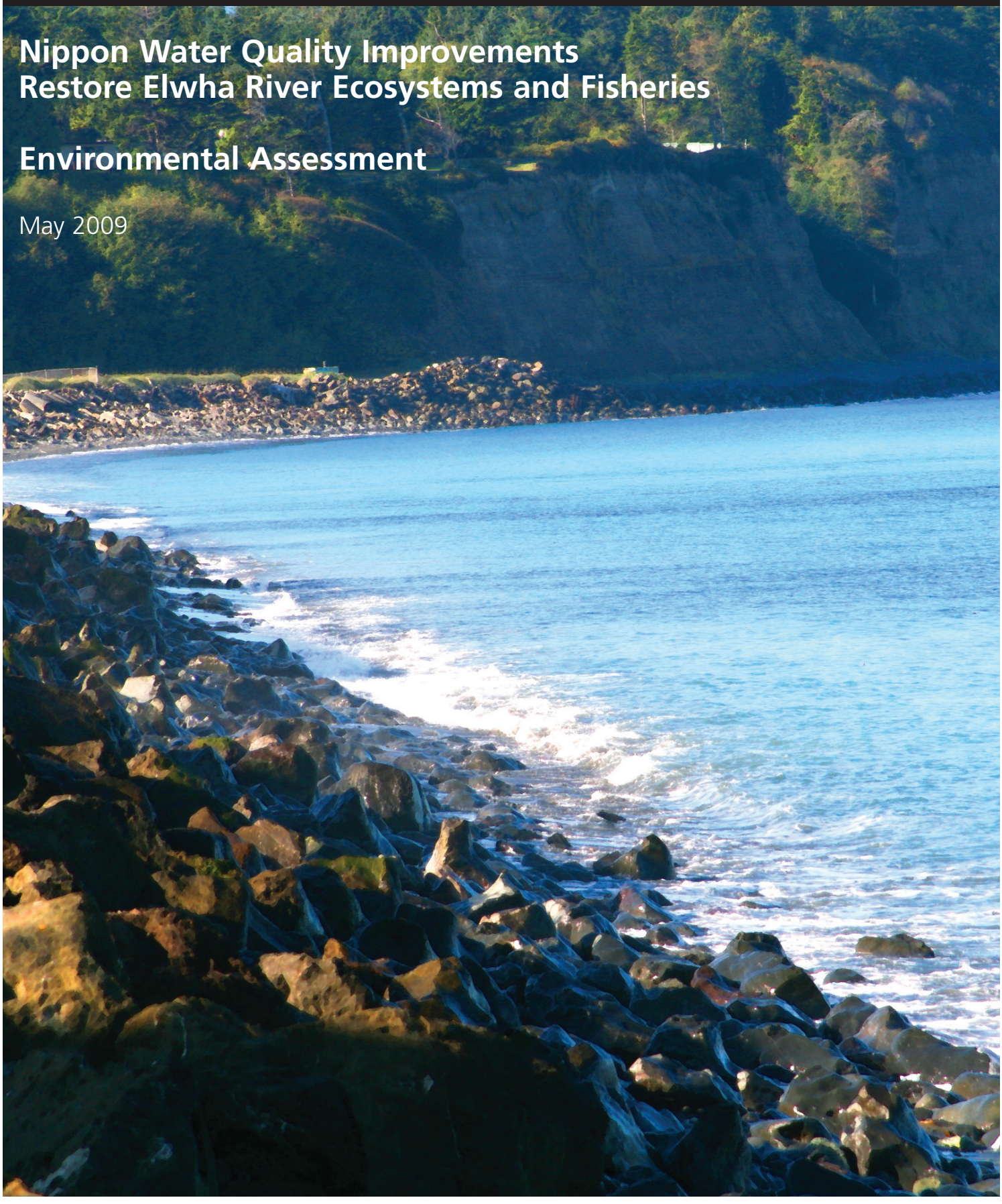
National Park Service
U.S. Department of the Interior

Olympic National Park
Washington

Nippon Water Quality Improvements Restore Elwha River Ecosystems and Fisheries

Environmental Assessment

May 2009



CONTENTS

TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

AKART	All known, available, and reasonable treatments
BMP	Best management practice
CEQ	Council of Environmental Quality
COE	U.S. Army Corps of Engineers
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
Elwha Act	Elwha River Ecosystem and Fisheries Restoration Act
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
EWTP	Elwha River Water Treatment Plant
FONSI	Finding of No Significant Impact
FWS	U.S. Fish and Wildlife Service
gpm	gallons per minute
GMP	General Management Plan
JARPA	Joint Aquatic Resource Permit Application
mgd	million gallons per day
MSA	Magnuson-Stevens Fisheries Conservation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
Nippon	Nippon Paper Industries
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination Permit
NPS	National Park Service
NTU	nephelometric turbidity units
ONP	Olympic National Park
PAC	polyaluminum chloride
PCB	Polychlorinated biphenyls
PEPC	Planning, Environment and Public Comment
PS	Puget Sound
SRKW	Southern resident killer whale
Strait	Strait of Juan de Fuca
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington State Department of Ecology
WTP	Water treatment plant
WWTP	Wastewater treatment plant

ENVIRONMENTAL ASSESSMENT

NIPPON WATER QUALITY IMPROVEMENTS RESTORE ELWHA RIVER ECOSYSTEMS AND FISHERIES

INTRODUCTION

The Elwha and Glines Canyon dams on the Elwha River, Washington block access to most of the river, adversely affecting the river ecosystem and native anadromous fisheries (NPS 2005). The Elwha River Ecosystem and Fisheries Restoration Act was signed into law on October 24, 1992 (Public Law 102-495; hereafter referred to as the Elwha Act). The Elwha Act authorized the full restoration of the Elwha River ecosystem and native anadromous fisheries through removal of the two dams. In doing so, the "protection of the existing water quality and availability of water from the Elwha River for municipal and industrial uses from the possible adverse impacts of dam removal" must be accomplished (Elwha Act Section 4(3)).

In the early 1900s, the free-flowing Elwha River on the Olympic Peninsula in Washington State was blocked by two hydroelectric dams, neither of which was built with means to pass the 10 runs of native anadromous salmon and trout that had used the river for spawning and rearing for centuries. Since its completion in 1913, the Elwha Dam has prevented migrating salmon and trout from using the upstream 70 miles of the main stem and tributary habitat. The Glines Canyon Dam was completed farther upstream in 1927. These dams are the primary cause of the precipitous decline of salmonid populations to fewer than 3,000 naturally spawning fish today compared to an estimated 392,000 fish prior to dam construction. The loss of fish from 93 percent of the Elwha River has resulted in severe impacts to the entire Elwha River ecosystem due to the loss of nutrients and carcasses and the effects on aquatic and terrestrial vegetation and wildlife.

To accomplish the purposes of the Elwha Act, two environmental impact statements (EISs) and a supplement to the final EIS were completed to analyze alternatives.

1. The *Elwha River Ecosystem Restoration: Final Environmental Impact Statement* (NPS June 1995) evaluated options for restoring the Elwha River ecosystem and native anadromous fisheries. The "Record of Decision" that followed selected the removal of both dams as the only option that would accomplish full restoration.
2. The *Elwha River Ecosystem Restoration Implementation: Final Environmental Impact Statement* (NPS November 1996b) examined two ways of removing the dams, as well as the sediment stored behind them. The "Record of Decision" selected "river erosion" as the preferred alternative for removing sediment. (The November 1996 FEIS included only specific changes to the DEIS, not the entire text of the draft document. Subsequently, a compilation of the DEIS and FEIS was prepared that included all the text of the draft, along with changes presented in the FEIS, plus responses to comments and the U.S. Fish and Wildlife Service's "Biological Opinion.")

