, the analysis applies a probability of six percent, representing the proportion of all permits likely to undergo consultation in each watershed relative to the total number of permits in each watershed potentially burdened by consultation. This probability is based on a review of State-issued NPDES stormwater permits resulting in section 7 consultation with the Seattle District of the USACE over the past three years. As a result, six percent of all projected State permits in each watershed are presumed to be burdened by section 7 consultation and related compliance costs.

Spatial Distribution
- As a proxy for the location of development activities potentially burdened by compliance requirements, the analysis employs recent NPDES stormwater permit data by state for residential and commercial development. Specifically, the analysis assumes that the number and location of future development activities constrained by West Coast salmon and steelhead protections are reasonably approximated by the proportion of NPDES stormwater permits resulting in consultation in the past.
- These historical permit data were collected from the Washington Department of Ecology, Oregon Department of Environmental Quality, and EPA Region 10. Industrial permit data were excluded, as this activity is captured through the analysis of EPA water quality regulations, utility, and instream projects. In general, the analysis relies on approximately three years of State NPDES stormwater permit data.

Temporal Distribution
- This analysis assumes that consultation related to projected permit applications is certain to occur and that modifications costs are borne in one year.

Caveats
- Availability of historic permit data varies by State. For example, Idaho permit data are available a portion of 2003 and 2004, whereas Oregon data include information extending back up to four years. This analysis uses permit activity locations for the available years to projected NPDES-permitted activity over the 20 year forecast period.

4.4.2.12 Agricultural Pesticide Applications

Cost estimates
- Agricultural pesticide applications ($0 to $6,517 per acre, depending on crop type and county). We considered three crop types (oil seed and grain farming, vegetable and melon farming, and fruit and tree nut farming) separately. Using data from the USDA's National Agricultural Statistics Service (NASS), we derived estimates of the net agricultural operational revenue per acre for each crop type in each county covered by an ESU. Under the assumption that the court-ordered restrictions on pesticide applications force the affected land out of production, these estimates are then a measure of the cost of section 7 implementation.

Spatial distribution
The court-ordered restrictions are applied as no-spray buffers along "salmon-supporting waters." We interpreted this phrase to mean stream reaches occupied by salmon or steelhead from the 12 ESUs, using NOAA Fisheries spatial data on the appropriate fish distribution. We created buffers of 100 yards and 20 yards on each side of the stream, and then intersected these buffers with USGS National Land Cover Data (NLCD) to estimate the amounts of the three crop types within the two sizes of buffers.[29]

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29. We used the following NLCD land use categories: row crops (corresponding to the NASS category vegetable and melon farming), small grains (corresponding to the NASS category oil seed and grain farming), and orchards/vineyards/other (corresponding to the NASS category fruit and tree

Temporal distribution
Because the NLCD data are based on satellite imagery from the early and mid-19902, we adjusted acreages using a comparison of 1992 and 2002 crop acreages on a crop type and county basis, using Census of Agriculture data. We applied the ratio of the 2002/1992 acreages to our crop acreage estimates, which "inflates" them to 2002 levels.

4.5 Summary

Table 4-12 below summarizes the cost estimates for the different types of activities.

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nut farming). There is a slight mismatch between these two data sets. The NASS data on agricultural revenues places corn in the oil seed and grain farming category, while the NLCD data on land cover types places it in the row crop category. Corn is not a significant crop in any of the counties under consideration, however.

Table 4-12
Summary of Activity Cost Estimation[1]

Activity	Sub-activity	Cost Unit	Mid-range Cost Estimate	Present Value of Cost Stream	Forecast Period	Likelihood of Consultation and Modifications	Annual Expected Cost
Hydropower Dams[2]	Small (0-5 MW)	per dam	$2,120,500	$2,120,500	20 years	10% over 20 years	$10,603
	Medium (5-20 MW)		$5,750,000	$5,750,000	50 years	100% over 50 years	$115,000
	Large (>20 MW), requires fish passage		$73,850,000	$73,850,000	50 years	100% over 50 years	$1,477,000
	Large (>20 MW), does not require fish passage		$45,230,000	$45,230,000	50 years	100% over 50 years	$904,600
	Dam removal		$24,000,000	$24,000,000	Applied to known cases of future removals		
Non-hydropower Dams	Federal and large non-hydropower dams	per dam	$2,120,500	$2,120,500	20 years	100% over 20 years	$106,025
	Small non-Federal Non-hydropower dams					10% over 20 years	$10,603

Table 4-12
Summary of Activity Cost Estimation[1]

Activity	Sub-activity	Cost Unit	Mid-range Cost Estimate	Present Value of Cost Stream	Forecast Period	Likelihood of Consultation and Modifications	Annual Expected Cost
Federal Land Management Activities (non-wilderness)	Idaho	per acre	$1.26	$1.26	Annual	100%	$1.26
	Western Oregon & Western Washington		$5.90	$5.90			$5.90
	Eastern Oregon & Eastern Washington		$3.30	$3.30			$3.30
Federal Land Management Activities (wilderness)	Idaho	per acre	$0.07	$0.07	Annual	100%	$0.07
	Western Oregon & Western Washington		$0.29	$0.29			$0.29
	Eastern Oregon & Eastern Washington		$0.15	$0.15			$0.15
Livestock Grazing on Federal Land	Grazing	Stream miles	$11,500 + 2% annual maintenance for 30 years	$14,354	Immediate	100%	$1,157

Table 4-12
Summary of Activity Cost Estimation[1]

Activity	Sub-activity	Cost Unit	Mid-range Cost Estimate	Present Value of Cost Stream	Forecast Period	Likelihood of Consultation and Modifications	Annual Expected Cost
Transportation[3]	Bridges & culverts (small)	per project & mile	$27,800 + variable costs	$42,938	5 years	100% over 5 years	$8,588
	Bridges & culverts (medium)		$55,500 + variable costs	$70,638			$14,128
	Bridges & culverts (large)		$84,300 + variable costs	$99,438			$19,888
	Roads (small)	per project & mile	$22,800 + variable costs	$37,938	5 years		$7,588
	Roads (medium)		$47,000 + variable costs	$62,138			$12,428
	Roads (large)		$71,300 + variable costs	$86,438			$17,288
Utility Lines	Outfall structures and pipelines	per project	$101,000	$101,000	Annual	100%	$12,625
Instream Activities	Dredging	per project	$821,000	$821,000	Annual	100%	$821,000
	Boat dock, boat ramps, bank stabilization	per project	$54,500	$54,500	Annual	100%	$54,500

Table 4-12
Summary of Activity Cost Estimation[1]

Activity	Sub-activity	Cost Unit	Mid-range Cost Estimate	Present Value of Cost Stream	Forecast Period	Likelihood of Consultation and Modifications	Annual Expected Cost
EPA NPDES-permitted facilities	Minor facility	per facility	O&M: $6,800 for 20 years	$72,039	Immediate	20%	$1,360
	Major facility	per facility	Capital: $421,500 O&M: $19,725 for 20 years	$630,467	Immediate	25%	$14,878
Sand and Gravel Mining	Mining on non-Federal lands	per site	$330,000 for 5 years	$1,352,106	30 years	50% over 30 years	$22,535
Residential and Commercial Development	New development	per project	$235,000	$235,000	Annual	100%	$11,750
Agricultural Pesticide Applications	Agricultural cropping	per acre	$0 - 6,517, depending on crop type and county		Annual	100%	$0 - 6,517, depending on crop type and county

[1]Cost estimates in this table are for the case of mid-range costs and a 7% discount rate.
[2]Data for hydropower dams do not allow us to allocate all costs over an expenditure period. The cost stream presented is the present value of costs.
[3]Transportation costs are presented for a project of average mileage (3.2 miles).

Section 5
The Economic Impacts of Critical Habitat Designation

5.1 Introduction

In this section, we present a summary of the economic impacts of critical habitat designation for each of the 12 ESUs of West Coast salmon and steelhead. Because of the large numbers of watersheds and nearshore areas that constitute the particular areas, the results are summarized by showing their range and other summary statistics for each ESU.

Below, we first discuss the aggregation of individual activity impacts into a total impact for each area, and some qualifications on the results. We then examine two different ways of grouping types of impacts that provide useful economic information to the exclusion process. For each ESU, we then present a summary of the results. The full set of results is given in Appendix C. Finally, we present results for all 12 ESUs combined.

5.2 Aggregating Impacts Up to the Watershed Level

As noted in Section 2 of the report, the ideal measure of the economic impact of a regulatory action is the change in economic surplus that occurs as the result of the action. Using this measure is not feasible in this case, as the economic models and data to use in those models are not available. Instead, we use a straightforward "unit-cost" approach to estimate the aggregate impacts for each watershed. Using the spatial data described in Section 4 above, we estimated the annual level of an activity type in a particular area. Where an activity has different sub-types or scales, a separate level was estimated for each. We then used the annual expected modification cost to calculate the economic impact of critical habitat designation for a particular area, using the following formula:

$$\text{Aggregate Annual Impact for Watershed (\$/yr)} = \text{Sum (over all Activity Types)} \left[\text{Level of Activity Type} \times \text{Annual Expected Modification Cost per-project} \right]$$

Two important elements of this estimation warrant closer examination: the discount rate and per-project modification costs. We considered both of these in the following ways. First, using the guidance from OMB (OMB 2003), we substituted a 3% discount rate for the 7% discount rate used in the base case calculations. Second, using the ranges of nominal modification costs (where available) described in Section 4 and Appendix A, we estimated a Low and High case for the annualized expected per-unit costs. For both cases, we substituted the estimate into the equation above. This produced six cases, using the two discount rates (7% and 3%) and three nominal cost estimates (Mid-range, High, and Low).

Although we use the high and low ends of the nominal cost range to produce an upper and lower bound for the aggregate costs, the probability that these bounds will be reached is vanishingly small. The range is not produced by true, uniform uncertainty over the cost estimate. If the cost estimate was distributed in this way, the probability of the true cost being equal to the high or low end of the range would be equal to the probability of it being equal to the midpoint of the range, which we use for the base case. Instead, the range is produced by variation in the underlying determinants of modification costs, such as project location, scale, history, and so forth. The cost of an individual project's modifications may in fact reach the upper or lower bound, but only where all of these determinants are “low” or “high” simultaneously, which is likely to happen in only a small fraction of the cases. For the upper and lower bounds of the aggregate impact costs to be reached, it would have to be that every individual project has the characteristics necessary to reach the upper or lower bound, which we know is not the case. Nevertheless, we present this information to illustrate how variation in the underlying nominal costs produces variation in the estimates of aggregate impacts for a particular area.

Another aspect of the aggregation method that warrants comment is the implicit assumption that there are no cumulative or regional effects. We do not provide alternative estimations in this case, however, because adequate data are not available to support the models and analysis needed to examine such effects. Nevertheless, it is important to discuss the possible limitations this assumption places on the analysis.

The use of a constant per-unit cost is best suited to a situation in which the impacts of a regulation are "small": that is, one in which the accumulation of areas or entities that fall under the regulation do not change either the aggregate level of activity or the per-unit cost itself. At first glance, looking ahead to the results presented later in this section, this would not seem to be the case for the impacts of critical habitat designation for West Coast salmon and steelhead. Yet the magnitudes of the impacts alone do not necessarily imply that the simpler per-unit approach is inappropriate. Two other factors are more determinative: the concentration of the impacts in terms of the industries and markets affected, and the practicality of using more sophisticated models to gauge the cumulative impacts at a regional scale. We have noted previously that the second factor works against examining cumulative impacts. The first factor reinforces this conclusion.

Using sophisticated models such as input-output models or estimations of changes in economic surplus requires a clear, quantifiable link between the regulation and a change in the availability or cost of a set of economic goods and services. In some previous analyses of critical habitat designation, such a link existed (or at least was assumed to exist). In the case of the northern spotted owl, for example, the economic analysis attributed a precise percentage reduction in federal timber harvest in certain areas to critical habitat designation (Schamberger et al. 1992). This assumption allowed the analysis to estimate the impacts of the designation on regional levels of employment and county tax revenues.

Specifying the link between critical habitat designation and a change in an economic good or service so precisely is not possible for the West Coast salmon and steelhead designations. In the Initial Regulatory Flexibility Analysis for this rulemaking, NOAA Fisheries discusses the impacts of the

designations on small entities. In that report, we identify a set of links between the different types of activities identified here and different industry groups that may bear the cost of some of the impacts to those activities. These links are presented in Table 5-1.

In some cases, the link between the activity and an industry is direct and quantifiable. For example, the link between hydropower dams and power markets is one that could be incorporated into a broader regional study. Working against this possibility, however, are the large number of dams and the need to document certain modifications (*e.g.*, changes in flow) on an individual basis, when these modifications are highly uncertain prospectively. Thus, the data needed to support such an effort are not available even in this case.

In other cases, the links are less direct and harder to quantify. Modifications to transportation, utility lines, and instream activities, for example, affect firms that either own the affected assets or are hired to build, maintain, or modify them, but the modifications do not directly affect the flow of a given input or output. In cases like these, data to identify and quantify the links from the impacted activities to market inputs or outputs are not available, and so assessing the impacts at a regional level would be tantamount to a simulation exercise.

This leaves us with uncertainty over the presence of any potential error from the decision not to consider cumulative impacts at the regional level. On the one hand, if these impacts in fact exist, the direction of the error in our results is downward, in that we have underestimated the costs of critical habitat designation at the level of the ESU. On the other hand, there are other potential sources of error that would produce an overestimate of the impact costs, as we have discussed in several instances above and in greater detail in Appendix A. The aggregate direction of these potential errors is therefore unknown.

There is no evidence, of course, that cumulative impacts are present in significant amounts. This absence of evidence is not evidence that they do not exist, but it does suggest that attempting to document these effects, given the analytical barriers, is of questionable value. We note, then, that the absence of this analysis possibly biases the results downward, although there is no way to gauge the likelihood or magnitude of this potential error.

5.3 Differentiating Types of Impacts

In addition to estimating the total impact of critical habitat designation for each watershed, we also used two different methods for grouping activity types. The first differentiates activity types by the degree to which the modification costs will be borne locally or in a broader area. This grouping is useful for discerning the possibility that critical habitat designation may impose an inequitable burden on individual watersheds. The second grouping differentiates activity types by their probable location within certain watersheds that serve as major migratory corridors. In these cases, NOAA Fisheries is considering the migratory and non-migratory (that is, tributary) areas separately, and the second grouping is intended to support that consideration.

Table 5-1 Industry Groups and Critical Habitat Designation Impacts	
Type of Activity Impacted by Critical Habitat Designation	**Industry Groups associated with Impacted Activity**
Hydropower dams	Hydroelectric power generation NAICS 22111
Non-hydropower dams	Water Supply and Irrigation Systems NAICS 22131
Federal lands management	Forestry and Logging NAICS 113
Grazing	Beef Cattle Ranching & Farming NAICS 112111
Transportation	Highway, Street, and Bridge Construction NAICS 237310
Utility lines	Electric Services NAICS 2211
	Natural Gas Distribution NAICS 221210
	Sewage Treatment Facilities NAICS 221320
Instream activities	Construction-General, Water, Sewer, Pipeline, Communication & Powerline Construction NAICS 237110, 237120, 237130
	Marinas NAICS 713930
Dredging	Heavy Construction SIC 1629
NPDES-permitted activities	Fishing, Hunting, Trapping NAICS 114
	Food and Kindred Products NAICS 311
	Sewage Services NAICS 221320
	Paper Mills NAICS 322121, 322122
	Pulp Mills NAICS 322110
	Lumber and Wood Products NAICS 321
Sand & gravel mining	Construction Sand and Gravel Mining NAICS 212321
Development	Subdividers and Developers SIC 6552
Agricultural pesticide application	Oil seed and grain farming NAICS 1111 Vegetable and melon farming NAICS 1112 Fruit and tree nut farming NAICS 1113

When analyzing the costs of designating a particular area as critical habitat, the standard approach is to consider the impacts from a national perspective, in that the location and concentration of the impacts does not routinely influence economic efficiency.[1] The location and concentration of impacts may in part determine the equity of the regulation, however. To support consideration of this issue, we divided the set of activity types into two types: those likely to have economic impacts locally and those likely to have economic impacts at a broader geographic scale.[2] For each activity, we judged the extent to which employment would be drawn from local labor markets and output would be consumed locally, and the extent to which the entity affected was local or non-local in nature. This division is presented in Table 5-2.

Table 5-2
Activity Types with Local and Non-Local Impact

Local Impact Activity Types	**Non-local Impact Activity Types**
Non-hydropower dams	Hydropower dams
Utility lines	Federal lands management (non-wilderness and wilderness areas)
Instream activities	Grazing
Dredging	Transportation
NPDES-permitted activities	
Sand & gravel mining	
Development	
Agricultural pesticide applications	

The most logical candidates for non-local impacts are hydropower dams (for which the impact may be absorbed in the broader market for electricity), transportation projects (which are most often funded at the federal or state level), and all types of federal lands management (which are funded at the federal level). We do not assume that the impacts of all projects within these categories are felt non-locally, only that as a category they are more likely to produce that result.

The second type of grouping categorized activity types by the location of the activity within the watershed.[3] In some cases, NOAA Fisheries is designating only the migratory corridor within a watershed and excluding the tributary areas. To support this decision-making process, we identified types of activities that were more likely to be located along migratory corridors.[4] Again, the division is categorical, which presumes a higher likelihood of being present in one area or another, but not a certainty. Table 5-3 presents the migratory and tributary grouping of activities.

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1. This approach is recommended by OMB (2003) and EPA (2000).

2. This division was made using best professional judgment.

3. Nearshore areas are not included.

4. This division was made using best professional judgment. We also drew on discussions with NOAA Fisheries biologists familiar with section 7 consultations.

Table 5-3 Activity Types and Location	
Activity Types located in tributary areas	**Activity Types located in migratory corridors**
Non-hydropower dams Federal lands management (non-wilderness and wilderness areas) Grazing Transportation Mining Development Agricultural pesticide applications	Hydropower dams Instream activities Dredging Utility lines NPDES-permitted activities

5.4 Summary of the Results for 12 West Coast salmon and steelhead ESUs

Below, for each ESU, we present a brief narrative covering the results for that ESU, followed by a series of tables. Our emphasis is on illustrating the variation in the impact of section 7 and critical habitat designation for individual watersheds in each ESU. As has been noted many times, the number of particular areas considered in the report is quite large, making a detailed discussion of each area's result impractical.[5] Our summary includes several important aspects of the results, including

1) The total impact of the designation for the ESU;
2) The distribution across activity types of the total impact for the ESU;
3) The average, median, maximum, and minimum total impact for the individual watersheds in an ESU, both annually and as a present value over a 20-year period[6]; and the sensitivity of the total impacts to variation in cost estimates and discount rates;
4) The frequency of annual total impacts by cost category for individual watersheds in an ESU.

For most of these, we list the results for each of the six cases we have described above, with High/Mid/Low referring to the three per-project cost estimates, and 7%/3% referring to the two discount rates.

Lastly, we emphasize that the impacts listed in these tables stem from the implementation of section 7 for activities that modify habitat, not just the incremental impacts of critical habitat designation alone. As noted above, the NMCA decision called for an analysis of "all of the economic impacts

5. Appendices C-1 to C-14 contain the full set of results for all watersheds, grouped by ESU. This set includes total potential annual impacts for each of the six cases (3 per-project cost estimates and 2 discount rates), as well as the individual activity cost estimates presented in the same way.

6. Because the data underlying the cost estimates varies widely in terms of the forecast period, the 20-year present value should be seen as illustrative.

of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes."[7] The estimates of impacts should then be interpreted as the sum of two types of impacts:

- Co-extensive impacts, or those that are associated with habitat-modifying actions covered by both the jeopardy and adverse modification standards; and
- Incremental impacts, or those that are solely attributable to critical habitat designation and would not occur without the designation.

7. New Mexico Cattle Growers' Association v. U.S. Fish and Wildlife Service, 248 F.3d 1277 (10th Cir. 2001).

5.4.1 Puget Sound chinook salmon ESU

5.4.1.1 Watershed Characteristics

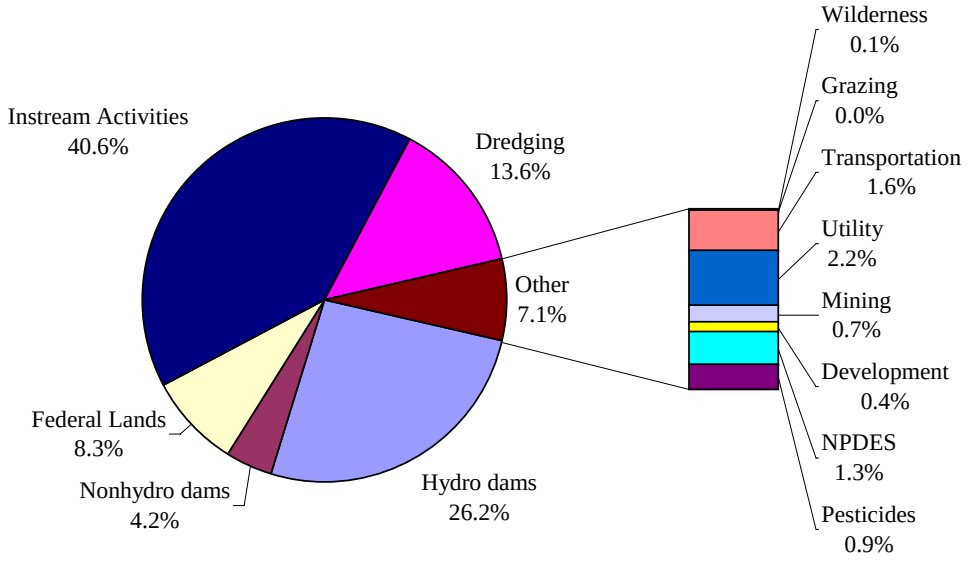
For this ESU, the analysis covers 80 watersheds, averaging 180.8 square miles in size and ranging from 69.9 to 338.1 square miles. The estimated total population for all watersheds in this ESU is 3,438,663 and the estimated total personal income is $125,615,440,000.

5.4.1.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$144,621,601	$1,639,371,931
	Mid-range	$93,228,558	$1,056,801,201
	Low	$41,825,315	$474,114,839
3%	High	$136,180,244	$2,086,798,699
	Mid-range	$87,872,409	$1,346,539,147
	Low	$39,555,745	$606,144,288

5.4.1.3 Economic Impacts of Individual Activities for the Entire ESU

Puget Sound chinook salmon ESU
Annual Potential Impact = $93,228,558



5.4.1.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$1,807,770	$889,468	$23,532,481	$2,865	80
	Mid-range	$1,165,357	$584,677	$15,308,987	$1,445	
	Low	$522,816	$310,256	$7,085,494	$25	
3%	High	$1,702,253	$888,036	$23,532,481	$2,865	
	Mid-range	$1,098,405	$585,880	$15,308,988	$1,445	
	Low	$494,447	$310,257	$7,085,494	$25	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$20,492,149	$10,082,647	$266,754,679	$32,478	80
	Mid-range	$13,210,015	$6,627,658	$173,536,483	$16,381	
	Low	$5,926,435	$3,516,942	$80,318,288	$285	
3%	High	$26,084,984	$13,608,084	$360,607,018	$43,904	
	Mid-range	$16,831,739	$8,977,914	$234,591,854	$22,145	
	Low	$7,576,804	$4,754,308	$108,576,690	$385	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	11	20	14	21	14
	Mid-range	14	22	20	15	9
	Low	28	27	17	6	2
3%	High	11	20	13	21	15
	Mid-range	14	22	20	18	6
	Low	28	28	17	6	1

5.4.2 Lower Columbia River chinook salmon ESU

5.4.2.1 Watershed Characteristics

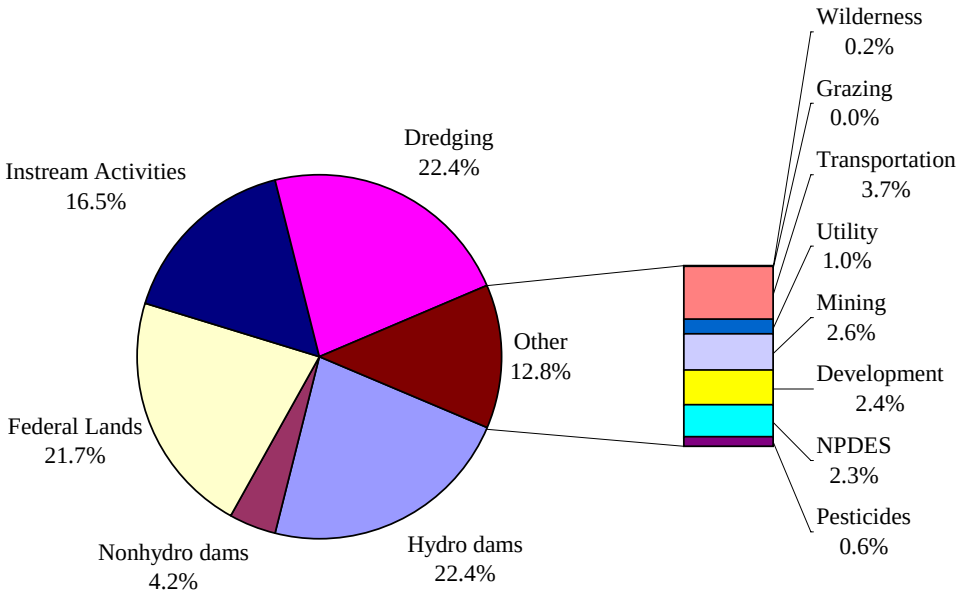
For this ESU, the analysis covers 48 watersheds, averaging 160.6 square miles in size and ranging from 49.2 to 391.8 square miles. The estimated total population for all watersheds in this ESU is 1,475,800 and the estimated total personal income is $46,014,973,000.

5.4.2.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$52,512,142	$595,256,384
	Mid-range	$37,630,372	$426,562,665
	Low	$22,744,058	$257,817,434
3%	High	$52,302,561	$801,473,943
	Mid-range	$36,875,994	$565,080,324
	Low	$21,449,904	$328,694,017

5.4.2.3 Economic Impacts of Individual Activities for the Entire ESU

Lower Columbia River chinook salmon ESU
Annual Potential Impact = $37,630,372



5.4.2.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$1,094,003	$702,502	$6,011,754	$50,062	48
	Mid-range	$783,966	$549,208	$3,932,625	$34,162	
	Low	$473,835	$287,444	$2,118,441	$16,545	
3%	High	$1,089,637	$702,502	$6,007,977	$50,062	
	Mid-range	$768,250	$547,958	$3,923,577	$34,162	
	Low	$446,873	$318,860	$1,839,178	$16,545	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$12,401,175	$7,963,280	$68,146,808	$567,483	48
	Mid-range	$8,886,722	$6,225,595	$44,578,646	$387,250	
	Low	$5,371,197	$3,258,352	$24,013,787	$187,552	
3%	High	$16,697,374	$10,765,003	$92,065,033	$767,141	
	Mid-range	$11,772,507	$8,396,804	$60,124,112	$523,497	
	Low	$6,847,792	$4,886,154	$28,183,191	$253,538	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	10	10	14	9	5
	Mid-range	11	12	16	6	3
	Low	15	17	11	5	0
3%	High	10	10	14	7	7
	Mid-range	11	12	16	7	2
	Low	16	17	11	4	0

5.4.3 Upper Willamette River chinook salmon ESU

5.4.3.1 Watershed Characteristics

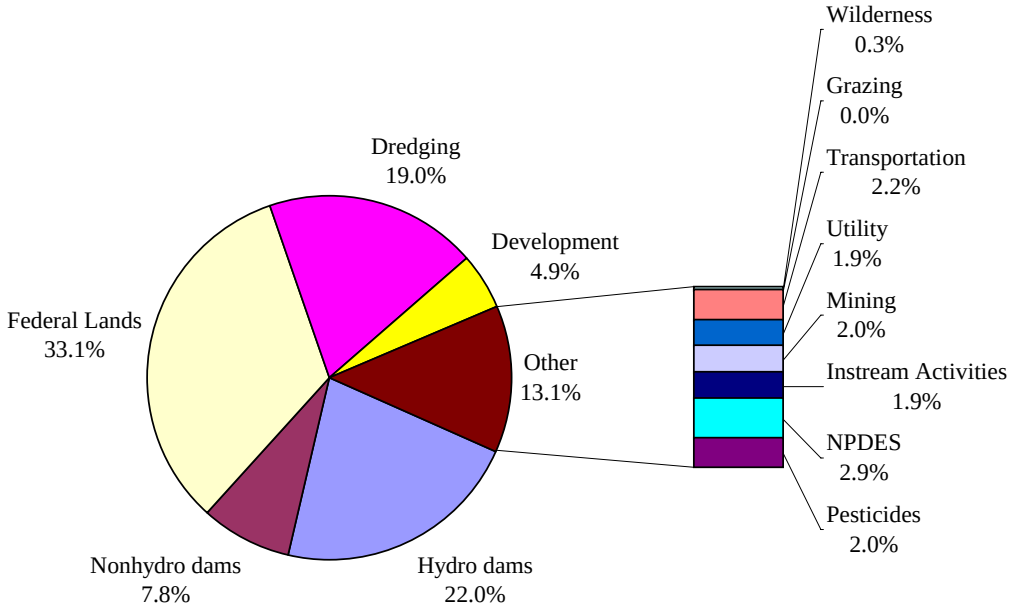
For this ESU, the analysis covers 60atersheds, averaging 164.8 square miles in size and ranging from 53.3 to 411.2 square miles. The estimated total population for all watersheds in this ESU is 1,791,854 and the estimated total personal income is $52,491,827,000.

5.4.3.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$46,651,839	$528,826,365
	Mid-range	$33,498,745	$379,728,213
	Low	$20,342,834	$230,598,136
3%	High	$43,708,704	$669,783,392
	Mid-range	$31,639,453	$484,836,629
	Low	$19,567,277	$299,845,025

5.4.3.3 Economic Impacts of Individual Activities for the Entire ESU

Upper Willamette River chinook salmon ESU
Annual Potential Impact = $33,498,745



5.4.3.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$777,531	$404,661	$7,068,726	$2,815	60
	Mid-range	$558,312	$320,406	$4,236,484	$1,454	
	Low	$339,047	$199,875	$1,577,678	$93	
3%	High	$728,478	$403,229	$5,508,711	$2,815	
	Mid-range	$527,324	$318,588	$3,536,035	$1,454	
	Low	$326,121	$198,861	$1,563,360	$93	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$8,813,773	$4,587,069	$80,128,212	$31,904	60
	Mid-range	$6,328,804	$3,631,994	$48,023,070	$16,482	
	Low	$3,843,302	$2,265,704	$17,883,916	$1,059	
3%	High	$11,163,057	$6,178,996	$84,414,375	$43,130	
	Mid-range	$8,080,610	$4,881,982	$54,185,492	$22,281	
	Low	$4,997,417	$3,047,306	$23,956,610	$1,432	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	18	16	16	6	4
	Mid-range	25	12	17	3	3
	Low	30	16	10	4	0
3%	High	18	16	16	6	4
	Mid-range	25	12	18	3	2
	Low	30	17	10	3	0

5.4.4 Upper Columbia River spring-run chinook salmon ESU

5.4.4.1 Watershed Characteristics

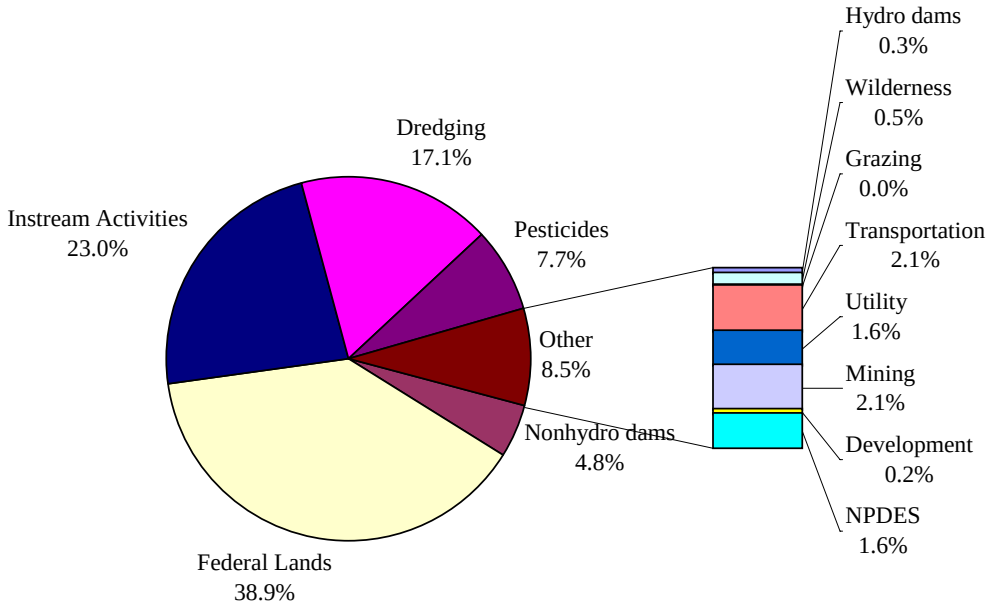
For this ESU, the analysis covers 31 watersheds, averaging 257.7 square miles in size and ranging from 132.1 to 489.1 square miles. The estimated total population for all watersheds in this ESU is 265,185 and the estimated total personal income is $6,321,621,000.

5.4.4.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$28,037,801	$317,825,160
	Mid-range	$20,466,821	$232,003,601
	Low	$12,895,842	$146,182,042
3%	High	$28,109,965	$430,751,460
	Mid-range	$20,489,167	$313,971,886
	Low	$12,868,370	$197,192,312

5.4.4.3 Economic Impacts of Individual Activities for the Entire ESU

Upper Columbia River spring-run chinook salmon ESU
Annual Potential Impact = $20,466,821



5.4.4.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$904,445	$559,334	$4,655,418	$33,862	31
	Mid-range	$660,220	$487,740	$2,948,332	$24,454	
	Low	$415,995	$354,401	$1,379,472	$4,853	
3%	High	$906,773	$559,334	$4,649,691	$33,526	
	Mid-range	$660,941	$487,740	$2,942,604	$24,454	
	Low	$415,109	$354,401	$1,379,460	$4,853	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$10,252,425	$6,340,386	$52,771,935	$383,846	31
	Mid-range	$7,483,987	$5,528,819	$33,421,095	$277,197	
	Low	$4,715,550	$4,017,348	$15,637,137	$55,011	
3%	High	$13,895,208	$8,571,125	$71,250,928	$513,749	
	Mid-range	$10,128,125	$7,474,024	$45,091,879	$374,724	
	Low	$6,361,042	$5,430,774	$21,138,566	$74,366	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	6	7	10	6	2
	Mid-range	7	9	8	6	1
	Low	12	8	9	2	0
3%	High	6	7	10	6	2
	Mid-range	7	9	8	6	1
	Low	12	8	9	2	0

5.4.5 Hood Canal summer-run chum salmon ESU

5.4.5.1 Watershed Characteristics

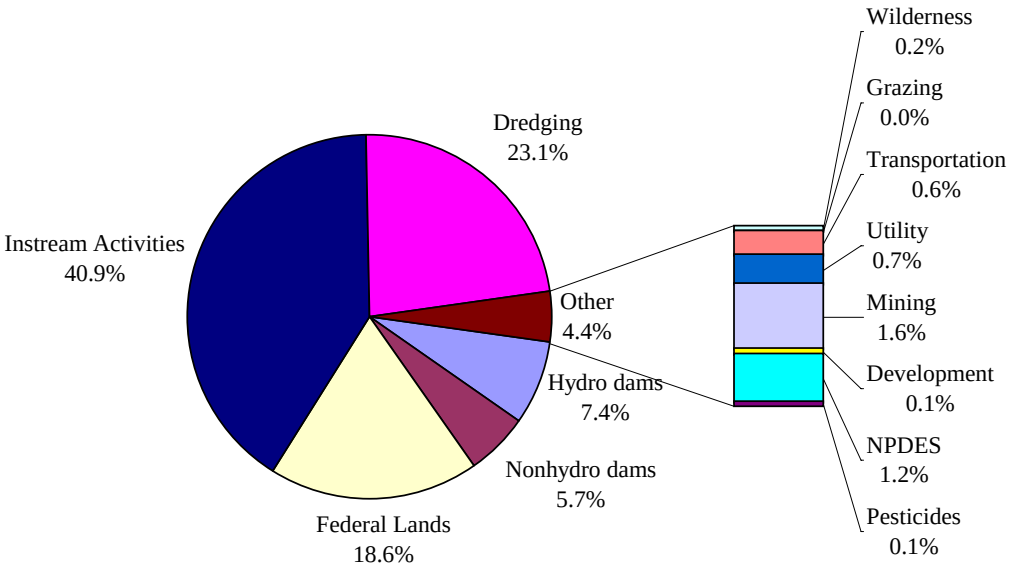
For this ESU, the analysis covers 17 watersheds, averaging 120.5 square miles in size and ranging from 53.0 to 244.5 square miles. The estimated total population for all watersheds in this ESU is 79,425 and the estimated total personal income is $2,042,304,000.

5.4.5.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$10,678,404	$121,046,071
	Mid-range	$7,123,487	$80,748,966
	Low	$3,569,730	$40,465,019
3%	High	$11,818,820	$181,109,224
	Mid-range	$7,773,694	$119,122,518
	Low	$3,731,700	$57,183,814

5.4.5.3 Economic Impacts of Individual Activities for the Entire ESU

Hood Canal summer-run chum salmon ESU
Annual Potential Impact = $7,123,487



5.4.5.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$628,141	$329,310	$2,250,820	$54,104	17
	Mid-range	$419,029	$255,018	$1,452,160	$54,104	
	Low	$209,984	$156,250	$653,500	$44,678	
3%	High	$695,225	$339,852	$2,532,912	$54,104	
	Mid-range	$457,276	$260,289	$1,645,373	$54,104	
	Low	$219,512	$156,250	$761,333	$44,678	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$7,120,357	$3,732,924	$25,514,386	$613,306	17
	Mid-range	$4,749,939	$2,890,779	$16,461,100	$613,306	
	Low	$2,380,295	$1,771,187	$7,407,813	$506,450	
3%	High	$10,653,484	$5,207,819	$38,813,841	$829,085	
	Mid-range	$7,007,207	$3,988,613	$25,213,363	$829,085	
	Low	$3,363,754	$2,394,344	$11,666,516	$684,635	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	8	1	4	4	0
	Mid-range	8	4	3	2	0
	Low	11	4	2	0	0
3%	High	8	1	4	3	1
	Mid-range	8	4	3	2	0
	Low	11	4	2	0	0

5.4.6 Columbia River chum salmon ESU

5.4.6.1 Watershed Characteristics

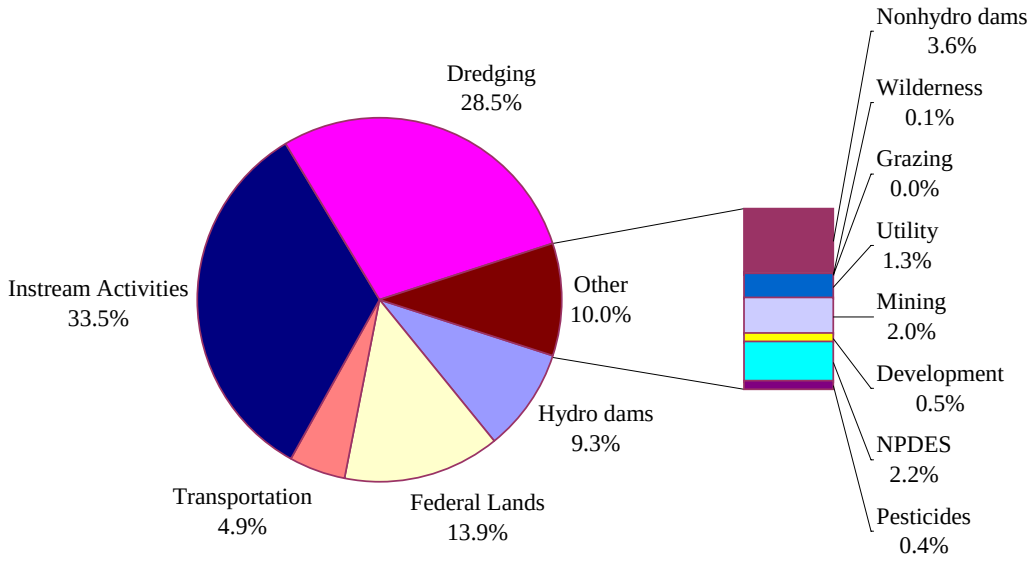
For this ESU, the analysis covers 20 watersheds, averaging 191.2 square miles in size and ranging from 116.4 to 391.8 square miles. The estimated total population for all watersheds in this ESU is 484,322 and the estimated total personal income is $13,298,604,000.

5.4.6.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$24,337,077	$275,875,258
	Mid-range	$17,062,592	$193,414,636
	Low	$9,788,107	$110,954,014
3%	High	$23,739,563	$363,780,299
	Mid-range	$16,425,546	$251,701,774
	Low	$9,111,530	$139,623,248

5.4.6.3 Economic Impacts of Individual Activities for the Entire ESU

Columbia River chum salmon ESU
Annual Potential Impact = $17,062,592



5.4.6.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$1,216,854	$611,033	$6,009,618	$50,062	20
	Mid-range	$853,130	$405,922	$3,931,381	$49,791	
	Low	$489,405	$254,337	$2,118,441	$17,350	
3%	High	$1,186,978	$617,508	$6,005,841	$50,062	
	Mid-range	$821,277	$408,443	$3,922,333	$49,791	
	Low	$455,576	$254,337	$1,838,825	$17,350	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$13,793,763	$6,926,425	$68,122,599	$567,483	20
	Mid-range	$9,670,732	$4,601,368	$44,564,541	$564,411	
	Low	$5,547,701	$2,883,059	$24,013,787	$196,672	
3%	High	$18,189,015	$9,462,564	$92,032,307	$767,141	
	Mid-range	$12,585,089	$6,258,905	$60,105,044	$762,987	
	Low	$6,981,162	$3,897,406	$28,177,781	$265,867	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	3	5	6	3	3
	Mid-range	3	8	5	3	1
	Low	6	8	4	2	0
3%	High	3	5	6	3	3
	Mid-range	3	8	5	3	1
	Low	7	7	4	2	0

5.4.7 Ozette Lake sockeye salmon ESU

5.4.7.1 Watershed Characteristics

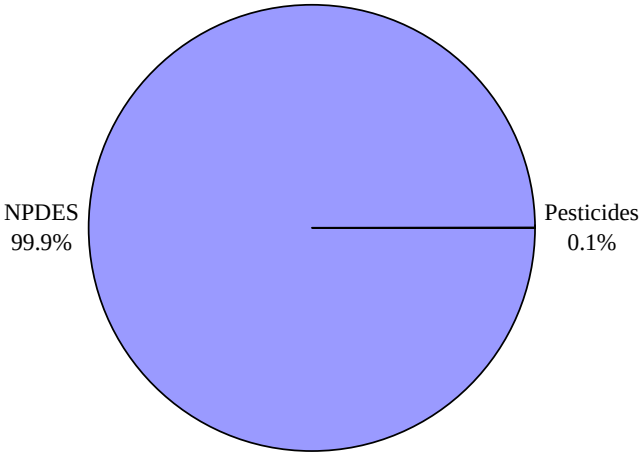
For this ESU, the analysis covers 1 watershed, which is 101.0 square miles in size. The estimated total population for the watershed in this ESU is 85 and the estimated total personal income is $2,092,000.

5.4.7.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$5,445	$61,724
	Mid-range	$2,723	$30,862
	Low	$0	$1
3%	High	$5,445	$83,441
	Mid-range	$2,723	$41,721
	Low	$0	$1

5.4.7.3 Economic Impacts of Individual Activities for the Entire ESU

Ozette Lake sockeye salmon ESU
Annual Potential Impact = $2,723



5.4.7.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		**Average**	**Median**	**Maximum**	**Minimum**	**No. of Watersheds**
7%	High	$5,445	$5,445	$5,445	$5,445	1
	Mid-range	$2,723	$2,723	$2,723	$2,723	
	Low	$0	$0	$0	$0	
3%	High	$5,445	$5,445	$5,445	$5,445	
	Mid-range	$2,723	$2,723	$2,723	$2,723	
	Low	$0	$0	$0	$0	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		**Average**	**Median**	**Maximum**	**Minimum**	**No. of Watersheds**
7%	High	$61,724	$61,724	$61,724	$61,724	1
	Mid-range	$30,862	$30,862	$30,862	$30,862	
	Low	$1	$1	$1	$1	
3%	High	$83,441	$83,441	$83,441	$83,441	
	Mid-range	$41,721	$41,721	$41,721	$41,721	
	Low	$1	$1	$1	$1	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		**< $200,000**	**$200,000-$500,000**	**$500,000-$1,000,000**	**$1,000,000-$2,500,000**	**> $2,500,000**
7%	High	1	0	0	0	0
	Mid-range	1	0	0	0	0
	Low	1	0	0	0	0
3%	High	1	0	0	0	0
	Mid-range	1	0	0	0	0
	Low	1	0	0	0	0

5.4.8 Upper Columbia River steelhead ESU

5.4.8.1 Watershed Characteristics

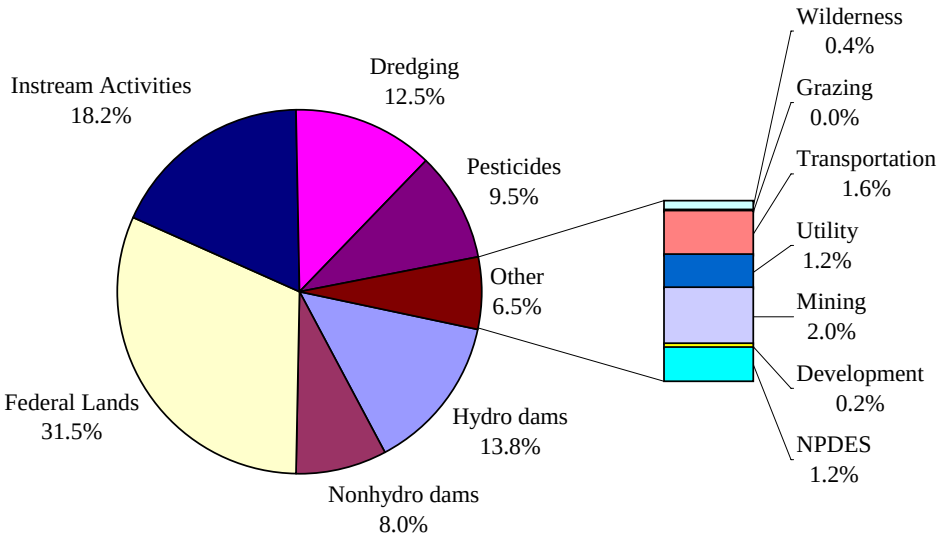
For this ESU, the analysis covers 42 watersheds, averaging 265.2 square miles in size and ranging from 68.4 to 489.1 square miles. The estimated total population for all watersheds in this ESU is 310,216 and the estimated total personal income is $7,268,925,000.

5.4.8.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$43,545,515	$493,614,332
	Mid-range	$29,587,340	$335,390,115
	Low	$15,618,275	$177,042,442
3%	High	$40,891,417	$626,611,853
	Mid-range	$28,127,247	$431,016,277
	Low	$15,356,247	$235,316,047

5.4.8.3 Economic Impacts of Individual Activities for the Entire ESU

Upper Columbia River steelhead ESU
Annual Potential Impact = $29,587,340



5.4.8.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$1,036,798	$689,331	$8,162,283	$33,862	42
	Mid-range	$704,460	$496,921	$4,735,387	$24,454	
	Low	$371,864	$241,512	$1,382,349	$4,853	
3%	High	$973,605	$694,259	$5,400,447	$33,526	
	Mid-range	$669,696	$498,239	$3,235,670	$24,454	
	Low	$365,625	$241,512	$1,382,337	$4,853	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$11,752,722	$7,813,980	$92,524,333	$383,846	42
	Mid-range	$7,985,479	$5,632,894	$53,678,432	$277,197	
	Low	$4,215,296	$2,737,682	$15,669,745	$55,011	
3%	High	$14,919,330	$10,638,685	$82,755,370	$513,749	
	Mid-range	$10,262,292	$7,634,909	$49,582,756	$374,724	
	Low	$5,602,763	$3,700,881	$21,182,647	$74,366	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	10	7	13	9	3
	Mid-range	11	10	13	6	2
	Low	18	12	9	3	0
3%	High	10	7	13	9	3
	Mid-range	11	10	13	6	2
	Low	18	12	9	3	0

5.4.9 Snake River Basin steelhead ESU

5.4.9.1 Watershed Characteristics

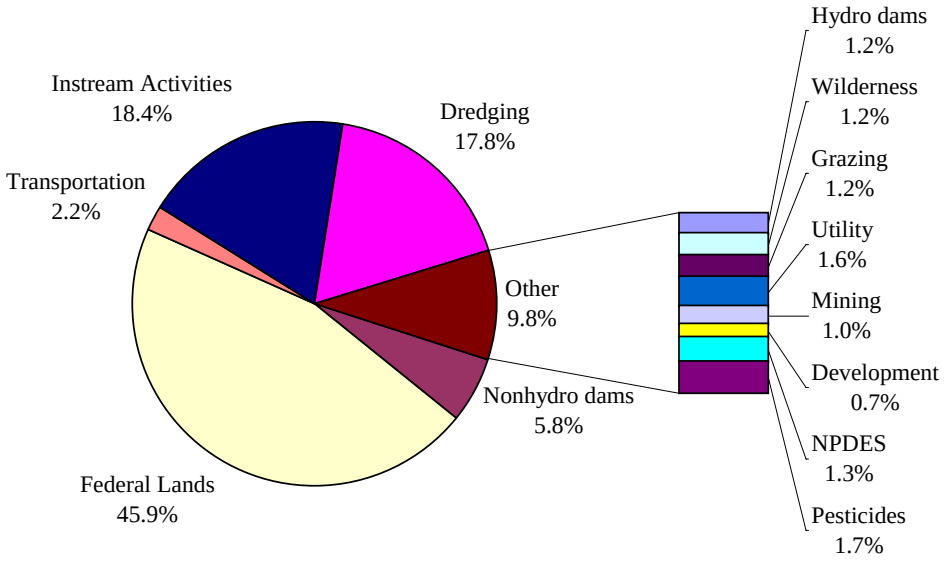
For this ESU, the analysis covers 287 watersheds, averaging 104.3 square miles in size and ranging from 2.5 to 325.9 square miles. The estimated total population for all watersheds in this ESU is 299,855 and the estimated total personal income is $7,068,023,000.

5.4.9.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$42,226,875	$478,666,766
	Mid-range	$32,324,426	$366,416,612
	Low	$22,421,977	$254,166,458
3%	High	$42,135,092	$645,669,686
	Mid-range	$32,210,228	$493,583,057
	Low	$22,285,361	$341,496,400

5.4.9.3 Economic Impacts of Individual Activities for the Entire ESU

Snake River Basin steelhead ESU
Annual Potential Impact = $32,324,426



5.4.9.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		**Average**	**Median**	**Maximum**	**Minimum**	**No. of Watersheds**
7%	High	$146,114	$68,351	$3,808,844	$99	287
	Mid-range	$111,849	$58,467	$2,402,363	$88	
	Low	$77,585	$45,803	$995,881	$0	
3%	High	$145,796	$67,738	$3,803,117	$70	
	Mid-range	$111,454	$57,749	$2,396,635	$62	
	Low	$77,112	$45,355	$990,154	$0	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		**Average**	**Median**	**Maximum**	**Minimum**	**No. of Watersheds**
7%	High	$1,656,286	$774,797	$43,175,517	$1,124	287
	Mid-range	$1,267,878	$662,760	$27,232,212	$994	
	Low	$879,469	$519,199	$11,288,907	$0	
3%	High	$2,234,151	$1,037,997	$58,278,198	$1,072	
	Mid-range	$1,707,900	$884,935	$36,725,558	$949	
	Low	$1,181,648	$695,013	$15,172,918	$1	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		**< $200,000**	**$200,000-$500,000**	**$500,000-$1,000,000**	**$1,000,000-$2,500,000**	**> $2,500,000**
7%	High	241	32	11	4	1
	Mid-range	251	32	3	3	0
	Low	264	22	3	0	0
3%	High	242	31	11	4	1
	Mid-range	251	32	3	3	0
	Low	264	22	3	0	0

5.4.10 Lower Columbia River steelhead ESU

5.4.10.1 Watershed Characteristics

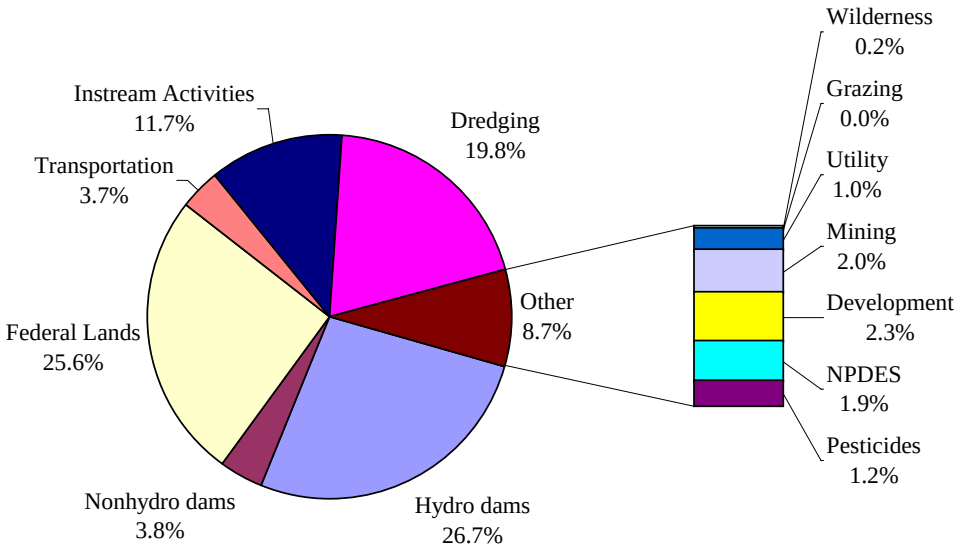
For this ESU, the analysis covers 42 watersheds, averaging 160.4 square miles in size and ranging from 53.4 to 274.3 square miles. The estimated total population for all watersheds in this ESU is 1,384,659 and the estimated total personal income is $43,827,919,000.

5.4.10.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$51,093,809	$579,178,734
	Mid-range	$36,647,051	$415,416,134
	Low	$22,202,305	$251,676,347
3%	High	$50,204,542	$769,324,313
	Mid-range	$35,719,741	$547,362,138
	Low	$21,239,681	$325,472,609

5.4.10.3 Economic Impacts of Individual Activities for the Entire ESU

Lower Columbia River steelhead ESU
Annual Potential Impact = $36,647,051



5.4.10.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$1,216,519	$727,297	$6,026,569	$50,185	42
	Mid-range	$872,549	$600,919	$3,941,426	$49,953	
	Low	$528,626	$357,756	$1,856,282	$49,722	
3%	High	$1,195,346	$727,297	$6,022,793	$50,185	
	Mid-range	$850,470	$599,487	$3,932,378	$49,953	
	Low	$505,707	$375,931	$1,841,964	$49,722	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$13,789,970	$8,244,346	$68,314,751	$568,873	42
	Mid-range	$9,890,860	$6,811,769	$44,678,409	$566,248	
	Low	$5,992,294	$4,055,377	$21,042,067	$563,624	
3%	High	$18,317,246	$11,144,956	$92,292,063	$769,020	
	Mid-range	$13,032,432	$9,186,414	$60,258,974	$765,472	
	Low	$7,749,348	$5,760,690	$28,225,886	$761,923	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	6	9	14	8	5
	Mid-range	7	11	15	5	4
	Low	9	16	11	6	0
3%	High	6	9	14	6	7
	Mid-range	7	11	15	7	2
	Low	10	16	12	4	0

5.4.11 Upper Willamette River steelhead ESU

5.4.11.1 Watershed Characteristics

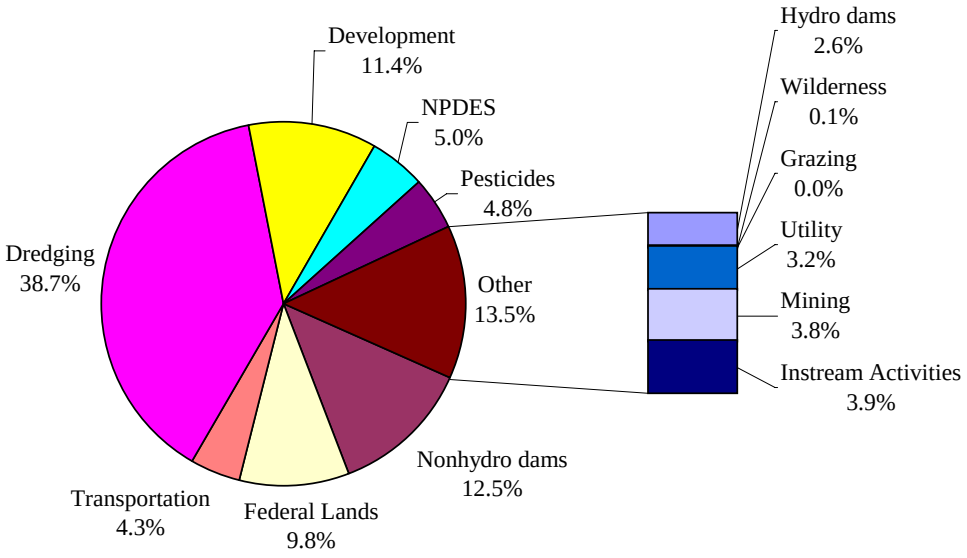
For this ESU, the analysis covers 36 watersheds, averaging 142.5 square miles in size and ranging from 53.3 to 315.2 square miles. The estimated total population for all watersheds in this ESU is 1,857,563 and the estimated total personal income is $56,623,752,000.

5.4.11.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$24,437,129	$277,009,402
	Mid-range	$16,481,661	$186,829,441
	Low	$8,526,194	$96,649,480
3%	High	$24,420,503	$374,214,876
	Mid-range	$16,391,243	$251,176,113
	Low	$8,361,983	$128,137,350

5.4.11.3 Economic Impacts of Individual Activities for the Entire ESU

Upper Willamette River steelhead ESU
Annual Potential Impact = $16,481,661



5.4.11.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$643,082	$312,163	$5,480,862	$2,815	38
	Mid-range	$433,728	$185,430	$3,529,270	$1,454	
	Low	$224,374	$110,493	$1,577,678	$93	
3%	High	$642,645	$305,004	$5,508,711	$2,815	
	Mid-range	$431,348	$183,999	$3,536,035	$1,454	
	Low	$220,052	$108,772	$1,563,360	$93	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$7,289,721	$3,538,559	$62,128,830	$31,904	38
	Mid-range	$4,916,564	$2,101,964	$40,006,373	$16,482	
	Low	$2,543,407	$1,252,499	$17,883,916	$1,059	
3%	High	$9,847,760	$4,673,823	$84,414,375	$43,130	
	Mid-range	$6,609,898	$2,819,557	$54,185,492	$22,281	
	Low	$3,372,036	$1,666,805	$23,956,610	$1,432	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	13	10	9	4	2
	Mid-range	20	7	9	1	1
	Low	26	8	3	1	0
3%	High	13	10	9	4	2
	Mid-range	20	7	9	1	1
	Low	26	9	2	1	0

5.4.12 Middle Columbia River steelhead ESU

5.4.12.1 Watershed Characteristics

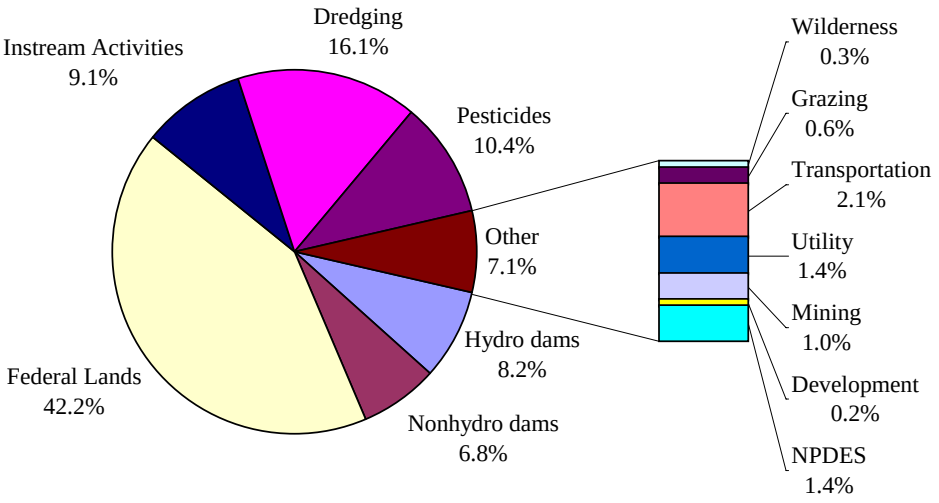
For this ESU, the analysis covers 114 watersheds, averaging 220.1 square miles in size and ranging from 58.4 to 849.8 square miles. The estimated total population for all watersheds in this ESU is 617,838 and the estimated total personal income is $14,192,698,000.

5.4.12.2 Economic Impacts of Critical Habitat Designation for the Entire ESU

Case		Annual Total Impact	Present Value over 20 years
7%	High	$57,644,299	$653,432,441
	Mid-range	$43,873,890	$497,336,655
	Low	$30,102,391	$341,228,523
3%	High	$56,407,209	$864,372,739
	Mid-range	$42,711,282	$654,499,110
	Low	$29,014,671	$444,614,994

5.4.12.3 Economic Impacts of Individual Activities for the Entire ESU

Middle Columbia River steelhead ESU
Annual Potential Impact = $43,873,890



5.4.12.4 Economic Impacts at the Watershed Level

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$505,652	$263,296	$3,808,845	$2,237	114
	Mid-range	$384,859	$201,580	$2,402,363	$1,408	
	Low	$264,056	$149,328	$2,118,441	$6	
3%	High	$494,800	$264,344	$3,803,117	$2,237	
	Mid-range	$374,660	$202,354	$2,396,636	$1,408	
	Low	$254,515	$147,512	$1,478,726	$6	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$5,731,864	$2,984,622	$43,175,522	$25,352	114
	Mid-range	$4,362,602	$2,285,025	$27,232,218	$15,959	
	Low	$2,993,233	$1,692,726	$24,013,787	$70	
3%	High	$7,582,217	$4,050,756	$58,278,205	$34,272	
	Mid-range	$5,741,220	$3,100,828	$36,725,566	$21,574	
	Low	$3,900,132	$2,260,451	$22,659,700	$94	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	51	30	18	10	5
	Mid-range	57	31	16	10	0
	Low	66	30	13	5	0
3%	High	51	30	18	10	5
	Mid-range	57	31	16	10	0
	Low	66	30	13	5	0

5.5 Aggregate Impacts for all ESUs

This section presents results for all 12 ESUs combined. We aggregated all watersheds, regardless of the ESU, to gauge the impacts for the entire extent of the 12 critical habitat designations. We have included all watersheds considered in the 4(b)(2) process, whether or not they are excluded from critical habitat designation.

5.5.1 Watershed Characteristics for all ESUs

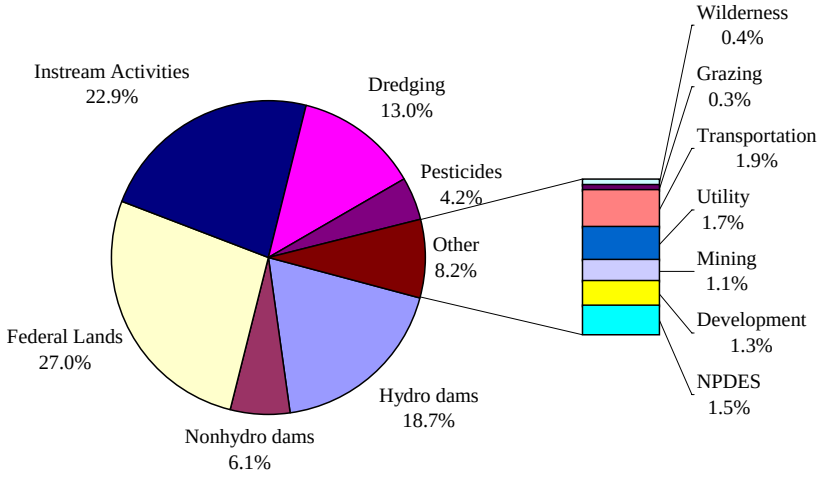
For all 12 ESUs, the analysis covers 609 watersheds, averaging 150.3 square miles in size and ranging from 2.2 to 850.0 square miles. The estimated total population for all watersheds is 7,220,294 and the estimated total personal income is $230,871,219,000.

5.5.2 Economic Impacts of Critical Habitat Designation for all ESUs

Case		Annual Total Impact	Present Value over 20 years
7%	High	$349,394,894	$3,960,599,100
	Mid-range	$243,709,179	$2,762,588,606
	Low	$137,995,677	$1,564,263,144
3%	High	$334,547,297	$5,126,535,575
	Mid-range	$233,834,722	$3,583,236,301
	Low	$133,105,108	$2,039,675,929

5.5.3 Economic Impacts of Individual Activities for all ESUs

All 12 West Coast salmon and steelhead ESUs
Annual Potential Impact = $243,709,276



5.5.4 Economic Impacts at the Watershed Level for all ESUs

Total Potential Annual Impact for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$573,719	$164,166	$23,532,481	$99	609
	Mid-range	$400,179	$131,204	$15,308,987	$88	
	Low	$226,594	$92,239	$7,085,494	$0	
3%	High	$549,339	$164,844	$23,532,481	$70	
	Mid-range	$383,965	$132,533	$15,308,988	$62	
	Low	$218,563	$92,239	$7,085,494	$0	

Present Value of Total Potential Annual Impact over 20 years for Individual Watersheds						
Case		Average	Median	Maximum	Minimum	No. of Watersheds
7%	High	$6,503,447	$1,860,920	$266,754,679	$1,124	609
	Mid-range	$4,536,270	$1,487,280	$173,536,483	$994	
	Low	$2,568,577	$1,045,580	$80,318,288	$0	
3%	High	$8,417,957	$2,526,040	$360,607,018	$1,072	
	Mid-range	$5,883,803	$2,030,905	$234,591,854	$949	
	Low	$3,349,222	$1,413,447	$108,576,690	$1	

Frequency of Annual Potential Total Impacts for Individual Watersheds						
		Annual Potential Total Impact is				
Case		< $200,000	$200,000-$500,000	$500,000-$1,000,000	$1,000,000-$2,500,000	> $2,500,000
7%	High	342	107	81	52	27
	Mid-range	368	112	78	35	16
	Low	418	114	54	21	2
3%	High	343	106	80	50	30
	Mid-range	368	112	78	40	11
	Low	419	115	55	19	1

Section 6
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Appendix A
Estimating Section 7 Impacts and Costs

In this appendix we describe in detail each type of activity (and sub-activity, where applicable) included in the analysis:

- Hydropower dams[8]
- Non-hydropower dams and other water supply structures
- Federal lands management, including grazing (considered separately)
- Transportation projects
- Utility line projects
- Instream activities, including dredging (considered separately)
- EPA NPDES-permitted activities
- Sand & gravel mining
- Residential and commercial development
- Agricultural pesticide applications

In each case, we describe the following:

- The nature of the activity;
- Any potential modifications necessary to comply with section 7 for the protection of West Coast salmon and steelhead;
- The range of costs associated with those modifications;
- The methods for estimating the occurrence of the activity over space and time; and
- the likelihood that an activity will require modification.

We also consider the assumptions and possible errors for our analysis for each type of activity.

Because our data sources for the cost estimates do not constitute a random sample, we do not use an average over the range of estimated costs. Instead, we assume that the endpoints of the range represent the minimum and maximum values of a symmetric cost distribution, and use the midpoint of the range (the mid-range) as the representative cost estimate.

Below, we first discuss the method used for obtaining estimates of the annual expected modification cost. We then discuss the application of this method to each activity type. Finally, we present a summary table for all activity types.

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8. The Federal Columbia River Power System (FCRPS) is a system of 31 federally-owned hydropower projects in the Columbia and Snake River basins. The impacts of critical habitat designation and implementation of section 7 of the ESA on the FCRPS are included in this analysis but treated as a separate type of hydropower activity.

A 1. Method for estimating annual expected modification costs

The cost of modifying an activity can be viewed in one of two ways, depending on the nature of the activity. Some activities take the form of a flow, in that a certain level of the activity takes place every year. The activities analyzed in this report that fall into this category are hydropower dam operations, non-hydropower dam and water supply structure operations, federal lands (non-wilderness and wilderness) management, transportation projects, utility line projects, instream projects, dredging, and agricultural pesticide applications. Because we do not have year-specific estimates of the levels of these activities, we assume our level estimates are representative of the uniform annual level for the near-term future. We also assume in most cases that the costs of modifying these types of activities are borne in one year (exceptions are noted in the individual sections below). These assumptions produce a straightforward formula for estimating the annual expected modification cost, namely, the per-project modification cost weighted by the probabilities of modification and consultation.[9]

The other activities – hydropower dam capital and programmatic modifications, non-hydropower dam and water supply structure capital and programmatic modifications, grazing, NPDES-permitted activities, and mining – take the form of a stock, in that a certain number of activity sites are estimated to exist in a particular watershed. Modifications that are the likely result of a section 7 consultation are then viewed as a capital improvement to the site. Capital expenditures are either amortized over an appropriate period or staged over a number of years, and other costs such as maintenance are included where appropriate. For these activities, the estimated modification cost involves a present value calculation. Transforming this cost into an annual expected modification cost then involves two steps. First, the cost is either weighted by the probabilities of consultation and modification in a certain year for an appropriate forecast period, or assigned a certain cost for a particular year if the activity is tied to a date as in the case of FERC relicensing. The expected cost is then discounted and annualized.

The following sections discusses these calculations in more formal detail.

1) **Modification cost stream**
If a project undergoes a consultation and consequently needs to be modified to comply with section 7, we assume that the expenditures on those modifications begin in the year of the consultation, t_c, and continue for τ additional years. This gives a stream of expenditures or costs, $\{C_0, \ldots, C_\tau\}$. In most cases, we assume $\tau = 0$ – that is, the costs are incurred in a single year. In other cases, costs may consist of capital costs that occur in the first year and O&M costs that occur in subsequent years. In still others, the costs may be capital costs that are spread out over a number of years.

2) **Forecast period for consultation**
This is the period over which we specify probability distributions for the possibility that a consultation will take place and the possibility that a project will subsequently need to be modified to comply with section 7. The length of the forecast period, T, is determined by one or both of two

9. As derived more formally below, a change in the discount rate therefore has no effect on the expected annual modification costs for these activities.

factors: the nature of the activity (e.g., FERC-licensed dams) and the nature of the data. In some cases, we used judgment to set this period.

3) **Probability of project modifications during the forecast period**
This probability has two components:

1) The probability, p_t, that consultation will occur in year t, where $0 \leq t \leq T$.
2) The probability, p_M, that consultation will result in a requirement to modify the project.

We assume that p_M is independent of t, and so the probability of project modifications beginning in year t is $p_M p_t$.

Using these three components, our calculation of the annual expected modification cost proceeds as follows:

Step 1: Calculate the present value of the cost stream
We take the stream of costs, $\{C_i\}$, and calculate its present value, using the discount rate, r :

(1)
$$PV_C = \sum_{i=0}^{\tau} \frac{C_i}{(1+r)^i}$$

PV_C is the estimated present value of costs incurred if modifications are required.

Step 2: Calculate the expected value of costs over the forecast period
We apply the probabilities of consultation and modification in year t to the present value of costs to get the expected value of costs for year t, $EC_t = p_t p_M PV_C$. We then calculate the present value of this expected cost, PV_{EC}, over the forecast period, using the discount rate, r :

(2)
$$\begin{aligned} PV_{EC} &= \sum_{t=0}^{T} \frac{EC_t}{(1+r)^t} \\ &= \sum_{t=0}^{T} \frac{p_t p_M PV_C}{(1+r)^t} \end{aligned}$$

Step 3: Annualization of PV_{EC}
Because T varies across activities, we express modification costs as an annual expected value, AEV_C, using the standard formula for annualization:

(3) $$AEV_C = PV_{EC}\left[\frac{r}{1-(1+r)^{-T}}\right]$$

In general, AEV_C depends on the discount rate, r, in a complex way, as r affects both the annualization and the embedded present value of costs, PV_C.

If p_t is uniformly distributed throughout the forecast period, however, p_t = 1/T. In that case, $p_t\, p_M\, PV_C = (p_M\, PV_C)$/T, which is constant over time. For this special case, we therefore have

(4) $$\boldsymbol{AEV_C = p_M\, PV_C\, /\, \mathrm{T}.}$$

Moreover, if expenditures only occur in the first year, then $PV_C = C_0$, which is independent of the discount rate. In this case, $AEV_C = p_M\, C_0$ will also be independent of the discount rate.

We use AEV_C to express the cost of section 7 impacts. In Section 5 of the report, we project this annual value over a 20-year period to give a picture of the present value of the costs, but the annual value is the most accurate estimate, given the wide range in forecast periods.

An important assumption embedded in this method is that AEV_C is independent of the area or extent of the critical habitat designation. This is equivalent to assuming that the cumulative impacts of critical habitat designation do not affect the per-unit costs of modifying an activity. If this assumption is violated, the number (and order) of watersheds designated will affect the assessment of a given watershed's impacts.[10]

This possibility raises a difficult analytical issue. If cumulative impacts are present, the analysis should then be conducted either as a series of individual watershed designations with a fixed order, or more generally as a combination of watersheds, ranging over all possibility combinations. Even if data exists on cumulative effects, the possible combinations become intractable for ESUs with more than a small number of watersheds .[11]

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10. If n watersheds have been designated, using a given set of per-unit costs, and the designation of the $n+1$ watershed raises the per-unit costs, the costs used to evaluate the nth and previous watersheds are not accurate. Evaluating the cost of designating the $n+1^{th}$ watershed, then, depends on and how many and which watersheds have been designated previously.

11. The number of possible designations, where each individual watershed cycles between included and excluded, increases exponentially as the number of watersheds increases. For example, the Hood Canal summer-run chum salmon ESU has 17 individual areas under consideration, which produces over 130,000 possible combinations; the Puget Sound chinook salmon ESU, with 80 watersheds, has 1.2×10^{24} possible combinations; and the Snake River Basin steelhead ESU, with 287 watersheds, has 2.5×10^{86} possible combinations.

Although there is no evidence that cumulative impacts are present and significant, we note that the assumption they are absent introduces a potential error in the results. If the assumption is violated, the estimates we use are biased downward, in that the cumulative impacts would likely increase the cost of critical habitat designation above the levels we estimate.

A 2. Hydropower Dams

A 2.1 Overview

- This analysis assesses impacts to hydropower projects that may result from future section 7 implementation for West Coast salmon and steelhead within a watershed. Hydropower-related activities include operations, maintenance, construction and deconstruction of hydropower facilities including licensing/relicensing, modifications to infrastructure, changes in operation, and removal of dams. A review of recent consultation history shows that approximately five percent of section 7 consultations in the Northwest Region for West Coast salmon and steelhead are conducted on various hydropower-related activities.

- This analysis assigns a per-project cost estimate based on the likely suite of capital modifications and programmatic expenses that may be required in order to comply with the Endangered Species Act (ESA) for West Coast salmon and steelhead. The primary modifications we analyzed are construction or improvements to fish passage facilities and programs; research and monitoring of water quality and fish passage efficiency; and offsite mitigation, such as land purchases for the purpose of conservation. While data regarding anticipated costs stemming from changes in flow regime for particular projects are presented, this category of costs is not integrated with the impact assessment due to the uncertainty surrounding the potential magnitude of costs and the difficulty of attributing these costs to the designation of a particular watershed as critical habitat.

- Where information is available on the likely project modifications recommended for a particular project, the anticipated costs are assigned to that dam. For all other projects, annualized expected costs of project modification are assigned according to two project attributes: (1) size of project based on level of installed capacity; and (2) status of fish passage provisions. The following are the per-project costs of modifications associated with the various types of hydropower projects:

  - Installed capacity of less than five megawatts (MW): $2.1 million[12] ($24,000 - $4.2 million)
  - Installed capacity between five and 20 MW: $5.76 million ($0 - $11.5 million)
  - Installed capacity of greater than 20 MW; Fish passage provisions may be required: $73.85 million ($11.5 to $136.0 million)
  - Installed capacity of greater than 20 MW; Fish passage provisions are already present: $45.23 million ($11.5 to $79.1 million)
  - Installed capacity unknown: $7.53 million ($0 to $136.0 million)[13]

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12. We assume these projects have a ten percent likelihood of bearing these costs due to consultation.

13. The mid-range estimate is estimated by summing the product of the estimated probability that a dam with an unknown capacity could belong to one of the known capacity categories and the mid-

- Dam removal costs: $24,000,000[14]

- While costs were estimated for FCRPS projects, cost estimates were not assigned to individual watersheds.

