CHAPTER 1: INTRODUCTION

Purpose and Need for the Plan 3 Introduction 3 Brief Description of the Park 3 Park Overview 3 Regional Context 4 Purpose of the Plan 4 Need for the Plan 5 An Outdated Master Plan 6 Wilderness Designation 6 Planning Process 6 The Next Steps 6 Implementation of the Plan 7 Guidance for the Planning Effort 9 Purpose and Significance 9 Purpose 9 Significance 9 Primary Interpretive Themes 10 Laws, Regulations, and Servicewide Mandates and Policies 10 Federally Recognized Tribes 11 Parkwide Policies and Desired Conditions 12 Parkwide Policies for Natural Resources 13 Parkwide Policies for Wilderness Resources 26 Parkwide Policies for Cultural Resources 27 Parkwide Policies for Visitor Use and Experience 33 Boundary Adjustments 34 Relationship of Other Planning Efforts to This General Management Plan 37 Management Plans 37 Transportation and Access Plans 38 Other Reports and Planning Efforts 38 Regional Plans 38 Planning Issues 40 Introduction 40 Decisions to Be Made in the Olympic General Management Plan 40 Natural Resources 40 Cultural Resources 40 Tribal Relations 41 Partnerships 41 Wilderness 41 Visitor Experiences 41 Access to and around the Park 41 Boundary Adjustments 42 Issues Not Addressed in the General Management Plan 42 Impact Topics — Resources and Values at Stake in the Planning Process 43 Introduction 43 Impact Topics to Be Considered 43

Air Quality 43 Soundscapes 43 Geologic Processes 43 Hydrologic Systems 43 Intertidal Areas 44 Soils 44 Vegetation 44 Fish and Wildlife 44 Special Status Species 44 Wilderness Values 45 Cultural Resources 45 Visitation 45 Visitor Opportunities 45 Information, Orientation, and Interpretation 45 Visitor Access and Transportation 46 Socioeconomic Environment 46 Park Operations 46 Impact Topics Dismissed from Further Consideration 46 Coastal Zone Management 46 Energy Requirements and Conservation Potential 46 Environmental Justice 47 Indian Trust Lands 48 Natural or Depletable Resources Requirements and Conservation Potential 48 Night Sky 49 Prime or Unique Farmlands 49 Urban Quality and Design of the Built Environment 50 Water Quality 50 Wild and Scenic Rivers 51

CHAPTER 2: ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

Introduction 55 Formulation of the Alternatives 55 Management Zones 55 The Alternatives 63 Identification of the NPS Management Preferred Alternative 63 General Description of the Alternatives 65 Alternative A – No Action 65 Alternative B 66 Alternative C 66 Alternative D — Management Preferred 67 Visitor Use and User (Carrying) Capacity 71 User Capacities 71 Development Zone 71 Day Use Zone 71 Low-Use Zone 72 River Zone (Alternative B only) 72 Intertidal Reserve Zone 72

Contents

Wilderness Zones (Wilderness Trail Zone, Primitive Wilderness Zone, and Primeval Wilderness Zone) 73 Implementation 74 Mitigative Measures Common to All Alternatives 75 Management and Protection of Natural Resources 75 Air Quality 75 Soundscapes / Natural Quiet 75 Night Skies (Lightscapes) 75 Hydrologic Systems including Wetlands 76 Soils 76 Vegetation 76 Fish and Wildlife 77 Special Status Species 77 Management and Protection of Wilderness Values 77 Minimum Requirement Process 77 Management and Protection of Cultural Resources 78 Archeological Resources 79 Historic Structures/Buildings 79 Cultural Landscapes 79 Ethnographic Resources 80 Museum Collections 80 Scenic Resources 80 Socioeconomic Environment 80 Sustainable Design and Aesthetics 80 Future Studies and Implementation Plans Needed 81 Alternatives and Actions Considered but not Evaluated 82 Identification of the Environmentally Preferred Alternative 83

CHAPTER 3: AFFECTED ENVIRONMENT

Introduction 95 Natural Resources 96 Air Quality 96 Past Monitoring 96 Current Monitoring 97 Area Climate 97 Soundscapes 98 Geologic Processes 99 Hydrologic Systems 100 Floodplains 100 Lakes and Wetlands 100 Intertidal Areas 103 Soils 104 Soil Moisture Regimes 104 Soil Orders 105 Vegetation 105 **Terrestrial Communities** 105 Vegetation Zones 106