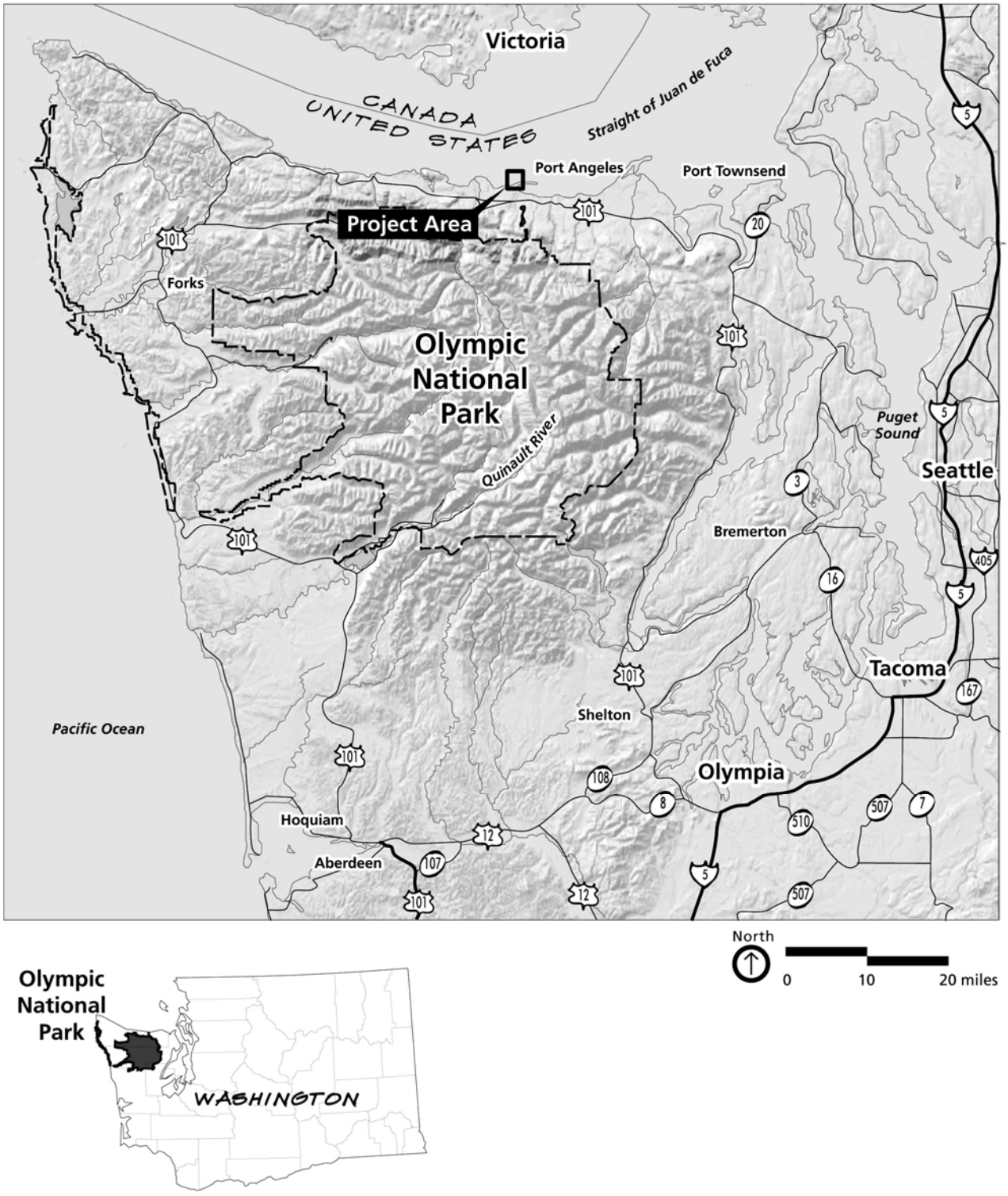
3. The *Elwha River Ecosystem Restoration Implementation: Final Supplement to the Final Environmental Impact Statement* (NPS July 2005) reexamined alternatives to mitigate the potential impacts to municipal and industrial water users arising from changes that occurred since release of the Implementation EIS. These changes included the requirements for treatment of the City of Port Angeles' municipal water supply, the need to keep the Washington Department of Fish and Wildlife (WDFW) Rearing Channel fully operational during dam removal, and the listing of two species of fish as threatened under the Endangered Species Act (ESA).

The Elwha River Ecosystem Restoration EISs addressed the overall large-scale plan for removal of the dams and river restoration. This EA is tiered to the previous EISs, which are incorporated by reference, and was prepared to address the site-specific measures needed to protect existing water quality for industrial use. This document provides additional information to that contained in the July 2005 EIS. Olympic National Park (ONP or park) of the National Park Service (NPS) is proposing to improve the Nippon Paper Industries (Nippon) existing Water Treatment Plant (WTP) to protect the mill's water supply from increased turbidities associated with removal of the two Elwha River dams. The Nippon paper mill is located on Ediz Hook in Port Angeles, Washington outside the ONP boundary (Figure 1).

Removal of the Elwha and Glines Canyon dams will increase the turbidity (suspended sediment) of the Elwha River water that the City of Port Angeles currently diverts through its industrial water line for delivery to Nippon for use in paper production. To ensure delivery of high quality water to Nippon similar to current conditions will require several measures. As part of the Elwha River Restoration, the NPS is currently constructing the Elwha Water Treatment Plant (EWTP) to remove suspended sediment during dam removal to protect municipal and industrial water users including Nippon. The purpose of the proposed project is to address additional measures at the existing Nippon WTP that would be needed to further treat the water to the required level of clarity for paper production and to meet the water quality discharge requirements of the Washington Department of Ecology (WDOE). These improvements include an extension of the Nippon WTP discharge outfall to an offshore location because of the anticipated increase in sediment discharges and need to better mix and disperse these discharges.

This Environmental Assessment (EA) describes a No Action Alternative and the Preferred Alternative, and evaluates the effects of these two alternatives on environmental, socioeconomic, and cultural resources. The EA was prepared in compliance with the National Environmental Policy Act (NEPA) to determine whether significant impacts would occur as a result of this proposed project and if an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI) would be required.

FIGURE 1. PROJECT VICINITY MAP



PROJECT PURPOSE AND NEED

The NPS is proposing to improve the Nippon WTP to protect the paper mill's water supply from increased turbidities associated with removal of the two Elwha River dams. This action is needed to maintain the level of water quality required by Nippon for paper production. With the Elwha and Glines Canyon dams in place, the river's sediment content has been reduced. All of the sand, gravel, and cobbles, and much of the silt normally transported downstream by the river has settled onto the bottom of the reservoirs. Once the dams are removed, the free-flowing river will again carry its full load of natural sediment. The Nippon paper production process requires particularly clear water. The proposed modifications to the Nippon WTP, along with the EWTP currently under construction, would provide continued high quality water to meet the mill's needs.

Proposed improvements to the Nippon WTP include an extension of the outfall pipe that discharges the filtered sediments into the Strait of Juan de Fuca (Strait) after they are removed by the Nippon WTP. To ensure better mixing and dispersion of the increased sediment load associated with dam removal, the WDOE requires extension of the current WTP shoreline discharge to an offshore outfall in the Strait.

Thus, the objectives for the proposed project are to:

- Maintain high quality water to Nippon for use in its paper mill
- Ensure that Nippon WTP off-shore discharges are adequately mixed and dispersed to minimize environmental impacts and meet WDOE water quality requirements

LEGISLATION, PLANS, AND GUIDANCE

The NPS Organic Act of 1916 (16 U.S.C. 1, 2-4) and the General Authorities Act (16 U.S.C. 1a-8) direct the NPS to conserve the scenery, natural and historic objects, and wildlife; and to provide for the enjoyment of those resources in such a manner as to leave them unimpaired for future generations. The Redwood Act (March 27, 1978, 16 U.S.C. 1a-1) reaffirmed the mandates of the NPS Organic Act of 1916 and provided additional guidance on national park system management as follows:

> The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the national park system and shall not be exercised in derogation of the values and purposes for which these various areas have been established.

Purpose and Significance of Olympic National Park

ONP was established by House Report No. 2247 of April 28, 1938. This report established the purpose of ONP, which is to:

> Preserve for the benefit, use, and enjoyment of the people, the finest sample of primeval forests of Sitka spruce, western hemlock, Douglas-fir, and western red cedar in the entire United States; to provide suitable winter range and permanent protection for the herds of native Roosevelt elk and other wildlife indigenous to the

area; to conserve and render available to the people, for recreational use, this outstanding mountainous country, containing numerous glaciers and perpetual snow fields, and a portion of the surrounding verdant forests together with a narrow strip along the beautiful Washington coast.

Management Policies 2006

NPS Management Policies (2006) include direction for preserving and protecting cultural resources, natural resources, processes, systems, and values (NPS 2006). Although management policies are not applicable to non-NPS lands, it is the goal of the NPS to avoid or minimize potential impacts to resources to the greatest extent practicable consistent with the management policies.

Related ONP Plans and Actions

The following park planning documents have relevance to Elwha River Restoration Project plans and the proposed water quality improvements at the Nippon WTP.

Statement for Management: Olympic National Park - 1996

This document includes information regarding the park's purpose, the natural and cultural resources found in the park and their significance, the legislative history, and the jurisdiction over ONP and the surrounding areas of the Olympic Peninsula (NPS 1996a).

Olympic National Park General Management Plan and Environmental Impact Statement

ONP recently completed a GMP to establish the overall park goals for the next 15 to 20 years (NPS 2008). The GMP provides overall planning guidance for protection of park resources.

Elwha River Restoration Project Plans

The 1995 Programmatic EIS, 1996 Implementation EIS, and 2005 Supplemental EIS evaluated alternatives for removing the dams and managing the accumulated sediments, alternatives for water quality mitigation, and plans for revegetation of the reservoir areas and fish restoration (NPS 1995, 1996b, 2005). The approved plan is to remove both dams concurrently and implement revegetation and fish restoration plans following construction of water quality treatment facilities and other mitigation measures.

ISSUES AND IMPACT TOPICS

Scoping

A list of issues and concerns related to improvements to the Nippon WTP were identified through park internal scoping and through the public scoping process. Internal scoping involved an interdisciplinary team of NPS and U.S. Bureau of Reclamation staff who assessed the site conditions and determined potential issues and impact topics.

ONP conducted public scoping from October 9 to November 10, 2008. Information about the project was posted on the park website and on the NPS Planning, Environment and

Public Comment (PEPC) website. A news release was faxed and e-mailed to about 120 individuals and media outlets. In addition, the park notified about 45 elected officials, park neighbors, organizations, area tribes, and agencies on the park's mailing list via a mailed letter. The purpose of public scoping was to gain input on the issues of concern related to the proposed project and identify potential projects in the area that could lead to cumulative impacts. The park received scoping comments from four members of the public and one organization. Comments were generally supportive of the proposed project, but several concerns were expressed, including:

- The potential impact to marine habitat from construction of the pipeline and sediment discharges and the need to monitor and evaluate effects
- The NPS should not pay to upgrade a WTP owned by a private entity (Nippon)
- The Elwha Water Treatment Plant under construction should provide a sufficient level of treatment for Nippon water use
- WTP improvements could lead to additional water use
- The necessity of a new offshore outfall rather than continued shoreline discharges is not clear
- The costs associated with this project could delay the start of dam removal

Internal and external scoping comments were considered in the choice of impact topics and were used in the development and evaluation of alternatives discussed in this EA. Issues and impact topics that were retained for further evaluation, and those that were not evaluated further, are discussed below.