- For FERC-licensed dams, section 7 consultation and subsequent project modification are anticipated to begin concurrent with the expiration of the current FERC license, or, in the absence of that information, we assume consultation will be initiated within the next 30 years based on the fact that FERC licenses typically last 30 to 50 years. This analysis assumes that consultation for each Federal project will occur sometime within the next 10 years. For small projects, we assume consultation has a ten percent chance of occurring at some point over the next 20 years. For the majority of hydropower projects, the costs of project modifications are assumed to be incurred uniformly over a ten year time period beginning in the year of section 7 consultation.

A 2.2 Background

Hydropower activities account for a relatively small percentage of section 7 consultations regarding West Coast salmon and steelhead in the past. The consultations that have occurred, however, have at times been controversial and costly. For example, consultation regarding review of the Federal Columbia River Power System (FCRPS) operations occurs on a five year schedule. The 2000 Biological Opinion on the FCRPS has been the subject of litigation challenging the adequacy of the project modification recommendations to provide for West Coast salmon and steelhead.[15]

Hydropower activities that generate consultation regarding West Coast salmon and steelhead include licensing or relicensing of projects, review of operations plans, construction of new projects, modifications to structures of dams (e.g., installation of fish passage facilities), changes in operations (e.g., change in flow regime), and removal of dams. The major Federal agencies responsible for hydropower activities in the areas under consideration are the Federal Energy Regulatory Commission (FERC), U.S. Army Corps of Engineers (USACE), the U.S. Bureau of Reclamation (USBR) and the Bonneville Power Administration (BPA). FERC issues licenses for privately owned hydropower projects and these licenses are valid for between 30 and 50 years depending on the extent of proposed new development or environmental mitigation and enhancement measures. The USACE and USBR also own and/or operate hydropower projects within the watersheds covered in this proceeding. A collaborative group comprised of the BPA, USACE, and USBR oversees operations of the 31 multipurpose dams of the FCRPS. While there is no formal procedure for

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range cost estimate for the appropriate capacity category.

14. We do not have a range of costs for dam removals.

15. National Wildlife Fed'n, et al. v. Nat'l Marine Fisheries Serv., et al., 254 F. Supp.2d 1196 (W.D.Wa. 2003) (finding the no-jeopardy conclusion in the 2000 biological opinion to be arbitrary and capricious); National Wildlife Federation, et al., and Oregon v. National Marine Fisheries Service, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation, CV 01-640-RE (Lead Case), and Columbia Snake River Irrigators Association and Eastern Oregon Irrigators Association v.Gutierrez, NOAA Fisheries and Lohn, CV 05-23-RE (Consolidated Cases) (finding the no-jeopardy conclusion in the 2004 biological opinion to be arbitrary and capricious).

regular review of Federally-operated projects, any change in operations or existing infrastructure may generate consultation regarding the impact to West Coast salmon and steelhead.

Multiple hydropower-related Federal and State regulations provide protection to West Coast salmon and steelhead. Specifically, section 10(j) of the Federal Power Act (FPA) was promulgated to ensure that FERC considers both power and non-power resources during the licensing process.[16] Further, section 18 of the FPA states that FERC shall require the construction, operation, and maintenance by a licensee at its own expense of a fishway if prescribed by the Secretaries of Interior (delegated to the FWS) and Commerce (NOAA Fisheries). The Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act) also incorporates a Fish and Wildlife Program directing the Northwest Power and Conservation Council to adopt programs to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, on the Columbia River system. BPA resources are utilized through this plan to mitigate and enhance fish and wildlife and habitat affected by the development and operation of hydroelectric projects in the Columbia River and it tributaries.[17]

Reasonable and prudent alternatives (RPAs) recommended through consultation regarding hydropower projects may be broadly divided into three major categories: capital, programmatic, and operational. Capital modifications involve direct investment in new or improved infrastructure, and require additional investment for regular operation and maintenance.[18] Programmatic changes include all other types of modification including monitoring of fish passage efficiency and water quality, data collection and research, operation of fish hatcheries, predator control, habitat improvements or restoration, and purchase of land and water rights.[19] Operational changes include changes in hydropower production level or method, and may be engendered by modification to flow regime.[20] For the purposes of the remainder of our discussion, we group the first two categories together.

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16. Federal Power Act, 16 U.S.C. § 803(j) (1986).

17. Pacific Northwest Electric Power Planning and Conservation Act, 16 U.S.C. §§ 839-839h.

18. From a review of historical section 7 consultations regarding hydropower activities, capital modifications include: constructing and maintaining fish passage facilities (including ladders and screens where applicable); collection and transport of fish at particular sites; installing improved juvenile sampling facilities, surface bypass collectors, and/or spillway weirs.

19. Programmatic changes from a review of a number of historical section 7 consultations include: implementing or improving capture and release programs (e.g., enlarging transport barge exits); monitoring, evaluation, and research programs; gas abatement programs; participation in research initiatives (e.g., investigating bypass improvement methods); managing riparian vegetation; controlling erosion and sediment; implementing timing constraints on instream construction; and increased pollution control standards.

20. From a review of historical section 7 consultations regarding hydropower activities, recommended operational changes include: improve and manage flows through additional flow augmentation; reduce flow diversions; provide spill to increase fish passage efficiency; operate pools within a specified range; operate turbines within a specified range of efficiency; shut down turbines seasonally; draw down reservoirs; and implement restrictions on ramping rates.

A 2.3 Cost Assessment

We use the current operations and existing structures of projects as a baseline for assessing the costs of modifications. Costs of RPAs for specific dams that have been recommended and implemented through past consultations are therefore not included as costs of section 7 implementation. This base case establishes the level of modification to existing operations and facilities that may be recommended through section 7 consultation in the future. Cost estimates for RPAs likely to be imposed in the future are based on a review of past economic studies, surveys of hydropower project operators, and available industry expenditure data.

Capital and programmatic costs

We estimated the potential costs of project modifications for almost 300 hydropower projects in California, Idaho, Oregon, and Washington. As part of this effort, utility companies and Public Utility Districts (PUDs) were contacted regarding the costs of anticipated project modifications to comply with the ESA for West Coast salmon and steelhead. Where project-specific costs were available from these contacts (17 projects in the Northwest Region), we used these figures in the analysis. Total per-project costs for these projects range from approximately $162 thousand to $136 million. As discussed below (separately), the FCRPS also has ample information on project modifications but these modifications are a mixture of section 7 implementation and other, major conservation measures.

Five hydropower projects within the watersheds covered by this proceeding are currently slated for removal. These projects are anticipated to bear a one time cost of $24 million in capital costs of deconstruction ($18 million) and land donation ($6 million).[21]

For other projects, where we do not have information on the specific per-project costs associated with section 7 implementation, we determined the likely suite of project modifications that may be recommended based on review of historical consultations. We aggregated the costs associated with these project modifications to determine potential ranges in total cost associated with section 7 implementation. To refine these estimates, we divided hydropower projects into six cost categories based on their relative level of power generation, and status of fish passage provisions.

For the majority of projects, we assume the costs of project modifications are incurred uniformly over a ten year time period beginning in the year of potential section 7 consultation. There are four exceptions: (1) dam removal costs are anticipated to occur in a single year, the year of decommissioning and deconstruction; (2) costs associated with small projects are assumed to occur in one year to be consistent with the treatment of non-hydropower dams; and (3) project modification costs associated with 11 of the projects employ a specific cost allocation formula provided by the project owners.[22] The present value of the cost estimates for each category is described in Table A-1.

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21. Based on anticipated costs of dam decommissioning and removal of the Sandy River Project from an interview with Portland General Electric (2003).

22. For these projects, four percent of costs occur each year for 2004 through 2018, two percent of costs occur each year from 2019 through 2033, and 0.5 percent of costs each year from 2034 through 2053, survey of Portland General Electric, December 2003.

Operational costs

Whether or not flow regime changes are necessary for West Coast salmon and steelhead at a particular project, and the level and method of change required, is determined on a case-by-case basis. Historically, while economic impacts associated with changes to flow regimes to accommodate West Coast salmon and steelhead (or their habitat) have been substantial, these impacts may vary by orders of magnitude depending upon the particular hydropower project and specific flow regime recommendation. If direct spill is requested, spilled water no longer passes through the turbines and therefore cannot be used to generate electricity. This may result in losses in profits to producers and/or welfare impacts to power consumers resulting from replacing lost electricity production with more expensive energy sources (for example, coal or gas turbine generation). Alternatively, seasonal changes to flow through turbines may be requested. While this water may still pass through the turbines, demand for power varies seasonally, thus the value of power changes throughout the year. To the extent that flow change recommendations require water to be passed at times of the year when it is less valuable, there may be an associated economic cost.

Estimating impacts prospectively at a specific project is possible if the following key pieces of information are available:

- **Site-specific instream minimum flow requirements for West Coast salmon and steelhead**. Minimum instream flow requirements for West Coast salmon and steelhead are needed to identify sites that are likely to lack sufficient stream flow for conservation. This information is also helpful in determining the incremental amount of water needed from upstream dams to increase flows downstream.
- **Method of augmenting or changing flows at specific projects**. The type and method of implementation for specified flow augmentation levels depends on the causative factor of the recommendation and the adaptability of the project. To determine how a hydropower project may be affected, specific information is needed on the type of operation changes being requested, for example, whether additional flow needed downstream or fish passage through the turbines is the primary concern. In the case of the former, additional cubic feet per second (cfs) of flow may be requested; in the case of the latter, direct spill over of the dam may be requested to reduce the risk of fatality associated with passage through the turbines.
- **Project-specific operational models**. The marginal impact of implementing changes in flow regime varies by project; that is, the unit change in power generation resulting from a unit change in flow is not uniform across projects. Further, replacement costs of lost or displaced power production depends on the operations of each project subject to modification. For example, replacing power generated by peaking projects (i.e., projects that produce hydropower during periods of highest demand) is more expensive than replacing base power production. Hydropower project operators typically develop an operations model that may calculate the change in power generation associated with a particular change in flow. These models may estimate both energy generation and dependable capacity impacts of the flow restrictions, by computing both annual energy and peak capacity availability for the facility both "without" and "with" West Coast salmon and steelhead conservation activities.

Power generation is a function of multiple parameters related to the specific infrastructure characteristics of the dam and the hydrology of the river system. In the case that these data were available for all projects within the region, the modeling of impacts would be possible, though massive and complex. For hydraulically-coupled dam systems like the FCRPS, however, the estimation of impacts is possible only by developing a dynamic, regional hydrological model. Flow changes implemented at upstream dams will affect the level of flow change necessary for salmon and steelhead conservation at downstream projects. Importantly, this means that even impoundments located outside of the proposed critical habitat may affect flow within the designation and therefore may require modification to operations. Because the same water flows through each of these projects, attributing the impacts of changes in operation of any one critical habitat area is complicated, if not impossible.

Until a hydropower project operation is reviewed, then, the type and level of flow changes necessary and feasible for species and habitat protection is speculative, and so the data needed to estimate these impacts are not available. For this reason, we cannot attribute estimates for flow regime changes to specific projects and therefore to specific watersheds. Data are available for a few, larger hydropower projects, however, and present them in Table 2. We use these data to illustrate the potential magnitude of these costs at the aggregate level of all 12 ESUs.

Table A-1 Estimated Costs of Project Modifications for Hydropower Dams			
Project Category (# of dams)	**Installed Capacity of Project (MW)**	**Status of Fish Passage**	**Estimated Per-Project Costs of Modifications**
1 (231 dams)	less than 5	N/A	**Present Value of Cost: $2.1 million ($24,000 - $4.2 million)** According to FERC guidelines, hydroelectric projects with an installed capacity of less than five megawatts (MW) may be exempted from the licensing process.[c] Because these projects are not currently generating power, or are generating power in small amounts, estimated costs are based on the project modification costs of non-hydropower dams, which are anticipated to range between from $24,000 to approximately $4.2 million. Each of these projects is assigned a ten percent probability of incurring these costs sometime during the next twenty years.
2 (24 dams)	between 5 and 20	N/A	**Present Value of Cost: $5.75 million ($0 to $11.5 million)** The high-end of this estimate comprises: - capital costs, such as facilities improvements, of $8 million; - species surveys at $2,600 per year for ten years; - research on species survival and passage efficiency at $150,000 per year for ten years; and - water quality monitoring at $200,000 per year for ten years. The low end is for a project where no modifications are required.

Table A-1 Estimated Costs of Project Modifications for Hydropower Dams			
Project Category (# of dams)	**Installed Capacity of Project (MW)**	**Status of Fish Passage**	**Estimated Per-Project Costs of Modifications**
3 (10 dams)	greater than 20	none	**Present Value of Cost: $73.75 million ($11.5 - $136.0 million)** The low end of the range includes: - Species surveys at $2,600 per year for ten years (BPA 1992); - Capital costs, such as facilities improvements, of $8 million, from a survey of 17 hydropower projects in the Northwest United States; - Research on species survival and passage efficiency at $150,000 per year for ten years (Huppert et. al. 1996); and - Water quality monitoring at $200,000 per year for ten years (Huppert et. al. 1996). The high-end of the cost range is the high-end for project modifications to a hydropower project from a December 2003 survey of utility companies and Public Utility Districts in the Pacific Northwest. The estimate includes annual costs of fish-related operations (hatchery and spawning operations, predator control studies, fish ladders and operations, fish survival studies, etc.), fish-related maintenance (fish ladder and bypass maintenance), and associated debt services (surface collector, diversion screens juvenile fish bypass system, etc.) projected over ten years. Not included is the market value of lost power generation as a result of modifications to project operation.
4 (8 dams)	greater than 20	present or not needed	**Present Value of Cost: $45.3 million ($11.5 - $79.1 million)** Where passage facilities were determined to be present or not required, the average costs of related operations and maintenance of these facilities was removed from the high-end estimate in the cost range (i.e., high-end estimate of $136 million less approximately $57 million over ten years of fish passage-related costs) These costs originate from a December 2003 survey of utility companies and Public Utility Districts in the Pacific Northwest.[b]

Table A-1
Estimated Costs of Project Modifications for Hydropower Dams

Project Category (# of dams)	Installed Capacity of Project (MW)	Status of Fish Passage	Estimated Per-Project Costs of Modifications
5 (16 dams)	greater than 20	unknown	**Present Value of Cost: $56.4 million ($11.5 - $136 million)** In the absence of information regarding the presence of fish passage (as is common for the California hydro projects), this estimate reflects the probability of the presence of fish passage based on data from the Northwest Region. In the Northwest, approximately 61 percent of projects with installed capacities greater than 20 MW currently have or do not require fish passage facilities, and 39 percent either do not have facilities or the status is unknown.
6 (35 dams)	unknown	unknown	**Present Value of Cost: $7.53 million ($0 to $136.0 million)** Where installed capacity is unknown, the cost estimate reflects the likelihood of the project having various levels of installed capacity, based on the data from the Northwest, as well as the likelihood that the project will need modifications (10% for projects with installed capacity less than 5MW). In the Northwest region, 81.2% of dams have i.c. of less than 5MW, 6.4% have i.c. between 5 and 20, and 12.4% have i.c. greater than 20MW. These probabilities were applied to the mid-range estimates above to arrive at this cost estimate.

[a] Data on installed capacity of projects and status of fish passage is from the Pacific Northwest Hydropower Database and Analysis System.
[b] The recommendation to install or improve a fish ladder may be brought about through consultation under section 7 of the ESA or through the Federal Power Act. This analysis quantifies the cost of this modification as coextensive with the designation of critical habitat, although in the absence of the designation, the FPA may obligate construction of an adequate fishway.
[c] FERC (2001).

Table A-2 Costs of Fish & Wildlife Modifications to Major (non-FCRPS) Hydropower Dams			
		Annual Fish & Wildlife Costs	
Dam	**River**	**Capital and Programmatic**	**Forgone Power Revenues**
1. Ariel Dam (Lake Merwin)	Lewis River	$7,729	$0
2. Baker River	Baker River	$11,749,000	$1,925,900
3. Faraday Dam	Clackamas River	$339,046	$0
4. Oak Grove (Timothy Lake)	Clackamas River, Oak Grove Fork	$339,046	Unknown
5. Priest Rapids	Columbia River	Unknown	$31,550,547
6. Oregon City (Smurfit)	Willamette River	$101,714	Unknown
7. Pelton Dam	Deschutes River	$1,281,593	Unknown
8. Pelton Reregulating Dam	Deschutes River	$244,113	Unknown
9. River Mill	Clackamas River	$339,046	Unknown
10. Rock Island	Columbia River	$427,668	$9,069,365
11. Rocky Reach	Columbia River	$6,476,778	$7,601,885
12. Round Butte Dam	Deschutes River	$1,525,706	Unknown
13. Swift No 1	Lewis River	$7,729	$0
14. Swift No 2	Lewis River	$7,729	$0
15. T W Sullivan (PGE)	Willamette River	$101,714	$0
16. West Linn (Simpson)	Willamette River	$101,714	$0
17. Yale Dam	Lewis River	$7,729	
Total for 17 Dams (known costs)		$23,058,054	$50,147,697

Sources

1. Communication with Pacificorps, November & December 2003. Estimate includes cost of fish collection and transport over 10 years
2. Puget Sound Energy, 2004. Baker River Hydroelectric Project, FERC No. 2150, Application for New License, Major Project—Existing Dam, Volume I, Part 1 of 2, Exhibits A, B, C, D and H, 18 CFR, Part 4, Subpart F, Section 4.51.
3. Communication with Portland General Electric (PGE), November & December, 2003. Costs include changes to facilities and mitigation costs, 4% of costs each year for 2004-2018, 2% of costs each year from 2019-2033, and 0.5% of costs each year from 2034-2053. Through a phone interview, PGE assumed that there would be no lost energy production at Faraday associated with salmon conservation.
4. Same as 3. Through a phone interview, PGE offered that to estimate energy losses, one could "assume that the ESA will force" a 15% reduction in energy reduction at Oak Grove

Table A-2 Costs of Fish & Wildlife Modifications to Major (non-FCRPS) Hydropower Dams
Dam. Average annual generation is 29 aMW. This was also assumed to be an underestimate as it does not consider any lost capacity at the project. 5. FERC Reports from Grant County PUD received through communication with Grant County PUD, November 2003. 6. Same as 3. 7. Same as 3. 8. Same as 3. 9. Same as 3. 10. Communication with Chelan County PUD, February 2004. Power revenue cost estimate is average annual market value of lost power generation due to fish spill implementation from 1998 through 2002 ($2004). 11. Communication with Chelan County PUD, February 2004. Cost impact estimate is average annual market value of lost power generation due to fish spill implementation from 1998 through 2002 ($2004). 12. Same as 3. 13. Cost estimate from communication with Pacificorps in December 2003. Estimate includes cost of fish collection and transport over 10 years. Swift No1, Swift No 2, Yale Dam and Ariel Dam are four hydropower dams of Pacificorps' Lewis River hydro projects. In a November 2003 phone interview, Pacificorps noted that ESA compliance associated with these projects was about $4.8 million and included purchase of lands to protect anadromous salmon, and fish collection and transport (annual costs through license period). Pacificorps specifically stated that there were no operational impacts, e.g., lost generation. 14. Same as 13. 15. Same as 3. 16. Same as 3. 17. Same as 13.

The Federal Columbia River Power System (FCRPS)

Projects belonging to the FCRPS comprise a unique type of hydropower activity, both in scale and in the extent to which the projects are hydraulically-coupled. Of the 31 FCRPS hydropower projects, 22 fall within the boundaries of the potential critical habitat for West Coast salmon and steelhead, but all projects may adversely affect that habitat through their operations (USBR et al. 2003). The implementation of section 7 for the 12 West Coast salmon and steelhead ESUs under consideration has had significant impacts on the FCRPS, both in terms of capital structures and operations.[23] Attributing these impacts to the designation of critical habitat for a particular watershed, however, is problematic for at least three reasons. Table A-3 presents these expenses over the period 1995-2004; Table A-4 gives projections for the period 2007-2009.

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23. Section 7 of the ESA was first applied to the FCRPS in 1995, which predates the listing of the 12 ESUs under consideration. The ESUs covered in that biological opinion were Snake River sockeye salmon, Snake River spring/summer chinook salmon, and Snake River fall chinook salmon.

Table A-3 Bonneville Power Administration (BPA) Fish & Wildlife Costs for the FCRPS, 1995 - 2004[1]						
	Fiscal Year					
Cost Element	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Capital Investments[2]						
BPA Fish and Wildlife	$38.2	$30.0	$32.0	$24.8	$16.3	$15.1
Associated Projects (Federal Hydro)	$46.2	$52.1	($48.5)	$0.0	$15.6	$50.9
Total Capital Investments	$84.5	$82.1	($16.5)	$24.8	$31.9	$66.0
Program Expenses						
BPA Direct Fish & Wildlife Program	$84.0	$79.1	$93.6	$118.1	$119.9	$117.3
Supplemental Mitigation Program Expenses[3]	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Lower Snake River Hatcheries (O&M)	$14.9	$13.3	$13.4	$12.8	$14.4	$13.4
Corps of Engineers (O&M)	$20.9	$21.0	$21.5	$20.8	$22.1	$21.4
Bureau of Reclamation (O&M)	$1.5	$1.7	$1.7	$3.0	$2.9	$2.0
Other (NW Power and Conservation Council)	$5.1	$4.9	$4.2	$4.2	$3.8	$4.0
Program Related Fixed Expenses[4]	$74.8	$84.4	$86.9	$83.4	$84.3	$82.7
Total Program Expenses	$201.3	$204.5	$221.3	$242.4	$247.4	$240.7
Forgone Revenues and Power Purchases						
Foregone Revenues	$8.4	$94.4	$122.7	$131.1	$219.2	$209.3
Power Purchases For Fish Enhancement	$74.7			$6.1	$52.8	$70.2
Total Foregone Revenues and Power Purchases	$83.1	$94.4	$122.7	$137.2	$272.0	$279.5
Total Program Expenses, Foregone Revenues, & Power Purchases[5]	$284.4	$298.8	$344.0	$379.6	$519.4	$520.2

Table A-3, continued
Bonneville Power Administration (BPA) Fish & Wildlife Costs for the FCRPS, 1995 - 2004

Cost Element	Fiscal Year costs ($millions)[1]				10-year Ave-rage
	2001	2002	2003	2004	
Capital Investments[2]					
BPA Fish and Wildlife	$17.4	$6.4	$11.9	$8.5	$20.1
Associated Projects (Federal Hydro)	$6.6	$9.2	$70.1	$75.9	$27.8
Total Capital Investments	$24.0	$15.5	$81.9	$84.4	$47.9
Program Expenses					
BPA Direct Fish & Wildlife Program	$106.9	$142.8	$144.1	$137.9	$114.4
Supplemental Mitigation Program Expenses[3]	$3.1	$7.4	$6.7	$7.8	$6.2
Lower Snake River Hatcheries (O&M)	$13.4	$15.5	$15.5	$17.3	$14.4
Corps of Engineers (O&M)	$24.4	$29.4	$31.0	$32.3	$24.5
Bureau of Reclamation (O&M)	$3.2	$4.0	$3.2	$3.9	$2.7
Other (NW Power and Conservation Council)	$3.9	$4.2	$4.1	$3.7	$4.2
Program Related Fixed Expenses[4]	$82.7	$58.9	$58.1	$85.4	$78.2
Total Program Expenses	$237.6	$262.1	$262.7	$288.3	$240.8
Forgone Revenues and Power Purchases					
Foregone Revenues	$122.5	$13.1	$81.1	$21.7	$102.4
Power Purchases For Fish Enhancement	$1,469.2	$153.9	$175.2	$191.0	$219.3
Total Foregone Revenues and Power Purchases	$1,591.7	$167.1	$256.4	$212.7	$321.7
Total Program Expenses, Foregone Revenues, & Power Purchases[5]	$1,829.3	$429.2	$519.1	$501.0	$562.5

[1]Costs are in 2004 dollars.
[2]Capital Investments include both BPA's direct Fish and Wildlife Program capital investments, funded by BPA's Treasury borrowing, and "Associated Projects", which include capital investments at Corps of Engineers' and Bureau of Reclamation projects, funded by appropriations and repaid by BPA. The negative amount in FY 1997 reflects a decision to reverse "plant-in-service" investment that was never actually placed into service. The annual expenses associated with these investments are included in "Program-Related Fixed Expenses", below.
[3]Includes High Priority and Action Plan Expenses and other supplemental programs including the BPA Power Business Line's contribution to Pikeminnow reward program.
[4]"Fixed Expenses" include depreciation and interest on investment on the Corps of Engineers' projects, and amortization and interest on the investments associated with BPA's direct Fish and Wildlife Program.
[5]Capital investments are not added to this total because their annual cost is more accurately reflected as an amortization, not an expenditure in a particular fiscal year.
Source: Roger Schiewe, Bonneville Power Administration, personal communication, June 27, 2005.

Table A-4 BPA Fish & Wildlife Projected Costs for the FCRPS, 2007-2009	
Category	**FY2007-2009 Projection ($millions/year)**
Annual Average Hydropower Operations Effects	$356.9
Integrated Fish & Wildlife Program	$139.0
Northwest Power and Conservation Council	$4.6
Lower Snake River Hatcheries (O & M)	$19.8
Corps of Engineers (O & M)	$37.5
Bureau of Reclamation (O & M)	$4.2
Total repayment obligations for current & past F&W investments	$129.6
Total	$691.6
Source: BPA (2005)	

First, NOAA Fisheries implements section 7 for the FCRPS at the system level, in that the agency applies the jeopardy and adverse modification standards to the system as a whole, not to the operation of individual constituent projects within a particular watershed. Because the system spans dozens of watersheds, it is not possible to assign section 7 impacts on a watershed-by-watershed basis.

Second, the FCRPS is operated as an optimized system subject to constraints, where the optimization involves multiple objectives. The impact of section 7 of the ESA is to add a set of constraints on the system's operation. Because the scale of the FCRPS is so large, this constraint cannot be viewed as one imposed on an individual project within a particular watershed. Changing the amount or timing of flow at one dam, for example, will produce changes at other dams as the system is adjusted in light of a new constraint.

Finally, while there is a rich historical record for the FCRPS covering expenditures on conservation projects and the cost of power generation lost or replaced due to conservation measures, this record does not clearly distinguish impacts attributable to the implementation of section 7 from impacts attributable to other conservation measures such as the Northwest Power Act . Moreover, NOAA Fisheries has issued a revised biological opinion covering the FCRPS that is the subject of ongoing

litigation.[24] Thus, identifying past and future modifications for the FCRPS attributable to section 7 implementation is particularly problematic.

For these reasons, we have included historic record of section 7 impacts and other conservation measures on the FCRPS in this analysis, as well as current estimates of near-term future impacts, but we do not apportion these impacts on a watershed-by-watershed basis nor attribute a subset of them to section 7 implementation. Tables A-3 and A-4 present estimates of these impacts (for both types of modifications), giving historical and projected costs borne by the Bonneville Power Administration (BPA).[25]

In many cases, the costs reported in these tables stem from actions taken to support the conservation of fish and wildlife species other than the 12 West Coast salmon and steelhead ESUs under consideration. It is not possible to apportion many of these costs among the various species covered, however. Therefore, the costs in these tables must be viewed as an overestimate of the costs attributable to the conservation of the 12 West Coast salmon and steelhead ESUs. As a result, these impacts are treated as an extreme upper bound for the impacts of section 7 for the designation of critical habitat, but not as an impact of designating a *particular* watershed as critical habitat.

A 2.4 Spatial and Temporal Distribution of Activity

We used latitude and longitude data from the Pacific Northwest Hydrosite Database (Bonneville Power Association) to locate hydropower dams in the Northwest region, augmenting those data with geospatial data from USACE National Inventory of Dams.[26] Although these databases include the FCRPS dams, we did not include them in the analysis of impacts at the watershed level, for the reasons given above.

In order to determine the likely date of consultation for a dam, we made a series of assumptions based on the nature of the federal nexus. For FERC-licensed dams, section 7 consultation and subsequent project modification are anticipated to begin concurrent with the expiration of the current FERC license as part of the relicensing process. Federal dams are not subject to FERC relicensing and, as such, operations may not be reviewed on a standard schedule. This analysis assumes that

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24. National Wildlife Federation, et al., and Oregon v. National Marine Fisheries Service, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation, CV 01-640-RE, and Columbia Snake River Irrigators Association and Eastern Oregon Irrigators Association v.Gutierrez, NOAA Fisheries and Lohn, CV 05-23-RE (FCRPS Biological Opinion Cases).

25. Not included in these estimates is the operational cost of additional spill ordered by the district court in FCRPS Biological Opinion Cases, Order and Opinion, June 10, 2005. The estimated annual cost of this spill ranges between $57 and 81 million (Roger Schiewe, Bonneville Power Administration, personal communication, June 30, 2005). This cost cannot be added to the other estimated costs in Table 4, however, because those estimates are predicated on no such spill taking place.

26. Bonneville Power Administration, The Pacific Northwest Hydropower Database and Analysis System (NWHS); USACE, National Inventory of Dams, accessed at http://crunch.tec.army.mil/nid/webpages/nid.cfm.

consultation for each non-FCRPS Federal project will occur sometime within the next 10 years. We assumed the probability that the consultation will occur in a given year is uniformly distributed through this period (i.e, a consultation has a ten percent probability of occurring in any given year). For small projects (that is, less than 5MW installed capacity), we assumed that consultation has a ten percent chance of occurring at all over the next 20 years (consistent with the treatment of non-hydropower dams), with the annual probability uniformly distributed through this period.

A 2.5 Annual Expected Modification Cost Estimates

Unlike most other activity types, the cost estimates for hydropower dams are a mix of specific cost information for some dams and general estimates for others. Table A-5 illustrates the annual expected modification costs[27] for the general estimates associated with each cost category as described in Table A-1.

Table A-5
Estimated Annual Expected Per-Project Costs for Hydropower Dams

Activity	Sub-activity	Present Value of Costs	Annual Expected Cost
Hydropower Dams	Installed capacity is less than 5MW	$2,120,500	$10,603
	Installed capacity between 5 and 20 MW	$5,750,000	$115,000
	Installed capacity is greater than 20MW; fish passage may be required	$73,850,000	$1,477,000
	Installed capacity is greater than 20MW; fish passage already present or unnecessary	$45,230,000	$904,600
	Installed capacity is greater than 20 MW; fish passage status is unknown	$56,390,000	$1,127,800
	Installed capacity unknown	$7,400,000	$246,667

A 2.6 Assumptions and Potential Errors

Table A-6 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

27. Because 17 projects were assigned project-specific modification cost estimates, those specific estimates are not included in this table, in that they are excluded from the estimation of the typical present value and annual expected costs. Also, the dams slated for removal are also not included in this table, as the date for removal is known in each case. In both cases, the costs are included in the estimated impacts for the corresponding watershed.

Table A-6 Hydropower Dams: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
To estimate the expected start date for future consultation, we employ a combination of methods based upon FERC relicensing schedules, operating review schedules for certain Federal dams, and a 30 year uniform probabilistic distribution of consultation for the remaining dams. In addition, it is assumed that once consultation and modifications commence, related expenditures will occur uniformly over a ten year time frame following consultation. In reality, start dates, duration, and distribution of consultations and modifications across all dams may vary from these assumptions.	+/-
We assume that the level of installed capacity is a key determinant of the level of project modification that may be required in order to meet the requirements of section 7.	+/-
Project modifications recommended in biological opinions are included in this analysis, even if they appear to overlap particular baseline elements, such as fish passage provisions.	+
We assume that each hydropower project will experience an individual consultation. In reality, a consultation may cover more than one project. To the extent that costs of particular project modifications associated with a single consultation may be jointly borne by the project owners, this analysis may overstate its costs.	+
Hydropower projects may be required to provide additional flow for salmon and steelhead and, as a result, may experience economic impacts to the extent that increased flow results in decreased or redistribution of power generation. The likelihood of a particular project being required to provide flow for salmon and steelhead will depend on many factors, including biological significance of the dam project to salmon/steelhead survival and recovery, the seasonality of flow, the economic importance of the dam project, whether there is public concern over the project, and other factors. As a result, costs associated with flow requirements are not included in the estimates of section 7 implementation costs assigned to a particular watershed.	*
To the extent possible, this analysis uses the location of dam infrastructure for the spatial analysis. Certain instances have been identified where dam locations vary across different data sources. The location of every dam in the data layers has not been independently corroborated.	+/-

Table A-6 Hydropower Dams: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
- : May result in an underestimate of real costs + : May result in an overestimate of real costs +/- : Has an unknown effect on estimates * : These costs are not attributable to an individual watershed.	

A 3. Non-hydropower Dams and other Water Supply Activities

A 3.1 Overview

- The analysis examines the impact of section 7 implementation for West Coast salmon and steelhead on both construction and improvement of water supply infrastructure for agricultural and municipal/industrial uses as well as the operation, or flow regime, of non-hydropower dams.

- Approximately three percent of the consultations on West Coast salmon and steelhead over the past four years were associated with water supply activities (not including consultations pertaining to dams with hydropower operations). These water supply activities include flood control activities, pumping plants, water diversions, water intake structures, and fish screen projects.

- Construction and infrastructure improvement projects have been modified in design, scope, maintenance requirements, and/or monitoring requirements as a result of section 7 consultation for West Coast salmon and steelhead. Water project operations have also been modified to make available minimum (sometimes maximum) instream flows for aquatic species.

- Costs of non-hydropower dam capital and programmatic modifications to comply with section 7 requirements are estimated to cost $2.1 million ($24,000 to $4.2 million).

- We assume that all federally regulated non-hydropower dams and dams with large reservoirs (defined as dams in the 90th percentile or higher of reservoir storage capacity) are certain to bear modification costs at some point over the next 20 years. Other non-hydropower dams are assumed to have a ten percent probability of bearing consultation costs over the next 20 years.

- Costs to provide additional water flow or change the flow regime for salmon and/or steelhead are difficult to estimate reliably. Data on water quantity changes attributable to section 7 implementation are too sparse to support an estimation of potential section 7 impacts for the nonhydropower and water supply projects in the area under consideration for critical habitat. There also is no consensus on the flow requirements likely to be recommended in the future. Further, attributing costs to provide flow to a specific watershed is difficult because water supply constraints in one watershed often have effects that are realized throughout the water system.

As a result, this analysis does not integrate costs associated with providing additional flow for salmon into the assessment of section 7 impacts at the watershed level.

A 3.2 Background

Water supply activities captured in this section include actions related to flood control activities, pumping plants, water diversions, water intake structures, and fish screen projects. Generally, Federal agencies, State agencies, regional public agencies, and regional private agencies supply water to end users by means of highly developed water systems consisting of dams and reservoirs, pumping plants, power plants and aqueducts. Agriculture relies on water diversion for irrigation of crops. Municipal suppliers provide water for both commercial and residential use.

Operation of the Federal water projects is subject to section 7 consultation under the ESA. Any water supplier providing water via contract with U.S. Bureau of Reclamation (USBR) or using USBR owned or maintained infrastructure is subject to section 7 consultation under ESA. Projects associated with privately owned diversions may require a Federal permit from USACE under sections 401 or 404 of the Clean Water Act.

Consultations on non-hydropower dams and other water supply activities involved Federal agencies such as the Bureau of Reclamation, U.S. Army Corps of Engineers, Bonneville Power Administration and Natural Resources Conservation Service. Other agencies involved in water supply consultations included the Department of Housing and Urban Development, Bureau of Indian Affairs, National Parks Service, and U.S. Forest Service.

As is the case for hydropower dams, we divide the potential impacts into two categories: capital and programmatic impacts, and operational impacts. The recent historical West Coast salmon and steelhead consultation record suggests that the most common modifications stemming from section 7 implementation are construction or improvement of dams, diversions, and intakes. Infrastructure construction projects have been modified in their design, scope, maintenance requirements, or monitoring requirements in order to comply with section 7 for West Coast salmon and steelhead. In the past, NOAA Fisheries has stipulated that alternative project designs be developed if the proposed design is believed to jeopardize listed species or adversely modify critical habitat. Design changes may require additional engineering and planning. NOAA Fisheries has also recommended adding additional components to a project. For example, to improve habitat in the area surrounding a project, NOAA Fisheries has required rock or woody debris be added to the site. The agency has requested monitoring devices be installed or additional data be collected by the Action agency or permit applicant. NOAA Fisheries has also requested a suite of other minor facility operation and maintenance requirements.

USBR water project operations, State operations, and regional water agency operations have been modified to make available minimum (sometimes maximum) instream flows for salmon, steelhead, and other aquatic species. In addition, NOAA Fisheries has recommended that flow fluctuations associated with reservoir operations be minimized. The agency also has stipulated that water project gate and pump operations be altered. Sometimes, NOAA Fisheries stipulates temperature objectives be pursued, or it may recommend research and monitoring of project operations.

A 3.3 Cost Assessment

Capital and programmatic modifications. We considered a variety of sources to document typical costs for these types of modifications. An analysis of the PNHD database showed that costs to install fish passage and fish screens can range from $92,000 to $4.2 million. Costs potentially attributable to section 7 implementation also are imposed on municipal water intake construction projects. For the latter case, we researched specific municipal water intake construction case studies by contacting project managers. Table A-7 presents the case studies, cost categories, and specific costs identified. Because non-hydropower dam projects may bear any combination of the modifications we have identified, costs are estimated to range from $24,000 to $4.2 million. We use the midpoint of this range, $2.1 million, as our cost estimate, which we assume will be borne over one year.

Table A-7
Case Studies of Operational Modification Costs for Nonhydropower Dams

Case Study	Cost Categories	Per-Project Costs
Lincoln City Municipal Water Intake Project on Schooner Creek, Siletz River Basin, Oregon	Engineering costs	$100,000
	Construction costs	$150,000-$220,000
	Monitoring costs	$25,000
	Habitat enhancement costs	$25,000
	Legal fees	$30,000
	Delay costs	$10,000
	Annual data collection & monitoring costs	$130,000-$260,000
City of Pendleton Water Intake and Pump Station Project, Oregon	Engineering costs	$20,000
	Construction costs	$4,000
Taylor Water Treatment Intake Project, Upper Willamette River Basin, City of Corvallis, Oregon	Construction costs	~$500,000
City of Boardman Collector Well No. 2 Project, Columbia River, Oregon	Flow replacement costs (One-time cost)	$100,000-$2,500,000
PNHD database	Fish screen and fish passage installation	$92,000 to $4.2 million
Range		$24,000 to $4.2 million

Operational (flow regime) modifications. Requirements for changes to flow regimes at dams and other water supply structures can affect water uses other than hydropower, such as agricultural and municipal water use. Almost 900 impoundments exist within the proposed critical habitat designation that serve functions of water supply, irrigation, and flood control. Flow regime changes at structures with these purposes are most likely to result in impacts to agricultural and municipal water uses. Impacts on these users could occur if the amount of water stored behind a dam is decreased, making it unavailable for its planned use at the time it is required. Impacts could also occur if the timing of water releases are altered so that water deliveries do not occur as scheduled. Impacts on flood control activities could occur if, conversely, more water is required to be held behind a dam for a later release, when it would have been released in preparation for a flood event.

The imposition of flow changes through section 7, however, requires a federal nexus to the operation of the dam or water supply structure, not just to the structure itself. For federal, non-hydropower dams, a federal nexus potentially exists for structural modifications through a U.S. Army Corps of Engineers permit for instream work. This nexus typically does not reach into the operational aspects of the structure, and therefore flow considerations are rarely covered in these types of consultations. If a non-hydropower dam or water supply structure is owned by a federal government agency, such as the Bureau of Reclamation (BOR), a federal nexus exists that can result in flow regime changes.

Water supply constraints can produce substantial economic impacts. Unfortunately, it is difficult to quantify and spatially distribute these impacts with any predictable degree of accuracy. As with calculating the impacts of flow change on hydropower operations, calculating the impacts of flow regime change on agriculture and other water uses requires site-specific minimum flow requirements and knowledge of the method (i.e. timing) of changing the flows at these sites. In addition, knowledge of the following attributes are necessary to fully understand the implications of changes to flow for municipal and agricultural uses:

- **Affected water users.** The key element to understanding the impact of flow changes on water users is understanding who will be affected. This exercise requires determining the location of water users that draw water from intakes/diversions both behind and downstream of each affected dam. Note that merely understanding the existence of farms or municipalities that are in proximity to the dams is not likely to provide a full understanding of all of the users of that water, as water users may be located remotely from the rivers providing the water. Another complicating factor is identifying the appropriate boundary where flow changes can be assumed to cease to affect downstream users. This is particularly true in dams that are managed as part of a river system, and thus where flow changes at one may be felt beyond the location of the next dam downstream.

- **The priority of the water right.** To understand the implications of a reduced water supply, it should be known what priority water right is held by each water user. While one could assume that all users would be affected by a flow change, in many cases, only the lowest priority users are likely to be affected. The priority of the water right held by users will determine which users may not receive water in the even that water supply is reduced due to flow changes. The lowest priority users will be the most likely to lost their water in the event of a shortage.

- **Purpose of water**. The purpose of the water used must be determined for affected users, either for the low-priority users, or for all users. To understand impacts on agricultural uses, this should include information on the specific crops grown, the acreage used, and the typical return flow. For municipal users, the points of withdrawal and the volume of water used should also be understood.

- **Value of the water**. A valuation tool must be used to determine the value of the lost water used as a result of flow changes. Methods are described in more detail below, but include the value of the agricultural production (on a per acre or crop basis), the market value of water, and land valuation.

For most dams and water supply structures that fall withing the salmon and steelhead critical habitat areas, the minimum flow requirements are not yet specified. Data are also not widely available on the water rights, uses, purposes, and values. As a result, the extent of flow regime changes for nonhydropower and water supply projects are the most difficult to forecast. Recommended modifications are location-specific and vary according to multiple factors, including the type of facility, the purpose of the facility, the regional importance of the facility, the presence of salmon and steelhead, the season of use, and other factors. There also does not appear to be a consensus within NOAA Fisheries on the flow requirements likely to be recommended for individual projects in future consultations. Nevertheless, it is possible to look at past consultations to gauge at least the potential magnitude of the impacts of section 7 implementation.

An example comes from the Bureau of Reclamation's (BOR) operations in the Snake River Basin above Brownlee Reservoir, including 12 BOR irrigation projects (Minidoka, Palisades, Ririe, Michaud Flats, Little Wood River, Boise, Lucky Peak, Mann Creek, Owyhee, Vale, Burnt River, and Baker), collectively referred to as the upper Snake River projects. These projects store and release water from Federal storage facilities, divert or pump water from the projects, and generate energy at Federal hydropower plants.

The projects were first brought into a section 7 consultation through the 1995 biological opinion on the FCRPS.[28] NOAA Fisheries recommended that the BOR provide up to 427,000 acre-feet of water from willing sellers and in accordance with state water law for the upper Snake River from these projects to augment flows in the Snake and Columbia rivers. This amount increased to 487,000 acre-feet through the 2004 Nez Perce water rights settlement, the terms of which have been incorporated into the 2005 Biological Opinion for the BOR's Snake River projects.

The BOR has provided water to satisfy this recommendation from the following sources:

- Uncontracted space in BOR water storage reservoirs;
- Water obtained from Idaho water rental pools;
- Buyout of existing contracts for water delivery from the upper Snake River projects; and

28. NOAA Fisheries, 1995. Biological Opinion, Reinitiation of Consultation on 1994-1998, Operation of the Federal Columbia River Power System and Juvenile Transportation Program in 1995 and Future Years, March 2, 1995.

- Acquisition of water rights for instream flows.

Table A-8 presents the amounts, costs, and average cost per acre-foot for several water sources from which the BOR has rented or contracted for water on an annual basis. Table A-9 presents the same information for other cases where the BOR has purchased water either on a long-term contract or permanently.[29]

Table A-8
Snake River Flow Augmentation from Annual Contracts, 1995-2004

Water Source and Year of Rental	Amount of Water (acre-ft)	Cost of Water Rental	Cost/acre-foot
Upper Snake (reservoir storage)			
1995	232,839	$2,314,744	$9.94
1996	194,667	$2,361,046	$12.13
1997	202,104	$2,415,544	$11.95
1998	200,325	$2,367,408	$11.82
1999	148,397	$1,727,042	$11.64
2000	162,325	$1,847,212	$11.38
2004	46,420	$675,411	$14.55
Payette Water District 65 (reservoir storage)			
1995	50,758	$322,470	$6.35
1996	56,000	$349,305	$6.24
1997	60,000	$368,804	$6.15
1998	50,000	$303,887	$6.08
1999	65,000	$389,041	$5.99
2000	50,000	$306,168	$6.12
2002	60,000	$353,071	$5.88
2003	64,500	$561,513	$8.71
2004	50,000	$425,000	$8.50

29. Not included in these tables are transactions the BOR makes with local rental pools that account for water purchased through contractual buy-backs. Gail McGarry, Bureau of Reclamation, provided the data for these tables. The dollar values have been adjusted to 2004 dollars.

Table A-8 Snake River Flow Augmentation from Annual Contracts, 1995-2004			
Water Source and Year of Rental	**Amount of Water (acre-ft)**	**Cost of Water Rental**	**Cost/acre-foot**
Boise River Water District 63 (reservoir storage)			
1995	2,000	$16,306	$8.15
1997	2,000	$15,777	$7.89
Lemhi River (natural flow)			
2001	1,000	$230,483	$230.48
2002	1,000	$255,674	$255.67
2003	1,000	$251,424	$251.42
2004	1,000	$211,000	$211.00
Idaho high lift pumpers (natural flow)			
2002	37,889	$2,062,586	$54.44
2003	43,137	$2,071,044	$48.01
2004	83,473	$3,683,420	$44.13
Grande Ronde River (natural flow)			
1996	64	$1,848	$28.88
1997	132	$3,751	$28.41
1998	198	$3,709	$18.73
1999	198	$3,652	$18.45
2000	198	$3,571	$18.04
2001	198	$3,484	$17.59
2002	198	$3,432	$17.33
2003	198	$3,375	$17.04

Table A-8 Snake River Flow Augmentation from Annual Contracts, 1995-2004			
Water Source and Year of Rental	**Amount of Water (acre-ft)**	**Cost of Water Rental**	**Cost/acre-foot**
All Water Sources			
1995	285,597	$2,653,519	$9.29
1996	250,667	$3,014,537	$10.81
1997	264,104	$2,800,125	$10.60
1998	250,325	$2,671,295	$10.67
1999	213,397	$2,116,083	$9.92
2000	212,325	$2,153,380	$10.14
2001	1,198	$221,295	$184.72
2002	108,687	$2,998,331	$27.59
2003	108,637	$2,829,220	$26.04
2004	180,893	$4,994,831	$27.61

Table A-9 Snake River Flow Augmentation from Long Term Contracts and Permanent Purchases, 1995-2004			
Water Source and Year of Contract	**Amount of Water (acre-ft)**	**Cost of Water Transfer**	**Cost/acre-foot[1]**
Permanent buyback of Snake River projects storage space			
1996	35000	$2,629,489	$75.13
1995	6518	$1,150,278	$176.48
1995	15878	$2,592,565	$163.28
Shoshone Bannock tribal water			
1998	38,000	$1,924,619	$50.65
Ontario, Oregon farm (natural flow)			
1997	17,649	$1,493,258	$84.61
[1]These costs are “one-time” costs, not annual amounts.			

In this example, the consultation record established a desired quantity of additional flow: 427,000 acre-feet, increasing to 487,000 acre-feet. A more common outcome of a section 7 consultation is a recommendation to maintain certain minimum instream flows during certain time periods. For example, in a consultation with the BOR on the Umatilla River Basin water supply projects, NOAA Fisheries, recommended that the BOR "avoid or minimize incidental take from dewatering McKay Creek from November through April by maintaining a minimum flow in McKay Creek."[30]; and in a consultation on the Deschutes River Basin water supply projects, NOAA Fisheries recommended that the BOR minimize incidental take by providing irrigation and flood control releases from upstream projects which will ensure streamflows on a weekly basis5 of 1,700 cfs into Lake Billy Chinook in October and November."[31]

Estimating actual impacts of section 7 for these other examples would require the types of information noted above for each project site, as well as projections of water conditions and water values over the near future. Moreover, the record from the upper Snake River projects is unique to their history, and so provides no reasonable basis for making projections to other regions.[32] Indeed, the wide variance in the per-unit costs illustrated in these tables demonstrates the difficulty of making any generalizations about likely per-unit costs and therefore likely impacts of section 7 implementation. For these reasons, we do not provide estimates of the impacts of operational (flow regime) changes to non-hydropower dam and other water supply structures at the level of a particular watershed.

A 3.4 Spatial and Temporal Distribution of Activity

We used latitude and longitude data from the USACE National Inventory of Dams to locate dams other than hydropower projects. Dams in the Pacific Northwest Hydrosite Database that are not currently producing hydropower and have a purpose in addition to hydropower (e.g. flood control or recreation) were also included.

Limited data exist regarding maintenance schedules for non-hydropower projects. Unlike FERC-licensed hydropower dams, nearly all non-hydropower dams lack a specific event similar to FERC licensing that would enable us to identify a likely date for consultation. Instead, we assumed that for most types of non-hydropower dams, a consultation will occur sometime over the next 20 years. We chose this period based on the historic frequency of consultation for these project types. For all Federally-regulated dams and dams with large reservoirs, we assume that they will incur modification costs with certainty sometime during that period. We assumed a uniform distribution for the probability that the modifications would occur in a given year. All other non-hydropower projects are assigned a ten percent probability of incurring modification costs during this period.

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30. NOAA Fisheries, Ongoing Operation of the Umatilla Project and the Umatilla Basin Project, April 23, 2004.

31. NOAA Fisheries, Ongoing Operation and Maintenance of the Deschutes River Basin Projects, February 17, 2005.

32. The Snake River augmentation program is focused on surplus water, not water that is actively being used for agriculture. If flow regime changes had the effect of significantly reducing agricultural production, the per-acre-foot costs likely would be higher.

A 3.5 Annual Expected Modification Cost Estimates

As noted above, we assume that modification costs are borne in one year; Federal and large non-hydropower dams are certain to bear these costs during a 20 year period; and smaller non-hydropower dams have a 10% chance of bearing these costs during the 20 year period. Using the cost estimates derived above, the annual expected modification cost estimates are given in Table A-10.

Table A-10
Estimated Annual Expected Per-Project Costs for Non-hydropower Dams

Activity	Sub-activity	Present Value of Costs	Annual Expected Cost
Non-hydropower dams	Federal and large dams	$2,120,500	$106,025
	Small non-Federal dams	$2,120,500	$10,603

A 3.6 Assumptions and Potential Errors

Table A-11 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

Table A-11
Nonhydropower Dams: Assumptions and Potential Errors

Assumption	Direction of Potential Error
Impacts related to flow regime are difficult to model, because information concerning specific anticipated changes to flow across the designation at each relevant dam are unattainable. In addition, the specific critical habitat areas engendering changes in operations at a particular dam may be located distantly from the affected dam, and areas affected by changes in flow may be, in turn, distantly located from the dam. Thus, because impacts from changes in flow result from broad and interrelated system changes across large areas, and changes are not easily predicted, these potential impacts are not estimated in our analysis.	-
Each non-hydropower dam within critical habitat areas is assumed to be subject to some level of modification costs over the next 20 years (though in most cases, a low probability of bearing these costs is assumed). In fact, many projects may not be subject to section 7 consultations.	+

Table A-11 Nonhydropower Dams: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
Project modifications included in biological opinions for non-hydropower dams are included in this analysis, even if they appear to overlap baseline elements. As a result, the impact of section 7 implementation over and above the baseline may be overstated.	+
Specific infrastructure costs and impacts attributable to critical habitat designation for most non-hydropower dams are not available. As a result, the cost and impacts identified are based on a relatively small sample of projects, and may not precisely capture impacts incrementally attributable to critical habitat or Section 7 of the ESA.	+/-
- : May result in an underestimate of real costs + : May result in an overestimate of real costs +/- : Has an unknown effect on estimates	

A 4. Federal Lands Management (including grazing)

A 4.1 Overview

- A review of recent consultation history shows that nearly 18 percent of section 7 consultations for West Coast salmon and steelhead are conducted with the U.S. Forest Service (USFS) and Bureau of Land Management (BLM) on various land management activities. The analysis assesses impacts on Federal land management activities that will result from section 7 enforcement for West Coast salmon and steelhead on USFS and BLM lands within areas of potential critical habitat.
- Since the mid-1990's, the Northwest Forest Plan and PACFISH have altered the priorities of the Federal land management agencies, and provided a strong management baseline for anadromous species protection. As a result, future impacts of section 7 implementation of the ESA, particularly in areas where the Northwest Forest Plan and PACFISH exist, are likely reduced from what they would have been absent these other protections. Nevertheless, this analysis includes types of project modifications that appear in biological opinions, some of which may overlap with these baseline protections. As a result, this analysis may overstate the additional costs of section 7 implementation for West Coast salmon and steelhead.
- We consider three types of Federal land management activities: Programmatic land management in non-wilderness areas; programmatic land management in wilderness areas; and grazing land management.
- We distinguish the first two types by geographic region. This produces the following cost estimates for Federal land management modifications:

- Idaho: $1.26 ($0.68 to $1.84) per non-wilderness acre and $0.07 ($0.04 to $0.10) per wilderness acre;
- Eastern Oregon/Washington: $3.30 ($1.62 to $4.98) per non-wilderness acre and $0.15 ($0.07 to $0.24) per wilderness acre
- Western Oregon/Washington: $5.89 ($3.08 to $8.71) per non-wilderness acre and $0.029 ($0.15 to $0.44) per wilderness acre

- Impacts on livestock grazing estimated to result from future section 7 implementation for West Coast salmon and steelhead are estimated to be $1,157 ($1,006 to $1,308) per stream mile on Federal land impacted by grazing.

A 4.2 Background

A federal nexus exists for all management activities occurring on Federal lands. We have grouped the activities of the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) together because the agencies have many similar land management goals and regulations, and because they frequently consult together. Activities conducted by the USFS and BLM are wide-ranging, but include fuel reduction activities, road construction, road obliteration, and road maintenance, maintenance of recreation facilities, fisheries programs, timber sales[33], permitting of livestock grazing[34], and permitting of various use permits. We have grouped these activities into two general activity types: General land management activities (classified into 10 sub-activities) and permitting of livestock grazing.

Our review of the recent consultation history (2001-2004) shows that about 17% of section 7 consultations for West Coast salmon and steelhead are conducted with the USFS and the BLM on various land management activities. The outcomes of these consultations are likely influenced by several important baseline regulations. In particular, the Northwest Forest Plan (NWFP) and PACFISH guidelines provide numerous baseline protections to West Coast salmon and steelhead.

The NWFP defines Standards and Guidelines (S&Gs) for forest use throughout the 24 million acres of Federal lands in its planning area. Specifically, the NWFP provides S&Gs for management of timber, roads, grazing, recreation, minerals, fire/fuels management, fish and wildlife management, general land management, riparian area management, watershed and habitat restoration, and research activities on USFS and BLM lands. To accomplish its goals, the NWFP defines seven land allocation categories, including “matrix lands,” areas where the majority of timber is to be taken, and Riparian Reserves and Key Watersheds, where distances from rivers are set within which many activities are restricted.

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33. The consultation history indicates that NOAA Fisheries consults on timber sales on Federal lands, but not on similar sales on private or other non-Federal lands. Timber sales on non-Federal lands rarely need a federal permit, and thus do not have a federal nexus.

34. The consultation history indicates that NOAA Fisheries consults on livestock grazing on Federal lands, but does not consult on similar activities on private or other non-Federal lands. The reason for this is that grazing on non-Federal lands rarely needs a federal permit, and thus does not have a federal nexus.

For Federal lands in eastern Oregon, Washington, and Idaho not covered by the NWFP, USFS and BLM have adopted a management strategy specifically for anadromous fish protection.[35] Like the NWFP, PACFISH provides guidelines for timber, roads, grazing, recreation, minerals, fire/fuels management, lands, riparian area, watershed and habitat restoration, and fisheries and wildlife restoration. Standards and guidelines under PACFISH are nearly identical to those in the NWFP.

A 4.3 Cost Assessment

A 4.3.1 Federal land management activities

We first classified the (non-grazing) activities typically conducted by Federal agencies or permittees on Federal lands into ten categories using Schedule of Proposed Actions (SOPAs) and past programmatic consultations. Because wilderness areas typically have different compositions and levels of activities than non-wilderness areas, we distinguish between the two types of areas. We then characterized"typical" project modifications by examining the Reasonable and Prudent Measures and Terms and Conditions from past salmon and steelhead biological opinions on these ten activities. Finally, we estimated costs of each identified project modification for each of the ten activities and then combined them into a per-acre estimate of modification costs.

Data sources of cost information for Federal lands management activities include more than 20 approved project proposals for Bonneville Power Administration's Fish and Wildlife Grants Program and the Wyden Amendment Watershed Restoration program as well as transportation costs from the State of Washington. Table A-12 presents a list of the typical project modifications characterized for each activity, and a range of costs associated with each category of Federal land management activity. Generally, where multiple cost values were available for a single project modification, we identified a low and a high cost to provide a range of potential costs for each modification. A composite low and high range for each activity was developed using the sum of the ranges for each type of modification. Because wilderness areas have a higher level of baseline protections, we modified these cost estimates for activities occurring on those lands. Consulting with USFS and BLM personnel, we attached a likelihood of occurrence to each specific sub-activity. We also adjusted the frequency of occurrence of each category of project for wilderness lands.[36]

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35. This strategy was intended to be in place for 18-months, beginning in February of 1995, but continues to be implemented.

36. Interviews with Bob Ruediger, BLM Salem District, March 7, 2005; Data from Wade Sims, USFS Willamette and Siuslaw National Forests, March 7, 2005; Diane Cross, Fire Management specialist, Los Padres National Forest on March 21, 2005; Bruce Smith, Fisheries Bioligist, Salmon-Challis National Forest March 21, 2005; Ken Stauffer, Recreation Coordinator, Salmon-Challis National Forest March 21, 2005.

Table A-12 Estimated Costs of Project Modifications for Federal Land Management Activities (excluding Grazing)		
Sub-activity	**Typical Project Modifications* (per-project)**	**Project Modification Costs**
Road maintenance, aquatic habitat projects, instream work, riparian protection	- Develop an approved spill containment plan - Conduct erosion control measures - Minimize vegetation disturbance - Revegetate stream-side area - Gather/obtain materials needed to complete the project and implement bank stabilization - Minimize brushing in riparian areas by leaving a minimum 10 foot buffer along intermittent and ephemeral streams, and a minimum 20 foot buffer along perennial streams	$48,100 to $211,500
Recreation, site, trail, and administrative structure maintenance and associated public use	- Provide an annual monitoring report - Prevent and minimize erosion from trails	$19,400 to $30,000
Fisheries, wildlife, botany and cultural programs	- Minimize disturbance to fish by training personnel in survey method - Coordinate with other local agencies to prevent redundant surveys	$4,200 to $5,400
Pump change/helipond maintenance and use	- Dispose of waste on stable site. - Minimize soil disturbance using filter materials such as straw bales or silt fencing - Work with engineering/fire personnel to review proposed activities to minimize potential effects to stream channel conditions and water quality - Water withdrawal with fish prevent must have a fish screen installed, operated and maintained in accordance with NMFS fish screen criteria	$12,000 to $17,600
Rock quarry operations and ornamental rock collecting	- Include erosion control plans for quarries to protect fish	$5,000 to $10,000

Table A-12 Estimated Costs of Project Modifications for Federal Land Management Activities (excluding Grazing)		
Sub-activity	**Typical Project Modifications* (per-project)**	**Project Modification Costs**
Road decommissioning, obliterating, storm-proofing and inactivation	- Develop an approved spill containment plan - Maximize activities during late summer and early fall during dry conditions - A biologist should participate in the design and implementation of the project - Dispose of waste on stable site. Nearby is acceptable if approved by a geotechnical engineer or other qualified personnel	$8,400 to $16,600
Telephone line and power line renewal	- Directionally fell hazard trees toward streams and riparian areas where it is safe and feasible to do so - Conduct erosion control measures - Minimize soil disturbance using filter materials such as straw bales or silt fencing - Rehabilitate and stabilize all disturbed areas by seeding & planting	$4,300 to $22,500
Special use permits	- Prior to issuance of a special use permit, a fisheries biologist shall make a written evaluation of the proposed action and any interrelated and interdependent effects of the action to determine if an individual consultation is necessary - Conduct erosion control measures - Minimize soil disturbance using filter materials such as straw bales or silt fencing - Rehabilitate and stabilize all disturbed areas by seeding & planting	$1,200 to $2,400
Timber sales	- Suspend timber hauling when road conditions become degraded - Install sediment traps along roads - Inspect and monitor roads frequently - Culverts shall be constructed to withstand 100-year floods (as in PACFISH) - No-cut riparian protection zones (RPZ) are defined and are site-specific depending on slope (but seem to follow NWFP).	$17,600

Table A-12 Estimated Costs of Project Modifications for Federal Land Management Activities (excluding Grazing)		
Sub-activity	**Typical Project Modifications* (per-project)**	**Project Modification Costs**
Fuel reduction, timber salvage (non-commercial), logging, thinning	- Minimize take from construction activities by ensuring that an effective spill prevention, containment and control plan is developed, implemented and maintained - Minimize take from vegetation management including salvage harvest and commercial thinning by minimizing adverse effects of key components of steelhead habitat - Complete annual comprehensive monitoring report	$40,300 to $115,500

To account for regional variation in the modification costs for Federal land management activities, we first classified all National Forests and BLM districts based on geography into three regions: Idaho, Western Oregon and Washington, and Eastern Oregon and Washington. These classifications are summarized in Table A-13.

Table A-13 Assessment Regions for National Forests and BLM Districts		
Region	BLM District(s)	National Forests*
Idaho	Idaho Falls District, Coeur d'Alene District	**Nez Perce National Forest, Payette National Forest, Salmon-Challis National Forest, Sawtooth National Forest**, St. Joe National Forest
Western Oregon and Washington	Coos Bay District, Eugene District, Medford District, Prineville District, Roseburg District, Salem District	**Columbia River Gorge National Forest**, **Mount Baker Snoqualmie National Forest**, **Olympic National Forest**, **Siskiyou National Forest, Siuslaw National Forest**, **Wenatchee-Okanogon National Forest, Willamette National Forest**, Rogue River National Forest, Mount Hood National Forest, Umpqua National Forest, Gifford Pinochet National Forest

Table A-13 Assessment Regions for National Forests and BLM Districts		
Region	BLM District(s)	National Forests*
Eastern Oregon and Washington	Burns District, Lakeview District, Spokane District, Vale District	**Malheur National Forest**, **Umatilla National Forest**, Ochoco National Forest, Wallowa-Whitman National Forest, Crooked River NG, Deschutes National Forest
*Bold indicates that a SOPA for this forest was used to derive estimates of activity level.		

We next used quarterly SOPA's from National Forests to determine the number of each of the 10 categories of projects that typically occur in each forest on an annual basis.[37] SOPA's include the same types of activities that are usually included in programmatic consultations on West Coast salmon and steelhead.

We estimated the annual total land management costs for forests that had available SOPAs by multiplying the number of annual activities of each type by the costs associated with each activity, adjusting this process for the different composition and levels of activities expected to occur on wilderness lands. We then calculated a per-acre cost for each forest that had data available by adding together the estimated costs for each activity and dividing by that forest's total forest acres. Finally, we calculated a regional per-acre cost estimate by averaging the per-acre costs created in the previous step for each forest within the three regions. This enabled us to project costs to USFS forests and BLM land that did not have SOPA information available.[38] Table A-14 lists the regional cost estimates and their ranges.

37. Carol Brown, Sawtooth National Forest, March 10, 2004, suggested that the SOPA's are a good representation of typical activities that occur within forests in a "typical" year.

38. Because BLM does not produce SOPA documents, we assume that BLM lands carry out the same mix of activities within a region as the USFS lands.

Table A-14 Estimated Modification Costs for Federal Lands Management Projects		
Type of Land	**Region**	**Cost Estimate (per acre)**
Non-wilder-ness	Idaho	$1.26 ($0.68 to $1.84)
	Western Oregon or Western Washington	$5.90 ($3.08 to $8.71)
	Eastern Oregon or Eastern Washington	$3.30 ($1.62 to $4.98)
Wilderness	Idaho	$0.07 ($0.04 to $0.10)
	Western Oregon or Western Washington	$0.029 ($0.15 to $0.44)
	Eastern Oregon or Eastern Washington	$0.15 ($0.07 to $0.24)

This method assumes that every National Forest or BLM District acre within critical habitat areas will bear a cost associated with section 7 implementation for West Coast salmon and steelhead. Indeed, several forests have programmatic agreements with NOAA Fisheries that compel them to place certain restrictions on activities within critical habitat areas. Even within critical habitat areas, however, it is possible that some projects will not need to be altered to accommodate salmon needs due to specific geography or specific attributes of the projects.

In addition, project modifications described in biological opinions for land management activities are included in this analysis, even if they appear to overlap baseline elements such as NWFP or PACFISH. As a result, the impact of section 7 implementation over and above the baseline elements may be overstated in areas where those baseline elements are in place. For these reasons, this analysis likely presents a high-end estimate of the costs likely to be incurred associated with Federal lands management activities.

A 4.3.2 Livestock Grazing

Project modifications for livestock grazing activities in salmon and steelhead habitat include fencing riparian areas, placing salt or mineral supplements to draw cattle away from rivers, total rest of allotments when possible, and frequent monitoring. Many consultations consider impacts on salmon and steelhead from more than one allotment, and include general instructions to the land management agency to develop general policies (e.g., establish a utilization standard of at least 4 inches of stubble height).

To determine costs of section 7 implementation for West Coast salmon and ,steelhead associated with Federal lands grazing modifications, we first characterized “typical” modifications and estimated their costs by examining Reasonable and Prudent Measures and Terms and Conditions from past salmon and steelhead biological opinions on grazing activities on a per-allotment basis. These measures typically include

- Grazing management plans
- Stream and spawning surveys
- Project monitoring
- Riparian fencing
- Off-channel water developments
- Rangeland Best Management Practices

While these measures are associated with section 7 consultations on grazing, most are impacts that are not triggered by the ESA. Activities like grazing management plans and surveys may be modified slightly by section 7 enforcement but are rarely brought into being in that way. The possible exceptions are riparian fencing and off-channel water developments. We focus on these measures to describe the activity modifications to grazing land management.

We treated riparian fencing as a capital investment in the grazing land, and so the cost is amortized over the expected life of the fence (30 years). We also include an estimate of maintenance costs, which are borne annually. The capital and maintenance costs are presented in Table A-15.

Table A-15
Estimated Modification Costs for Grazing Land Management (Fencing)

Activity	Sub-activity	Cost Estimate
Grazing Land Management	Fencing	$14,354 (12,481 - 16,226) per mile*
*The High case includes the cost (per mile) of off-channel water developments.		

A 4.4 Spatial and Temporal Distribution of Activity

A 4.4.1 Federal land management activities

We used land ownership spatial data to determine USFS and BLM acreage in each watershed based on data collected from the Interior Columbia Basin Ecosystem Management Project (1995). Data include BLM Administrative Unit Boundaries and National Forest boundaries in Oregon, Washington and Idaho. We identified wilderness areas using spatial data (National Special Designated Areas) from the USFS, including both National Wilderness areas and Wilderness Study areas.

SOPAs that were used to develop the cost estimates generally have a forecast period of two years or shorter. Forest managers report that these activities are fairly constant, however, and are likely to continue indefinitely at similar rates.[39] We therefore used the annual level of SOPA activity as an estimate of the typical annual level. We also assumed that activities that take place on Federal lands are certain to bear modification costs and that these costs are borne in a single year.

A 4.4.2 Livestock Grazing

39. Carol Brown, Sawtooth National Forest, March 10, 2004, suggested that projects listed in quarterly SOPAs are likely to continue indefinitely at the present annual rate

We identified grazing activity on Federal lands by intersecting spatial coverages for statewide grazing allotments with a USFS and BLM ownership coverage in the area under consideration. We employed the Interior Columbia Basin Ecosystem Management Project (ICBEMP) spatial data for grazing. Based on discussions with NOAA Fisheries biologists, we excluded allotments identified as having only sheep or horses. We then identified and measured (in miles) stream reaches on these Federal grazing lands that are likely to trigger section 7 consultation. We identified these stream reaches by using the "branch" stream reach concept developed by the Interior Columbia Basin Technical Recovery Team (TRT). The TRT developed a biological framework for gauging recovery of Interior Columbia Basin salmon and steelhead ESUs. They describe the "branch" concept in the following way:

> In our approach to describing spatial structure, we designated the basic building block for a salmonid population as a branch. In our definition, a branch component can be any reach organization containing suitable spawning habitat within a subwatershed. The quantity and interrelatedness of branches within a watershed contribute to a population's risk level in regard to sustainable production.[40]

Based on an analysis of actual stream mileage with fencing in several Snake River watersheds,[41] we assume that a proportion (20%) of the stream miles on Federal grazing lands (as identified above) will bear modification costs for section 7 consultations related to West Coast salmon or steelhead. Based on the same analysis, we assume that this proportion can range between 10% and 50%, and we use this figures for the Low and High cost-estimates cases, respectively. Finally, we assumed that 50% of the affected stream mileage would require fencing on one side, and 50% would require fencing on both sides.

A 4.5 Annual Expected Modification Cost Estimates

For land management activities, we assume all costs are certain and borne in one year and the level of activity per acre is constant. Thus, the regional per-acre cost estimate equals the annual expected modification cost for these activities. For grazing, the annual expected modification cost incorporates the capital costs of fencing (amortized over 30 years) and annual maintenance costs. These estimates are presented below in Table A-16.

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40. TRT (2004), at 34.

41. The analysis used data gathered on 12 HUC5 Snake River Basin watersheds, from Garry Seloske, Dave Mays, Wayne Paradis, and Steve Hiebert, Nez Perce National Forest; Craig Johnson, Cottonwood District, BLM; and Pat Murphy, Clearwater National Forest.

Table A-16 Estimated Annual Expected Costs for Federal Lands Management and Grazing			
Activity	**Sub-activity**	**Present Value of Costs (per-acre/stream-mile)**	**Annual Expected Cost (per-acre/stream-mile)**
Federal land management, non-wilderness areas	Idaho	$1.26	$1.26
	Western Oregon or Western Washington	$5.90	$5.90
	Eastern Oregon or Eastern Washington	$3.30	$3.30
Federal land management, wilderness areas	Idaho	$0.07	$0.07
	Western Oregon or Western Washington	$0.029	$0.029
	Eastern Oregon or Eastern Washington	$0.15	$0.15
Livestock Grazing on Federal Land	Fencing	$14,354 per stream-mile	$1,157 per stream-mile

A 4.6 Assumptions and Potential Errors

Table A-17 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

Table A-17 Federal Lands Management: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
Each acre of Federal land within critical habitat areas is assumed to be subject to section 7 implementation. In fact, many projects may not affect salmon and steelhead habitat.	+
Project modifications included in biological opinions for Federal land management activities are included in this analysis, even if they appear to overlap baseline elements. As a result, the impact of section 7 implementation over and above the baseline elements may be overstated.	+

Table A-17 Federal Lands Management: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
Land management agencies are assumed to carry out the list of land management activities consistently within geographical areas. Real variations in geography and management could result in different management activities in each management unit.	+/-
Per-project costs of modifications to specific land management activities are assumed to be uniform across geographic areas (e.g. costs of a fuels management project are assumed to be consistent across all regions).	+/-
On December 8, 2003, NOAA Fisheries and USFWS issued "Joint Counterpart Endangered Species Act Section 7 Regulations" whose purpose is "to streamline projects that fit under the National Fire Plan." These new regulations may alter the future consultation behavior of NOAA Fisheries regarding fuel reduction/fire management activities on Federal lands. If executed as planned, future informal consultations will be streamlined. As a result, our estimated costs of fuel reduction activities would be overstated.	+/-
For grazing impacts, we assume that the ratio of one-sided to two-sided (1:1) was the same across all watersheds. Similarly, we also assume that the proportion of identified stream miles that require fencing was the same. These parameters may actually vary across watersheds, and so the actual impacts at the watershed level may be higher or lower than our estimated impacts.	+/-
- : May result in an underestimate of real costs + : May result in an overestimate of real costs +/- : Has an unknown effect on estimates	

A 5. Transportation Projects

A 5.1 Overview

- Transportation projects that affect West Coast salmon and steelhead habitat are wide ranging, but may include the widening of a road, the reconstruction of a bridge, or the restoration of a ferry terminal. Examination of the consultation history reveals that roadwork, bridgework, and culvert projects encompass nearly 90 percent of all transportation projects that are in the consultation record.

- Transportation projects can produce environmental impacts that may directly kill or injure salmon and steelhead, or may disturb habitat. The impacts can be direct (i.e., riparian destruction during a bridge replacement) or more ancillary (i.e., storm water run-off disturbance following a road widening).

- Our method for estimating section 7 impacts on transportation projects is to measure the direct costs associated with section 7 implementation. We first reviewed the consultation history and spatial data to identify the types and sizes of transportation projects planned to occur. We then combined spatial data with typical project modification costs (fixed and variable) to estimate a cost for each project type and a total cost for transportation activities in each watershed.

- Secondary economic impacts resulting from changes to regional transportation mobility as a result of Section 7 implementation are expected to be minor. The consultation record indicates that transportation agencies can comply with section 7 project modifications without precluding any projects within critical habitat.

- On a per-project basis, project modification costs associated with transportation activities are small relative to other activity types. Because of the high level of these projects, however, they may prove significant in specific geographical regions. These costs are likely to be borne or passed on to the Federal government, which accordingly will ultimately bear the majority of the costs.

A 5.2 Background

Nearly a quarter of all Section 7 consultations conducted by NOAA Fisheries during 2001-2003 involved transportation projects. These projects may entail the widening of a road, the reconstruction of a bridge, or the restoration of a ferry terminal. The federal nexus for a transportation project may be through permitting or funding provided by the Army Corps of Engineers (USACE), Federal Highways Administration (FHWA) and/or the Federal Aviation Administration (FAA). The USACE permits bridgework, roadwork, and railroad restoration projects that need Clean Water Act permits. FHWA funds bridgework, roadwork, railroad restoration projects, and ferry terminal maintenance, and the FAA permits aircraft/airport repair and maintenance.

Transportation projects can produce environmental impacts that may directly jeopardize the existence of salmon and steelhead, or may disturb habitat. The impacts can be direct (for example, riparian destruction during a bridge replacement) or more ancillary (for example, storm water run-off disturbance following a road widening). Federal agencies involved in transportation projects are required by NOAA Fisheries to modify their activities to avoid both direct and indirect take of salmon. Table A-18 lists both the effects from and the modifications typically required of transportation projects.

Table A-18 Typical Project Modifications for Transportation Projects		
Project Types	**Effect on Salmon**	**Typical Project Modifications**
Roadwork, Bridgework, Culvert Projects	- In-water work during critical salmon life stages that may disturb spawning and development ability - Pollution of chemicals/waste into stream water by construction or repair machinery - Direct handling of salmon during transportation activities (i.e culvert installation) - Discharge of construction water - Stormwater run-off disturbance to habitat - Stream bank damage during construction activities (erosion and pollution)	- Limit time of in-water work to avoid take during vulnerable salmon life stages - Ensure isolation of in-water work area and proper fish handling methods - Develop effective erosion and pollution control measures - Stormwater management measures - Restoration of construction site through contouring, mulching, seeding and planting with native vegetation - Monitoring and evaluation both during and following construction
Other Transportation Projects	- Sound disturbance to salmon habitat due to piling installation - In-water work during critical salmon life stages that may disturb spawning and development ability - Pollution of chemicals/waste into stream water by construction/repair machinery	- Use of bubble curtain to maintain low sounds during ferry restoration - Obtaining hydraulic permit approval from State. - Monitoring and evaluation both during and following railroad restoration project - Construction time limits - Captive breeding, re-establishment and habitat restoration program

Examination of the consultation history reveals that roadwork, bridgework, and culvert projects encompass nearly 90 percent of all transportation projects that have been the subject of a consultation, and so we focus on these categories in our analysis.

A 5.3 Cost Assessment

To determine the costs of section 7 implementation for West Coast salmon and steelhead associated with transportation projects, we first examined spatial data and recent consultation history to identify the typical characteristics of transportation projects in the areas under consideration. We then developed typical project modifications by examining Reasonable and Prudent Measures and Terms and Conditions from past salmon and steelhead biological opinions on transportation projects. Finally, we estimated the costs of each identified project modification. Some costs vary continuously with project scale (usually measured by miles of roadway or feet of stream affected), and so we categorized costs as either fixed or variable depending on the nature of the modification.

Data sources for cost information for transportation projects include the *Integrated Streambank Protection Guidelines* (Washington Department of Transportation), published economic analyses, and various other cost studies. Table A-19 lists the estimated costs associated with typical project modifications identified for road, bridge and culvert projects.

Modification costs classified as fixed are incurred once in the course of a project, and do not vary continuously with project scale (e.g. costs of spill prevention plan development, costs of water quality monitoring). A low, medium, and high cost level for each fixed project modification cost is presented in Table A-19 to provide a range of potential costs for each modification.