Endemic Plants 107 Special Status Species 107 USFWS Species of Special Concern 108 Washington Natural Heritage Program-Listed Threatened Species 108 Nonnative Species 108 Fish and Wildlife 108 Overview 108 Endemic Animals 108 Wildlife 109 Fish 110 Marine Species 110 Nonnative Species 111 Special Status Fish and Wildlife 112 Special Status Wildlife 112 Special Status Fish 114 Wilderness Values 117 The Wilderness Act 117 Olympic Wilderness 117 Natural Resources in Wilderness 118 Cultural Resources in Wilderness 118 Visitor Use 121 Cultural Resources 123 Historic Overview 123 A Description of the Park's Cultural Resources 127 Archeological Resources 127 Historic Structures 128 Cultural Landscapes 128 Ethnographic Resources 129 Museum Collections 129 Historic Contexts and Current Threats 131 Maritime Archeological Sites 131 Traditional Tribal Activities 132 Homesteads 132 Federal Land Management Infrastructure 132 Resorts and Recreational Cabins 132 World War II Resources 132 Olympic Peninsula Tribes 133 Visitation 137 Visitor Opportunities 140 **Recreational Opportunities** 140 Road-based Recreational Opportunities 140 Trail-based Recreational Opportunities 142 Water-based Recreational Opportunities 142 Winter Snow-based Recreational Opportunities 143 Recreational Services 143 Facilities for Visitors 144 Camping Facilities 144 Lodging / Food Service / Supplies and Stores 144 Information, Orientation, and Interpretation 146

Internet Site 146 Wayside Exhibits, Signs, and Brochures 146 Visitor Centers 146 Olympic National Park Visitor Center / Port Angeles 146 Hurricane Ridge 147 Olympic National Park and Olympic National Forest Information Station in Forks 147 Lake Crescent 147 Mora 147 Hoh 147 Kalaloch 147 Quinault 147 Staircase 148 Education 148 Visitor Access and Transportation 149 Visitor Access to the Park 149 Roadway Network 149 Visitor Access within The Park 150 Access within Specific Park Areas 150 Headquarters and Olympic National Park Visitor Center, Port Angeles 150 Heart O' the Hills/Hurricane Ridge 150 Elwha 153 Lake Crescent 153 Sol Duc 154 Ozette 154 Mora and La Push Area 154 Hoh 155 Kalaloch 155 Queets 155 Quinault 155 Staircase 156 Dosewallips 156 Deer Park 157 Parking 157 Travel Distribution Patterns 157 Roadway Level of Service 160 Advanced Traveler Information Systems 161 Alternative Transportation Sources 161 Public Transit 161 Bicycle Access 162 Socioeconomic Environment 163 Introduction 163 Population 163 Income 166 Major Industries by Earnings 167 Major Industries by Employment 167 Unemployment 170 Poverty 170 Visitor Use 171 Park Operations 174

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Introduction 177 Terms and Assumptions 177 Cumulative Impacts 177 Olympic National Park Plans and Actions 178 Other Planned or Ongoing Park Projects 180 Other Federal Agency Plans 181 State Plans 182 County/Community Plans and Activities 182 American Indian Activities and Projects 183 Impairment of Park Resources or Values 183 Methods and Assumptions for Analyzing Impacts 185 Natural Resources 185 Air Quality 185 Soundscapes 186 Geologic Processes 186 Hydrologic Systems 187 Intertidal Areas 187 Soils 187 Vegetation 188 Fish and Wildlife 188 Special Status Species 189 Wilderness Values 189 Cultural Resources 190 Cultural Resources Listed, or Eligible to be Listed, in the National Register of Historic Places 190 Ethnographic Resources 192 Museum Collections 192 Visitation 193 Visitor Opportunities 193 Information, Orientation, and Interpretation 194 Visitor Access and Transportation 194 Socioeconomic Environment 196 Regional Economy 196 Local Gateway Communities 197 Park Concessioners 197 Park Staffing and Budget 197 Socioeconomic Impact Thresholds 197 Park Operations 197 Impacts of Implementing Alternative A 199 Impacts on Natural Resources 199 Air Quality 199 Soundscapes 201 Geologic Processes 202 Hydrologic Systems 202 Intertidal Areas 204 Soils 205

Vegetation 205 Fish and Wildlife 207 Special Status Species 208 Impacts on Wilderness Values 210 Cumulative Effects 211 Conclusion 211 Impacts on Cultural Resources 212 Archeological Resources 212 Historic Structures and Cultural Landscapes 212 Ethnographic Resources 213 Museum Collections 214 Impacts on Visitation 214 Cumulative Effects 215 Conclusion 215 Impacts on Visitor Opportunities 215 Experiencing the Spectrum of Park Environments 215 Recreational Opportunities 216 Recreational Services 217 Commercial Visitor Facilities 217 Cumulative Effects 218 Conclusion 218 Impacts on Information, Orientation, and Interpretation 218 Parkwide 218 Olympic National Park Visitor Center Area 219 Hurricane Ridge 219 Elwha 219 Lake Crescent 219 Mora 220 Forest Information Station in Forks 220 Hoh 220 Kalaloch 220 Quinault 220 Cumulative Effects 221 Conclusion 221 Impacts on Visitor Access and Transportation 223 Parkwide Access and Parking 223 Access and Parking at Specific Park Areas 224 Roadway Capacity 228 Alternative Transportation 228 Health and Safety 228 Cumulative Effects 229 Conclusion 229 Impacts on the Socioeconomic Environment 230 Analysis 230 Cumulative Effects 231 Conclusion 232 Impacts on Park Operations 232 Cumulative Effects 233 Conclusion 233