Impact Topics Evaluated

Issues and impact topics were developed from the questions and comments brought forth during internal and external scoping. Issues identified for further evaluation in the EA included potential effects to marine resources, special status species, water quality, and socioeconomics. Table 1 discusses the impact topics; the reasons for retaining the topic; and the relevant laws, regulations, and policies.

TABLE 1. IMPACT TOPICS RETAINED FOR FURTHER EVALUATION AND RELEVANT LAWS, REGULATIONS, AND POLICIES

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Water Quality	Nippon WTP sediment discharges from the paper mill would increase as a result of treating water with higher turbidity. In addition, temporary negative effects to water quality are possible during construction of the discharge pipeline on the seafloor.	Clean Water Act; Executive Order 12088; NPS *Management Policies 2006;* NPS-77; Section 10 of the Rivers and Harbors Act of 1899
Marine Resources	Installation of new offshore buried outfall pipeline would require excavation and disturbance to the seafloor with potential effects on the marine environment. Additional Nippon WTP discharges would also affect water quality at the new outfall, which could potentially impact marine life.	Endangered Species Act; NPS *Management Policies 2006*; 16 U.S.C. 1535 Section 7(a)(2); Magnuson-Stevens Fishery Conservation and Management Act; Sustainable Fishery Act of 1996 (P.L. 104-267);Marine Mammal Protection Act of 1972.

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Special Status Species	Threatened, endangered, and sensitive fish or marine mammals species could be affected during installation of the outfall pipeline or from ongoing sediment discharges There are no federally listed threatened or endangered plant species in the project area; therefore, there would be no impacts on special status plant species.	Endangered Species Act; NPS *Management Policies 2006*; 16 U.S.C. 1535 Section 7(a)(2)
Socioeconomics	The Nippon paper mill employs about 240 workers and contributes more than $65 million to the local economy in wages, purchases of pulp wood and materials, and taxes. A reduction to the quality of receiving water used in paper production would affect mill operations and costs.	NPS *Management Policies 2006*

Impact Topics Dismissed from Further Analysis

The following impact topics or issues were eliminated from detailed analysis because the adverse impacts would be negligible to minor.

Geology and Soils

The No Action Alternative would have no effect on geology or soil resources because there would be no ground-disturbing activities. Construction of the Nippon WTP discharge pipeline under the Preferred Alternative would require excavation of a trench about 10 feet deep, plus or minus several feet, to protect the pipeline from scour (HDR 2009). Excavated soil material would be disposed in an upland location or an approved offshore site. The 1,200-foot pipeline would be buried from a connection to the existing shoreline discharge pipe for a distance of about 900 feet along the seafloor of the Strait. The last 300 feet of the pipeline would be anchored on the surface of the seafloor. Geotechnical investigations indicated that the trench excavations would be in loose to medium dense sand with gravel with possible sections of medium dense to dense sand and silty sand (HDR 2009). Imported rock fill material would be used for bedding and backfill of the trench. The disturbance and loss of soil material from excavation of the pipeline trench would be localized, long-term, minor, and adverse. Because the impacts from both alternatives would be minor or less, this topic was eliminated from further evaluation in this EA.

Floodplains

Executive Order (EO) 11988, NPS *Management Policies 2006*, and DO-77-2 require examination of impacts to floodplains and the potential risks involved in placing facilities within floodplains. The existing and proposed Nippon WTP discharge outfall is located on the coastal shoreline, but neither alternative would adversely affect the natural resources or function of the coastal floodplain and would not increase flood risk; therefore, this topic was eliminated from further evaluation in this EA.

Wetlands

Executive Order (EO) 11990, NPS *Management Policies 2006*, and DO-77-1 direct that wetlands be protected and that wetlands and wetland functions and values be preserved. These orders and policies further direct that direct or indirect impacts to wetlands be avoided whenever there are practicable alternatives. The project area does not contain any wetlands; therefore, there would be no impact to wetlands from either alternative. The No Action Alternative would have no effect to wetlands or other waters because there would be no new surface disturbance. Installation of the Nippon WTP outfall pipeline under the Preferred Alternative would require excavation and temporary disturbance in coastal waters. Potential effects to marine resources and water quality are discussed in the Affected Environment and Environmental Consequences section of this EA. Permitting requirements for the Preferred Alternative are discussed in the section on Compliance with Federal and State Regulations. Because there would be no impact to wetlands under the No Action or Preferred Alternative, this topic was dismissed from further evaluation in this EA.

Wildlife

The Nippon WTP and discharge outfall are located entirely within an industrial zone with limited habitat value for wildlife. The riprap shoreline at the Nippon WTP discharge outfall provides perch sites for sea gulls and other shore birds, and limited habitat for crustaceans and invertebrates. Harbor seals are common visitors in Port Angeles Harbor, but are rarely present near the Nippon facility (City of Port Angeles 2008a). A harbor seal haulout site has been recorded on log booms on the harbor side of Ediz Hook (Jeffries et al. 2000). Continued operation of the Nippon WTP and use of the existing discharge site under the No Action Alternative would have no effect on wildlife. Construction of the extended discharge outfall under the Preferred Alternative would result in a temporary disturbance to the riprap and shoreline during construction, but the effects to wildlife would be localized, short-term, negligible, and adverse. Harbor seals occasionally use the haulout site in the Port Angeles Harbor, but would not likely be affected by installation of the pipeline because of the distance from the site. Because of the limited impacts to wildlife, this topic was dismissed from further evaluation in this EA. Fish and wildlife also are addressed in the context of marine resources, which are discussed in the Affected Environment and Environmental Consequences chapter.

Prime and Unique Farmland

In 1980, the CEQ directed federal agencies to assess the effects of their actions on farmland soils classified as prime or unique by the United States Department of Agriculture, Natural Resources Conservation Service. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; and unique farmland produces specialty crops such as fruits, vegetables, and nuts. There are no prime or unique farmlands associated with the project area; therefore, prime and unique farmland was dismissed from further evaluation in this EA.

Air Quality

The Nippon WTP, as currently operated, does not have measurable levels of emissions to the atmosphere. Water treatment equipment and discharges are all operated by electric pumps; therefore, continued operation of the Nippon WTP under the No Action Alternative

would have no impact on air quality. Installation of the offshore Nippon WTP discharge outfall pipe under the Preferred Alternative would generate additional air emissions from equipment during construction, but the effects would be short-term, adverse, and negligible. Visibility, deposition, and other air quality-related values would not be affected. These emissions would be small and would not contribute to climate change. There would be no long-term change in air emissions following construction. For these reasons, this topic was dismissed from further evaluation in this EA.

Cultural Resources

Cultural resources include archeological resources, ethnographic resources, historic structures, and cultural landscapes. Cultural resources are found throughout the Olympic Peninsula, from its mountain peaks and alpine meadows down to its river valleys and coastal shoreline. Legislative acts, regulations, and NPS policies provide direction for the protection, preservation, and management of cultural resources on public lands or cultural resources affected by Federal undertakings. This undertaking is within the scope of the Elwha Project Programmatic Agreement for the management of cultural resources.

The project is in the vicinity of the Lower Elwha Village of Tsewhitzen (45CA523) (Lewarch and Larson 2004). This is a site of major complexity and of great importance. ONP staff reviewed the project area for archeological resources, historic resources, ethnographic resources, and cultural landscapes. Geomorphic test trenching was monitored and the potential for cultural deposits was addressed in the geomorphic studies. No cultural resources were found in the project area. To meet the requirements of Section 106 of the National Historic Preservation Act (NHPA), the Washington State Historic Preservation Office and Lower Elwha Tribe were consulted and concurred with the finding of no effect to historic properties. Because it has been determined there would be no impact to cultural resources with either of the alternatives, cultural resources have been dismissed from further evaluation in this EA.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. The lands comprising the project area are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians; therefore, Indian trust resources were dismissed as an impact topic.

Environmental Justice

Presidential Executive Order 12898, General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the Environmental Protection Agency, environmental justice is the

> …fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The goal of 'fair treatment' is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

Port Angeles and surrounding communities contain both minority and low-income populations; however, environmental justice is dismissed as an impact topic for the following reasons:

- The Park staff and planning team actively solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors.
- Implementation of the proposed alternative would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect adverse effects on any minority or low-income population.
- The impacts associated with implementation of the Preferred Alternative would not disproportionately affect any minority or low-income population or community.
- Implementation of the Preferred Alternative would not result in any identified effects that would be specific to any minority or low-income community.
- The impacts to the socioeconomic environment resulting from implementation the Preferred Alternative would be beneficial. In addition, the Park staff and planning team do not anticipate the impacts on the socioeconomic environment to appreciably alter the physical and social structure of the nearby communities.

Visitor Use and Recreation

The Nippon WTP and associated facilities are located outside of ONP in an industrial area with no active recreation on the property. The nearby Waterfront trail follows the road through Nippon facilities out to Ediz Hook. Also nearby is the Sail and Paddle Park just east of the Nippon facility on Ediz Hook where picnic tables, beach access, and barbeque pits are available. Further west on Ediz Hook is the Harbor View Park, which also offers picnic tables and beach access for day use recreation. The No Action and Preferred alternatives would have no direct impacts on recreation facilities or use of nearby recreation sites. Construction of the Nippon WTP discharge outfall pipeline under the Preferred Alternative would result in a temporary increase in noise from equipment operation; however, increased noise levels likely would be unnoticeable because of the current ambient noise levels from the paper mill operations. Therefore, the increase in noise levels would not likely affect nearby recreation use. Public access to the infrequently used shoreline adjacent to the Nippon WTP would be

temporarily suspended during construction. Because the Preferred Alternative would have localized, short-term, negligible, and adverse impacts on visitor use and recreation, this topic was dismissed from further evaluation in this EA.