Table A-19
Estimated Costs of Project Modifications for Transportation Projects

Project Modifications	Fixed Costs (per-project)*			Variable Costs (per linear foot of stream impacted)
	Low	Medium	High	
Pre-construction Surveys	$4,900	$5,950	$7,000	N/A
Develop and implement a site-specific spill prevention, containment and control plan and remove toxicants as they are released	$5,000	$7,500	$10,000	N/A
Water quality monitoring	$5,000	$17,500	$30,000	N/A
Excavation and relocation of materials during a project where they cannot enter wetlands.	$1,000	$3,000	$5,000	N/A
Bank stabilization	N/A	N/A	N/A	$25.00-65.00
Maintain supply of emergency erosion control materials (slit fence and straw bales)	N/A	N/A	N/A	$2.50-$5.50
Use of boulders, rock, woody materials from outside of the riparian area.	$500	$2,750	$5,000	N/A
Stormwater management measures	$2,000	$2,650	$3,300	N/A
Restoration of construction site through contouring, mulching, seeding and planting with native vegetation	N/A	N/A	N/A	$10-$60
Monitoring and evaluation both during and following construction	$4,400	$7,700	11000	N/A
Construction and implementation of coffer dam (a temporary structure to exclude water during instream work)**	$4,000	$6,000	$8,000	N/A

Table A-19 Estimated Costs of Project Modifications for Transportation Projects				
	Fixed Costs (per-project)*			Variable Costs (per linear foot of stream impacted)
Project Modifications	**Low**	**Medium**	**High**	
Ensure isolation of in-water work area and proper fish handling methods (hoop net sampling, electro-fishing)**	$1,000	$2,500	$5,000	N/A
TOTALS	**$27,800**	**$55,550**	**$84,300**	**$130.50**
*Scale classes for fixed costs: Low = <1 mile, Medium = 1-10 miles, High = >10 miles **These project modifications only apply to bridge and road projects				

In contrast to fixed costs, some costs are highly dependent on the scale of a transportation project and can be calculated on that basis. These variable costs may include restoration efforts, bank stabilization, and emergency erosion control, and are a function of the length of the waterway affected by the project (or for which mitigation efforts are required). Because data are more widely available for project length than for stream length impacted, we explored the relation between the two using data on both from biological opinions. Unfortunately, instances where data on both road length and stream length impacted are available are rare, and so we used two cases to develop the following relationship:

$$\textit{Stream Length Impacted (SLI) (ft)} = 100 + 5\times \textit{Road Length (miles)}$$

Using this relation, the variable cost for a project that impacts *N* feet of stream would be

$$\textit{Total variable cost} = N \times \textit{modification cost estimate (per-foot)}$$

The estimated total modification cost is then the sum of the fixed cost for the project's particular scale and the variable costs as computed above.[42]

A 5.4 Spatial and Temporal Distribution of Activity

Idaho, Washington, and Oregon have produced future transportation plans, which we used to forecast the locations of transportation projects. These plans include spatial information, budget allocation, and road mileage for projected road, bridge, culvert, and transit activities in each state. The plans vary in scope as well as time frame, and thus, the nature of the data varies considerably

42. In this case, we used the high end of the variable cost range as the representative cost estimate. Although the review of the data sources found projects with variable costs at the lower end of the range, the higher end is applicable in instances that are far more typical. This was not the case for other activities where we found a range of costs for typical projects.

across regions. Table A-20 summarizes all projected, federally funded transportation projects within the critical habitat designation. Because exact start and completion dates are often difficult to anticipate, this analysis assumes that the projects included in the state transportation plans represent an estimation of the number and types of projects that are completed within a given 5 year period.

Table A-20
Summary of Transportation Projects Affected by Critical Habitat

State	Data Source	Time Frame for Planned Projects (years)*	Total Number of Projects within Areas under Consideration
Idaho	State Improvement Plans (STIP) 2002- 2005	3	28
Oregon	State Improvement Plans (STIP) 2002-2005	3	198
Washington	6-Year Capital Improvements Plan	6	379

*Although transportation plans differ in time frame, this analysis assumes that all projects listed in each state's transportation plan are completed within 5 years

A 5.5 Annual Expected Modification Cost Estimates

Using the data in the state transportation plans, we applied the formula given above to each project in the plan. We assumed all modification costs are certain and borne in one year, and that the probability of bearing the costs is uniform through the 5 year period for transportation projects. As a result, the annual expected modification cost for a project is equal to the estimated project cost derived from the formula above multiplied by the probability of occurrence (0.20). Because projects vary in road mileage, the estimated project costs vary as well. Below in Table A-21, we give estimated and annual expected costs for a project that involves the average mileage (3.2 miles).

Table A-21 Estimated Annual Expected Per-Project Costs for Transportation Projects			
Activity	**Sub-activity**	**Present Value of Costs**	**Annual Expected Cost**
Transportation*	Bridges & culverts (small)	$41,778	$8,356
	Bridges & culverts (medium)	$69,478	$13,896
	Bridges & culverts (large)	$98,278	$19,656
	Roads (small)	$36,778	$7,356
	Roads (medium)	$60,978	$12,196
	Roads (large)	$85,278	$17,056
*Transportation costs are presented for a project of average mileage (3.2 miles).			

A 5.6 Assumptions and Potential Errors

Table A-22 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

Table A-22 Transportation Projects: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
We assume that all project modifications included in section 7 consultations for transportation projects are implemented specifically for salmon and steelhead protection and are not part of the baseline (e.g., these measures would not already be conducted as part of Best Management Practices).	+
Best Management Practices are followed strictly as outlined in state legislation, and do not overlap with recommended project modifications.	+/-
Future methods of compliance with specific project modifications will mirror past methods (i.e., pollution/erosion control plans do not change significantly over time).	+/-
All streams containing salmon and steelhead in the area under consideration are assumed to have similar ecological sensitivity with regards to pollution and chemical contamination.	+/-

Table A-22 Transportation Projects: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
Transportation projects may include sub-projects within them (e.g., road projects w/ bank stabilization efforts). If sub-projects are constructed as part of a transportation project, project modification costs could be understated. Available data do not allow us to reasonably forecast projects that would include sub-projects, however.	-
Long-term effects of modifying transportation projects in critical habitat areas on regional transportation functions (such as congestion and air pollution) are not included in this analysis. If projects occur that are not included in state transportation plans, this analysis may understate costs.	-
State transportation plans are assumed to include all major federally-funded transportation projects planned to occur over the designated the time period.	-
- : May result in an underestimate of real costs + : May result in an overestimate of real costs +/- : Has an unknown effect on estimates	

A 6. Utility Line Projects

A 6.1 Overview

- The analysis separates the category of "utility lines" into two subcategories: pipelines and outfall structures. Overall, utility lines account for approximately two percent of the total consultation activity for the salmon in our consultation record. Most of these consultations are associated with pipeline projects.
- The most common federal nexuses for utility lines are through the actions of the Army Corps of Engineers (USACE), and the Federal Energy Regulatory Commission (FERC). USACE consults with NOAA Fisheries regarding permits issued under Section 404 of the Clean Water Act and/or Section 10 of the River and Harbors Act. FERC consults on pipeline projects that have the potential to affect threatened and endangered species and their habitat.[43] For projects that may impact wetlands or cross water bodies, FERC maintains a list of construction and mitigation procedures. These mitigation procedures include the use of directional drilling, rather than open cut construction, and suggest mitigation activities during the proposal stage (FERC 2003). Therefore, some of the project modification costs estimated to be attributable to salmon critical habitat may be overestimated as these measures may be already required.

43. Robert Arvedlund, Federal Energy Regulatory Commission, personal communication, February 25, 2003.

- We estimate the per-project costs of section 7 implementation on pipeline and outfall structure projects to be $101,000 ($100,000 to $102,000), using historical project modification costs.

A 6.2 Background

Activities classified as utility lines projects include the installation or repair of pipes or pipelines utilized in gas or liquids; cables, lines or wires used to transmit electricity or communication; and outfall structures of utilities such as waste water treatment plants or powerplants. These activities can impact salmon and steelhead habitat through actions such as excavation, temporary sidecasting of excavated materials, backfilling of the trench, and restoration of the work site to pre-construction contours and vegetation.

Table A-23 describes the common project modifications recommended by NOAA Fisheries for each type of utility line activity based on a review of the consultation history. These descriptions illustrate how projects may be impacted by section 7 implementation.

Table A-23
Typical Project Modifications for Utility Line Projects

Sub-activity	Typical Project Modifications
Pipeline Projects	- Use directional drilling - No change in the pre-construction contours - Stockpile soil from the excavation and replace in trench - Minimize roads and other encroachments to the maximum extent possible - Return banklines to original slopes and revegetated with native vegetation - Erosion control
Outfall Structure Projects	- Construction access via a barge from the waterway - Effluent restrictions - Backfill trench with clean sand - Complete site restoration and cleanup - In water work period restrictions - All blasting occurs in the dewatered area of the coffer dams - Provide fish salvage and/or fish passage - Isolate in-water work area
Sources: NMFS (2001), NMFS (2003f), NMFS (2003g), NMFS (2003e).	

A 6.3 Cost Assessment

We used data from local municipalities that have experience with utility line project modifications through consultations with NOAA Fisheries and the USACE to estimate modification costs. Table A-24 lists the typical project modifications associated with each sub-activity and presents a range of costs associated with the corresponding modifications. We assumed that the costs are certain and will be borne in a single year.

Given the available data, we were not able to distinguish between types of utility projects (pipeline projects *v.* outfall structure projects). As a result, we assigned an equal probability to the two types of sub-activities and their estimated modifications costs ($102,000, the midpoint of the range for pipeline projects, and $100,00 for outfall structure projects). The annual expected modification cost for a project is then equal to the mid-range of these two figures, or $101,000 per-project.

Table A-24
Estimated Per-Project Costs of Project Modifications for Utility Line Projects

Sub-activity	Typical Project Modifications	Estimated Costs
Pipeline Projects	- Erosion control (rock lining) - Bypass stream corridor - Riparian planning - Directional drilling ($800 to $1,000 per foot)	$5,000 to $199,000
Outfall Structure Projects	- Flag boundaries - Complete site restoration and clean up - Pollution and erosion control plan - Timing restrictions - Construction monitoring by an on-site biologist - Store and replace native soil upon project completion - Implement construction techniques to avoid sedimentation and conduct a sediment survey.	$100,000

A 6.4 Spatial and Temporal Distribution of Activity

We identified the location of utility line projects using data on the latitude and longitude of historic USACE permits on utility lines. We assumed that the historic patterns of these permits are likely to predict the general location of potential future projects, which will then engage in consultations.[44]

44. Future consultations may also cover pipeline projects permitted by FERC. We attempted to account for these by mapping pipeline right-of-ways in each watershed. We did not estimate modification costs for these right-of-way projects, however, as it was not possible to estimate the likelihood that a future pipeline project will in fact utilize a current right-of-way, and will also be involved in a consultation for salmon and steelhead. We therefore limited our analysis to known

We assume the annual level and locations of USACE permits for utility lines are representative of the annual level and locations of projects that need to be modified to comply with section 7 for salmon and steelhead.

We recognize there are limitations associated with using historic data to predict future permitted projects. The main concern is that past location is not a good predictor of future location. Although historic consultations are not a perfect indicator of future consultations, areas of concentrated activity in the past are likely to be areas of concentrated activity in the future and therefore our method produces a reasonable geographic distribution of activity given available data.

A 6.5 Annual Expected Modification Cost Estimates

Given the assumptions that all modification costs are certain and borne in one year, and that the annual level and locations of USACE permits for utility lines are representative of the annual level and locations of projects that need to be modified to comply with section 7 for salmon and steelhead, the annual expected modifications costs are equal to the estimated modifications costs, as shown in Table 25.[45]

Table A-25
Estimated Annual Expected Per-Project Costs for Utility Line Projects

Activity	Sub-activity	Present Value of Costs	Annual Expected Cost
Utility Lines	Outfall structures and pipelines	$101,000	$101,000

A 6.6 Assumptions and Potential Errors

Table A-26 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

pipeline and outfall structures.

45. We adjusted USACE permit data from different districts to account for temporal differences in the data. For example, the data set from the Seattle USACE district covered 4 years, while the Portland USACE district's data set covers 3 years. We estimated the annual level of projects requiring modifications by dividing the level we obtained from each district's data by the number of years covered by that district's data set.

Table A-26 Utility Line Projects: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
Historic location of USACE permits for utilities and location of right-of-ways are the most reasonable predictors of future locations available.	+/-
Costs associated with implementing past consultations are the most reasonable predictor of future costs.	+/-
Project modification recommendations do not overlap with Federal, state, or local laws.	+
Because there is no way to differentiate between pipelines with FERC and USACE nexuses, half of all pipelines are assigned directional drilling costs.	+/-
Section 7 consultation will not result in any net reduction in utility transmission capability. The same amount of utility lines will be constructed, although potentially at a higher cost and/or in a different location.	+/-
+ : This assumption is likely to bias our results upward. - : This assumption is likely to bias our results downward. +/- : This assumption could bias our results upward or downward.	

A 7. Instream Activities (including Dredging)

A 7.1 Overview

- The analysis assesses impacts on instream activities that are likely to result from section 7 implementation within critical habitat. Instream activities account for approximately 16 percent of the total consultation activity for the salmon in our consultation record. The majority of dredging consultations are encompassed by programmatic consultation with NOAA Fisheries. Some instream projects are addressed in an independent consultation but many are part of larger projects (e.g., pile driving may also be associated with large bridge projects, or an airport expansion has the potential to include dredging).[46]

- Actions associated with instream activities that may affect salmon and steelhead include dredging, construction or repair of breakwaters, docks, piers, pilings, bulkheads, boat ramp, and docks. For the purpose of our analysis, we divide instream activities into the following sub-activities: boat dock and boat ramp projects; bank stabilization projects; breakwaters and bulkhead projects; and dredging.

46. Wes Silverthorne, NOAA Fisheries, personal communication, January 9, 2004.

- Consultations on boat dock, boat launch, and bank stabilization projects typically involve USACE permits. Modification to these projects required to comply with section 7 for salmon and steelhead include shoreline planting, construction materials restrictions, use of bubble curtains, habitat improvement, spill prevention contaminant control plan, erosion control, and timing restrictions.

- Consultations on dredging projects typically involve a USACE permit. Modifications to dredging include work window constraints, extension of the prescribed work window, additional survey work, and mobilization costs.

A 7.2 Background

Instream activities include two broad types of projects: construction, maintenance, repair, or other work that is conducted instream, and dredging. Actions associated with the first type may involve structure removal, excavation, filling, and driving pilings. Most of the consultations on this type of project are associated with dock, pier, and breakwater projects.

Instream activity can affect salmon and steelhead in a number of ways. Turbidity associated with instream activities may interfere with salmon and steelhead visual foraging, increase susceptibility for predation, and interfere with migratory behavior. Chemicals and waste materials including toxic organic and inorganic chemicals that accumulate in sediment may be directly toxic to aquatic life or a source of contaminants for bioaccumulation in the food chain. The release of ammonia, a common by-product produced in anaerobic sediments, may affect aquatic species as it is re-suspended in the water column. Instream activity may adversely affect invertebrate colonies, which may result in some loss of salmon and steelhead prey. For dredging, entrainment can occur when the fish are unable to overcome the water velocities near the draghead and are pulled into the hold of the ship during dredging activities.

Table A-27 describes the common project modifications recommended by NOAA Fisheries for each type of instream sub-activity based on a review of the consultation history. These descriptions illustrate how projects may be modified by section 7 implementation.

Table A-27 Typical Project Modifications for Instream Activities (including Dredging)	
Sub-activity	**Typical Project Modifications**
Boat Dock	- Date restrictions - Temporary silt fences and floating silt barriers to limit sediment entry into river and reduce turbidity effects - Disposal of excavated material at upland disposal site - Assurance of clean, inert material making contact with water - Maintenance of all heavy equipment to insure cleanliness and devoid of external oil, fuel or other pollutants - Strict following of permit and contract requirements - Use of bubble curtain to minimize effects of sound waves from pile driving on listed fish - Minimize creation of predator habitat by minimizing incidental take from heavy equipment use - Minimization of incidental take from use of heavy equipment that may disturb riparian and aquatic systems - Minimization of incidental take from erosion control activities by using best available technology - Removal of one piling and its associated dock
Boat Launch	- Date restrictions - Insure isolation from flowing water to minimize take - Development and implementation of erosion and pollution control measures through area of disturbance - Implementation of measures to minmize impacts to riparian and instream habitat - Implementation of measures to treat water and limit fill within the 100-year floodplain - Ensure temporary/permanent impacts to riparian instream habitat are restored and mitigated

Table A-27 Typical Project Modifications for Instream Activities (including Dredging)	
Sub-activity	**Typical Project Modifications**
Bank Stabili-zation	- Limit the extent of rock placement in the channel - Spill Prevention Contaminant Control Plan - Erosion Control - Submit a monitoring and evaluation to USACE and NMFS - Replant disturbed areas with native plants with 80 percent survival after three years - Ensure that the in-water work activities (toe trench excavation and scour protection placement) are isolated from flowing water - Use fish screens on all water intakes - Fisheries biologist oversee capture and release program - Move excavated materials to upland areas - Restore all damaged areas to pre-work conditions - Install fencing as necessary to protect revegetated sites
Breakwater	- Minimize incidental take from general construction by excluding authorized permit actions and applying permit conditions - Comprehensive monitoring and reporting program to make sure objectives are met - Equipment will be fueled and lubricated in designated refueling areas at least 150 feet away from stream
Bulkhead	- In-water work restrictions - Fish passage - Removal of treated wood - Restricted use of heavy equipment - Isolation of in-water work area - Compensatory mitigation - Water intake screening - Pollution/erosion control - Capture and release - Conservation of native materials - Earthwork - Site restoration - Date restrictions - Minimize disturbance to riparian habitat - Minimize disturbance due to construction barges - Minimized contamination of riverine habitat - Monitoring

Table A-27 Typical Project Modifications for Instream Activities (including Dredging)	
Sub-activity	**Typical Project Modifications**
Dredging	- Work windows - Dredge-material disposal requirements
Sources: NMFS (2003a), NMFS (2003b), NMFS (2003c), NMFS (2003d), Peter Losavita, U.S. Army Corps of Engineers, personal communication, December 4, 2003.	

A 7.3 Cost Assessment

We used data from local municipalities that have experience with instream project modifications through consultations with NOAA Fisheries and the USACE to estimate modification costs. Due to data limitations, we were not able to estimate costs separately for bulkhead and breakwater projects, but assume they are included as part of other sub-activity projects. Table A-28 lists the different sub-activities with the typical project modifications and cost estimates.

Table A-28 Estimated Per-Project Costs of Modifications for Instream Activities (including Dredging)		
Sub-activity	**Typical Project Modifications**	**Estimated Costs**
Boat Dock	- Shore line planting. - Paint pilings white. - Bubble curtain. - Planks and floats graded for 60 percent light passage.	$25,000
Boat Launch	- Habitat improvements, including native plant installation and replacement of failed plantings - Redesign dock to meet NOAA Fisheries performance standards. - Professional fish biologist to monitor construction.	$28,400

Table A-28 Estimated Per-Project Costs of Modifications for Instream Activities (including Dredging)		
Sub-activity	**Typical Project Modifications**	**Estimated Costs**
Bank Stabilization	- Spill Prevention Contaminant Control Plan - Erosion Control - Monitoring and evaluation - Replant disturbed areas with native plants with 80 percent survival after three years - Ensure that the in-water work activities are isolated from flowing water - Fisheries biologist oversee capture and release program - Move excavated materials to upland areas - Restore all damaged areas to pre-work conditions - Install fencing as necessary to protect revegetated sites	$34,050 to $84,000
Dredging Projects	- Work window constraint - Extension of the prescribed work window[1] - additional survey work if safety is an issue - Mobilization cost[2] (occurs 14 percent of the time)	$332,000 to $1,310,000[3]
[1]Requires between 40 and 120 man-hours. [2] If a work window extension is not granted, USACE must complete the project during the next work window. Restarting the project results in additional mobilization costs. Mobilization costs are approximately one third of total project costs.		

Because of limitations in the spatial data, we collapsed the first three sub-activities – boat dock construction, boat launch construction, and bank stabilization projects – into one sub-activity. We used the midpoint of the associated range of costs as the cost estimate for each sub-activity: $54,500 ($25,000 - $84,000) for the combined instream project sub-activity, and $821,000 ($332,000 - $1,310,000) for dredging.

A 7.4 Spatial and Temporal Distribution of Activity

We used latitude and longitude location data from historic USACE permits to predict the location of future instream activities. We assume that historic patterns of instream projects are likely to predict the general location of potential future projects over the next eight years (the longest period in the USACE data). We also assume that the annual level and locations of USACE permits for instream activities and dredging projects are representative of the annual level and locations of projects that need to be modified to comply with section 7 for West Coast salmon and steelhead. Finally, we assume that costs are certain and will be borne in a single year.

We recognize there are limitations associated with using historic data to predict future permitted projects. The main concern is that past location is not a good predictor of future location. Although historic consultations are not a perfect indicator of future consultations, areas of concentrated activity in the past are likely to be areas of concentrated activity in the future and therefore our method produces a reasonable geographic distribution of activity given available data.

A 7.5 Annual Expected Modification Cost Estimates

As noted above, we assumed all modification costs are certain and borne in one year, and that the annual level and locations of USACE permits for instream activities and dredging projects are representative of the annual level and locations of projects that need to be modified to comply with section 7 for salmon and steelhead.[47] These assumptions produce the annual expected modification costs for instream projects and dredging shown in Table A-29.

Table A-29
Estimated Annual Expected Per-Project Costs for Instream Activity Projects (including Dredging)

Activity	Sub-activity	Present Value of Costs	Annual Expected Cost
Instream Activities	Boat dock, boat ramps, bank stabilization	$54,500	$54,500
Dredging	Dredging	$821,000	$821,000

A 7.6 Assumptions and Potential Errors

Table A-30 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

Table A-30
Instream Activities and Dredging: Assumptions and Potential Errors

Assumption	Direction of Potential Error
Historic location of USACE permits for instream activities including dredging are the most reasonable predictors of future locations available.	+/-
Costs associated with implementing past consultations are the most reasonable predictor of future costs.	+/-
Project modification recommendations do not overlap with Federal, state, or local laws or best management practices.	+

47. We adjusted USACE permit data from different districts to account for temporal differences in the data. We estimated the annual level of projects requiring modifications by dividing the level we obtained from each district's data by the number of years covered by that district's data set.

Table A-30 Instream Activities and Dredging: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
Range of costs for case studies are representative of all instream activities.	+/-
- : May result in an underestimate of real costs + : May result in an overestimate of real costs +/- : Has an unknown effect on estimates	

A 8. National Pollutant Discharge Elimination System Permitted Facilities

A 8.1 Overview

- This analysis examines the potential economic impact to facilities that are required to obtain National Pollutant Discharge Elimination System (NPDES) permits. The EPA and NOAA Fisheries recently authored guidance to States and tribes on the development of temperature criteria deemed protective of salmon and steelhead. As a result, NPDES-permitted facilities in the Pacific Northwest are required to ensure effluent discharge does not raise the temperature in receiving waters above site-specific minimum temperature standards (EPA 2003). Facilities employ a range of temperature control strategies to meet these standards.

- The federal nexus for this activity is EPA's approval of State Water Quality Standards. NOAA Fisheries has consulted with EPA regarding the review and approval of the temperature component of water quality standards. Although a federal nexus does not apply directly to each NPDES-permitted facility (due to EPA's delegation of permitting to state water quality agencies), this analysis includes the project modifications and costs resulting from future compliance with the new standards by NPDES-permitted facilities.

- To comply with the temperature criteria, NPDES-permitted facilities identify and employ a host of temperature control procedures through Temperature Management Plans (TMPs). Controls include process optimization, pollution prevention, land application, and cooling towers.

- The analysis estimates the operations and maintenance (O&M) costs and capital expenditures necessary to comply with the temperature criteria. These compliance costs are based on a sample of major and minor NPDES-permitted facilities considered in EPA's Economic Analysis of the Proposed Water Quality Standards Rule for the State of Oregon (Science Applications International Cooperation 2003). The estimated modifications costs are $630,467 ($476,483 - $784,451) for a major facility and $72,039 ($0 - $144,078) for a minor facility.

- Impacts of section 7 implementation resulting from NOAA's consultation on the temperature criteria will vary depending on a facility's compliance with existing temperature standards, and

whether it is subject to these requirements at all. To reflect this uncertainty, this analysis assumes that any major NPDES-permitted facility has a 25 percent probability of requiring compliance-related expenditures, and any minor NPDES-permitted facility has a 20 percent chance of incurring related costs.

A 8.2 Background

NOAA Fisheries has consulted with EPA on various aspects of its approval of State Water Quality Standards. Since the species were listed, 14 informal and one formal consultation have been completed, including development of Total Maximum Daily Loads (TMDLs), review of non-temperature related Water Quality Standards, clean up of Superfund sites, and review of pesticide applications. With the exception of pesticide applications, the majority of these activities do not represent a significant portion of the consultation record nor are they expected to increase in the future.[48]

In general, the only incremental standard that has been affected explicitly by concern for salmon and steelhead involves water temperature controls. While NPDES-permitted facilities have always been required to adhere to certain temperature criteria associated with effluent discharge, the 2003 guidance has led to stricter standards where salmon and steelhead are known to spawn or rear. As a result, this analysis focuses on costs associated with the temperature criteria.

A 8.3 Cost Assessment

We used EPA's economic impact assessment to estimate modifications costs for NPDES-permitted facilities. The EPA analysis provides cost estimates to meet the spawning and rearing temperature criteria of 18 degrees Celsius for salmon and steelhead rearing, 16 degrees Celsius for core juvenile rearing, and 13 degrees Celsius for spawning. Temperature control procedures commonly employed at NPDES-permitted facilities include:

- Process optimization (identifying management procedures that could be altered to reduce thermal loads to waste streams);
- Reduced volume of discharge by reusing effluent;
- Storing heated wastewater;
- Off stream cooling/evaporation ponds; and
- Installing treatment technology to reduce temperatures.

The EPA analysis assumes that facilities first employ low cost controls and then consider more costly controls, if necessary.

Based on EPA's sample of facilities, we assume capital costs are incurred in the first year, and operations and maintenance (O&M) costs are incurred uniformly over a 20 year period. We divided facilities into two categories, also based on the EPA study. Major facilities are those that may require significant capital expenses to comply with the temperature criteria, while minor facilities need only incur O&M expenditures.

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48. Pesticide applications are covered as a separate activity in section D-11.

Table A-31 provides a summary of the cost estimates and their ranges, based on the EPA analysis.

Table A-31 Estimated Per-Project Costs of Modifications for NPDES-permitted Facilities			
Facility Type	**O & M**	**Capital Cost**	**Present Value of Cost**
Minor	$6,800 ($0 - $13,600)	$0	$72,039
Major	$19,725 ($5,190 - $34,260)	$421,500	$630,467

A 8.4 Spatial and Temporal Distribution of Activity

We identified the location and type (major or minor) of facilities potentially affected by the temperature requirements using latitude and longitude data from the Washington Department of Ecology, the Oregon Department of Environmental Quality, EPA Region 10, and EPA Region EPA Region 9. The data represent the location of facilities as of 2003 or 2004. We assume that if a facility is required to comply with the temperature criteria, it will do so immediately.

A 8.5 Annual Expected Modification Cost Estimates

Based on the EPA's analysis, it is not certain that a facility will in fact incur modification costs. Their analysis focused on a relatively small sample of potentially affected facilities, specifically four major facilities and five minor facilities. The analysis reviewed site-specific monthly effluent and receiving water temperature data from these facilities to evaluate the effect of discharge on receiving waters. Based on this review, EPA concluded that one of the four major facilities would require significant capital expenditures along with incurring incremental O&M costs to comply. Of the five minor facilities, only one would incur incremental O&M costs, while the remaining four would experience no incremental costs.

We employ these ratios as the probabilities that a major and minor facility, respectively, will incur modification costs. Specifically, the analysis assumes that a major facility has a 0.25 probability of bearing modification costs (capital and O&M), and a minor facility has a 0.20 probability (O&M). The resulting annual expected modification costs are shown in Table A-32.

Table A-32 Estimated Annual Expected Per-Project Costs for NPDES-permitted activities			
Activity	**Sub-activity**	**Present Value of Costs**	**Annual Expected Cost**
NPDES-permitted activities	Minor facility	$72,039	$1,360
	Major facility	$630,467	$14,878

A 8.6 Assumptions and Potential Errors

Table A-33 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

Table A-33 **NPDES-permitted Facilities: Assumptions and Potential Errors**	
Assumption	**Direction of Potential Error**
All states and related facilities are assumed to begin compliance with more stringent temperature requirements in the near term.	+
The sample of major and minor facilities (located in Oregon) considered in the EPA analysis is representative of facilities throughout the designation	+/-
The compliance costs estimated for the sample of facilities considered in the EPA analysis are representative for all facilities	+/-
The ratio of facilities affected by the new standard to facilities not affected in the EPA sample is representative of the ratio in the entire population of facilities.	+/-
All NPDES permit holders within the same class (major or minor) have a similar probability of incurring temperature control compliance costs.	+/-
- : May result in an underestimate of real costs + : May result in an overestimate of real costs +/- : Has an unknown effect on estimates	

A 9. Sand and Gravel Mining

A 9.1 Overview

- Sand and gravel mining activities that affect West Coast salmon and steelhead generally include the removal of gravel for industrial purposes, such as for road construction material, concrete aggregate, fill, and landscaping (NMFS 2005i).

- Sand and gravel mining is an activity permitted by USACE under sections 401 and 404 of the Clean Water Act, or under section 10 of the Rivers and Harbors Act of 1899.

- Section 7 consultations on sand and gravel mining have produced numerous recommended modifications, but one that is frequently recommended is a limitation that reduces the total amount of gravel that can be removed from salmon and steelhead habitat areas.

- Our approach is to apply an average per-mile cost of the net revenue forgone from sand and gravel mining due to section 7 restrictions in areas where sand and gravel mining affects critical habitat. This is likely to overstate the real costs of reducing sand and gravel mining within critical habitat, as alternative mining sites are likely to exist that would allow for substitution to sites outside of critical habitat.

- Impacts of section 7 implementation may be significant to the companies conducting activities within the riparian areas of this designation, though the overall impact of this activity on regional economies is likely to be smaller than other activities. We do not expect that this impact will result in a reduction in the overall market supply of gravel to the impacted regions.

A 9.2 Background

Sand and gravel is commonly mined from active river channels and floodplains for construction aggregate that can be made into concrete, asphalt, road base, and drain rock. Three basic types of sand and gravel mining can take place in salmon and steelhead habitat: wet-pit mining, bar skimming or scalping, and dry-pit mining. Wet-pit mining involves the use of a dragline or hydraulic excavator to remove gravel from below the water table and can directly destroy spawning habitat, increase turbidity, increase suspended sediment, and increase gravel siltation in salmon habitat areas. Gravel bar skimming typically occurs above the water table, but is also considered to significantly impact aquatic habitat by destabilizing the banks and increasing suspended sediment (NMFS 2005i). Dry-pit mining occurs outside the active stream channel, and typically is considered by NOAA Fisheries to have fewer direct effects on salmon and steelhead, although adverse impacts on the stream channel are still a concern.

Sand and gravel mining is an activity permitted by USACE under sections 401 and 404 of the Clean Water Act, or under section 10 of the Rivers and Harbors Act of 1899, and this is the typical federal nexus for consultation. This activity accounts for less than one percent of consultation on salmon and steelhead during 2001-2003. Several formal consultations are reported to be underway at present.

A 9.3 Cost Assessment

The sand and gravel mining extraction policy for NOAA Fisheries states that "instream gravel removal quantities be strictly limited so that gravel recruitment and accumulation rates are sufficient to avoid prolonged impacts on channel morphology and anadromous fish habitat."[49] Following this guidance, most NOAA Fisheries formal consultations on sand and gravel mining include strict gravel removal restrictions. The consultation record typically does not record the original quantities of gravel intended for a permit, however, so it is not possible generally to account for the opportunity cost of these restrictions. Instead, we use information from one case that has sufficient information to estimate this cost.

The case concerned a site mined for 32 years by Joe Bernert Towing (NMFS 2003i). The average annual gravel extraction for this area before the consultation was 281,000 cubic yards (cy). Under

49. NMFS (2005i) at 11.

the terms of the biological opinion and resulting five-year USACE permit, the average annual removal allowed was 150,000 cy, a 47% reduction. This restriction imposed a loss of approximately 6,600 tons/mile on average for the site. At a value of $6.70/ton (Kohler 2002), the gross value of the forgone production is about $44,500 per mile annually.[50] If net revenue for this industry is assumed to be 25 percent of gross revenue,[51] potential lost net revenues at this site are approximately $11,000 per year, or a present value (at a 7%discount rate) of $1.35 million for the 30-mile mining area over the 5-year life of the permit.

Because substitute sites may be available to a producer, the actual loss in net revenues may be smaller than amount obtained assuming a substitute site is not used. Because critical habitat may cover a wide area, however, its coverage could create a need to travel a substantial distance to a substitute site, possible rendering the substitute site uneconomical.[52] Without information on the proximity of such substitute sites, we assume that net revenues lost to producers when gravel restrictions are imposed can be estimated in a manner similar to the one used above.

Because the area was mined successfully for 32 years, we consider this area to be a good source of gravel. Clearly, not all sand and gravel mining areas will produce equivalent loss of the product. Moreover, the value per mile of sand and gravel mining activities depends on many factors, including depth of operation. Rough estimates of a few sample sites suggest that per-mile annual production may vary from 3,000 to 30,000 tons.[53] This analysis currently assumes that identified and currently-producing sand and gravel mining sites will produce gravel at rates similar to the ones in the above example.

A 9.4 Spatial and Temporal Distribution of Activity

We identified sand and gravel mining tracts in Oregon, Washington, and Idaho using latitude and longitude data from the USGS "Active mines and mineral plants" (1997). We assume that each sand and gravel mining site in the areas under consideration will be involved in a consultation at some point over the next 30 years. We also assume that the probability of consultation in a given year is equal across that time period.

Whether or not a particular site will actually be required to modify its operations depends on many factors, including:

- whether the sand and gravel mining occurs in a salmon- or steelhead-bearing stream;
- the type of mining planned (wet-pit mining, bar skimming or scalping, and dry-pit mining)
- whether the planned mining activity will occur during spawning or migration of salmon; and

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50. It is possible that the age and history of the mine could preclude future mining at the same levels as previously, but this is not known.

51. This figure is a gross operating margin (Risk Management Association 2002).

52. For every 30 miles that aggregate has to travel, the costs of transportation double (California Department of Conservation 2001).

53. Estimated from sites characteristics included in California Department of Conservation (2001).

- whether the planned mining activity already incorporates mitigation measures to reduce sedimentation, bank stability, channel widening, and so forth.

For this reason, we consider the possibility that no modification will be required for a sand and gravel mining operation. Without more detailed information on the distribution of site attributes, we assign an equal probability to the two possible events, modification and no modification. Moreover, we also assume that restrictions will be in effect for five years of the 30 year forecast period, after which a substitute site is used or some other alternative is chosen that eliminates the loss in net revenue.

A 9.5 Annual Expected Modification Cost Estimates

To derive the annual expected modification cost for sand and gravel mining, we combine the cost estimates and assumptions we have made in the following way:

1) If a consultation occurs and modifications are required, the cost of the modifications equals the lost net revenue over a five year period derived from the example above, or $1.35 million.
2) The probability that a consultation will occur in a given year is 0.033, and the probability that the modifications will be required is 0.50.

The resulting annual expected modification cost for sand and gravel mining is given in Table A-34.

Table A-34
Estimated Annual Expected Per-Project Costs for Sand and Gravel Mining

Activity	Sub-activity	Present Value of Costs	Annual Expected Cost
Sand and Gravel Mining	Mining on non-Federal lands	$1,352,106	$22,535

A 9.6 Assumptions and Potential Errors

Table A-35 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

Table A-35
Sand and Gravel Mining: Assumptions and Potential Errors

Assumption	Direction of Potential Error
This analysis assumes that each sand and gravel mining site in critical habitat is likely to bear costs associated with section 7 implementation for salmon and steelhead over the next 30 years, and assumes an equal probability of those costs being borne in any one year in that time period.	+

Table A-35 Sand and Gravel Mining: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
This analysis assumes that substitutes are unavailable to sand and gravel mining companies who are required to reduce mining efforts in salmon and steelhead critical habitat areas.	+/-
Impacts attributable to critical habitat designation for specific sand and gravel mining operations are not available. As a result, the cost/impacts identified are based on a small sample of projects, and may not precisely capture impacts incrementally attributable to critical habitat or section 7 of the ESA. In addition, impacts at specific projects are likely to vary.	+/-
This analysis assumes that a typical mining operation will be 30 miles of mining for 5 years, with a profit margin of 25 percent.	+/-
- : May result in an underestimate of real costs + : May result in an overestimate of real costs +/- : Has an unknown effect on estimates	

A 10. Residential and Commercial Development

A 10.1 Overview

- This analysis assesses impacts on residential and commercial development, but excludes impacts that are covered elsewhere (roads, utility lines, and so forth).[54] The most common federal nexus for residential and related development activities is an Army Corps of Engineers (USACE) permit for construction or expansion of stormwater outfalls, discharge or fill of wetlands, flood control projects, bank stabilization, and instream work.[55]

- We estimate the per-project cost of section 7 implementation on residential and related development projects as $235,000 ($230,000 to $240,000), using costs of implementing state recommended stormwater plans. The estimate includes costs of the stormwater pollution

54. Infrastructure impacts are captured in the analyses of transportation, instream activities, and utility line projects.

55. Personal communication with DeeAnn Kirkpatrick, NOAA Puget Sound Habitat Conservation Division, Fishery Biologist Southern Puget Sound Region, October 31, 2003. Personal communication with Eric Shott, NMFS Santa Rosa Field Office Section 7 Coordinator, November 5, 2003. Personal communication with Gary Stern, NMFS Santa Rosa Field Office, San Francisco Bay Team Leader, November 5, 2003.

prevention plan, permanent stormwater site plan, and stormwater best management practice operation and maintenance.

- The designation of critical habitat for West Coast salmon and steelhead is unlikely to have significant impacts to this activity by increasing costs to developers, reducing revenues, imposing mitigation costs, or resulting in project delays. The designation of critical habitat will have a negligible impact on regional market supply for residential, commercial, or industrial land and thus the primary impacts will be felt by individual property owners. There are three reasons significant impacts are not anticipated. First, the historical consultation record suggests that section 7 consultation regarding West Coast salmon and steelhead are rare. Second, the resulting project modifications are relatively small and/or have been captured by other activities (e.g., utility line activities). Third, the land markets in the watersheds covered in this proceeding area are relatively unconstrained (e.g., market substitution to competitive and comparable sites can easily occur). All of these factors contribute to a low impact to development.

A 10.2 Background

The potential for adverse economic impacts arising from constraints on residential and related development is a frequent concern to communities in which critical habitat has been proposed for designation. The nature and magnitude of any economic impact attributable to critical habitat designation will depend upon baseline land and housing market conditions and the extent to which a designation distorts these initial conditions. A common concern is that the designation of critical habitat may reduce the overall amount of land available to the market, and increase the price of developed land and housing.

If critical habitat designation inhibits the development potential of some parcels, the supply of land available for development will be reduced. In areas that are already highly developed, or where developable land is scarce for other reasons (i.e., non-critical habitat-related regulations), this reduction in available land and the corresponding increase in price could be significant, and ultimately translate into fewer housing units being built within the affected market, affecting both producers and consumers. In areas where developable land is relatively plentiful, however, developers and builders will be able to identify substitute sites for projects, thereby limiting economic impacts to the owners of specific parcels that suffer a diminishment in their land's value.

In addition to the primary economic impacts identified above, commenters on previous economic analyses of critical habitat designation have described additional categories of economic and financial effects in residential and commercial development markets, generally falling into the category of regional economic impacts (Elliott D. Pollack and Company 1999). Regional economic impacts reflect changes in *local* output, employment and taxes. The principal category of regional impacts associated with critical habitat designation in areas of residential development involves potential changes in revenues and employment in construction-related firms and other industries that support builders and developers. Specifically, commenters have suggested that if development activity decreases in a given area, these secondary industries are likely to suffer severe economic consequences.

A second category of regional impacts identified by commenters to past critical habitat analyses concerns the potential for forgone tax revenues associated with reduced residential development. That is, reduced development potential in an area may lead to lower real estate and other tax revenues. In many cases, however, the lower revenue will be offset by a reduction in municipal expense; thus, it is important that any estimated impacts in this category are net of these service expenditures.

Finally, in more extreme cases, concern has been expressed regarding the broader impact of critical habitat designation on regional economies. Specifically, some individuals have questioned whether designation will delay and/or impair an area's ability to realize economic growth by influencing development patterns. Whether further development of a region is, on net, desirable is a point of contention in many markets. Nonetheless, with the exception of cases in which critical habitat designation precludes a large proportion of available land from development, designation is unlikely to substantially affect the course of regional economic development (Meyer 1998).

In some cases, the public may believe that critical habitat designation will depress private property values below the levels associated with anticipated project modifications described above. That is, the public may perceive that, all else being equal, a property that is designated as critical habitat will be stigmatized and have lower market value than an identical property that is not within the boundaries of critical habitat. Public attitudes about the limits and costs that critical habitat may impose can cause real economic effects to the owners of property, regardless of whether such limits are actually imposed.

The designation of critical habitat for the West Coast salmon and steelhead ESUs under consideration is unlikely to increase costs to developers, reduce revenues, impose mitigation costs, or result in project delays, at least in significant amounts. There are two reasons significant impacts are not anticipated. First, unlike terrestrial species, habitat for West Coast salmon and steelhead is not itself part of the supply of developable land. For this reason, protection of the aquatic habitat need not take the form of supplanting development if the impacts of the development (whatever they might be) can be mitigated. As a result, section 7 consultations regarding the ESUs for real estate developments are usually limited to specific components of the development and are expected to have no direct impact on the supply of land or housing. Second, as seen in the next part of this section, project modification costs are expected to be modest (anticipated to range from $230,000 to $240,000 per project) and, according to NOAA Fisheries personnel, consultations regarding development projects are rare.[56]

For this reason, the available data also do not support an expectation of significant stigma effects. Section 7 has no strong historical connection to restrictions on private property, and there is no expectation that this lack of a connection will change in the future. If such stigmatization does occur, it seems likely that experience with the actual strictures of critical habitat designation will remove any (negative) premium that might be characterized as a stigma effect.

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56. Personal communications with DeeAnn Kirkpatrick, NOAA Puget Sound Habitat Conservation Division, Fishery Biologist Southern Puget Sound Region, October 31, 2003; Eric Shott, NOAA Fisheries Santa Rosa Field Office Section 7 Coordinator, November 5, 2003; and Gary Stern, NOAA Fisheries Santa Rosa Field Office, San Francisco Bay Team Leader, November 5, 2003.

A 10.3 Cost Assessment

We used information from the Washington Department of Ecology as the basis for our cost assessment (WDOE 2001). Table A-36 lists the typical modifications associated with development projects and presents a range of costs. To determine this range, we combined all potential project modification costs and applied the average project cost to each project. This is likely to be an overestimate because it is the cost of implementing the State of Washington's suggested stormwater management plan and other states may not require as stringent standards as this plan.[57] We assume that costs will be borne in one year.

Table A-36
Estimated Per-Project Costs of Modifications for Development Projects

Activity	Typical Project Modifications	Estimated Costs
Residential and Commercial Development	- Implement state recommended stormwater plans. - Activities to reduce stormwater volume and/or pollutants. - Minimizing hardscape of the outfall structure. - Vegetation replacement.	$235,000 ($230,000 - 240,000)

A 10.4 Spatial and Temporal Distribution of Activity

To estimate the level and location of development-related impacts, we used EPA data on the level and locations of State-issued NPDES stormwater permits and USACE permit data. Information from USACE permits for stormwater systems would be the ideal data, as they have information on location, cover development activities, and have a clear federal nexus. Only one USACE district (Seattle), however, identified stormwater projects in their permit data. NPDES stormwater permits are overly inclusive, as not all State-issued permits are for projects which would require the modifications recommended by NOAA Fisheries (e.g., a single family home would not require an extensive stormwater management system).

We therefore needed to find another way to identify potentially impacted projects. We assumed that the ratio of the Seattle USACE stormwater permits (which have a clear federal nexus) to State-issued NPDES stormwater permits in the area covered by the Seattle USACE district could be applied to other areas. This approach found 86 of the 104 NPDES stormwater permits issued by Washington Department of Ecology from 2000 to 2003 lay within the boundary of Seattle USACE jurisdiction. There were five unique stormwater permits identified in the Seattle USACE data from 2000 to 2003. This proportion (0.058 USACE-permitted stormwater projects per 1 State-issued NPDES stormwater

57. This guidance document's implementation is not required except in the case of municipal stormwater systems that require a NPDES permit. Implementation may also be required by local zoning laws or as other permit requirements. Personal communication with Ed O'Brien, Washington Department of Ecology personnel, November 7, 2003.

permits) was then used to adjust the level of State-issued NPDES permits for stormwater projects in a particular area.

We assume that each development-related project is certain to bear these modification costs and that the costs are borne in one year.

A 10.5 Annual Expected Modification Cost Estimates

The assumptions that modification costs are certain and they are borne in one year produce the annual expected modification costs shown in Table A-37.

Table A-37
Estimated Annual Expected Per-Project Costs for Residential and Commercial Development

Activity	Sub-activity	Present Value of Costs	Annual Expected Cost*
Residential and Commercial Development	New development	$235,000	$13,865

*The annual expected cost is adjusted to reflect the probability (0.058) that a USACE-permitted activity would require a stormwater modification, as noted in section D.10.4

A 10.6 Assumptions and Potential Errors

Table A-38 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

Table A-38
Development Projects: Assumptions and Potential Errors

Assumption	Direction of Potential Error
State and local laws do not require similar provisions to the Minimum Requirements for Stormwater Management of Washington Department of Ecology.	+
Historic location of stormwater permits is the most reasonable predictor of future locations available.	+/-
Stormwater system costs for Washington Department of Ecology recommended systems are the most reasonable estimates of the cost of project modifications for development.	+/-
NOAA stormwater system recommendations do not overlap with state or local laws.	+/-

Table A-38 Development Projects: Assumptions and Potential Errors	
Assumption	**Direction of Potential Error**
Other consultations related to development may occur through associated infrastructure and are captured in these other activities.	+/-
- : May result in an underestimate of real costs + : May result in an overestimate of real costs +/- : Has an unknown effect on estimates	

A 11. Agricultural Pesticide Applications

A 11.1 Overview

- The Environmental Protection Agency (EPA) was recently enjoined from authorizing the application of a set of pesticides within certain distances from "salmon-supporting waters." The effect of this injunction is to impose two types of restrictions on applications of pesticides covered in the lawsuit. For aerial applications, no pesticides can be applied within 100 yards of "salmon-supporting waters"; for ground applications, the distance is 20 yards. We use these restrictions as a proxy for the types of modifications section 7 is likely to have.

- We considered three crop types (oil seed and grain farming, vegetable and melon farming, and fruit and tree nut farming) separately. Using data from the USDA's National Agricultural Statistics Service (NASS), we derived estimates of the net agricultural operational revenue per acre for each crop type in each county covered by an ESU. Under the assumption that the court-ordered restrictions on pesticide applications force the affected land out of production, these estimates are then a measure of the cost of section 7 implementation.
- Using NOAA Fisheries spatial data on the salmon and steelhead distribution, we created buffers of 100 yards and 20 yards on each side of the streams occupied by the salmon and steelhead under consideration. We measured the amount of land affected by the pesticide restrictions using USGS National Land Cover Data (NLCD). We then applied the per-acre cost estimates to these acreage estimates to obtain the costs of section 7 implementation on agricultural pesticide applications.

A 11.2 Background

Under the Endangered Species Act, the Environmental Protection Agency (EPA) must consult with the Fish and Wildlife Service and NOAA Fisheries to ensure that the registration of products under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) complies with section 7 of the ESA. Because of the complexity of consultations to examine the effects of pest-control products, there have been almost no consultations completed in the past decade.

In 2004, the EPA was enjoined from authorizing the application of a set of pesticides within a certain distances from "salmon supporting waters."[58] For aerial applications, the distance is 100 yards; for ground applications, the distance is 20 yards. The basis for this injunction was the EPA's failure to consult with NOAA Fisheries under section 7 of the ESA concerning possible adverse effects of pesticide application on ESA-protected salmon and steelhead. The injunction has been allowed to remain in place by the Ninth Circuit Court of Appeals, and so as of the date of this report, the court-ordered restrictions continue to apply.[59] Because of the link between section 7 and these restrictions, we used the two sets of "no-spray buffers" to set a range of possible impacts.

A 11.3 Cost Assessment

Our analysis focused on agricultural pesticide applications and the associated impacts of the no-spray buffers. We assumed that the effect of the court-ordered restrictions was to force agricultural land out of production, resulting in the loss of any positive net revenue earned from the land. We considered three crop types separately:

- Oil seed and grain farming(NAICS industry code 1111) - This category comprises operations engaged in growing oilseed and/or grain crops, and operations engaged in producing oilseed and/or grain seeds, including corn silage and grain silage

- Vegetable and melon farming (NAICS industry code 1112) - This category comprises operations engaged in growing vegetables or melon crops; producing vegetable and melon seeds; or growing vegetable and/or melon bedding plants

- Fruit and tree nut farming (NAICS industry code 1113) - This category comprises operations engaged in growing fruit and/or tree nut crops.[60]

For each crop type, we used the data from the USDA National Agricultural Statistics Service, 2002 Census of Agriculture, on the acres of cropland and net operational dollar gain (ignoring government payments) on a county basis. Dividing the latter by the former produced an estimate of the average net operational dollar gain per acre by crop type and county. Table A-39 presents a summary of these estimates.

58. *Washington Toxics Coalition, et al., v. EPA*, C01-0132 (W.D. WA), January 22, 2004.

59. *Washington Toxics Coalition et. al v. EPA*, No. 04-35138, May 4 and June 22, 2004.

60. USDA, National Agricultural Statistics Service. 2002 Census of Agriculture: Appendix A.

Table A-39 Net Operational Dollar Gain by Crop Type and County			
	State average and county range by crop type		
State	Oil seed and grain farming	Vegetable and melon farming	Fruit and tree nut farming
Idaho	$34 (-$191 to $234)	$239 (-$68 to $939)	$111 (-$1,105 to $1,264)
Oregon	$9 (-$260 to $105)	$338 (-$1,070 to $6,517)	$216 (-$646 to $3,583)
Washington	$30 (-$1,226 to $202)	$367 (-$3,145 to $4,176)	$754 (-$2,519 to $3,623)

As can be seen in this table, in some cases the Census data show a negative net operational dollar gain. In the long run, an economic enterprise is unlikely to operate if net revenue is negative. For this reason, we set net operational dollar gain to zero if it was negative for a particular county and crop type. For other counties and crop types, the Census data were missing, in which case we substituted the state average for that crop type. These adjusted figures are then used as estimates of the modifications costs for agricultural pesticide applications.

A 11.4 Spatial and Temporal Distribution of Activity

Assessing the spatial distribution of the section 7 impacts required us first to interpret the phrase "salmon supporting waters," which is the basis for the court-ordered restrictions. We used NOAA Fisheries spatial data to identify stream reaches that are occupied by salmon or steelhead for each of the 12 ESUs under consideration.[61] For the purposes of this analysis, these reaches are taken as the "salmon supporting waters" to which the court-ordered restrictions are applied. Because occupied reaches vary by ESU, the spatial distribution of the impacts also varies by ESU.

The next step was to create 100-yard and 20-yard buffers around these stream reaches. These buffers identified the areas where aerial and ground pesticide applications, respectively, are restricted by the court order. We then estimated the number of acres within these buffers for each of the three crop types using U.S. Geological Survey National Land Cover Data (NLCD).[62] The three land cover types were

61. We also considered nearshore areas and the Lower Columbia River area as occupied reaches, and so treated them as "salmon supporting waters."

62. There is a slight mismatch between the NASS and the NLCD data sets. The NASS data on agricultural revenues places corn in the oil seed and grain farming category, while the NLCD data on land cover types places it in the row crop category. Corn is not a significant crop in any of the counties under consideration, however.

- Small Grains (NLCD 83) - Areas used for the production of graminoid crops such as wheat, barley, oats, and rice
- Row Crops (NLCD 82) - Areas used for the production of crops, such as corn, soybeans, vegetables, tobacco, and cotton
- Orchards/Vineyards/Other (NLCD 61) - Orchards, vineyards, and other areas planted or maintained for the production of fruits, nuts, berries, or ornamentals

This produced acreage estimates for each watershed, divided into separate county portions where a watershed spanned more than one county.

Because the NLCD data are based on satellite imagery from the early-to-mid 1990s, we adjusted the acreage estimates using county-level data (and state-level data where county-level data were missing) on changes in acreages of each crop type between 1992 and 2002, using the 1992 and 2002 Census of Agriculture, respectively. We applied the ratio of the 2002/1992 acreages to our crop acreage estimates, which "inflates" them to 2002 levels.

Finally, we assume that the impacts of the agricultural pesticide application restrictions are certain and borne as an annual impact. Because we have no data on the distribution of spraying by application type (aerial or ground), we assume there is a 50% probability of each type. For the High and Low cost estimates, we assume that pesticide applications are 100% aerial and 100% ground, respectively, which implies that all buffers would be 100 yards and 20 yards, respectively.

A 11.5 Annual Expected Modification Cost Estimates

The assumptions that modification costs are certain and they are borne in one year produce the annual expected modification costs shown in Table A-40.

Table A-40
Estimated Annual Expected Per-Project Costs for Agricultural Pesticide Applications

Activity	Present Value of Costs	Annual Expected Cost
Agricultural Pesticide Applications	$0 - 6,517 per acre, depending on crop type and county	$0 - 6,517 per acre, depending on crop type and county

A 11.6 Assumptions and Potential Errors

Table A-41 presents the key assumptions of the economic analysis for this type of activity, as well as the direction of potential error introduced by the assumptions.

Table A-41
Agricultural Pesticide Applications: Assumptions and Potential Errors

Assumption	Direction of Potential Error
We assume the court-ordered injunction represents the likely outcome of future section 7 consultations. If consultation may find more flexible ways to avoid jeopardy and adverse modification, the impacts of section 7 implementation may be lower.	+
We assume that agricultural land owners can make no adjustment in their crop and pesticide practices nor are there alternative beneficial uses of land.	+
We assume there are no adverse spillover effects of pesticide restrictions on agricultural land adjacent to the pesticide buffers. If the restrictions increase the cost of managing adjacent land, the impacts of section 7 implementation may be higher.	-
We assume that the base case consists of a 50% probability that each acre of land currently has aerial or ground pesticide applications.	-/+
We assume that negative per-acre returns are not representative of the actual impact.	+
We assume that the measured, positive per-acre returns are representative of the actual impact.	-/+
We assume that the adjustment for acreage between 1992 and 2002 represents the actual change in acreage during that period.	-/+

A 12. Summary

Table A-42 below summarizes the cost estimates for the different types of activities.

Table A-42
Summary of Activity Cost Estimation

Activity	Sub-activity	Cost Unit	Cost Stream (Duration)	Present Value of Cost Stream	Forecast Period	Probability of Modifications	Annual Expected Per-Project Cost
Hydropower Dams*	Small (0 - 5 MW)	per dam	$2,120,500	$2,120,000	20 years	$p_t = 0.05$ $p_M = 0.10$	$10,603
	Medium (5 - 20 MW)		$5,750,000	$5,750,000	50 years	$p_t = 0.02$ $p_M = 1.00$	$115,000
	Large (>20 MW), requires fish passage		$73,850,000	$73,850,000	50 years	$p_t = 0.02$ $p_M = 1.00$	$1,477,000
	Large (>20 MW), does not require fish passage		$45,230,000	$45,230,000	50 years	$p_t = 0.02$ $p_M = 1.00$	$904,600
	Large (>20 MW), fish passage unknown		$56,390,000	$56,390,000	50 years	$p_t = 0.02$ $p_M = 1.00$	$1,127,800
	Unknown capacity		$7,400,000	$7,400,000	30 years	$p_t = 0.033$ $p_M = 1.00$	$246,667
Non-hydropower Dams	Federal and large non-hydropower dams	per dam	$2,120,500 (1 year)	$2,120,500	20 years	$p_t = 0.05$ $p_M = 1$	$106,025
	Small non-Federal Non-hydropower dams					$p_t = 0.05$ $p_M = 0.10$	$10,603

Table A-42
Summary of Activity Cost Estimation

Activity	Sub-activity	Cost Unit	Cost Stream (Duration)	Present Value of Cost Stream	Forecast Period	Probability of Modifications	Annual Expected Per-Project Cost
Federal Land Management Activities (non-wilderness)	Idaho Federal land	per acre	$1.26 (1 year)	$1.26	Annual	$p_t = 1.0$ $p_M = 1.0$	$1.26
	Western Oregon & Western Washington Federal land		$5.90 (1 year)	$5.90			$5.90
	Eastern Oregon & Eastern Washington Federal land		$3.30 (1 year)	$3.30			$3.30
Federal Land Management Activities (wild-erness)	Idaho	per acre	$0.07 (1 year)	$0.07	Annual	$p_t = 1.0$ $p_M = 1.0$	$0.07
	Western Oregon & Western Washington		$0.29 (1 year)	$0.29			$0.29
	Eastern Oregon & Eastern Washington		$0.15 (1 year)	$0.15			$0.15
Livestock Grazing on Federal Land	Fencing	Stream miles	$11,500 + 2% annual maintenance for 30 years	$14,354	Immediate	$p_t = 1.0$ $p_M = 1.0$	$1,157

Table A-42
Summary of Activity Cost Estimation

Activity	Sub-activity	Cost Unit	Cost Stream (Duration)	Present Value of Cost Stream	Forecast Period	Probability of Modifications	Annual Expected Per-Project Cost
Transportation**	Bridges & culverts (small)	per project & mile	$27,800 + variable costs (1 year)	$41,778	5 years	$p_t = 0.20$ $p_M = 1.0$	$8,356
	Bridges & culverts (medium)		$55,500 + variable costs (1 year)	$69,478			$13,896
	Bridges & culverts (large)		$84,300 + variable costs (1 year)	$98,278			$19,656
	Roads (small)	per project & mile	$22,800 + variable costs (1 year)	$36,778	5 years	$p_t = 0.20$ $p_M = 1.0$	$7,356
	Roads (medium)		$47,000 + variable costs (1 year)	$60,978			$12,196
	Roads (large)		$71,300 + variable costs (1 year)	$85,278			$17,056
Utility Lines	Outfall structures and pipelines	per project	$101,000 (1 year)	$101,000	Annual	$p_t = 1.0$ $p_M = 1.0$	$101,000
Instream Activities	Dredging	per project	$821,000 (1 year)	$821,000	Annual	$p_t = 1.0$ $p_M = 1.0$	$821,000
	Boat dock, boat ramps, bank stabilization	per project	$54,500 (1 year)	$54,500	Annual	$p_t = 1.0$ $p_M = 1.0$	$54,500

Table A-42
Summary of Activity Cost Estimation

Activity	Sub-activity	Cost Unit	Cost Stream (Duration)	Present Value of Cost Stream	Forecast Period	Probability of Modifications	Annual Expected Per-Project Cost
NPDES-permitted activities	Minor facility	per facility	O&M: $6,800 (20 years)	$72,039	Immediate	$p_t = 1.0$ $p_M = 0.20$	$1,360
	Major facility	per facility	Capital: $421,500 O&M: $19,725 (20 years)	$630,467	Immediate	$p_t = 1.0$ $p_M = 0.25$	$14,878
Sand and Gravel Mining	Mining on non-Federal lands	per site	$330,000 (5 years)	$1,353,065	30 years	$p_t = 0.033$ $p_M = 0.50$	$22,551
Residential and Commercial Development	New development	per project	$235,000 (1 year)	$235,000	Annual	$p_t = 1.0$ $p_M = 0.06$	$13,865
Agricultural Pesticide Appli-cations	Agricultural cropping	per acre	$0 - 6,517, depending on crop type and county		Annual	100%	$0 - 6,517, depending on crop type and county

*The cost stream presented is the present value of costs.
**Transportation costs are presented for a project of average mileage (3.2 miles).

Appendix B
Water Supply Impacts Related to Salmon and Steelhead

As noted in Section 4, the impacts of section 7 on water supply activities cannot be analyzed on a watershed basis, as these activities often affect multiple watersheds simultaneously. Attributing the impacts of section 7 consultations and the resulting modifications to a particular watershed is not appropriate, then, as designating critical habitat or applying section 7 generally to *any* of those watersheds would bring about the same result. Nevertheless, assessing the potential magnitude of these impacts is important. Below, we summarize several studies that assess these magnitudes for the Pacific Northwest and California, although not in the context of critical habitat designation. We also describe major water supply projects in those states.

B 1. Review of Selected Literature

B 1.1 Economics Literature

1) Hamilton and Whittlesey (1996)

This paper examines costs associated with the NOAA Fisheries Recovery Plan for salmon species on the Snake/Columbia system. Costs are based on flow targets (as of the date of the study) for the lower Snake River at Lower Granite Dam in spring/early summer and midsummer. The paper develops five scenarios that cover a broad range of flow target interpretations.

Results indicate a range of annual costs to agriculture from $81 million to $292 million for proposed flow augmentation. The flow augmentation cost range is developed through estimation of agricultural land retirement and agricultural participation in an interruptible water market. Affected agricultural acreage ranges from approximately 25 percent of the total irrigated acres in the region to 18 percent more than the total irrigated acres in the region. Flow augmentation allows for increased power production that offsets the gross cost to agriculture. Net of increased electric power production revenues resulting from increased flow, the annual costs of flow augmentation to agriculture are estimated to be between $50 million and $160 million.

Caveats to the research include the consideration of willing sellers only, the assumption that interruptible markets would only deliver up to 600,000 acre feet in dry years, the exclusion of third party costs including water shortage costs to downstream irrigators (i.e., from changes in runoff or aquifer recharge), costs related to flow management facilities, legal costs, and secondary impacts. Nonetheless, the authors argue that costs are conservative for several reasons.

It should be noted that scenarios related to the NMFS recovery plan are outdated. Nonetheless, Hamilton and Whittlesey (1996) provides understanding of the magnitude of costs that may be attributable to future flow augmentation scenarios.

2) Huppert et al. (2004)

Huppert et al. (2004) examines the economic effect of increased water withdrawal from the mainstem of Columbia River in Washington. The analysis considers effects on agricultural production, municipal and industrial water supplies, hydropower generation, flood control, river navigation, commercial and recreational fishing, regional impacts, and passive use values. Five different "management scenarios" are evaluated. Though fisheries-related regulation is likely to decrease water withdrawal from the tributaries of the Columbia, this research provides useful dollar value estimates associated with specific changes in water availability. In this section, we examine the Huppert et al. (2004) estimates of agricultural and regional impacts.

The management scenarios evaluated in Huppert et al. (2004) research were developed by Washington's Department of Ecology. The scenarios prescribe variation in the quantity of new water rights, fees, contingencies, and other requirements. Table B-1 describes the five management scenarios.

Table B-1
Five Management Scenarios

Scenario	Quantity of New Water Rights	Fees	Contingencies	Other Requirements
I.	1 MAF	None	None	Meet BMPs and meter withdrawals
II.	1 MAF	$10/acre-foot annually	300 KAF (80% of existing rights complying with BMPs)	Meet BMPs and meter withdrawals
III.	1 MAF	$20/acre-foot annually	300 KAF (80% of existing rights complying with BMPs)	Meet BMPs and meter withdrawals
IV.	None	$30/acre-foot annually	New withdrawals must be fully offset by transfers, conservation, or new storage	Meet BMPs and meter withdrawals
V.	Status Quo	None	Issuance of new rights follows current procedures & depends upon opinion of fishery managers	

Huppert et al. (2004) shows that the irrigation agriculture sector is significantly affected by allocation of additional water rights from the Columbia mainstem. New water rights allow the expansion of crop production. The analysis assumes that crop prices remain at current levels, and

that the costs of production are reflected in crop budget studies. The study reports that new agricultural production will generate between $349.0 and $752.9 million in gross revenue, which corresponds to between $52.1 and $136.5 million in net revenue, as shown in Table B-2.

Table B-2
Summary of Effects on Agricultural Production and Value

Scenario	Gross Revenue ($ millions)	Net Revenue ($ millions)
I.	$752.9	$136.5
II.	$476.2 - $752.9	$79.8 - $136.5
III.	$349.0 – $752.9	$52.1 – $136.5
IV.	Unknown	Unknown
V.	None	None

Regional economic impacts are determined using the 1987 Washington Input-Output model. First, Huppert et al. (2004) estimate direct impacts, which consist of increased sales of raw and processed agricultural products, then estimate full effects, which consider the total (multiplied) effect of the direct impacts on the economy as a whole. The estimated Output impact measures the change in sales of all products, including raw materials, wholesale products, plus a retail sales margin. In addition, the Input-Output model estimates employment and value-added impacts. Results of the regional economic analysis are presented in Table B-3.

Table B-3
Summary of Economic Impacts of Agricultural Section Expansion

Scenario	Total Output Impact $2002 (in millions)	Total Employment Impact	Total Value-Added Impact
1 MAF	$4244.580	44,656	$2,023.6
700 KAF	$2195.634	23,812	$1,059.4
569 KAF	$1,570.09	17,160	$759.6

B 1.2 Engineering Literature

1) USBR (1999)

The USBR (1999) Snake River Flow Augmentation analysis uses a hydrology model of the upper Snake to predict the impacts from water shortage, then uses economic modeling to estimate the related dollar value impacts.

On March 2, 1995, NOAA Fisheries issued a biological opinion on the operation of the FCRPS with respect to endangered Snake River spring/summer chinook salmon , Snake River fall chinook salmon, and Snake River sockeye salmon. This biological opinion concluded that the effects of the proposed operations of Federal hydroelectric dams in the Columbia and Snake River basins would jeopardize the continued existence of the listed Snake River salmon stocks. Flow augmentation in the lower Snake River and the Columbia River is a key component of the 1995 biological opinion. Reclamation agreed to provide 427,000 acre-feet of flow augmentation.

USBR (1999) analyzes the effects of providing a flow augmentation in the following scenarios:

I. Base Case: Provide 427,000 acre-feet of flow augmentation water each year.
II. No Augmentation: Provide no water for flow augmentation (condition prior to 1991).
III. Provide up to 1,427,000 acre-feet of flow augmentation water to meet deficits in flow targets at Lower Granite Dam. Irrigation shortages would be minimized by using large drawdowns of Reclamation reservoirs (i.e., storage reservoirs are operated to minimize the impact on irrigation).
IV. Provide up to 1,427,000 acre-feet of flow augmentation water to meet deficits in flow targets at Lower Granite Dam. Reservoir elevations would be maintained at or near the Base Case levels with shortages assumed by irrigation (i.e., storage reservoirs are operated to minimize the impact on recreation).

Changes in agricultural production, hydropower generation, and recreation due to the flow augmentation scenarios would have national and regional economic impacts. National economic impacts were identified for agriculture, hydropower, and recreation. Regional impacts were identified using input-output modeling (IMPLAN) for agriculture and recreation. National economic impacts on agriculture are provided in Table B-4, while regional economic impacts on agriculture attributable to flow augmentation are presented in Table B-5.

The national effects presented are direct effects (i.e., no multiplier effect is considered in the analysis). For agriculture, the direct effects are calculated using the value of production, or gross revenue, measured as the total production of an irrigated crop multiplied by its market value. A change in the value of production provides an estimate of the total direct loss in economic activity resulting from the prescribed water acquisition program. Water acquisition costs are calculated based on recent water acquisitions.

Table B-4 National Economic Effects on Agriculture (Direct Costs)*				
Item	**Scenario I**	**Scenario II**	**Scenario III**	**Scenario IV**
Decrease in irrigated acres in average water-year	0[1]	0	$243,000	$360,000
Decrease in irrigated acres in dry water-year	([2])	([2])	$376,000	$643,000
Decrease in value of production in average water-year	0[3]	0	$90,204,000	$136,433,000
Decrease in value of production in dry water-year	([2])	([2])	$141,202,000	$243,737,000
Water acquisition cost (annual) low estimate	0	0	$10,414,000	$31,128,000
Water acquisition cost (annual) high estimate	0	0	$31,243,000	$87,157,000

* Direct costs include lost value of production, not broader market adjustments.
[1] Base Case average irrigated acreage is 3,364,000 acres
[2] Not estimated
[3] Base Case average value of production is $2,019,934,000

The study estimates regional economic impacts in three ways:

1) Reduced Irrigation. This estimate is of impacts stemming from the reduction in irrigated agricultural production only;
2) Reduced Irrigation With Payments to Farmers. This estimate adds the impacts of a hypothetical water acquisition program to those of a reduction in irrigated agriculture production; and
3) Reduced Irrigation With Forward Linkages. This estimate adds the effect of forward linkages to those of a reduction in irrigated agriculture production. That is, it adds the ripple effects to industries such as livestock and agricultural processing that use irrigated crops as a part of their production process.

The study also states that the second estimate, Reduced Irrigated Agriculture Production With Water Payments, is the best estimate of regional economic impacts.

Table B-5 Regional Economic Effects on Agriculture				
Item	**Scenario I**	**Scenario II**	**Scenario III**	**Scenario IV**
Employment–jobs lost (annual)	0 [1]	0	2,543	3,612
Income lost (annual)	0 [2]	0	$44,700,000	$51,976,000
Sales lost (annual)	0 [3]	0	$95,200,000	$130,400,000

[1] Scenario I regional jobs total 658,543
[2] Scenario I regional income totals $23,310,023,000
[3] Scenario I regional sales total $46,777,512,000

According to the 2001 biological opinion (U.S. Bureau of Reclamation Operations and Maintenance of its Projects in the Snake River Basin above Brownlee Dam from Date Issued through March 2002, 5/2/2001), USBR (1999) anticipated that the prescribed flow augmentation (427,000 acre-feet) would not be available in 2001 or similar dry years for a variety of reasons. The 2001 biological opinion states:

> *NMFS' expectations for flow augmentation for the long term acknowledge that in very low water years like 2001, the opportunities for significant flow augmentation volumes from the upper Snake River basin would be limited. When combined with the reductions in stream flow depletions anticipated by other water interests, the proposed action for 2001 will yield volumes of flow augmentation within the range expected by the USBR in a low water year such as this one.*

The terms and conditions of the 2001 biological opinion require that USBR work toward procurement of water in an effort to meet the prescribed 427,000 acre-foot flow augmentation. Specifically, prior to entering into any agreement to commit uncontracted storage space in any of its reservoirs covered by the 2001 biological opinion to any use other than salmon flow augmentation, the USBR shall consult under section 7. In addition, USBR shall seek out water savings programs, describe the potential outcome of such storage, and identify those programs with the highest potential for streamflow improvement in the event of future droughts.

In the context of the 2001 biological opinion, it seems unlikely that NOAA Fisheries will require a 300 percent increase in flow augmentation in the future (USBR (1999) models an additional one million acre feet of flow augmentation). According to the study:

> *It is important to recognize that the 1,427,000 acre-foot scenarios for this analysis are only conceptual, and therefore, the analysis is conceptual. In some cases, due to a lack of empirical data, estimations and assumptions were used in developing modeling simulations. The model results cannot precisely depict all future operations and circumstances. The implementation of an additional 1 million acre-feet of flow augmentation would, most certainly, have an affect that reaches far beyond the scope of this theoretical analysis (USBR 1999).*

The 1,427,000 acre foot augmentation cost estimates are useful, however, when interpreted as an extreme upper bound scenario.

2) California Water System Operations Environmental Funding

The California Bay-Delta Authority (CALFED), established by legislation enacted in 2002, provides a permanent governance structure for the collaborative California State-Federal water management effort that began in 1994. A key component of CALFED's Water Management Strategy, the Environmental Water Account (EWA) was created to address two problems, declining fish populations and unreliable water supplies. Its purpose is to better protect fish by making it possible to modify water project operations in the Bay-Delta and still meet the needs of water users.

The EWA buys water from willing sellers or diverts surplus water when safe for fish, then banks, stores, transfers and releases it as needed to protect fish and compensate water users. For example, EWA managers might coordinate with water project operators to curtail pumping at specific times to avoid harming fish, and then provide water to cities and farms to compensate for the reduced pumping.

The EWA does not provide all of the fish protection in the California water system. The regulatory baseline includes the biological opinions on winter-run salmon and delta smelt, the California State Water Control Board 1995 Delta Water Quality Control Plan, and 800,000 acre-feet of CVP water pursuant to the Central Valley Project Improvement Act (CVPIA).

EWA funding is representative of a portion of the costs associated with NOAA Fisheries' requirements related to operations of the CVP and SWP. In addition, the EWA funds additional recovery efforts above the regulatory baseline. EWA funding is presented in Table B-6.

Table B-6 Environmental Water Account Funding ($ in Millions)								
Category	Program Year							Total
	2001	2002	2003	2004	2005	2006	2007	
Water & Power Acquisitions	$57.15	$31.48	$44.54	$40.40	$32.27			$205.84
Tier 3 Water			$6.25	$3.20				$9.45
Environmental Documen-tations	$1.39	$0.20	$0.25	$0.20	$0.20			$2.24
Oversight and Coordination	$0.36	$0.46	$0.36	$0.21	$0.06	$0.06	$0.06	$1.57
Actual and Ex-pected Funding	$58.90	$32.14	$51.40	$44.01	$32.53	$0.06	$0.06	$219.10
Funding for years 1-2 (2001-2002) reflects actual State encumbrances & expenditures and Federal obligations. Funding for Year 3 reflects final State and Federal budgets. Funding for Year 4 reflects proposed Governor's and President's budgets. Expected funding in Years 5-7 includes remaining state bond funds until spent and ongoing State base funding, plus estimates for local matching to grants for years where bond funding is available. Note: Federal appropriations for Years 5-7 is dependent on a decision to continue the EWA beyond Year 4.								

B 2. Description of Major Water Projects in Critical Habitat Areas[63]

B 2.1 Idaho

The Avondale Project

Rehabilitation of privately developed irrigation facilities on the 880 acre Avondale Project by the Bureau of Reclamation in 1954-1955 required the reconstruction of a pumping plant at the source of supply, Hayden Lake, and the construction of an elevated equalizing tank with a main water line and distribution system for sprinkler irrigation. However, the water source is now four deep wells drilled by the Avondale Irrigation District in lieu of pumping from Hayden Lake. Farming is on a part-time basis and subdividing continues since this is a popular resort area which also offers industrial employment.

63. This list includes all major projects in ID, OR and WA, although some of these projects may fall outside of proposed critical habitat areas. This section is intended only to add context to the discussion in the report.

The Boise Project

Boise Project furnishes a full irrigation water supply to about 224,000 acres and a supplemental supply to some 173,000 acres under special and Warren Act contracts. The irrigable lands are in southwestern Idaho and eastern Oregon.

Principal facilities include five storage dams (excluding Lucky Peak Dam constructed by the Corps of Engineers and Hubbard Dam a re-regulatory facility) which form reservoirs with a total capacity of 1,793,600 acre-feet (active 1,663,200 acre-feet), two diversion dams, three powerplants with a combined capacity of 50,200 kilowatts, seven pumping plants, canals, laterals, and drains.

To facilitate organization of the administrative and operating procedures, the irrigable project lands are divided into the Arrowrock and Payette Divisions. Some of the features serve only one division; other features serve both divisions as well as other nearby projects.

The Dalton Gardens Project

Dalton Gardens is a privately developed project 2 miles north of Coeur d'Alene, Idaho, and 30 miles east of Spokane, Washington, on the eastern edge of the extensive Spokane Valley plain, known as Rathdrum Prairie. The project's irrigation works include a pumping plant, equalizing reservoir and main line, and a distribution system that has been reconstructed to supply approximately 980 acres of land with an adequate sprinkler irrigation water supply.

The Lewiston Orchards Project

Private interests originally constructed the Lewiston Orchards Project beginning in 1906. Most of the project features have been rehabilitated or rebuilt by the Bureau of Reclamation. The project facilities include four diversion structures (Webb Creek, Sweetwater, West Fork, and Captain John) feeder canals, three small storage reservoirs (Soldiers Meadow, Reservoir "A", and Lake Waha) a domestic water system including a water filtration plant that is no longer in use, and a system for distribution of irrigation water. The domestic water supply initially provided by surface water resources now comes entirely from groundwater resources developed by the Lewiston Orchards Irrigation District. A full irrigation water supply is delivered to project lands totaling over 3,900 acres, and a dependable domestic water system is now provided for some 16,000 residents.

The Little Wood River Project

Little Wood River Project includes lands within an area 2 miles wide and 12 miles long upstream and downstream from Carey, Idaho, in the south-central section of the State. The project provides a supplemental irrigation water supply for approximately 9,550 acres of land. The principal construction feature is the enlarged Little Wood River Dam and Reservoir that serve previously constructed diversion and distribution works. Flood control is provided by operation of the reservoir on a forecast basis.

The Mann Creek Project

The Mann Creek Project in west-central Idaho consists of approximately 5,100 irrigable acres utilizing an existing distribution system in the narrow valleys of Mann and Monroe Creeks, both tributaries of the Weiser River. The natural flow of Mann Creek historically has been near its lowest point during the growing season when the demand for irrigation water is at its highest. Project

development provides for storage of winter and spring flows of Mann Creek for use later in the irrigation season.