Unavoidable Adverse Impacts 233 Irreversible and Irretrievable Commitments of Resources 233 Relationships between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity 234 Impacts of Implementing Alternative B 235 Impacts on Natural Resources 235 Air Quality 235 Soundscapes 236 Geological Processes 237 Hydrologic Systems 238 Intertidal Areas 240 Soils 241 Vegetation 242 Fish and Wildlife 243 Special Status Species 245 Impacts on Wilderness Values 247 Cumulative Effects 248 Conclusion 248 Impacts on Cultural Resources 249 Archeological Resources 249 Historic Structures and Cultural Landscapes 249 Ethnographic Resources 250 Museum Collections 251 Impacts on Visitation 251 Cumulative Effects 252 Conclusion 252 Impacts on Visitor Opportunities 252 Experiencing the Spectrum of Park Environments 252 **Recreational Opportunities** 253 Recreational Services 254 Commercial Visitor Facilities 254 Cumulative Effects 254 Conclusion 255 Impacts on Information, Orientation, and Interpretation 255 Parkwide 255 Olympic National Park Visitor Center Area 255 Hurricane Ridge 256 Elwha 256 Lake Crescent 256 Mora 256 Forest Information Station in Forks 257 Hoh 257 Kalaloch 257 Quinault 257 Cumulative Effects 258 Conclusion 258 Impacts on Visitor Access and Transportation 260 Parkwide Access and Parking 261

Contents

Access and Parking at Specific Park Areas 261 Roadway Capacity 265 Alternative Transportation 266 Health and Safety 266 Cumulative Effects 266 Conclusion 267 Impacts on the Socioeconomic Environment 268 Analysis 268 Cumulative Effects 270 Conclusion 270 Impacts on Park Operations 271 Cumulative Effects 271 Conclusion 271 Unavoidable Adverse Impacts 272 Irreversible and Irretrievable Commitments of Resources 272 Relationships between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity 272 Impacts of Implementing Alternative C 274 Impacts on Natural Resources 274 Air Quality 274 Soundscapes 275 Geologic Processes 277 Hydrologic Systems 277 Intertidal Areas 278 Soils 279 Vegetation 280 Fish and Wildlife 282 Special Status Species 283 Impacts on Wilderness Values 285 Cumulative Effects 287 Conclusion 287 Impacts on Cultural Resources 288 Archeological Resources 288 Historic Structures and Cultural Landscapes 288 Ethnographic Resources 289 Museum Collections 290 Impacts on Visitation 291 Cumulative Effects 291 Conclusion 291 Impacts on Visitor Opportunities 292 Experiencing the Spectrum of Park Environments 292 Recreational Opportunities 292 Recreational Services 293 Commercial Visitor Facilities 294 Cumulative Effects 294 Conclusion 294 Impacts on Information, Orientation, and Interpretation 294 Parkwide 294

Olympic National Park Visitor Center Area 295 Hurricane Ridge 295 Elwha 295 Lake Crescent 295 Mora 296 Forest Information Station in Forks 296 Hoh 296 Kalaloch 296 Quinault 296 Cumulative Effects 297 Conclusion 297 Impacts on Visitor Access and Transportation 299 Parkwide Access and Parking 299 Access and Parking at Specific Park Areas 300 Roadway Capacity 303 Alternative Transportation 304 Health and Safety 304 Cumulative Effects 304 Conclusion 305 Impacts on the Socioeconomic Environment 306 Analysis 306 Cumulative Effects 307 Conclusion 307 Impacts on Park Operations 308 Cumulative Effects 308 Conclusion 308 Unavoidable Adverse Impacts 308 Irreversible and Irretrievable Commitments of Resources 309 Relationships between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity 309 Impacts of Implementing Alternative D (Preferred) 310 Impacts on Natural Resources 310 Air Quality 310 Soundscapes 312 Geologic Processes 313 Hydrologic Systems 314 Intertidal Areas 315 Soils 316 Vegetation 317 Fish and Wildlife 319 Special Status Species 321 Impacts on Wilderness Values 322 Cumulative Effects 324 Conclusion 324 Impacts on Cultural Resources 325 Archeological Resources 325 Historic Structures and Cultural Landscapes 325 Ethnographic Resources 326