Visual Resources

The current Nippon WTP discharge site is located on private property. Public access is possible along the beach and although the site is not readily observable from nearby lands, it can be seen by boaters. Under the No Action Alternative, there would be no change in the existing visual quality to the site. Under the Preferred Alternative, a pipeline would be connected to the existing outfall, which would then be buried under the riprap shoreline until it reaches the offshore discharge site. The new pipeline connection would be less visible than the existing outfall because the pipe would be mostly buried at the shoreline. Under the Preferred Alternative, installation of the pipeline would result in a localized, short-term, negligible, and adverse effect from construction equipment onshore and offshore. Because the effect to visual resources would be negligible, this topic was dismissed from further evaluation in this EA.

Soundscapes

In accordance with NPS *Management Policies 2006* and Director's Order #47, Sound Preservation and Noise Management, an important part of the National Park Service mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among National Park Service units, as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

The project area, which is not within the boundaries of Olympic National Park, is in an industrial setting where the protection of a natural ambient soundscape and/or the opportunity for visitors to experience natural sound environments is not an objective. Any construction associated with implementation of the Preferred Alternative could result in dissonant sounds, but such sounds would be temporary and not out-of-place in the setting of a paper mill. Because protection of a natural ambient soundscape and/or opportunity for visitors to experience natural sound environments is not a consideration during either construction or operation of the outfall, soundscape management was dismissed as an impact topic.

Lightscape Management

In accordance with NPS *Management Policies 2006*, the National Park Service strives to preserve natural ambient landscapes, which are natural resources and values that exist in the absence of human-caused light. No structures, outdoor lighting, or night construction are proposed for the WTP improvements. Because there would be no changes in lighting for either of the alternatives, this topic was dismissed from further consideration and is not evaluated in this document.

Wilderness

The project area occurs outside of the park and wilderness boundaries and, therefore, is not subject to Wilderness Act requirements. Because there would be no direct effect to wilderness resources and values, this topic was dismissed from further evaluation in this EA.

Climate Change and Energy Resources

Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program, the National Academy of Sciences, and the United Nations Intergovernmental Panel on Climate Change provide evidence that climate change is occurring and could accelerate in the coming decades. While climate change is a global phenomenon, it manifests differently depending on regional and local factors. General changes that are expected to occur in the future as a result of climate change include hotter, drier summers; warmer winters; warmer water; higher ocean levels, among other changes.

Climate change is a far-reaching, long-term issue that could affect Olympic National Park, its resources, visitors, and management. Although some effects of climate change are considered known or likely to occur, many potential impacts are unknown. Much depends on the rate at which the temperature would continue to rise and whether global emissions of greenhouse gases can be reduced or mitigated. Climate change science is a rapidly advancing field and new information is being collected and released continually.

The No Action Alternative would result in negligible changes to the energy requirements or greenhouse emissions associated with Nippon WTP operations. The Preferred Alternative would contribute to greenhouse emissions and require expenditures of energy, including natural and depletable resources, during construction of the pipeline; however, the emissions and energy use would be short-term and have negligible impacts to climate change and energy resources. The Preferred Alternative would also result in a long-term, negligible increase in greenhouse emissions and energy consumption from additional operation of pumps because of the greater frequency of backwashes and discharges due to more waste solids in the Elwha River supply. Because impacts would be no greater than negligible, climate change and energy resources were dismissed from further evaluation in this EA.

ALTERNATIVES

INTRODUCTION

This section describes the No Action Alternative and NPS Preferred Alternative, which includes improvements to the Nippon WTP. The No Action Alternative would maintain the existing Nippon WTP shoreline discharge location and the Nippon mill would use lower quality water for paper production. The Preferred Alternative was developed to address water quality issues associated with anticipated increases in turbidity from removal of the two dams on the Elwha River as part of the Elwha River restoration. The Preferred Alternative includes additional water filtering at the existing Nippon WTP to maintain the current high quality water for paper production and the extension of the discharge outfall to an offshore location to better disperse and mix solid discharges and minimize water quality impacts in the marine environment.

The following sections provide a description of the two alternatives. The Preferred Alternative defines the rationale for the action in terms of resource protection and management, operational use, and other applicable factors. The No Action Alternative provides a basis for comparison with the Preferred Alternative and the respective anticipated environmental consequences. Other alternatives that were considered but eliminated from detailed analysis are also discussed in this section. Also included in this chapter is a comparison of how well the alternatives meet project objectives and a comparison of the environmental effects of each of the alternatives.

NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no improvements to Nippon WTP operations or outfall. The Nippon WTP currently receives untreated Elwha River water via a river diversion to the industrial water supply line. Historically, the untreated water delivered to the plant has had an average turbidity of about 9 nephelometric turbidity units (NTU). NTUs are a measure of the clarity of the water, with higher values having more suspended solids. During the anticipated 3- to 5-year dam demolition and erosion phase, the turbidity of the Elwha River water will substantially increase periodically. Prior to delivery to Nippon, the water will be treated at the EWTP, which will treat the water to a turbidity of about 20 NTU or less during dam demolition and erosion. After the dam demolition and erosion phase, the turbidity in the Elwha River is expected to decrease and pretreatment in the EWTP prior to deliver to the Nippon WTP would not be needed. The anticipated annual average turbidity of the untreated water would be about 15 NTU, but maximum turbidity is predicted to reach 1,900 NTUs during high turbidity events that could last several days (NPS 1996b).

The Nippon WTP currently treats an average of 9 million gallons per day (mgd) with a peak production capacity of 14 mgd. The volume of water delivered would not change under this alternative. The Nippon WTP would continue to treat incoming water using existing sedimentation and filtration processes, aided by the use of a coagulant (polyaluminum chloride) to remove suspended solids. Current treatment typically requires semi-annual cleaning of the sedimentation basin and filter backwashing one or two times per day depending on the quality of the delivered water. These intermittent discharges would continue to occur from the existing Nippon WTP outfall structure onto the riprap shoreline adjacent to the Nippon WTP (Figure 2).

FIGURE 2. EXISTING NIPPON WTP SHORELINE OUTFALL

Existing Nippon WTP discharges are regulated under a National Pollution Discharge Elimination Permit (NPDES) issued by the WDOE (Outfall 2, NPDES Permit WA 000292-5). The WDOE has indicated that the existing outfall does not provide adequate mixing and dilution for additional Nippon WTP loadings (URS 2007a). Thus, Nippon WTP discharges under the No Action Alternative would remain similar to existing conditions and Nippon would not be able to filter and treat process water for paper production to the same quality it is currently using.

IMPROVE NIPPON WTP—THE MANAGEMENT PREFERRED ALTERNATIVE

The Preferred Alternative includes improvements to the Nippon WTP that allow continued availability of high quality water and the extension of the outfall for better mixing and dispersion of discharges for paper production. Total water use would not increase under the Preferred Alternative. Because of the anticipated higher turbidity of water deliveries to the Nippon WTP following dam removal as described for the No Action Alternative, additional treatment would be needed to reduce the turbidity prior to use for paper production. As with the No Action Alternative, the EWTP will pretreat water to about 20 NTU prior to delivery to the Nippon WTP. After the dam demolition and erosion phase, the turbidity in the Elwha River is expected to decrease and pretreatment in the EWTP prior to deliver to the Nippon WTP would not be needed. The anticipated annual average turbidity of the untreated water would be about 15 NTU, but maximum turbidity is predicted to reach 1,900 NTUs during high turbidity events that could last several days (NPS 1996b).

Several improvements to the Nippon WTP facility and operations are being considered to further treat water delivery from the EWTP during dam removal and erosion to about 3 NTU (the current quality of the Nippon WTP output). Proposed WTP improvements include:

- The use of a coagulating chemical (polyaluminum chloride - PAC) prior to treatment
- Installation of a new sludge collection system
- Renovation of the existing single media gravity filters to dual media filters

In addition, preliminary recommendations (URS 2004a) for water treatment indicated that use of sodium hypochlorite may be needed if the concentration of iron and manganese in the Elwha River increases as a result of dam removal and erosion. Use of sodium hypochlorite would oxidize iron and manganese and facilitate the flocculation of these metals out of the water. If needed, the sodium hypochlorite would be added at the EWTP to provide longer reaction time prior to delivery to the Nippon WTP. Because PAC is acidic, sodium hydroxide may be injected at the head of the Nippon WTP to raise the alkalinity (pH) of the water and improve coagulation for sediment removal. The use of these additives would be determined based on water quality testing of Elwha River diversions.

PAC is a coagulating chemical used to help bind suspended solids and facilitate settling. PAC will be used at the EWTP and is currently being used at the Nippon WTP as part of the pretreatment process. A new sludge collection system would be used to handle the additional sediment loadings at the Nippon WTP. Under this system, discharges would occur at timed intervals based on the volume of solid loadings rather than semi-annually, as under current operations and the No Action Alternative. The addition of dual media filters would increase the efficiency of solid removal. Periodic backwashing would continue to be used to clear the filters. The frequency of discharges from the backwash would depend on the quality of the untreated water. Delivery of water with higher turbidity would generate more solids for discharge and more frequent backwashing and discharges from the sedimentation basin. The capacity of the two pumps currently used to pump discharges to the outfall is expected to remain at 5,800 gallons per minute (gpm).

The Preferred Alternative also includes modifications to the Nippon WTP outfall. The current shoreline discharge location would be extended about 1,200 feet offshore into the Strait to provide better mixing and dispersal of sediments (Figure 3). The outfall pipeline would be constructed with 20-inch high density polyethylene (HDPE) pipe to resist wave action and sediment scouring. This type of pipe was selected to provide maximum durability in the marine environment. Extension of the pipeline discharge would require a joint connecting the two existing 16-inch pipes to a new single 20-inch pipe. The new pipeline would connect at the existing shoreline discharge point and would then be buried below the ground surface. Temporary removal of the shoreline riprap and excavation would be required to bury the pipeline. Riprap would be replaced following pipeline installation.