The Michaud Flats Project

The Michaud Flats Project provides irrigation for some 11,200 acres along the Snake River adjacent to the town of American Falls in southeastern Idaho. Surface flow of the Snake River, stored in space allotted to the project in American Falls (Minidoka Project) and Palisades (Palisades Project) Reservoirs, is pumped from below American Falls Reservoir into canals that serve 69 percent of the land. Return flow is used on as much of the land as it will serve, and ground water is pumped from wells to serve the remainder. The project area is part of 65 square miles of flat rolling land south of the Snake River between Pocatello and Eagle Rock known as the Michaud Flats. Irrigable land on the flats is divided by the western boundary of the Fort Hall Indian Reservation into a Michaud Flats extension of the Fort Hall Indian Project and the Michaud Flats Project.

The Minidoka Project

Minidoka Project lands extend discontinuously from the town of Ashton, in eastern Idaho along the Snake River, about 300 miles downstream to the town of Bliss in south-central Idaho. The project furnishes irrigation water from five reservoirs that have a combined active storage capacity of more than 3 million acre-feet.

The project works consist of Minidoka Dam and Powerplant and Lake Walcott, Jackson Lake Dam and Jackson Lake, American Falls Dam and Reservoir, Island Park Dam and Reservoir, Grassy Lake Dam and Grassy Lake, two diversion dams, canals, laterals, drains, and some 177 water supply wells.

The Owyhee Project

The Owyhee Project lies west of the Snake River in Malheur County, Oregon, and Owyhee County, Idaho. The project furnishes a full irrigation water supply to over 105,000 acres of land lying along the west side of the Snake River in eastern Oregon and southwestern Idaho. An additional 13,000 acres are furnished supplemental water. About 72 percent of the lands are in Oregon, and 28 percent in Idaho. Irrigable lands are divided into the Mitchell Butte, Dead Ox Flat, and Succor Creek Divisions. The key feature of the project is Owyhee Dam, on the Owyhee River about 11 miles southwest of Adrian, Oregon, which acts as both a storage and diversion structure. Project works also include canals, pipelines, tunnels, 9 pumping plants, laterals and drains.

The Palisades Project

The principal features of the project are Palisades Dam Reservoir, and Powerplant. Palisades Dam is on the South Fork of the Snake River at Calamity Point in eastern Idaho about 11 miles west of the Idaho-Wyoming boundary. The project provides a supplemental water supply to about 650,000 acres of irrigated land in the Minidoka and Michaud Flats Projects. The 176,600 kilowatt hydroelectric powerplant furnishes energy needed in the upper valley to serve irrigation pumping units, municipalities, rural cooperatives, and other power users. The principal features of the project are Palisades Dam, Reservoir, and Powerplant.

The Preston Bench Project

The Preston Bench Project, located in southeastern Idaho near the town of Preston, includes Mink Creek Canal which supplies irrigation water for 5,000 acres of highly developed land in the vicinity of Preston.

The Rathdrum Prairie Project

The Rathdrum Prairie Project area extends about 12 miles north and 13 miles west of Coeur d'Alene in the panhandle of Idaho. The initial project consisted of the Post Falls, Hayden Lake, and East Greenacres Units, totaling about 10,200 acres of irrigable land. However, in 1991, the landowners within the Post Falls Unit petitioned for dissolution of the operating entity, the Post Falls Irrigation District. By 1995, with approval of the Bureau of Reclamation, dissolution activities were completed. Currently there are about 7,000 irrigable acres in the Rathdrum Prairie Project.

Major facilities of the Post Falls Unit consisted of a pumping plant, 3,000 feet of discharge pipe, 9 miles of canal, and 20 miles of laterals.

Hayden Lake facilities consisted of a pumping plant, 2 miles of 27-inch-diameter discharge pipe, a 10,026-cubic foot storage tank, and a pipe distribution system. However, the Hayden Lake Irrigation District has since converted to a groundwater supply.

Primary facilities of the East Greenacres Unit include 14 wells in 3 well complexes, a 43,446 cubic-foot regulating reservoir, and a pipe distribution system.

The Ririe Project

The Ririe Project was constructed to impound and control the waters of Willow Creek, a Snake River tributary in eastern Idaho, for flood control, irrigation, and recreation. Significant fish and wildlife protection measures also are included. Major features include Ririe Dam and Lake, and a floodway bypass outlet channel.

The Spokane Valley Project

The Spokane Valley Project provides an irrigation and domestic water supply for lands lying east of the city of Spokane, extending eastward to the Washington-Idaho boundary and on into Idaho for a short distance. The diversion dam on the Spokane River and the canal system previously used were abandoned in 1967 favor of a pumping system from wells into a pressure pipeline system that now provides sprinkler irrigation and serves domestic, municipal, and industrial requirements.

B 2.2 Oregon

The Arnold Project

The Arnold Project, a private development southeast of Bend, Oregon, diverts water from the Deschutes River a short distance above Lava Island Falls for approximately 4,300 acres of irrigable land. Project features include Arnold Diversion Dam, Arnold Flume and Canal, and laterals.

The Baker Project

The Baker Project in east-central Oregon consists of two divisions, the Lower and the Upper. The Lower Division provides a supplemental water supply for about 7,300 acres along the Powder River about 10 miles northeast of Baker, Oregon. The Upper Division provides supplemental water for 19,000 acres, including some contiguous areas previously dry-farmed near the city of Baker.

The Burnt River Project

The Burnt River Project in east-central Oregon consists of a storage dam and reservoir that provides water for supplemental irrigation of some 15,600 acres which formerly depended entirely on the natural flow of the Burnt River.

The Crescent Lake Dam Project

The Crescent Lake Dam Project is composed of lands of the Tumalo Irrigation District on the west side of the Deschutes River near Bend, Oregon. The principal feature of the project is Crescent Lake Dam, located at the outlet of Crescent Lake. The lake is a large natural body of water formed in a glacial deposit high on the eastern slopes of the Cascade Range. Canals, pipelines, and distribution laterals in the project furnish a full irrigation water supply to over 8,000 acres of land. Developed by private interests, various project facilities have been rehabilitated by or through the assistance of the Bureau of Reclamation.

The Crooked River Project

The main body of the Crooked River Project lies north and west of Prineville, Oregon. The water resources of Ochoco Creek and Crooked River are used to furnish irrigation water for approximately 20,000 acres. Project features include Arthur R. Bowman Dam on the Crooked River, Ochoco Dam on Ochoco Creek, a diversion canal and headworks on the Crooked River, Lytle Creek Diversion Dam and Wasteway, two major pumping plants, nine small pumping plants, and Ochoco Main and distribution canals.

The Dalles Project

The Dalles Project, Western Division is located about 80 miles east of Portland, adjacent to the city of The Dalles, Oregon, on the south side of the Columbia River. Principal features are the Mill Creek Pumping Plant, a booster pumping plant, seven relift pumping plants, three concrete-lined reservoirs, one elevated steel storage tank, five steel regulating tanks, and 46 miles of buried pressure pipe. The division provides water for nearly 6,000 irrigable acres of land.

The Deschutes Project

The Deschutes Project lands are in the vicinity of Madras, Oregon. Principal features include Wickiup Dam and Reservoir, Crane Prairie Dam and Reservoir, Haystack Dam and Reservoir, North Unit Main Canal and lateral system, and the Crooked River Pumping Plant. The project furnishes a full supply of irrigation water for about 50,000 acres of land within the North Unit Irrigation District, and a supplemental supply for more than 48,000 acres in the Central Oregon Irrigation District and Crook County Improvement District No. 1.

The Grants Pass Project

The Grants Pass Project lies within the Rogue River Basin in southwestern Oregon. The project was constructed by private interests beginning in the 1920's and partially rehabilitated by the Bureau of Reclamation in 1949-1955. The project furnishes irrigation water to over 10,000 acres of land surrounding the town of Grants Pass, Oregon. Principal project features are the Savage Rapids Diversion Dam on the Rogue River, and the associated pipelines, pumping plants, canals, and laterals.

The Klamath Project[64]

The irrigable lands of the Klamath Project are in south-central Oregon (62 percent) and north-central California (38 percent). The Project provides full service water to approximately 240,000 acres of cropland. Two main sources supply water for the project: Upper Klamath Lake and the Klamath River; and Clear Lake Reservoir, Gerber Reservoir, and Lost River, which are located in a closed basin. The total drainage area, including the Lost River and the Klamath River watershed above Keno, Oregon, is approximately 5,700 square miles.

The Owyhee Project

The Owyhee Project lies west of the Snake River in Malheur County, Oregon, and Owyhee County, Idaho. The project furnishes a full irrigation water supply to over 105,000 acres of land lying along the west side of the Snake River in eastern Oregon and southwestern Idaho. An additional 13,000 acres are furnished supplemental water. About 72 percent of the lands are in Oregon, and 28 percent in Idaho. Irrigable lands are divided into the Mitchell Butte, Dead Ox Flat, and Succor Creek Divisions. The key feature of the project is Owyhee Dam, on the Owyhee River about 11 miles southwest of Adrian, Oregon, which acts as both a storage and diversion structure. Project works also include canals, pipelines, tunnels, 9 pumping plants, laterals and drains.

The Rogue River Basin Project

The Talent Division of the Rogue River Basin Project is in the northeastern part of the Rogue River Basin in southwestern Oregon. Work on the division consisted of construction, rehabilitation, and improvement of the irrigation facilities of three irrigation districts in the vicinity of Medford, Oregon, and the provision for full and supplemental water for these lands. The work on the Medford and Rogue River Valley Irrigation Districts included rehabilitation and betterment of Fourmile Lake Dam, Fish Lake Dam, and the numerous structures which are a part of the Main and Medford Canals. An extensive collection, diversion, storage, and conveyance system was constructed to carry excess waters of the Rogue River and Klamath River Basins to the irrigated lands.

The Talent Irrigation District consists of approximately 15,500 irrigable acres. Medford Irrigation District has a water supply for 11,500 acres, and Rogue River Valley Irrigation District has a water supply for 8,300 acres. Additionally, the Talent Division provides electric power from a 16,000-kilowatt hydroelectric Green Springs Powerplant.

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64. The re-assessment of critical habitat is not occurring within the area of this project.

Principal features of the Talent Division include Howard Prairie Dam, Howard Prairie Delivery Canal, Keene Creek Dam, Green Springs Powerplant, the enlarged Emigrant Dam and Lake, and Agate Dam and Reservoir.

The Tualatin Project

The Tualatin Project area lies primarily in Washington County in the northwest part of the Willamette Basin, west of and adjacent to the city of Portland, Oregon. Some 17,000 acres of land are furnished irrigation water. Several communities and an industrial corporation are furnished untreated water for municipal and industrial use, and for quality control purposes. Fish and wildlife enhancement, recreation, and flood control are also important project functions.

Principal features include Scoggins Dam, Henry Hagg Lake, Patton Valley Pumping Plant, Spring Hill Pumping Plant, booster pumping plants, and piped lateral distribution systems.

The Umatilla Project

The original Umatilla Project furnishes a full supply of irrigation water to over 17,000 acres and a supplemental supply to approximately 13,000 acres. These lands, located in north-central Oregon, are divided into three divisions. The East Division is the Hermiston Irrigation District, the West Division is the West Extension Irrigation District, and the South Division includes the Stanfield and Westland Irrigation Districts. In addition, there are approximately 3,800 acres not included in an irrigation district that are provided either a full or supplemental water supply from McKay Reservoir under individual storage contracts.

Project features of the East Division are Cold Springs Dam and Reservoir, Feed Canal Diversion Dam and Canal, and Maxwell Diversion Dam and Canal. Three Mile Falls Diversion Dam on the Umatilla River and the 27-mile West Extension Main Canal are the principal features of the West Division. McKay Dam and Reservoir are the only features in the South Division.

Activities were initiated in the mid-1980´s under the Umatilla Basin Project to restore instream flows for anadromous fish and allow established irrigation to continue. These activities resulted in Umatilla River channel modifications, construction of fish ladders, fish traps and fish screens, and the construction of water exchange facilities (Phase I and Phase II) to deliver irrigation replacement water from the Columbia River.

The Vale Project

The Vale Project lands are located along the Malheur River and Willow Creek in east-central Oregon, surrounding the town of Vale. The project furnishes irrigation water to 35,000 acres of land. Features include Agency Valley Dam and Beulah Reservoir, Bully Creek Dam and Reservoir, Harper Diversion Dam, Vale Main Canal, and a distribution and drainage system. To supplement project needs, the Federal Government purchased one-half of the storage rights in the Warm Springs Reservoir built by the Warmsprings Irrigation District.

The Wapinita Project

The Wapinitia Project, Juniper Division, is on Juniper Flat in north-central Oregon. Juniper Flat is a plateau, 3 to 6 miles wide and approximately 17 miles long, between the Deschutes and White Rivers. Some 2,100 acres over a scattered area receive supplemental irrigation service from the project. The principal construction feature is Wasco Dam on Clear Creek, 0.5 mile below the outlet of Clear Lake, a natural lake in a mountain valley.

B 2.3 Washington

The Chief Joseph Project

The Chief Joseph Dam is on the Columbia River in north-central Washington and is a key structure in the comprehensive development of the Columbia River Basin. Storage water from the reservoir, and power revenues to assist in paying for irrigation features, are necessary for present and future irrigation development of the area.

The Columbia Basin Project

The Columbia Basin Project is a multipurpose development utilizing a portion of the resources of the Columbia River in the central part of the State of Washington. The key structure, Grand Coulee Dam, is on the main stem of the Columbia River about 90 miles west of Spokane, Washington. The extensive irrigation works extend southward on the Columbia Plateau 125 miles to the vicinity of Pasco, Washington, where the Snake and Columbia Rivers join.

Principal project features include Grand Coulee Dam, Franklin D. Roosevelt Lake, Grand Coulee Powerplant Complex, switchyards, and a pump-generating plant. Primary irrigation facilities are the Feeder Canal, Banks Lake, the Main, West, East High, and East Low Canals, O'Sullivan Dam, Potholes Reservoir, and Potholes Canal. There is over 300 miles of main canals, about 2,000 miles of laterals, and 3,500 miles of drains and wasteways on the project.

The project irrigation facilities were planned to deliver a full water supply to about 1.1 million acres of land previously used only for dry farming or grazing. About 671,000 acres are currently irrigated and further development is not anticipated. Power production facilities at Grand Coulee Dam are among the largest in the world; the total name plate generating capacity is rated at 6,809 megawatts.

The Okanogan Project

Project facilities include Conconully Dam and Reservoir, Salmon Lake Dam and Conconully Lake, Salmon Creek Diversion Dam, and canals and laterals to serve some 5,000 acres of irrigable lands along the Okanogan River in the vicinity of Okanogan, Washington.

The Spokane Valley Project

The Spokane Valley Project provides an irrigation and domestic water supply for lands lying east of the city of Spokane, extending eastward to the Washington-Idaho boundary and on into Idaho for a short distance. The diversion dam on the Spokane River and the canal system previously used were abandoned in 1967 favor of a pumping system from wells into a pressure pipeline system that now provides sprinkler irrigation and serves domestic, municipal, and industrial requirements.

The Yakima Project

The Yakima Project provides irrigation water for a comparatively narrow strip of fertile land that extends for 175 miles on both sides of the Yakima River in south-central Washington. The irrigable lands presently being served total approximately 464,000 acres.

There are seven divisions in the project: Storage, Kittitas, Tieton, Sunnyside, Roza, Kennewick, and Wapato. The Wapato Division is operated by the Bureau of Indian Affairs, but receives most of its water supply from the Yakima Project for irrigation of 136,000 acres of land. Over 45,000 acres not included in the seven divisions are irrigated by private interests under water supply contracts with the Bureau of Reclamation. Storage dams and reservoirs on the project are Bumping Lake, Clear Creek, Tieton, Cle Elum, Kachess, and Keechelus. Other project features are 5 diversion dams, canals, laterals, pumping plants, drains, 2 powerplants, and transmission lines.

Appendix C
Potential Impacts for Individual Watersheds by Activity

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$317,707	$320,571	$822,435	$825,299	$1,327,163	$1,330,026
1711000202	$422,171	$422,170	$935,160	$929,888	$1,448,148	$1,437,606
1711000204	$263,843	$266,706	$573,568	$576,431	$883,293	$886,157
1711000401	$229,197	$229,197	$313,057	$313,057	$396,917	$396,917
1711000402	$48,174	$48,174	$91,464	$91,464	$134,754	$134,754
1711000403	$125,937	$125,937	$217,491	$217,491	$309,044	$309,044
1711000404	$65,893	$65,893	$162,680	$162,679	$259,466	$259,466
1711000405	$350,340	$353,203	$707,197	$710,060	$1,064,054	$1,066,917
1711000504	$441,412	$321,711	$2,773,500	$2,004,813	$5,098,247	$3,682,654
1711000505	$166,490	$166,490	$179,692	$179,692	$192,895	$192,895
1711000506	$163,689	$163,689	$192,029	$192,029	$220,369	$220,369
1711000507	$282,303	$282,303	$327,016	$327,016	$371,730	$371,730
1711000508	$1,121,073	$1,474,719	$4,387,745	$6,175,550	$7,652,229	$10,873,411
1711000601	$374,944	$374,944	$463,072	$463,072	$551,199	$551,199
1711000602	$29,168	$29,168	$39,650	$39,650	$50,133	$50,133
1711000603	$307,099	$307,099	$339,958	$339,958	$372,817	$372,817
1711000604	$299,757	$299,757	$345,774	$345,774	$391,791	$391,791
1711000701	$49,929	$49,929	$521,217	$518,581	$992,505	$987,234
1711000702	$336,001	$338,864	$805,901	$803,494	$1,275,801	$1,268,123
1711000801	$313,414	$313,413	$366,220	$366,220	$419,027	$419,027
1711000802	$445,774	$445,774	$562,567	$562,567	$679,360	$679,360
1711000803	$170,511	$170,510	$357,076	$357,076	$543,642	$543,641
1711000901	$537,949	$537,949	$715,364	$715,364	$892,779	$892,779
1711000902	$639,115	$639,115	$745,300	$745,300	$851,485	$851,485
1711000903	$180,135	$180,135	$270,222	$270,222	$360,308	$360,308
1711000904	$465,126	$535,814	$2,332,556	$2,786,500	$4,194,433	$5,030,403
1711000905	$200,733	$200,733	$265,669	$265,669	$330,606	$330,606
1711001003	$772,493	$1,006,030	$2,434,716	$3,470,202	$4,101,038	$5,940,907
1711001004	$255,845	$255,845	$649,263	$621,417	$1,042,303	$986,707
1711001101	$155,528	$155,528	$238,326	$238,326	$321,124	$321,124
1711001102	$688,735	$691,598	$1,405,834	$1,408,697	$2,122,933	$2,125,797
1711001201	$1,173,123	$1,406,660	$3,843,517	$5,343,234	$6,507,081	$9,268,917
1711001202	$918,429	$918,429	$1,990,371	$1,987,736	$3,062,314	$3,057,043

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001203	$7,085,494	$7,085,494	$15,308,988	$15,308,987	$23,532,481	$23,532,481
1711001204	$996,338	$996,338	$2,065,625	$2,065,625	$3,134,912	$3,134,912
1711001301	$449,824	$449,824	$449,922	$449,922	$450,021	$450,021
1711001302	$191,223	$191,223	$322,505	$322,505	$453,786	$453,786
1711001303	$1,142,412	$1,145,275	$2,706,270	$2,709,134	$4,270,129	$4,272,992
1711001401	$458,897	$458,897	$458,897	$458,897	$458,897	$458,897
1711001402	$752,961	$685,521	$1,781,818	$1,491,377	$2,812,017	$2,297,648
1711001403	$236,016	$236,016	$312,187	$312,187	$388,359	$388,359
1711001404	$593,787	$827,324	$1,898,150	$2,816,664	$3,207,295	$4,813,627
1711001405	$675,218	$689,536	$1,428,485	$1,442,803	$2,181,752	$2,196,070
1711001502	$115,490	$115,490	$254,848	$254,848	$394,206	$394,206
1711001503	$99,127	$99,127	$448,427	$405,270	$797,470	$711,296
1711001601	$164,000	$164,000	$408,052	$408,052	$652,103	$652,103
1711001602	$44,425	$47,289	$171,441	$169,034	$298,457	$290,779
1711001701	$760,133	$598,165	$1,647,437	$1,010,408	$2,538,240	$1,424,180
1711001802	$78,320	$78,320	$116,755	$116,755	$155,190	$155,190
1711001803	$170,804	$170,804	$172,164	$172,164	$173,524	$173,524
1711001804	$54,104	$54,104	$54,104	$54,104	$54,104	$54,104
1711001805	$74,114	$74,114	$84,596	$84,596	$95,079	$95,079
1711001806	$149,060	$149,060	$174,105	$174,105	$199,150	$199,150
1711001808	$203,819	$203,819	$598,193	$592,922	$992,567	$982,025
1711001900	$224,223	$224,223	$674,458	$666,551	$1,124,692	$1,108,879
1711001901	$1,008,287	$1,016,877	$2,470,624	$2,466,037	$3,932,961	$3,915,197
1711001902	$197,069	$197,069	$639,131	$633,860	$1,081,192	$1,070,650
1711001904	$798,962	$801,826	$1,794,611	$1,797,474	$2,790,259	$2,793,123
1711002003	$180,710	$180,710	$260,263	$254,992	$339,815	$329,273
1711002004	$201,419	$204,283	$506,634	$504,227	$811,850	$804,172
1711002007	$1,890,945	$3,330,273	$1,917,541	$3,356,869	$1,944,137	$3,383,465
N01	$670,235	$670,235	$1,564,676	$1,564,676	$2,459,117	$2,459,117
N02	$782,382	$782,382	$1,621,739	$1,621,739	$2,461,095	$2,461,095
N03	$679,240	$679,240	$1,473,815	$1,473,814	$2,268,389	$2,268,389
N04	$25	$25	$1,445	$1,445	$2,865	$2,865
N05	$351,782	$351,781	$783,945	$783,945	$1,216,109	$1,216,109
N06	$401,602	$404,466	$854,411	$857,275	$1,307,221	$1,310,085
N07	$367,523	$367,523	$873,802	$873,801	$1,380,080	$1,380,080
N08	$699,000	$699,000	$1,572,959	$1,572,958	$2,446,917	$2,446,917
N09	$655,677	$658,541	$1,437,666	$1,440,530	$2,219,655	$2,222,518

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
N10	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
N11	$117,302	$117,302	$253,070	$253,070	$388,838	$388,838
N12	$301,870	$301,870	$610,418	$610,418	$918,965	$918,965
N13	$112,500	$112,500	$247,970	$247,970	$383,440	$383,440
N14	$1,546,809	$1,546,809	$3,355,422	$3,355,422	$5,164,035	$5,164,035
N15	$316,902	$316,902	$961,740	$961,740	$1,606,578	$1,606,578
N16	$156,250	$156,250	$340,625	$340,625	$525,000	$525,000
N17	$44,678	$44,678	$115,458	$112,823	$186,239	$180,968
N18	$653,500	$653,500	$1,452,160	$1,452,160	$2,250,820	$2,250,820
N19	$383,001	$383,001	$835,624	$835,624	$1,288,247	$1,288,247
Lower Columbia River chinook salmon ESU						
1707010506	$383,727	$383,727	$546,239	$546,239	$708,750	$708,750
1707010507	$259,533	$259,533	$295,609	$295,609	$331,684	$331,684
1707010508	$902,628	$1,283,103	$1,013,525	$1,394,000	$1,124,422	$1,504,897
1707010509	$1,478,726	$2,118,441	$1,502,046	$2,141,761	$1,525,367	$2,165,082
1707010510	$495,752	$495,752	$602,109	$602,109	$708,467	$708,467
1707010511	$737,637	$737,637	$779,775	$779,775	$821,914	$821,914
1707010512	$354,373	$354,373	$393,440	$390,804	$432,507	$427,236
1707010513	$244,595	$244,595	$285,689	$283,053	$326,782	$321,512
1708000101	$212,458	$212,458	$224,301	$224,301	$236,143	$236,143
1708000102	$173,118	$173,118	$174,579	$174,579	$176,040	$176,040
1708000103	$110,040	$110,040	$110,040	$110,040	$110,040	$110,040
1708000104	$102,900	$102,900	$166,059	$160,788	$229,219	$218,677
1708000105	$1,318,433	$1,424,514	$2,077,861	$1,936,112	$2,839,246	$2,448,914
1708000106	$198,198	$201,061	$405,423	$400,380	$612,648	$599,699
1708000107	$627,625	$627,625	$926,364	$926,364	$1,225,103	$1,225,103
1708000108	$132,557	$135,421	$234,296	$231,889	$336,035	$328,357
1708000109	$1,839,178	$1,853,496	$3,923,577	$3,932,625	$6,007,977	$6,011,754
1708000205	$551,679	$551,679	$831,142	$825,871	$1,110,606	$1,100,064
1708000206	$308,312	$310,810	$549,678	$552,177	$791,044	$793,543
1708000301	$357,074	$359,938	$594,991	$597,855	$832,908	$835,771
1708000302	$51,825	$57,552	$118,631	$119,088	$185,437	$180,623
1708000303	$16,545	$16,545	$34,162	$34,162	$51,779	$51,779
1708000304	$922,951	$928,678	$2,127,118	$2,130,210	$3,331,285	$3,331,742
1708000305	$112,500	$112,500	$249,330	$249,330	$386,160	$386,160
1708000306	$24,131	$26,995	$66,734	$66,963	$109,338	$106,931

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000401	$175,864	$175,864	$177,224	$177,224	$178,584	$178,584
1708000402	$697,985	$786,394	$2,491,173	$3,058,911	$4,278,641	$5,324,171
1708000403	$584,263	$584,263	$640,400	$640,400	$696,538	$696,538
1708000404	$669,209	$669,209	$691,534	$691,534	$713,859	$713,859
1708000405	$696,485	$696,485	$718,610	$718,610	$740,735	$740,735
1708000501	$329,409	$329,409	$361,791	$361,790	$394,172	$394,172
1708000502	$453,069	$228,745	$1,602,652	$720,376	$2,756,475	$1,213,516
1708000503	$219,155	$219,155	$596,687	$596,687	$974,219	$974,219
1708000504	$264,078	$264,078	$368,903	$368,903	$473,728	$473,728
1708000505	$160,091	$160,091	$160,091	$160,091	$160,091	$160,091
1708000506	$49,624	$49,624	$49,843	$49,843	$50,062	$50,062
1708000507	$175,959	$175,959	$380,185	$380,185	$584,411	$584,411
1708000508	$200,365	$200,365	$410,828	$410,828	$621,291	$621,291
1708000601	$262,655	$262,654	$737,536	$734,900	$1,212,417	$1,207,146
1708000602	$41,787	$44,651	$215,256	$204,942	$388,725	$365,234
1708000603	$19,127	$19,127	$68,187	$68,187	$117,247	$117,247
1709000704	$470,909	$549,209	$615,230	$688,259	$759,552	$827,310
1709001105	$76,188	$76,188	$113,795	$111,160	$151,402	$146,131
1709001106	$704,172	$855,579	$953,183	$1,091,414	$1,202,195	$1,327,249
1709001201	$392,079	$400,671	$708,567	$709,252	$1,025,055	$1,017,834
1709001202	$337,143	$340,007	$646,762	$646,990	$956,381	$953,974
1709001203	$1,563,504	$1,577,822	$3,538,038	$3,531,273	$5,512,573	$5,484,724
Lower Columbia	$990,288	$996,016	$2,396,798	$2,402,525	$3,803,307	$3,809,035
Upper Willamette River chinook salmon ESU						
1709000101	$591,291	$591,291	$591,291	$591,291	$591,291	$591,291
1709000102	$221,253	$221,253	$221,253	$221,253	$221,253	$221,253
1709000103	$417,342	$417,342	$417,342	$417,342	$417,342	$417,342
1709000104	$424,985	$424,985	$529,883	$529,883	$634,782	$634,782
1709000105	$634,048	$634,048	$656,373	$656,373	$678,698	$678,698
1709000106	$740,645	$740,645	$752,488	$752,488	$764,330	$764,330
1709000107	$373,302	$373,302	$378,088	$378,088	$382,874	$382,873
1709000108	$57,071	$57,071	$58,271	$58,271	$59,471	$59,471
1709000109	$591,641	$591,641	$697,843	$697,843	$804,045	$804,045
1709000110	$42,980	$42,980	$67,701	$67,701	$92,422	$92,422
1709000201	$645,352	$645,352	$762,985	$762,985	$880,617	$880,617

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000202	$90,935	$90,935	$101,418	$101,418	$111,900	$111,900
1709000203	$163,483	$166,347	$286,652	$289,515	$409,820	$412,684
1709000205	$79,775	$79,775	$119,347	$119,347	$158,919	$158,919
1709000301	$168,085	$168,084	$501,323	$501,323	$834,562	$834,562
1709000302	$406,055	$414,646	$777,484	$780,805	$1,148,914	$1,146,963
1709000303	$109,400	$112,264	$126,470	$129,334	$143,540	$146,404
1709000304	$219,225	$230,680	$267,072	$278,527	$314,918	$326,373
1709000305	$347,669	$350,533	$451,414	$454,278	$555,159	$558,022
1709000306	$81,158	$81,158	$212,536	$212,536	$343,914	$343,914
1709000401	$1,266,258	$1,395,103	$3,344,540	$4,236,484	$5,416,148	$7,068,726
1709000402	$175,479	$175,479	$175,479	$175,479	$175,479	$175,479
1709000403	$375,333	$375,333	$385,985	$385,985	$396,637	$396,637
1709000404	$333,690	$333,690	$438,515	$438,515	$543,341	$543,341
1709000405	$159,173	$159,173	$159,173	$159,173	$159,173	$159,173
1709000406	$154,486	$154,486	$159,665	$159,665	$164,844	$164,844
1709000407	$323,579	$326,443	$582,653	$504,472	$841,211	$682,269
1709000504	$34,229	$34,229	$49,115	$49,115	$64,001	$64,001
1709000505	$100,658	$100,658	$100,844	$100,844	$101,031	$101,031
1709000506	$75,284	$78,148	$161,229	$164,093	$247,174	$250,038
1709000601	$109,066	$114,794	$148,303	$154,030	$187,539	$193,266
1709000602	$104,449	$104,449	$116,554	$116,554	$128,659	$128,659
1709000603	$83,203	$83,203	$95,889	$95,889	$108,575	$108,575
1709000606	$510,448	$510,448	$522,291	$522,291	$534,133	$534,133
1709000607	$93	$93	$1,454	$1,454	$2,815	$2,815
1709000608	$16,194	$16,194	$29,396	$29,396	$42,599	$42,599
1709000701	$376,496	$376,496	$763,616	$760,980	$1,150,735	$1,145,464
1709000702	$113,023	$115,886	$348,433	$351,297	$583,844	$586,708
1709000703	$334,359	$342,951	$561,767	$565,087	$789,174	$787,224
1709000704	$471,062	$549,362	$619,030	$692,059	$766,997	$834,755
1709000804	$39,940	$39,940	$101,440	$101,440	$162,941	$162,941
1709000805	$12,766	$12,766	$184,314	$184,314	$355,862	$355,862
1709000806	$88,477	$88,477	$288,743	$288,743	$489,010	$489,009
1709000807	$69,864	$72,728	$182,045	$184,908	$294,225	$297,089
1709000901	$304,139	$307,003	$800,832	$803,696	$1,297,525	$1,300,389
1709000902	$38,110	$40,974	$120,494	$123,358	$202,879	$205,743
1709000903	$29,883	$29,883	$117,533	$117,533	$205,183	$205,183
1709000904	$50,629	$50,628	$131,149	$125,878	$211,669	$201,128

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000905	$178,497	$178,497	$178,571	$178,571	$178,644	$178,644
1709000906	$37,992	$37,992	$129,748	$124,477	$221,503	$210,962
1709001101	$436,099	$436,099	$436,173	$436,173	$436,247	$436,247
1709001102	$557,445	$557,445	$557,445	$557,445	$557,445	$557,445
1709001103	$997,026	$1,145,570	$1,087,892	$1,195,914	$1,178,515	$1,246,156
1709001104	$1,143,850	$1,320,673	$2,232,366	$2,927,818	$3,325,389	$4,541,622
1709001105	$76,188	$76,188	$113,795	$111,160	$151,402	$146,131
1709001106	$701,935	$853,343	$951,170	$1,089,401	$1,200,405	$1,325,459
1709001201	$392,079	$400,671	$708,567	$709,252	$1,025,055	$1,017,834
1709001202	$336,736	$339,599	$644,204	$644,432	$951,672	$949,265
1709001203	$1,563,360	$1,577,678	$3,536,035	$3,529,270	$5,508,711	$5,480,862
Lower Columbia	$990,003	$995,730	$2,395,771	$2,401,498	$3,801,539	$3,807,267
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$238,429	$238,429	$560,041	$554,770	$881,653	$871,112
1702000801	$33,426	$33,625	$33,433	$33,730	$33,500	$33,836
1702000802	$379,350	$379,350	$394,100	$394,100	$408,850	$408,850
1702000803	$133,299	$133,299	$133,299	$133,299	$133,299	$133,299
1702000804	$603,756	$604,324	$668,645	$669,495	$733,705	$734,666
1702000805	$291,408	$291,758	$357,146	$355,035	$422,990	$418,312
1702000806	$684,233	$684,245	$1,092,806	$1,087,555	$1,501,384	$1,490,864
1702000807	$543,182	$543,182	$739,284	$736,648	$935,385	$930,114
1702001001	$1,379,464	$1,379,473	$1,552,622	$1,552,636	$1,725,782	$1,725,798
1702001002	$1,235,518	$1,241,245	$2,942,604	$2,948,332	$4,649,691	$4,655,418
1702001003	$128,224	$128,224	$231,858	$231,858	$335,492	$335,492
1702001004	$89,039	$89,039	$130,284	$130,284	$171,529	$171,529
1702001101	$462,895	$462,895	$487,740	$487,740	$512,585	$512,585
1702001102	$500,338	$500,505	$511,168	$511,418	$522,048	$522,331
1702001103	$650,235	$650,235	$699,478	$699,478	$748,721	$748,721
1702001104	$793,953	$793,953	$1,270,087	$1,267,452	$1,746,221	$1,740,950
1702001105	$817,764	$817,764	$1,087,806	$1,087,805	$1,357,847	$1,357,847
1702001604	$149,711	$149,711	$271,409	$271,409	$393,107	$393,107
1702001605	$4,853	$4,853	$32,679	$32,679	$60,506	$60,506
1702001606	$149,339	$155,067	$525,441	$520,627	$901,544	$886,187
1707010101	$496,776	$496,776	$1,066,806	$1,066,806	$1,636,837	$1,636,836
1707010102	$15,198	$15,198	$134,592	$134,592	$253,985	$253,985

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010106	$8,370	$8,370	$24,454	$24,454	$40,538	$40,538
1707010109	$40,665	$40,665	$54,201	$54,201	$67,738	$67,738
1707010114	$147,464	$150,328	$483,324	$475,646	$819,184	$800,964
1707010501	$192,869	$192,869	$376,101	$376,101	$559,334	$559,334
1707010504	$482,406	$488,134	$625,523	$625,979	$768,639	$763,825
1707010512	$354,401	$354,401	$393,608	$390,973	$432,815	$427,544
1707010513	$244,595	$244,595	$285,689	$283,053	$326,782	$321,512
1708000107	$627,621	$627,621	$926,305	$926,305	$1,224,989	$1,224,988
Lower Co-lumbia	$990,154	$995,881	$2,396,634	$2,402,362	$3,803,115	$3,808,842
Hood Canal Summer-run chum salmon ESU						
1711001701	$761,333	$599,365	$1,645,373	$1,008,344	$2,532,912	$1,418,852
1711001802	$78,320	$78,320	$116,755	$116,755	$155,190	$155,190
1711001803	$170,804	$170,804	$172,164	$172,164	$173,524	$173,524
1711001804	$54,104	$54,104	$54,104	$54,104	$54,104	$54,104
1711001805	$74,114	$74,114	$84,596	$84,596	$95,079	$95,079
1711001806	$149,060	$149,060	$174,105	$174,105	$199,150	$199,150
1711001807	$204,475	$204,475	$397,380	$397,380	$590,285	$590,285
1711001808	$203,819	$203,819	$598,193	$592,922	$992,567	$982,025
1711001908	$133,120	$133,120	$334,373	$334,373	$535,625	$535,625
1711002001	$89,451	$89,451	$142,616	$142,616	$195,781	$195,781
1711002002	$78,043	$78,043	$88,138	$88,138	$98,233	$98,233
1711002003	$180,726	$180,726	$260,289	$255,018	$339,852	$329,310
N15	$316,902	$316,902	$961,740	$961,740	$1,606,578	$1,606,578
N16	$156,250	$156,250	$340,625	$340,625	$525,000	$525,000
N17	$44,678	$44,678	$115,458	$112,823	$186,239	$180,968
N18	$653,500	$653,500	$1,452,160	$1,452,160	$2,250,820	$2,250,820
N19	$383,000	$383,000	$835,624	$835,624	$1,287,880	$1,287,880
Columbia River chum salmon ESU						
1707010509	$1,478,726	$2,118,441	$1,502,046	$2,141,761	$1,525,367	$2,165,082
1707010512	$354,373	$354,373	$393,440	$390,804	$432,507	$427,236
1707010513	$244,595	$244,595	$285,689	$283,053	$326,782	$321,512
1708000106	$198,198	$201,061	$405,423	$400,380	$612,648	$599,699
1708000107	$627,734	$627,734	$926,794	$926,794	$1,225,854	$1,225,854
1708000109	$1,838,825	$1,853,143	$3,922,333	$3,931,381	$6,005,841	$6,009,618

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000205	$551,876	$551,876	$831,639	$826,368	$1,111,402	$1,100,861
1708000206	$308,160	$310,658	$549,338	$551,837	$790,517	$793,015
1708000301	$355,430	$358,294	$590,752	$593,616	$826,073	$828,937
1708000304	$922,333	$928,060	$2,126,180	$2,129,272	$3,330,028	$3,330,484
1708000305	$112,500	$112,500	$249,330	$249,330	$386,160	$386,160
1708000503	$219,433	$219,433	$598,334	$598,334	$977,234	$977,234
1708000504	$264,078	$264,078	$368,903	$368,903	$473,728	$473,728
1708000505	$160,091	$160,091	$160,091	$160,091	$160,091	$160,091
1708000506	$49,520	$49,520	$49,791	$49,791	$50,062	$50,062
1708000507	$175,671	$175,671	$379,096	$379,096	$582,522	$582,521
1708000508	$200,561	$200,561	$411,464	$411,464	$622,368	$622,368
1708000602	$41,787	$44,651	$215,256	$204,942	$388,725	$365,234
1708000603	$17,350	$17,350	$62,848	$62,848	$108,347	$108,347
Lower Co-lumbia	$990,288	$996,016	$2,396,797	$2,402,525	$3,803,306	$3,809,034
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$2,723	$2,723	$5,445	$5,445
Upper Columbia River steelhead ESU						
1702000503	$32,035	$32,035	$79,438	$79,438	$126,841	$126,841
1702000504	$26,432	$26,432	$95,995	$93,360	$165,558	$160,287
1702000505	$238,429	$238,429	$560,040	$554,769	$881,652	$871,110
1702000601	$251,964	$251,964	$826,763	$824,127	$1,401,562	$1,396,291
1702000602	$238,165	$238,165	$508,738	$506,102	$779,311	$774,040
1702000603	$264,466	$264,466	$574,800	$572,165	$885,135	$879,864
1702000604	$85,147	$85,147	$381,076	$375,806	$677,006	$666,465
1702000605	$223,888	$223,888	$812,781	$810,145	$1,401,673	$1,396,402
1702000704	$68,696	$68,696	$106,235	$106,235	$143,775	$143,775
1702000801	$33,426	$33,625	$33,433	$33,730	$33,500	$33,836
1702000802	$379,427	$379,448	$394,177	$394,209	$408,935	$408,971
1702000803	$133,299	$133,299	$133,299	$133,299	$133,299	$133,299
1702000804	$601,615	$602,020	$656,475	$657,082	$711,458	$712,144
1702000805	$292,471	$293,120	$358,123	$356,459	$423,971	$419,799
1702000806	$705,019	$705,239	$1,153,645	$1,148,704	$1,602,338	$1,592,169
1702000807	$551,075	$551,411	$754,826	$752,694	$958,679	$953,976
1702000903	$1,064,063	$1,297,601	$3,235,670	$4,735,387	$5,400,447	$8,162,283

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$1,382,341	$1,382,350	$1,558,078	$1,558,092	$1,733,819	$1,733,835
1702001002	$1,238,427	$1,244,154	$2,950,428	$2,956,155	$4,662,429	$4,668,156
1702001003	$128,395	$128,395	$233,603	$233,603	$338,812	$338,812
1702001004	$89,039	$89,039	$130,284	$130,284	$171,529	$171,529
1702001101	$462,895	$462,895	$487,740	$487,740	$512,585	$512,585
1702001102	$500,627	$500,875	$511,460	$511,832	$522,368	$522,788
1702001103	$651,609	$651,609	$704,110	$704,110	$756,610	$756,610
1702001104	$806,950	$806,950	$1,304,684	$1,302,049	$1,802,419	$1,797,148
1702001105	$845,915	$845,915	$1,173,280	$1,173,280	$1,500,644	$1,500,644
1702001204	$80,939	$80,939	$131,204	$131,204	$181,470	$181,470
1702001509	$75,979	$75,978	$680,091	$680,091	$1,284,203	$1,284,203
1702001604	$149,711	$149,711	$271,408	$271,408	$393,106	$393,106
1702001605	$4,853	$4,853	$32,679	$32,679	$60,506	$60,506
1702001606	$149,339	$155,067	$525,443	$520,628	$901,546	$886,190
1707010101	$496,776	$496,776	$1,066,806	$1,066,806	$1,636,837	$1,636,836
1707010102	$15,198	$15,198	$134,592	$134,592	$253,985	$253,985
1707010106	$8,370	$8,370	$24,454	$24,454	$40,538	$40,538
1707010109	$40,665	$40,665	$54,201	$54,201	$67,738	$67,738
1707010114	$147,464	$150,328	$483,324	$475,646	$819,184	$800,964
1707010501	$192,869	$192,869	$376,101	$376,101	$559,334	$559,334
1707010504	$482,406	$488,134	$625,523	$625,979	$768,639	$763,825
1707010512	$354,401	$354,401	$393,608	$390,973	$432,815	$427,544
1707010513	$244,595	$244,595	$285,689	$283,053	$326,782	$321,512
1708000107	$627,621	$627,621	$926,305	$926,305	$1,224,989	$1,224,988
Lower Columbia	$990,154	$995,881	$2,396,635	$2,402,363	$3,803,117	$3,808,844
Snake River Basin steelhead ESU						
1702001606	$142,601	$148,329	$487,748	$482,934	$832,895	$817,539
1706010101	$36,953	$36,953	$37,326	$37,326	$37,698	$37,698
1706010102	$74,355	$74,355	$75,011	$75,011	$75,667	$75,667
1706010104	$35,430	$35,430	$35,624	$35,624	$35,819	$35,819
1706010201	$181,642	$182,360	$193,467	$194,541	$205,509	$206,723
1706010202	$294,492	$295,806	$294,662	$296,631	$295,230	$297,456
1706010203	$247,501	$249,324	$247,564	$250,295	$248,179	$251,266
1706010204	$113,448	$114,329	$113,503	$114,822	$113,824	$115,315
1706010205	$441,463	$443,952	$441,550	$445,278	$442,389	$446,603

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010301	$424,413	$424,413	$815,613	$815,613	$1,206,813	$1,206,813
1706010302	$391,875	$391,875	$393,274	$393,274	$394,673	$394,673
1706010303	$550,365	$550,365	$1,238,209	$1,238,209	$1,926,053	$1,926,053
1706010401	$405,123	$408,213	$405,230	$409,859	$406,272	$411,504
1706010402	$299,089	$301,812	$404,009	$408,086	$509,751	$514,361
1706010403	$221,376	$221,668	$231,942	$232,379	$242,597	$243,091
1706010404	$142,255	$143,889	$147,439	$149,887	$153,117	$155,884
1706010405	$129,054	$129,791	$141,074	$142,178	$153,317	$154,565
1706010406	$51,243	$54,107	$75,561	$78,425	$99,879	$102,743
1706010407	$48,727	$48,727	$146,617	$146,617	$244,508	$244,508
1706010408	$79,527	$79,527	$91,902	$91,902	$104,278	$104,278
1706010409	$95,827	$96,693	$142,851	$144,147	$190,136	$191,601
1706010410	$294,881	$294,948	$317,209	$317,309	$339,556	$339,670
1706010411	$199,107	$199,107	$205,805	$205,805	$212,503	$212,503
1706010501	$32,418	$32,418	$62,521	$62,521	$92,625	$92,625
1706010502	$36,032	$36,838	$68,313	$69,521	$100,839	$102,204
1706010503	$1,978	$1,978	$4,805	$4,805	$7,633	$7,633
1706010504	$45,205	$45,205	$55,985	$55,985	$66,766	$66,766
1706010505	$37,674	$39,851	$37,750	$41,010	$38,483	$42,169
1706010506	$41,833	$41,965	$44,063	$44,260	$46,333	$46,556
1706010601	$327,677	$327,946	$327,686	$328,090	$327,777	$328,234
1706010602	$245,441	$249,256	$256,184	$261,899	$268,081	$274,541
1706010603	$148,446	$149,822	$148,494	$150,555	$148,958	$151,288
1706010604	$236,135	$238,983	$236,234	$240,500	$237,194	$242,016
1706010605	$228,723	$231,345	$239,297	$243,223	$250,663	$255,101
1706010606	$190,409	$191,607	$190,451	$192,245	$190,855	$192,883
1706010607	$136,539	$136,639	$147,590	$147,740	$158,670	$158,840
1706010701	$69	$69	$1,429	$1,429	$2,789	$2,789
1706010702	$226,750	$226,750	$466,958	$466,958	$707,165	$707,165
1706010703	$3,470	$3,470	$9,995	$9,995	$16,520	$16,520
1706010704	$18,112	$18,112	$18,559	$18,559	$19,006	$19,006
1706010705	$74,447	$74,447	$75,486	$75,486	$76,525	$76,525
1706010706	$337,455	$337,455	$349,325	$349,325	$361,195	$361,195
1706010707	$119	$119	$1,952	$1,952	$3,784	$3,784
1706010708	$51,086	$51,086	$98,132	$98,132	$145,177	$145,177
1706010808	$0	$0	$1,360	$1,360	$2,720	$2,720
1706011001	$43,750	$43,750	$95,535	$95,535	$147,320	$147,320

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706011003	$56,998	$56,998	$153,018	$153,018	$249,038	$249,038
1706011004	$63,717	$66,580	$90,397	$93,261	$117,077	$119,941
1706020101	$202,094	$205,040	$295,816	$298,802	$389,563	$392,565
1706020104	$115,676	$115,770	$134,578	$134,718	$153,507	$153,666
1706020105	$164,967	$165,511	$289,408	$290,222	$414,013	$414,933
1706020107	$24,994	$25,104	$30,898	$31,062	$36,835	$37,020
1706020108	$122,102	$122,732	$169,323	$170,268	$216,736	$217,803
1706020109	$79,371	$79,966	$138,391	$139,283	$197,592	$198,600
1706020110	$43,419	$44,629	$55,261	$57,073	$67,469	$69,517
1706020111	$7,336	$7,609	$7,345	$7,754	$7,437	$7,900
1706020112	$54,749	$54,859	$83,070	$83,235	$111,425	$111,611
1706020113	$293,007	$293,693	$351,192	$352,219	$409,584	$410,745
1706020114	$203,361	$203,361	$496,761	$496,761	$790,161	$790,161
1706020115	$155,988	$156,257	$209,784	$210,187	$263,663	$264,118
1706020117	$61,793	$62,051	$116,825	$114,575	$171,935	$167,099
1706020118	$47,496	$47,567	$82,899	$83,005	$118,323	$118,443
1706020119	$139,214	$139,215	$241,231	$241,233	$343,248	$343,250
1706020120	$79,086	$79,086	$132,186	$132,186	$185,286	$185,286
1706020121	$11,223	$11,223	$11,223	$11,223	$11,223	$11,223
1706020122	$69,544	$72,717	$101,711	$105,038	$133,971	$137,359
1706020123	$70,662	$72,178	$71,190	$73,461	$72,177	$74,743
1706020124	$54,407	$55,116	$66,232	$67,294	$78,271	$79,471
1706020125	$97,850	$98,369	$435,943	$436,720	$774,193	$775,071
1706020126	$44,386	$44,386	$44,386	$44,386	$44,386	$44,386
1706020127	$38,353	$39,554	$38,395	$40,193	$38,799	$40,833
1706020128	$64,448	$65,126	$284,746	$285,761	$505,249	$506,397
1706020129	$64,283	$64,294	$112,473	$112,490	$160,667	$160,686
1706020130	$52,252	$52,330	$52,406	$52,523	$52,584	$52,716
1706020132	$98,883	$99,645	$111,993	$113,134	$125,333	$126,624
1706020201	$94,609	$94,611	$105,459	$105,463	$116,310	$116,315
1706020202	$132,303	$132,317	$138,741	$138,762	$145,183	$145,207
1706020203	$42,200	$42,465	$44,825	$45,221	$47,529	$47,978
1706020301	$51,524	$51,524	$81,974	$81,974	$112,425	$112,425
1706020302	$40,623	$40,623	$40,623	$40,623	$40,623	$40,623
1706020303	$115,870	$115,870	$127,904	$127,904	$139,938	$139,938
1706020304	$104,348	$104,621	$104,957	$105,366	$105,649	$106,112
1706020305	$181,522	$181,603	$256,838	$256,960	$332,180	$332,317

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020306	$175,528	$176,589	$187,238	$188,826	$199,269	$201,064
1706020307	$36,252	$36,265	$47,613	$47,632	$58,977	$59,000
1706020308	$40,915	$40,975	$69,993	$70,083	$99,089	$99,190
1706020309	$67,300	$70,164	$111,436	$114,300	$155,573	$158,437
1706020310	$66,172	$66,192	$76,740	$76,770	$87,313	$87,348
1706020311	$66,509	$66,509	$88,278	$88,278	$110,047	$110,047
1706020312	$114,352	$114,487	$120,086	$120,289	$125,861	$126,091
1706020313	$59,362	$59,362	$60,722	$60,722	$62,082	$62,082
1706020314	$52,130	$52,388	$60,945	$61,331	$69,837	$70,274
1706020315	$54,320	$54,976	$54,343	$55,326	$54,564	$55,675
1706020316	$34,546	$34,975	$34,561	$35,203	$34,706	$35,431
1706020317	$68,096	$68,919	$79,967	$81,200	$92,087	$93,481
1706020318	$30,339	$30,342	$30,339	$30,344	$30,340	$30,345
1706020319	$69,504	$69,504	$90,469	$90,469	$111,434	$111,434
1706020320	$35,881	$35,985	$35,885	$36,041	$35,920	$36,096
1706020321	$22,890	$22,890	$22,890	$22,890	$22,890	$22,890
1706020322	$89,292	$89,352	$135,184	$135,274	$181,095	$181,196
1706020323	$2,445	$2,445	$2,445	$2,445	$2,445	$2,445
1706020401	$54,876	$54,923	$66,038	$66,109	$77,214	$77,294
1706020402	$61,243	$61,277	$180,727	$180,779	$300,222	$300,281
1706020403	$56,140	$56,197	$56,335	$56,421	$56,548	$56,645
1706020404	$35,137	$35,152	$35,148	$35,170	$35,164	$35,189
1706020405	$37,798	$37,805	$38,179	$38,190	$38,562	$38,575
1706020406	$44,116	$44,144	$66,245	$66,286	$88,383	$88,429
1706020407	$41,002	$41,002	$51,484	$51,484	$61,967	$61,967
1706020408	$59,895	$60,472	$60,366	$61,028	$60,836	$61,585
1706020409	$51,862	$53,027	$52,282	$53,621	$52,701	$54,215
1706020412	$55,013	$55,044	$55,014	$55,061	$55,025	$55,078
1706020414	$106,398	$107,637	$106,560	$108,414	$107,095	$109,192
1706020501	$16,647	$16,925	$16,712	$17,129	$16,861	$17,332
1706020502	$10,160	$10,160	$10,160	$10,160	$10,160	$10,160
1706020503	$21,360	$21,594	$21,396	$21,745	$21,501	$21,897
1706020504	$1,953	$1,953	$1,953	$1,953	$1,953	$1,953
1706020505	$45,355	$45,355	$45,355	$45,355	$45,355	$45,355
1706020506	$100,680	$101,145	$100,696	$101,392	$100,853	$101,639
1706020507	$17,169	$17,169	$17,169	$17,169	$17,169	$17,169
1706020508	$114,760	$114,760	$114,760	$114,760	$114,760	$114,760

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020509	$15,274	$15,274	$22,927	$22,927	$30,580	$30,580
1706020510	$11,201	$11,201	$11,201	$11,201	$11,201	$11,201
1706020511	$7,124	$7,124	$7,124	$7,124	$7,124	$7,124
1706020512	$7,045	$7,045	$7,045	$7,045	$7,045	$7,045
1706020513	$5,490	$5,490	$5,490	$5,490	$5,490	$5,490
1706020601	$6,956	$6,956	$6,956	$6,956	$6,956	$6,956
1706020602	$1,726	$1,726	$1,726	$1,726	$1,726	$1,726
1706020603	$3,994	$3,994	$3,994	$3,994	$3,994	$3,994
1706020604	$46,309	$46,309	$88,239	$88,239	$130,169	$130,169
1706020605	$53,248	$53,471	$86,020	$86,355	$118,861	$119,240
1706020606	$50,419	$50,841	$50,434	$51,065	$50,576	$51,290
1706020607	$2,301	$2,396	$2,304	$2,447	$2,336	$2,497
1706020608	$29,431	$29,623	$41,237	$41,526	$53,102	$53,428
1706020609	$4,725	$4,725	$4,725	$4,725	$4,725	$4,725
1706020610	$4,421	$4,421	$14,903	$14,903	$25,386	$25,386
1706020611	$14,864	$14,864	$14,864	$14,864	$14,864	$14,864
1706020612	$2,707	$2,707	$2,707	$2,707	$2,707	$2,707
1706020613	$49,451	$49,451	$80,898	$80,898	$112,346	$112,346
1706020614	$2,849	$2,849	$2,849	$2,849	$2,849	$2,849
1706020615	$1,508	$1,508	$1,508	$1,508	$1,508	$1,508
1706020616	$4,714	$4,714	$4,714	$4,714	$4,714	$4,714
1706020617	$23,675	$23,675	$47,275	$47,275	$70,875	$70,875
1706020701	$50,240	$50,240	$67,940	$67,940	$85,640	$85,640
1706020702	$17,909	$17,909	$17,909	$17,909	$17,909	$17,909
1706020703	$44,751	$44,751	$56,551	$56,551	$68,351	$68,351
1706020704	$5,296	$5,775	$5,313	$6,030	$5,474	$6,286
1706020705	$53,869	$54,661	$53,897	$55,082	$54,164	$55,504
1706020706	$29,146	$29,146	$29,146	$29,146	$29,146	$29,146
1706020707	$45,803	$45,803	$45,803	$45,803	$45,803	$45,803
1706020708	$62,717	$62,717	$62,780	$62,780	$62,844	$62,844
1706020709	$39,661	$40,609	$39,694	$41,114	$40,013	$41,619
1706020710	$2,541	$2,541	$2,541	$2,541	$2,541	$2,541
1706020711	$8,678	$9,054	$8,691	$9,254	$8,818	$9,454
1706020712	$2,814	$2,819	$2,814	$2,821	$2,816	$2,824
1706020713	$3,918	$3,918	$3,918	$3,918	$3,918	$3,918
1706020714	$25,282	$25,282	$25,282	$25,282	$25,282	$25,282
1706020715	$21,439	$21,439	$21,439	$21,439	$21,439	$21,439

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020716	$2,726	$2,726	$2,726	$2,726	$2,726	$2,726
1706020717	$4,177	$4,177	$4,177	$4,177	$4,177	$4,177
1706020718	$6,372	$6,372	$6,372	$6,372	$6,372	$6,372
1706020719	$70,013	$70,013	$81,856	$81,856	$93,698	$93,698
1706020801	$64,896	$64,896	$75,378	$75,378	$85,861	$85,861
1706020802	$106,404	$106,404	$106,404	$106,404	$106,404	$106,404
1706020803	$60,220	$60,228	$70,703	$70,715	$81,188	$81,201
1706020804	$96,623	$96,727	$108,427	$108,583	$120,262	$120,438
1706020805	$61,489	$61,920	$82,691	$83,337	$104,024	$104,753
1706020806	$30,942	$30,942	$30,942	$30,942	$30,942	$30,942
1706020807	$92,406	$92,406	$114,688	$114,688	$136,971	$136,971
1706020808	$110,650	$110,650	$151,950	$151,950	$193,250	$193,250
1706020809	$57,506	$57,506	$57,506	$57,506	$57,506	$57,506
1706020810	$91,935	$91,935	$103,735	$103,735	$115,535	$115,535
1706020811	$39,215	$39,215	$39,215	$39,215	$39,215	$39,215
1706020812	$40,926	$40,926	$40,926	$40,926	$40,926	$40,926
1706020813	$92,239	$92,239	$102,721	$102,721	$113,204	$113,204
1706020814	$74,321	$74,321	$80,221	$80,221	$86,121	$86,121
1706020815	$38,022	$38,022	$38,022	$38,022	$38,022	$38,022
1706020901	$6,166	$6,166	$6,166	$6,166	$6,166	$6,166
1706020902	$1,615	$1,634	$1,615	$1,645	$1,622	$1,655
1706020903	$61	$79	$62	$88	$68	$97
1706020904	$2,756	$2,756	$2,756	$2,756	$2,756	$2,756
1706020905	$3,265	$3,265	$13,748	$13,748	$24,230	$24,230
1706020906	$12,677	$12,689	$13,295	$13,313	$13,917	$13,937
1706020907	$30,938	$30,939	$60,438	$60,440	$89,939	$89,940
1706020908	$54,653	$55,078	$63,287	$63,925	$72,051	$72,771
1706020909	$21,075	$21,075	$21,075	$21,075	$21,075	$21,075
1706020910	$18,656	$18,887	$18,664	$19,011	$18,742	$19,134
1706020911	$130,584	$130,983	$148,691	$149,288	$166,919	$167,594
1706020912	$126,797	$126,797	$193,644	$193,644	$260,492	$260,492
1706020913	$108,089	$108,089	$148,072	$148,072	$188,054	$188,054
1706020914	$26,027	$26,027	$26,027	$26,027	$26,027	$26,027
1706020915	$44,992	$44,992	$47,712	$47,712	$50,432	$50,432
1706020916	$54,829	$54,829	$54,829	$54,829	$54,829	$54,829
1706020917	$606	$633	$11,090	$11,130	$21,581	$21,627
1706021001	$166,152	$166,210	$303,801	$303,889	$441,469	$441,567

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706021002	$99,730	$100,147	$145,627	$146,252	$191,650	$192,357
1706021003	$33,169	$33,169	$33,169	$33,169	$33,169	$33,169
1706021006	$46,727	$46,810	$64,430	$64,555	$82,158	$82,299
1706021007	$83,428	$84,077	$93,933	$94,905	$104,634	$105,733
1706030101	$5,085	$5,085	$5,085	$5,085	$5,085	$5,085
1706030102	$8,607	$8,607	$19,089	$19,089	$29,572	$29,572
1706030103	$20,962	$20,962	$20,962	$20,962	$20,962	$20,962
1706030104	$6,190	$6,190	$6,190	$6,190	$6,190	$6,190
1706030105	$2,680	$2,680	$2,680	$2,680	$2,680	$2,680
1706030106	$27,342	$27,342	$27,342	$27,342	$27,342	$27,342
1706030107	$10,615	$10,615	$10,615	$10,615	$10,615	$10,615
1706030108	$41,560	$41,560	$41,560	$41,560	$41,560	$41,560
1706030109	$1,455	$1,455	$1,455	$1,455	$1,455	$1,455
1706030201	$89,066	$89,066	$89,066	$89,066	$89,066	$89,066
1706030202	$24,622	$24,622	$24,622	$24,622	$24,622	$24,622
1706030203	$8,080	$8,080	$8,080	$8,080	$8,080	$8,080
1706030204	$1,223	$1,223	$1,223	$1,223	$1,223	$1,223
1706030205	$2,590	$2,590	$2,590	$2,590	$2,590	$2,590
1706030207	$4,585	$4,585	$4,585	$4,585	$4,585	$4,585
1706030208	$5,133	$5,133	$5,133	$5,133	$5,133	$5,133
1706030209	$5,741	$5,741	$5,741	$5,741	$5,741	$5,741
1706030210	$1,508	$1,508	$1,508	$1,508	$1,508	$1,508
1706030211	$52,925	$54,739	$52,988	$55,705	$53,600	$56,671
1706030212	$54,383	$54,655	$54,392	$54,800	$54,484	$54,945
1706030213	$89,317	$89,786	$89,333	$90,035	$89,491	$90,285
1706030214	$47,109	$47,109	$47,109	$47,109	$47,109	$47,109
1706030301	$152,504	$152,540	$163,845	$163,900	$175,197	$175,259
1706030302	$70,333	$70,333	$70,333	$70,333	$70,333	$70,333
1706030303	$123,694	$123,694	$153,194	$153,194	$182,694	$182,694
1706030304	$120,997	$120,997	$138,697	$138,697	$156,397	$156,397
1706030305	$12,470	$12,470	$12,470	$12,470	$12,470	$12,470
1706030306	$58,526	$58,526	$58,526	$58,526	$58,526	$58,526
1706030307	$85,899	$85,899	$115,399	$115,399	$144,899	$144,899
1706030308	$49,361	$49,361	$61,161	$61,161	$72,961	$72,961
1706030309	$7,132	$7,132	$7,132	$7,132	$7,132	$7,132
1706030310	$40,078	$40,078	$40,078	$40,078	$40,078	$40,078
1706030311	$14,854	$14,854	$14,854	$14,854	$14,854	$14,854

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030312	$8,349	$8,349	$8,349	$8,349	$8,349	$8,349
1706030313	$5,063	$5,063	$5,063	$5,063	$5,063	$5,063
1706030314	$2,705	$2,705	$2,705	$2,705	$2,705	$2,705
1706030401	$47,856	$47,856	$66,681	$66,681	$85,507	$85,507
1706030402	$59,955	$60,943	$60,425	$61,905	$61,195	$62,867
1706030501	$67,038	$67,190	$99,548	$99,776	$132,105	$132,363
1706030502	$45,599	$46,296	$57,423	$58,467	$69,458	$70,639
1706030503	$64,127	$64,449	$64,138	$64,621	$64,247	$64,792
1706030504	$63,832	$65,166	$63,878	$65,877	$64,328	$66,587
1706030505	$64,704	$66,590	$70,669	$73,494	$77,205	$80,399
1706030506	$69,456	$71,779	$70,897	$74,376	$73,040	$76,973
1706030507	$161,693	$165,104	$185,411	$190,520	$210,161	$215,936
1706030508	$59,450	$60,510	$59,487	$61,074	$59,844	$61,639
1706030509	$26,520	$26,672	$37,007	$37,236	$47,541	$47,800
1706030510	$42,730	$43,061	$42,742	$43,237	$42,853	$43,413
1706030511	$31,437	$31,628	$31,444	$31,729	$31,508	$31,831
1706030512	$22,966	$22,992	$57,749	$57,788	$92,540	$92,585
1706030513	$7,303	$7,339	$8,665	$8,718	$10,037	$10,097
1706030601	$111,237	$116,965	$355,164	$358,256	$599,091	$599,547
1706030602	$6,407	$6,430	$16,172	$16,207	$25,943	$25,983
1706030603	$30,063	$30,079	$68,395	$68,418	$106,730	$106,757
1706030604	$1,709	$1,709	$39,753	$39,753	$77,796	$77,796
1706030605	$3,576	$3,576	$8,351	$8,351	$13,125	$13,125
1706030606	$16,909	$16,954	$38,470	$38,538	$60,045	$60,121
1706030607	$26,919	$28,310	$46,821	$48,904	$67,143	$69,498
1706030608	$11,157	$11,157	$26,817	$26,817	$42,476	$42,476
1706030609	$30,112	$30,112	$65,800	$65,800	$101,489	$101,489
1706030610	$30,838	$30,838	$68,074	$68,074	$105,310	$105,310
1706030611	$1,246	$1,246	$14,979	$14,979	$28,712	$28,712
1706030612	$65,579	$65,579	$112,712	$112,712	$159,845	$159,845
1706030613	$44,538	$44,538	$47,651	$47,651	$50,765	$50,765
1706030614	$73,556	$73,555	$122,944	$122,944	$172,333	$172,333
1706030615	$18,171	$18,171	$29,971	$29,971	$41,771	$41,771
1706030616	$19,695	$19,695	$19,695	$19,695	$19,695	$19,695
1706030617	$32,635	$32,635	$50,335	$50,335	$68,035	$68,035
1706030618	$169,553	$169,553	$376,953	$376,953	$584,353	$584,353
1706030619	$35,477	$35,477	$35,477	$35,477	$35,477	$35,477

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030620	$47,148	$47,148	$88,456	$88,456	$129,763	$129,763
1706030621	$10,655	$10,655	$24,062	$24,062	$37,468	$37,468
1706030622	$39,217	$39,217	$73,527	$73,527	$107,836	$107,836
1706030623	$5,928	$5,928	$17,837	$17,837	$29,745	$29,745
1706030624	$85	$85	$281	$281	$478	$478
1706030627	$772	$772	$2,453	$2,453	$4,133	$4,133
1706030628	$27,790	$27,790	$64,746	$64,746	$101,702	$101,702
1706030629	$18,735	$18,735	$43,699	$43,699	$68,663	$68,663
1706030630	$6,200	$6,200	$116,925	$116,925	$227,650	$227,650
1706030631	$29,012	$29,012	$56,092	$56,092	$83,172	$83,172
1707010101	$496,776	$496,776	$1,066,806	$1,066,806	$1,636,837	$1,636,836
1707010102	$15,198	$15,198	$134,592	$134,592	$253,985	$253,985
1707010106	$8,370	$8,370	$24,454	$24,454	$40,538	$40,538
1707010109	$40,665	$40,665	$54,201	$54,201	$67,738	$67,738
1707010114	$147,464	$150,328	$483,324	$475,646	$819,184	$800,964
1707010501	$192,869	$192,869	$376,101	$376,101	$559,334	$559,334
1707010504	$482,406	$488,134	$625,523	$625,979	$768,639	$763,825
1707010512	$354,401	$354,401	$393,608	$390,973	$432,815	$427,544
1707010513	$244,595	$244,595	$285,689	$283,053	$326,782	$321,512
1708000107	$627,621	$627,621	$926,305	$926,305	$1,224,989	$1,224,988
Lower Columbia	$990,154	$995,881	$2,396,635	$2,402,363	$3,803,117	$3,808,844
Lower Columbia River steelhead ESU						
1707010506	$420,262	$420,262	$657,599	$657,599	$894,935	$894,935
1707010507	$259,533	$259,533	$295,670	$295,670	$331,806	$331,806
1707010508	$918,824	$1,299,300	$1,067,447	$1,447,922	$1,216,070	$1,596,545
1707010511	$737,637	$737,637	$779,775	$779,775	$821,914	$821,914
1707010512	$354,373	$354,373	$393,440	$390,804	$432,507	$427,236
1707010513	$244,595	$244,595	$285,689	$283,053	$326,782	$321,512
1708000101	$212,458	$212,458	$224,301	$224,301	$236,143	$236,143
1708000102	$173,118	$173,118	$174,579	$174,579	$176,040	$176,040
1708000103	$110,040	$110,040	$110,088	$110,088	$110,137	$110,137
1708000104	$102,968	$102,968	$166,225	$160,954	$229,482	$218,940
1708000105	$1,318,433	$1,424,514	$2,077,861	$1,936,112	$2,839,246	$2,448,914
1708000106	$198,314	$201,177	$405,746	$400,704	$613,179	$600,230
1708000107	$627,734	$627,734	$926,803	$926,803	$1,225,873	$1,225,873

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000108	$132,847	$135,711	$235,216	$232,809	$337,586	$329,908
1708000109	$1,841,964	$1,856,282	$3,932,378	$3,941,426	$6,022,793	$6,026,569
1708000205	$552,242	$552,242	$832,594	$827,323	$1,112,947	$1,102,405
1708000206	$312,658	$315,157	$562,110	$564,609	$811,562	$814,061
1708000301	$358,276	$361,139	$599,970	$602,834	$841,665	$844,529
1708000401	$175,864	$175,864	$177,224	$177,224	$178,584	$178,584
1708000402	$697,985	$786,394	$2,491,173	$3,058,911	$4,278,641	$5,324,171
1708000403	$585,101	$585,101	$642,966	$642,966	$700,832	$700,832
1708000404	$669,209	$669,209	$691,534	$691,534	$713,859	$713,859
1708000405	$696,485	$696,485	$718,610	$718,610	$740,735	$740,735
1708000501	$331,108	$331,108	$365,003	$365,003	$398,898	$398,898
1708000502	$453,069	$228,745	$1,602,652	$720,376	$2,756,475	$1,213,516
1708000503	$219,399	$219,399	$599,003	$599,003	$978,607	$978,607
1708000504	$264,078	$264,078	$368,903	$368,903	$473,728	$473,728
1708000505	$160,091	$160,091	$160,091	$160,091	$160,091	$160,091
1708000506	$49,722	$49,722	$49,953	$49,953	$50,185	$50,185
1708000507	$176,121	$176,121	$381,515	$381,515	$586,909	$586,909
1708000508	$200,857	$200,857	$411,955	$411,955	$623,053	$623,053
1709000704	$472,227	$550,527	$619,587	$692,616	$766,948	$834,706
1709001101	$436,099	$436,099	$436,173	$436,173	$436,247	$436,247
1709001102	$557,445	$557,445	$557,445	$557,445	$557,445	$557,445
1709001103	$997,026	$1,145,570	$1,087,892	$1,195,914	$1,178,515	$1,246,156
1709001104	$1,143,850	$1,320,673	$2,232,366	$2,927,818	$3,325,389	$4,541,622
1709001105	$77,692	$77,692	$118,433	$115,797	$159,173	$153,903
1709001106	$715,861	$867,269	$987,349	$1,125,579	$1,258,836	$1,383,890
1709001201	$393,586	$402,177	$713,478	$714,163	$1,033,370	$1,026,148
1709001202	$336,735	$339,599	$644,105	$644,333	$951,474	$949,067
1709001203	$1,563,504	$1,577,822	$3,538,039	$3,531,273	$5,512,573	$5,484,725
Lower Columbia	$990,290	$996,017	$2,396,800	$2,402,527	$3,803,310	$3,809,037
Upper Willamette River steelhead ESU						
1709000303	$109,412	$112,276	$126,210	$129,074	$143,009	$145,872
1709000304	$218,666	$230,121	$266,930	$278,385	$315,195	$326,650
1709000306	$127,047	$127,047	$347,110	$347,110	$567,173	$567,173
1709000504	$34,267	$34,267	$49,207	$49,207	$64,147	$64,147
1709000505	$100,620	$100,620	$100,774	$100,774	$100,929	$100,929

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000506	$73,072	$75,936	$159,516	$162,380	$245,959	$248,823
1709000601	$108,835	$114,563	$147,318	$153,045	$185,800	$191,528
1709000602	$104,449	$104,449	$116,475	$116,475	$128,500	$128,500
1709000603	$83,199	$83,199	$95,770	$95,770	$108,341	$108,341
1709000606	$510,448	$510,448	$522,291	$522,291	$534,133	$534,133
1709000607	$93	$93	$1,454	$1,454	$2,815	$2,815
1709000608	$16,194	$16,194	$29,396	$29,396	$42,599	$42,599
1709000701	$376,473	$376,473	$763,846	$761,210	$1,151,218	$1,145,947
1709000702	$113,618	$116,482	$349,599	$352,462	$585,579	$588,443
1709000703	$337,028	$345,620	$569,988	$573,308	$802,947	$800,997
1709000704	$471,062	$549,362	$619,021	$692,050	$766,980	$834,738
1709000801	$120,221	$120,221	$142,788	$142,788	$165,355	$165,355
1709000802	$108,709	$108,709	$111,650	$111,650	$114,592	$114,592
1709000803	$89,365	$89,365	$109,342	$109,342	$129,320	$129,320
1709000804	$43,409	$43,409	$112,193	$112,193	$180,977	$180,977
1709000805	$13,261	$13,261	$185,674	$185,674	$358,088	$358,088
1709000806	$94,454	$94,454	$305,196	$305,196	$515,938	$515,938
1709000807	$69,833	$72,696	$182,323	$185,187	$294,813	$297,677
1709000901	$304,185	$307,049	$801,815	$804,679	$1,299,445	$1,302,309
1709000902	$37,942	$40,806	$119,954	$122,817	$201,966	$204,829
1709000903	$30,861	$30,861	$121,044	$121,044	$211,227	$211,227
1709000904	$50,499	$50,499	$132,533	$127,262	$214,566	$204,024
1709000905	$178,497	$178,497	$178,571	$178,571	$178,644	$178,644
1709000906	$40,324	$40,324	$132,722	$127,451	$225,120	$214,579
1709001001	$167,009	$169,873	$322,065	$324,929	$477,121	$479,984
1709001002	$66,150	$69,014	$209,600	$207,193	$353,050	$345,372
1709001003	$45,746	$45,746	$301,216	$301,216	$556,687	$556,687
1709001004	$389,602	$392,466	$596,055	$598,918	$802,507	$805,370
1709001005	$445,254	$448,118	$777,119	$766,806	$1,108,985	$1,085,494
1709001201	$392,079	$400,671	$708,567	$709,252	$1,025,055	$1,017,834
1709001202	$336,736	$339,599	$644,105	$644,333	$951,474	$949,067
1709001203	$1,563,360	$1,577,678	$3,536,035	$3,529,270	$5,508,711	$5,480,862
Lower Columbia	$990,003	$995,730	$2,395,771	$2,401,498	$3,801,539	$3,807,267
Middle Columbia River steelhead ESU						
1702001606	$142,601	$148,329	$487,748	$482,934	$832,895	$817,539

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1703000101	$1,190,533	$1,190,533	$2,195,899	$2,193,263	$3,201,264	$3,195,993
1703000102	$571,386	$571,471	$661,515	$661,644	$751,671	$751,816
1703000103	$1,161,569	$1,164,432	$1,544,089	$1,546,952	$1,926,609	$1,929,472
1703000104	$226,287	$226,287	$528,913	$528,913	$831,538	$831,538
1703000201	$619,025	$619,025	$723,850	$723,850	$828,675	$828,675
1703000202	$601,769	$601,769	$613,666	$613,666	$625,563	$625,563
1703000203	$1,182,297	$1,182,715	$2,176,858	$2,294,456	$3,170,862	$3,405,107
1703000301	$173,063	$173,063	$489,174	$489,174	$805,286	$805,286
1703000302	$215,360	$218,224	$447,581	$447,809	$679,801	$677,394
1703000303	$95,500	$95,500	$232,500	$232,500	$369,500	$369,500
1703000304	$98,177	$98,177	$206,390	$203,755	$314,603	$309,332
1703000305	$71,601	$71,601	$72,961	$72,961	$74,321	$74,321
1703000306	$151,531	$157,258	$544,731	$550,458	$937,932	$943,659
1703000307	$69,150	$69,150	$167,607	$164,971	$266,063	$260,792
1707010101	$496,776	$496,776	$1,066,806	$1,066,806	$1,636,837	$1,636,836
1707010102	$15,198	$15,198	$134,592	$134,592	$253,985	$253,985
1707010105	$2,780	$2,780	$6,860	$6,860	$10,940	$10,940
1707010106	$8,370	$8,370	$24,454	$24,454	$40,538	$40,538
1707010109	$40,665	$40,665	$54,201	$54,201	$67,738	$67,738
1707010110	$2,999	$2,999	$2,999	$2,999	$2,999	$2,999
1707010111	$2,237	$2,237	$2,237	$2,237	$2,237	$2,237
1707010112	$56,250	$56,250	$65,485	$65,485	$74,720	$74,720
1707010113	$21,080	$21,216	$22,445	$22,648	$23,851	$24,080
1707010114	$147,464	$150,328	$483,324	$475,646	$819,184	$800,964
1707010201	$276,762	$277,598	$277,414	$278,666	$278,319	$279,733
1707010202	$428,969	$431,839	$984,236	$984,474	$1,539,505	$1,537,109
1707010203	$219,769	$219,779	$251,620	$251,635	$283,474	$283,490
1707010204	$31,433	$31,433	$60,114	$60,114	$88,795	$88,795
1707010207	$35,546	$35,546	$89,691	$89,691	$143,837	$143,837
1707010208	$523,944	$523,944	$1,533,312	$1,533,312	$2,542,681	$2,542,681
1707010209	$95,794	$95,794	$181,804	$181,804	$267,814	$267,813
1707010210	$38,943	$38,943	$100,483	$100,483	$162,023	$162,023
1707010211	$626,542	$629,406	$1,602,450	$1,605,313	$2,578,358	$2,581,221
1707010301	$336,966	$336,966	$336,966	$336,966	$336,966	$336,966
1707010302	$505,602	$505,602	$506,962	$506,962	$508,322	$508,322
1707010303	$77,778	$77,778	$105,672	$105,672	$133,566	$133,566
1707010304	$366,318	$366,318	$860,055	$860,055	$1,353,792	$1,353,792