Museum Collections 327 Impacts on Visitation 328 Cumulative Effects 328 Conclusion 329 Impacts on Visitor Opportunities 329 Experiencing the Spectrum of Park Environments 329 Recreational Opportunities 329 Recreational Services 331 Commercial Visitor Facilities 331 Cumulative Effects 331 Conclusion 331 Impacts on Information, Orientation, and Interpretation 332 Parkwide 332 Olympic National Park Visitor Center Area 332 Hurricane Ridge 333 Elwha 333 Lake Crescent 333 Mora 333 Forest Information Station in Forks 333 Hoh 333 Kalaloch 334 Quinault 334 Cumulative Effects 334 Conclusion 335 Impacts on Visitor Access and Transportation 336 Parkwide Access and Parking 337 Access and Parking at Specific Park Areas 337 Roadway Capacity 343 Alternative Transportation 343 Health and Safety 344 Cumulative Effects 344 Conclusion 345 Impacts on the Socioeconomic Environment 346 Analysis 346 Cumulative Effects 347 Conclusion 348 Impacts on Park Operations 348 Cumulative Effects 348 Conclusion 349 Unavoidable Adverse Impacts 349 Irreversible and Irretrievable Commitments of Resources 349 Relationships between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity 349

CHAPTER 5: CONSULTATION AND COORDINATION

Public Involvement 353
Public Meetings and Newsletters 353
Consultation with Other Agencies/Officials and Organizations (To Date) 354
Federal Agencies 354
State Agencies 354
Native American Tribes 355
Compliance Requirements 355
Agencies and Organizations Receiving a Copy of This Document 357

APPENDIXES, REFERENCES, PREPARERS AND CONSULTANTS, AND INDEX

Appendix A: Legislation 363 Appendix B: Analysis of Boundary Adjustment and Land Protection Criteria 369 Appendix C: Washington Maritime National Wildlife Refuge Complex 373 Appendix D: Statement of Findings 375 Appendix E: List of Classified Structures for the Park 380 Appendix F: Park Cultural Landscapes Inventory Status 385 Appendix G: State and Federal Listed Species in Olympic National Park 386

Glossary 389

Glossary of Terms for Maintained Trails 392

Selected References 393

Preparers and Consultants 399

Index 403

MAPS

Region 8 Alternative Maps 69 Headquarters and Olympic National Park Visitor Center and Heart O' Hills Area Maps M1-M4 Hurricane Ridge and Obstruction Point Area Maps M5-M8 Elwha Area Maps M9-M12 Lake Crescent Area Maps M13-M16 Maps M17-M20 Sol Duc Area Ozette Area Maps M21-M24 Mora Area Maps M25-M28 Maps M29-M32 Hoh Area Kalaloch Area Maps M33-M36 Queets Area Maps M37-M40 Quinault Area Maps M41-M44 Staircase Area Maps M45-M48

Dosewallips Area Maps M49-M52 Deer Park Maps M53-M56 Wilderness Maps M57-M60 Watershed 101 Wilderness 119

TABLES

- Table 1: Management Zones 57
- Table 2: Summary of Comparative Costs (FY 2005 Dollars)* 64
- Table 3: Environmentally Preferred Alternative Analysis 84
- Table 4: Summary of Key Impacts of Implementing the Alternatives 87
- Table 5: Park Watersheds 103
- Table 6: Vegetation Zones, with Corresponding Dominant Tree Species and Typical Elevation106
- Table 7: Total Annual Recreation Visits by District, 2004 138
- Table 8: Distribution of Overnight Stays in the Park, 2004 138
- Table 9: Camping Facilities- Nonwilderness 145
- Table 10: Parking Peak Use 158
- Table 11: Affected Area Population for Counties and Selected Cities 164
- Table 12: Population of American Indian Reservations 164
- Table 13: Race 165
- Table 14: Per Capita Personal Income Counties, State, and U.S. 166
- Table 15: Per Capita Personal Income for American Indian Reservations 166
- Table 16:Total Personal Income 167
- Table 17: Earnings by Industry for 1999 168
- Table 18: Full-time and Part-time Employees* by Major Industry for 1999 169
- Table 19: Unemployment Rates 170
- Table 20: Unemployment Rates for American Indian Reservations 170
- Table 21: Percent of People Living in Poverty 171
- Table 22: Percent of People Living in Poverty on American Indian Reservations 171
- Table 23: Recreational Use at Olympic National Park 172
- Table 24: Projected Recreational Use at Olympic National Park 172
- Table 25: Park Concessions Affected by Alternative B 269
- Table 26: Compliance Required for Implementation of Specific Actions 356

FIGURES

- Figure 1: Spotted Owl and Marbled Murrelet Habitat 113
- Figure 2: Total Annual Visitation 1980-2004 137
- Figure 3: Monthly Visitation (2004) 138
- Figure 4: Road Network And Daily Traffic Volumes 151
- Figure 5: Visitor Use Historical Use And Projected 173