The 1,200-foot pipe would extend perpendicular from the shoreline into the Strait. The first 900 feet of the pipe would be buried to a depth of about 10 feet, plus or minus several feet, below the surface. At that point, the pipeline would begin to daylight to its terminus about 1,200 feet from the shore at a depth of about 30 feet below the water surface. The pipe would maintain a slope of about 0.5 percent to prevent solids from accumulating in the pipe. A perforated diffuser would be used on the last 315 feet of pipe. The diffuser would contain 21 four-inch diameter ports spaced on alternating sides of the pipe at 15-feet intervals. The diffuser was designed to meet dilution requirements and provide for compliance with water quality standards. The pipe would be installed using conventional open-cut marine excavation techniques, which may include use of a barge-mounted trackhoe or clamshell excavator. The dredged material would be disposed of at an upland site or an offshore state

and/or county permitted site. The portion of the pipeline in the trench would be placed on imported crushed rock (less than 3/4-inch in size) and the backfill around the pipe to 6 inches above the pipe would be with 1.5-inch diameter rock or smaller. The remainder of the trench fill would be with well graded rock less than 4 inches in size. Concrete anchors would be used to secure the aboveground portions of the pipeline.

Construction activities are currently planned for 2010. Installation of the pipeline outfall is anticipated to occur between June and October to avoid storms when the water in the Strait is too rough to safely install the outfall pipeline and to reduce impacts to marine species. Slight modifications in pipe design and installation procedures could occur during final design. The estimated cost for proposed WTP improvements including the new outfall, sludge basin, and dual media filters is about $2.1 million in 2007 dollars. The annualized operating costs for the outfall would be about $32,000 during the period of dam removal. Final costs and responsibilities for implementation of the project would be determined as part of a negotiated settlement agreement between the NPS and Nippon.

FIGURE 3. PROPOSED NIPPON WTP OUTFALL

MITIGATION

Mitigation measures to protect natural resources, cultural resources, and other values, as described in Table 2, would apply to the Preferred Alternative.

TABLE 2. MITIGATION MEASURES

Resource Area	Mitigation
General Considerations	The onshore construction zones would be identified and fenced with construction tape, snow fencing, or some similar material prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications, and workers would be instructed to avoid conducting activities beyond the construction zone. Disturbances would be limited to areas inside the designated construction limits. No machinery or equipment would access areas outside the construction limits. Construction equipment staging would occur on Nippon property in a protected area. Construction vehicle engines would not be allowed to idle for extended periods of time. All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion.
Water Quality	Best management erosion-control practices for excavation and trenching to install the pipeline would be implemented to minimize turbidity. Prior to starting work each day, all machinery would be inspected for leaks (e.g., fuel, oil, and hydraulic fluid), and all necessary repairs would be made before commencing work. Hydraulic fluid utilized in machinery shall be bio-degradable. This measure is designed to avoid/minimize the introduction of chemical contaminants associated with machinery used in project implementation. Hazardous spill clean-up materials would be on-site at all times. This measure is designed to avoid/minimize the introduction of chemical contaminants associated with machinery (e.g., fuel, oil, and hydraulic fluid) used in project implementation because chemicals may have a toxic effect on aquatic organisms. Equipment used for this project shall be free of external petroleum-based products while working in and around water. Accumulation of soils or debris shall be removed from the drive mechanisms (wheels, tires, tracks, etc.) and undercarriage of equipment prior to its working below the ordinary high water line. As requested by the WDOE, whole effluent toxicity testing on outfall discharges after discharges have reached a steady state would be conducted under the Preferred Alternative.
Marine Resources and Special Status Species	Installation of the pipeline would occur between June and October to minimize potential effects to migrating salmonids present in the spring. Best management erosion-control practices (NOAA 2003) for excavation and trenching to install the pipeline would be implemented to minimize turbidity, organism entrainment, and noise that could have adverse impacts on local ecology. The project area was surveyed to assure avoidance of sensitive marine habitats along the proposed pipeline outfall. Surveys results indicate no signs of eelgrass beds or extensive kelp growth, and geoduck densities were below commercial densities.

Resource Area	Mitigation
Cultural Resources	While no historic properties were identified within the area of potential effect, limited archeological monitoring of initial ground disturbance may occur. Should previously unknown cultural resources be encountered during construction activities, work would be halted in the discovery area and the park would consult the Washington State Historic Preservation Office and Tribe as outlined in the Programmatic Agreement and, as appropriate, provisions of the Native American Graves Protection and Repatriation Act of 1990 and the project's inadvertent discovery plan. The NPS would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and subcontractors also would be instructed on procedures to follow in case previously unknown archeological resources are uncovered during construction. Equipment and material staging areas would avoid known archeological resources.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

In addition to the No Action and Preferred alternatives, three alternatives were evaluated as potential options for the treatment and disposal of discharges from the Nippon WTP. These alternatives were developed based on typical approaches for treatment and disposal used at other similar water treatment plants and discussions with WDOE. The evaluation of alternatives was conducted based on WDOE guidance that requires waste generating facilities to meet AKART (all known, available, and reasonable treatments) technology-based treatment standards, as well as water quality-based standards (URS 2007b). Results of the AKART evaluation determined that alternatives other than the Preferred Alternative were not feasible based on consideration of cultural and environmental impacts, life cycle cost, and water quality. The WDOE concurred with the results of the AKART evaluation (WDOE 2007a). The alternatives evaluated as part of the AKART study and eliminated from detailed analysis in the EA are described below.

Shared Use of the Existing Wastewater Treatment Plant Outfall

Nippon facilities also have a wastewater treatment plant (WWTP) discharge outfall located north of the Nippon WTP outfall. This alternative considered combining the Nippon WTP discharges with the WWTP discharges at a single outfall. Because of capacity limitation in the WWTP outfall, an equalization tank and associated pipes and pumps would be needed to regulate flows. Construction of an equalization tank and the associated excavation would require ground disturbances that could disturb human remains associated with the Lower Elwha Village Tsewhitzen. For this reason, this alternative was eliminated from further consideration.

Use of an On-site Mechanical Treatment and Dewatering System

This alternative would treat Nippon WTP discharges using a two-step process. The first step requires thickening the waste stream to increase solid concentrations using a mechanical thickener. The second step requires dewatering the solids using a dewatering belt press or centrifuge. The dewatered solids produced would then be disposed of at an off-site land fill. The water removed from the solids through this process would be recycled to the Nippon WTP inlet and combined with the untreated river water. Use of this system would require installation of a gravity mechanical thickening tank and dewatering facilities in a building about 40 feet by 50 feet, along with additional piping. This alternative would take up a large

amount of space at the mill and adversely affect the delivery of materials to the mill for its paper making process. For this reason and because implementation of this alternative would require new excavations with the potential to disturb human remains and greater life cycle costs, this alternative was eliminated from further consideration.

Use of an Off-site Mechanical Treatment and Dewatering System

The treatment system for this alternative would be the same as described for the on-site system, but it would be located off the Nippon property. This alternative substantially increases the length of piping required to connect the treatment facility with the Nippon WTP. Construction of the off-site thickening and dewatering system would require two new pipelines of at least 4,000 feet in length to an off-site facility. To avoid disturbing potential human remains on Nippon property, the pipelines would need to be constructed above ground. Human remains could potentially be present at an off-site location. In addition, this alternative adds operational complexity with a substantially higher life cycle cost. For these reasons, this alternative was eliminated from further consideration.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The CEQ defines the Environmentally Preferred Alternative as "…the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act § 101." Section 101 states that, "…it is the continuing responsibility of the Federal Government to meet these goals:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

2. Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

3. Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

4. Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment, which supports diversity and variety of individual choice;

5. Achieve a balance between population and resource use, which will permit high standards of living and a wide sharing of life's amenities; and

6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

The identification of the "Environmentally Preferred Alternative" was based on an analysis that balances factors such as physical impacts on various aspects of the environment, mitigation measures to deal with impacts, and other factors including the statutory mission of the NPS and the purposes for the project.

The No Action Alternative would preserve existing conditions, but it would not be considered the Environmentally Preferred Alternative because it would require Nippon to use lower quality water for paper production and nearshore discharges from the WTP would continue. The No Action Alternative is not the Environmentally Preferred Alternative for the following reasons: (1) it would not satisfy the requirements of the Elwha Act, which requires

protection of the existing quality of water from the Elwha River for industrial use as a result of adverse impacts of dam removal, (2) it would require the Nippon paper mill to use higher turbidity water, resulting in increased operation and maintenance costs, and (3) it would continue nearshore WTP discharges, which may not be conformance with future water quality permitting requirements. The No Action Alternative does not fully meet NEPA Section 101 goals.

The NPS determined that the Environmentally Preferred Alternative is to implement the Nippon WTP improvements described for the Preferred Alternative because it surpasses the No Action Alternative in realizing the full range of goals as stated in Section 101 of NEPA. Improvements to the Nippon WTP would produce low turbidity water of quality similar to current conditions for paper production (goal 5). Extension of the WTP outfall would ensure better mixing and dispersion of sediment, which would benefit the marine environment (goals 2, 3, and 4).

ALTERNATIVES COMPARISON TABLE

A comparison of the alternatives and the degree to which each alternative fulfills the needs and objectives of the proposed project is summarized in Table 3.