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010305	$54,740	$54,740	$160,270	$160,270	$265,801	$265,801
1707010306	$359,991	$360,496	$709,288	$710,044	$1,058,737	$1,059,592
1707010307	$6	$6	$1,408	$1,408	$2,810	$2,810
1707010308	$28,839	$31,703	$33,833	$36,697	$38,827	$41,690
1707010310	$18,481	$18,481	$18,822	$18,822	$19,163	$19,163
1707010313	$80,432	$83,295	$114,962	$117,826	$149,492	$152,356
1707010501	$193,135	$193,135	$377,011	$377,011	$560,888	$560,888
1707010502	$117,799	$117,810	$150,209	$150,226	$182,623	$182,642
1707010503	$130,609	$130,609	$147,388	$147,388	$164,166	$164,166
1707010504	$484,475	$490,215	$630,962	$631,437	$777,453	$772,660
1707010505	$54,523	$54,523	$69,105	$69,105	$83,688	$83,688
1707010509	$1,478,726	$2,118,441	$1,502,072	$2,141,786	$1,525,418	$2,165,132
1707010510	$495,752	$495,752	$602,109	$602,109	$708,467	$708,467
1707010512	$363,416	$363,416	$424,230	$421,595	$485,044	$479,773
1707010513	$244,595	$244,595	$285,689	$283,053	$326,782	$321,512
1707010601	$7,881	$7,881	$9,241	$9,241	$10,601	$10,601
1707010602	$1,847	$1,850	$34,654	$34,659	$67,463	$67,468
1707010603	$120,980	$120,980	$313,760	$313,760	$506,540	$506,540
1707010604	$122,860	$122,860	$277,689	$277,689	$432,518	$432,518
1707020103	$351,384	$352,850	$351,435	$353,630	$351,929	$354,411
1707020104	$263,352	$265,860	$263,439	$267,195	$264,284	$268,530
1707020105	$265,540	$267,211	$266,958	$269,461	$268,881	$271,711
1707020106	$225,551	$226,921	$225,599	$227,650	$226,060	$228,379
1707020107	$152,911	$154,044	$163,433	$165,130	$174,298	$176,216
1707020108	$119,008	$120,029	$151,851	$153,381	$185,003	$186,732
1707020109	$167,158	$169,146	$167,227	$170,205	$167,897	$171,264
1707020110	$128,982	$129,242	$143,716	$144,105	$158,528	$158,967
1707020111	$126,496	$126,787	$126,596	$127,031	$126,783	$127,275
1707020112	$218,115	$219,163	$218,151	$219,721	$218,504	$220,279
1707020113	$257,196	$257,620	$484,263	$484,899	$711,458	$712,177
1707020114	$156,362	$157,088	$198,317	$199,405	$240,492	$241,721
1707020115	$196,359	$196,633	$196,442	$196,853	$196,608	$197,073
1707020201	$133,507	$133,722	$133,514	$133,837	$133,587	$133,951
1707020202	$313,644	$315,156	$313,696	$315,962	$314,206	$316,767
1707020203	$294,755	$295,779	$294,790	$296,324	$295,135	$296,869
1707020204	$409,709	$411,885	$409,784	$413,043	$410,518	$414,202
1707020205	$521,932	$525,576	$522,058	$527,516	$523,286	$529,457

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707020206	$436,674	$439,257	$458,085	$461,954	$480,278	$484,651
1707020207	$669,946	$672,831	$680,528	$684,850	$691,983	$696,869
1707020208	$620,513	$625,659	$637,073	$644,782	$655,191	$663,905
1707020209	$140,481	$141,173	$140,505	$141,541	$140,738	$141,910
1707020210	$103,542	$103,982	$124,522	$125,181	$145,636	$146,381
1707020301	$268,141	$270,831	$280,077	$284,105	$292,826	$297,380
1707020302	$440,002	$445,355	$440,188	$448,206	$441,992	$451,057
1707020303	$280,594	$282,001	$280,642	$282,750	$281,117	$283,500
1707020304	$117,103	$117,812	$128,333	$129,396	$139,778	$140,979
1707020305	$7,295	$7,345	$7,296	$7,372	$7,313	$7,399
1707020401	$243,593	$244,063	$267,556	$268,260	$291,662	$292,458
1707020402	$63,837	$64,194	$74,648	$75,183	$85,567	$86,172
1707020403	$221,512	$222,763	$242,520	$244,394	$263,907	$266,026
1707020404	$147,670	$147,920	$179,126	$179,501	$210,658	$211,083
1707020405	$102,795	$102,976	$102,802	$103,072	$102,863	$103,168
1707020406	$7,495	$7,502	$7,658	$7,668	$7,823	$7,834
1707020407	$54,651	$55,461	$54,679	$55,891	$54,952	$56,322
1707020408	$46,804	$47,046	$57,299	$57,661	$67,867	$68,276
1707020409	$31,332	$32,399	$31,381	$32,979	$31,753	$33,559
1707020410	$89,362	$89,983	$115,543	$113,837	$141,911	$137,691
1707020411	$564,312	$564,358	$1,109,513	$1,109,583	$1,654,729	$1,654,807
1707020412	$70,652	$70,677	$129,667	$129,705	$188,689	$188,732
1707020413	$11,728	$11,819	$13,864	$14,000	$16,026	$16,180
1707020414	$10,401	$10,401	$10,553	$10,553	$10,705	$10,705
1707030603	$1,235,568	$1,569,792	$1,236,928	$1,571,152	$1,238,288	$1,572,512
1707030604	$18,009	$18,009	$18,009	$18,009	$18,009	$18,009
1707030605	$21,443	$21,443	$21,443	$21,443	$21,443	$21,443
1707030606	$58,715	$58,715	$60,075	$60,075	$61,435	$61,435
1707030607	$347,133	$347,325	$373,778	$371,430	$400,481	$395,535
1707030608	$20,337	$20,618	$20,351	$20,773	$20,451	$20,927
1707030610	$645,720	$645,720	$919,625	$919,625	$1,193,530	$1,193,530
1707030611	$30,711	$31,523	$108,347	$106,928	$186,229	$182,334
1707030612	$322,589	$322,740	$322,787	$323,013	$323,030	$323,285
1707030701	$166,464	$166,725	$176,955	$177,347	$187,526	$187,969
1707030702	$49,194	$49,432	$49,202	$49,560	$49,282	$49,687
1707030704	$113,123	$113,134	$113,124	$113,141	$113,127	$113,147
1707030705	$52,010	$52,294	$52,024	$52,448	$52,123	$52,603

Table C-1 Annual Potential Total Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1708000107	$627,621	$627,621	$926,305	$926,305	$1,224,989	$1,224,988
Lower Columbia	$990,154	$995,882	$2,396,636	$2,402,363	$3,803,117	$3,808,845

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$0	$0	$0	$0	$0	$0
1711000202	$0	$0	$0	$0	$0	$0
1711000204	$0	$0	$0	$0	$0	$0
1711000401	$960	$960	$84,820	$84,820	$168,680	$168,680
1711000402	$360	$360	$31,808	$31,808	$63,255	$63,255
1711000403	$240	$240	$21,205	$21,205	$42,170	$42,170
1711000404	$360	$360	$31,808	$31,808	$63,255	$63,255
1711000405	$0	$0	$0	$0	$0	$0
1711000504	$422,429	$302,728	$2,732,393	$1,963,705	$5,035,014	$3,619,421
1711000505	$120	$120	$10,603	$10,603	$21,085	$21,085
1711000506	$240	$240	$21,205	$21,205	$42,170	$42,170
1711000507	$120	$120	$10,603	$10,603	$21,085	$21,085
1711000508	$741,151	$1,094,797	$3,981,254	$5,771,695	$7,219,169	$10,445,622
1711000601	$840	$840	$74,218	$74,218	$147,595	$147,595
1711000602	$120	$120	$10,603	$10,603	$21,085	$21,085
1711000603	$360	$360	$31,808	$31,808	$63,255	$63,255
1711000604	$240	$240	$21,205	$21,205	$42,170	$42,170
1711000701	$600	$600	$53,013	$53,013	$105,425	$105,425
1711000702	$120	$120	$10,603	$10,603	$21,085	$21,085
1711000801	$240	$240	$21,205	$21,205	$42,170	$42,170
1711000802	$360	$360	$31,808	$31,808	$63,255	$63,255
1711000803	$0	$0	$0	$0	$0	$0
1711000901	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020
1711000902	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1711000903	$360	$360	$31,808	$31,808	$63,255	$63,255
1711000904	$319,299	$389,988	$2,050,457	$2,504,401	$3,776,062	$4,612,032
1711000905	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001003	$393,418	$626,955	$1,804,804	$2,840,289	$3,220,287	$5,060,157
1711001004	$120	$120	$119,505	$91,659	$238,512	$182,916
1711001101	$0	$0	$0	$0	$0	$0
1711001102	$0	$0	$0	$0	$0	$0
1711001201	$392,698	$626,235	$2,521,804	$4,021,521	$4,644,080	$7,405,915
1711001202	$0	$0	$0	$0	$0	$0
1711001203	$0	$0	$0	$0	$0	$0
1711001204	$0	$0	$0	$0	$0	$0
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$0	$0	$0	$0	$0	$0
1711001303	$0	$0	$0	$0	$0	$0
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$110,289	$34,258	$443,901	$144,868	$778,854	$255,894

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1711001403	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001404	$392,698	$626,235	$1,544,498	$2,463,011	$2,701,079	$4,307,411
1711001405	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001502	$0	$0	$0	$0	$0	$0
1711001503	$0	$0	$74,157	$33,635	$148,057	$67,154
1711001601	$0	$0	$0	$0	$0	$0
1711001602	$0	$0	$0	$0	$0	$0
1711001701	$287,490	$125,522	$1,130,711	$493,683	$1,977,432	$863,372
1711001802	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001806	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001808	$0	$0	$0	$0	$0	$0
1711001900	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001901	$0	$0	$0	$0	$0	$0
1711001902	$0	$0	$0	$0	$0	$0
1711001904	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$0	$0	$0	$0
1711002004	$120	$120	$10,603	$10,603	$21,085	$21,085
1711002007	$1,811,328	$3,250,655	$1,821,810	$3,261,138	$1,832,293	$3,271,620
N01	$0	$0	$0	$0	$0	$0
N02	$0	$0	$0	$0	$0	$0
N03	$0	$0	$0	$0	$0	$0
N04	$0	$0	$0	$0	$0	$0
N05	$0	$0	$0	$0	$0	$0
N06	$0	$0	$0	$0	$0	$0
N07	$0	$0	$0	$0	$0	$0
N08	$0	$0	$0	$0	$0	$0
N09	$0	$0	$0	$0	$0	$0
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$0	$0	$0	$0	$0	$0
N13	$0	$0	$0	$0	$0	$0
N14	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010507	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010508	$781,662	$1,159,273	$823,592	$1,201,203	$865,522	$1,243,133
1707010509	$879,347	$1,519,062	$889,829	$1,529,544	$900,312	$1,540,027
1707010510	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$823,132	$929,213	$1,477,661	$1,335,912	$2,134,147	$1,743,815
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000206	$5,470	$7,969	$26,435	$28,934	$47,400	$49,899
1708000301	$0	$0	$0	$0	$0	$0
1708000302	$0	$0	$0	$0	$0	$0
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$328,878	$417,287	$2,111,971	$2,679,709	$3,889,344	$4,934,874
1708000403	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000404	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$348,266	$123,942	$1,369,745	$487,470	$2,395,464	$852,506
1708000503	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000601	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$238,416	$305,261	$248,899	$315,744	$259,381	$326,226
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$529,667	$678,212	$540,150	$688,694	$550,632	$699,177
1709001201	$240	$240	$21,205	$21,205	$42,170	$42,170
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$120	$120	$10,603	$10,603	$21,085	$21,085
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$0	$0	$0	$0
1709000201	$0	$0	$0	$0	$0	$0
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$0	$0	$0	$0	$0	$0
1709000301	$0	$0	$0	$0	$0	$0
1709000302	$0	$0	$0	$0	$0	$0
1709000303	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000304	$0	$0	$0	$0	$0	$0
1709000305	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000401	$349,027	$477,872	$2,425,949	$3,317,893	$4,496,197	$6,148,774
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$0	$0	$148,315	$67,271	$296,115	$134,308
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$240	$240	$21,205	$21,205	$42,170	$42,170

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$238,416	$305,261	$248,899	$315,744	$259,381	$326,226
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$529,787	$678,332	$620,653	$728,675	$711,276	$778,917
1709001104	$370,155	$546,978	$1,455,838	$2,151,290	$2,546,026	$3,762,260
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$529,667	$678,212	$540,150	$688,694	$550,632	$699,177
1709001201	$240	$240	$21,205	$21,205	$42,170	$42,170
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$120	$120	$10,603	$10,603	$21,085	$21,085
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$0	$0	$0	$0
1702000807	$0	$0	$0	$0	$0	$0
1702001001	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1702001002	$0	$0	$0	$0	$0	$0
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001103	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$287,490	$125,522	$1,130,711	$493,683	$1,977,432	$863,372
1711001802	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001806	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001807	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$0	$0	$0	$0
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
N19	$0	$0	$0	$0	$0	$0
Columbia River chum salmon ESU						
1707010509	$879,347	$1,519,062	$889,829	$1,529,544	$900,312	$1,540,027
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000206	$5,470	$7,969	$26,435	$28,934	$47,400	$49,899
1708000301	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0
1708000603	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$0	$0	$0	$0	$0	$0
1702000601	$0	$0	$0	$0	$0	$0
1702000602	$0	$0	$0	$0	$0	$0
1702000603	$0	$0	$0	$0	$0	$0
1702000604	$0	$0	$0	$0	$0	$0
1702000605	$0	$0	$0	$0	$0	$0
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$0	$0	$0	$0
1702000807	$0	$0	$0	$0	$0	$0
1702000903	$392,698	$626,235	$2,521,804	$4,021,521	$4,644,080	$7,405,915
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$0	$0	$0	$0	$0	$0
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001103	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$0	$0	$0	$0
1702001204	$0	$0	$0	$0	$0	$0
1702001509	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$120	$120	$10,603	$10,603	$21,085	$21,085

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$360	$360	$31,808	$31,808	$63,255	$63,255
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0
1706010204	$0	$0	$0	$0	$0	$0
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$0	$0	$0	$0	$0	$0
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$0	$0	$0	$0	$0	$0
1706010406	$0	$0	$0	$0	$0	$0
1706010407	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010410	$0	$0	$0	$0	$0	$0
1706010411	$0	$0	$0	$0	$0	$0
1706010501	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010502	$0	$0	$0	$0	$0	$0
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$0	$0	$0	$0	$0	$0
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1706010605	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$0	$0	$0	$0	$0	$0
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$0	$0	$0	$0	$0	$0
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$0	$0	$0	$0	$0	$0
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$0	$0	$0	$0	$0	$0
1706020101	$0	$0	$0	$0	$0	$0
1706020104	$0	$0	$0	$0	$0	$0
1706020105	$0	$0	$0	$0	$0	$0
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$0	$0	$0	$0	$0	$0
1706020113	$0	$0	$0	$0	$0	$0
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$0	$0	$0	$0	$0	$0
1706020117	$0	$0	$0	$0	$0	$0
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$0	$0	$0	$0	$0	$0
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$0	$0	$0	$0	$0	$0
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$0	$0	$0	$0	$0	$0
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020132	$0	$0	$0	$0	$0	$0
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020307	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020308	$240	$240	$21,205	$21,205	$42,170	$42,170
1706020309	$0	$0	$0	$0	$0	$0
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$0	$0	$0	$0
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$0	$0	$0	$0	$0	$0
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$360	$360	$31,808	$31,808	$63,255	$63,255
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020801	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$240	$240	$21,205	$21,205	$42,170	$42,170
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0
1706020813	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$0	$0	$0	$0	$0	$0
1706020912	$360	$360	$31,808	$31,808	$63,255	$63,255
1706020913	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$360	$360	$31,808	$31,808	$63,255	$63,255
1706021002	$0	$0	$0	$0	$0	$0
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$120	$120	$10,603	$10,603	$21,085	$21,085
1706030101	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$0	$0	$0	$0	$0	$0
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$120	$120	$10,603	$10,603	$21,085	$21,085
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$120	$120	$10,603	$10,603	$21,085	$21,085
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$0	$0	$0	$0	$0	$0
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0
1706030607	$0	$0	$0	$0	$0	$0
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$120	$120	$10,603	$10,603	$21,085	$21,085
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$0	$0	$0	$0
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010507	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010508	$781,662	$1,159,273	$823,592	$1,201,203	$865,522	$1,243,133
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$823,132	$929,213	$1,477,661	$1,335,912	$2,134,147	$1,743,815
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000206	$5,470	$7,969	$26,435	$28,934	$47,400	$49,899
1708000301	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$328,878	$417,287	$2,111,971	$2,679,709	$3,889,344	$4,934,874
1708000403	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000404	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$348,266	$123,942	$1,369,745	$487,470	$2,395,464	$852,506
1708000503	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1708000508	$0	$0	$0	$0	$0	$0
1709000704	$238,416	$305,261	$248,899	$315,744	$259,381	$326,226
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$529,787	$678,332	$620,653	$728,675	$711,276	$778,917
1709001104	$370,155	$546,978	$1,455,838	$2,151,290	$2,546,026	$3,762,260
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$529,667	$678,212	$540,150	$688,694	$550,632	$699,177
1709001201	$240	$240	$21,205	$21,205	$42,170	$42,170
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$120	$120	$10,603	$10,603	$21,085	$21,085
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River steelhead ESU						
1709000303	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000304	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$238,416	$305,261	$248,899	$315,744	$259,381	$326,226
1709000801	$0	$0	$0	$0	$0	$0
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001001	$120	$120	$10,603	$10,603	$21,085	$21,085
1709001002	$0	$0	$0	$0	$0	$0
1709001003	$0	$0	$0	$0	$0	$0
1709001004	$120	$120	$10,603	$10,603	$21,085	$21,085
1709001005	$0	$0	$0	$0	$0	$0
1709001201	$240	$240	$21,205	$21,205	$42,170	$42,170
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$120	$120	$10,603	$10,603	$21,085	$21,085
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Middle Columbia River steelhead ESU						
1702001606	$360	$360	$31,808	$31,808	$63,255	$63,255
1703000101	$120	$120	$10,603	$10,603	$21,085	$21,085
1703000102	$0	$0	$0	$0	$0	$0
1703000103	$240	$240	$21,205	$21,205	$42,170	$42,170
1703000104	$240	$240	$21,205	$21,205	$42,170	$42,170
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$0	$0	$0	$0
1703000203	$480	$480	$239,100	$356,072	$477,038	$710,575
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$0	$0	$0	$0	$0	$0
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$120	$120	$10,603	$10,603	$21,085	$21,085
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$0	$0	$0	$0	$0	$0
1703000307	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010201	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707010202	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010203	$0	$0	$0	$0	$0	$0
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$0	$0	$0	$0	$0	$0
1707010209	$0	$0	$0	$0	$0	$0
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$0	$0	$0	$0	$0	$0
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$0	$0	$0	$0	$0	$0
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$0	$0	$0	$0	$0	$0
1707010306	$0	$0	$0	$0	$0	$0
1707010307	$0	$0	$0	$0	$0	$0
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010501	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010502	$0	$0	$0	$0	$0	$0
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$879,347	$1,519,062	$889,829	$1,529,544	$900,312	$1,540,027
1707010510	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$240	$240	$21,205	$21,205	$42,170	$42,170
1707010603	$0	$0	$0	$0	$0	$0
1707010604	$0	$0	$0	$0	$0	$0
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$0	$0	$0	$0
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$0	$0	$0	$0	$0	$0
1707020111	$0	$0	$0	$0	$0	$0
1707020112	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707020113	$0	$0	$0	$0	$0	$0
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$0	$0	$0	$0	$0	$0
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$0	$0	$0	$0	$0	$0
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$0	$0	$0	$0	$0	$0
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$0	$0	$0	$0	$0	$0
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$0	$0	$0	$0
1707020411	$0	$0	$0	$0	$0	$0
1707020412	$0	$0	$0	$0	$0	$0
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$1,191,482	$1,525,706	$1,191,482	$1,525,706	$1,191,482	$1,525,706
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$0	$0	$0	$0
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$120	$120	$10,603	$10,603	$21,085	$21,085
1707030611	$0	$0	$0	$0	$0	$0
1707030612	$0	$0	$0	$0	$0	$0

Table C-2 Annual Potential Hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$2,040	$2,040	$180,243	$180,243	$358,445	$358,445
1711000202	$720	$720	$63,615	$63,615	$126,510	$126,510
1711000204	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$120	$120	$10,603	$10,603	$21,085	$21,085
1711000403	$0	$0	$0	$0	$0	$0
1711000404	$0	$0	$0	$0	$0	$0
1711000405	$360	$360	$31,808	$31,808	$63,255	$63,255
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$0	$0	$0	$0	$0	$0
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$120	$120	$10,603	$10,603	$21,085	$21,085
1711000508	$0	$0	$0	$0	$0	$0
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$0	$0	$0	$0
1711000604	$240	$240	$21,205	$21,205	$42,170	$42,170
1711000701	$3,840	$3,840	$339,280	$339,280	$674,720	$674,720
1711000702	$600	$600	$53,013	$53,013	$105,425	$105,425
1711000801	$0	$0	$0	$0	$0	$0
1711000802	$360	$360	$31,808	$31,808	$63,255	$63,255
1711000803	$120	$120	$10,603	$10,603	$21,085	$21,085
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$0	$0	$0	$0	$0	$0
1711000903	$240	$240	$21,205	$21,205	$42,170	$42,170
1711000904	$1,560	$1,560	$137,833	$137,833	$274,105	$274,105
1711000905	$0	$0	$0	$0	$0	$0
1711001003	$600	$600	$53,013	$53,013	$105,425	$105,425
1711001004	$720	$720	$63,615	$63,615	$126,510	$126,510
1711001101	$240	$240	$21,205	$21,205	$42,170	$42,170
1711001102	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1711001201	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1711001202	$720	$720	$63,615	$63,615	$126,510	$126,510
1711001203	$2,280	$2,280	$201,448	$201,448	$400,615	$400,615
1711001204	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1711001303	$5,520	$5,520	$487,715	$487,715	$969,910	$969,910
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001404	$0	$0	$0	$0	$0	$0
1711001405	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1711001502	$0	$0	$0	$0	$0	$0
1711001503	$1,680	$1,680	$148,435	$148,435	$295,190	$295,190
1711001601	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1711001602	$240	$240	$21,205	$21,205	$42,170	$42,170
1711001701	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001802	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001808	$960	$960	$84,820	$84,820	$168,680	$168,680
1711001900	$840	$840	$74,218	$74,218	$147,595	$147,595
1711001901	$1,800	$1,800	$159,038	$159,038	$316,275	$316,275
1711001902	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020
1711001904	$840	$840	$74,218	$74,218	$147,595	$147,595
1711002003	$240	$240	$21,205	$21,205	$42,170	$42,170
1711002004	$240	$240	$21,205	$21,205	$42,170	$42,170
1711002007	$0	$0	$0	$0	$0	$0
N01	$0	$0	$0	$0	$0	$0
N02	$0	$0	$0	$0	$0	$0
N03	$0	$0	$0	$0	$0	$0
N04	$0	$0	$0	$0	$0	$0
N05	$0	$0	$0	$0	$0	$0
N06	$0	$0	$0	$0	$0	$0
N07	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
N08	$0	$0	$0	$0	$0	$0
N09	$0	$0	$0	$0	$0	$0
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$120	$120	$10,603	$10,603	$21,085	$21,085
N13	$0	$0	$0	$0	$0	$0
N14	$120	$120	$10,603	$10,603	$21,085	$21,085
N15	$2,640	$2,640	$233,255	$233,255	$463,870	$463,870
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$480	$480	$42,410	$42,410	$84,340	$84,340
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000101	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000105	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1708000106	$360	$360	$31,808	$31,808	$63,255	$63,255
1708000107	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000108	$480	$480	$42,410	$42,410	$84,340	$84,340
1708000109	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000205	$840	$840	$74,218	$74,218	$147,595	$147,595
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000302	$0	$0	$0	$0	$0	$0
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020
1708000503	$1,800	$1,800	$159,038	$159,038	$316,275	$316,275
1708000504	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1708000508	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000601	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1708000602	$360	$360	$31,808	$31,808	$63,255	$63,255

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000704	$600	$600	$53,013	$53,013	$105,425	$105,425
1709001105	$120	$120	$10,603	$10,603	$21,085	$21,085
1709001106	$960	$960	$84,820	$84,820	$168,680	$168,680
1709001201	$360	$360	$31,808	$31,808	$63,255	$63,255
1709001202	$360	$360	$31,808	$31,808	$63,255	$63,255
1709001203	$1,800	$1,800	$159,038	$159,038	$316,275	$316,275
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1709000105	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1709000110	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000201	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1709000202	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000203	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1709000205	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000301	$3,360	$3,360	$296,870	$296,870	$590,380	$590,380
1709000302	$480	$480	$42,410	$42,410	$84,340	$84,340
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000305	$840	$840	$74,218	$74,218	$147,595	$147,595
1709000306	$960	$960	$84,820	$84,820	$168,680	$168,680
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$0	$0	$0	$0	$0	$0
1709000404	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000504	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$240	$240	$21,205	$21,205	$42,170	$42,170

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000601	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000701	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000702	$2,040	$2,040	$180,243	$180,243	$358,445	$358,445
1709000703	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1709000704	$600	$600	$53,013	$53,013	$105,425	$105,425
1709000804	$360	$360	$31,808	$31,808	$63,255	$63,255
1709000805	$1,920	$1,920	$169,640	$169,640	$337,360	$337,360
1709000806	$2,160	$2,160	$190,845	$190,845	$379,530	$379,530
1709000807	$960	$960	$84,820	$84,820	$168,680	$168,680
1709000901	$1,680	$1,680	$148,435	$148,435	$295,190	$295,190
1709000902	$480	$480	$42,410	$42,410	$84,340	$84,340
1709000903	$840	$840	$74,218	$74,218	$147,595	$147,595
1709000904	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$240	$240	$21,205	$21,205	$42,170	$42,170
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$120	$120	$10,603	$10,603	$21,085	$21,085
1709001106	$960	$960	$84,820	$84,820	$168,680	$168,680
1709001201	$360	$360	$31,808	$31,808	$63,255	$63,255
1709001202	$360	$360	$31,808	$31,808	$63,255	$63,255
1709001203	$1,800	$1,800	$159,038	$159,038	$316,275	$316,275
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$120	$120	$10,603	$10,603	$21,085	$21,085
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1702000807	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001001	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001002	$4,560	$4,560	$402,895	$402,895	$801,230	$801,230
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$720	$720	$63,615	$63,615	$126,510	$126,510
1702001105	$240	$240	$21,205	$21,205	$42,170	$42,170
1702001604	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001605	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001606	$480	$480	$42,410	$42,410	$84,340	$84,340
1707010101	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010102	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1707010106	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010109	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010114	$720	$720	$63,615	$63,615	$126,510	$126,510
1707010501	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010504	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000107	$240	$240	$21,205	$21,205	$42,170	$42,170
Lower Columbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001802	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$120	$120	$10,603	$10,603	$21,085	$21,085
1711001807	$240	$240	$21,205	$21,205	$42,170	$42,170
1711001808	$960	$960	$84,820	$84,820	$168,680	$168,680
1711001908	$120	$120	$10,603	$10,603	$21,085	$21,085
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$240	$240	$21,205	$21,205	$42,170	$42,170
N15	$2,640	$2,640	$233,255	$233,255	$463,870	$463,870
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
N19	$0	$0	$0	$0	$0	$0
Columbia River chum salmon ESU						
1707010509	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000106	$360	$360	$31,808	$31,808	$63,255	$63,255
1708000107	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000109	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000205	$840	$840	$74,218	$74,218	$147,595	$147,595
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000304	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$1,800	$1,800	$159,038	$159,038	$316,275	$316,275
1708000504	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1708000508	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000602	$360	$360	$31,808	$31,808	$63,255	$63,255
1708000603	$240	$240	$21,205	$21,205	$42,170	$42,170
Lower Co-lumbia	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$120	$120	$10,603	$10,603	$21,085	$21,085
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$0	$0	$0	$0	$0	$0
1702000601	$2,640	$2,640	$233,255	$233,255	$463,870	$463,870
1702000602	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1702000603	$2,520	$2,520	$222,653	$222,653	$442,785	$442,785
1702000604	$360	$360	$31,808	$31,808	$63,255	$63,255
1702000605	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020
1702000704	$240	$240	$21,205	$21,205	$42,170	$42,170
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$120	$120	$10,603	$10,603	$21,085	$21,085
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1702000807	$120	$120	$10,603	$10,603	$21,085	$21,085
1702000903	$480	$480	$42,410	$42,410	$84,340	$84,340
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$4,560	$4,560	$402,895	$402,895	$801,230	$801,230
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$720	$720	$63,615	$63,615	$126,510	$126,510
1702001105	$240	$240	$21,205	$21,205	$42,170	$42,170
1702001204	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001509	$6,480	$6,480	$572,535	$572,535	$1,138,590	$1,138,590
1702001604	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001605	$120	$120	$10,603	$10,603	$21,085	$21,085
1702001606	$480	$480	$42,410	$42,410	$84,340	$84,340
1707010101	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010102	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1707010106	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010109	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010114	$720	$720	$63,615	$63,615	$126,510	$126,510
1707010501	$120	$120	$10,603	$10,603	$21,085	$21,085

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010504	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000107	$240	$240	$21,205	$21,205	$42,170	$42,170
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$480	$480	$42,410	$42,410	$84,340	$84,340
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0
1706010204	$0	$0	$0	$0	$0	$0
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1706010403	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010406	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010407	$840	$840	$74,218	$74,218	$147,595	$147,595
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$240	$240	$21,205	$21,205	$42,170	$42,170
1706010410	$240	$240	$21,205	$21,205	$42,170	$42,170
1706010411	$0	$0	$0	$0	$0	$0
1706010501	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010502	$360	$360	$31,808	$31,808	$63,255	$63,255
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$0	$0	$0	$0	$0	$0
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$0	$0	$0	$0	$0	$0
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$120	$120	$10,603	$10,603	$21,085	$21,085
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$240	$240	$21,205	$21,205	$42,170	$42,170
1706020101	$0	$0	$0	$0	$0	$0
1706020104	$0	$0	$0	$0	$0	$0
1706020105	$0	$0	$0	$0	$0	$0
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020113	$240	$240	$21,205	$21,205	$42,170	$42,170
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$0	$0	$0	$0	$0	$0
1706020117	$0	$0	$0	$0	$0	$0
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$0	$0	$0	$0	$0	$0
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$0	$0	$0	$0	$0	$0
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$3,600	$3,600	$318,075	$318,075	$632,550	$632,550
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$2,520	$2,520	$222,653	$222,653	$442,785	$442,785
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020132	$0	$0	$0	$0	$0	$0
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$360	$360	$31,808	$31,808	$63,255	$63,255
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$240	$240	$21,205	$21,205	$42,170	$42,170
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$0	$0	$0	$0	$0	$0
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$240	$240	$21,205	$21,205	$42,170	$42,170
1706020407	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$480	$480	$42,410	$42,410	$84,340	$84,340
1706020605	$240	$240	$21,205	$21,205	$42,170	$42,170
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$120	$120	$10,603	$10,603	$21,085	$21,085
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$0	$0	$0	$0	$0	$0
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$0	$0	$0	$0	$0	$0
1706020912	$0	$0	$0	$0	$0	$0
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$120	$120	$10,603	$10,603	$21,085	$21,085
1706021001	$0	$0	$0	$0	$0	$0
1706021002	$120	$120	$10,603	$10,603	$21,085	$21,085
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030102	$120	$120	$10,603	$10,603	$21,085	$21,085
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$0	$0	$0	$0	$0	$0
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$0	$0	$0	$0	$0	$0
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$360	$360	$31,808	$31,808	$63,255	$63,255
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0
1706030607	$120	$120	$10,603	$10,603	$21,085	$21,085
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$120	$120	$10,603	$10,603	$21,085	$21,085
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$0	$0	$0	$0	$0	$0
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$120	$120	$10,603	$10,603	$21,085	$21,085
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010102	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1707010106	$120	$120	$10,603	$10,603	$21,085	$21,085

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010109	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010114	$720	$720	$63,615	$63,615	$126,510	$126,510
1707010501	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010504	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000107	$240	$240	$21,205	$21,205	$42,170	$42,170
Lower Columbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010511	$480	$480	$42,410	$42,410	$84,340	$84,340
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000101	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000105	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1708000106	$360	$360	$31,808	$31,808	$63,255	$63,255
1708000107	$240	$240	$21,205	$21,205	$42,170	$42,170
1708000108	$480	$480	$42,410	$42,410	$84,340	$84,340
1708000109	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000205	$840	$840	$74,218	$74,218	$147,595	$147,595
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$120	$120	$10,603	$10,603	$21,085	$21,085
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020
1708000503	$1,800	$1,800	$159,038	$159,038	$316,275	$316,275
1708000504	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000508	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000704	$600	$600	$53,013	$53,013	$105,425	$105,425
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$120	$120	$10,603	$10,603	$21,085	$21,085
1709001106	$960	$960	$84,820	$84,820	$168,680	$168,680
1709001201	$360	$360	$31,808	$31,808	$63,255	$63,255
1709001202	$360	$360	$31,808	$31,808	$63,255	$63,255
1709001203	$1,800	$1,800	$159,038	$159,038	$316,275	$316,275
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Upper Willamette River steelhead ESU						
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000306	$960	$960	$84,820	$84,820	$168,680	$168,680
1709000504	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000601	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000701	$240	$240	$21,205	$21,205	$42,170	$42,170
1709000702	$2,040	$2,040	$180,243	$180,243	$358,445	$358,445
1709000703	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1709000704	$600	$600	$53,013	$53,013	$105,425	$105,425
1709000801	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000804	$360	$360	$31,808	$31,808	$63,255	$63,255
1709000805	$1,920	$1,920	$169,640	$169,640	$337,360	$337,360
1709000806	$2,160	$2,160	$190,845	$190,845	$379,530	$379,530
1709000807	$960	$960	$84,820	$84,820	$168,680	$168,680
1709000901	$1,680	$1,680	$148,435	$148,435	$295,190	$295,190
1709000902	$480	$480	$42,410	$42,410	$84,340	$84,340
1709000903	$840	$840	$74,218	$74,218	$147,595	$147,595

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000904	$120	$120	$10,603	$10,603	$21,085	$21,085
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$240	$240	$21,205	$21,205	$42,170	$42,170
1709001001	$1,080	$1,080	$95,423	$95,423	$189,765	$189,765
1709001002	$600	$600	$53,013	$53,013	$105,425	$105,425
1709001003	$2,760	$2,760	$243,858	$243,858	$484,955	$484,955
1709001004	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020
1709001005	$0	$0	$0	$0	$0	$0
1709001201	$360	$360	$31,808	$31,808	$63,255	$63,255
1709001202	$360	$360	$31,808	$31,808	$63,255	$63,255
1709001203	$1,800	$1,800	$159,038	$159,038	$316,275	$316,275
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Middle Columbia River steelhead ESU						
1702001606	$480	$480	$42,410	$42,410	$84,340	$84,340
1703000101	$9,720	$9,720	$858,803	$858,803	$1,707,885	$1,707,885
1703000102	$360	$360	$31,808	$31,808	$63,255	$63,255
1703000103	$360	$360	$31,808	$31,808	$63,255	$63,255
1703000104	$1,440	$1,440	$127,230	$127,230	$253,020	$253,020
1703000201	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1703000202	$120	$120	$10,603	$10,603	$21,085	$21,085
1703000203	$2,520	$2,520	$222,653	$222,653	$442,785	$442,785
1703000301	$240	$240	$21,205	$21,205	$42,170	$42,170
1703000302	$120	$120	$10,603	$10,603	$21,085	$21,085
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$120	$120	$10,603	$10,603	$21,085	$21,085
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$2,040	$2,040	$180,243	$180,243	$358,445	$358,445
1703000307	$240	$240	$21,205	$21,205	$42,170	$42,170
1707010101	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010102	$1,320	$1,320	$116,628	$116,628	$231,935	$231,935
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010109	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$720	$720	$63,615	$63,615	$126,510	$126,510
1707010201	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010202	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010203	$0	$0	$0	$0	$0	$0
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1707010209	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010210	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010211	$0	$0	$0	$0	$0	$0
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$0	$0	$0	$0	$0	$0
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$1,200	$1,200	$106,025	$106,025	$210,850	$210,850
1707010306	$240	$240	$21,205	$21,205	$42,170	$42,170
1707010307	$0	$0	$0	$0	$0	$0
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010501	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010502	$0	$0	$0	$0	$0	$0
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$360	$360	$31,808	$31,808	$63,255	$63,255
1707010505	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$120	$120	$10,603	$10,603	$21,085	$21,085
1707010603	$480	$480	$42,410	$42,410	$84,340	$84,340
1707010604	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020108	$360	$360	$31,808	$31,808	$63,255	$63,255
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020111	$0	$0	$0	$0	$0	$0
1707020112	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707020113	$360	$360	$31,808	$31,808	$63,255	$63,255
1707020114	$480	$480	$42,410	$42,410	$84,340	$84,340
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$240	$240	$21,205	$21,205	$42,170	$42,170
1707020207	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020208	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$240	$240	$21,205	$21,205	$42,170	$42,170
1707020301	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020302	$0	$0	$0	$0	$0	$0
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020402	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020403	$240	$240	$21,205	$21,205	$42,170	$42,170
1707020404	$360	$360	$31,808	$31,808	$63,255	$63,255
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$120	$120	$10,603	$10,603	$21,085	$21,085
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$0	$0	$0	$0
1707020411	$0	$0	$0	$0	$0	$0
1707020412	$0	$0	$0	$0	$0	$0
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$0	$0	$0	$0	$0	$0
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$0	$0	$0	$0
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$3,000	$3,000	$265,063	$265,063	$527,125	$527,125
1707030611	$600	$600	$53,013	$53,013	$105,425	$105,425
1707030612	$0	$0	$0	$0	$0	$0

Table C-3 Annual Potential Non-hydropower Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707030701	$120	$120	$10,603	$10,603	$21,085	$21,085
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$240	$240	$21,205	$21,205	$42,170	$42,170
Lower Co-lumbia	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$0	$0	$0	$0	$0	$0
1711000202	$0	$0	$0	$0	$0	$0
1711000204	$0	$0	$0	$0	$0	$0
1711000401	$221,959	$221,959	$221,959	$221,959	$221,959	$221,959
1711000402	$45,459	$45,459	$45,459	$45,459	$45,459	$45,459
1711000403	$66,556	$66,556	$66,556	$66,556	$66,556	$66,556
1711000404	$0	$0	$0	$0	$0	$0
1711000405	$0	$0	$0	$0	$0	$0
1711000504	$233	$233	$233	$233	$233	$233
1711000505	$140,764	$140,764	$140,764	$140,764	$140,764	$140,764
1711000506	$149,672	$149,672	$149,672	$149,672	$149,672	$149,672
1711000507	$253,270	$253,270	$253,270	$253,270	$253,270	$253,270
1711000508	$374,985	$374,985	$374,985	$374,985	$374,985	$374,985
1711000601	$347,384	$347,384	$347,384	$347,384	$347,384	$347,384
1711000602	$11,335	$11,335	$11,335	$11,335	$11,335	$11,335
1711000603	$300,784	$300,784	$300,784	$300,784	$300,784	$300,784
1711000604	$297,945	$297,945	$297,945	$297,945	$297,945	$297,945
1711000701	$4	$4	$4	$4	$4	$4
1711000702	$0	$0	$0	$0	$0	$0
1711000801	$265,562	$265,562	$265,562	$265,562	$265,562	$265,562
1711000802	$404,837	$404,837	$404,837	$404,837	$404,837	$404,837
1711000803	$0	$0	$0	$0	$0	$0
1711000901	$482,787	$482,787	$482,787	$482,787	$482,787	$482,787
1711000902	$614,504	$614,504	$614,504	$614,504	$614,504	$614,504
1711000903	$147,326	$147,326	$147,326	$147,326	$147,326	$147,326
1711000904	$144,266	$144,266	$144,266	$144,266	$144,266	$144,266
1711000905	$6,198	$6,198	$6,198	$6,198	$6,198	$6,198
1711001003	$200,627	$200,627	$200,627	$200,627	$200,627	$200,627
1711001004	$111,173	$111,173	$111,173	$111,173	$111,173	$111,173
1711001101	$35,880	$35,880	$35,880	$35,880	$35,880	$35,880
1711001102	$0	$0	$0	$0	$0	$0
1711001201	$406,278	$406,278	$406,278	$406,278	$406,278	$406,278
1711001202	$0	$0	$0	$0	$0	$0
1711001203	$0	$0	$0	$0	$0	$0
1711001204	$0	$0	$0	$0	$0	$0
1711001301	$445,312	$445,312	$445,312	$445,312	$445,312	$445,312
1711001302	$146,273	$146,273	$146,273	$146,273	$146,273	$146,273
1711001303	$0	$0	$0	$0	$0	$0
1711001401	$456,077	$456,077	$456,077	$456,077	$456,077	$456,077
1711001402	$47,798	$47,798	$47,798	$47,798	$47,798	$47,798

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$184,267	$184,267	$184,267	$184,267	$184,267	$184,267
1711001404	$95,440	$95,440	$95,440	$95,440	$95,440	$95,440
1711001405	$0	$0	$0	$0	$0	$0
1711001502	$0	$0	$0	$0	$0	$0
1711001503	$0	$0	$0	$0	$0	$0
1711001601	$66,668	$66,668	$66,668	$66,668	$66,668	$66,668
1711001602	$0	$0	$0	$0	$0	$0
1711001701	$446,479	$446,479	$446,479	$446,479	$446,479	$446,479
1711001802	$65,580	$65,580	$65,580	$65,580	$65,580	$65,580
1711001803	$168,731	$168,731	$168,731	$168,731	$168,731	$168,731
1711001804	$52,857	$52,857	$52,857	$52,857	$52,857	$52,857
1711001805	$72,510	$72,510	$72,510	$72,510	$72,510	$72,510
1711001806	$146,818	$146,818	$146,818	$146,818	$146,818	$146,818
1711001808	$0	$0	$0	$0	$0	$0
1711001900	$0	$0	$0	$0	$0	$0
1711001901	$0	$0	$0	$0	$0	$0
1711001902	$0	$0	$0	$0	$0	$0
1711001904	$0	$0	$0	$0	$0	$0
1711002003	$176,321	$176,321	$176,321	$176,321	$176,321	$176,321
1711002004	$24,012	$24,012	$24,012	$24,012	$24,012	$24,012
1711002007	$67,117	$67,117	$67,117	$67,117	$67,117	$67,117
N01	$0	$0	$0	$0	$0	$0
N02	$0	$0	$0	$0	$0	$0
N03	$0	$0	$0	$0	$0	$0
N04	$0	$0	$0	$0	$0	$0
N05	$0	$0	$0	$0	$0	$0
N06	$0	$0	$0	$0	$0	$0
N07	$0	$0	$0	$0	$0	$0
N08	$0	$0	$0	$0	$0	$0
N09	$0	$0	$0	$0	$0	$0
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$0	$0	$0	$0	$0	$0
N13	$0	$0	$0	$0	$0	$0
N14	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$342,032	$342,032	$342,032	$342,032	$342,032	$342,032
1707010507	$256,837	$256,837	$256,837	$256,837	$256,837	$256,837
1707010508	$61,202	$61,202	$61,202	$61,202	$61,202	$61,202
1707010509	$595,851	$595,851	$595,851	$595,851	$595,851	$595,851
1707010510	$413,598	$413,598	$413,598	$413,598	$413,598	$413,598
1707010511	$735,532	$735,532	$735,532	$735,532	$735,532	$735,532
1707010512	$311,727	$311,727	$311,727	$311,727	$311,727	$311,727
1707010513	$205,529	$205,529	$205,529	$205,529	$205,529	$205,529
1708000101	$202,102	$202,102	$202,102	$202,102	$202,102	$202,102
1708000102	$151,749	$151,749	$151,749	$151,749	$151,749	$151,749
1708000103	$105,569	$105,569	$105,569	$105,569	$105,569	$105,569
1708000104	$66,314	$66,314	$66,314	$66,314	$66,314	$66,314
1708000105	$490,709	$490,709	$490,709	$490,709	$490,709	$490,709
1708000106	$66,306	$66,306	$66,306	$66,306	$66,306	$66,306
1708000107	$312,516	$312,516	$312,516	$312,516	$312,516	$312,516
1708000108	$55,303	$55,303	$55,303	$55,303	$55,303	$55,303
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$174,103	$174,103	$174,103	$174,103	$174,103	$174,103
1708000206	$144,330	$144,330	$144,330	$144,330	$144,330	$144,330
1708000301	$82,735	$82,735	$82,735	$82,735	$82,735	$82,735
1708000302	$0	$0	$0	$0	$0	$0
1708000303	$4,010	$4,010	$4,010	$4,010	$4,010	$4,010
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$0	$0	$0	$0
1708000401	$156,627	$156,627	$156,627	$156,627	$156,627	$156,627
1708000402	$357,384	$357,384	$357,384	$357,384	$357,384	$357,384
1708000403	$563,232	$563,232	$563,232	$563,232	$563,232	$563,232
1708000404	$662,628	$662,628	$662,628	$662,628	$662,628	$662,628
1708000405	$677,735	$677,735	$677,735	$677,735	$677,735	$677,735
1708000501	$278,387	$278,387	$278,387	$278,387	$278,387	$278,387
1708000502	$103,243	$103,243	$103,243	$103,243	$103,243	$103,243
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$262,878	$262,878	$262,878	$262,878	$262,878	$262,878
1708000505	$160,091	$160,091	$160,091	$160,091	$160,091	$160,091
1708000506	$49,431	$49,431	$49,431	$49,431	$49,431	$49,431
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000601	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709001105	$69,834	$69,834	$69,834	$69,834	$69,834	$69,834
1709001106	$23,190	$23,190	$23,190	$23,190	$23,190	$23,190
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$33,461	$33,461	$33,461	$33,461	$33,461	$33,461
1709001203	$10	$10	$10	$10	$10	$10
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$587,313	$587,313	$587,313	$587,313	$587,313	$587,313
1709000102	$221,043	$221,043	$221,043	$221,043	$221,043	$221,043
1709000103	$396,878	$396,878	$396,878	$396,878	$396,878	$396,878
1709000104	$416,955	$416,955	$416,955	$416,955	$416,955	$416,955
1709000105	$633,808	$633,808	$633,808	$633,808	$633,808	$633,808
1709000106	$730,402	$730,402	$730,402	$730,402	$730,402	$730,402
1709000107	$369,711	$369,711	$369,711	$369,711	$369,711	$369,711
1709000108	$56,853	$56,853	$56,853	$56,853	$56,853	$56,853
1709000109	$589,689	$589,689	$589,689	$589,689	$589,689	$589,689
1709000110	$26,255	$26,255	$26,255	$26,255	$26,255	$26,255
1709000201	$636,895	$636,895	$636,895	$636,895	$636,895	$636,895
1709000202	$90,815	$90,815	$90,815	$90,815	$90,815	$90,815
1709000203	$146,997	$146,997	$146,997	$146,997	$146,997	$146,997
1709000205	$24,649	$24,649	$24,649	$24,649	$24,649	$24,649
1709000301	$125,652	$125,652	$125,652	$125,652	$125,652	$125,652
1709000302	$22,296	$22,296	$22,296	$22,296	$22,296	$22,296
1709000303	$80,347	$80,347	$80,347	$80,347	$80,347	$80,347
1709000304	$0	$0	$0	$0	$0	$0
1709000305	$145,935	$145,935	$145,935	$145,935	$145,935	$145,935
1709000306	$50,006	$50,006	$50,006	$50,006	$50,006	$50,006
1709000401	$894,039	$894,039	$894,039	$894,039	$894,039	$894,039
1709000402	$153,191	$153,191	$153,191	$153,191	$153,191	$153,191
1709000403	$348,760	$348,760	$348,760	$348,760	$348,760	$348,760
1709000404	$332,490	$332,490	$332,490	$332,490	$332,490	$332,490
1709000405	$159,173	$159,173	$159,173	$159,173	$159,173	$159,173
1709000406	$144,514	$144,514	$144,514	$144,514	$144,514	$144,514
1709000407	$204,951	$204,951	$204,951	$204,951	$204,951	$204,951
1709000504	$23,847	$23,847	$23,847	$23,847	$23,847	$23,847
1709000505	$90,626	$90,626	$90,626	$90,626	$90,626	$90,626
1709000506	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000601	$29,351	$29,351	$29,351	$29,351	$29,351	$29,351
1709000602	$104,231	$104,231	$104,231	$104,231	$104,231	$104,231
1709000603	$82,823	$82,823	$82,823	$82,823	$82,823	$82,823
1709000606	$508,914	$508,914	$508,914	$508,914	$508,914	$508,914
1709000607	$87	$87	$87	$87	$87	$87
1709000608	$16,074	$16,074	$16,074	$16,074	$16,074	$16,074
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$21,244	$21,244	$21,244	$21,244	$21,244	$21,244
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709000804	$6,269	$6,269	$6,269	$6,269	$6,269	$6,269
1709000805	$295	$295	$295	$295	$295	$295
1709000806	$71,056	$71,056	$71,056	$71,056	$71,056	$71,056
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$4,473	$4,473	$4,473	$4,473	$4,473	$4,473
1709000902	$14,088	$14,088	$14,088	$14,088	$14,088	$14,088
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$173,222	$173,222	$173,222	$173,222	$173,222	$173,222
1709000906	$7,880	$7,880	$7,880	$7,880	$7,880	$7,880
1709001101	$425,279	$425,279	$425,279	$425,279	$425,279	$425,279
1709001102	$557,445	$557,445	$557,445	$557,445	$557,445	$557,445
1709001103	$467,239	$467,239	$467,239	$467,239	$467,239	$467,239
1709001104	$773,520	$773,520	$773,520	$773,520	$773,520	$773,520
1709001105	$69,834	$69,834	$69,834	$69,834	$69,834	$69,834
1709001106	$23,190	$23,190	$23,190	$23,190	$23,190	$23,190
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$33,461	$33,461	$33,461	$33,461	$33,461	$33,461
1709001203	$10	$10	$10	$10	$10	$10
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$98,774	$98,774	$98,774	$98,774	$98,774	$98,774
1702000801	$17,132	$17,132	$17,132	$17,132	$17,132	$17,132
1702000802	$356,780	$356,780	$356,780	$356,780	$356,780	$356,780
1702000803	$116,842	$116,842	$116,842	$116,842	$116,842	$116,842
1702000804	$567,511	$567,511	$567,511	$567,511	$567,511	$567,511
1702000805	$255,377	$255,377	$255,377	$255,377	$255,377	$255,377
1702000806	$501,846	$501,846	$501,846	$501,846	$501,846	$501,846
1702000807	$444,165	$444,165	$444,165	$444,165	$444,165	$444,165
1702001001	$1,259,555	$1,259,555	$1,259,555	$1,259,555	$1,259,555	$1,259,555

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1702001002	$234,296	$234,296	$234,296	$234,296	$234,296	$234,296
1702001003	$21,869	$21,869	$21,869	$21,869	$21,869	$21,869
1702001004	$32,491	$32,491	$32,491	$32,491	$32,491	$32,491
1702001101	$428,546	$428,546	$428,546	$428,546	$428,546	$428,546
1702001102	$493,973	$493,973	$493,973	$493,973	$493,973	$493,973
1702001103	$589,968	$589,968	$589,968	$589,968	$589,968	$589,968
1702001104	$516,539	$516,539	$516,539	$516,539	$516,539	$516,539
1702001105	$722,037	$722,037	$722,037	$722,037	$722,037	$722,037
1702001604	$52,087	$52,087	$52,087	$52,087	$52,087	$52,087
1702001605	$2,974	$2,974	$2,974	$2,974	$2,974	$2,974
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$6,626	$6,626	$6,626	$6,626	$6,626	$6,626
1707010106	$1,463	$1,463	$1,463	$1,463	$1,463	$1,463
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$6,292	$6,292	$6,292	$6,292	$6,292	$6,292
1707010501	$7,699	$7,699	$7,699	$7,699	$7,699	$7,699
1707010504	$390,093	$390,093	$390,093	$390,093	$390,093	$390,093
1707010512	$311,727	$311,727	$311,727	$311,727	$311,727	$311,727
1707010513	$205,529	$205,529	$205,529	$205,529	$205,529	$205,529
1708000107	$312,516	$312,516	$312,516	$312,516	$312,516	$312,516
Lower Columbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$446,479	$446,479	$446,479	$446,479	$446,479	$446,479
1711001802	$65,580	$65,580	$65,580	$65,580	$65,580	$65,580
1711001803	$168,731	$168,731	$168,731	$168,731	$168,731	$168,731
1711001804	$52,857	$52,857	$52,857	$52,857	$52,857	$52,857
1711001805	$72,510	$72,510	$72,510	$72,510	$72,510	$72,510
1711001806	$146,818	$146,818	$146,818	$146,818	$146,818	$146,818
1711001807	$83,735	$83,735	$83,735	$83,735	$83,735	$83,735
1711001808	$0	$0	$0	$0	$0	$0
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$50,465	$50,465	$50,465	$50,465	$50,465	$50,465
1711002002	$59,650	$59,650	$59,650	$59,650	$59,650	$59,650
1711002003	$176,321	$176,321	$176,321	$176,321	$176,321	$176,321
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
N19	$0	$0	$0	$0	$0	$0
Columbia River chum salmon ESU						
1707010509	$595,851	$595,851	$595,851	$595,851	$595,851	$595,851
1707010512	$311,727	$311,727	$311,727	$311,727	$311,727	$311,727
1707010513	$205,529	$205,529	$205,529	$205,529	$205,529	$205,529
1708000106	$66,306	$66,306	$66,306	$66,306	$66,306	$66,306
1708000107	$312,516	$312,516	$312,516	$312,516	$312,516	$312,516
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$174,103	$174,103	$174,103	$174,103	$174,103	$174,103
1708000206	$144,330	$144,330	$144,330	$144,330	$144,330	$144,330
1708000301	$82,735	$82,735	$82,735	$82,735	$82,735	$82,735
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$262,878	$262,878	$262,878	$262,878	$262,878	$262,878
1708000505	$160,091	$160,091	$160,091	$160,091	$160,091	$160,091
1708000506	$49,431	$49,431	$49,431	$49,431	$49,431	$49,431
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0
1708000603	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$361	$361	$361	$361	$361	$361
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$98,774	$98,774	$98,774	$98,774	$98,774	$98,774
1702000601	$120,322	$120,322	$120,322	$120,322	$120,322	$120,322
1702000602	$171,704	$171,704	$171,704	$171,704	$171,704	$171,704
1702000603	$219,523	$219,523	$219,523	$219,523	$219,523	$219,523
1702000604	$8,971	$8,971	$8,971	$8,971	$8,971	$8,971
1702000605	$23,080	$23,080	$23,080	$23,080	$23,080	$23,080
1702000704	$66,837	$66,837	$66,837	$66,837	$66,837	$66,837
1702000801	$17,132	$17,132	$17,132	$17,132	$17,132	$17,132
1702000802	$356,780	$356,780	$356,780	$356,780	$356,780	$356,780
1702000803	$116,842	$116,842	$116,842	$116,842	$116,842	$116,842
1702000804	$567,511	$567,511	$567,511	$567,511	$567,511	$567,511
1702000805	$255,377	$255,377	$255,377	$255,377	$255,377	$255,377
1702000806	$501,846	$501,846	$501,846	$501,846	$501,846	$501,846
1702000807	$444,165	$444,165	$444,165	$444,165	$444,165	$444,165
1702000903	$670,640	$670,640	$670,640	$670,640	$670,640	$670,640
1702001001	$1,259,555	$1,259,555	$1,259,555	$1,259,555	$1,259,555	$1,259,555
1702001002	$234,296	$234,296	$234,296	$234,296	$234,296	$234,296
1702001003	$21,869	$21,869	$21,869	$21,869	$21,869	$21,869
1702001004	$32,491	$32,491	$32,491	$32,491	$32,491	$32,491
1702001101	$428,546	$428,546	$428,546	$428,546	$428,546	$428,546
1702001102	$493,973	$493,973	$493,973	$493,973	$493,973	$493,973
1702001103	$589,968	$589,968	$589,968	$589,968	$589,968	$589,968
1702001104	$516,539	$516,539	$516,539	$516,539	$516,539	$516,539
1702001105	$722,037	$722,037	$722,037	$722,037	$722,037	$722,037
1702001204	$41,391	$41,391	$41,391	$41,391	$41,391	$41,391
1702001509	$43,551	$43,551	$43,551	$43,551	$43,551	$43,551
1702001604	$52,087	$52,087	$52,087	$52,087	$52,087	$52,087
1702001605	$2,974	$2,974	$2,974	$2,974	$2,974	$2,974
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$6,626	$6,626	$6,626	$6,626	$6,626	$6,626
1707010106	$1,463	$1,463	$1,463	$1,463	$1,463	$1,463
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$6,292	$6,292	$6,292	$6,292	$6,292	$6,292
1707010501	$7,699	$7,699	$7,699	$7,699	$7,699	$7,699

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707010504	$390,093	$390,093	$390,093	$390,093	$390,093	$390,093
1707010512	$311,727	$311,727	$311,727	$311,727	$311,727	$311,727
1707010513	$205,529	$205,529	$205,529	$205,529	$205,529	$205,529
1708000107	$312,516	$312,516	$312,516	$312,516	$312,516	$312,516
Lower Columbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1706010101	$25,744	$25,744	$25,744	$25,744	$25,744	$25,744
1706010102	$66,004	$66,004	$66,004	$66,004	$66,004	$66,004
1706010104	$30,005	$30,005	$30,005	$30,005	$30,005	$30,005
1706010201	$162,815	$162,815	$162,815	$162,815	$162,815	$162,815
1706010202	$289,738	$289,738	$289,738	$289,738	$289,738	$289,738
1706010203	$239,511	$239,511	$239,511	$239,511	$239,511	$239,511
1706010204	$89,417	$89,417	$89,417	$89,417	$89,417	$89,417
1706010205	$432,479	$432,479	$432,479	$432,479	$432,479	$432,479
1706010301	$158,813	$158,813	$158,813	$158,813	$158,813	$158,813
1706010302	$391,465	$391,465	$391,465	$391,465	$391,465	$391,465
1706010303	$4,351	$4,351	$4,351	$4,351	$4,351	$4,351
1706010401	$394,112	$394,112	$394,112	$394,112	$394,112	$394,112
1706010402	$288,189	$288,189	$288,189	$288,189	$288,189	$288,189
1706010403	$216,824	$216,824	$216,824	$216,824	$216,824	$216,824
1706010404	$134,085	$134,085	$134,085	$134,085	$134,085	$134,085
1706010405	$124,402	$124,402	$124,402	$124,402	$124,402	$124,402
1706010406	$20,227	$20,227	$20,227	$20,227	$20,227	$20,227
1706010407	$33,372	$33,372	$33,372	$33,372	$33,372	$33,372
1706010408	$72,992	$72,992	$72,992	$72,992	$72,992	$72,992
1706010409	$80,844	$80,844	$80,844	$80,844	$80,844	$80,844
1706010410	$294,341	$294,341	$294,341	$294,341	$294,341	$294,341
1706010411	$156,631	$156,631	$156,631	$156,631	$156,631	$156,631
1706010501	$22,548	$22,548	$22,548	$22,548	$22,548	$22,548
1706010502	$26,940	$26,940	$26,940	$26,940	$26,940	$26,940
1706010503	$1,220	$1,220	$1,220	$1,220	$1,220	$1,220
1706010504	$41,255	$41,255	$41,255	$41,255	$41,255	$41,255
1706010505	$9,454	$9,454	$9,454	$9,454	$9,454	$9,454
1706010506	$27,894	$27,894	$27,894	$27,894	$27,894	$27,894
1706010601	$326,664	$326,664	$326,664	$326,664	$326,664	$326,664
1706010602	$231,705	$231,705	$231,705	$231,705	$231,705	$231,705
1706010603	$118,610	$118,610	$118,610	$118,610	$118,610	$118,610
1706010604	$225,986	$225,986	$225,986	$225,986	$225,986	$225,986

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010605	$219,263	$219,263	$219,263	$219,263	$219,263	$219,263
1706010606	$186,141	$186,141	$186,141	$186,141	$186,141	$186,141
1706010607	$135,622	$135,622	$135,622	$135,622	$135,622	$135,622
1706010701	$69	$69	$69	$69	$69	$69
1706010702	$0	$0	$0	$0	$0	$0
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$52,371	$52,371	$52,371	$52,371	$52,371	$52,371
1706010706	$335,203	$335,203	$335,203	$335,203	$335,203	$335,203
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$633	$633	$633	$633	$633	$633
1706011004	$54,044	$54,044	$54,044	$54,044	$54,044	$54,044
1706020101	$79,800	$79,800	$79,800	$79,800	$79,800	$79,800
1706020104	$91,647	$91,647	$91,647	$91,647	$91,647	$91,647
1706020105	$56,715	$56,715	$56,715	$56,715	$56,715	$56,715
1706020107	$16,886	$16,886	$16,886	$16,886	$16,886	$16,886
1706020108	$79,112	$79,112	$79,112	$79,112	$79,112	$79,112
1706020109	$25,081	$25,081	$25,081	$25,081	$25,081	$25,081
1706020110	$26,150	$26,150	$26,150	$26,150	$26,150	$26,150
1706020111	$4,326	$4,326	$4,326	$4,326	$4,326	$4,326
1706020112	$39,213	$39,213	$39,213	$39,213	$39,213	$39,213
1706020113	$80,935	$80,935	$80,935	$80,935	$80,935	$80,935
1706020114	$532	$532	$532	$532	$532	$532
1706020115	$40,278	$40,278	$40,278	$40,278	$40,278	$40,278
1706020117	$34,496	$34,496	$34,496	$34,496	$34,496	$34,496
1706020118	$15,671	$15,671	$15,671	$15,671	$15,671	$15,671
1706020119	$82,092	$82,092	$82,092	$82,092	$82,092	$82,092
1706020120	$32,739	$32,739	$32,739	$32,739	$32,739	$32,739
1706020121	$9,767	$9,767	$9,767	$9,767	$9,767	$9,767
1706020122	$39,022	$39,022	$39,022	$39,022	$39,022	$39,022
1706020123	$64,771	$64,771	$64,771	$64,771	$64,771	$64,771
1706020124	$41,881	$41,881	$41,881	$41,881	$41,881	$41,881
1706020125	$72,381	$72,381	$72,381	$72,381	$72,381	$72,381
1706020126	$44,292	$44,292	$44,292	$44,292	$44,292	$44,292
1706020127	$34,027	$34,027	$34,027	$34,027	$34,027	$34,027
1706020128	$59,430	$59,430	$59,430	$59,430	$59,430	$59,430
1706020129	$23,486	$23,486	$23,486	$23,486	$23,486	$23,486
1706020130	$51,781	$51,781	$51,781	$51,781	$51,781	$51,781

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020132	$85,619	$85,619	$85,619	$85,619	$85,619	$85,619
1706020201	$85,979	$85,979	$85,979	$85,979	$85,979	$85,979
1706020202	$129,997	$129,997	$129,997	$129,997	$129,997	$129,997
1706020203	$40,220	$40,220	$40,220	$40,220	$40,220	$40,220
1706020301	$25,425	$25,425	$25,425	$25,425	$25,425	$25,425
1706020302	$40,593	$40,593	$40,593	$40,593	$40,593	$40,593
1706020303	$105,807	$105,807	$105,807	$105,807	$105,807	$105,807
1706020304	$43,375	$43,375	$43,375	$43,375	$43,375	$43,375
1706020305	$117,721	$117,721	$117,721	$117,721	$117,721	$117,721
1706020306	$171,090	$171,090	$171,090	$171,090	$171,090	$171,090
1706020307	$35,695	$35,695	$35,695	$35,695	$35,695	$35,695
1706020308	$36,328	$36,328	$36,328	$36,328	$36,328	$36,328
1706020309	$42,684	$42,684	$42,684	$42,684	$42,684	$42,684
1706020310	$59,887	$59,887	$59,887	$59,887	$59,887	$59,887
1706020311	$65,756	$65,756	$65,756	$65,756	$65,756	$65,756
1706020312	$110,900	$110,900	$110,900	$110,900	$110,900	$110,900
1706020313	$59,362	$59,362	$59,362	$59,362	$59,362	$59,362
1706020314	$44,639	$44,639	$44,639	$44,639	$44,639	$44,639
1706020315	$51,982	$51,982	$51,982	$51,982	$51,982	$51,982
1706020316	$33,019	$33,019	$33,019	$33,019	$33,019	$33,019
1706020317	$65,029	$65,029	$65,029	$65,029	$65,029	$65,029
1706020318	$30,328	$30,328	$30,328	$30,328	$30,328	$30,328
1706020319	$69,264	$69,264	$69,264	$69,264	$69,264	$69,264
1706020320	$35,511	$35,511	$35,511	$35,511	$35,511	$35,511
1706020321	$22,098	$22,098	$22,098	$22,098	$22,098	$22,098
1706020322	$52,708	$52,708	$52,708	$52,708	$52,708	$52,708
1706020323	$284	$284	$284	$284	$284	$284
1706020401	$44,340	$44,340	$44,340	$44,340	$44,340	$44,340
1706020402	$58,952	$58,952	$58,952	$58,952	$58,952	$58,952
1706020403	$55,935	$55,935	$55,935	$55,935	$55,935	$55,935
1706020404	$34,576	$34,576	$34,576	$34,576	$34,576	$34,576
1706020405	$37,256	$37,256	$37,256	$37,256	$37,256	$37,256
1706020406	$43,779	$43,779	$43,779	$43,779	$43,779	$43,779
1706020407	$40,882	$40,882	$40,882	$40,882	$40,882	$40,882
1706020412	$54,901	$54,901	$54,901	$54,901	$54,901	$54,901
1706020414	$101,986	$101,986	$101,986	$101,986	$101,986	$101,986
1706020501	$10,229	$10,229	$10,229	$10,229	$10,229	$10,229
1706020502	$6,203	$6,203	$6,203	$6,203	$6,203	$6,203
1706020503	$15,620	$15,620	$15,620	$15,620	$15,620	$15,620
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$42,172	$42,172	$42,172	$42,172	$42,172	$42,172

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020506	$97,677	$97,677	$97,677	$97,677	$97,677	$97,677
1706020507	$10,887	$10,887	$10,887	$10,887	$10,887	$10,887
1706020508	$112,373	$112,373	$112,373	$112,373	$112,373	$112,373
1706020509	$8,351	$8,351	$8,351	$8,351	$8,351	$8,351
1706020510	$6,379	$6,379	$6,379	$6,379	$6,379	$6,379
1706020511	$3,529	$3,529	$3,529	$3,529	$3,529	$3,529
1706020512	$1,826	$1,826	$1,826	$1,826	$1,826	$1,826
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$23	$23	$23	$23	$23	$23
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$43,436	$43,436	$43,436	$43,436	$43,436	$43,436
1706020605	$42,211	$42,211	$42,211	$42,211	$42,211	$42,211
1706020606	$45,434	$45,434	$45,434	$45,434	$45,434	$45,434
1706020607	$252	$252	$252	$252	$252	$252
1706020608	$16,674	$16,674	$16,674	$16,674	$16,674	$16,674
1706020609	$142	$142	$142	$142	$142	$142
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$9,746	$9,746	$9,746	$9,746	$9,746	$9,746
1706020612	$1,129	$1,129	$1,129	$1,129	$1,129	$1,129
1706020613	$48,404	$48,404	$48,404	$48,404	$48,404	$48,404
1706020614	$925	$925	$925	$925	$925	$925
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$35,240	$35,240	$35,240	$35,240	$35,240	$35,240
1706020702	$15,959	$15,959	$15,959	$15,959	$15,959	$15,959
1706020703	$31,620	$31,620	$31,620	$31,620	$31,620	$31,620
1706020704	$1,293	$1,293	$1,293	$1,293	$1,293	$1,293
1706020705	$47,791	$47,791	$47,791	$47,791	$47,791	$47,791
1706020706	$28,500	$28,500	$28,500	$28,500	$28,500	$28,500
1706020707	$45,749	$45,749	$45,749	$45,749	$45,749	$45,749
1706020708	$56,511	$56,511	$56,511	$56,511	$56,511	$56,511
1706020709	$33,093	$33,093	$33,093	$33,093	$33,093	$33,093
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$3,489	$3,489	$3,489	$3,489	$3,489	$3,489
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$19,985	$19,985	$19,985	$19,985	$19,985	$19,985
1706020715	$19,413	$19,413	$19,413	$19,413	$19,413	$19,413
1706020716	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$69,737	$69,737	$69,737	$69,737	$69,737	$69,737
1706020801	$61,612	$61,612	$61,612	$61,612	$61,612	$61,612
1706020802	$106,398	$106,398	$106,398	$106,398	$106,398	$106,398
1706020803	$60,072	$60,072	$60,072	$60,072	$60,072	$60,072
1706020804	$85,050	$85,050	$85,050	$85,050	$85,050	$85,050
1706020805	$59,204	$59,204	$59,204	$59,204	$59,204	$59,204
1706020806	$30,942	$30,942	$30,942	$30,942	$30,942	$30,942
1706020807	$82,286	$82,286	$82,286	$82,286	$82,286	$82,286
1706020808	$75,650	$75,650	$75,650	$75,650	$75,650	$75,650
1706020809	$57,506	$57,506	$57,506	$57,506	$57,506	$57,506
1706020810	$81,935	$81,935	$81,935	$81,935	$81,935	$81,935
1706020811	$39,215	$39,215	$39,215	$39,215	$39,215	$39,215
1706020812	$40,926	$40,926	$40,926	$40,926	$40,926	$40,926
1706020813	$92,119	$92,119	$92,119	$92,119	$92,119	$92,119
1706020814	$69,321	$69,321	$69,321	$69,321	$69,321	$69,321
1706020815	$38,022	$38,022	$38,022	$38,022	$38,022	$38,022
1706020901	$6,166	$6,166	$6,166	$6,166	$6,166	$6,166
1706020902	$1,545	$1,545	$1,545	$1,545	$1,545	$1,545
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$2,633	$2,633	$2,633	$2,633	$2,633	$2,633
1706020905	$2,405	$2,405	$2,405	$2,405	$2,405	$2,405
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$5,935	$5,935	$5,935	$5,935	$5,935	$5,935
1706020908	$48,137	$48,137	$48,137	$48,137	$48,137	$48,137
1706020909	$13,843	$13,843	$13,843	$13,843	$13,843	$13,843
1706020910	$17,830	$17,830	$17,830	$17,830	$17,830	$17,830
1706020911	$95,744	$95,744	$95,744	$95,744	$95,744	$95,744
1706020912	$62,156	$62,156	$62,156	$62,156	$62,156	$62,156
1706020913	$46,515	$46,515	$46,515	$46,515	$46,515	$46,515
1706020914	$26,027	$26,027	$26,027	$26,027	$26,027	$26,027
1706020915	$44,992	$44,992	$44,992	$44,992	$44,992	$44,992
1706020916	$54,829	$54,829	$54,829	$54,829	$54,829	$54,829
1706020917	$389	$389	$389	$389	$389	$389
1706021001	$43,139	$43,139	$43,139	$43,139	$43,139	$43,139
1706021002	$55,500	$55,500	$55,500	$55,500	$55,500	$55,500
1706021003	$33,169	$33,169	$33,169	$33,169	$33,169	$33,169
1706021006	$31,431	$31,431	$31,431	$31,431	$31,431	$31,431
1706021007	$80,034	$80,034	$80,034	$80,034	$80,034	$80,034
1706030101	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030102	$399	$399	$399	$399	$399	$399
1706030103	$16,823	$16,823	$16,823	$16,823	$16,823	$16,823
1706030104	$237	$237	$237	$237	$237	$237
1706030105	$461	$461	$461	$461	$461	$461
1706030106	$19,081	$19,081	$19,081	$19,081	$19,081	$19,081
1706030107	$7,857	$7,857	$7,857	$7,857	$7,857	$7,857
1706030108	$39,658	$39,658	$39,658	$39,658	$39,658	$39,658
1706030109	$149	$149	$149	$149	$149	$149
1706030201	$89,066	$89,066	$89,066	$89,066	$89,066	$89,066
1706030202	$23,807	$23,807	$23,807	$23,807	$23,807	$23,807
1706030203	$3,826	$3,826	$3,826	$3,826	$3,826	$3,826
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0
1706030209	$594	$594	$594	$594	$594	$594
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$46,461	$46,461	$46,461	$46,461	$46,461	$46,461
1706030212	$53,286	$53,286	$53,286	$53,286	$53,286	$53,286
1706030213	$87,309	$87,309	$87,309	$87,309	$87,309	$87,309
1706030214	$47,109	$47,109	$47,109	$47,109	$47,109	$47,109
1706030301	$139,509	$139,509	$139,509	$139,509	$139,509	$139,509
1706030302	$70,333	$70,333	$70,333	$70,333	$70,333	$70,333
1706030303	$98,353	$98,353	$98,353	$98,353	$98,353	$98,353
1706030304	$105,973	$105,973	$105,973	$105,973	$105,973	$105,973
1706030305	$12,470	$12,470	$12,470	$12,470	$12,470	$12,470
1706030306	$58,526	$58,526	$58,526	$58,526	$58,526	$58,526
1706030307	$60,796	$60,796	$60,796	$60,796	$60,796	$60,796
1706030308	$39,301	$39,301	$39,301	$39,301	$39,301	$39,301
1706030309	$5,170	$5,170	$5,170	$5,170	$5,170	$5,170
1706030310	$34,779	$34,779	$34,779	$34,779	$34,779	$34,779
1706030311	$12,328	$12,328	$12,328	$12,328	$12,328	$12,328
1706030312	$6,353	$6,353	$6,353	$6,353	$6,353	$6,353
1706030313	$3,061	$3,061	$3,061	$3,061	$3,061	$3,061
1706030314	$750	$750	$750	$750	$750	$750
1706030401	$32,728	$32,728	$32,728	$32,728	$32,728	$32,728
1706030402	$56,175	$56,175	$56,175	$56,175	$56,175	$56,175
1706030501	$52,795	$52,795	$52,795	$52,795	$52,795	$52,795
1706030502	$33,114	$33,114	$33,114	$33,114	$33,114	$33,114
1706030503	$62,980	$62,980	$62,980	$62,980	$62,980	$62,980
1706030504	$58,732	$58,732	$58,732	$58,732	$58,732	$58,732

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030505	$52,983	$52,983	$52,983	$52,983	$52,983	$52,983
1706030506	$61,179	$61,179	$61,179	$61,179	$61,179	$61,179
1706030507	$129,541	$129,541	$129,541	$129,541	$129,541	$129,541
1706030508	$55,589	$55,589	$55,589	$55,589	$55,589	$55,589
1706030509	$24,805	$24,805	$24,805	$24,805	$24,805	$24,805
1706030510	$38,677	$38,677	$38,677	$38,677	$38,677	$38,677
1706030511	$30,750	$30,750	$30,750	$30,750	$30,750	$30,750
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$0	$0	$0	$0	$0	$0
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$1,483	$1,483	$1,483	$1,483	$1,483	$1,483
1706030606	$0	$0	$0	$0	$0	$0
1706030607	$16,649	$16,649	$16,649	$16,649	$16,649	$16,649
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$14,086	$14,086	$14,086	$14,086	$14,086	$14,086
1706030614	$0	$0	$0	$0	$0	$0
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$19,695	$19,695	$19,695	$19,695	$19,695	$19,695
1706030617	$17,635	$17,635	$17,635	$17,635	$17,635	$17,635
1706030618	$26,753	$26,753	$26,753	$26,753	$26,753	$26,753
1706030619	$35,477	$35,477	$35,477	$35,477	$35,477	$35,477
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$0	$0	$0	$0
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$6,626	$6,626	$6,626	$6,626	$6,626	$6,626
1707010106	$1,463	$1,463	$1,463	$1,463	$1,463	$1,463

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$6,292	$6,292	$6,292	$6,292	$6,292	$6,292
1707010501	$7,699	$7,699	$7,699	$7,699	$7,699	$7,699
1707010504	$390,093	$390,093	$390,093	$390,093	$390,093	$390,093
1707010512	$311,727	$311,727	$311,727	$311,727	$311,727	$311,727
1707010513	$205,529	$205,529	$205,529	$205,529	$205,529	$205,529
1708000107	$312,516	$312,516	$312,516	$312,516	$312,516	$312,516
Lower Columbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$342,032	$342,032	$342,032	$342,032	$342,032	$342,032
1707010507	$256,837	$256,837	$256,837	$256,837	$256,837	$256,837
1707010508	$61,202	$61,202	$61,202	$61,202	$61,202	$61,202
1707010511	$735,532	$735,532	$735,532	$735,532	$735,532	$735,532
1707010512	$311,727	$311,727	$311,727	$311,727	$311,727	$311,727
1707010513	$205,529	$205,529	$205,529	$205,529	$205,529	$205,529
1708000101	$202,102	$202,102	$202,102	$202,102	$202,102	$202,102
1708000102	$151,749	$151,749	$151,749	$151,749	$151,749	$151,749
1708000103	$105,569	$105,569	$105,569	$105,569	$105,569	$105,569
1708000104	$66,314	$66,314	$66,314	$66,314	$66,314	$66,314
1708000105	$490,709	$490,709	$490,709	$490,709	$490,709	$490,709
1708000106	$66,306	$66,306	$66,306	$66,306	$66,306	$66,306
1708000107	$312,516	$312,516	$312,516	$312,516	$312,516	$312,516
1708000108	$55,303	$55,303	$55,303	$55,303	$55,303	$55,303
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$174,103	$174,103	$174,103	$174,103	$174,103	$174,103
1708000206	$144,330	$144,330	$144,330	$144,330	$144,330	$144,330
1708000301	$82,735	$82,735	$82,735	$82,735	$82,735	$82,735
1708000401	$156,627	$156,627	$156,627	$156,627	$156,627	$156,627
1708000402	$357,384	$357,384	$357,384	$357,384	$357,384	$357,384
1708000403	$563,232	$563,232	$563,232	$563,232	$563,232	$563,232
1708000404	$662,628	$662,628	$662,628	$662,628	$662,628	$662,628
1708000405	$677,735	$677,735	$677,735	$677,735	$677,735	$677,735
1708000501	$278,387	$278,387	$278,387	$278,387	$278,387	$278,387
1708000502	$103,243	$103,243	$103,243	$103,243	$103,243	$103,243
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$262,878	$262,878	$262,878	$262,878	$262,878	$262,878
1708000505	$160,091	$160,091	$160,091	$160,091	$160,091	$160,091
1708000506	$49,431	$49,431	$49,431	$49,431	$49,431	$49,431
1708000507	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1708000508	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709001101	$425,279	$425,279	$425,279	$425,279	$425,279	$425,279
1709001102	$557,445	$557,445	$557,445	$557,445	$557,445	$557,445
1709001103	$467,239	$467,239	$467,239	$467,239	$467,239	$467,239
1709001104	$773,520	$773,520	$773,520	$773,520	$773,520	$773,520
1709001105	$69,834	$69,834	$69,834	$69,834	$69,834	$69,834
1709001106	$23,190	$23,190	$23,190	$23,190	$23,190	$23,190
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$33,461	$33,461	$33,461	$33,461	$33,461	$33,461
1709001203	$10	$10	$10	$10	$10	$10
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River steelhead ESU						
1709000303	$80,347	$80,347	$80,347	$80,347	$80,347	$80,347
1709000304	$0	$0	$0	$0	$0	$0
1709000306	$50,006	$50,006	$50,006	$50,006	$50,006	$50,006
1709000504	$23,847	$23,847	$23,847	$23,847	$23,847	$23,847
1709000505	$90,626	$90,626	$90,626	$90,626	$90,626	$90,626
1709000506	$0	$0	$0	$0	$0	$0
1709000601	$29,351	$29,351	$29,351	$29,351	$29,351	$29,351
1709000602	$104,231	$104,231	$104,231	$104,231	$104,231	$104,231
1709000603	$82,823	$82,823	$82,823	$82,823	$82,823	$82,823
1709000606	$508,914	$508,914	$508,914	$508,914	$508,914	$508,914
1709000607	$87	$87	$87	$87	$87	$87
1709000608	$16,074	$16,074	$16,074	$16,074	$16,074	$16,074
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$21,244	$21,244	$21,244	$21,244	$21,244	$21,244
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709000801	$60,382	$60,382	$60,382	$60,382	$60,382	$60,382
1709000802	$98,532	$98,532	$98,532	$98,532	$98,532	$98,532
1709000803	$80,623	$80,623	$80,623	$80,623	$80,623	$80,623
1709000804	$6,269	$6,269	$6,269	$6,269	$6,269	$6,269
1709000805	$295	$295	$295	$295	$295	$295
1709000806	$71,056	$71,056	$71,056	$71,056	$71,056	$71,056
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$4,473	$4,473	$4,473	$4,473	$4,473	$4,473
1709000902	$14,088	$14,088	$14,088	$14,088	$14,088	$14,088
1709000903	$0	$0	$0	$0	$0	$0

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$173,222	$173,222	$173,222	$173,222	$173,222	$173,222
1709000906	$7,880	$7,880	$7,880	$7,880	$7,880	$7,880
1709001001	$35,113	$35,113	$35,113	$35,113	$35,113	$35,113
1709001002	$0	$0	$0	$0	$0	$0
1709001003	$16,864	$16,864	$16,864	$16,864	$16,864	$16,864
1709001004	$0	$0	$0	$0	$0	$0
1709001005	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$33,461	$33,461	$33,461	$33,461	$33,461	$33,461
1709001203	$10	$10	$10	$10	$10	$10
Lower Columbia	$0	$0	$0	$0	$0	$0
Middle Columbia River steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1703000101	$1,062,789	$1,062,789	$1,062,789	$1,062,789	$1,062,789	$1,062,789
1703000102	$475,947	$475,947	$475,947	$475,947	$475,947	$475,947
1703000103	$824,531	$824,531	$824,531	$824,531	$824,531	$824,531
1703000104	$78,351	$78,351	$78,351	$78,351	$78,351	$78,351
1703000201	$600,023	$600,023	$600,023	$600,023	$600,023	$600,023
1703000202	$594,063	$594,063	$594,063	$594,063	$594,063	$594,063
1703000203	$680,152	$680,152	$680,152	$680,152	$680,152	$680,152
1703000301	$2,170	$2,170	$2,170	$2,170	$2,170	$2,170
1703000302	$20,093	$20,093	$20,093	$20,093	$20,093	$20,093
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$26,801	$26,801	$26,801	$26,801	$26,801	$26,801
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$34,208	$34,208	$34,208	$34,208	$34,208	$34,208
1703000307	$14,966	$14,966	$14,966	$14,966	$14,966	$14,966
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$6,626	$6,626	$6,626	$6,626	$6,626	$6,626
1707010105	$2,780	$2,780	$2,780	$2,780	$2,780	$2,780
1707010106	$1,463	$1,463	$1,463	$1,463	$1,463	$1,463
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$2,999	$2,999	$2,999	$2,999	$2,999	$2,999
1707010111	$2,237	$2,237	$2,237	$2,237	$2,237	$2,237
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$20,598	$20,598	$20,598	$20,598	$20,598	$20,598
1707010114	$6,292	$6,292	$6,292	$6,292	$6,292	$6,292
1707010201	$255,148	$255,148	$255,148	$255,148	$255,148	$255,148

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010202	$180,966	$180,966	$180,966	$180,966	$180,966	$180,966
1707010203	$201,318	$201,318	$201,318	$201,318	$201,318	$201,318
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$0	$0	$0	$0	$0	$0
1707010209	$0	$0	$0	$0	$0	$0
1707010210	$282	$282	$282	$282	$282	$282
1707010211	$0	$0	$0	$0	$0	$0
1707010301	$333,890	$333,890	$333,890	$333,890	$333,890	$333,890
1707010302	$505,602	$505,602	$505,602	$505,602	$505,602	$505,602
1707010303	$9,207	$9,207	$9,207	$9,207	$9,207	$9,207
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$40,966	$40,966	$40,966	$40,966	$40,966	$40,966
1707010306	$122,200	$122,200	$122,200	$122,200	$122,200	$122,200
1707010307	$0	$0	$0	$0	$0	$0
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$2,949	$2,949	$2,949	$2,949	$2,949	$2,949
1707010501	$7,699	$7,699	$7,699	$7,699	$7,699	$7,699
1707010502	$95,480	$95,480	$95,480	$95,480	$95,480	$95,480
1707010503	$119,369	$119,369	$119,369	$119,369	$119,369	$119,369
1707010504	$390,093	$390,093	$390,093	$390,093	$390,093	$390,093
1707010505	$54,402	$54,402	$54,402	$54,402	$54,402	$54,402
1707010509	$595,851	$595,851	$595,851	$595,851	$595,851	$595,851
1707010510	$413,598	$413,598	$413,598	$413,598	$413,598	$413,598
1707010512	$311,727	$311,727	$311,727	$311,727	$311,727	$311,727
1707010513	$205,529	$205,529	$205,529	$205,529	$205,529	$205,529
1707010601	$7,355	$7,355	$7,355	$7,355	$7,355	$7,355
1707010602	$1,471	$1,471	$1,471	$1,471	$1,471	$1,471
1707010603	$0	$0	$0	$0	$0	$0
1707010604	$26,555	$26,555	$26,555	$26,555	$26,555	$26,555
1707020103	$346,161	$346,161	$346,161	$346,161	$346,161	$346,161
1707020104	$253,488	$253,488	$253,488	$253,488	$253,488	$253,488
1707020105	$253,958	$253,958	$253,958	$253,958	$253,958	$253,958
1707020106	$219,690	$219,690	$219,690	$219,690	$219,690	$219,690
1707020107	$140,940	$140,940	$140,940	$140,940	$140,940	$140,940
1707020108	$107,036	$107,036	$107,036	$107,036	$107,036	$107,036
1707020109	$160,073	$160,073	$160,073	$160,073	$160,073	$160,073
1707020110	$114,799	$114,799	$114,799	$114,799	$114,799	$114,799
1707020111	$121,922	$121,922	$121,922	$121,922	$121,922	$121,922
1707020112	$214,380	$214,380	$214,380	$214,380	$214,380	$214,380

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707020113	$122,504	$122,504	$122,504	$122,504	$122,504	$122,504
1707020114	$153,246	$153,246	$153,246	$153,246	$153,246	$153,246
1707020115	$191,989	$191,989	$191,989	$191,989	$191,989	$191,989
1707020201	$121,864	$121,864	$121,864	$121,864	$121,864	$121,864
1707020202	$301,060	$301,060	$301,060	$301,060	$301,060	$301,060
1707020203	$275,607	$275,607	$275,607	$275,607	$275,607	$275,607
1707020204	$401,535	$401,535	$401,535	$401,535	$401,535	$401,535
1707020205	$508,942	$508,942	$508,942	$508,942	$508,942	$508,942
1707020206	$393,856	$393,856	$393,856	$393,856	$393,856	$393,856
1707020207	$659,545	$659,545	$659,545	$659,545	$659,545	$659,545
1707020208	$597,056	$597,056	$597,056	$597,056	$597,056	$597,056
1707020209	$138,014	$138,014	$138,014	$138,014	$138,014	$138,014
1707020210	$101,734	$101,734	$101,734	$101,734	$101,734	$101,734
1707020301	$258,438	$258,438	$258,438	$258,438	$258,438	$258,438
1707020302	$420,905	$420,905	$420,905	$420,905	$420,905	$420,905
1707020303	$275,579	$275,579	$275,579	$275,579	$275,579	$275,579
1707020304	$106,233	$106,233	$106,233	$106,233	$106,233	$106,233
1707020305	$7,115	$7,115	$7,115	$7,115	$7,115	$7,115
1707020401	$231,796	$231,796	$231,796	$231,796	$231,796	$231,796
1707020402	$62,444	$62,444	$62,444	$62,444	$62,444	$62,444
1707020403	$215,107	$215,107	$215,107	$215,107	$215,107	$215,107
1707020404	$144,278	$144,278	$144,278	$144,278	$144,278	$144,278
1707020405	$100,220	$100,220	$100,220	$100,220	$100,220	$100,220
1707020406	$14	$14	$14	$14	$14	$14
1707020407	$51,531	$51,531	$51,531	$51,531	$51,531	$51,531
1707020408	$31,454	$31,454	$31,454	$31,454	$31,454	$31,454
1707020409	$19,624	$19,624	$19,624	$19,624	$19,624	$19,624
1707020410	$84,238	$84,238	$84,238	$84,238	$84,238	$84,238
1707020411	$108,546	$108,546	$108,546	$108,546	$108,546	$108,546
1707020412	$8,289	$8,289	$8,289	$8,289	$8,289	$8,289
1707020413	$3,517	$3,517	$3,517	$3,517	$3,517	$3,517
1707020414	$10,331	$10,331	$10,331	$10,331	$10,331	$10,331
1707030603	$36,609	$36,609	$36,609	$36,609	$36,609	$36,609
1707030604	$18,009	$18,009	$18,009	$18,009	$18,009	$18,009
1707030605	$8,911	$8,911	$8,911	$8,911	$8,911	$8,911
1707030606	$58,715	$58,715	$58,715	$58,715	$58,715	$58,715
1707030607	$346,385	$346,385	$346,385	$346,385	$346,385	$346,385
1707030608	$19,335	$19,335	$19,335	$19,335	$19,335	$19,335
1707030610	$642,559	$642,559	$642,559	$642,559	$642,559	$642,559
1707030611	$27,214	$27,214	$27,214	$27,214	$27,214	$27,214
1707030612	$321,900	$321,900	$321,900	$321,900	$321,900	$321,900

Table C-4 Annual Potential Federal Lands Management (Non-wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707030701	$165,405	$165,405	$165,405	$165,405	$165,405	$165,405
1707030702	$29,711	$29,711	$29,711	$29,711	$29,711	$29,711
1707030704	$113,083	$113,083	$113,083	$113,083	$113,083	$113,083
1707030705	$50,998	$50,998	$50,998	$50,998	$50,998	$50,998
1708000107	$312,516	$312,516	$312,516	$312,516	$312,516	$312,516
Lower Columbia	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$0	$0	$0	$0	$0	$0
1711000202	$0	$0	$0	$0	$0	$0
1711000204	$0	$0	$0	$0	$0	$0
1711000401	$6,279	$6,279	$6,279	$6,279	$6,279	$6,279
1711000402	$2,234	$2,234	$2,234	$2,234	$2,234	$2,234
1711000403	$1,035	$1,035	$1,035	$1,035	$1,035	$1,035
1711000404	$0	$0	$0	$0	$0	$0
1711000405	$0	$0	$0	$0	$0	$0
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$1,321	$1,321	$1,321	$1,321	$1,321	$1,321
1711000506	$7,527	$7,527	$7,527	$7,527	$7,527	$7,527
1711000507	$1,785	$1,785	$1,785	$1,785	$1,785	$1,785
1711000508	$4,937	$4,937	$4,937	$4,937	$4,937	$4,937
1711000601	$14,221	$14,221	$14,221	$14,221	$14,221	$14,221
1711000602	$17,713	$17,713	$17,713	$17,713	$17,713	$17,713
1711000603	$5,812	$5,812	$5,812	$5,812	$5,812	$5,812
1711000604	$1,281	$1,281	$1,281	$1,281	$1,281	$1,281
1711000701	$0	$0	$0	$0	$0	$0
1711000702	$0	$0	$0	$0	$0	$0
1711000801	$3,808	$3,808	$3,808	$3,808	$3,808	$3,808
1711000802	$2,591	$2,591	$2,591	$2,591	$2,591	$2,591
1711000803	$0	$0	$0	$0	$0	$0
1711000901	$9,972	$9,972	$9,972	$9,972	$9,972	$9,972
1711000902	$8,052	$8,052	$8,052	$8,052	$8,052	$8,052
1711000903	$0	$0	$0	$0	$0	$0
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$0	$0	$0	$0	$0	$0
1711001003	$7,685	$7,685	$7,685	$7,685	$7,685	$7,685
1711001004	$0	$0	$0	$0	$0	$0
1711001101	$0	$0	$0	$0	$0	$0
1711001102	$0	$0	$0	$0	$0	$0
1711001201	$0	$0	$0	$0	$0	$0
1711001202	$0	$0	$0	$0	$0	$0
1711001203	$0	$0	$0	$0	$0	$0
1711001204	$0	$0	$0	$0	$0	$0
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$0	$0	$0	$0	$0	$0
1711001303	$0	$0	$0	$0	$0	$0
1711001401	$2,821	$2,821	$2,821	$2,821	$2,821	$2,821
1711001402	$1,215	$1,215	$1,215	$1,215	$1,215	$1,215

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$785	$785	$785	$785	$785	$785
1711001404	$359	$359	$359	$359	$359	$359
1711001405	$0	$0	$0	$0	$0	$0
1711001502	$0	$0	$0	$0	$0	$0
1711001503	$0	$0	$0	$0	$0	$0
1711001601	$0	$0	$0	$0	$0	$0
1711001602	$0	$0	$0	$0	$0	$0
1711001701	$687	$687	$687	$687	$687	$687
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$2,073	$2,073	$2,073	$2,073	$2,073	$2,073
1711001804	$1,247	$1,247	$1,247	$1,247	$1,247	$1,247
1711001805	$1,483	$1,483	$1,483	$1,483	$1,483	$1,483
1711001806	$2,001	$2,001	$2,001	$2,001	$2,001	$2,001
1711001808	$0	$0	$0	$0	$0	$0
1711001900	$0	$0	$0	$0	$0	$0
1711001901	$0	$0	$0	$0	$0	$0
1711001902	$0	$0	$0	$0	$0	$0
1711001904	$0	$0	$0	$0	$0	$0
1711002003	$4,131	$4,131	$4,131	$4,131	$4,131	$4,131
1711002004	$0	$0	$0	$0	$0	$0
1711002007	$0	$0	$0	$0	$0	$0
N01	$0	$0	$0	$0	$0	$0
N02	$0	$0	$0	$0	$0	$0
N03	$0	$0	$0	$0	$0	$0
N04	$0	$0	$0	$0	$0	$0
N05	$0	$0	$0	$0	$0	$0
N06	$0	$0	$0	$0	$0	$0
N07	$0	$0	$0	$0	$0	$0
N08	$0	$0	$0	$0	$0	$0
N09	$0	$0	$0	$0	$0	$0
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$0	$0	$0	$0	$0	$0
N13	$0	$0	$0	$0	$0	$0
N14	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$4,865	$4,865	$4,865	$4,865	$4,865	$4,865
1707010507	$1,353	$1,353	$1,353	$1,353	$1,353	$1,353
1707010508	$2	$2	$2	$2	$2	$2
1707010509	$3,373	$3,373	$3,373	$3,373	$3,373	$3,373
1707010510	$784	$784	$784	$784	$784	$784
1707010511	$1,552	$1,552	$1,552	$1,552	$1,552	$1,552
1707010512	$558	$558	$558	$558	$558	$558
1707010513	$8,965	$8,965	$8,965	$8,965	$8,965	$8,965
1708000101	$10,237	$10,237	$10,237	$10,237	$10,237	$10,237
1708000102	$3,529	$3,529	$3,529	$3,529	$3,529	$3,529
1708000103	$4,471	$4,471	$4,471	$4,471	$4,471	$4,471
1708000104	$33	$33	$33	$33	$33	$33
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$1,826	$1,826	$1,826	$1,826	$1,826	$1,826
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$20	$20	$20	$20	$20	$20
1708000301	$0	$0	$0	$0	$0	$0
1708000302	$0	$0	$0	$0	$0	$0
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$0	$0	$0	$0
1708000401	$6,901	$6,901	$6,901	$6,901	$6,901	$6,901
1708000402	$5,472	$5,472	$5,472	$5,472	$5,472	$5,472
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$6,341	$6,341	$6,341	$6,341	$6,341	$6,341
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000601	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709001105	$2,510	$2,510	$2,510	$2,510	$2,510	$2,510
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$3,978	$3,978	$3,978	$3,978	$3,978	$3,978
1709000102	$211	$211	$211	$211	$211	$211
1709000103	$1,415	$1,415	$1,415	$1,415	$1,415	$1,415
1709000104	$3,437	$3,437	$3,437	$3,437	$3,437	$3,437
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$10,123	$10,123	$10,123	$10,123	$10,123	$10,123
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$0	$0	$0	$0
1709000201	$0	$0	$0	$0	$0	$0
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$0	$0	$0	$0	$0	$0
1709000301	$0	$0	$0	$0	$0	$0
1709000302	$0	$0	$0	$0	$0	$0
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000305	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000401	$23,192	$23,192	$23,192	$23,192	$23,192	$23,192
1709000402	$22,288	$22,288	$22,288	$22,288	$22,288	$22,288
1709000403	$22,012	$22,012	$22,012	$22,012	$22,012	$22,012
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$0	$0	$0	$0	$0	$0
1709000504	$42	$42	$42	$42	$42	$42
1709000505	$9,991	$9,991	$9,991	$9,991	$9,991	$9,991
1709000506	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$1,414	$1,414	$1,414	$1,414	$1,414	$1,414
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$1,883	$1,883	$1,883	$1,883	$1,883	$1,883
1709000906	$0	$0	$0	$0	$0	$0
1709001101	$7,428	$7,428	$7,428	$7,428	$7,428	$7,428
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$174	$174	$174	$174	$174	$174
1709001105	$2,510	$2,510	$2,510	$2,510	$2,510	$2,510
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$0	$0	$0	$0
1702000801	$15,588	$15,588	$15,588	$15,588	$15,588	$15,588
1702000802	$1,895	$1,895	$1,895	$1,895	$1,895	$1,895
1702000803	$16,456	$16,456	$16,456	$16,456	$16,456	$16,456
1702000804	$49	$49	$49	$49	$49	$49
1702000805	$10,885	$10,885	$10,885	$10,885	$10,885	$10,885
1702000806	$3,117	$3,117	$3,117	$3,117	$3,117	$3,117
1702000807	$492	$492	$492	$492	$492	$492

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$3,756	$3,756	$3,756	$3,756	$3,756	$3,756
1702001002	$0	$0	$0	$0	$0	$0
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$15,599	$15,599	$15,599	$15,599	$15,599	$15,599
1702001102	$5,637	$5,637	$5,637	$5,637	$5,637	$5,637
1702001103	$7,544	$7,544	$7,544	$7,544	$7,544	$7,544
1702001104	$15,637	$15,637	$15,637	$15,637	$15,637	$15,637
1702001105	$3,465	$3,465	$3,465	$3,465	$3,465	$3,465
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$558	$558	$558	$558	$558	$558
1707010513	$8,965	$8,965	$8,965	$8,965	$8,965	$8,965
1708000107	$1,826	$1,826	$1,826	$1,826	$1,826	$1,826
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$687	$687	$687	$687	$687	$687
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$2,073	$2,073	$2,073	$2,073	$2,073	$2,073
1711001804	$1,247	$1,247	$1,247	$1,247	$1,247	$1,247
1711001805	$1,483	$1,483	$1,483	$1,483	$1,483	$1,483
1711001806	$2,001	$2,001	$2,001	$2,001	$2,001	$2,001
1711001807	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$0	$0	$0	$0
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$4,131	$4,131	$4,131	$4,131	$4,131	$4,131
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0
Columbia River chum salmon ESU						
1707010509	$3,373	$3,373	$3,373	$3,373	$3,373	$3,373
1707010512	$558	$558	$558	$558	$558	$558
1707010513	$8,965	$8,965	$8,965	$8,965	$8,965	$8,965
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$1,826	$1,826	$1,826	$1,826	$1,826	$1,826
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$20	$20	$20	$20	$20	$20
1708000301	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0
1708000603	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$0	$0	$0	$0	$0	$0
1702000601	$0	$0	$0	$0	$0	$0
1702000602	$0	$0	$0	$0	$0	$0
1702000603	$0	$0	$0	$0	$0	$0
1702000604	$0	$0	$0	$0	$0	$0
1702000605	$0	$0	$0	$0	$0	$0
1702000704	$202	$202	$202	$202	$202	$202
1702000801	$15,588	$15,588	$15,588	$15,588	$15,588	$15,588
1702000802	$1,895	$1,895	$1,895	$1,895	$1,895	$1,895

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1702000803	$16,456	$16,456	$16,456	$16,456	$16,456	$16,456
1702000804	$49	$49	$49	$49	$49	$49
1702000805	$10,885	$10,885	$10,885	$10,885	$10,885	$10,885
1702000806	$3,117	$3,117	$3,117	$3,117	$3,117	$3,117
1702000807	$492	$492	$492	$492	$492	$492
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$3,756	$3,756	$3,756	$3,756	$3,756	$3,756
1702001002	$0	$0	$0	$0	$0	$0
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$15,599	$15,599	$15,599	$15,599	$15,599	$15,599
1702001102	$5,637	$5,637	$5,637	$5,637	$5,637	$5,637
1702001103	$7,544	$7,544	$7,544	$7,544	$7,544	$7,544
1702001104	$15,637	$15,637	$15,637	$15,637	$15,637	$15,637
1702001105	$3,465	$3,465	$3,465	$3,465	$3,465	$3,465
1702001204	$0	$0	$0	$0	$0	$0
1702001509	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$558	$558	$558	$558	$558	$558
1707010513	$8,965	$8,965	$8,965	$8,965	$8,965	$8,965
1708000107	$1,826	$1,826	$1,826	$1,826	$1,826	$1,826
Lower Columbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1706010101	$10,909	$10,909	$10,909	$10,909	$10,909	$10,909
1706010102	$7,210	$7,210	$7,210	$7,210	$7,210	$7,210
1706010104	$4,430	$4,430	$4,430	$4,430	$4,430	$4,430
1706010201	$6,272	$6,272	$6,272	$6,272	$6,272	$6,272
1706010202	$8	$8	$8	$8	$8	$8
1706010203	$1,492	$1,492	$1,492	$1,492	$1,492	$1,492

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$876	$876	$876	$876	$876	$876
1706010205	$116	$116	$116	$116	$116	$116
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$0	$0	$0	$0	$0	$0
1706010401	$1	$1	$1	$1	$1	$1
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$1,846	$1,846	$1,846	$1,846	$1,846	$1,846
1706010406	$30	$30	$30	$30	$30	$30
1706010407	$42	$42	$42	$42	$42	$42
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$138	$138	$138	$138	$138	$138
1706010410	$62	$62	$62	$62	$62	$62
1706010411	$0	$0	$0	$0	$0	$0
1706010501	$7,756	$7,756	$7,756	$7,756	$7,756	$7,756
1706010502	$5,559	$5,559	$5,559	$5,559	$5,559	$5,559
1706010503	$56	$56	$56	$56	$56	$56
1706010504	$3,618	$3,618	$3,618	$3,618	$3,618	$3,618
1706010505	$20,464	$20,464	$20,464	$20,464	$20,464	$20,464
1706010506	$138	$138	$138	$138	$138	$138
1706010601	$52	$52	$52	$52	$52	$52
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$24,932	$24,932	$24,932	$24,932	$24,932	$24,932
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$343	$343	$343	$343	$343	$343
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$0	$0	$0	$0	$0	$0
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$2,091	$2,091	$2,091	$2,091	$2,091	$2,091
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$3	$3	$3	$3	$3	$3
1706011004	$1,050	$1,050	$1,050	$1,050	$1,050	$1,050

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$0	$0	$0	$0	$0	$0
1706020104	$0	$0	$0	$0	$0	$0
1706020105	$579	$579	$579	$579	$579	$579
1706020107	$2,718	$2,718	$2,718	$2,718	$2,718	$2,718
1706020108	$744	$744	$744	$744	$744	$744
1706020109	$2,169	$2,169	$2,169	$2,169	$2,169	$2,169
1706020110	$2,960	$2,960	$2,960	$2,960	$2,960	$2,960
1706020111	$2,036	$2,036	$2,036	$2,036	$2,036	$2,036
1706020112	$0	$0	$0	$0	$0	$0
1706020113	$780	$780	$780	$780	$780	$780
1706020114	$3,629	$3,629	$3,629	$3,629	$3,629	$3,629
1706020115	$1,466	$1,466	$1,466	$1,466	$1,466	$1,466
1706020117	$1,291	$1,291	$1,291	$1,291	$1,291	$1,291
1706020118	$1,573	$1,573	$1,573	$1,573	$1,573	$1,573
1706020119	$288	$288	$288	$288	$288	$288
1706020120	$1,347	$1,347	$1,347	$1,347	$1,347	$1,347
1706020121	$1,457	$1,457	$1,457	$1,457	$1,457	$1,457
1706020122	$492	$492	$492	$492	$492	$492
1706020123	$236	$236	$236	$236	$236	$236
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$22	$22	$22	$22	$22	$22
1706020126	$94	$94	$94	$94	$94	$94
1706020127	$48	$48	$48	$48	$48	$48
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0
1706020132	$7	$7	$7	$7	$7	$7
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$876	$876	$876	$876	$876	$876
1706020302	$30	$30	$30	$30	$30	$30
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$0	$0	$0	$0	$0	$0
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$13	$13	$13	$13	$13	$13
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$791	$791	$791	$791	$791	$791
1706020322	$810	$810	$810	$810	$810	$810
1706020323	$2,161	$2,161	$2,161	$2,161	$2,161	$2,161
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$0	$0	$0	$0	$0	$0
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$5,423	$5,423	$5,423	$5,423	$5,423	$5,423
1706020502	$3,956	$3,956	$3,956	$3,956	$3,956	$3,956
1706020503	$4,908	$4,908	$4,908	$4,908	$4,908	$4,908
1706020504	$1,953	$1,953	$1,953	$1,953	$1,953	$1,953
1706020505	$3,183	$3,183	$3,183	$3,183	$3,183	$3,183
1706020506	$1,350	$1,350	$1,350	$1,350	$1,350	$1,350
1706020507	$6,282	$6,282	$6,282	$6,282	$6,282	$6,282
1706020508	$2,387	$2,387	$2,387	$2,387	$2,387	$2,387
1706020509	$1,836	$1,836	$1,836	$1,836	$1,836	$1,836
1706020510	$4,822	$4,822	$4,822	$4,822	$4,822	$4,822
1706020511	$3,595	$3,595	$3,595	$3,595	$3,595	$3,595
1706020512	$5,219	$5,219	$5,219	$5,219	$5,219	$5,219
1706020513	$5,490	$5,490	$5,490	$5,490	$5,490	$5,490
1706020601	$6,956	$6,956	$6,956	$6,956	$6,956	$6,956
1706020602	$1,704	$1,704	$1,704	$1,704	$1,704	$1,704
1706020603	$3,994	$3,994	$3,994	$3,994	$3,994	$3,994
1706020604	$2,393	$2,393	$2,393	$2,393	$2,393	$2,393
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$3,483	$3,483	$3,483	$3,483	$3,483	$3,483
1706020607	$1,710	$1,710	$1,710	$1,710	$1,710	$1,710

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$2,070	$2,070	$2,070	$2,070	$2,070	$2,070
1706020609	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583
1706020610	$4,301	$4,301	$4,301	$4,301	$4,301	$4,301
1706020611	$5,118	$5,118	$5,118	$5,118	$5,118	$5,118
1706020612	$1,578	$1,578	$1,578	$1,578	$1,578	$1,578
1706020613	$687	$687	$687	$687	$687	$687
1706020614	$1,924	$1,924	$1,924	$1,924	$1,924	$1,924
1706020615	$1,508	$1,508	$1,508	$1,508	$1,508	$1,508
1706020616	$4,714	$4,714	$4,714	$4,714	$4,714	$4,714
1706020617	$3,675	$3,675	$3,675	$3,675	$3,675	$3,675
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$1,951	$1,951	$1,951	$1,951	$1,951	$1,951
1706020703	$3,130	$3,130	$3,130	$3,130	$3,130	$3,130
1706020704	$2,295	$2,295	$2,295	$2,295	$2,295	$2,295
1706020705	$3,258	$3,258	$3,258	$3,258	$3,258	$3,258
1706020706	$646	$646	$646	$646	$646	$646
1706020707	$54	$54	$54	$54	$54	$54
1706020708	$6,182	$6,182	$6,182	$6,182	$6,182	$6,182
1706020709	$3,189	$3,189	$3,189	$3,189	$3,189	$3,189
1706020710	$2,541	$2,541	$2,541	$2,541	$2,541	$2,541
1706020711	$3,852	$3,852	$3,852	$3,852	$3,852	$3,852
1706020712	$2,798	$2,798	$2,798	$2,798	$2,798	$2,798
1706020713	$3,918	$3,918	$3,918	$3,918	$3,918	$3,918
1706020714	$5,296	$5,296	$5,296	$5,296	$5,296	$5,296
1706020715	$2,025	$2,025	$2,025	$2,025	$2,025	$2,025
1706020716	$2,726	$2,726	$2,726	$2,726	$2,726	$2,726
1706020717	$4,177	$4,177	$4,177	$4,177	$4,177	$4,177
1706020718	$6,372	$6,372	$6,372	$6,372	$6,372	$6,372
1706020719	$156	$156	$156	$156	$156	$156
1706020801	$3,163	$3,163	$3,163	$3,163	$3,163	$3,163
1706020802	$6	$6	$6	$6	$6	$6
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$1,203	$1,203	$1,203	$1,203	$1,203	$1,203
1706020805	$20	$20	$20	$20	$20	$20
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$124	$124	$124	$124	$124	$124
1706020905	$741	$741	$741	$741	$741	$741
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$336	$336	$336	$336	$336	$336
1706020912	$61	$61	$61	$61	$61	$61
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$43	$43	$43	$43	$43	$43
1706021002	$0	$0	$0	$0	$0	$0
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$963	$963	$963	$963	$963	$963
1706030101	$5,085	$5,085	$5,085	$5,085	$5,085	$5,085
1706030102	$8,087	$8,087	$8,087	$8,087	$8,087	$8,087
1706030103	$4,139	$4,139	$4,139	$4,139	$4,139	$4,139
1706030104	$5,953	$5,953	$5,953	$5,953	$5,953	$5,953
1706030105	$2,219	$2,219	$2,219	$2,219	$2,219	$2,219
1706030106	$8,261	$8,261	$8,261	$8,261	$8,261	$8,261
1706030107	$2,757	$2,757	$2,757	$2,757	$2,757	$2,757
1706030108	$1,902	$1,902	$1,902	$1,902	$1,902	$1,902
1706030109	$1,306	$1,306	$1,306	$1,306	$1,306	$1,306
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$815	$815	$815	$815	$815	$815
1706030203	$4,253	$4,253	$4,253	$4,253	$4,253	$4,253
1706030204	$1,223	$1,223	$1,223	$1,223	$1,223	$1,223
1706030205	$2,590	$2,590	$2,590	$2,590	$2,590	$2,590
1706030207	$4,585	$4,585	$4,585	$4,585	$4,585	$4,585
1706030208	$5,133	$5,133	$5,133	$5,133	$5,133	$5,133

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$5,146	$5,146	$5,146	$5,146	$5,146	$5,146
1706030210	$1,508	$1,508	$1,508	$1,508	$1,508	$1,508
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$126	$126	$126	$126	$126	$126
1706030213	$338	$338	$338	$338	$338	$338
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$681	$681	$681	$681	$681	$681
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$341	$341	$341	$341	$341	$341
1706030304	$24	$24	$24	$24	$24	$24
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$103	$103	$103	$103	$103	$103
1706030308	$59	$59	$59	$59	$59	$59
1706030309	$1,962	$1,962	$1,962	$1,962	$1,962	$1,962
1706030310	$5,300	$5,300	$5,300	$5,300	$5,300	$5,300
1706030311	$2,526	$2,526	$2,526	$2,526	$2,526	$2,526
1706030312	$1,996	$1,996	$1,996	$1,996	$1,996	$1,996
1706030313	$2,002	$2,002	$2,002	$2,002	$2,002	$2,002
1706030314	$1,955	$1,955	$1,955	$1,955	$1,955	$1,955
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$0	$0	$0	$0	$0	$0
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$345	$345	$345	$345	$345	$345
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$83	$83	$83	$83	$83	$83
1706030509	$1,050	$1,050	$1,050	$1,050	$1,050	$1,050
1706030510	$2,874	$2,874	$2,874	$2,874	$2,874	$2,874
1706030511	$8	$8	$8	$8	$8	$8
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$0	$0	$0	$0	$0	$0
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030607	$0	$0	$0	$0	$0	$0
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$0	$0	$0	$0	$0	$0
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$0	$0	$0	$0
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$558	$558	$558	$558	$558	$558
1707010513	$8,965	$8,965	$8,965	$8,965	$8,965	$8,965
1708000107	$1,826	$1,826	$1,826	$1,826	$1,826	$1,826
Lower Columbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$4,865	$4,865	$4,865	$4,865	$4,865	$4,865
1707010507	$1,353	$1,353	$1,353	$1,353	$1,353	$1,353
1707010508	$2	$2	$2	$2	$2	$2
1707010511	$1,552	$1,552	$1,552	$1,552	$1,552	$1,552

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010512	$558	$558	$558	$558	$558	$558
1707010513	$8,965	$8,965	$8,965	$8,965	$8,965	$8,965
1708000101	$10,237	$10,237	$10,237	$10,237	$10,237	$10,237
1708000102	$3,529	$3,529	$3,529	$3,529	$3,529	$3,529
1708000103	$4,471	$4,471	$4,471	$4,471	$4,471	$4,471
1708000104	$33	$33	$33	$33	$33	$33
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$1,826	$1,826	$1,826	$1,826	$1,826	$1,826
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$20	$20	$20	$20	$20	$20
1708000301	$0	$0	$0	$0	$0	$0
1708000401	$6,901	$6,901	$6,901	$6,901	$6,901	$6,901
1708000402	$5,472	$5,472	$5,472	$5,472	$5,472	$5,472
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$6,341	$6,341	$6,341	$6,341	$6,341	$6,341
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709001101	$7,428	$7,428	$7,428	$7,428	$7,428	$7,428
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$174	$174	$174	$174	$174	$174
1709001105	$2,510	$2,510	$2,510	$2,510	$2,510	$2,510
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River steelhead ESU						

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000504	$42	$42	$42	$42	$42	$42
1709000505	$9,991	$9,991	$9,991	$9,991	$9,991	$9,991
1709000506	$0	$0	$0	$0	$0	$0
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$1,414	$1,414	$1,414	$1,414	$1,414	$1,414
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709000801	$0	$0	$0	$0	$0	$0
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$1,883	$1,883	$1,883	$1,883	$1,883	$1,883
1709000906	$0	$0	$0	$0	$0	$0
1709001001	$0	$0	$0	$0	$0	$0
1709001002	$0	$0	$0	$0	$0	$0
1709001003	$0	$0	$0	$0	$0	$0
1709001004	$0	$0	$0	$0	$0	$0
1709001005	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Middle Columbia River steelhead ESU						

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$0	$0	$0	$0	$0	$0
1703000101	$11,130	$11,130	$11,130	$11,130	$11,130	$11,130
1703000102	$17	$17	$17	$17	$17	$17
1703000103	$0	$0	$0	$0	$0	$0
1703000104	$0	$0	$0	$0	$0	$0
1703000201	$17,801	$17,801	$17,801	$17,801	$17,801	$17,801
1703000202	$7,586	$7,586	$7,586	$7,586	$7,586	$7,586
1703000203	$9,144	$9,144	$9,144	$9,144	$9,144	$9,144
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$0	$0	$0	$0	$0	$0
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$0	$0	$0	$0	$0	$0
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$0	$0	$0	$0	$0	$0
1703000307	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010201	$39	$39	$39	$39	$39	$39
1707010202	$18	$18	$18	$18	$18	$18
1707010203	$12	$12	$12	$12	$12	$12
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$0	$0	$0	$0	$0	$0
1707010209	$0	$0	$0	$0	$0	$0
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$0	$0	$0	$0	$0	$0
1707010301	$3,076	$3,076	$3,076	$3,076	$3,076	$3,076
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$0	$0	$0	$0	$0	$0
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$0	$0	$0	$0	$0	$0
1707010306	$0	$0	$0	$0	$0	$0
1707010307	$0	$0	$0	$0	$0	$0

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010502	$730	$730	$730	$730	$730	$730
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$3,373	$3,373	$3,373	$3,373	$3,373	$3,373
1707010510	$784	$784	$784	$784	$784	$784
1707010512	$558	$558	$558	$558	$558	$558
1707010513	$8,965	$8,965	$8,965	$8,965	$8,965	$8,965
1707010601	$526	$526	$526	$526	$526	$526
1707010602	$5	$5	$5	$5	$5	$5
1707010603	$0	$0	$0	$0	$0	$0
1707010604	$0	$0	$0	$0	$0	$0
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$931	$931	$931	$931	$931	$931
1707020105	$5,628	$5,628	$5,628	$5,628	$5,628	$5,628
1707020106	$982	$982	$982	$982	$982	$982
1707020107	$7,813	$7,813	$7,813	$7,813	$7,813	$7,813
1707020108	$7,973	$7,973	$7,973	$7,973	$7,973	$7,973
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$0	$0	$0	$0	$0	$0
1707020111	$103	$103	$103	$103	$103	$103
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$19	$19	$19	$19	$19	$19
1707020114	$50	$50	$50	$50	$50	$50
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$10,875	$10,875	$10,875	$10,875	$10,875	$10,875
1707020202	$7,194	$7,194	$7,194	$7,194	$7,194	$7,194
1707020203	$15,499	$15,499	$15,499	$15,499	$15,499	$15,499
1707020204	$421	$421	$421	$421	$421	$421
1707020205	$4	$4	$4	$4	$4	$4
1707020206	$0	$0	$0	$0	$0	$0
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$23	$23	$23	$23	$23	$23

Table C-5 Annual Potential Federal Lands Management (Wilderness) Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$0	$0	$0	$0	$0	$0
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$1,708	$1,708	$1,708	$1,708	$1,708	$1,708
1707020404	$2,138	$2,138	$2,138	$2,138	$2,138	$2,138
1707020405	$1,930	$1,930	$1,930	$1,930	$1,930	$1,930
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$237	$237	$237	$237	$237	$237
1707020408	$28	$28	$28	$28	$28	$28
1707020409	$7,905	$7,905	$7,905	$7,905	$7,905	$7,905
1707020410	$2,617	$2,617	$2,617	$2,617	$2,617	$2,617
1707020411	$0	$0	$0	$0	$0	$0
1707020412	$0	$0	$0	$0	$0	$0
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$196	$196	$196	$196	$196	$196
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$0	$0	$0	$0
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$41	$41	$41	$41	$41	$41
1707030611	$0	$0	$0	$0	$0	$0
1707030612	$0	$0	$0	$0	$0	$0
1707030701	$7	$7	$7	$7	$7	$7
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$1,826	$1,826	$1,826	$1,826	$1,826	$1,826
Lower Columbia	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$0	$0	$0	$0	$0	$0
1711000202	$0	$0	$0	$0	$0	$0
1711000204	$0	$0	$0	$0	$0	$0
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$0	$0	$0	$0
1711000403	$0	$0	$0	$0	$0	$0
1711000404	$0	$0	$0	$0	$0	$0
1711000405	$0	$0	$0	$0	$0	$0
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$0	$0	$0	$0	$0	$0
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$0	$0	$0	$0	$0	$0
1711000508	$0	$0	$0	$0	$0	$0
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$0	$0	$0	$0
1711000604	$0	$0	$0	$0	$0	$0
1711000701	$0	$0	$0	$0	$0	$0
1711000702	$0	$0	$0	$0	$0	$0
1711000801	$0	$0	$0	$0	$0	$0
1711000802	$0	$0	$0	$0	$0	$0
1711000803	$0	$0	$0	$0	$0	$0
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$0	$0	$0	$0	$0	$0
1711000903	$0	$0	$0	$0	$0	$0
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$0	$0	$0	$0	$0	$0
1711001003	$0	$0	$0	$0	$0	$0
1711001004	$0	$0	$0	$0	$0	$0
1711001101	$0	$0	$0	$0	$0	$0
1711001102	$0	$0	$0	$0	$0	$0
1711001201	$0	$0	$0	$0	$0	$0
1711001202	$0	$0	$0	$0	$0	$0
1711001203	$0	$0	$0	$0	$0	$0
1711001204	$0	$0	$0	$0	$0	$0
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$0	$0	$0	$0	$0	$0
1711001303	$0	$0	$0	$0	$0	$0
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$0	$0	$0	$0	$0	$0
1711001404	$0	$0	$0	$0	$0	$0
1711001405	$0	$0	$0	$0	$0	$0
1711001502	$0	$0	$0	$0	$0	$0
1711001503	$0	$0	$0	$0	$0	$0
1711001601	$0	$0	$0	$0	$0	$0
1711001602	$0	$0	$0	$0	$0	$0
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$0	$0	$0	$0
1711001900	$0	$0	$0	$0	$0	$0
1711001901	$0	$0	$0	$0	$0	$0
1711001902	$0	$0	$0	$0	$0	$0
1711001904	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$0	$0	$0	$0
1711002004	$0	$0	$0	$0	$0	$0
1711002007	$0	$0	$0	$0	$0	$0
N01	$0	$0	$0	$0	$0	$0
N02	$0	$0	$0	$0	$0	$0
N03	$0	$0	$0	$0	$0	$0
N04	$0	$0	$0	$0	$0	$0
N05	$0	$0	$0	$0	$0	$0
N06	$0	$0	$0	$0	$0	$0
N07	$0	$0	$0	$0	$0	$0
N08	$0	$0	$0	$0	$0	$0
N09	$0	$0	$0	$0	$0	$0
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$0	$0	$0	$0	$0	$0
N13	$0	$0	$0	$0	$0	$0
N14	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000302	$0	$0	$0	$0	$0	$0
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000601	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$0	$0	$0	$0
1709000201	$0	$0	$0	$0	$0	$0
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$0	$0	$0	$0	$0	$0
1709000301	$0	$0	$0	$0	$0	$0
1709000302	$0	$0	$0	$0	$0	$0
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000305	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$0	$0	$0	$0	$0	$0
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$0	$0	$0	$0
1702000801	$620	$879	$713	$1,010	$806	$1,142
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$1,776	$2,516	$2,043	$2,893	$2,309	$3,270
1702000805	$1,095	$1,551	$1,260	$1,784	$1,424	$2,017
1702000806	$40	$56	$46	$65	$52	$73
1702000807	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$29	$41	$34	$48	$38	$54
1702001002	$0	$0	$0	$0	$0	$0
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$522	$739	$600	$850	$679	$961
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001807	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$0	$0	$0	$0
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0
Columbia River chum salmon ESU						
1707010509	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0
1708000603	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$0	$0	$0	$0	$0	$0
1702000601	$0	$0	$0	$0	$0	$0
1702000602	$0	$0	$0	$0	$0	$0
1702000603	$0	$0	$0	$0	$0	$0
1702000604	$0	$0	$0	$0	$0	$0
1702000605	$0	$0	$0	$0	$0	$0
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$620	$879	$713	$1,010	$806	$1,142
1702000802	$67	$95	$77	$109	$87	$123

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$1,268	$1,796	$1,458	$2,065	$1,648	$2,334
1702000805	$2,029	$2,873	$2,333	$3,304	$2,637	$3,735
1702000806	$689	$976	$793	$1,123	$896	$1,269
1702000807	$1,050	$1,487	$1,207	$1,710	$1,365	$1,933
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$29	$41	$34	$48	$38	$54
1702001002	$0	$0	$0	$0	$0	$0
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$776	$1,099	$893	$1,264	$1,009	$1,429
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$0	$0	$0	$0
1702001204	$0	$0	$0	$0	$0	$0
1702001509	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$2,244	$3,178	$2,580	$3,655	$2,917	$4,131
1706010202	$4,112	$5,824	$4,729	$6,697	$5,345	$7,571
1706010203	$5,705	$8,081	$6,561	$9,293	$7,417	$10,505

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$2,754	$3,901	$3,168	$4,486	$3,581	$5,072
1706010205	$7,787	$11,028	$8,955	$12,683	$10,123	$14,337
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$0	$0	$0	$0	$0	$0
1706010401	$9,667	$13,692	$11,117	$15,746	$12,567	$17,799
1706010402	$8,517	$12,062	$9,794	$13,872	$11,072	$15,681
1706010403	$913	$1,293	$1,050	$1,487	$1,187	$1,681
1706010404	$5,112	$7,240	$5,879	$8,326	$6,645	$9,412
1706010405	$2,307	$3,267	$2,653	$3,758	$2,999	$4,248
1706010406	$0	$0	$0	$0	$0	$0
1706010407	$0	$0	$0	$0	$0	$0
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$2,707	$3,835	$3,114	$4,410	$3,520	$4,985
1706010410	$210	$297	$241	$342	$273	$387
1706010411	$0	$0	$0	$0	$0	$0
1706010501	$0	$0	$0	$0	$0	$0
1706010502	$2,523	$3,573	$2,901	$4,109	$3,279	$4,645
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$6,810	$9,645	$7,831	$11,092	$8,853	$12,539
1706010506	$412	$584	$474	$672	$536	$759
1706010601	$843	$1,194	$970	$1,373	$1,096	$1,552
1706010602	$11,936	$16,905	$13,726	$19,440	$15,516	$21,976
1706010603	$4,306	$6,099	$4,952	$7,014	$5,598	$7,929
1706010604	$8,910	$12,620	$10,247	$14,513	$11,584	$16,406
1706010605	$8,201	$11,615	$9,431	$13,357	$10,661	$15,099
1706010606	$3,748	$5,309	$4,310	$6,105	$4,873	$6,901
1706010607	$313	$444	$360	$510	$407	$577
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$0	$0	$0	$0	$0	$0
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$0	$0	$0	$0	$0	$0
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$255	$362	$294	$416	$332	$470
1706020104	$293	$415	$337	$478	$381	$540
1706020105	$1,701	$2,409	$1,956	$2,770	$2,211	$3,131
1706020107	$343	$486	$394	$559	$446	$631
1706020108	$1,972	$2,793	$2,268	$3,212	$2,564	$3,631
1706020109	$1,862	$2,637	$2,141	$3,033	$2,421	$3,429
1706020110	$3,784	$5,359	$4,352	$6,163	$4,919	$6,967
1706020111	$855	$1,211	$983	$1,392	$1,111	$1,574
1706020112	$344	$487	$396	$560	$447	$633
1706020113	$2,145	$3,038	$2,467	$3,494	$2,789	$3,950
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$842	$1,192	$968	$1,371	$1,094	$1,550
1706020117	$805	$1,140	$926	$1,311	$1,046	$1,482
1706020118	$222	$314	$255	$361	$288	$408
1706020119	$3	$4	$4	$5	$4	$6
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$968	$1,370	$1,113	$1,576	$1,258	$1,781
1706020123	$4,741	$6,715	$5,453	$7,723	$6,164	$8,730
1706020124	$2,218	$3,141	$2,551	$3,613	$2,883	$4,084
1706020125	$1,622	$2,297	$1,865	$2,642	$2,108	$2,986
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$3,757	$5,321	$4,320	$6,119	$4,884	$6,917
1706020128	$2,121	$3,003	$2,439	$3,454	$2,757	$3,904
1706020129	$36	$51	$41	$59	$47	$66
1706020130	$243	$344	$280	$396	$316	$448
1706020132	$2,384	$3,376	$2,741	$3,883	$3,099	$4,389
1706020201	$9	$13	$10	$15	$12	$16
1706020202	$45	$63	$51	$73	$58	$82
1706020203	$829	$1,174	$953	$1,350	$1,077	$1,526
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$855	$1,210	$983	$1,392	$1,111	$1,574
1706020305	$255	$361	$293	$415	$331	$469
1706020306	$3,318	$4,699	$3,815	$5,404	$4,313	$6,109
1706020307	$42	$59	$48	$68	$54	$76
1706020308	$187	$265	$215	$305	$243	$345
1706020309	$0	$0	$0	$0	$0	$0
1706020310	$64	$90	$73	$104	$83	$117
1706020311	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$424	$600	$488	$691	$551	$781
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$806	$1,142	$927	$1,313	$1,048	$1,484
1706020315	$2,053	$2,907	$2,361	$3,344	$2,669	$3,780
1706020316	$1,341	$1,899	$1,542	$2,184	$1,743	$2,469
1706020317	$2,576	$3,648	$2,962	$4,196	$3,349	$4,743
1706020318	$9	$13	$11	$15	$12	$17
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$325	$461	$374	$530	$423	$599
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$186	$264	$214	$304	$242	$343
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$147	$209	$170	$240	$192	$271
1706020402	$108	$153	$124	$176	$141	$199
1706020403	$180	$255	$207	$293	$234	$332
1706020404	$46	$66	$53	$75	$60	$85
1706020405	$23	$32	$26	$37	$29	$42
1706020406	$86	$121	$99	$140	$111	$158
1706020407	$0	$0	$0	$0	$0	$0
1706020408	$1,384	$1,961	$1,592	$2,255	$1,800	$2,549
1706020409	$2,797	$3,962	$3,217	$4,556	$3,636	$5,150
1706020412	$98	$139	$113	$159	$127	$180
1706020414	$3,874	$5,487	$4,455	$6,310	$5,036	$7,133
1706020501	$870	$1,233	$1,001	$1,417	$1,131	$1,602
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$730	$1,034	$839	$1,189	$949	$1,344
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$1,452	$2,057	$1,670	$2,365	$1,888	$2,674
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$700	$991	$805	$1,140	$910	$1,288

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020606	$1,319	$1,868	$1,517	$2,148	$1,715	$2,429
1706020607	$298	$421	$342	$485	$387	$548
1706020608	$603	$854	$693	$982	$783	$1,110
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$1,499	$2,123	$1,724	$2,442	$1,949	$2,760
1706020705	$2,476	$3,507	$2,848	$4,033	$3,219	$4,559
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$2,967	$4,202	$3,412	$4,832	$3,856	$5,462
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$1,175	$1,664	$1,351	$1,913	$1,527	$2,163
1706020712	$14	$20	$16	$23	$18	$26
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$24	$35	$28	$40	$32	$45
1706020804	$325	$461	$374	$530	$423	$599
1706020805	$1,348	$1,909	$1,550	$2,196	$1,752	$2,482
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$61	$87	$70	$100	$80	$113
1706020903	$54	$76	$62	$88	$70	$99
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$37	$53	$43	$60	$48	$68
1706020907	$3	$4	$4	$5	$4	$6
1706020908	$1,331	$1,885	$1,530	$2,167	$1,730	$2,450
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$725	$1,027	$834	$1,181	$943	$1,335
1706020911	$1,248	$1,768	$1,435	$2,033	$1,622	$2,298
1706020912	$0	$0	$0	$0	$0	$0
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$85	$121	$98	$139	$111	$157
1706021001	$182	$258	$209	$297	$237	$335
1706021002	$1,305	$1,849	$1,501	$2,126	$1,697	$2,403
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$260	$369	$299	$424	$339	$479
1706021007	$2,030	$2,875	$2,334	$3,306	$2,638	$3,737
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$5,675	$8,038	$6,527	$9,244	$7,378	$10,450
1706030212	$852	$1,207	$980	$1,388	$1,107	$1,569
1706030213	$1,467	$2,077	$1,687	$2,389	$1,907	$2,701
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$114	$162	$132	$186	$149	$211
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$3,090	$4,377	$3,554	$5,034	$4,018	$5,690
1706030501	$476	$675	$548	$776	$619	$877
1706030502	$2,182	$3,090	$2,509	$3,553	$2,836	$4,017
1706030503	$1,007	$1,427	$1,158	$1,641	$1,309	$1,854
1706030504	$4,175	$5,913	$4,801	$6,800	$5,427	$7,687
1706030505	$5,901	$8,357	$6,786	$9,611	$7,671	$10,865
1706030506	$7,268	$10,294	$8,358	$11,838	$9,448	$13,382
1706030507	$10,670	$15,112	$12,270	$17,379	$13,871	$19,645
1706030508	$3,316	$4,697	$3,814	$5,401	$4,311	$6,106
1706030509	$478	$676	$549	$778	$621	$879
1706030510	$1,035	$1,465	$1,190	$1,685	$1,345	$1,905
1706030511	$596	$844	$686	$971	$775	$1,098
1706030512	$82	$117	$95	$134	$107	$152
1706030513	$111	$158	$128	$182	$145	$205
1706030601	$0	$0	$0	$0	$0	$0
1706030602	$73	$103	$84	$119	$95	$135
1706030603	$49	$70	$57	$80	$64	$91
1706030604	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$140	$199	$161	$229	$182	$258
1706030607	$4,351	$6,163	$5,004	$7,087	$5,657	$8,012
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$0	$0	$0	$0	$0	$0
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$0	$0	$0	$0
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010508	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$0	$0	$0	$0
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Upper Willamette River steelhead ESU						
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$0	$0	$0	$0	$0	$0
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709000801	$0	$0	$0	$0	$0	$0
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001001	$0	$0	$0	$0	$0	$0
1709001002	$0	$0	$0	$0	$0	$0
1709001003	$0	$0	$0	$0	$0	$0
1709001004	$0	$0	$0	$0	$0	$0
1709001005	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$0	$0	$0	$0	$0	$0
1709001203	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Middle Columbia River steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1703000101	$0	$0	$0	$0	$0	$0
1703000102	$269	$380	$309	$437	$349	$494
1703000103	$0	$0	$0	$0	$0	$0
1703000104	$0	$0	$0	$0	$0	$0
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$0	$0	$0	$0
1703000203	$1,308	$1,853	$1,504	$2,130	$1,700	$2,408
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$0	$0	$0	$0	$0	$0
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$0	$0	$0	$0	$0	$0
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$0	$0	$0	$0	$0	$0
1703000307	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$424	$600	$487	$690	$551	$780
1707010114	$0	$0	$0	$0	$0	$0
1707010201	$2,613	$3,701	$3,005	$4,256	$3,397	$4,812
1707010202	$20	$28	$23	$32	$26	$36
1707010203	$31	$43	$35	$50	$40	$57
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$0	$0	$0	$0	$0	$0
1707010209	$0	$0	$0	$0	$0	$0
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$0	$0	$0	$0	$0	$0
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$0	$0	$0	$0	$0	$0
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$0	$0	$0	$0	$0	$0

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010306	$1,580	$2,237	$1,816	$2,573	$2,053	$2,908
1707010307	$0	$0	$0	$0	$0	$0
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010502	$35	$50	$40	$57	$46	$65
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$40	$56	$45	$64	$51	$73
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$10	$14	$11	$16	$13	$18
1707010603	$0	$0	$0	$0	$0	$0
1707010604	$0	$0	$0	$0	$0	$0
1707020103	$4,586	$6,495	$5,273	$7,469	$5,961	$8,443
1707020104	$7,844	$11,110	$9,021	$12,776	$10,197	$14,443
1707020105	$5,227	$7,404	$6,012	$8,514	$6,796	$9,625
1707020106	$4,284	$6,068	$4,927	$6,978	$5,569	$7,888
1707020107	$3,545	$5,021	$4,077	$5,774	$4,609	$6,527
1707020108	$3,195	$4,525	$3,674	$5,204	$4,154	$5,883
1707020109	$6,221	$8,811	$7,154	$10,132	$8,087	$11,454
1707020110	$812	$1,151	$934	$1,323	$1,056	$1,496
1707020111	$909	$1,288	$1,046	$1,481	$1,182	$1,674
1707020112	$3,279	$4,644	$3,771	$5,341	$4,263	$6,038
1707020113	$1,328	$1,881	$1,527	$2,163	$1,726	$2,445
1707020114	$2,271	$3,217	$2,612	$3,699	$2,952	$4,182
1707020115	$859	$1,216	$987	$1,398	$1,116	$1,581
1707020201	$674	$955	$775	$1,098	$876	$1,241
1707020202	$4,732	$6,702	$5,442	$7,707	$6,151	$8,713
1707020203	$3,203	$4,537	$3,684	$5,217	$4,164	$5,898
1707020204	$6,807	$9,641	$7,828	$11,087	$8,849	$12,534
1707020205	$11,401	$16,148	$13,111	$18,570	$14,822	$20,992
1707020206	$8,080	$11,444	$9,292	$13,160	$10,504	$14,877
1707020207	$9,027	$12,785	$10,381	$14,703	$11,735	$16,621
1707020208	$16,100	$22,803	$18,515	$26,223	$20,930	$29,644
1707020209	$2,166	$3,067	$2,490	$3,527	$2,815	$3,987
1707020210	$1,377	$1,950	$1,583	$2,242	$1,790	$2,535

Table C-6 Annual Potential Federal Grazing Lands Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707020301	$8,414	$11,917	$9,676	$13,704	$10,938	$15,492
1707020302	$16,748	$23,720	$19,260	$27,279	$21,772	$30,837
1707020303	$4,403	$6,236	$5,064	$7,172	$5,724	$8,107
1707020304	$2,219	$3,142	$2,551	$3,614	$2,884	$4,085
1707020305	$158	$224	$182	$257	$205	$291
1707020401	$1,471	$2,084	$1,692	$2,396	$1,913	$2,709
1707020402	$1,117	$1,583	$1,285	$1,820	$1,453	$2,057
1707020403	$3,914	$5,543	$4,501	$6,375	$5,088	$7,206
1707020404	$785	$1,111	$902	$1,278	$1,020	$1,445
1707020405	$564	$799	$649	$919	$734	$1,039
1707020406	$21	$30	$24	$34	$27	$39
1707020407	$2,531	$3,585	$2,911	$4,123	$3,291	$4,661
1707020408	$756	$1,071	$869	$1,231	$983	$1,392
1707020409	$3,338	$4,727	$3,839	$5,437	$4,339	$6,146
1707020410	$1,942	$2,751	$2,233	$3,163	$2,525	$3,576
1707020411	$145	$206	$167	$236	$189	$267
1707020412	$79	$112	$91	$128	$102	$145
1707020413	$284	$402	$327	$463	$369	$523
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$0	$0	$0	$0	$0	$0
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$600	$850	$690	$977	$780	$1,105
1707030608	$880	$1,246	$1,012	$1,433	$1,144	$1,620
1707030610	$0	$0	$0	$0	$0	$0
1707030611	$2,540	$3,598	$2,921	$4,138	$3,303	$4,677
1707030612	$473	$669	$543	$770	$614	$870
1707030701	$818	$1,159	$941	$1,333	$1,064	$1,506
1707030702	$747	$1,058	$859	$1,217	$971	$1,375
1707030704	$36	$50	$41	$58	$46	$66
1707030705	$886	$1,255	$1,019	$1,444	$1,152	$1,632
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$0	$0	$0	$0	$0	$0
1711000202	$72,106	$72,106	$72,106	$72,106	$72,106	$72,106
1711000204	$8,177	$8,177	$8,177	$8,177	$8,177	$8,177
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$0	$0	$0	$0
1711000403	$0	$0	$0	$0	$0	$0
1711000404	$0	$0	$0	$0	$0	$0
1711000405	$41,164	$41,164	$41,164	$41,164	$41,164	$41,164
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$24,284	$24,284	$24,284	$24,284	$24,284	$24,284
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$8,173	$8,173	$8,173	$8,173	$8,173	$8,173
1711000508	$0	$0	$0	$0	$0	$0
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$0	$0	$0	$0
1711000604	$0	$0	$0	$0	$0	$0
1711000701	$8,171	$8,171	$8,171	$8,171	$8,171	$8,171
1711000702	$31,805	$31,805	$31,805	$31,805	$31,805	$31,805
1711000801	$24,937	$24,937	$24,937	$24,937	$24,937	$24,937
1711000802	$0	$0	$0	$0	$0	$0
1711000803	$7,196	$7,196	$7,196	$7,196	$7,196	$7,196
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$15,358	$15,358	$15,358	$15,358	$15,358	$15,358
1711000903	$7,191	$7,191	$7,191	$7,191	$7,191	$7,191
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$127,283	$127,283	$127,283	$127,283	$127,283	$127,283
1711001003	$25,067	$25,067	$25,067	$25,067	$25,067	$25,067
1711001004	$0	$0	$0	$0	$0	$0
1711001101	$25,595	$25,595	$25,595	$25,595	$25,595	$25,595
1711001102	$53,572	$53,572	$53,572	$53,572	$53,572	$53,572
1711001201	$0	$0	$0	$0	$0	$0
1711001202	$39,523	$39,523	$39,523	$39,523	$39,523	$39,523
1711001203	$164,431	$164,431	$164,431	$164,431	$164,431	$164,431
1711001204	$133,738	$133,738	$133,738	$133,738	$133,738	$133,738
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$0	$0	$0	$0	$0	$0
1711001303	$124,602	$124,602	$124,602	$124,602	$124,602	$124,602
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$65,655	$65,655	$65,655	$65,655	$65,655	$65,655

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$12,463	$12,463	$12,463	$12,463	$12,463	$12,463
1711001404	$0	$0	$0	$0	$0	$0
1711001405	$195,167	$195,167	$195,167	$195,167	$195,167	$195,167
1711001502	$0	$0	$0	$0	$0	$0
1711001503	$21,588	$21,588	$21,588	$21,588	$21,588	$21,588
1711001601	$0	$0	$0	$0	$0	$0
1711001602	$0	$0	$0	$0	$0	$0
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001808	$21,596	$21,596	$21,596	$21,596	$21,596	$21,596
1711001900	$0	$0	$0	$0	$0	$0
1711001901	$110,635	$110,635	$110,635	$110,635	$110,635	$110,635
1711001902	$0	$0	$0	$0	$0	$0
1711001904	$45,943	$45,943	$45,943	$45,943	$45,943	$45,943
1711002003	$0	$0	$0	$0	$0	$0
1711002004	$12,404	$12,404	$12,404	$12,404	$12,404	$12,404
1711002007	$0	$0	$0	$0	$0	$0
N01	$8,175	$8,175	$8,175	$8,175	$8,175	$8,175
N02	$0	$0	$0	$0	$0	$0
N03	$0	$0	$0	$0	$0	$0
N04	$0	$0	$0	$0	$0	$0
N05	$0	$0	$0	$0	$0	$0
N06	$16,446	$16,446	$16,446	$16,446	$16,446	$16,446
N07	$8,203	$8,203	$8,203	$8,203	$8,203	$8,203
N08	$0	$0	$0	$0	$0	$0
N09	$0	$0	$0	$0	$0	$0
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$0	$0	$0	$0	$0	$0
N13	$0	$0	$0	$0	$0	$0
N14	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$7,178	$7,178	$7,178	$7,178	$7,178	$7,178
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$18,324	$18,324	$18,324	$18,324	$18,324	$18,324
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$24,911	$24,911	$24,911	$24,911	$24,911	$24,911
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$28,517	$28,517	$28,517	$28,517	$28,517	$28,517
1707010513	$29,951	$29,951	$29,951	$29,951	$29,951	$29,951
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$14,447	$14,447	$14,447	$14,447	$14,447	$14,447
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$26,078	$26,078	$26,078	$26,078	$26,078	$26,078
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$36,326	$36,326	$36,326	$36,326	$36,326	$36,326
1708000107	$87,393	$87,393	$87,393	$87,393	$87,393	$87,393
1708000108	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1708000109	$183,150	$183,150	$183,150	$183,150	$183,150	$183,150
1708000205	$253,240	$253,240	$253,240	$253,240	$253,240	$253,240
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$21,549	$21,549	$21,549	$21,549	$21,549	$21,549
1708000302	$14,434	$14,434	$14,434	$14,434	$14,434	$14,434
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$0	$0	$0	$0
1708000401	$12,336	$12,336	$12,336	$12,336	$12,336	$12,336
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$7,171	$7,171	$7,171	$7,171	$7,171	$7,171
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$24,518	$24,518	$24,518	$24,518	$24,518	$24,518
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$64,618	$64,618	$64,618	$64,618	$64,618	$64,618
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$109,363	$109,363	$109,363	$109,363	$109,363	$109,363
1708000508	$0	$0	$0	$0	$0	$0
1708000601	$19,342	$19,342	$19,342	$19,342	$19,342	$19,342
1708000602	$19,476	$19,476	$19,476	$19,476	$19,476	$19,476

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$62,671	$62,671	$62,671	$62,671	$62,671	$62,671
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$27,250	$27,250	$27,250	$27,250	$27,250	$27,250
1709001201	$72,888	$72,888	$72,888	$72,888	$72,888	$72,888
1709001202	$19,792	$19,792	$19,792	$19,792	$19,792	$19,792
1709001203	$225,841	$225,841	$225,841	$225,841	$225,841	$225,841
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$19,049	$19,049	$19,049	$19,049	$19,049	$19,049
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$0	$0	$0	$0
1709000201	$0	$0	$0	$0	$0	$0
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$0	$0	$0	$0	$0	$0
1709000301	$21,605	$21,605	$21,605	$21,605	$21,605	$21,605
1709000302	$61,080	$61,080	$61,080	$61,080	$61,080	$61,080
1709000303	$12,355	$12,355	$12,355	$12,355	$12,355	$12,355
1709000304	$13,308	$13,308	$13,308	$13,308	$13,308	$13,308
1709000305	$24,460	$24,460	$24,460	$24,460	$24,460	$24,460
1709000306	$0	$0	$0	$0	$0	$0
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$0	$0	$0	$0	$0	$0
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1709000407	$42,769	$42,769	$42,769	$42,769	$42,769	$42,769
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000601	$37,736	$37,736	$37,736	$37,736	$37,736	$37,736
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1709000702	$19,382	$19,382	$19,382	$19,382	$19,382	$19,382
1709000703	$45,592	$45,592	$45,592	$45,592	$45,592	$45,592
1709000704	$62,671	$62,671	$62,671	$62,671	$62,671	$62,671
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$7,256	$7,256	$7,256	$7,256	$7,256	$7,256
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$27,250	$27,250	$27,250	$27,250	$27,250	$27,250
1709001201	$72,888	$72,888	$72,888	$72,888	$72,888	$72,888
1709001202	$19,792	$19,792	$19,792	$19,792	$19,792	$19,792
1709001203	$225,841	$225,841	$225,841	$225,841	$225,841	$225,841
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$8,175	$8,175	$8,175	$8,175	$8,175	$8,175
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$24,336	$24,336	$24,336	$24,336	$24,336	$24,336
1702000807	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$73,448	$73,448	$73,448	$73,448	$73,448	$73,448
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$8,179	$8,179	$8,179	$8,179	$8,179	$8,179
1702001604	$7,174	$7,174	$7,174	$7,174	$7,174	$7,174
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$86,654	$86,654	$86,654	$86,654	$86,654	$86,654
1707010102	$7,246	$7,246	$7,246	$7,246	$7,246	$7,246
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707010114	$21,267	$21,267	$21,267	$21,267	$21,267	$21,267
1707010501	$37,267	$37,267	$37,267	$37,267	$37,267	$37,267
1707010504	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707010512	$28,517	$28,517	$28,517	$28,517	$28,517	$28,517
1707010513	$29,951	$29,951	$29,951	$29,951	$29,951	$29,951
1708000107	$87,393	$87,393	$87,393	$87,393	$87,393	$87,393
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001807	$0	$0	$0	$0	$0	$0
1711001808	$21,596	$21,596	$21,596	$21,596	$21,596	$21,596
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$12,143	$12,143	$12,143	$12,143	$12,143	$12,143
1711002003	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$7,178	$7,178	$7,178	$7,178	$7,178	$7,178

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0
Columbia River chum salmon ESU						
1707010509	$0	$0	$0	$0	$0	$0
1707010512	$28,517	$28,517	$28,517	$28,517	$28,517	$28,517
1707010513	$29,951	$29,951	$29,951	$29,951	$29,951	$29,951
1708000106	$36,326	$36,326	$36,326	$36,326	$36,326	$36,326
1708000107	$87,393	$87,393	$87,393	$87,393	$87,393	$87,393
1708000109	$183,150	$183,150	$183,150	$183,150	$183,150	$183,150
1708000205	$253,240	$253,240	$253,240	$253,240	$253,240	$253,240
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$21,549	$21,549	$21,549	$21,549	$21,549	$21,549
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$64,618	$64,618	$64,618	$64,618	$64,618	$64,618
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$109,363	$109,363	$109,363	$109,363	$109,363	$109,363
1708000508	$0	$0	$0	$0	$0	$0
1708000602	$19,476	$19,476	$19,476	$19,476	$19,476	$19,476
1708000603	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$0	$0	$0	$0	$0	$0
1702000601	$0	$0	$0	$0	$0	$0
1702000602	$18,629	$18,629	$18,629	$18,629	$18,629	$18,629
1702000603	$0	$0	$0	$0	$0	$0
1702000604	$0	$0	$0	$0	$0	$0
1702000605	$0	$0	$0	$0	$0	$0
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$8,175	$8,175	$8,175	$8,175	$8,175	$8,175

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$24,336	$24,336	$24,336	$24,336	$24,336	$24,336
1702000807	$0	$0	$0	$0	$0	$0
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$73,448	$73,448	$73,448	$73,448	$73,448	$73,448
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$8,179	$8,179	$8,179	$8,179	$8,179	$8,179
1702001204	$8,178	$8,178	$8,178	$8,178	$8,178	$8,178
1702001509	$0	$0	$0	$0	$0	$0
1702001604	$7,174	$7,174	$7,174	$7,174	$7,174	$7,174
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$86,654	$86,654	$86,654	$86,654	$86,654	$86,654
1707010102	$7,246	$7,246	$7,246	$7,246	$7,246	$7,246
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707010114	$21,267	$21,267	$21,267	$21,267	$21,267	$21,267
1707010501	$37,267	$37,267	$37,267	$37,267	$37,267	$37,267
1707010504	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707010512	$28,517	$28,517	$28,517	$28,517	$28,517	$28,517
1707010513	$29,951	$29,951	$29,951	$29,951	$29,951	$29,951
1708000107	$87,393	$87,393	$87,393	$87,393	$87,393	$87,393
Lower Columbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$20,002	$20,002	$20,002	$20,002	$20,002	$20,002
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$0	$0	$0	$0	$0	$0
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$0	$0	$0	$0	$0	$0
1706010406	$18,548	$18,548	$18,548	$18,548	$18,548	$18,548
1706010407	$0	$0	$0	$0	$0	$0
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$0	$0	$0	$0	$0	$0
1706010410	$0	$0	$0	$0	$0	$0
1706010411	$7,239	$7,239	$7,239	$7,239	$7,239	$7,239
1706010501	$0	$0	$0	$0	$0	$0
1706010502	$0	$0	$0	$0	$0	$0
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$13,015	$13,015	$13,015	$13,015	$13,015	$13,015
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$0	$0	$0	$0	$0	$0
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$0	$0	$0	$0	$0	$0
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$21,577	$21,577	$21,577	$21,577	$21,577	$21,577
1706010706	$0	$0	$0	$0	$0	$0
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$13,054	$13,054	$13,054	$13,054	$13,054	$13,054
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$0	$0	$0	$0	$0	$0
1706020104	$8,174	$8,174	$8,174	$8,174	$8,174	$8,174
1706020105	$0	$0	$0	$0	$0	$0
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$0	$0	$0	$0	$0	$0
1706020113	$38,513	$38,513	$38,513	$38,513	$38,513	$38,513
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$8,248	$8,248	$8,248	$8,248	$8,248	$8,248
1706020117	$0	$0	$0	$0	$0	$0
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$0	$0	$0	$0	$0	$0
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$0	$0	$0	$0	$0	$0
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$0	$0	$0	$0	$0	$0
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0
1706020132	$0	$0	$0	$0	$0	$0
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$0	$0	$0	$0
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$0	$0	$0	$0	$0	$0
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$0	$0	$0	$0	$0	$0
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$0	$0	$0	$0	$0	$0
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$12,409	$12,409	$12,409	$12,409	$12,409	$12,409
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$7,232	$7,232	$7,232	$7,232	$7,232	$7,232
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$0	$0	$0	$0	$0	$0
1706020912	$34,220	$34,220	$34,220	$34,220	$34,220	$34,220
1706020913	$36,454	$36,454	$36,454	$36,454	$36,454	$36,454
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$32,403	$32,403	$32,403	$32,403	$32,403	$32,403
1706021002	$12,623	$12,623	$12,623	$12,623	$12,623	$12,623
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$7,183	$7,183	$7,183	$7,183	$7,183	$7,183
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$0	$0	$0	$0	$0	$0
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$7,177	$7,177	$7,177	$7,177	$7,177	$7,177
1706030601	$8,204	$8,204	$8,204	$8,204	$8,204	$8,204
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030607	$0	$0	$0	$0	$0	$0
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$12,497	$12,497	$12,497	$12,497	$12,497	$12,497
1706030613	$12,370	$12,370	$12,370	$12,370	$12,370	$12,370
1706030614	$7,271	$7,271	$7,271	$7,271	$7,271	$7,271
1706030615	$8,171	$8,171	$8,171	$8,171	$8,171	$8,171
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$12,148	$12,148	$12,148	$12,148	$12,148	$12,148
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$12,429	$12,429	$12,429	$12,429	$12,429	$12,429
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$12,535	$12,535	$12,535	$12,535	$12,535	$12,535
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$12,167	$12,167	$12,167	$12,167	$12,167	$12,167
1707010101	$86,654	$86,654	$86,654	$86,654	$86,654	$86,654
1707010102	$7,246	$7,246	$7,246	$7,246	$7,246	$7,246
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707010114	$21,267	$21,267	$21,267	$21,267	$21,267	$21,267
1707010501	$37,267	$37,267	$37,267	$37,267	$37,267	$37,267
1707010504	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707010512	$28,517	$28,517	$28,517	$28,517	$28,517	$28,517
1707010513	$29,951	$29,951	$29,951	$29,951	$29,951	$29,951
1708000107	$87,393	$87,393	$87,393	$87,393	$87,393	$87,393
Lower Columbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$18,324	$18,324	$18,324	$18,324	$18,324	$18,324
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$24,911	$24,911	$24,911	$24,911	$24,911	$24,911
1707010511	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010512	$28,517	$28,517	$28,517	$28,517	$28,517	$28,517
1707010513	$29,951	$29,951	$29,951	$29,951	$29,951	$29,951
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$14,447	$14,447	$14,447	$14,447	$14,447	$14,447
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$26,078	$26,078	$26,078	$26,078	$26,078	$26,078
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$36,326	$36,326	$36,326	$36,326	$36,326	$36,326
1708000107	$87,393	$87,393	$87,393	$87,393	$87,393	$87,393
1708000108	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1708000109	$183,150	$183,150	$183,150	$183,150	$183,150	$183,150
1708000205	$253,240	$253,240	$253,240	$253,240	$253,240	$253,240
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$21,549	$21,549	$21,549	$21,549	$21,549	$21,549
1708000401	$12,336	$12,336	$12,336	$12,336	$12,336	$12,336
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$7,171	$7,171	$7,171	$7,171	$7,171	$7,171
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$24,518	$24,518	$24,518	$24,518	$24,518	$24,518
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$64,618	$64,618	$64,618	$64,618	$64,618	$64,618
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$109,363	$109,363	$109,363	$109,363	$109,363	$109,363
1708000508	$0	$0	$0	$0	$0	$0
1709000704	$62,671	$62,671	$62,671	$62,671	$62,671	$62,671
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$27,250	$27,250	$27,250	$27,250	$27,250	$27,250
1709001201	$72,888	$72,888	$72,888	$72,888	$72,888	$72,888
1709001202	$19,792	$19,792	$19,792	$19,792	$19,792	$19,792
1709001203	$225,841	$225,841	$225,841	$225,841	$225,841	$225,841
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Upper Willamette River steelhead ESU						