TABLE 3. ALTERNATIVES COMPARISON

No Action Alternative	Improve Nippon WTP (Preferred Alternative)
Under the No Action Alternative, the NPS would not improve the Nippon WTP or extend the discharge outfall. The Nippon paper mill would use lower quality water for paper production and the shoreline WTP discharge outfall would remain at the current location.	Under the Preferred Alternative, the NPS would upgrade the Nippon WTP to better filter and remove sediments, thus providing water quality for paper production similar to current conditions. The WTP discharge outfall would be extended 1,200 feet offshore to better disperse and mix sediment.
Meets Project Objectives?	
The No Action Alternative does not fulfill the project objectives. High quality water would not be available for use in the Nippon paper mill. WTP discharges would not be adequately mixed and may not meet future WDOE water quality requirements. Natural resources would not be as protected with continued shoreline WTP discharges.	The Preferred Alternative fulfills the project objectives by maintaining high quality water for use at the Nippon paper mill. The extension of the WTP discharge outfall to an offshore location would ensure adequate mixing and would meet WDOE water quality requirements. Natural resources would be protected by better mixing and dispersal of sediments and by implementation of best management practices during outfall construction.

IMPACT SUMMARY

A summary of potential environmental effects for the alternatives is presented in Table 4.

TABLE 4. IMPACT SUMMARY

Impact Topic	No Action	Improve Nippon WTP (Preferred Alternative)
Water Quality	Continuation of Nippon WTP shoreline discharges would have a long-term minor adverse effect to water quality in a localized area at the base of the Ediz Hook, although sediment discharges contribute to the natural supply of sediment that would normally reach the Strait via the Elwha River. Current NPDES Permit requirements for meeting water quality standards would be met, although shoreline discharges may not meet future permit renewal requirements. Contributions to cumulative effects would be minor in relation to the overall long-term beneficial effects associated Elwha River restoration and cleanup of the Rayonier site.	Implementation of the Preferred Alternative would result in a long-term beneficial effect to water quality in the Strait by providing better mixing and dilution of sediment discharges. A short-term increase in turbidity would have a minor adverse impact on water quality in the localized vicinity during construction in an area that is currently subject to erosion and deposition. Cumulative impacts would primarily be beneficial over the long term, with only a slight contribution to increased sediments in the Strait from the Nippon WTP in relation to the discharges from removal of the dams as part of the Elwha River Restoration Project.
Marine Resources	Continuation of Nippon WTP shoreline discharges during the dam removal phase would have a long-term minor adverse effect to marine resources in a localized area at the base of the Ediz Hook, although such sediment discharges contribute to the natural supply of sediment that would normally reach the Strait via the Elwha River. Contributions to cumulative effects would be minor in relation to the overall long-term beneficial effects associated with the Elwha River restoration.	Implementation of the Preferred Alternative would result in a long-term beneficial effect to marine resources in the Strait by providing better mixing and dilution of sediment discharges. This would alleviate high turbidity discharges, which can reduce primary production, resulting in lower dissolved oxygen in the intertidal nearshore habitat. A short-term increase in turbidity, potential entrainment, noise, and habitat disturbance during construction would have a minor short-term adverse impact on marine resources in the localized vicinity during construction. Cumulative impacts would primarily be beneficial over the long term, with only a slight contribution to increased sediments in the Strait from the Nippon WTP in relation to the discharges from removal of the dams as part of the Elwha River restoration.

Impact Topic	No Action	Improve Nippon WTP (Preferred Alternative)
Special Status Species	Continuation of Nippon WTP shoreline discharges during the dam removal phase of the Elwha River restoration may affect, but is not likely to adversely affect special status species in a localized area at the base of the Ediz Hook. Sediment discharges would contribute to the natural supply of sediment that would normally reach the Strait via the Elwha River. Contributions to cumulative effects would be minor in relation to the overall long-term beneficial effects associated Elwha River restoration.	The increase in turbidity, potential entrainment, noise, and habitat disturbance during construction may affect, but is not likely to adversely affect federally listed marine species, including PS Chinook, PS steelhead, southern resident killer whales, or bull trout. Localized short-term minor effects to fish species with EFH are possible during construction. There would be a long-term benefit to marine special status species from the discharge of sediments at the offshore Nippon WTP outfall because of improved mixing and dilution. No adverse effect is anticipated for brown pelican, marbled murrelet, western snowy plover, Pacific herring, Hood Canal summer chum, or Stellar sea lion because of the lack of suitable habitat or infrequent activity by these species in the project area. There would be no impact on federally listed plants in the project area because none are present. Cumulative effects to marine special status species may affect, but is not likely to adversely affect federally listed species or EFH and should provide long-term benefits. The Preferred Alternative would contribute to the long-term beneficial effects of the overall Elwha River restoration.
Socioeconomics	The No Action Alternative would increase operating and maintenance costs at the Nippon paper mill, which would result in a long-term minor adverse effect to the cost of paper production. Cumulative effects to the local economy from Elwha River restoration activities and cleanup of the Rayonier site would result in long-term beneficial effects to the local economy with a minor adverse contribution from the No Action Alternative due to increased operating costs for the Nippon paper mill.	The Preferred Alternative would provide continued availability of high quality water for paper production and the operation of the Nippon paper mill. Construction-related spending would have a short-term beneficial effect to the local economy and continued operation of the paper mill would have a long-term benefit to the local economy. Implementation of the WTP improvements would result in cumulative beneficial effects to employment and the local economy in combination with reasonably foreseeable actions.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section provides a description of the resources potentially impacted by the alternatives and the likely environmental consequences. It is organized by impact topics that were derived from internal park and external public scoping. Impacts are evaluated based on context, duration, intensity, and whether they are direct, indirect, or cumulative. In addition to determining the environmental consequences of the alternative, the NPS typically conducts an analysis of potential effects to determine if actions would impair park resources or cause unacceptable impacts. Because the proposed action is located outside of ONP, neither NPS policies nor managerial determinations regarding impairment or unacceptable impacts apply to non-NPS lands or resources. Thus, no determination is made regarding impairment or unacceptable impacts to park resources.

GENERAL METHODS

This section contains the environmental impacts, including direct and indirect effects, and their significance to the alternatives. The analysis is based on the assumption that the mitigation measures identified in the "Mitigation" section of this EA would be implemented for the Preferred Alternative. Overall, the NPS based these impact analyses and conclusions on the review of existing literature and park studies, information provided by experts within the park, the National Marine Fisheries Service (NMFS), WDOE, and other agencies, professional judgment, and public input.

Several terms are used within the "Environmental Consequences" section to assess the impacts of each alternative on each impact topic. The following terms were used to define the nature of impacts associated with project alternatives:

Type: Impacts can be beneficial or adverse.

Context: Context is the setting within which an impact would occur, such as local, park-wide, or regional.

Impact Intensity: Impact intensity is defined individually for each impact topic. There may be no impact, or impacts may be negligible, minor, moderate, or major.

Duration: Duration of impact is analyzed independently for each resource because impact duration is dependent on the resource being analyzed. Depending on the resource, impacts may last for the construction period, a single year, or other time period. For purposes of this analysis, impact duration is described as short- or long-term as defined for each resource.

Direct and Indirect Impacts: Effects can be direct, indirect, or cumulative. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. Direct and indirect impacts are considered in this analysis, but are not specified in the narratives. Cumulative effects are discussed on page 27.

THRESHOLD FOR IMPACT ANALYSIS

The intensity and duration of effects vary by resource; therefore, the definitions for each impact topic are described separately. These definitions were formulated through the review of existing laws, policies, and guidelines; and with assistance from park staff, Denver Service Center NPS staff, and other resource specialists.

Water Quality

Information on water quality in the project area was compiled from available data and recent studies. Potential impacts to water quality in the marine environment from the alternatives were based on analysis of the water quality of projected discharges, input from WDOE, compliance with state water quality standards, study results, and professional judgment. The thresholds of change for the intensity of impacts to water quality are defined in Table 5.

TABLE 5. WATER QUALITY IMPACT AND INTENSITY

Impact Intensity	Intensity Description
Negligible	An action that would result in a change to water quality, but the change would be so small that it would not be of any measurable or perceptible consequence.
Minor	An action that would result in a change to water quality parameters, but the change would be small, localized, and of little consequence.
Moderate	An action that would result in a change to a water quality parameters; the change would be measurable and of consequence.
Major	An action that would result in a noticeable change to water quality parameters; the change would be measurable and would result in a severe adverse impact with regional consequences.

Short-term impact—recovers in less than 1 year
Long-term impact—takes more than 1 year to recover

Marine Resources

According to NPS *Management Policies 2006,* the restoration of native species is a high priority (sec. 4.1, NPS 2006). Management goals for marine life include maintaining components and processes of naturally evolving ecosystems, including natural abundance, diversity, and the ecological integrity of plants and animals. Information on marine resources was taken from park documents and studies, NMFS, the U.S. Fish and Wildlife Service (FWS), and the WDFW. The thresholds of change for the intensity of impacts to marine life are defined in Table 6.

TABLE 6. MARINE RESOURCES IMPACT AND INTENSITY

Impact Intensity	Intensity Description
Negligible	There would be no observable or measurable impacts to native marine species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.
Minor	Impacts would be detectable and they would not be expected to be outside the natural range of variability of native marine species' populations, their habitats, or the natural processes sustaining them. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
Moderate	Impacts on marine resources would be detectable and occur over a large area. Breeding species of concern are present, including species with particularly vulnerable life stages such as migration or juvenile stages. Mortality or interference with activities necessary for survival could be expected on an occasional basis, but would not be

Impact Intensity	Intensity Description
	expected to threaten the continued existence of the species. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
Major	Impacts on native marine species, their habitats, or the natural processes sustaining them, would be detectable and would be expected to be outside the natural range of variability. Key ecosystem processes might be disrupted. Loss of habitat might affect the viability of at least some native species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

Short-term impact—recovers in less than 1 year
Long-term impact—takes more than 1 year to recover

Special Status Species

Section 7 of the Endangered Species Act (ESA) mandates all federal agencies to determine how to use their existing authorities to further the purposes of the ESA to aid in recovering listed species, and to address existing and potential conservation issues. Section 7(a)(2) states that each federal agency shall, in consultation with the Secretary of the Interior and Secretary of Commerce, ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. NPS *Management Policies 2006* state that potential effects of agency actions would also be considered for state or locally listed species (i.e., special status species). The thresholds of change for the intensity of impacts to special status species are defined in Table 7.