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000303	$12,355	$12,355	$12,355	$12,355	$12,355	$12,355
1709000304	$13,308	$13,308	$13,308	$13,308	$13,308	$13,308
1709000306	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$0	$0	$0	$0	$0	$0
1709000601	$37,736	$37,736	$37,736	$37,736	$37,736	$37,736
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1709000702	$19,382	$19,382	$19,382	$19,382	$19,382	$19,382
1709000703	$45,592	$45,592	$45,592	$45,592	$45,592	$45,592
1709000704	$62,671	$62,671	$62,671	$62,671	$62,671	$62,671
1709000801	$12,362	$12,362	$12,362	$12,362	$12,362	$12,362
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$7,256	$7,256	$7,256	$7,256	$7,256	$7,256
1709001001	$26,646	$26,646	$26,646	$26,646	$26,646	$26,646
1709001002	$14,520	$14,520	$14,520	$14,520	$14,520	$14,520
1709001003	$13,136	$13,136	$13,136	$13,136	$13,136	$13,136
1709001004	$78,304	$78,304	$78,304	$78,304	$78,304	$78,304
1709001005	$43,137	$43,137	$43,137	$43,137	$43,137	$43,137
1709001201	$72,888	$72,888	$72,888	$72,888	$72,888	$72,888
1709001202	$19,792	$19,792	$19,792	$19,792	$19,792	$19,792
1709001203	$225,841	$225,841	$225,841	$225,841	$225,841	$225,841
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Middle Columbia River steelhead ESU						

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$0	$0	$0	$0	$0	$0
1703000101	$12,429	$12,429	$12,429	$12,429	$12,429	$12,429
1703000102	$0	$0	$0	$0	$0	$0
1703000103	$12,630	$12,630	$12,630	$12,630	$12,630	$12,630
1703000104	$7,268	$7,268	$7,268	$7,268	$7,268	$7,268
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$0	$0	$0	$0
1703000203	$126,727	$126,727	$126,727	$126,727	$126,727	$126,727
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$45,897	$45,897	$45,897	$45,897	$45,897	$45,897
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$31,580	$31,580	$31,580	$31,580	$31,580	$31,580
1703000305	$71,601	$71,601	$71,601	$71,601	$71,601	$71,601
1703000306	$0	$0	$0	$0	$0	$0
1703000307	$24,312	$24,312	$24,312	$24,312	$24,312	$24,312
1707010101	$86,654	$86,654	$86,654	$86,654	$86,654	$86,654
1707010102	$7,246	$7,246	$7,246	$7,246	$7,246	$7,246
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$21,267	$21,267	$21,267	$21,267	$21,267	$21,267
1707010201	$18,345	$18,345	$18,345	$18,345	$18,345	$18,345
1707010202	$0	$0	$0	$0	$0	$0
1707010203	$0	$0	$0	$0	$0	$0
1707010204	$15,438	$15,438	$15,438	$15,438	$15,438	$15,438
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$12,362	$12,362	$12,362	$12,362	$12,362	$12,362
1707010209	$18,266	$18,266	$18,266	$18,266	$18,266	$18,266
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$21,514	$21,514	$21,514	$21,514	$21,514	$21,514
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$0	$0	$0	$0	$0	$0
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$12,224	$12,224	$12,224	$12,224	$12,224	$12,224
1707010306	$13,156	$13,156	$13,156	$13,156	$13,156	$13,156
1707010307	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$20,459	$20,459	$20,459	$20,459	$20,459	$20,459
1707010310	$18,306	$18,306	$18,306	$18,306	$18,306	$18,306
1707010313	$32,094	$32,094	$32,094	$32,094	$32,094	$32,094
1707010501	$37,267	$37,267	$37,267	$37,267	$37,267	$37,267
1707010502	$0	$0	$0	$0	$0	$0
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$28,517	$28,517	$28,517	$28,517	$28,517	$28,517
1707010513	$29,951	$29,951	$29,951	$29,951	$29,951	$29,951
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$0	$0	$0	$0	$0	$0
1707010603	$0	$0	$0	$0	$0	$0
1707010604	$0	$0	$0	$0	$0	$0
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$0	$0	$0	$0
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$13,016	$13,016	$13,016	$13,016	$13,016	$13,016
1707020111	$0	$0	$0	$0	$0	$0
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$0	$0	$0	$0	$0	$0
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$0	$0	$0	$0	$0	$0
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$0	$0	$0	$0	$0	$0

Table C-7 Annual Potential Transportation Project Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$0	$0	$0	$0	$0	$0
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$7,170	$7,170	$7,170	$7,170	$7,170	$7,170
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$14,340	$14,340	$14,340	$14,340	$14,340	$14,340
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$0	$0	$0	$0
1707020411	$0	$0	$0	$0	$0	$0
1707020412	$12,271	$12,271	$12,271	$12,271	$12,271	$12,271
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$7,281	$7,281	$7,281	$7,281	$7,281	$7,281
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$12,532	$12,532	$12,532	$12,532	$12,532	$12,532
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$0	$0	$0	$0
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$0	$0	$0	$0	$0	$0
1707030611	$0	$0	$0	$0	$0	$0
1707030612	$0	$0	$0	$0	$0	$0
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$18,632	$18,632	$18,632	$18,632	$18,632	$18,632
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$87,393	$87,393	$87,393	$87,393	$87,393	$87,393
Lower Columbia	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1711000202	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
1711000204	$100,000	$100,000	$101,000	$101,000	$102,000	$102,000
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$0	$0	$0	$0
1711000403	$0	$0	$0	$0	$0	$0
1711000404	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711000405	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$0	$0	$0	$0	$0	$0
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$0	$0	$0	$0	$0	$0
1711000508	$0	$0	$0	$0	$0	$0
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$0	$0	$0	$0
1711000604	$0	$0	$0	$0	$0	$0
1711000701	$0	$0	$0	$0	$0	$0
1711000702	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1711000801	$0	$0	$0	$0	$0	$0
1711000802	$0	$0	$0	$0	$0	$0
1711000803	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$0	$0	$0	$0	$0	$0
1711000903	$0	$0	$0	$0	$0	$0
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711001003	$0	$0	$0	$0	$0	$0
1711001004	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711001101	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1711001102	$150,000	$150,000	$151,500	$151,500	$153,000	$153,000
1711001201	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711001202	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711001203	$325,000	$325,000	$328,250	$328,250	$331,500	$331,500
1711001204	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711001303	$150,000	$150,000	$151,500	$151,500	$153,000	$153,000
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$0	$0	$0	$0	$0	$0
1711001404	$0	$0	$0	$0	$0	$0
1711001405	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711001502	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711001503	$0	$0	$0	$0	$0	$0
1711001601	$0	$0	$0	$0	$0	$0
1711001602	$0	$0	$0	$0	$0	$0
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$0	$0	$0	$0
1711001900	$0	$0	$0	$0	$0	$0
1711001901	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1711001902	$0	$0	$0	$0	$0	$0
1711001904	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1711002003	$0	$0	$0	$0	$0	$0
1711002004	$0	$0	$0	$0	$0	$0
1711002007	$0	$0	$0	$0	$0	$0
N01	$0	$0	$0	$0	$0	$0
N02	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
N03	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
N04	$0	$0	$0	$0	$0	$0
N05	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
N06	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
N07	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
N08	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
N09	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
N13	$0	$0	$0	$0	$0	$0
N14	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
N19	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$100,000	$100,000	$101,000	$101,000	$102,000	$102,000
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1708000302	$0	$0	$0	$0	$0	$0
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
1708000601	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709001202	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1709001203	$66,750	$66,750	$67,418	$67,418	$68,085	$68,085
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$0	$0	$0	$0
1709000201	$0	$0	$0	$0	$0	$0
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709000301	$0	$0	$0	$0	$0	$0
1709000302	$66,750	$66,750	$67,418	$67,418	$68,085	$68,085
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$100,125	$100,125	$101,126	$101,126	$102,128	$102,128
1709000305	$100,125	$100,125	$101,126	$101,126	$102,128	$102,128
1709000306	$0	$0	$0	$0	$0	$0
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$0	$0	$0	$0	$0	$0
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$66,750	$66,750	$67,418	$67,418	$68,085	$68,085
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709000704	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709001202	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1709001203	$66,750	$66,750	$67,418	$67,418	$68,085	$68,085
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$0	$0	$0	$0
1702000807	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1702001003	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702001004	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$0	$0	$0	$0
1702001604	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010504	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001807	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$0	$0	$0	$0
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
N18	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
N19	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
Columbia River chum salmon ESU						
1707010509	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000109	$100,000	$100,000	$101,000	$101,000	$102,000	$102,000
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
1708000602	$0	$0	$0	$0	$0	$0
1708000603	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702000601	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702000602	$0	$0	$0	$0	$0	$0
1702000603	$0	$0	$0	$0	$0	$0
1702000604	$0	$0	$0	$0	$0	$0
1702000605	$0	$0	$0	$0	$0	$0
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$0	$0	$0	$0
1702000807	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1702001003	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702001004	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$0	$0	$0	$0
1702001204	$0	$0	$0	$0	$0	$0
1702001509	$0	$0	$0	$0	$0	$0
1702001604	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010504	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$0	$0	$0	$0	$0	$0
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$0	$0	$0	$0	$0	$0
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$0	$0	$0	$0	$0	$0
1706010406	$0	$0	$0	$0	$0	$0
1706010407	$0	$0	$0	$0	$0	$0
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$0	$0	$0	$0	$0	$0
1706010410	$0	$0	$0	$0	$0	$0
1706010411	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1706010501	$0	$0	$0	$0	$0	$0
1706010502	$0	$0	$0	$0	$0	$0
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$0	$0	$0	$0	$0	$0
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$0	$0	$0	$0	$0	$0
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$0	$0	$0	$0	$0	$0
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$40,000	$40,000	$40,400	$40,400	$40,800	$40,800
1706020104	$0	$0	$0	$0	$0	$0
1706020105	$0	$0	$0	$0	$0	$0
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$0	$0	$0	$0	$0	$0
1706020113	$140,000	$140,000	$141,400	$141,400	$142,800	$142,800
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$60,000	$60,000	$60,600	$60,600	$61,200	$61,200
1706020117	$0	$0	$0	$0	$0	$0
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$0	$0	$0	$0	$0	$0
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$0	$0	$0	$0	$0	$0
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$0	$0	$0	$0	$0	$0
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0
1706020132	$0	$0	$0	$0	$0	$0
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$60,000	$60,000	$60,600	$60,600	$61,200	$61,200
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$0	$0	$0	$0	$0	$0
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$0	$0	$0	$0
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$0	$0	$0	$0	$0	$0
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$0	$0	$0	$0	$0	$0
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$0	$0	$0	$0	$0	$0
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$0	$0	$0	$0	$0	$0
1706020912	$0	$0	$0	$0	$0	$0
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$0	$0	$0	$0	$0	$0
1706021002	$0	$0	$0	$0	$0	$0
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$0	$0	$0	$0	$0	$0
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$0	$0	$0	$0	$0	$0
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$0	$0	$0	$0	$0	$0
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030607	$0	$0	$0	$0	$0	$0
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$0	$0	$0	$0	$0	$0
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$0	$0	$0	$0
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010504	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$100,000	$100,000	$101,000	$101,000	$102,000	$102,000
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$75,000	$75,000	$75,750	$75,750	$76,500	$76,500
1709000704	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709001202	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1709001203	$66,750	$66,750	$67,418	$67,418	$68,085	$68,085
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River steelhead ESU						

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$100,125	$100,125	$101,126	$101,126	$102,128	$102,128
1709000306	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$66,750	$66,750	$67,418	$67,418	$68,085	$68,085
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709000704	$0	$0	$0	$0	$0	$0
1709000801	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001001	$0	$0	$0	$0	$0	$0
1709001002	$0	$0	$0	$0	$0	$0
1709001003	$0	$0	$0	$0	$0	$0
1709001004	$0	$0	$0	$0	$0	$0
1709001005	$66,750	$66,750	$67,418	$67,418	$68,085	$68,085
1709001201	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1709001202	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1709001203	$66,750	$66,750	$67,418	$67,418	$68,085	$68,085
Lower Columbia	$0	$0	$0	$0	$0	$0
Middle Columbia River steelhead ESU						

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$0	$0	$0	$0	$0	$0
1703000101	$0	$0	$0	$0	$0	$0
1703000102	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1703000103	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1703000104	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$0	$0	$0	$0
1703000203	$0	$0	$0	$0	$0	$0
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$0	$0	$0	$0	$0	$0
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1703000307	$0	$0	$0	$0	$0	$0
1707010101	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1707010102	$0	$0	$0	$0	$0	$0
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$50,000	$50,000	$50,500	$50,500	$51,000	$51,000
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010201	$0	$0	$0	$0	$0	$0
1707010202	$0	$0	$0	$0	$0	$0
1707010203	$0	$0	$0	$0	$0	$0
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$0	$0	$0	$0	$0	$0
1707010209	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010304	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010305	$0	$0	$0	$0	$0	$0
1707010306	$0	$0	$0	$0	$0	$0
1707010307	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010501	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010502	$0	$0	$0	$0	$0	$0
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$0	$0	$0	$0	$0	$0
1707010603	$25,000	$25,000	$25,250	$25,250	$25,500	$25,500
1707010604	$0	$0	$0	$0	$0	$0
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$0	$0	$0	$0
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$0	$0	$0	$0	$0	$0
1707020111	$0	$0	$0	$0	$0	$0
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$0	$0	$0	$0	$0	$0
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$33,375	$33,375	$33,709	$33,709	$34,043	$34,043
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$0	$0	$0	$0	$0	$0

Table C-8 Annual Potential Utility Line Project Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$0	$0	$0	$0	$0	$0
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$0	$0	$0	$0	$0	$0
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$0	$0	$0	$0
1707020411	$60,000	$60,000	$60,600	$60,600	$61,200	$61,200
1707020412	$0	$0	$0	$0	$0	$0
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$0	$0	$0	$0	$0	$0
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$0	$0	$0	$0
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$0	$0	$0	$0	$0	$0
1707030611	$0	$0	$0	$0	$0	$0
1707030612	$0	$0	$0	$0	$0	$0
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$243,750	$243,750	$531,375	$531,375	$819,000	$819,000
1711000202	$150,000	$150,000	$327,000	$327,000	$504,000	$504,000
1711000204	$143,750	$143,750	$313,375	$313,375	$483,000	$483,000
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$0	$0	$0	$0
1711000403	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1711000404	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1711000405	$193,750	$193,750	$422,375	$422,375	$651,000	$651,000
1711000504	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1711000505	$0	$0	$0	$0	$0	$0
1711000506	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1711000507	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1711000508	$0	$0	$0	$0	$0	$0
1711000601	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$0	$0	$0	$0
1711000604	$0	$0	$0	$0	$0	$0
1711000701	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1711000702	$131,250	$131,250	$286,125	$286,125	$441,000	$441,000
1711000801	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1711000802	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1711000803	$137,500	$137,500	$299,750	$299,750	$462,000	$462,000
1711000901	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000
1711000902	$0	$0	$0	$0	$0	$0
1711000903	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1711001003	$75,000	$75,000	$163,500	$163,500	$252,000	$252,000
1711001004	$75,000	$75,000	$163,500	$163,500	$252,000	$252,000
1711001101	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000
1711001102	$268,750	$268,750	$585,875	$585,875	$903,000	$903,000
1711001201	$250,000	$250,000	$545,000	$545,000	$840,000	$840,000
1711001202	$825,000	$825,000	$1,798,500	$1,798,500	$2,772,000	$2,772,000
1711001203	$5,918,750	$5,918,750	$12,902,875	$12,902,875	$19,887,000	$19,887,000
1711001204	$487,500	$487,500	$1,062,750	$1,062,750	$1,638,000	$1,638,000
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1711001303	$618,750	$618,750	$1,348,875	$1,348,875	$2,079,000	$2,079,000
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$231,250	$231,250	$504,125	$504,125	$777,000	$777,000

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1711001404	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1711001405	$137,500	$137,500	$299,750	$299,750	$462,000	$462,000
1711001502	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1711001503	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1711001601	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1711001602	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1711001701	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1711001802	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001808	$93,750	$93,750	$204,375	$204,375	$315,000	$315,000
1711001900	$218,750	$218,750	$476,875	$476,875	$735,000	$735,000
1711001901	$325,000	$325,000	$708,500	$708,500	$1,092,000	$1,092,000
1711001902	$112,500	$112,500	$245,250	$245,250	$378,000	$378,000
1711001904	$343,750	$343,750	$749,375	$749,375	$1,155,000	$1,155,000
1711002003	$0	$0	$0	$0	$0	$0
1711002004	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1711002007	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
N01	$325,000	$325,000	$708,500	$708,500	$1,092,000	$1,092,000
N02	$706,250	$706,250	$1,539,625	$1,539,625	$2,373,000	$2,373,000
N03	$437,500	$437,500	$953,750	$953,750	$1,470,000	$1,470,000
N04	$0	$0	$0	$0	$0	$0
N05	$156,250	$156,250	$340,625	$340,625	$525,000	$525,000
N06	$268,750	$268,750	$585,875	$585,875	$903,000	$903,000
N07	$225,000	$225,000	$490,500	$490,500	$756,000	$756,000
N08	$425,000	$425,000	$926,500	$926,500	$1,428,000	$1,428,000
N09	$431,250	$431,250	$940,125	$940,125	$1,449,000	$1,449,000
N10	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
N11	$112,500	$112,500	$245,250	$245,250	$378,000	$378,000
N12	$143,750	$143,750	$313,375	$313,375	$483,000	$483,000
N13	$112,500	$112,500	$245,250	$245,250	$378,000	$378,000
N14	$1,300,000	$1,300,000	$2,834,000	$2,834,000	$4,368,000	$4,368,000
N15	$143,750	$143,750	$313,375	$313,375	$483,000	$483,000
N16	$156,250	$156,250	$340,625	$340,625	$525,000	$525,000
N17	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
N18	$462,500	$462,500	$1,008,250	$1,008,250	$1,554,000	$1,554,000
N19	$275,000	$275,000	$599,500	$599,500	$924,000	$924,000

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$81,250	$81,250	$177,125	$177,125	$273,000	$273,000
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1708000107	$218,750	$218,750	$476,875	$476,875	$735,000	$735,000
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$831,250	$831,250	$1,812,125	$1,812,125	$2,793,000	$2,793,000
1708000205	$118,750	$118,750	$258,875	$258,875	$399,000	$399,000
1708000206	$75,000	$75,000	$163,500	$163,500	$252,000	$252,000
1708000301	$187,500	$187,500	$408,750	$408,750	$630,000	$630,000
1708000302	$0	$0	$0	$0	$0	$0
1708000303	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1708000304	$656,250	$656,250	$1,430,625	$1,430,625	$2,205,000	$2,205,000
1708000305	$112,500	$112,500	$245,250	$245,250	$378,000	$378,000
1708000306	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1708000403	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1708000501	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$62,500	$62,500	$136,250	$136,250	$210,000	$210,000
1708000508	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1708000601	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1708000603	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1709000704	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$56,250	$56,250	$122,625	$122,625	$189,000	$189,000
1709001203	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
Lower Co-lumbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$0	$0	$0	$0
1709000201	$0	$0	$0	$0	$0	$0
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$0	$0	$0	$0	$0	$0
1709000301	$0	$0	$0	$0	$0	$0
1709000302	$0	$0	$0	$0	$0	$0
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000305	$0	$0	$0	$0	$0	$0
1709000306	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$0	$0	$0	$0	$0	$0
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709000704	$0	$0	$0	$0	$0	$0
1709000804	$16,688	$16,688	$36,379	$36,379	$56,070	$56,070
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$56,250	$56,250	$122,625	$122,625	$189,000	$189,000
1709001203	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
Lower Columbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$81,250	$81,250	$177,125	$177,125	$273,000	$273,000
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702000805	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1702000806	$131,250	$131,250	$286,125	$286,125	$441,000	$441,000
1702000807	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1702001001	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702001002	$712,500	$712,500	$1,553,250	$1,553,250	$2,394,000	$2,394,000
1702001003	$81,250	$81,250	$177,125	$177,125	$273,000	$273,000
1702001004	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1702001101	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702001104	$162,500	$162,500	$354,250	$354,250	$546,000	$546,000
1702001105	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000
1702001604	$50,000	$50,000	$109,000	$109,000	$168,000	$168,000
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$125,000	$125,000	$272,500	$272,500	$420,000	$420,000
1707010101	$131,250	$131,250	$286,125	$286,125	$441,000	$441,000
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1707010504	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$218,750	$218,750	$476,875	$476,875	$735,000	$735,000
Lower Co-lumbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000
Hood Canal Summer-run chum salmon ESU						
1711001701	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1711001802	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001807	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1711001808	$93,750	$93,750	$204,375	$204,375	$315,000	$315,000
1711001908	$50,000	$50,000	$109,000	$109,000	$168,000	$168,000
1711002001	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1711002002	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1711002003	$0	$0	$0	$0	$0	$0
N15	$143,750	$143,750	$313,375	$313,375	$483,000	$483,000
N16	$156,250	$156,250	$340,625	$340,625	$525,000	$525,000
N17	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
N18	$462,500	$462,500	$1,008,250	$1,008,250	$1,554,000	$1,554,000
N19	$275,000	$275,000	$599,500	$599,500	$924,000	$924,000
Columbia River chum salmon ESU						
1707010509	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000106	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1708000107	$218,750	$218,750	$476,875	$476,875	$735,000	$735,000
1708000109	$831,250	$831,250	$1,812,125	$1,812,125	$2,793,000	$2,793,000
1708000205	$118,750	$118,750	$258,875	$258,875	$399,000	$399,000
1708000206	$75,000	$75,000	$163,500	$163,500	$252,000	$252,000
1708000301	$187,500	$187,500	$408,750	$408,750	$630,000	$630,000
1708000304	$656,250	$656,250	$1,430,625	$1,430,625	$2,205,000	$2,205,000
1708000305	$112,500	$112,500	$245,250	$245,250	$378,000	$378,000
1708000503	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$62,500	$62,500	$136,250	$136,250	$210,000	$210,000
1708000508	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1708000602	$0	$0	$0	$0	$0	$0
1708000603	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
Lower Columbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1702000504	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702000505	$81,250	$81,250	$177,125	$177,125	$273,000	$273,000
1702000601	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000
1702000602	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702000603	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702000604	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1702000605	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702000805	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1702000806	$131,250	$131,250	$286,125	$286,125	$441,000	$441,000
1702000807	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702001002	$712,500	$712,500	$1,553,250	$1,553,250	$2,394,000	$2,394,000
1702001003	$81,250	$81,250	$177,125	$177,125	$273,000	$273,000
1702001004	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1702001101	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702001104	$162,500	$162,500	$354,250	$354,250	$546,000	$546,000
1702001105	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000
1702001204	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1702001509	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1702001604	$50,000	$50,000	$109,000	$109,000	$168,000	$168,000
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$125,000	$125,000	$272,500	$272,500	$420,000	$420,000
1707010101	$131,250	$131,250	$286,125	$286,125	$441,000	$441,000
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1707010504	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$218,750	$218,750	$476,875	$476,875	$735,000	$735,000
Lower Columbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000
Snake River Basin steelhead ESU						
1702001606	$125,000	$125,000	$272,500	$272,500	$420,000	$420,000
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$0	$0	$0	$0	$0	$0
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$75,000	$75,000	$163,500	$163,500	$252,000	$252,000
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$0	$0	$0	$0	$0	$0
1706010406	$0	$0	$0	$0	$0	$0
1706010407	$0	$0	$0	$0	$0	$0
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1706010410	$0	$0	$0	$0	$0	$0
1706010411	$0	$0	$0	$0	$0	$0
1706010501	$0	$0	$0	$0	$0	$0
1706010502	$0	$0	$0	$0	$0	$0
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$0	$0	$0	$0	$0	$0
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$0	$0	$0	$0	$0	$0
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$93,750	$93,750	$204,375	$204,375	$315,000	$315,000
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$0	$0	$0	$0	$0	$0
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000
1706011003	$56,250	$56,250	$122,625	$122,625	$189,000	$189,000
1706011004	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$70,000	$70,000	$152,600	$152,600	$235,200	$235,200
1706020104	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706020105	$105,000	$105,000	$228,900	$228,900	$352,800	$352,800
1706020107	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706020108	$40,000	$40,000	$87,200	$87,200	$134,400	$134,400
1706020109	$50,000	$50,000	$109,000	$109,000	$168,000	$168,000
1706020110	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706020113	$30,000	$30,000	$65,400	$65,400	$100,800	$100,800
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$45,000	$45,000	$98,100	$98,100	$151,200	$151,200
1706020117	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1706020118	$30,000	$30,000	$65,400	$65,400	$100,800	$100,800
1706020119	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706020120	$45,000	$45,000	$98,100	$98,100	$151,200	$151,200
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$20,000	$20,000	$43,600	$43,600	$67,200	$67,200
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020125	$20,000	$20,000	$43,600	$43,600	$67,200	$67,200
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$40,000	$40,000	$87,200	$87,200	$134,400	$134,400
1706020130	$0	$0	$0	$0	$0	$0
1706020132	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020201	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$60,000	$60,000	$130,800	$130,800	$201,600	$201,600
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$0	$0	$0	$0	$0	$0
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$0	$0	$0	$0
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$35,000	$35,000	$76,300	$76,300	$117,600	$117,600
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$0	$0	$0	$0	$0	$0
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$20,000	$20,000	$43,600	$43,600	$67,200	$67,200
1706020701	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020805	$0	$0	$0	$0	$0	$0
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020808	$35,000	$35,000	$76,300	$76,300	$117,600	$117,600
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1706020908	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706020912	$30,000	$30,000	$65,400	$65,400	$100,800	$100,800
1706020913	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$90,000	$90,000	$196,200	$196,200	$302,400	$302,400
1706021002	$30,000	$30,000	$65,400	$65,400	$100,800	$100,800
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1706030304	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1706030308	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706030502	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0
1706030505	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$20,000	$20,000	$43,600	$43,600	$67,200	$67,200
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$20,000	$20,000	$43,600	$43,600	$67,200	$67,200
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$85,000	$85,000	$185,300	$185,300	$285,600	$285,600
1706030602	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706030603	$30,000	$30,000	$65,400	$65,400	$100,800	$100,800
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1706030607	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706030608	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706030609	$30,000	$30,000	$65,400	$65,400	$100,800	$100,800
1706030610	$30,000	$30,000	$65,400	$65,400	$100,800	$100,800
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$35,000	$35,000	$76,300	$76,300	$117,600	$117,600
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$30,000	$30,000	$65,400	$65,400	$100,800	$100,800
1706030615	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706030618	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$35,000	$35,000	$76,300	$76,300	$117,600	$117,600
1706030621	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1706030622	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1706030623	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706030629	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1706030630	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1706030631	$15,000	$15,000	$32,700	$32,700	$50,400	$50,400
1707010101	$131,250	$131,250	$286,125	$286,125	$441,000	$441,000
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1707010504	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$218,750	$218,750	$476,875	$476,875	$735,000	$735,000
Lower Columbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000
Lower Columbia River steelhead ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1708000107	$218,750	$218,750	$476,875	$476,875	$735,000	$735,000
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$831,250	$831,250	$1,812,125	$1,812,125	$2,793,000	$2,793,000
1708000205	$118,750	$118,750	$258,875	$258,875	$399,000	$399,000
1708000206	$75,000	$75,000	$163,500	$163,500	$252,000	$252,000
1708000301	$187,500	$187,500	$408,750	$408,750	$630,000	$630,000
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1708000403	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1708000501	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$68,750	$68,750	$149,875	$149,875	$231,000	$231,000
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$62,500	$62,500	$136,250	$136,250	$210,000	$210,000
1708000508	$37,500	$37,500	$81,750	$81,750	$126,000	$126,000
1709000704	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$56,250	$56,250	$122,625	$122,625	$189,000	$189,000
1709001203	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
Lower Columbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000
Upper Willamette River steelhead ESU						

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000306	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$0	$0	$0	$0
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709000704	$0	$0	$0	$0	$0	$0
1709000801	$0	$0	$0	$0	$0	$0
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$16,688	$16,688	$36,379	$36,379	$56,070	$56,070
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001001	$0	$0	$0	$0	$0	$0
1709001002	$0	$0	$0	$0	$0	$0
1709001003	$0	$0	$0	$0	$0	$0
1709001004	$0	$0	$0	$0	$0	$0
1709001005	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$56,250	$56,250	$122,625	$122,625	$189,000	$189,000
1709001203	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
Lower Columbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000
Middle Columbia River steelhead ESU						

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$125,000	$125,000	$272,500	$272,500	$420,000	$420,000
1703000101	$93,750	$93,750	$204,375	$204,375	$315,000	$315,000
1703000102	$43,750	$43,750	$95,375	$95,375	$147,000	$147,000
1703000103	$256,250	$256,250	$558,625	$558,625	$861,000	$861,000
1703000104	$93,750	$93,750	$204,375	$204,375	$315,000	$315,000
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$0	$0	$0	$0
1703000203	$93,750	$93,750	$204,375	$204,375	$315,000	$315,000
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1703000303	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1703000304	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1703000307	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1707010101	$131,250	$131,250	$286,125	$286,125	$441,000	$441,000
1707010102	$0	$0	$0	$0	$0	$0
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010201	$0	$0	$0	$0	$0	$0
1707010202	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1707010203	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1707010204	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$18,750	$18,750	$40,875	$40,875	$63,000	$63,000
1707010209	$0	$0	$0	$0	$0	$0
1707010210	$6,250	$6,250	$13,625	$13,625	$21,000	$21,000
1707010211	$25,000	$25,000	$54,500	$54,500	$84,000	$84,000
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$16,688	$16,688	$36,379	$36,379	$56,070	$56,070
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$0	$0	$0	$0	$0	$0
1707010306	$0	$0	$0	$0	$0	$0
1707010307	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$0	$0	$0	$0	$0	$0
1707010501	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1707010502	$16,688	$16,688	$36,379	$36,379	$56,070	$56,070
1707010503	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1707010504	$31,250	$31,250	$68,125	$68,125	$105,000	$105,000
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$81,250	$81,250	$177,125	$177,125	$273,000	$273,000
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$0	$0	$0	$0	$0	$0
1707010603	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1707010604	$12,500	$12,500	$27,250	$27,250	$42,000	$42,000
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$0	$0	$0	$0
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$0	$0	$0	$0	$0	$0
1707020111	$0	$0	$0	$0	$0	$0
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$0	$0	$0	$0	$0	$0
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$0	$0	$0	$0	$0	$0
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$5,000	$5,000	$10,900	$10,900	$16,800	$16,800
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$0	$0	$0	$0	$0	$0

Table C-9 Annual Potential Instream Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$8,344	$8,344	$18,189	$18,189	$28,035	$28,035
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$10,000	$10,000	$21,800	$21,800	$33,600	$33,600
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$0	$0	$0	$0	$0	$0
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$0	$0	$0	$0
1707020411	$130,000	$130,000	$283,400	$283,400	$436,800	$436,800
1707020412	$50,000	$50,000	$109,000	$109,000	$168,000	$168,000
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$0	$0	$0	$0	$0	$0
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$0	$0	$0	$0
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$0	$0	$0	$0	$0	$0
1707030611	$0	$0	$0	$0	$0	$0
1707030612	$0	$0	$0	$0	$0	$0
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$218,750	$218,750	$476,875	$476,875	$735,000	$735,000
Lower Co-lumbia	$168,750	$168,750	$367,875	$367,875	$567,000	$567,000

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$0	$0	$0	$0	$0	$0
1711000202	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711000204	$0	$0	$0	$0	$0	$0
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$0	$0	$0	$0
1711000403	$0	$0	$0	$0	$0	$0
1711000404	$0	$0	$0	$0	$0	$0
1711000405	$0	$0	$0	$0	$0	$0
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$0	$0	$0	$0	$0	$0
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$0	$0	$0	$0	$0	$0
1711000508	$0	$0	$0	$0	$0	$0
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$0	$0	$0	$0
1711000604	$0	$0	$0	$0	$0	$0
1711000701	$0	$0	$0	$0	$0	$0
1711000702	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711000801	$0	$0	$0	$0	$0	$0
1711000802	$0	$0	$0	$0	$0	$0
1711000803	$0	$0	$0	$0	$0	$0
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$0	$0	$0	$0	$0	$0
1711000903	$0	$0	$0	$0	$0	$0
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$0	$0	$0	$0	$0	$0
1711001003	$0	$0	$0	$0	$0	$0
1711001004	$0	$0	$0	$0	$0	$0
1711001101	$0	$0	$0	$0	$0	$0
1711001102	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
1711001201	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711001202	$0	$0	$0	$0	$0	$0
1711001203	$664,000	$664,000	$1,642,000	$1,642,000	$2,620,000	$2,620,000
1711001204	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$0	$0	$0	$0	$0	$0
1711001303	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$0	$0	$0	$0	$0	$0
1711001404	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711001405	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
1711001502	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711001503	$0	$0	$0	$0	$0	$0
1711001601	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711001602	$0	$0	$0	$0	$0	$0
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001808	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711001900	$0	$0	$0	$0	$0	$0
1711001901	$498,000	$498,000	$1,231,500	$1,231,500	$1,965,000	$1,965,000
1711001902	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711001904	$332,000	$332,000	$821,000	$821,000	$1,310,000	$1,310,000
1711002003	$0	$0	$0	$0	$0	$0
1711002004	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711002007	$0	$0	$0	$0	$0	$0
N01	$332,000	$332,000	$821,000	$821,000	$1,310,000	$1,310,000
N02	$0	$0	$0	$0	$0	$0
N03	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
N04	$0	$0	$0	$0	$0	$0
N05	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
N06	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
N07	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
N08	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
N09	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
N13	$0	$0	$0	$0	$0	$0
N14	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
N15	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
N19	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$664,000	$664,000	$1,642,000	$1,642,000	$2,620,000	$2,620,000
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1708000301	$0	$0	$0	$0	$0	$0
1708000302	$0	$0	$0	$0	$0	$0
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1708000601	$221,610	$221,610	$548,018	$548,018	$874,425	$874,425
1708000602	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001202	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001203	$997,245	$997,245	$2,466,079	$2,466,079	$3,934,913	$3,934,913
Lower Co-lumbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$0	$0	$0	$0
1709000201	$0	$0	$0	$0	$0	$0
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$0	$0	$0	$0	$0	$0
1709000301	$0	$0	$0	$0	$0	$0
1709000302	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000305	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$0	$0	$0	$0	$0	$0
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$221,610	$221,610	$548,018	$548,018	$874,425	$874,425
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$221,610	$221,610	$548,018	$548,018	$874,425	$874,425
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001202	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001203	$997,245	$997,245	$2,466,079	$2,466,079	$3,934,913	$3,934,913
Lower Columbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$0	$0	$0	$0
1702000807	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1702001105	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1707010501	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200
Hood Canal Summer-run chum salmon ESU						
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001807	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711001808	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711001908	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$0	$0	$0	$0
N15	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
N18	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
N19	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
Columbia River chum salmon ESU						
1707010509	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000109	$664,000	$664,000	$1,642,000	$1,642,000	$2,620,000	$2,620,000
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1708000301	$0	$0	$0	$0	$0	$0
1708000304	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1708000602	$0	$0	$0	$0	$0	$0
1708000603	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$0	$0	$0	$0	$0	$0
1702000601	$0	$0	$0	$0	$0	$0
1702000602	$0	$0	$0	$0	$0	$0
1702000603	$0	$0	$0	$0	$0	$0
1702000604	$0	$0	$0	$0	$0	$0
1702000605	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$0	$0	$0	$0
1702000807	$0	$0	$0	$0	$0	$0
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1702001105	$0	$0	$0	$0	$0	$0
1702001204	$0	$0	$0	$0	$0	$0
1702001509	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1707010501	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200
Snake River Basin steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$0	$0	$0	$0	$0	$0
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$265,600	$265,600	$656,800	$656,800	$1,048,000	$1,048,000
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$398,400	$398,400	$985,200	$985,200	$1,572,000	$1,572,000
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$0	$0	$0	$0	$0	$0
1706010406	$0	$0	$0	$0	$0	$0
1706010407	$0	$0	$0	$0	$0	$0
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$0	$0	$0	$0	$0	$0
1706010410	$0	$0	$0	$0	$0	$0
1706010411	$0	$0	$0	$0	$0	$0
1706010501	$0	$0	$0	$0	$0	$0
1706010502	$0	$0	$0	$0	$0	$0
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$0	$0	$0	$0	$0	$0
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$0	$0	$0	$0	$0	$0
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$0	$0	$0	$0	$0	$0
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$0	$0	$0	$0	$0	$0
1706020104	$0	$0	$0	$0	$0	$0
1706020105	$0	$0	$0	$0	$0	$0
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$0	$0	$0	$0	$0	$0
1706020113	$0	$0	$0	$0	$0	$0
1706020114	$199,200	$199,200	$492,600	$492,600	$786,000	$786,000
1706020115	$0	$0	$0	$0	$0	$0
1706020117	$0	$0	$0	$0	$0	$0
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$0	$0	$0	$0	$0	$0
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$0	$0	$0	$0	$0	$0
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$0	$0	$0	$0	$0	$0
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0
1706020132	$0	$0	$0	$0	$0	$0
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$0	$0	$0	$0	$0	$0
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$0	$0	$0	$0
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$0	$0	$0	$0	$0	$0
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$0	$0	$0	$0	$0	$0
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$0	$0	$0	$0	$0	$0
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$0	$0	$0	$0	$0	$0
1706020912	$0	$0	$0	$0	$0	$0
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$0	$0	$0	$0	$0	$0
1706021002	$0	$0	$0	$0	$0	$0
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$0	$0	$0	$0	$0	$0
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$0	$0	$0	$0	$0	$0
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$0	$0	$0	$0	$0	$0
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030607	$0	$0	$0	$0	$0	$0
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$0	$0	$0	$0	$0	$0
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$132,800	$132,800	$328,400	$328,400	$524,000	$524,000
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$0	$0	$0	$0
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1707010501	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1707010504	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200
Lower Columbia River steelhead ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$0	$0	$0	$0
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$0	$0	$0	$0
1708000109	$664,000	$664,000	$1,642,000	$1,642,000	$2,620,000	$2,620,000
1708000205	$0	$0	$0	$0	$0	$0
1708000206	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1708000301	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1709000704	$0	$0	$0	$0	$0	$0
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$0	$0	$0	$0
1709001106	$0	$0	$0	$0	$0	$0
1709001201	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001202	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001203	$997,245	$997,245	$2,466,079	$2,466,079	$3,934,913	$3,934,913
Lower Co-lumbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200
Upper Willamette River steelhead ESU						

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$0	$0	$0	$0	$0	$0
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$221,610	$221,610	$548,018	$548,018	$874,425	$874,425
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$0	$0	$0	$0
1709000801	$0	$0	$0	$0	$0	$0
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$221,610	$221,610	$548,018	$548,018	$874,425	$874,425
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$0	$0	$0	$0
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$0	$0	$0	$0
1709001001	$0	$0	$0	$0	$0	$0
1709001002	$0	$0	$0	$0	$0	$0
1709001003	$0	$0	$0	$0	$0	$0
1709001004	$0	$0	$0	$0	$0	$0
1709001005	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001201	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001202	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1709001203	$997,245	$997,245	$2,466,079	$2,466,079	$3,934,913	$3,934,913
Lower Co-lumbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200
Middle Columbia River steelhead ESU						

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$0	$0	$0	$0	$0	$0
1703000101	$0	$0	$0	$0	$0	$0
1703000102	$0	$0	$0	$0	$0	$0
1703000103	$0	$0	$0	$0	$0	$0
1703000104	$0	$0	$0	$0	$0	$0
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$0	$0	$0	$0
1703000203	$166,000	$166,000	$410,500	$410,500	$655,000	$655,000
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1703000303	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1703000304	$0	$0	$0	$0	$0	$0
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$0	$0	$0	$0	$0	$0
1703000307	$0	$0	$0	$0	$0	$0
1707010101	$249,000	$249,000	$615,750	$615,750	$982,500	$982,500
1707010102	$0	$0	$0	$0	$0	$0
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$110,805	$110,805	$274,009	$274,009	$437,213	$437,213
1707010201	$0	$0	$0	$0	$0	$0
1707010202	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1707010203	$0	$0	$0	$0	$0	$0
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$0	$0	$0	$0	$0	$0
1707010209	$0	$0	$0	$0	$0	$0
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$0	$0	$0	$0	$0	$0
1707010304	$332,415	$332,415	$822,026	$822,026	$1,311,638	$1,311,638
1707010305	$0	$0	$0	$0	$0	$0
1707010306	$221,610	$221,610	$548,018	$548,018	$874,425	$874,425
1707010307	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$0	$0	$0	$0	$0	$0
1707010501	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1707010502	$0	$0	$0	$0	$0	$0
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$0	$0	$0	$0
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$0	$0	$0	$0
1707010513	$0	$0	$0	$0	$0	$0
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$0	$0	$0	$0	$0	$0
1707010603	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1707010604	$83,000	$83,000	$205,250	$205,250	$327,500	$327,500
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$0	$0	$0	$0
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$0	$0	$0	$0	$0	$0
1707020111	$0	$0	$0	$0	$0	$0
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$132,800	$132,800	$328,400	$328,400	$524,000	$524,000
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$0	$0	$0	$0	$0	$0
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$0	$0	$0	$0	$0	$0

Table C-10 Annual Potential Dredging Projects Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$0	$0	$0	$0	$0	$0
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$0	$0	$0	$0	$0	$0
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$0	$0	$0	$0
1707020411	$265,600	$265,600	$656,800	$656,800	$1,048,000	$1,048,000
1707020412	$0	$0	$0	$0	$0	$0
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$0	$0	$0	$0	$0	$0
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$0	$0	$0	$0
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$0	$0	$0	$0	$0	$0
1707030611	$0	$0	$0	$0	$0	$0
1707030612	$0	$0	$0	$0	$0	$0
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$803,440	$803,440	$1,986,820	$1,986,820	$3,170,200	$3,170,200

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$8,381	$11,245	$46,015	$48,879	$83,649	$86,512
1711000202	$1	$1	$40,801	$40,801	$81,601	$81,601
1711000204	$8,381	$11,244	$20,174	$23,038	$31,968	$34,832
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$1,360	$1,360	$2,720	$2,720
1711000403	$0	$0	$0	$0	$0	$0
1711000404	$0	$0	$10,880	$10,880	$21,760	$21,760
1711000405	$8,382	$11,245	$56,895	$59,759	$105,409	$108,272
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$0	$0	$2,720	$2,720	$5,440	$5,440
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$0	$0	$1,360	$1,360	$2,720	$2,720
1711000508	$0	$0	$1,360	$1,360	$2,720	$2,720
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$1,360	$1,360	$2,720	$2,720
1711000604	$0	$0	$4,080	$4,080	$8,160	$8,160
1711000701	$0	$0	$5,440	$5,440	$10,880	$10,880
1711000702	$8,381	$11,245	$35,135	$37,998	$61,889	$64,752
1711000801	$0	$0	$9,520	$9,520	$19,040	$19,040
1711000802	$0	$0	$9,520	$9,520	$19,040	$19,040
1711000803	$0	$0	$12,240	$12,240	$24,480	$24,480
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$0	$0	$1,360	$1,360	$2,720	$2,720
1711000903	$0	$0	$8,160	$8,160	$16,320	$16,320
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$0	$0	$9,520	$9,520	$19,040	$19,040
1711001003	$0	$0	$8,160	$8,160	$16,320	$16,320
1711001004	$0	$0	$9,520	$9,520	$19,040	$19,040
1711001101	$0	$0	$9,520	$9,520	$19,040	$19,040
1711001102	$8,381	$11,245	$46,015	$48,879	$83,649	$86,512
1711001201	$0	$0	$8,160	$8,160	$16,320	$16,320
1711001202	$0	$0	$9,520	$9,520	$19,040	$19,040
1711001203	$2	$1	$58,482	$58,481	$116,962	$116,961
1711001204	$0	$0	$14,960	$14,960	$29,920	$29,920
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$0	$0	$4,080	$4,080	$8,160	$8,160
1711001303	$8,382	$11,245	$63,696	$66,559	$119,009	$121,873
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$25,142	$33,733	$57,803	$66,394	$90,464	$99,055

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$0	$0	$6,800	$6,800	$13,600	$13,600
1711001404	$0	$0	$1,360	$1,360	$2,720	$2,720
1711001405	$41,903	$56,222	$107,672	$121,990	$173,441	$187,759
1711001502	$0	$0	$6,800	$6,800	$13,600	$13,600
1711001503	$0	$0	$16,320	$16,320	$32,640	$32,640
1711001601	$0	$0	$1,360	$1,360	$2,720	$2,720
1711001602	$8,381	$11,244	$26,975	$29,838	$45,568	$48,432
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$2,720	$2,720	$5,440	$5,440
1711001803	$0	$0	$1,360	$1,360	$2,720	$2,720
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$4,080	$4,080	$8,160	$8,160
1711001808	$1	$0	$27,201	$27,200	$54,401	$54,400
1711001900	$1	$1	$32,641	$32,641	$65,281	$65,281
1711001901	$25,143	$33,733	$86,364	$94,955	$147,585	$156,176
1711001902	$0	$0	$10,880	$10,880	$21,760	$21,760
1711001904	$8,381	$11,245	$35,135	$37,998	$61,889	$64,752
1711002003	$0	$0	$8,160	$8,160	$16,320	$16,320
1711002004	$8,381	$11,244	$28,335	$31,198	$48,288	$51,152
1711002007	$0	$0	$1,360	$1,360	$2,720	$2,720
N01	$1	$0	$19,041	$19,040	$38,081	$38,080
N02	$0	$0	$4,080	$4,080	$8,160	$8,160
N03	$1	$0	$27,201	$27,200	$54,401	$54,400
N04	$0	$0	$1,360	$1,360	$2,720	$2,720
N05	$0	$0	$2,720	$2,720	$5,440	$5,440
N06	$8,381	$11,244	$21,534	$24,398	$34,688	$37,552
N07	$0	$0	$2,720	$2,720	$5,440	$5,440
N08	$0	$0	$5,440	$5,440	$10,880	$10,880
N09	$8,381	$11,245	$36,495	$39,358	$64,609	$67,472
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$2,720	$2,720	$5,440	$5,440
N12	$0	$0	$5,440	$5,440	$10,880	$10,880
N13	$0	$0	$2,720	$2,720	$5,440	$5,440
N14	$0	$0	$16,320	$16,320	$32,640	$32,640
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$1,360	$1,360	$2,720	$2,720
N18	$0	$0	$8,160	$8,160	$16,320	$16,320
N19	$0	$0	$5,440	$5,440	$10,880	$10,880

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$0	$0	$5,440	$5,440	$10,880	$10,880
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$8,381	$11,244	$20,174	$23,038	$31,968	$34,832
1707010509	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$13,600	$13,600	$27,200	$27,200
1707010513	$0	$0	$5,440	$5,440	$10,880	$10,880
1708000101	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000102	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$8,381	$11,244	$26,975	$29,838	$45,568	$48,432
1708000107	$1	$0	$19,041	$19,040	$38,081	$38,080
1708000108	$8,381	$11,244	$16,094	$18,958	$23,808	$26,672
1708000109	$41,903	$56,222	$102,232	$116,550	$162,561	$176,879
1708000205	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000206	$0	$0	$6,800	$6,800	$13,600	$13,600
1708000301	$8,381	$11,244	$18,814	$21,678	$29,248	$32,112
1708000302	$16,761	$22,489	$32,189	$37,916	$47,616	$53,344
1708000303	$0	$0	$2,720	$2,720	$5,440	$5,440
1708000304	$16,761	$22,489	$43,069	$48,796	$69,376	$75,104
1708000305	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000306	$8,380	$11,244	$14,734	$17,598	$21,088	$23,952
1708000401	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000402	$0	$0	$2,720	$2,720	$5,440	$5,440
1708000403	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000404	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000502	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000503	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$9,520	$9,520	$19,040	$19,040
1708000508	$0	$0	$10,880	$10,880	$21,760	$21,760
1708000601	$0	$0	$17,680	$17,680	$35,360	$35,360
1708000602	$8,381	$11,244	$24,254	$27,118	$40,128	$42,992

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1708000603	$0	$0	$4,080	$4,080	$8,160	$8,160
1709000704	$33,522	$44,977	$61,657	$73,112	$89,792	$101,247
1709001105	$0	$0	$1,360	$1,360	$2,720	$2,720
1709001106	$8,381	$11,244	$24,254	$27,118	$40,128	$42,992
1709001201	$25,141	$33,733	$46,923	$55,514	$68,704	$77,295
1709001202	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232
1709001203	$41,905	$56,223	$157,993	$172,311	$274,082	$288,400
Lower Columbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000106	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000107	$0	$0	$4,080	$4,080	$8,160	$8,160
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$4,080	$4,080	$8,160	$8,160
1709000201	$0	$0	$2,720	$2,720	$5,440	$5,440
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$8,381	$11,244	$16,094	$18,958	$23,808	$26,672
1709000205	$0	$0	$8,160	$8,160	$16,320	$16,320
1709000301	$1	$1	$28,561	$28,561	$57,121	$57,121
1709000302	$25,142	$33,733	$80,924	$89,515	$136,705	$145,296
1709000303	$8,380	$11,244	$12,014	$14,878	$15,648	$18,512
1709000304	$33,522	$44,977	$73,897	$85,352	$114,272	$125,727
1709000305	$8,381	$11,244	$20,174	$23,038	$31,968	$34,832
1709000306	$0	$0	$2,720	$2,720	$5,440	$5,440
1709000401	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$0	$0	$0	$0	$0	$0
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$8,381	$11,244	$21,534	$24,398	$34,688	$37,552
1709000504	$0	$0	$4,080	$4,080	$8,160	$8,160
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$8,380	$11,244	$14,734	$17,598	$21,088	$23,952

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000601	$16,761	$22,488	$30,828	$36,556	$44,896	$50,623
1709000602	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000603	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000606	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000607	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000608	$0	$0	$2,720	$2,720	$5,440	$5,440
1709000701	$0	$0	$6,800	$6,800	$13,600	$13,600
1709000702	$8,381	$11,244	$22,894	$25,758	$37,408	$40,272
1709000703	$25,142	$33,733	$57,803	$66,394	$90,464	$99,055
1709000704	$33,522	$44,977	$61,657	$73,112	$89,792	$101,247
1709000804	$0	$0	$5,440	$5,440	$10,880	$10,880
1709000805	$0	$0	$2,720	$2,720	$5,440	$5,440
1709000806	$0	$0	$9,520	$9,520	$19,040	$19,040
1709000807	$8,381	$11,244	$16,094	$18,958	$23,808	$26,672
1709000901	$8,381	$11,244	$21,534	$24,398	$34,688	$37,552
1709000902	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232
1709000903	$0	$0	$4,080	$4,080	$8,160	$8,160
1709000904	$0	$0	$12,240	$12,240	$24,480	$24,480
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$4,080	$4,080	$8,160	$8,160
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$2,720	$2,720	$5,440	$5,440
1709001105	$0	$0	$1,360	$1,360	$2,720	$2,720
1709001106	$8,381	$11,244	$24,254	$27,118	$40,128	$42,992
1709001201	$25,141	$33,733	$46,923	$55,514	$68,704	$77,295
1709001202	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232
1709001203	$41,905	$56,223	$157,993	$172,311	$274,082	$288,400
Lower Columbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$5,440	$5,440	$10,880	$10,880
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$1,360	$1,360	$2,720	$2,720
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$5,440	$5,440	$10,880	$10,880
1702000807	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$16,762	$22,489	$55,309	$61,036	$93,857	$99,584
1702001003	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001004	$0	$0	$4,080	$4,080	$8,160	$8,160
1702001101	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$6,800	$6,800	$13,600	$13,600
1702001604	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001605	$0	$0	$6,800	$6,800	$13,600	$13,600
1702001606	$16,761	$22,489	$40,349	$46,076	$63,936	$69,664
1707010101	$0	$0	$16,320	$16,320	$32,640	$32,640
1707010102	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010106	$0	$0	$5,440	$5,440	$10,880	$10,880
1707010109	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010114	$8,381	$11,244	$17,454	$20,318	$26,528	$29,392
1707010501	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010504	$16,761	$22,489	$40,349	$46,076	$63,936	$69,664
1707010512	$0	$0	$13,600	$13,600	$27,200	$27,200
1707010513	$0	$0	$5,440	$5,440	$10,880	$10,880
1708000107	$1	$0	$19,041	$19,040	$38,081	$38,080
Lower Columbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784
Hood Canal Summer-run chum salmon ESU						
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$2,720	$2,720	$5,440	$5,440
1711001803	$0	$0	$1,360	$1,360	$2,720	$2,720
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$4,080	$4,080	$8,160	$8,160
1711001807	$0	$0	$5,440	$5,440	$10,880	$10,880
1711001808	$1	$0	$27,201	$27,200	$54,401	$54,400
1711001908	$0	$0	$9,520	$9,520	$19,040	$19,040
1711002001	$0	$0	$6,800	$6,800	$13,600	$13,600
1711002002	$0	$0	$2,720	$2,720	$5,440	$5,440
1711002003	$0	$0	$8,160	$8,160	$16,320	$16,320
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$1,360	$1,360	$2,720	$2,720

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
N18	$0	$0	$8,160	$8,160	$16,320	$16,320
N19	$0	$0	$5,440	$5,440	$10,880	$10,880
Columbia River chum salmon ESU						
1707010509	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010512	$0	$0	$13,600	$13,600	$27,200	$27,200
1707010513	$0	$0	$5,440	$5,440	$10,880	$10,880
1708000106	$8,381	$11,244	$26,975	$29,838	$45,568	$48,432
1708000107	$1	$0	$19,041	$19,040	$38,081	$38,080
1708000109	$41,903	$56,222	$102,232	$116,550	$162,561	$176,879
1708000205	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000206	$0	$0	$6,800	$6,800	$13,600	$13,600
1708000301	$8,381	$11,244	$18,814	$21,678	$29,248	$32,112
1708000304	$16,761	$22,489	$43,069	$48,796	$69,376	$75,104
1708000305	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000503	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$9,520	$9,520	$19,040	$19,040
1708000508	$0	$0	$10,880	$10,880	$21,760	$21,760
1708000602	$8,381	$11,244	$24,254	$27,118	$40,128	$42,992
1708000603	$0	$0	$4,080	$4,080	$8,160	$8,160
Lower Columbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$2,720	$2,720	$5,440	$5,440
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$1,360	$1,360	$2,720	$2,720
1702000505	$0	$0	$5,440	$5,440	$10,880	$10,880
1702000601	$0	$0	$1,360	$1,360	$2,720	$2,720
1702000602	$0	$0	$2,720	$2,720	$5,440	$5,440
1702000603	$0	$0	$0	$0	$0	$0
1702000604	$0	$0	$5,440	$5,440	$10,880	$10,880
1702000605	$0	$0	$0	$0	$0	$0
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$1,360	$1,360	$2,720	$2,720
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$5,440	$5,440	$10,880	$10,880
1702000807	$0	$0	$0	$0	$0	$0
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$16,762	$22,489	$55,309	$61,036	$93,857	$99,584
1702001003	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001004	$0	$0	$4,080	$4,080	$8,160	$8,160
1702001101	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$6,800	$6,800	$13,600	$13,600
1702001204	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001509	$0	$0	$6,800	$6,800	$13,600	$13,600
1702001604	$0	$0	$2,720	$2,720	$5,440	$5,440
1702001605	$0	$0	$6,800	$6,800	$13,600	$13,600
1702001606	$16,761	$22,489	$40,349	$46,076	$63,936	$69,664
1707010101	$0	$0	$16,320	$16,320	$32,640	$32,640
1707010102	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010106	$0	$0	$5,440	$5,440	$10,880	$10,880
1707010109	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010114	$8,381	$11,244	$17,454	$20,318	$26,528	$29,392
1707010501	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010504	$16,761	$22,489	$40,349	$46,076	$63,936	$69,664
1707010512	$0	$0	$13,600	$13,600	$27,200	$27,200
1707010513	$0	$0	$5,440	$5,440	$10,880	$10,880
1708000107	$1	$0	$19,041	$19,040	$38,081	$38,080
Lower Columbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784
Snake River Basin steelhead ESU						
1702001606	$16,761	$22,489	$40,349	$46,076	$63,936	$69,664
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$0	$0	$0	$0	$0	$0
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$0	$0	$0	$0	$0	$0
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$0	$0	$1,360	$1,360	$2,720	$2,720
1706010406	$8,380	$11,244	$14,734	$17,598	$21,088	$23,952
1706010407	$0	$0	$0	$0	$0	$0
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$0	$0	$0	$0	$0	$0
1706010410	$0	$0	$1,360	$1,360	$2,720	$2,720
1706010411	$0	$0	$2,720	$2,720	$5,440	$5,440
1706010501	$0	$0	$5,440	$5,440	$10,880	$10,880
1706010502	$0	$0	$0	$0	$0	$0
1706010503	$0	$0	$1,360	$1,360	$2,720	$2,720
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$0	$0	$1,360	$1,360	$2,720	$2,720
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$0	$0	$0	$0	$0	$0
1706010701	$0	$0	$1,360	$1,360	$2,720	$2,720
1706010702	$0	$0	$6,800	$6,800	$13,600	$13,600
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$0	$0	$1,360	$1,360	$2,720	$2,720
1706010707	$0	$0	$1,360	$1,360	$2,720	$2,720
1706010708	$0	$0	$1,360	$1,360	$2,720	$2,720
1706010808	$0	$0	$1,360	$1,360	$2,720	$2,720
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$8,380	$11,244	$12,014	$14,878	$15,648	$18,512
1706020104	$0	$0	$0	$0	$0	$0
1706020105	$0	$0	$0	$0	$0	$0
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$0	$0	$0	$0	$0	$0
1706020113	$0	$0	$0	$0	$0	$0
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$0	$0	$0	$0	$0	$0
1706020117	$0	$0	$0	$0	$0	$0
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$0	$0	$0	$0	$0	$0
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$8,380	$11,244	$14,734	$17,598	$21,088	$23,952
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$0	$0	$0	$0	$0	$0
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0
1706020132	$0	$0	$0	$0	$0	$0
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$8,380	$11,244	$12,014	$14,878	$15,648	$18,512
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$1,360	$1,360	$2,720	$2,720
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$1,360	$1,360	$2,720	$2,720
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$0	$0	$0	$0	$0	$0
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$0	$0	$0	$0	$0	$0
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$1,360	$1,360	$2,720	$2,720
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$0	$0	$0	$0	$0	$0
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$2,720	$2,720	$5,440	$5,440
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$0	$0	$0	$0	$0	$0
1706020912	$0	$0	$0	$0	$0	$0
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$2,720	$2,720	$5,440	$5,440
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$0	$0	$0	$0	$0	$0
1706021002	$0	$0	$0	$0	$0	$0
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$0	$0	$5,440	$5,440	$10,880	$10,880
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$0	$0	$2,720	$2,720	$5,440	$5,440
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$1,360	$1,360	$2,720	$2,720
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$0	$0	$5,440	$5,440	$10,880	$10,880
1706030513	$0	$0	$1,360	$1,360	$2,720	$2,720
1706030601	$16,761	$22,488	$29,468	$35,196	$42,176	$47,903
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$2,720	$2,720	$5,440	$5,440
1706030604	$0	$0	$2,720	$2,720	$5,440	$5,440
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030607	$0	$0	$2,720	$2,720	$5,440	$5,440
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$1,360	$1,360	$2,720	$2,720
1706030612	$0	$0	$5,440	$5,440	$10,880	$10,880
1706030613	$0	$0	$2,720	$2,720	$5,440	$5,440
1706030614	$0	$0	$2,720	$2,720	$5,440	$5,440
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$4,080	$4,080	$8,160	$8,160
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$8,160	$8,160	$16,320	$16,320
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$5,440	$5,440	$10,880	$10,880
1707010101	$0	$0	$16,320	$16,320	$32,640	$32,640
1707010102	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010106	$0	$0	$5,440	$5,440	$10,880	$10,880
1707010109	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010114	$8,381	$11,244	$17,454	$20,318	$26,528	$29,392
1707010501	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010504	$16,761	$22,489	$40,349	$46,076	$63,936	$69,664
1707010512	$0	$0	$13,600	$13,600	$27,200	$27,200
1707010513	$0	$0	$5,440	$5,440	$10,880	$10,880
1708000107	$1	$0	$19,041	$19,040	$38,081	$38,080
Lower Columbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784
Lower Columbia River steelhead ESU						
1707010506	$0	$0	$5,440	$5,440	$10,880	$10,880
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$8,381	$11,244	$20,174	$23,038	$31,968	$34,832
1707010511	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707010512	$0	$0	$13,600	$13,600	$27,200	$27,200
1707010513	$0	$0	$5,440	$5,440	$10,880	$10,880
1708000101	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000102	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$8,381	$11,244	$26,975	$29,838	$45,568	$48,432
1708000107	$1	$0	$19,041	$19,040	$38,081	$38,080
1708000108	$8,381	$11,244	$16,094	$18,958	$23,808	$26,672
1708000109	$41,903	$56,222	$102,232	$116,550	$162,561	$176,879
1708000205	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000206	$0	$0	$6,800	$6,800	$13,600	$13,600
1708000301	$8,381	$11,244	$18,814	$21,678	$29,248	$32,112
1708000401	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000402	$0	$0	$2,720	$2,720	$5,440	$5,440
1708000403	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000404	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000502	$0	$0	$1,360	$1,360	$2,720	$2,720
1708000503	$0	$0	$4,080	$4,080	$8,160	$8,160
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$9,520	$9,520	$19,040	$19,040
1708000508	$0	$0	$10,880	$10,880	$21,760	$21,760
1709000704	$33,522	$44,977	$61,657	$73,112	$89,792	$101,247
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$2,720	$2,720	$5,440	$5,440
1709001105	$0	$0	$1,360	$1,360	$2,720	$2,720
1709001106	$8,381	$11,244	$24,254	$27,118	$40,128	$42,992
1709001201	$25,141	$33,733	$46,923	$55,514	$68,704	$77,295
1709001202	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232
1709001203	$41,905	$56,223	$157,993	$172,311	$274,082	$288,400
Lower Co-lumbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784
Upper Willamette River steelhead ESU						

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1709000303	$8,380	$11,244	$12,014	$14,878	$15,648	$18,512
1709000304	$33,522	$44,977	$73,897	$85,352	$114,272	$125,727
1709000306	$0	$0	$2,720	$2,720	$5,440	$5,440
1709000504	$0	$0	$4,080	$4,080	$8,160	$8,160
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$8,380	$11,244	$14,734	$17,598	$21,088	$23,952
1709000601	$16,761	$22,488	$30,828	$36,556	$44,896	$50,623
1709000602	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000603	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000606	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000607	$0	$0	$1,360	$1,360	$2,720	$2,720
1709000608	$0	$0	$2,720	$2,720	$5,440	$5,440
1709000701	$0	$0	$6,800	$6,800	$13,600	$13,600
1709000702	$8,381	$11,244	$22,894	$25,758	$37,408	$40,272
1709000703	$25,142	$33,733	$57,803	$66,394	$90,464	$99,055
1709000704	$33,522	$44,977	$61,657	$73,112	$89,792	$101,247
1709000801	$0	$0	$4,080	$4,080	$8,160	$8,160
1709000802	$0	$0	$2,720	$2,720	$5,440	$5,440
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$5,440	$5,440	$10,880	$10,880
1709000805	$0	$0	$2,720	$2,720	$5,440	$5,440
1709000806	$0	$0	$9,520	$9,520	$19,040	$19,040
1709000807	$8,381	$11,244	$16,094	$18,958	$23,808	$26,672
1709000901	$8,381	$11,244	$21,534	$24,398	$34,688	$37,552
1709000902	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232
1709000903	$0	$0	$4,080	$4,080	$8,160	$8,160
1709000904	$0	$0	$12,240	$12,240	$24,480	$24,480
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$4,080	$4,080	$8,160	$8,160
1709001001	$8,381	$11,244	$18,814	$21,678	$29,248	$32,112
1709001002	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232
1709001003	$0	$0	$1,360	$1,360	$2,720	$2,720
1709001004	$8,381	$11,245	$39,215	$42,078	$70,049	$72,912
1709001005	$8,381	$11,244	$17,454	$20,318	$26,528	$29,392
1709001201	$25,141	$33,733	$46,923	$55,514	$68,704	$77,295
1709001202	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232
1709001203	$41,905	$56,223	$157,993	$172,311	$274,082	$288,400
Lower Columbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784
Middle Columbia River steelhead ESU						

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$16,761	$22,489	$40,349	$46,076	$63,936	$69,664
1703000101	$0	$0	$9,520	$9,520	$19,040	$19,040
1703000102	$0	$0	$2,720	$2,720	$5,440	$5,440
1703000103	$8,381	$11,245	$35,135	$37,998	$61,889	$64,752
1703000104	$0	$0	$12,240	$12,240	$24,480	$24,480
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$1,360	$1,360	$2,720	$2,720
1703000203	$0	$0	$2,720	$2,720	$5,440	$5,440
1703000301	$0	$0	$2,720	$2,720	$5,440	$5,440
1703000302	$8,381	$11,245	$36,495	$39,358	$64,609	$67,472
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$0	$0	$13,600	$13,600	$27,200	$27,200
1703000305	$0	$0	$1,360	$1,360	$2,720	$2,720
1703000306	$16,762	$22,489	$81,150	$86,877	$145,537	$151,264
1703000307	$0	$0	$12,240	$12,240	$24,480	$24,480
1707010101	$0	$0	$16,320	$16,320	$32,640	$32,640
1707010102	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010105	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010106	$0	$0	$5,440	$5,440	$10,880	$10,880
1707010109	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010113	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010114	$8,381	$11,244	$17,454	$20,318	$26,528	$29,392
1707010201	$0	$0	$0	$0	$0	$0
1707010202	$8,381	$11,244	$17,454	$20,318	$26,528	$29,392
1707010203	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010204	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010209	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$8,381	$11,244	$16,094	$18,958	$23,808	$26,672
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010303	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010304	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010305	$0	$0	$0	$0	$0	$0
1707010306	$0	$0	$0	$0	$0	$0
1707010307	$0	$0	$1,360	$1,360	$2,720	$2,720

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$8,380	$11,244	$13,374	$16,238	$18,368	$21,232
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$8,381	$11,244	$21,534	$24,398	$34,688	$37,552
1707010501	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010502	$0	$0	$2,720	$2,720	$5,440	$5,440
1707010503	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010504	$16,761	$22,489	$40,349	$46,076	$63,936	$69,664
1707010505	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010509	$0	$0	$4,080	$4,080	$8,160	$8,160
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$13,600	$13,600	$27,200	$27,200
1707010513	$0	$0	$5,440	$5,440	$10,880	$10,880
1707010601	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010602	$0	$0	$1,360	$1,360	$2,720	$2,720
1707010603	$0	$0	$13,600	$13,600	$27,200	$27,200
1707010604	$0	$0	$6,800	$6,800	$13,600	$13,600
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$1,360	$1,360	$2,720	$2,720
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$1,360	$1,360	$2,720	$2,720
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$0	$0	$4,080	$4,080	$8,160	$8,160
1707020111	$0	$0	$0	$0	$0	$0
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$0	$0	$0	$0	$0	$0
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$0	$0	$0	$0	$0	$0
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$1,360	$1,360	$2,720	$2,720
1707020302	$0	$0	$0	$0	$0	$0

Table C-11 Annual Potential NPDES-Permitted Activity Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$1,360	$1,360	$2,720	$2,720
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$0	$0	$1,360	$1,360	$2,720	$2,720
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$0	$0	$0	$0	$0	$0
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$0	$0	$0	$0
1707020411	$0	$0	$0	$0	$0	$0
1707020412	$0	$0	$0	$0	$0	$0
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$0	$0	$1,360	$1,360	$2,720	$2,720
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$1,360	$1,360	$2,720	$2,720
1707030607	$0	$0	$1,360	$1,360	$2,720	$2,720
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$0	$0	$1,360	$1,360	$2,720	$2,720
1707030611	$0	$0	$0	$0	$0	$0
1707030612	$0	$0	$0	$0	$0	$0
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$1	$0	$19,041	$19,040	$38,081	$38,080
Lower Columbia	$16,761	$22,489	$34,909	$40,636	$53,056	$58,784

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$0	$0	$0	$0	$0	$0
1711000202	$0	$0	$50,341	$45,070	$100,682	$90,140
1711000204	$0	$0	$0	$0	$0	$0
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$0	$0	$0	$0
1711000403	$0	$0	$0	$0	$0	$0
1711000404	$0	$0	$0	$0	$0	$0
1711000405	$0	$0	$0	$0	$0	$0
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$0	$0	$0	$0	$0	$0
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$0	$0	$0	$0	$0	$0
1711000508	$0	$0	$25,171	$22,535	$50,341	$45,070
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$0	$0	$0	$0
1711000604	$0	$0	$0	$0	$0	$0
1711000701	$0	$0	$25,171	$22,535	$50,341	$45,070
1711000702	$0	$0	$50,341	$45,070	$100,682	$90,140
1711000801	$0	$0	$0	$0	$0	$0
1711000802	$0	$0	$0	$0	$0	$0
1711000803	$0	$0	$0	$0	$0	$0
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$0	$0	$0	$0	$0	$0
1711000903	$0	$0	$0	$0	$0	$0
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$0	$0	$0	$0	$0	$0
1711001003	$0	$0	$0	$0	$0	$0
1711001004	$0	$0	$0	$0	$0	$0
1711001101	$0	$0	$0	$0	$0	$0
1711001102	$0	$0	$0	$0	$0	$0
1711001201	$0	$0	$0	$0	$0	$0
1711001202	$0	$0	$25,171	$22,535	$50,341	$45,070
1711001203	$0	$0	$0	$0	$0	$0
1711001204	$0	$0	$0	$0	$0	$0
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$0	$0	$0	$0	$0	$0
1711001303	$0	$0	$0	$0	$0	$0
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$0	$0	$0	$0	$0	$0
1711001404	$0	$0	$0	$0	$0	$0
1711001405	$0	$0	$0	$0	$0	$0
1711001502	$0	$0	$0	$0	$0	$0
1711001503	$0	$0	$25,171	$22,535	$50,341	$45,070
1711001601	$0	$0	$0	$0	$0	$0
1711001602	$0	$0	$50,341	$45,070	$100,682	$90,140
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$50,341	$45,070	$100,682	$90,140
1711001900	$0	$0	$75,512	$67,605	$151,023	$135,211
1711001901	$0	$0	$125,853	$112,675	$251,705	$225,351
1711001902	$0	$0	$50,341	$45,070	$100,682	$90,140
1711001904	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$50,341	$45,070	$100,682	$90,140
1711002004	$0	$0	$50,341	$45,070	$100,682	$90,140
1711002007	$0	$0	$0	$0	$0	$0
N01	$0	$0	$0	$0	$0	$0
N02	$0	$0	$0	$0	$0	$0
N03	$0	$0	$0	$0	$0	$0
N04	$0	$0	$0	$0	$0	$0
N05	$0	$0	$0	$0	$0	$0
N06	$0	$0	$0	$0	$0	$0
N07	$0	$0	$0	$0	$0	$0
N08	$0	$0	$0	$0	$0	$0
N09	$0	$0	$0	$0	$0	$0
N10	$0	$0	$0	$0	$0	$0
N11	$0	$0	$0	$0	$0	$0
N12	$0	$0	$0	$0	$0	$0
N13	$0	$0	$0	$0	$0	$0
N14	$0	$0	$0	$0	$0	$0
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$25,171	$22,535	$50,341	$45,070
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010513	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$75,512	$67,605	$151,023	$135,211
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000109	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000205	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000302	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000601	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000602	$0	$0	$125,853	$112,675	$251,705	$225,351

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$50,341	$45,070	$100,682	$90,140
1709001105	$0	$0	$25,171	$22,535	$50,341	$45,070
1709001106	$0	$0	$125,853	$112,675	$251,705	$225,351
1709001201	$0	$0	$75,512	$67,605	$151,023	$135,211
1709001202	$0	$0	$25,171	$22,535	$50,341	$45,070
1709001203	$0	$0	$201,364	$180,281	$402,728	$360,562
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$0	$0	$0	$0	$0	$0
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$0	$0	$0	$0	$0	$0
1709000201	$0	$0	$0	$0	$0	$0
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$0	$0	$0	$0	$0	$0
1709000301	$0	$0	$0	$0	$0	$0
1709000302	$0	$0	$50,341	$45,070	$100,682	$90,140
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000305	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$0	$0	$0	$0	$0	$0
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$25,171	$22,535	$50,341	$45,070
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$50,341	$45,070	$100,682	$90,140
1709000704	$0	$0	$50,341	$45,070	$100,682	$90,140
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$50,341	$45,070	$100,682	$90,140
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$50,341	$45,070	$100,682	$90,140
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$25,171	$22,535	$50,341	$45,070
1709001106	$0	$0	$125,853	$112,675	$251,705	$225,351
1709001201	$0	$0	$75,512	$67,605	$151,023	$135,211
1709001202	$0	$0	$25,171	$22,535	$50,341	$45,070
1709001203	$0	$0	$201,364	$180,281	$402,728	$360,562
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$50,341	$45,070	$100,682	$90,140
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$25,171	$22,535	$50,341	$45,070
1702000806	$0	$0	$50,341	$45,070	$100,682	$90,140
1702000807	$0	$0	$25,171	$22,535	$50,341	$45,070

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$0	$0	$0	$0	$0	$0
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$0	$0	$25,171	$22,535	$50,341	$45,070
1702001105	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$100,682	$90,140	$201,364	$180,281
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$100,682	$90,140	$201,364	$180,281
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$50,341	$45,070	$100,682	$90,140
1707010512	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010513	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000107	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001807	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$50,341	$45,070	$100,682	$90,140
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$50,341	$45,070	$100,682	$90,140
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$25,171	$22,535	$50,341	$45,070