TABLE 7. SPECIAL STATUS SPECIES IMPACT AND INTENSITY

Impact Intensity	Intensity Description
Negligible	The action could result in a change to a population or individuals of a species, but the change would not be of any measurable or perceptible consequence and would be well within natural variability. In the case of federally listed species, this impact intensity equates to a FWS/NMFS determination of "may affect, not likely to adversely affect."
Minor	The action could result in a change to a population or individuals of a species. The change would be measurable, but small and localized, and not outside the range of natural variability. Mitigation measures, if needed, would be simple and successful. In the case of federally listed species, this impact intensity equates to a FWS/NMFS determination of "may affect, not likely to adversely affect."
Moderate	Impacts on special status species, their habitats, or the natural processes sustaining them would be detectable and would occur over a large area. Breeding species of concern are present, including species with particularly vulnerable life stages. Mortality or interference with activities necessary for survival could be expected on an occasional basis, but is not expected to threaten the continued existence of the species. Mitigation measures would be extensive and likely successful. In the case of federally listed species, this impact intensity equates to a FWS/NMFS determination of "may affect, likely to adversely affect."
Major	The action would result in noticeable effects to the viability of the population or individuals of a species. Impacts on special status species or the natural processes sustaining them would be detectable. Loss of habitat might affect the viability of at least some special status species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed. In the case of federally listed species, the impact intensity equates to a FWS/NMFS determination of "may affect, likely to jeopardize the continued existence of a species."

Short-term impact—recovers in less than 1 year
Long-term impact—takes more than 1 year to recover

Socioeconomics

Socioeconomic issues were identified through the scoping process. Concerns covered by this section include the costs associated with implementing Nippon WTP improvements and any changes in operating costs for the paper mill. The thresholds of change for the intensity of impacts to socioeconomics are described in Table 8.

TABLE 8. SOCIOECONOMIC IMPACT AND INTENSITY

Impact Intensity	Intensity Description
Negligible	No effects would occur or the effects to socioeconomic conditions would be below the level of detection.
Minor	The effects to socioeconomic conditions would be detectable. Any effects would be small and if mitigation were needed to offset potential adverse effects, it would be simple and successful.
Moderate	The effects to socioeconomic conditions would be readily apparent. Any effects would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.
Major	The effects to socioeconomic conditions would be readily apparent and would cause substantial changes to socioeconomic conditions in the region. Mitigation measures to offset potential adverse effects would be extensive and success could not be guaranteed.

Short-term impact—effects lasting for the duration of the proposed action
Long-term impact—effects lasting longer than the duration of the proposed action

CUMULATIVE EFFECTS

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time. The CEQ regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects.

Methods for Assessing Cumulative Effects

To determine potential cumulative effects, actions and land uses that have occurred, are occurring, or are reasonably expected to occur near the project area were identified. Potential future actions were determined by reviewing the local plans and activities in the vicinity of the Nippon paper mill. These actions were then assessed in conjunction with the impacts of the alternatives to determine if they would have any added adverse or beneficial effects on a particular natural, cultural, or socioeconomic resource. Cumulative effects are considered for each of the alternatives and are presented in the discussion of each impact topic.

Past Actions

Past actions include activities that have influenced and affected the current conditions of the environment near the project area. A paper mill has been present at the site of the Nippon mill since 1921. Manufacturing facilities, storage yard, buildings, equipment, the current WTP, and other facilities associated with operation of the paper mill have affected the environment at this location. The placement of riprap armor along the shoreline of the Nippon facility and along the Ediz Hook to protect the shore from erosion has modified natural erosion and

depositional processes. The construction of the Glines Canyon and Elwha dams on the Elwha River in the early 1900s also affected the sediment discharge and amount of sediments historically deposited along Ediz Hook. Recent armoring of the bluffs between Dry Creek and the Elwha River delta has reduced the contribution of sediments to the ocean. Roads, commercial and industrial facilities, urban developments, and other activities along the coast have affected the natural environment near the project area.

Current and Future Actions

No substantial new developments or facilities other than the proposed improvements to the Nippon WTP and discharge outfall are planned in the immediate vicinity of the project area. Implementation of the Elwha River Restoration Project, which includes removal of two dams, is currently scheduled to begin in 2011. This project will increase the sediment discharges into the Strait about 4 miles north of the Nippon WTP discharge site. Plans are underway by the City of Port Angeles, Port of Port Angeles, Rayonier, and the WDOE to clean up and redevelop the former Rayonier mill site located in the Port Angeles Harbor about 2.5 miles south of the Nippon mill (City of Port Angeles 2008b). The site is currently contaminated with dioxins, polychlorinated biphenyls (PCBs), arsenic, and other chemicals.

WATER QUALITY

Affected Environment

The Strait of Juan de Fuca (Strait) provides extraordinary water quality for aquatic life uses (WDOE 2006). This high quality water provides for salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; and crustaceans and other shellfish (e.g., crabs, shrimp, crayfish, and scallops) rearing and spawning. The extraordinary high quality of the water is based on temperature, turbidity, pH, and dissolved oxygen concentrations. Water quality in the Strait also provides for shellfish harvesting, primary and secondary recreation contact, and other miscellaneous uses.

Water quality in the Strait is affected by strong seasonal storms that contribute pulses of fresh water and sediment, which forms large lenses of very low salinity and very high turbidity in the nearshore environment (Elwha-Dungeness Planning Unit 2005). The dynamic conditions in the Strait result in a well-mixed, cold, and nutrient-enriched environment important for marine life (Id.).

Water quality in the Strait near the Nippon WTP project area is affected by several factors. The dams on the Elwha River have captured sediment and reduced sediment discharges into the Strait. This has impacted the sediment supply supporting Ediz Hook, as well as changes to the morphology at the river delta outlet into the Strait (NPS 1995). Erosion control measures on the bluffs south of the Elwha River outlet also have reduced natural sediment discharges to the Strait. A shortage in a sediment supply source to maintain Ediz Hook resulted in the need for riprap armoring of the coastline along Nippon facilities and Ediz Hook to prevent erosion.

Water currently supplied to the Nippon WTP is diverted from the Elwha River. This water is of general high quality because the majority of the watershed is located in ONP. The water does not contain heavy metals, organic compounds, or other toxic compounds (WDOE 2007b). The Nippon WTP currently treats an average of 9 mgd of Elwha River water

(14 mgd at peak production) to reduce turbidity prior to use in paper production (URS 2007b). The WTP uses sedimentation and filtration processes, aided by the use of the coagulant PAC, to remove suspended solids from the untreated Elwha River water. Sediment captured during the treatment process is discharged from the WTP at the shoreline discharge point into the Strait. Discharges occur from the sedimentation underflow with a concentration of about 3,000 mg/L (milligrams per liter) and from the filter backwash at a concentration of about 500 mg/L or less. In addition to the Nippon WTP discharge, the paper mill has a wastewater treatment plant (WWTP) that discharges into the Strait at an outfall located north of the WTP discharge site about 1,200 feet offshore. The WWTP discharges stormwater and treated process water from paper production. Nippon sanitary wastewater is treated and discharged by the City of Port Angeles WWTP. Both the Nippon WWTP and WTP discharges are in compliance with state water quality standards per the existing National Pollution Discharge Elimination System (NPDES) Permit (WA 000292-5) (WDOE 2007b).

The only other nearby point source of discharge is the Port of Angeles WWTP discharge located on the south end of Port Angeles Harbor along Ennis Creek. Stormwater and other nonpoint sources of discharge also affect nearshore water quality in the Strait.

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts of the Alternative

Under the No Action Alternative, there would be no improvements to the Nippon WTP or extension of the discharge outfall. Elwha River diversions would be treated by the EWTP currently under construction prior to delivery to the Nippon WTP. The EWTP would reduce the turbidity of the water delivered to the WTP to less than 20 NTU, although peak turbidities of 1,900 NTU are possible for short periods during dam removal (URS 2007b). This would result in a decrease in the quality of water currently delivered to the Nippon WTP, which has an average turbidity of about 9 NTU. The WDOE has indicated that the limited mixing and dilution provided by the existing WTP shoreline outfall would not be adequate for increased levels of sediment discharge (WDOE 2007a). Thus, the Nippon WTP would not be able to treat the higher turbidity water received from the EWTP to current levels of about 3 NTU without increasing sediment discharges. The Nippon paper mill would use lower quality water for paper production, which would affect operating costs. The existing shoreline discharge outfall would continue to be used and sediment discharge would be of a similar volume and quality to existing conditions.

Shoreline discharges from the Nippon WTP would continue to meet current NPDES Permit requirements, but the beneficial effects provided by offshore mixing and dilution of sediments would not be realized. However, shoreline discharges may not meet future permit renewal requirements. Shoreline sediment discharges would have a long-term minor adverse effect to water quality in a localized area at the base of the Ediz Hook.