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0
Columbia River chum salmon ESU						
1707010509	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010513	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000106	$0	$0	$75,512	$67,605	$151,023	$135,211
1708000107	$0	$0	$0	$0	$0	$0
1708000109	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000205	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000602	$0	$0	$125,853	$112,675	$251,705	$225,351
1708000603	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$25,171	$22,535	$50,341	$45,070
1702000505	$0	$0	$50,341	$45,070	$100,682	$90,140
1702000601	$0	$0	$25,171	$22,535	$50,341	$45,070
1702000602	$0	$0	$25,171	$22,535	$50,341	$45,070
1702000603	$0	$0	$25,171	$22,535	$50,341	$45,070
1702000604	$0	$0	$50,341	$45,070	$100,682	$90,140
1702000605	$0	$0	$25,171	$22,535	$50,341	$45,070
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$25,171	$22,535	$50,341	$45,070
1702000806	$0	$0	$50,341	$45,070	$100,682	$90,140
1702000807	$0	$0	$25,171	$22,535	$50,341	$45,070
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$0	$0	$0	$0	$0	$0
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$0	$0	$25,171	$22,535	$50,341	$45,070
1702001105	$0	$0	$0	$0	$0	$0
1702001204	$0	$0	$0	$0	$0	$0
1702001509	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$100,682	$90,140	$201,364	$180,281
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$100,682	$90,140	$201,364	$180,281
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$50,341	$45,070	$100,682	$90,140
1707010512	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010513	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$0	$0	$100,682	$90,140	$201,364	$180,281
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$0	$0	$0	$0	$0	$0
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$0	$0	$0	$0	$0	$0
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$0	$0	$0	$0	$0	$0
1706010406	$0	$0	$0	$0	$0	$0
1706010407	$0	$0	$0	$0	$0	$0
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$0	$0	$0	$0	$0	$0
1706010410	$0	$0	$0	$0	$0	$0
1706010411	$0	$0	$0	$0	$0	$0
1706010501	$0	$0	$0	$0	$0	$0
1706010502	$0	$0	$0	$0	$0	$0
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$0	$0	$0	$0	$0	$0
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$0	$0	$0	$0	$0	$0
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$0	$0	$0	$0	$0	$0
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$0	$0	$0	$0	$0	$0
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$0	$0	$0	$0	$0	$0
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$0	$0	$0	$0	$0	$0
1706020104	$0	$0	$0	$0	$0	$0
1706020105	$0	$0	$0	$0	$0	$0
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$0	$0	$0	$0	$0	$0
1706020113	$0	$0	$0	$0	$0	$0
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$0	$0	$0	$0	$0	$0
1706020117	$0	$0	$25,171	$22,535	$50,341	$45,070
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$0	$0	$0	$0	$0	$0
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$0	$0	$0	$0	$0	$0
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$0	$0	$0	$0	$0	$0
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0
1706020132	$0	$0	$0	$0	$0	$0
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$0	$0	$0	$0	$0	$0
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$0	$0	$0	$0
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$0	$0	$0	$0	$0	$0
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$0	$0	$0	$0	$0	$0
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$0	$0	$0	$0	$0	$0
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$0	$0	$0	$0	$0	$0
1706020912	$0	$0	$0	$0	$0	$0
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$0	$0	$0	$0	$0	$0
1706021002	$0	$0	$0	$0	$0	$0
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$0	$0	$0	$0	$0	$0
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$0	$0	$0	$0	$0	$0
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$0	$0	$25,171	$22,535	$50,341	$45,070
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030607	$0	$0	$0	$0	$0	$0
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$0	$0	$0	$0	$0	$0
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$0	$0	$0	$0
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$100,682	$90,140	$201,364	$180,281
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$50,341	$45,070	$100,682	$90,140
1707010512	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010513	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$0	$0	$0	$0	$0	$0
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010512	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010513	$0	$0	$25,171	$22,535	$50,341	$45,070
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$0	$0	$0	$0
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$0	$0	$75,512	$67,605	$151,023	$135,211
1708000107	$0	$0	$0	$0	$0	$0
1708000108	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000109	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000205	$0	$0	$50,341	$45,070	$100,682	$90,140
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$0	$0	$0	$0	$0	$0
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1709000704	$0	$0	$50,341	$45,070	$100,682	$90,140
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$0	$0	$25,171	$22,535	$50,341	$45,070
1709001106	$0	$0	$125,853	$112,675	$251,705	$225,351
1709001201	$0	$0	$75,512	$67,605	$151,023	$135,211
1709001202	$0	$0	$25,171	$22,535	$50,341	$45,070
1709001203	$0	$0	$201,364	$180,281	$402,728	$360,562
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River steelhead ESU						

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000303	$0	$0	$0	$0	$0	$0
1709000304	$0	$0	$0	$0	$0	$0
1709000306	$0	$0	$0	$0	$0	$0
1709000504	$0	$0	$0	$0	$0	$0
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$0	$0	$0	$0	$0	$0
1709000601	$0	$0	$0	$0	$0	$0
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$0	$0	$25,171	$22,535	$50,341	$45,070
1709000702	$0	$0	$0	$0	$0	$0
1709000703	$0	$0	$50,341	$45,070	$100,682	$90,140
1709000704	$0	$0	$50,341	$45,070	$100,682	$90,140
1709000801	$0	$0	$0	$0	$0	$0
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$0	$0	$0	$0	$0	$0
1709000804	$0	$0	$0	$0	$0	$0
1709000805	$0	$0	$0	$0	$0	$0
1709000806	$0	$0	$0	$0	$0	$0
1709000807	$0	$0	$0	$0	$0	$0
1709000901	$0	$0	$0	$0	$0	$0
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$0	$0	$0	$0	$0	$0
1709000904	$0	$0	$50,341	$45,070	$100,682	$90,140
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$0	$0	$50,341	$45,070	$100,682	$90,140
1709001001	$0	$0	$0	$0	$0	$0
1709001002	$0	$0	$50,341	$45,070	$100,682	$90,140
1709001003	$0	$0	$0	$0	$0	$0
1709001004	$0	$0	$0	$0	$0	$0
1709001005	$0	$0	$125,853	$112,675	$251,705	$225,351
1709001201	$0	$0	$75,512	$67,605	$151,023	$135,211
1709001202	$0	$0	$25,171	$22,535	$50,341	$45,070
1709001203	$0	$0	$201,364	$180,281	$402,728	$360,562
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Middle Columbia River steelhead ESU						

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$0	$0	$100,682	$90,140	$201,364	$180,281
1703000101	$0	$0	$25,171	$22,535	$50,341	$45,070
1703000102	$0	$0	$0	$0	$0	$0
1703000103	$0	$0	$0	$0	$0	$0
1703000104	$0	$0	$0	$0	$0	$0
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$0	$0	$0	$0
1703000203	$0	$0	$0	$0	$0	$0
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$0	$0	$25,171	$22,535	$50,341	$45,070
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$0	$0	$25,171	$22,535	$50,341	$45,070
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$0	$0	$0	$0	$0	$0
1703000307	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010101	$0	$0	$0	$0	$0	$0
1707010102	$0	$0	$0	$0	$0	$0
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$0	$0	$0	$0	$0	$0
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$100,682	$90,140	$201,364	$180,281
1707010201	$0	$0	$0	$0	$0	$0
1707010202	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010203	$0	$0	$0	$0	$0	$0
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$0	$0	$0	$0	$0	$0
1707010209	$0	$0	$0	$0	$0	$0
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$0	$0	$0	$0	$0	$0
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$0	$0	$0	$0	$0	$0
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$0	$0	$0	$0	$0	$0
1707010306	$0	$0	$0	$0	$0	$0
1707010307	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010502	$0	$0	$0	$0	$0	$0
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$0	$0	$50,341	$45,070	$100,682	$90,140
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010513	$0	$0	$25,171	$22,535	$50,341	$45,070
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$0	$0	$0	$0	$0	$0
1707010603	$0	$0	$0	$0	$0	$0
1707010604	$0	$0	$0	$0	$0	$0
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$0	$0	$0	$0
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$0	$0	$0	$0	$0	$0
1707020111	$0	$0	$0	$0	$0	$0
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$0	$0	$0	$0	$0	$0
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$0	$0	$0	$0	$0	$0
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$0	$0	$0	$0	$0	$0

Table C-12 Annual Potential Mining Impact						
	Cost Estimate and Discount Rate					
Watershed	**Low - 3%**	**Low - 7%**	**Mid - 3%**	**Mid - 7%**	**High - 3%**	**High - 7%**
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$0	$0	$0	$0	$0	$0
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$0	$0	$0	$0	$0	$0
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$25,171	$22,535	$50,341	$45,070
1707020411	$0	$0	$0	$0	$0	$0
1707020412	$0	$0	$0	$0	$0	$0
1707020413	$0	$0	$0	$0	$0	$0
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$0	$0	$0	$0	$0	$0
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$25,171	$22,535	$50,341	$45,070
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$0	$0	$0	$0	$0	$0
1707030611	$0	$0	$25,171	$22,535	$50,341	$45,070
1707030612	$0	$0	$0	$0	$0	$0
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$0	$0	$0	$0	$0	$0
Lower Columbia	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$13,536	$13,536	$13,830	$13,830	$14,125	$14,125
1711000202	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1711000204	$0	$0	$0	$0	$0	$0
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$0	$0	$0	$0
1711000403	$0	$0	$0	$0	$0	$0
1711000404	$0	$0	$0	$0	$0	$0
1711000405	$9,024	$9,024	$9,220	$9,220	$9,416	$9,416
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$0	$0	$0	$0	$0	$0
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$0	$0	$0	$0	$0	$0
1711000508	$0	$0	$0	$0	$0	$0
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$0	$0	$0	$0	$0	$0
1711000604	$0	$0	$0	$0	$0	$0
1711000701	$0	$0	$0	$0	$0	$0
1711000702	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1711000801	$0	$0	$0	$0	$0	$0
1711000802	$0	$0	$0	$0	$0	$0
1711000803	$0	$0	$0	$0	$0	$0
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$0	$0	$0	$0	$0	$0
1711000903	$0	$0	$0	$0	$0	$0
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711001003	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711001004	$0	$0	$0	$0	$0	$0
1711001101	$0	$0	$0	$0	$0	$0
1711001102	$40,608	$40,608	$41,491	$41,491	$42,374	$42,374
1711001201	$13,536	$13,536	$13,830	$13,830	$14,125	$14,125
1711001202	$27,072	$27,072	$27,661	$27,661	$28,249	$28,249
1711001203	$9,024	$9,024	$9,220	$9,220	$9,416	$9,416
1711001204	$45,120	$45,120	$46,101	$46,101	$47,082	$47,082
1711001301	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711001302	$0	$0	$0	$0	$0	$0
1711001303	$40,608	$40,608	$41,491	$41,491	$42,374	$42,374
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$0	$0	$0	$0	$0	$0
1711001404	$0	$0	$0	$0	$0	$0
1711001405	$9,024	$9,024	$9,220	$9,220	$9,416	$9,416
1711001502	$0	$0	$0	$0	$0	$0
1711001503	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711001601	$0	$0	$0	$0	$0	$0
1711001602	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001808	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711001900	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711001901	$22,560	$22,560	$23,051	$23,051	$23,541	$23,541
1711001902	$0	$0	$0	$0	$0	$0
1711001904	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1711002003	$0	$0	$0	$0	$0	$0
1711002004	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711002007	$0	$0	$0	$0	$0	$0
N01	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
N02	$0	$0	$0	$0	$0	$0
N03	$0	$0	$0	$0	$0	$0
N04	$0	$0	$0	$0	$0	$0
N05	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
N06	$0	$0	$0	$0	$0	$0
N07	$0	$0	$0	$0	$0	$0
N08	$0	$0	$0	$0	$0	$0
N09	$0	$0	$0	$0	$0	$0
N10	$0	$0	$0	$0	$0	$0
N11	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
N12	$0	$0	$0	$0	$0	$0
N13	$0	$0	$0	$0	$0	$0
N14	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
N15	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$16,963	$16,963	$17,331	$17,331	$17,700	$17,700
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$0	$0	$0	$0	$0	$0
1707010512	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1708000105	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1708000106	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1708000107	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1708000108	$61,065	$61,065	$62,393	$62,393	$63,720	$63,720
1708000109	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1708000205	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1708000302	$20,355	$20,355	$20,798	$20,798	$21,240	$21,240
1708000303	$0	$0	$0	$0	$0	$0
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000601	$20,355	$20,355	$20,798	$20,798	$21,240	$21,240
1708000602	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$0	$0	$0	$0	$0	$0
1709000704	$135,700	$135,700	$138,650	$138,650	$141,600	$141,600
1709001105	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709001106	$108,560	$108,560	$110,920	$110,920	$113,280	$113,280
1709001201	$149,270	$149,270	$152,515	$152,515	$155,760	$155,760
1709001202	$54,280	$54,280	$55,460	$55,460	$56,640	$56,640
1709001203	$220,513	$220,513	$225,306	$225,306	$230,100	$230,100
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000108	$0	$0	$0	$0	$0	$0
1709000109	$0	$0	$0	$0	$0	$0
1709000110	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000201	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1709000205	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1709000301	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000302	$108,560	$108,560	$110,920	$110,920	$113,280	$113,280
1709000303	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1709000304	$71,243	$71,243	$72,791	$72,791	$74,340	$74,340
1709000305	$61,065	$61,065	$62,393	$62,393	$63,720	$63,720
1709000306	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000404	$0	$0	$0	$0	$0	$0
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$0	$0	$0	$0	$0	$0
1709000407	$23,748	$23,748	$24,264	$24,264	$24,780	$24,780
1709000504	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000601	$23,748	$23,748	$24,264	$24,264	$24,780	$24,780
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$78,028	$78,028	$79,724	$79,724	$81,420	$81,420
1709000702	$54,280	$54,280	$55,460	$55,460	$56,640	$56,640
1709000703	$213,728	$213,728	$218,374	$218,374	$223,020	$223,020
1709000704	$135,700	$135,700	$138,650	$138,650	$141,600	$141,600
1709000804	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1709000805	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000806	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1709000807	$47,495	$47,495	$48,528	$48,528	$49,560	$49,560
1709000901	$30,533	$30,533	$31,196	$31,196	$31,860	$31,860
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$23,748	$23,748	$24,264	$24,264	$24,780	$24,780
1709000904	$47,495	$47,495	$48,528	$48,528	$49,560	$49,560
1709000905	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000906	$16,963	$16,963	$17,331	$17,331	$17,700	$17,700
1709001101	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709001106	$108,560	$108,560	$110,920	$110,920	$113,280	$113,280
1709001201	$149,270	$149,270	$152,515	$152,515	$155,760	$155,760
1709001202	$54,280	$54,280	$55,460	$55,460	$56,640	$56,640
1709001203	$220,513	$220,513	$225,306	$225,306	$230,100	$230,100
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$0	$0	$0	$0
1702000807	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1707010512	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
Lower Columbia	$0	$0	$0	$0	$0	$0
Hood Canal Summer-run chum salmon ESU						
1711001701	$0	$0	$0	$0	$0	$0
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001807	$0	$0	$0	$0	$0	$0
1711001808	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$0	$0	$0	$0	$0	$0
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$0	$0	$0	$0	$0	$0
N15	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$0	$0	$0	$0
Columbia River chum salmon ESU						
1707010509	$0	$0	$0	$0	$0	$0
1707010512	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1707010513	$0	$0	$0	$0	$0	$0
1708000106	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1708000107	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1708000109	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1708000205	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1708000304	$0	$0	$0	$0	$0	$0
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1708000602	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1708000603	$0	$0	$0	$0	$0	$0
Lower Co-lumbia	$0	$0	$0	$0	$0	$0
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$0	$0	$0	$0
Upper Columbia River steelhead ESU						
1702000503	$0	$0	$0	$0	$0	$0
1702000504	$0	$0	$0	$0	$0	$0
1702000505	$0	$0	$0	$0	$0	$0
1702000601	$0	$0	$0	$0	$0	$0
1702000602	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1702000603	$0	$0	$0	$0	$0	$0
1702000604	$0	$0	$0	$0	$0	$0
1702000605	$0	$0	$0	$0	$0	$0
1702000704	$0	$0	$0	$0	$0	$0
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$0	$0	$0	$0	$0	$0
1702000805	$0	$0	$0	$0	$0	$0
1702000806	$0	$0	$0	$0	$0	$0
1702000807	$0	$0	$0	$0	$0	$0
1702000903	$0	$0	$0	$0	$0	$0
1702001001	$0	$0	$0	$0	$0	$0
1702001002	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1702001003	$0	$0	$0	$0	$0	$0
1702001004	$0	$0	$0	$0	$0	$0
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$0	$0	$0	$0	$0	$0
1702001103	$0	$0	$0	$0	$0	$0
1702001104	$0	$0	$0	$0	$0	$0
1702001105	$0	$0	$0	$0	$0	$0
1702001204	$0	$0	$0	$0	$0	$0
1702001509	$0	$0	$0	$0	$0	$0
1702001604	$0	$0	$0	$0	$0	$0
1702001605	$0	$0	$0	$0	$0	$0
1702001606	$0	$0	$0	$0	$0	$0
1707010101	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1707010512	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
Lower Columbia	$0	$0	$0	$0	$0	$0
Snake River Basin steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1706010101	$0	$0	$0	$0	$0	$0
1706010102	$0	$0	$0	$0	$0	$0
1706010104	$0	$0	$0	$0	$0	$0
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$0	$0	$0	$0	$0	$0
1706010203	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$0	$0	$0	$0	$0	$0
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$0	$0	$0	$0	$0	$0
1706010303	$72,328	$72,328	$73,900	$73,900	$75,473	$75,473
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1706010404	$0	$0	$0	$0	$0	$0
1706010405	$0	$0	$0	$0	$0	$0
1706010406	$0	$0	$0	$0	$0	$0
1706010407	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1706010408	$0	$0	$0	$0	$0	$0
1706010409	$0	$0	$0	$0	$0	$0
1706010410	$0	$0	$0	$0	$0	$0
1706010411	$0	$0	$0	$0	$0	$0
1706010501	$0	$0	$0	$0	$0	$0
1706010502	$0	$0	$0	$0	$0	$0
1706010503	$0	$0	$0	$0	$0	$0
1706010504	$0	$0	$0	$0	$0	$0
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$0	$0	$0	$0	$0	$0
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$0	$0	$0	$0	$0	$0
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$0	$0	$0	$0	$0	$0
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$0	$0	$0	$0	$0	$0
1706010703	$0	$0	$0	$0	$0	$0
1706010704	$18,082	$18,082	$18,475	$18,475	$18,868	$18,868
1706010705	$0	$0	$0	$0	$0	$0
1706010706	$0	$0	$0	$0	$0	$0
1706010707	$0	$0	$0	$0	$0	$0
1706010708	$0	$0	$0	$0	$0	$0
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$0	$0	$0	$0
1706011003	$0	$0	$0	$0	$0	$0
1706011004	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$0	$0	$0	$0	$0	$0
1706020104	$0	$0	$0	$0	$0	$0
1706020105	$0	$0	$0	$0	$0	$0
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$0	$0	$0	$0	$0	$0
1706020113	$0	$0	$0	$0	$0	$0
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$0	$0	$0	$0	$0	$0
1706020117	$0	$0	$0	$0	$0	$0
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$0	$0	$0	$0	$0	$0
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$0	$0	$0	$0	$0	$0
1706020123	$0	$0	$0	$0	$0	$0
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$0	$0	$0	$0	$0	$0
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$0	$0	$0	$0	$0	$0
1706020129	$0	$0	$0	$0	$0	$0
1706020130	$0	$0	$0	$0	$0	$0
1706020132	$0	$0	$0	$0	$0	$0
1706020201	$0	$0	$0	$0	$0	$0
1706020202	$0	$0	$0	$0	$0	$0
1706020203	$0	$0	$0	$0	$0	$0
1706020301	$0	$0	$0	$0	$0	$0
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$0	$0	$0	$0	$0	$0
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$0	$0	$0	$0	$0	$0
1706020306	$0	$0	$0	$0	$0	$0
1706020307	$0	$0	$0	$0	$0	$0
1706020308	$0	$0	$0	$0	$0	$0
1706020309	$0	$0	$0	$0	$0	$0
1706020310	$0	$0	$0	$0	$0	$0
1706020311	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$0	$0	$0	$0	$0	$0
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$0	$0	$0	$0	$0	$0
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$0	$0	$0	$0
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$0	$0	$0	$0	$0	$0
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$0	$0	$0	$0	$0	$0
1706020402	$0	$0	$0	$0	$0	$0
1706020403	$0	$0	$0	$0	$0	$0
1706020404	$0	$0	$0	$0	$0	$0
1706020405	$0	$0	$0	$0	$0	$0
1706020406	$0	$0	$0	$0	$0	$0
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$0	$0	$0	$0
1706020501	$0	$0	$0	$0	$0	$0
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$0	$0	$0	$0
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$0	$0	$0	$0	$0	$0
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$0	$0	$0	$0	$0	$0
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$0	$0	$0	$0	$0	$0
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$0	$0	$0	$0	$0	$0
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$18,082	$18,082	$18,475	$18,475	$18,868	$18,868
1706020912	$0	$0	$0	$0	$0	$0
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$0	$0	$0	$0	$0	$0
1706021002	$0	$0	$0	$0	$0	$0
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$0	$0	$0	$0	$0	$0
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$0	$0	$0	$0	$0	$0
1706030402	$0	$0	$0	$0	$0	$0
1706030501	$0	$0	$0	$0	$0	$0
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$0	$0	$0	$0	$0	$0
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$0	$0	$0	$0	$0	$0
1706030602	$0	$0	$0	$0	$0	$0
1706030603	$0	$0	$0	$0	$0	$0
1706030604	$0	$0	$0	$0	$0	$0
1706030605	$0	$0	$0	$0	$0	$0
1706030606	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030607	$0	$0	$0	$0	$0	$0
1706030608	$0	$0	$0	$0	$0	$0
1706030609	$0	$0	$0	$0	$0	$0
1706030610	$0	$0	$0	$0	$0	$0
1706030611	$0	$0	$0	$0	$0	$0
1706030612	$18,082	$18,082	$18,475	$18,475	$18,868	$18,868
1706030613	$18,082	$18,082	$18,475	$18,475	$18,868	$18,868
1706030614	$36,164	$36,164	$36,950	$36,950	$37,736	$37,736
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$0	$0	$0	$0
1706030621	$0	$0	$0	$0	$0	$0
1706030622	$0	$0	$0	$0	$0	$0
1706030623	$0	$0	$0	$0	$0	$0
1706030624	$0	$0	$0	$0	$0	$0
1706030627	$0	$0	$0	$0	$0	$0
1706030628	$0	$0	$0	$0	$0	$0
1706030629	$0	$0	$0	$0	$0	$0
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$0	$0	$0	$0	$0	$0
1707010101	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1707010102	$0	$0	$0	$0	$0	$0
1707010106	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010501	$0	$0	$0	$0	$0	$0
1707010504	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1707010512	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1707010513	$0	$0	$0	$0	$0	$0
1708000107	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
Lower Columbia	$0	$0	$0	$0	$0	$0
Lower Columbia River steelhead ESU						
1707010506	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1707010507	$0	$0	$0	$0	$0	$0
1707010508	$16,963	$16,963	$17,331	$17,331	$17,700	$17,700
1707010511	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010512	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1707010513	$0	$0	$0	$0	$0	$0
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1708000105	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1708000106	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1708000107	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1708000108	$61,065	$61,065	$62,393	$62,393	$63,720	$63,720
1708000109	$18,048	$18,048	$18,440	$18,440	$18,833	$18,833
1708000205	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1708000206	$0	$0	$0	$0	$0	$0
1708000301	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$0	$0	$0	$0	$0	$0
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$0	$0	$0	$0	$0	$0
1708000502	$0	$0	$0	$0	$0	$0
1708000503	$0	$0	$0	$0	$0	$0
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$0	$0	$0	$0	$0	$0
1708000507	$0	$0	$0	$0	$0	$0
1708000508	$0	$0	$0	$0	$0	$0
1709000704	$135,700	$135,700	$138,650	$138,650	$141,600	$141,600
1709001101	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$0	$0	$0	$0
1709001105	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709001106	$108,560	$108,560	$110,920	$110,920	$113,280	$113,280
1709001201	$149,270	$149,270	$152,515	$152,515	$155,760	$155,760
1709001202	$54,280	$54,280	$55,460	$55,460	$56,640	$56,640
1709001203	$220,513	$220,513	$225,306	$225,306	$230,100	$230,100
Lower Columbia	$0	$0	$0	$0	$0	$0
Upper Willamette River steelhead ESU						

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000303	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1709000304	$71,243	$71,243	$72,791	$72,791	$74,340	$74,340
1709000306	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000504	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000505	$0	$0	$0	$0	$0	$0
1709000506	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000601	$23,748	$23,748	$24,264	$24,264	$24,780	$24,780
1709000602	$0	$0	$0	$0	$0	$0
1709000603	$0	$0	$0	$0	$0	$0
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$0	$0	$0	$0	$0	$0
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$78,028	$78,028	$79,724	$79,724	$81,420	$81,420
1709000702	$54,280	$54,280	$55,460	$55,460	$56,640	$56,640
1709000703	$213,728	$213,728	$218,374	$218,374	$223,020	$223,020
1709000704	$135,700	$135,700	$138,650	$138,650	$141,600	$141,600
1709000801	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000802	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000803	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000804	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1709000805	$10,178	$10,178	$10,399	$10,399	$10,620	$10,620
1709000806	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1709000807	$47,495	$47,495	$48,528	$48,528	$49,560	$49,560
1709000901	$30,533	$30,533	$31,196	$31,196	$31,860	$31,860
1709000902	$0	$0	$0	$0	$0	$0
1709000903	$23,748	$23,748	$24,264	$24,264	$24,780	$24,780
1709000904	$47,495	$47,495	$48,528	$48,528	$49,560	$49,560
1709000905	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1709000906	$16,963	$16,963	$17,331	$17,331	$17,700	$17,700
1709001001	$74,635	$74,635	$76,258	$76,258	$77,880	$77,880
1709001002	$23,748	$23,748	$24,264	$24,264	$24,780	$24,780
1709001003	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1709001004	$281,578	$281,578	$287,699	$287,699	$293,820	$293,820
1709001005	$196,765	$196,765	$201,043	$201,043	$205,320	$205,320
1709001201	$149,270	$149,270	$152,515	$152,515	$155,760	$155,760
1709001202	$54,280	$54,280	$55,460	$55,460	$56,640	$56,640
1709001203	$220,513	$220,513	$225,306	$225,306	$230,100	$230,100
Lower Columbia	$0	$0	$0	$0	$0	$0
Middle Columbia River steelhead ESU						

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$0	$0	$0	$0	$0	$0
1703000101	$0	$0	$0	$0	$0	$0
1703000102	$0	$0	$0	$0	$0	$0
1703000103	$9,024	$9,024	$9,220	$9,220	$9,416	$9,416
1703000104	$0	$0	$0	$0	$0	$0
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$0	$0	$0	$0
1703000203	$0	$0	$0	$0	$0	$0
1703000301	$0	$0	$0	$0	$0	$0
1703000302	$0	$0	$0	$0	$0	$0
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$0	$0	$0	$0	$0	$0
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1703000307	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1707010101	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1707010102	$0	$0	$0	$0	$0	$0
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$0	$0	$0	$0
1707010201	$0	$0	$0	$0	$0	$0
1707010202	$4,512	$4,512	$4,610	$4,610	$4,708	$4,708
1707010203	$0	$0	$0	$0	$0	$0
1707010204	$0	$0	$0	$0	$0	$0
1707010207	$0	$0	$0	$0	$0	$0
1707010208	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1707010209	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1707010210	$0	$0	$0	$0	$0	$0
1707010211	$0	$0	$0	$0	$0	$0
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$16,963	$16,963	$17,331	$17,331	$17,700	$17,700
1707010304	$0	$0	$0	$0	$0	$0
1707010305	$0	$0	$0	$0	$0	$0
1707010306	$0	$0	$0	$0	$0	$0
1707010307	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$0	$0	$0	$0	$0	$0
1707010313	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1707010501	$0	$0	$0	$0	$0	$0
1707010502	$0	$0	$0	$0	$0	$0
1707010503	$0	$0	$0	$0	$0	$0
1707010504	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1707010505	$0	$0	$0	$0	$0	$0
1707010509	$0	$0	$0	$0	$0	$0
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$13,570	$13,570	$13,865	$13,865	$14,160	$14,160
1707010513	$0	$0	$0	$0	$0	$0
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$0	$0	$0	$0	$0	$0
1707010603	$0	$0	$0	$0	$0	$0
1707010604	$0	$0	$0	$0	$0	$0
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$0	$0	$0	$0
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$0	$0	$0	$0	$0	$0
1707020111	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$0	$0	$0	$0	$0	$0
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$3,393	$3,393	$3,466	$3,466	$3,540	$3,540
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$0	$0	$0	$0	$0	$0
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$0	$0	$0	$0	$0	$0

Table C-13 Annual Potential Development Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$0	$0	$0	$0	$0	$0
1707020402	$0	$0	$0	$0	$0	$0
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$0	$0	$0	$0	$0	$0
1707020406	$0	$0	$0	$0	$0	$0
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$0	$0	$0	$0	$0	$0
1707020409	$0	$0	$0	$0	$0	$0
1707020410	$0	$0	$0	$0	$0	$0
1707020411	$0	$0	$0	$0	$0	$0
1707020412	$0	$0	$0	$0	$0	$0
1707020413	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
1707020414	$0	$0	$0	$0	$0	$0
1707030603	$0	$0	$0	$0	$0	$0
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$0	$0	$0	$0	$0	$0
1707030608	$0	$0	$0	$0	$0	$0
1707030610	$0	$0	$0	$0	$0	$0
1707030611	$0	$0	$0	$0	$0	$0
1707030612	$0	$0	$0	$0	$0	$0
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$0	$0	$0	$0	$0	$0
1708000107	$6,785	$6,785	$6,933	$6,933	$7,080	$7,080
Lower Columbia	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Puget Sound chinook salmon ESU						
1711000201	$0	$0	$472	$472	$944	$944
1711000202	$23,296	$23,296	$81,856	$81,856	$140,417	$140,417
1711000204	$2,095	$2,095	$3,612	$3,612	$5,128	$5,128
1711000401	$0	$0	$0	$0	$0	$0
1711000402	$0	$0	$0	$0	$0	$0
1711000403	$26,856	$26,856	$60,569	$60,569	$94,283	$94,283
1711000404	$3,033	$3,033	$12,992	$12,992	$22,950	$22,950
1711000405	$22,661	$22,661	$69,985	$69,985	$117,310	$117,310
1711000504	$0	$0	$0	$0	$0	$0
1711000505	$0	$0	$0	$0	$0	$0
1711000506	$0	$0	$0	$0	$0	$0
1711000507	$85	$85	$348	$348	$612	$612
1711000508	$0	$0	$38	$38	$77	$77
1711000601	$0	$0	$0	$0	$0	$0
1711000602	$0	$0	$0	$0	$0	$0
1711000603	$143	$143	$194	$194	$245	$245
1711000604	$51	$51	$58	$58	$65	$65
1711000701	$6,063	$6,063	$22,014	$22,014	$37,964	$37,964
1711000702	$12,797	$12,797	$64,690	$64,690	$116,583	$116,583
1711000801	$116	$116	$312	$312	$509	$509
1711000802	$126	$126	$254	$254	$382	$382
1711000803	$694	$694	$2,037	$2,037	$3,380	$3,380
1711000901	$0	$0	$0	$0	$0	$0
1711000902	$0	$0	$0	$0	$0	$0
1711000903	$18	$18	$32	$32	$46	$46
1711000904	$0	$0	$0	$0	$0	$0
1711000905	$120	$120	$456	$456	$792	$792
1711001003	$65,584	$65,584	$167,251	$167,251	$268,919	$268,919
1711001004	$43,832	$43,832	$156,700	$156,700	$269,567	$269,567
1711001101	$63	$63	$251	$251	$438	$438
1711001102	$103	$103	$254	$254	$404	$404
1711001201	$1,290	$1,290	$1,317	$1,317	$1,343	$1,343
1711001202	$1,114	$1,114	$1,132	$1,132	$1,150	$1,150
1711001203	$2,007	$2,007	$2,282	$2,282	$2,557	$2,557
1711001204	$4,780	$4,780	$10,551	$10,551	$16,322	$16,322
1711001301	$0	$0	$0	$0	$0	$0
1711001302	$0	$0	$2	$2	$3	$3
1711001303	$28,550	$28,550	$77,891	$77,891	$127,233	$127,233
1711001401	$0	$0	$0	$0	$0	$0
1711001402	$11,125	$11,125	$29,402	$29,402	$47,679	$47,679

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1711001403	$761	$761	$4,918	$4,918	$9,074	$9,074
1711001404	$3,539	$3,539	$10,367	$10,367	$17,196	$17,196
1711001405	$16,183	$16,183	$48,445	$48,445	$80,707	$80,707
1711001502	$1,240	$1,240	$3,923	$3,923	$6,606	$6,606
1711001503	$2,596	$2,596	$8,270	$8,270	$13,945	$13,945
1711001601	$632	$632	$1,499	$1,499	$2,366	$2,366
1711001602	$43	$43	$185	$185	$328	$328
1711001701	$357	$357	$4,457	$4,457	$8,557	$8,557
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$0	$0	$0	$0
1711001900	$0	$0	$0	$0	$0	$0
1711001901	$149	$149	$435	$435	$720	$720
1711001902	$129	$129	$179	$179	$230	$230
1711001904	$0	$0	$0	$0	$0	$0
1711002003	$19	$19	$105	$105	$191	$191
1711002004	$0	$0	$0	$0	$0	$0
1711002007	$0	$0	$4	$4	$7	$7
N01	$547	$547	$3,350	$3,350	$6,154	$6,154
N02	$1,132	$1,132	$2,284	$2,284	$3,435	$3,435
N03	$740	$740	$6,614	$6,614	$12,488	$12,488
N04	$25	$25	$85	$85	$145	$145
N05	$19	$19	$240	$240	$461	$461
N06	$26	$26	$56	$56	$87	$87
N07	$0	$0	$1	$1	$3	$3
N08	$0	$0	$18	$18	$37	$37
N09	$46	$46	$46	$46	$46	$46
N10	$0	$0	$0	$0	$0	$0
N11	$290	$290	$490	$490	$689	$689
N12	$0	$0	$0	$0	$0	$0
N13	$0	$0	$0	$0	$0	$0
N14	$1,177	$1,177	$3,639	$3,639	$6,102	$6,102
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0
N18	$0	$0	$0	$0	$0	$0
N19	$1	$1	$184	$184	$366	$366

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
Lower Columbia River chinook salmon ESU						
1707010506	$10,161	$10,161	$30,813	$30,813	$51,465	$51,465
1707010507	$983	$983	$5,611	$5,611	$10,239	$10,239
1707010508	$9,147	$9,147	$34,504	$34,504	$59,861	$59,861
1707010509	$155	$155	$8,913	$8,913	$17,670	$17,670
1707010510	$0	$0	$0	$0	$0	$0
1707010511	$73	$73	$281	$281	$490	$490
1707010512	$0	$0	$2	$2	$4	$4
1707010513	$30	$30	$31	$31	$31	$31
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$28	$28	$55	$55
1708000103	$0	$0	$0	$0	$0	$0
1708000104	$177	$177	$932	$932	$1,686	$1,686
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$26	$26	$181	$181	$336	$336
1708000107	$114	$114	$576	$576	$1,037	$1,037
1708000108	$158	$158	$585	$585	$1,011	$1,011
1708000109	$707	$707	$3,687	$3,687	$6,667	$6,667
1708000205	$113	$113	$1,072	$1,072	$2,032	$2,032
1708000206	$491	$491	$3,343	$3,343	$6,194	$6,194
1708000301	$2,397	$2,397	$8,032	$8,032	$13,667	$13,667
1708000302	$275	$275	$870	$870	$1,465	$1,465
1708000303	$36	$36	$183	$183	$330	$330
1708000304	$820	$820	$1,901	$1,901	$2,983	$2,983
1708000305	$0	$0	$0	$0	$0	$0
1708000306	$622	$622	$1,708	$1,708	$2,794	$2,794
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$999	$999	$6,859	$6,859	$12,719	$12,719
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$1,504	$1,504	$3,025	$3,025	$4,547	$4,547
1708000502	$120	$120	$1,073	$1,073	$2,027	$2,027
1708000503	$867	$867	$3,224	$3,224	$5,581	$5,581
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$193	$193	$412	$412	$631	$631
1708000507	$2,775	$2,775	$8,424	$8,424	$14,072	$14,072
1708000508	$4,625	$4,625	$15,993	$15,993	$27,361	$27,361
1708000601	$147	$147	$503	$503	$859	$859
1708000602	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1708000603	$6,387	$6,387	$15,652	$15,652	$24,917	$24,917
1709000704	$0	$0	$0	$0	$0	$0
1709001105	$332	$332	$852	$852	$1,372	$1,372
1709001106	$6,163	$6,163	$16,746	$16,746	$27,329	$27,329
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$3,815	$3,815	$20,563	$20,563	$37,311	$37,311
1709001203	$977	$977	$6,198	$6,198	$11,419	$11,419
Lower Co-lumbia	$1,337	$1,337	$7,194	$7,194	$13,051	$13,051
Upper Willamette River chinook salmon ESU						
1709000101	$0	$0	$0	$0	$0	$0
1709000102	$0	$0	$0	$0	$0	$0
1709000103	$0	$0	$0	$0	$0	$0
1709000104	$0	$0	$0	$0	$0	$0
1709000105	$0	$0	$0	$0	$0	$0
1709000106	$0	$0	$0	$0	$0	$0
1709000107	$199	$199	$831	$831	$1,463	$1,463
1709000108	$218	$218	$1,417	$1,417	$2,617	$2,617
1709000109	$751	$751	$2,129	$2,129	$3,506	$3,506
1709000110	$6,428	$6,428	$16,365	$16,365	$26,302	$26,302
1709000201	$3,864	$3,864	$13,878	$13,878	$23,892	$23,892
1709000202	$0	$0	$0	$0	$0	$0
1709000203	$0	$0	$0	$0	$0	$0
1709000205	$8,061	$8,061	$28,362	$28,362	$48,662	$48,662
1709000301	$7,289	$7,289	$18,237	$18,237	$29,184	$29,184
1709000302	$10,941	$10,941	$68,087	$68,087	$125,233	$125,233
1709000303	$1,413	$1,413	$4,219	$4,219	$7,025	$7,025
1709000304	$1,027	$1,027	$5,948	$5,948	$10,870	$10,870
1709000305	$6,864	$6,864	$23,109	$23,109	$39,353	$39,353
1709000306	$18,456	$18,456	$53,334	$53,334	$88,213	$88,213
1709000401	$0	$0	$0	$0	$0	$0
1709000402	$0	$0	$0	$0	$0	$0
1709000403	$1,049	$1,049	$1,145	$1,145	$1,241	$1,241
1709000404	$0	$0	$1	$1	$1	$1
1709000405	$0	$0	$0	$0	$0	$0
1709000406	$2,802	$2,802	$7,981	$7,981	$13,160	$13,160
1709000407	$35,267	$35,267	$112,028	$112,028	$188,788	$188,788
1709000504	$43	$43	$145	$145	$247	$247
1709000505	$40	$40	$227	$227	$414	$414
1709000506	$14,527	$14,527	$41,788	$41,788	$69,049	$69,049

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000601	$1,231	$1,231	$4,918	$4,918	$8,606	$8,606
1709000602	$98	$98	$360	$360	$623	$623
1709000603	$260	$260	$1,104	$1,104	$1,947	$1,947
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$6	$6	$7	$7	$7	$7
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$2,698	$2,698	$8,111	$8,111	$13,524	$13,524
1709000702	$7,696	$7,696	$49,210	$49,210	$90,725	$90,725
1709000703	$6,979	$6,979	$31,733	$31,733	$56,488	$56,488
1709000704	$153	$153	$3,799	$3,799	$7,446	$7,446
1709000804	$3,053	$3,053	$7,680	$7,680	$12,307	$12,307
1709000805	$374	$374	$1,260	$1,260	$2,147	$2,147
1709000806	$1,690	$1,690	$3,457	$3,457	$5,223	$5,223
1709000807	$4,685	$4,685	$14,414	$14,414	$24,142	$24,142
1709000901	$4,088	$4,088	$13,467	$13,467	$22,847	$22,847
1709000902	$15,161	$15,161	$50,622	$50,622	$86,083	$86,083
1709000903	$5,295	$5,295	$14,972	$14,972	$24,648	$24,648
1709000904	$3,013	$3,013	$9,438	$9,438	$15,862	$15,862
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$5,654	$5,654	$21,655	$21,655	$37,655	$37,655
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$114	$114	$228	$228
1709001105	$332	$332	$852	$852	$1,372	$1,372
1709001106	$3,927	$3,927	$14,733	$14,733	$25,539	$25,539
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$3,407	$3,407	$18,005	$18,005	$32,603	$32,603
1709001203	$833	$833	$4,195	$4,195	$7,556	$7,556
Lower Columbia	$1,052	$1,052	$6,167	$6,167	$11,283	$11,283
Upper Columbia River spring-run chinook salmon ESU						
1702000505	$33,405	$33,405	$203,111	$203,111	$372,817	$372,817
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$9,053	$9,053	$32,579	$32,579	$56,106	$56,106
1702000805	$11,399	$11,399	$37,204	$37,204	$63,010	$63,010
1702000806	$22,438	$22,438	$115,530	$115,530	$208,623	$208,623
1702000807	$29,656	$29,656	$138,229	$138,229	$246,802	$246,802

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001001	$91,119	$91,119	$234,777	$234,777	$378,434	$378,434
1702001002	$56,440	$56,440	$363,046	$363,046	$669,652	$669,652
1702001003	$105	$105	$4,894	$4,894	$9,683	$9,683
1702001004	$298	$298	$338	$338	$378	$378
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$14	$14	$355	$355	$697	$697
1702001103	$2,603	$2,603	$8,894	$8,894	$15,184	$15,184
1702001104	$15,557	$15,557	$89,625	$89,625	$163,693	$163,693
1702001105	$40,094	$40,094	$230,745	$230,745	$421,396	$421,396
1702001604	$15,329	$15,329	$64,575	$64,575	$113,820	$113,820
1702001605	$1,759	$1,759	$12,303	$12,303	$22,847	$22,847
1702001606	$6,738	$6,738	$37,693	$37,693	$68,648	$68,648
1707010101	$0	$0	$289	$289	$579	$579
1707010102	$7	$7	$13	$13	$19	$19
1707010106	$2	$2	$16	$16	$30	$30
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$5	$5	$10	$10
1707010501	$37	$37	$126	$126	$215	$215
1707010504	$5	$5	$462	$462	$920	$920
1707010512	$29	$29	$170	$170	$311	$311
1707010513	$30	$30	$31	$31	$31	$31
1708000107	$111	$111	$517	$517	$923	$923
Lower Columbia	$1,203	$1,203	$7,031	$7,031	$12,859	$12,859
Hood Canal Summer-run chum salmon ESU						
1711001701	$1,557	$1,557	$2,393	$2,393	$3,229	$3,229
1711001802	$0	$0	$0	$0	$0	$0
1711001803	$0	$0	$0	$0	$0	$0
1711001804	$0	$0	$0	$0	$0	$0
1711001805	$0	$0	$0	$0	$0	$0
1711001806	$0	$0	$0	$0	$0	$0
1711001807	$0	$0	$0	$0	$0	$0
1711001808	$0	$0	$0	$0	$0	$0
1711001908	$0	$0	$0	$0	$0	$0
1711002001	$1,486	$1,486	$3,601	$3,601	$5,716	$5,716
1711002002	$0	$0	$0	$0	$0	$0
1711002003	$34	$34	$131	$131	$228	$228
N15	$0	$0	$0	$0	$0	$0
N16	$0	$0	$0	$0	$0	$0
N17	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
N18	$0	$0	$0	$0	$0	$0
N19	$0	$0	$184	$184	$0	$0
Columbia River chum salmon ESU						
1707010509	$155	$155	$8,913	$8,913	$17,670	$17,670
1707010512	$0	$0	$2	$2	$4	$4
1707010513	$30	$30	$31	$31	$31	$31
1708000106	$26	$26	$181	$181	$336	$336
1708000107	$224	$224	$1,006	$1,006	$1,789	$1,789
1708000109	$354	$354	$2,442	$2,442	$4,531	$4,531
1708000205	$311	$311	$1,569	$1,569	$2,828	$2,828
1708000206	$339	$339	$3,003	$3,003	$5,666	$5,666
1708000301	$754	$754	$3,793	$3,793	$6,833	$6,833
1708000304	$201	$201	$963	$963	$1,725	$1,725
1708000305	$0	$0	$0	$0	$0	$0
1708000503	$1,146	$1,146	$4,871	$4,871	$8,596	$8,596
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$89	$89	$360	$360	$631	$631
1708000507	$2,488	$2,488	$7,335	$7,335	$12,183	$12,183
1708000508	$4,820	$4,820	$16,629	$16,629	$28,437	$28,437
1708000602	$0	$0	$0	$0	$0	$0
1708000603	$4,610	$4,610	$10,313	$10,313	$16,017	$16,017
Lower Columbia	$1,337	$1,337	$7,194	$7,194	$13,050	$13,050
Ozette Lake sockeye salmon ESU						
1710010102	$0	$0	$3	$3	$5	$5
Upper Columbia River steelhead ESU						
1702000503	$304	$304	$350	$350	$395	$395
1702000504	$1,432	$1,432	$14,965	$14,965	$28,497	$28,497
1702000505	$33,405	$33,405	$203,110	$203,110	$372,816	$372,816
1702000601	$60,251	$60,251	$326,030	$326,030	$591,808	$591,808
1702000602	$16,999	$16,999	$114,776	$114,776	$212,553	$212,553
1702000603	$17,423	$17,423	$52,954	$52,954	$88,486	$88,486
1702000604	$44,565	$44,565	$216,392	$216,392	$388,218	$388,218
1702000605	$47,618	$47,618	$282,175	$282,175	$516,732	$516,732
1702000704	$1,416	$1,416	$17,991	$17,991	$34,565	$34,565
1702000801	$0	$0	$0	$0	$0	$0
1702000802	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702000803	$0	$0	$0	$0	$0	$0
1702000804	$7,490	$7,490	$20,994	$20,994	$34,498	$34,498
1702000805	$11,399	$11,399	$37,108	$37,108	$62,817	$62,817
1702000806	$42,484	$42,484	$175,622	$175,622	$308,760	$308,760
1702000807	$36,353	$36,353	$152,564	$152,564	$268,776	$268,776
1702000903	$246	$246	$817	$817	$1,388	$1,388
1702001001	$93,996	$93,996	$240,233	$240,233	$386,471	$386,471
1702001002	$59,349	$59,349	$370,870	$370,870	$682,390	$682,390
1702001003	$276	$276	$6,639	$6,639	$13,002	$13,002
1702001004	$298	$298	$338	$338	$378	$378
1702001101	$0	$0	$0	$0	$0	$0
1702001102	$14	$14	$355	$355	$697	$697
1702001103	$3,977	$3,977	$13,525	$13,525	$23,073	$23,073
1702001104	$28,553	$28,553	$124,222	$124,222	$219,892	$219,892
1702001105	$68,245	$68,245	$316,219	$316,219	$564,193	$564,193
1702001204	$0	$0	$188	$188	$376	$376
1702001509	$947	$947	$2,704	$2,704	$4,461	$4,461
1702001604	$15,329	$15,329	$64,574	$64,574	$113,819	$113,819
1702001605	$1,759	$1,759	$12,303	$12,303	$22,847	$22,847
1702001606	$6,738	$6,738	$37,694	$37,694	$68,651	$68,651
1707010101	$0	$0	$289	$289	$579	$579
1707010102	$7	$7	$13	$13	$19	$19
1707010106	$2	$2	$16	$16	$30	$30
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$5	$5	$10	$10
1707010501	$37	$37	$126	$126	$215	$215
1707010504	$5	$5	$462	$462	$920	$920
1707010512	$29	$29	$170	$170	$311	$311
1707010513	$30	$30	$31	$31	$31	$31
1708000107	$111	$111	$517	$517	$923	$923
Lower Columbia	$1,203	$1,203	$7,032	$7,032	$12,861	$12,861
Snake River Basin steelhead ESU						
1702001606	$0	$0	$0	$0	$0	$0
1706010101	$300	$300	$672	$672	$1,045	$1,045
1706010102	$1,142	$1,142	$1,798	$1,798	$2,454	$2,454
1706010104	$995	$995	$1,189	$1,189	$1,384	$1,384
1706010201	$0	$0	$0	$0	$0	$0
1706010202	$63	$63	$187	$187	$312	$312
1706010203	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706010204	$17	$17	$41	$41	$65	$65
1706010205	$0	$0	$0	$0	$0	$0
1706010301	$0	$0	$0	$0	$0	$0
1706010302	$410	$410	$1,809	$1,809	$3,208	$3,208
1706010303	$166	$166	$655	$655	$1,144	$1,144
1706010401	$0	$0	$0	$0	$0	$0
1706010402	$0	$0	$0	$0	$0	$0
1706010403	$0	$0	$0	$0	$0	$0
1706010404	$2,348	$2,348	$7,475	$7,475	$12,602	$12,602
1706010405	$59	$59	$210	$210	$362	$362
1706010406	$3,938	$3,938	$11,419	$11,419	$18,901	$18,901
1706010407	$7,567	$7,567	$21,450	$21,450	$35,333	$35,333
1706010408	$6,535	$6,535	$18,911	$18,911	$31,286	$31,286
1706010409	$3,058	$3,058	$8,758	$8,758	$14,459	$14,459
1706010410	$0	$0	$0	$0	$0	$0
1706010411	$1,861	$1,861	$5,505	$5,505	$9,150	$9,150
1706010501	$1,874	$1,874	$5,573	$5,573	$9,271	$9,271
1706010502	$300	$300	$1,106	$1,106	$1,912	$1,912
1706010503	$702	$702	$2,170	$2,170	$3,637	$3,637
1706010504	$212	$212	$510	$510	$808	$808
1706010505	$0	$0	$0	$0	$0	$0
1706010506	$317	$317	$1,182	$1,182	$2,047	$2,047
1706010601	$0	$0	$0	$0	$0	$0
1706010602	$23	$23	$151	$151	$280	$280
1706010603	$0	$0	$0	$0	$0	$0
1706010604	$0	$0	$0	$0	$0	$0
1706010605	$0	$0	$0	$0	$0	$0
1706010606	$0	$0	$0	$0	$0	$0
1706010607	$98	$98	$662	$662	$1,227	$1,227
1706010701	$0	$0	$0	$0	$0	$0
1706010702	$0	$0	$32	$32	$65	$65
1706010703	$3,470	$3,470	$9,995	$9,995	$16,520	$16,520
1706010704	$30	$30	$84	$84	$138	$138
1706010705	$500	$500	$1,539	$1,539	$2,578	$2,578
1706010706	$41	$41	$68	$68	$95	$95
1706010707	$119	$119	$592	$592	$1,064	$1,064
1706010708	$532	$532	$1,968	$1,968	$3,403	$3,403
1706010808	$0	$0	$0	$0	$0	$0
1706011001	$0	$0	$160	$160	$320	$320
1706011003	$112	$112	$29,757	$29,757	$59,402	$59,402
1706011004	$2	$2	$724	$724	$1,445	$1,445

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020101	$3,623	$3,623	$10,709	$10,709	$17,794	$17,794
1706020104	$521	$521	$1,719	$1,719	$2,917	$2,917
1706020105	$737	$737	$1,258	$1,258	$1,780	$1,780
1706020107	$0	$0	$0	$0	$0	$0
1706020108	$0	$0	$0	$0	$0	$0
1706020109	$0	$0	$0	$0	$0	$0
1706020110	$0	$0	$0	$0	$0	$0
1706020111	$0	$0	$0	$0	$0	$0
1706020112	$24	$24	$159	$159	$294	$294
1706020113	$96	$96	$492	$492	$888	$888
1706020114	$0	$0	$0	$0	$0	$0
1706020115	$37	$37	$124	$124	$212	$212
1706020117	$90	$90	$442	$442	$794	$794
1706020118	$0	$0	$0	$0	$0	$0
1706020119	$41,830	$41,830	$126,147	$126,147	$210,464	$210,464
1706020120	$0	$0	$0	$0	$0	$0
1706020121	$0	$0	$0	$0	$0	$0
1706020122	$547	$547	$2,750	$2,750	$4,952	$4,952
1706020123	$256	$256	$731	$731	$1,207	$1,207
1706020124	$0	$0	$0	$0	$0	$0
1706020125	$0	$0	$0	$0	$0	$0
1706020126	$0	$0	$0	$0	$0	$0
1706020127	$0	$0	$0	$0	$0	$0
1706020128	$83	$83	$225	$225	$367	$367
1706020129	$755	$755	$1,745	$1,745	$2,735	$2,735
1706020130	$194	$194	$346	$346	$497	$497
1706020132	$541	$541	$1,825	$1,825	$3,109	$3,109
1706020201	$3,619	$3,619	$8,569	$8,569	$13,520	$13,520
1706020202	$2,255	$2,255	$8,692	$8,692	$15,130	$15,130
1706020203	$1,037	$1,037	$3,652	$3,652	$6,267	$6,267
1706020301	$222	$222	$1,173	$1,173	$2,123	$2,123
1706020302	$0	$0	$0	$0	$0	$0
1706020303	$62	$62	$296	$296	$530	$530
1706020304	$0	$0	$0	$0	$0	$0
1706020305	$3,511	$3,511	$8,025	$8,025	$12,539	$12,539
1706020306	$540	$540	$1,730	$1,730	$2,921	$2,921
1706020307	$389	$389	$1,267	$1,267	$2,145	$2,145
1706020308	$4,134	$4,134	$12,245	$12,245	$20,356	$20,356
1706020309	$8,705	$8,705	$17,761	$17,761	$26,816	$26,816
1706020310	$6,212	$6,212	$16,779	$16,779	$27,346	$27,346
1706020311	$513	$513	$1,317	$1,317	$2,121	$2,121

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020312	$2,969	$2,969	$8,698	$8,698	$14,428	$14,428
1706020313	$0	$0	$0	$0	$0	$0
1706020314	$6,573	$6,573	$15,378	$15,378	$24,184	$24,184
1706020315	$0	$0	$0	$0	$0	$0
1706020316	$0	$0	$0	$0	$0	$0
1706020317	$0	$0	$0	$0	$0	$0
1706020318	$0	$0	$0	$0	$0	$0
1706020319	$0	$0	$0	$0	$0	$0
1706020320	$0	$0	$0	$0	$0	$0
1706020321	$0	$0	$0	$0	$0	$0
1706020322	$561	$561	$5,152	$5,152	$9,742	$9,742
1706020323	$0	$0	$0	$0	$0	$0
1706020401	$10,368	$10,368	$21,528	$21,528	$32,689	$32,689
1706020402	$848	$848	$5,024	$5,024	$9,200	$9,200
1706020403	$0	$0	$193	$193	$387	$387
1706020404	$509	$509	$519	$519	$530	$530
1706020405	$516	$516	$897	$897	$1,278	$1,278
1706020406	$0	$0	$1,163	$1,163	$2,326	$2,326
1706020407	$0	$0	$0	$0	$0	$0
1706020412	$0	$0	$0	$0	$0	$0
1706020414	$0	$0	$118	$118	$236	$236
1706020501	$3	$3	$59	$59	$115	$115
1706020502	$0	$0	$0	$0	$0	$0
1706020503	$0	$0	$27	$27	$54	$54
1706020504	$0	$0	$0	$0	$0	$0
1706020505	$0	$0	$0	$0	$0	$0
1706020506	$0	$0	$0	$0	$0	$0
1706020507	$0	$0	$0	$0	$0	$0
1706020508	$0	$0	$0	$0	$0	$0
1706020509	$5,087	$5,087	$12,740	$12,740	$20,394	$20,394
1706020510	$0	$0	$0	$0	$0	$0
1706020511	$0	$0	$0	$0	$0	$0
1706020512	$0	$0	$0	$0	$0	$0
1706020513	$0	$0	$0	$0	$0	$0
1706020601	$0	$0	$0	$0	$0	$0
1706020602	$0	$0	$0	$0	$0	$0
1706020603	$0	$0	$0	$0	$0	$0
1706020604	$0	$0	$0	$0	$0	$0
1706020605	$0	$0	$0	$0	$0	$0
1706020606	$0	$0	$0	$0	$0	$0
1706020607	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020608	$0	$0	$0	$0	$0	$0
1706020609	$0	$0	$0	$0	$0	$0
1706020610	$0	$0	$0	$0	$0	$0
1706020611	$0	$0	$0	$0	$0	$0
1706020612	$0	$0	$0	$0	$0	$0
1706020613	$0	$0	$0	$0	$0	$0
1706020614	$0	$0	$0	$0	$0	$0
1706020615	$0	$0	$0	$0	$0	$0
1706020616	$0	$0	$0	$0	$0	$0
1706020617	$0	$0	$0	$0	$0	$0
1706020701	$0	$0	$0	$0	$0	$0
1706020702	$0	$0	$0	$0	$0	$0
1706020703	$0	$0	$0	$0	$0	$0
1706020704	$0	$0	$0	$0	$0	$0
1706020705	$0	$0	$0	$0	$0	$0
1706020706	$0	$0	$0	$0	$0	$0
1706020707	$0	$0	$0	$0	$0	$0
1706020708	$24	$24	$87	$87	$151	$151
1706020709	$0	$0	$0	$0	$0	$0
1706020710	$0	$0	$0	$0	$0	$0
1706020711	$0	$0	$0	$0	$0	$0
1706020712	$0	$0	$0	$0	$0	$0
1706020713	$0	$0	$0	$0	$0	$0
1706020714	$0	$0	$0	$0	$0	$0
1706020715	$0	$0	$0	$0	$0	$0
1706020716	$0	$0	$0	$0	$0	$0
1706020717	$0	$0	$0	$0	$0	$0
1706020718	$0	$0	$0	$0	$0	$0
1706020719	$0	$0	$0	$0	$0	$0
1706020801	$0	$0	$0	$0	$0	$0
1706020802	$0	$0	$0	$0	$0	$0
1706020803	$0	$0	$0	$0	$0	$0
1706020804	$0	$0	$0	$0	$0	$0
1706020805	$490	$490	$712	$712	$934	$934
1706020806	$0	$0	$0	$0	$0	$0
1706020807	$0	$0	$0	$0	$0	$0
1706020808	$0	$0	$0	$0	$0	$0
1706020809	$0	$0	$0	$0	$0	$0
1706020810	$0	$0	$0	$0	$0	$0
1706020811	$0	$0	$0	$0	$0	$0
1706020812	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706020813	$0	$0	$0	$0	$0	$0
1706020814	$0	$0	$0	$0	$0	$0
1706020815	$0	$0	$0	$0	$0	$0
1706020901	$0	$0	$0	$0	$0	$0
1706020902	$0	$0	$0	$0	$0	$0
1706020903	$0	$0	$0	$0	$0	$0
1706020904	$0	$0	$0	$0	$0	$0
1706020905	$0	$0	$0	$0	$0	$0
1706020906	$225	$225	$843	$843	$1,461	$1,461
1706020907	$0	$0	$0	$0	$0	$0
1706020908	$0	$0	$0	$0	$0	$0
1706020909	$0	$0	$0	$0	$0	$0
1706020910	$0	$0	$0	$0	$0	$0
1706020911	$0	$0	$0	$0	$0	$0
1706020912	$0	$0	$0	$0	$0	$0
1706020913	$0	$0	$0	$0	$0	$0
1706020914	$0	$0	$0	$0	$0	$0
1706020915	$0	$0	$0	$0	$0	$0
1706020916	$0	$0	$0	$0	$0	$0
1706020917	$0	$0	$0	$0	$0	$0
1706021001	$0	$0	$0	$0	$0	$0
1706021002	$0	$0	$0	$0	$0	$0
1706021003	$0	$0	$0	$0	$0	$0
1706021006	$0	$0	$0	$0	$0	$0
1706021007	$0	$0	$0	$0	$0	$0
1706030101	$0	$0	$0	$0	$0	$0
1706030102	$0	$0	$0	$0	$0	$0
1706030103	$0	$0	$0	$0	$0	$0
1706030104	$0	$0	$0	$0	$0	$0
1706030105	$0	$0	$0	$0	$0	$0
1706030106	$0	$0	$0	$0	$0	$0
1706030107	$0	$0	$0	$0	$0	$0
1706030108	$0	$0	$0	$0	$0	$0
1706030109	$0	$0	$0	$0	$0	$0
1706030201	$0	$0	$0	$0	$0	$0
1706030202	$0	$0	$0	$0	$0	$0
1706030203	$0	$0	$0	$0	$0	$0
1706030204	$0	$0	$0	$0	$0	$0
1706030205	$0	$0	$0	$0	$0	$0
1706030207	$0	$0	$0	$0	$0	$0
1706030208	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030209	$0	$0	$0	$0	$0	$0
1706030210	$0	$0	$0	$0	$0	$0
1706030211	$0	$0	$0	$0	$0	$0
1706030212	$0	$0	$0	$0	$0	$0
1706030213	$0	$0	$0	$0	$0	$0
1706030214	$0	$0	$0	$0	$0	$0
1706030301	$0	$0	$0	$0	$0	$0
1706030302	$0	$0	$0	$0	$0	$0
1706030303	$0	$0	$0	$0	$0	$0
1706030304	$0	$0	$0	$0	$0	$0
1706030305	$0	$0	$0	$0	$0	$0
1706030306	$0	$0	$0	$0	$0	$0
1706030307	$0	$0	$0	$0	$0	$0
1706030308	$0	$0	$0	$0	$0	$0
1706030309	$0	$0	$0	$0	$0	$0
1706030310	$0	$0	$0	$0	$0	$0
1706030311	$0	$0	$0	$0	$0	$0
1706030312	$0	$0	$0	$0	$0	$0
1706030313	$0	$0	$0	$0	$0	$0
1706030314	$0	$0	$0	$0	$0	$0
1706030401	$128	$128	$1,254	$1,254	$2,380	$2,380
1706030402	$260	$260	$696	$696	$1,133	$1,133
1706030501	$3,580	$3,580	$11,083	$11,083	$18,586	$18,586
1706030502	$0	$0	$0	$0	$0	$0
1706030503	$0	$0	$0	$0	$0	$0
1706030504	$0	$0	$0	$0	$0	$0
1706030505	$0	$0	$0	$0	$0	$0
1706030506	$0	$0	$0	$0	$0	$0
1706030507	$0	$0	$0	$0	$0	$0
1706030508	$0	$0	$0	$0	$0	$0
1706030509	$0	$0	$0	$0	$0	$0
1706030510	$0	$0	$0	$0	$0	$0
1706030511	$0	$0	$0	$0	$0	$0
1706030512	$2,872	$2,872	$8,614	$8,614	$14,356	$14,356
1706030513	$0	$0	$0	$0	$0	$0
1706030601	$73	$73	$996	$996	$1,920	$1,920
1706030602	$1,324	$1,324	$5,187	$5,187	$9,051	$9,051
1706030603	$7	$7	$218	$218	$428	$428
1706030604	$1,349	$1,349	$5,225	$5,225	$9,101	$9,101
1706030605	$2,093	$2,093	$6,867	$6,867	$11,642	$11,642
1706030606	$1,749	$1,749	$5,609	$5,609	$9,469	$9,469

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1706030607	$195	$195	$946	$946	$1,697	$1,697
1706030608	$1,157	$1,157	$5,017	$5,017	$8,876	$8,876
1706030609	$112	$112	$400	$400	$689	$689
1706030610	$838	$838	$2,674	$2,674	$4,510	$4,510
1706030611	$1,126	$1,126	$3,016	$3,016	$4,907	$4,907
1706030612	$0	$0	$0	$0	$0	$0
1706030613	$0	$0	$0	$0	$0	$0
1706030614	$0	$0	$0	$0	$0	$0
1706030615	$0	$0	$0	$0	$0	$0
1706030616	$0	$0	$0	$0	$0	$0
1706030617	$0	$0	$0	$0	$0	$0
1706030618	$0	$0	$0	$0	$0	$0
1706030619	$0	$0	$0	$0	$0	$0
1706030620	$0	$0	$7	$7	$15	$15
1706030621	$655	$655	$2,262	$2,262	$3,868	$3,868
1706030622	$1,788	$1,788	$6,598	$6,598	$11,407	$11,407
1706030623	$928	$928	$2,857	$2,857	$4,785	$4,785
1706030624	$85	$85	$281	$281	$478	$478
1706030627	$772	$772	$2,453	$2,453	$4,133	$4,133
1706030628	$135	$135	$749	$749	$1,362	$1,362
1706030629	$3,735	$3,735	$10,999	$10,999	$18,263	$18,263
1706030630	$0	$0	$0	$0	$0	$0
1706030631	$1,845	$1,845	$5,785	$5,785	$9,725	$9,725
1707010101	$0	$0	$289	$289	$579	$579
1707010102	$7	$7	$13	$13	$19	$19
1707010106	$2	$2	$16	$16	$30	$30
1707010109	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$5	$5	$10	$10
1707010501	$37	$37	$126	$126	$215	$215
1707010504	$5	$5	$462	$462	$920	$920
1707010512	$29	$29	$170	$170	$311	$311
1707010513	$30	$30	$31	$31	$31	$31
1708000107	$111	$111	$517	$517	$923	$923
Lower Columbia	$1,203	$1,203	$7,032	$7,032	$12,861	$12,861
Lower Columbia River steelhead ESU						
1707010506	$46,697	$46,697	$142,173	$142,173	$237,649	$237,649
1707010507	$983	$983	$5,672	$5,672	$10,361	$10,361
1707010508	$25,344	$25,344	$88,426	$88,426	$151,509	$151,509
1707010511	$73	$73	$281	$281	$490	$490

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010512	$0	$0	$2	$2	$4	$4
1707010513	$30	$30	$31	$31	$31	$31
1708000101	$0	$0	$0	$0	$0	$0
1708000102	$0	$0	$28	$28	$55	$55
1708000103	$0	$0	$48	$48	$96	$96
1708000104	$246	$246	$1,097	$1,097	$1,949	$1,949
1708000105	$0	$0	$0	$0	$0	$0
1708000106	$142	$142	$505	$505	$868	$868
1708000107	$223	$223	$1,015	$1,015	$1,807	$1,807
1708000108	$448	$448	$1,505	$1,505	$2,562	$2,562
1708000109	$3,493	$3,493	$12,488	$12,488	$21,482	$21,482
1708000205	$676	$676	$2,524	$2,524	$4,373	$4,373
1708000206	$4,838	$4,838	$15,775	$15,775	$26,712	$26,712
1708000301	$3,599	$3,599	$13,012	$13,012	$22,424	$22,424
1708000401	$0	$0	$0	$0	$0	$0
1708000402	$0	$0	$0	$0	$0	$0
1708000403	$1,837	$1,837	$9,425	$9,425	$17,013	$17,013
1708000404	$0	$0	$0	$0	$0	$0
1708000405	$0	$0	$0	$0	$0	$0
1708000501	$3,202	$3,202	$6,238	$6,238	$9,273	$9,273
1708000502	$120	$120	$1,073	$1,073	$2,027	$2,027
1708000503	$1,112	$1,112	$5,541	$5,541	$9,969	$9,969
1708000504	$0	$0	$0	$0	$0	$0
1708000505	$0	$0	$0	$0	$0	$0
1708000506	$291	$291	$522	$522	$754	$754
1708000507	$2,938	$2,938	$9,754	$9,754	$16,571	$16,571
1708000508	$5,117	$5,117	$17,120	$17,120	$29,123	$29,123
1709000704	$1,318	$1,318	$4,357	$4,357	$7,396	$7,396
1709001101	$0	$0	$0	$0	$0	$0
1709001102	$0	$0	$0	$0	$0	$0
1709001103	$0	$0	$0	$0	$0	$0
1709001104	$0	$0	$114	$114	$228	$228
1709001105	$1,836	$1,836	$5,490	$5,490	$9,144	$9,144
1709001106	$17,853	$17,853	$50,911	$50,911	$83,970	$83,970
1709001201	$1,507	$1,507	$4,911	$4,911	$8,315	$8,315
1709001202	$3,407	$3,407	$17,906	$17,906	$32,405	$32,405
1709001203	$977	$977	$6,198	$6,198	$11,419	$11,419
Lower Columbia	$1,339	$1,339	$7,196	$7,196	$13,053	$13,053
Upper Willamette River steelhead ESU						

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1709000303	$1,425	$1,425	$3,960	$3,960	$6,494	$6,494
1709000304	$468	$468	$5,807	$5,807	$11,147	$11,147
1709000306	$64,345	$64,345	$187,909	$187,909	$311,472	$311,472
1709000504	$80	$80	$236	$236	$393	$393
1709000505	$2	$2	$157	$157	$312	$312
1709000506	$12,316	$12,316	$40,075	$40,075	$67,834	$67,834
1709000601	$1,000	$1,000	$3,934	$3,934	$6,867	$6,867
1709000602	$98	$98	$281	$281	$463	$463
1709000603	$257	$257	$985	$985	$1,713	$1,713
1709000606	$0	$0	$0	$0	$0	$0
1709000607	$6	$6	$7	$7	$7	$7
1709000608	$0	$0	$0	$0	$0	$0
1709000701	$2,676	$2,676	$8,341	$8,341	$14,007	$14,007
1709000702	$8,291	$8,291	$50,376	$50,376	$92,460	$92,460
1709000703	$9,648	$9,648	$39,954	$39,954	$70,261	$70,261
1709000704	$153	$153	$3,790	$3,790	$7,428	$7,428
1709000801	$3,804	$3,804	$11,253	$11,253	$18,703	$18,703
1709000802	$0	$0	$0	$0	$0	$0
1709000803	$5,229	$5,229	$14,651	$14,651	$24,073	$24,073
1709000804	$6,522	$6,522	$18,433	$18,433	$30,343	$30,343
1709000805	$868	$868	$2,620	$2,620	$4,373	$4,373
1709000806	$7,667	$7,667	$19,909	$19,909	$32,152	$32,152
1709000807	$4,653	$4,653	$14,692	$14,692	$24,730	$24,730
1709000901	$4,134	$4,134	$14,450	$14,450	$24,767	$24,767
1709000902	$14,993	$14,993	$50,081	$50,081	$85,170	$85,170
1709000903	$6,273	$6,273	$18,482	$18,482	$30,692	$30,692
1709000904	$2,884	$2,884	$10,821	$10,821	$18,759	$18,759
1709000905	$0	$0	$0	$0	$0	$0
1709000906	$7,986	$7,986	$24,629	$24,629	$41,272	$41,272
1709001001	$21,035	$21,035	$59,209	$59,209	$97,384	$97,384
1709001002	$18,902	$18,902	$54,089	$54,089	$89,275	$89,275
1709001003	$6,201	$6,201	$19,066	$19,066	$31,931	$31,931
1709001004	$19,780	$19,780	$53,004	$53,004	$86,229	$86,229
1709001005	$11,072	$11,072	$30,017	$30,017	$48,961	$48,961
1709001201	$0	$0	$0	$0	$0	$0
1709001202	$3,407	$3,407	$17,906	$17,906	$32,404	$32,404
1709001203	$833	$833	$4,195	$4,195	$7,556	$7,556
Lower Columbia	$1,052	$1,052	$6,167	$6,167	$11,283	$11,283
Middle Columbia River steelhead ESU						

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1702001606	$0	$0	$0	$0	$0	$0
1703000101	$595	$595	$1,080	$1,080	$1,566	$1,566
1703000102	$1,006	$1,006	$4,840	$4,840	$8,674	$8,674
1703000103	$152	$152	$435	$435	$718	$718
1703000104	$20,238	$20,238	$52,993	$52,993	$85,749	$85,749
1703000201	$0	$0	$0	$0	$0	$0
1703000202	$0	$0	$54	$54	$109	$109
1703000203	$102,035	$102,035	$279,983	$279,983	$457,931	$457,931
1703000301	$170,653	$170,653	$463,080	$463,080	$755,506	$755,506
1703000302	$7,870	$7,870	$24,323	$24,323	$40,777	$40,777
1703000303	$0	$0	$0	$0	$0	$0
1703000304	$8,306	$8,306	$19,908	$19,908	$31,510	$31,510
1703000305	$0	$0	$0	$0	$0	$0
1703000306	$37,758	$37,758	$151,146	$151,146	$264,533	$264,533
1703000307	$0	$0	$0	$0	$0	$0
1707010101	$0	$0	$289	$289	$579	$579
1707010102	$7	$7	$13	$13	$19	$19
1707010105	$0	$0	$0	$0	$0	$0
1707010106	$2	$2	$16	$16	$30	$30
1707010109	$0	$0	$0	$0	$0	$0
1707010110	$0	$0	$0	$0	$0	$0
1707010111	$0	$0	$0	$0	$0	$0
1707010112	$0	$0	$0	$0	$0	$0
1707010113	$0	$0	$0	$0	$0	$0
1707010114	$0	$0	$5	$5	$10	$10
1707010201	$255	$255	$878	$878	$1,501	$1,501
1707010202	$145,340	$145,340	$494,709	$494,709	$844,079	$844,079
1707010203	$12,154	$12,154	$33,910	$33,910	$55,665	$55,665
1707010204	$9,745	$9,745	$29,691	$29,691	$49,637	$49,637
1707010207	$35,546	$35,546	$89,691	$89,691	$143,837	$143,837
1707010208	$488,239	$488,239	$1,369,224	$1,369,224	$2,250,209	$2,250,209
1707010209	$37,007	$37,007	$89,729	$89,729	$142,450	$142,450
1707010210	$32,291	$32,291	$75,973	$75,973	$119,655	$119,655
1707010211	$463,647	$463,647	$1,279,842	$1,279,842	$2,096,036	$2,096,036
1707010301	$0	$0	$0	$0	$0	$0
1707010302	$0	$0	$0	$0	$0	$0
1707010303	$1,545	$1,545	$4,966	$4,966	$8,387	$8,387
1707010304	$528	$528	$1,600	$1,600	$2,672	$2,672
1707010305	$349	$349	$1,055	$1,055	$1,761	$1,761
1707010306	$986	$986	$2,892	$2,892	$4,799	$4,799
1707010307	$6	$6	$48	$48	$90	$90

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707010308	$0	$0	$0	$0	$0	$0
1707010310	$176	$176	$517	$517	$858	$858
1707010313	$0	$0	$4	$4	$8	$8
1707010501	$303	$303	$1,036	$1,036	$1,769	$1,769
1707010502	$4,862	$4,862	$14,860	$14,860	$24,859	$24,859
1707010503	$2,897	$2,897	$8,470	$8,470	$14,042	$14,042
1707010504	$2,028	$2,028	$5,856	$5,856	$9,684	$9,684
1707010505	$0	$0	$20	$20	$40	$40
1707010509	$155	$155	$8,938	$8,938	$17,721	$17,721
1707010510	$0	$0	$0	$0	$0	$0
1707010512	$9,044	$9,044	$30,792	$30,792	$52,540	$52,540
1707010513	$30	$30	$31	$31	$31	$31
1707010601	$0	$0	$0	$0	$0	$0
1707010602	$0	$0	$0	$0	$0	$0
1707010603	$0	$0	$0	$0	$0	$0
1707010604	$685	$685	$1,232	$1,232	$1,778	$1,778
1707020103	$0	$0	$0	$0	$0	$0
1707020104	$0	$0	$0	$0	$0	$0
1707020105	$0	$0	$0	$0	$0	$0
1707020106	$0	$0	$0	$0	$0	$0
1707020107	$0	$0	$0	$0	$0	$0
1707020108	$0	$0	$0	$0	$0	$0
1707020109	$0	$0	$0	$0	$0	$0
1707020110	$122	$122	$284	$284	$446	$446
1707020111	$44	$44	$59	$59	$75	$75
1707020112	$0	$0	$0	$0	$0	$0
1707020113	$1	$1	$6	$6	$10	$10
1707020114	$0	$0	$0	$0	$0	$0
1707020115	$0	$0	$0	$0	$0	$0
1707020201	$0	$0	$0	$0	$0	$0
1707020202	$0	$0	$0	$0	$0	$0
1707020203	$0	$0	$0	$0	$0	$0
1707020204	$0	$0	$0	$0	$0	$0
1707020205	$0	$0	$0	$0	$0	$0
1707020206	$0	$0	$23	$23	$46	$46
1707020207	$0	$0	$0	$0	$0	$0
1707020208	$0	$0	$0	$0	$0	$0
1707020209	$0	$0	$0	$0	$0	$0
1707020210	$0	$0	$0	$0	$0	$0
1707020301	$0	$0	$0	$0	$0	$0
1707020302	$0	$0	$0	$0	$0	$0

Table C-14 Annual Potential Agricultural Pesticide Application Impact						
	Cost Estimate and Discount Rate					
Watershed	Low - 3%	Low - 7%	Mid - 3%	Mid - 7%	High - 3%	High - 7%
1707020303	$0	$0	$0	$0	$0	$0
1707020304	$0	$0	$0	$0	$0	$0
1707020305	$0	$0	$0	$0	$0	$0
1707020401	$2	$2	$306	$306	$611	$611
1707020402	$0	$0	$316	$316	$632	$632
1707020403	$0	$0	$0	$0	$0	$0
1707020404	$0	$0	$0	$0	$0	$0
1707020405	$3	$3	$3	$3	$3	$3
1707020406	$288	$288	$450	$450	$612	$612
1707020407	$0	$0	$0	$0	$0	$0
1707020408	$1	$1	$5	$5	$9	$9
1707020409	$1	$1	$13	$13	$26	$26
1707020410	$295	$295	$1,284	$1,284	$2,272	$2,272
1707020411	$0	$0	$0	$0	$0	$0
1707020412	$2	$2	$16	$16	$30	$30
1707020413	$1,103	$1,103	$3,087	$3,087	$5,072	$5,072
1707020414	$70	$70	$222	$222	$374	$374
1707030603	$0	$0	$0	$0	$0	$0
1707030604	$0	$0	$0	$0	$0	$0
1707030605	$0	$0	$0	$0	$0	$0
1707030606	$0	$0	$0	$0	$0	$0
1707030607	$65	$65	$173	$173	$281	$281
1707030608	$0	$0	$5	$5	$10	$10
1707030610	$0	$0	$0	$0	$0	$0
1707030611	$4	$4	$29	$29	$54	$54
1707030612	$151	$151	$343	$343	$535	$535
1707030701	$0	$0	$0	$0	$0	$0
1707030702	$0	$0	$0	$0	$0	$0
1707030704	$0	$0	$0	$0	$0	$0
1707030705	$2	$2	$6	$6	$10	$10
1708000107	$110	$110	$516	$516	$923	$923
Lower Columbia	$1,203	$1,203	$7,032	$7,032	$12,861	$12,861