Cumulative Impacts

Past actions such as operation of the paper mill, construction of the Elwha River dams, use of riprap armoring on the shoreline, and nearby commercial and shoreline developments all contribute to the cumulative effect on water quality in the vicinity of the project area. These past actions have affected the natural supply and distribution of sediment entering the

Strait and water quality. Removal of the dams as part of the Elwha River Restoration Project will result in an increase in sediment discharges to the Strait. Sediment concentrations would be highest during the 3- to 5-year dam demolition and erosion phase and eventually reach equilibrium to natural levels (NPS 1995). Sediment discharges from the Nippon WTP would contribute slightly to the overall cumulative sediment increases expected during dam removal. WTP discharges contain sediments that under natural conditions would be part of the Elwha River discharges. Hence, the net delivery of sediment to the Strait would be similar with or without the WTP discharges. The WTP discharges would be located several miles south of the Elwha River discharge. Cleanup of the Rayonier mill site would result in improved water quality in the Port Angeles Harbor. The No Action Alternative would contribute slightly to the overall beneficial effects associated with restoring natural sediment delivery and deposition processes to the Elwha River ecosystem and nearshore marine environment and from expected water quality improvements associated with cleanup of the Rayonier site.

Conclusion

Continuation of Nippon WTP shoreline discharges would have a long-term minor adverse effect to water quality in a localized area at the base of the Ediz Hook, although sediment discharges contribute to the natural supply of sediment that would normally reach the Strait via the Elwha River. Current NPDES Permit requirements for meeting water quality standards would be met, although shoreline discharges may not meet future permit renewal requirements. Contributions to cumulative effects would be minor in relation to the overall long-term beneficial effects associated Elwha River restoration and cleanup of the Rayonier site.

Preferred Alternative—Improve Nippon WTP

Direct and Indirect Impacts of the Alternative

Implementation of the Preferred Alternative would result in improvements to the Nippon WTP that would allow continued delivery of high quality water for use in the paper mill. The delivery of water with higher turbidity from the EWTP would require additional treatment prior to use in paper production, which would increase sediment discharges from the Nippon WTP during dam demolition and the erosion phase. The extension of the discharge outfall 1,200 feet into the Strait would allow for better mixing and dilution of the additional sediments in compliance with WDOE requirements that waste generating facilities meet AKART technology based treatment standards, as well as water quality based standards (URS 2007a).

To ensure the proposed discharge outfall would satisfy water quality standards for turbidity and other pollutants, a dilution study was conducted (URS 2007b). The projected water quality and quantity of discharges from the Nippon WTP were used to evaluate impacts to water quality. Two types of discharges would occur from the WTP:

- Sedimentation underflow discharge at a rate of 2,900 gpm and a total suspended sediment concentration of 3,000 mg/L
- Filter backwash discharges at a rate of 5,800 gpm and a total suspended sediment concentration of 500 mg/L

Temperature, dissolved oxygen, pH, toxins, and turbidity water quality standards were used in accessing impacts to water quality from WTP discharges. Results of the analysis indicate that the proposed 315-foot-long deep water diffuser at a depth of about 30 feet would provide adequate dilution to comply with WDOE water quality standards. The discharge would occur in an area of the Strait where erosion and deposition regularly occur. The discharge of solids in this environment is likely to disperse and mix with existing sediments, which supports deposition of sediments along Ediz Hook. As part of NPDES compliance with a new discharge outfall, the WDOE has requested whole effluent toxicity testing on outfall discharges after discharges have reached a steady state (WDOE 2007a).

The use of PAC to coagulate sediments at the EWTP was evaluated to determine possible toxicity in treated water and residual solids in aquatic organisms (URS 2004b, 2005). Several tests were conducted including a bioassay test that exposed bivalve larvae (*Mytillus* sp.) to marine sediments containing different concentrations of PAC to determine potential toxicity. Results of the study indicated that planned doses of PAC would have minimal impacts on bivalve development with a slight reduction in survivorship. Overall, test results indicated that potential adverse effects from the use of PAC are highly unlikely. The WDOE concurred with the toxicity test results and indicated that the use of PAC in the EWTP is acceptable if used in accordance with standard practices for operation of conventional surface water coagulation and sedimentation processes (WDOE 2005). Sodium hydroxide may be added at the Nippon WTP to improve coagulation of sediments and balance the pH from the addition of PAC. The net effect of the addition of PAC and sodium hydroxide would have minimal effect on the pH of Nippon WTP discharges. The potential addition of sodium hypochlorite to Nippon WTP water deliveries is possible if water quality monitoring indicates that iron or manganese concentrations in Elwha River water diversions are substantially elevated. High concentrations of iron and manganese can affect the quality of paper products. Sodium hypochlorite would oxidize these soluble metals into an insoluble form, which would result in Nippon WTP discharges with lower concentrations of soluble iron and manganese.

In addition to the long-term discharges of sediment at the WTP outfall, there would be a temporary increase in turbidity from the trench excavation required to bury about 900 feet of the pipeline. The increase in turbidity during construction would have a minor adverse impact on water quality in the vicinity of construction because of the short-term nature of the disturbance in a localized area and the ongoing erosion and deposition that regularly occur in this area. Overall, implementation of the Preferred Alternative would result in a long-term beneficial effect to water quality in the Strait by providing better mixing and dilution of sediment discharges. Following eventual stabilization of the Elwha River, turbidity would decrease to near current conditions and Nippon WTP sediment discharges are expected to decrease.

Cumulative Impacts

Past actions such as operation of the paper mill, construction of the Elwha River dams, use of riprap armoring of the shoreline, and nearby commercial and shoreline developments all contribute to the cumulative effect on water quality in the vicinity of the project area. These past actions have affected the natural supply and distribution of sediment entering the Strait and water quality. Removal of the Elwha River dams as part of the Elwha River restoration plan is expected to release between 1 and 3 million cubic yards of coarse sediment and 5 million cubic yards of fine-grained sediment over a 3- to 5-year period (NMFS 2006). The contribution to cumulative sediment discharges into the Strait from the proposed

Nippon WTP outfall in addition to those from removal of the dams would be negligible in comparison to the sediments discharged into the Strait from removal of the dams. WTP discharges contain sediments that under natural conditions would be part of the Elwha River discharges. Hence, the net delivery of sediment to the Strait would be similar with or without the WTP discharges. The WTP discharges would be located several miles south of the Elwha River discharge. Over the long term, sediment discharge would decrease as the Elwha River channel reaches a new equilibrium and turbidity in the Elwha River declines. Cleanup of the Rayonier site will provide a cumulative benefit to regional water quality in Port Angeles harbor and the Strait. Cumulative impacts to water quality from the reasonably foreseeable actions and the Preferred Alternative would provide a long-term beneficial effect to water quality, although temporary increases in turbidity would occur during dam removal and installation of the Nippon WTP discharge outfall.

Conclusion

Implementation of the Preferred Alternative would result in a long-term beneficial effect to water quality in the Strait by providing better mixing and dilution of sediment discharges. A short-term increase in turbidity would have a minor adverse impact on water quality in the localized vicinity during construction in an area that is currently subject to erosion and deposition. Cumulative impacts would be beneficial over the long term, with only a slight contribution to increased sediments in the Strait from the Nippon WTP in relation to the discharges from removal of the dams as part of the Elwha River Restoration Project.

MARINE RESOURCES

Affected Environment

The Nippon paper mill is located at the base of Ediz Hook and adjacent to the Strait of Juan de Fuca. The Strait is a portion of the larger Puget Sound Estuary ecosystem. More than 80 percent of the water in Puget Sound flows through the Strait with warm surface water flowing to the west, while cold oceanic deep water enters from the east (Mackas and Harrison 1997). The Strait nearshore habitat, delineated by the physical parameters of tidal influence at the surface and light limitation at depth, ranges from the shore to approximately 90 feet in depth. The Strait, including nearshore regions, is a dynamic wind-dominated system that can have dramatic changes in currents over short periods resulting from changes in large-scale oceanic wind patterns. The Elwha nearshore encompasses approximately 13 miles of shoreline in the Central Strait of Juan de Fuca, defined as true marine coastline from the west side of the mouth of the Elwha River to the drainage divide on the north coast of Miller Peninsula that separate the Sequim Bay watershed from the coastal drainage (Shaffer et al. 2006). Disruption of sediment processes, caused in part by construction of bulkheads and riprap armoring of nearshore habitats and the Elwha and Glines Canyon dams in the Elwha River, have starved Elwha nearshore estuarine regions of sediment sources and transport, resulting in significant erosion of nearshore sediments including Ediz Hook.

The general habitat structure of the Elwha nearshore area between the Elwha River and Ediz Hook is highly diverse with extraordinary water quality for aquatic life uses (Shaffer et al. 2006; WDOE 2006). Vegetated nearshore habitats, including kelp bed, eelgrass bed, drift algae, and cobble, provide a wide range of habitat functions, including critical feeding, refuge, and migration corridors for various species. Eel grass beds, which are important habitat for forage fish, can be negatively impacted through sediment loading without proper dispersal,

resulting in reduced primary productivity and vegetated habitat. Invertebrate species inhabiting the benthic regions of the nearshore include crab, shrimp, abalone, scallops, geoduck clams, urchins, and sea cucumber. Federally listed anadromous species including the Puget Sound Chinook, Strait of Juan de Fuca/Hood Canal summer chum, bull trout, and Puget Sound steelhead; as well as sockeye, pink, and chum salmon; rockfish species; and several species of groundfish utilize marine nearshore habitat. Forage fish including surf smelt, sand lance, herring, and eulachon feed, migrate, and spawn in these regions of the shoreline and provide important prey sources for salmonids, groundfish, and avian species. Avian species such as marbled murrelets, tufted puffins, and others; as well as marine mammals including sea otters, Dahl's porpoise, Harbor porpoise, Southern Resident Killer Whales (SRKW), and gray whales may use the nearshore and adjacent marine habitat. The ecological assemblages located in the nearshore Strait are highly diverse and vary seasonally and annually.

The project area encompassed by the potential extension of the Nippon WTP outfall was surveyed for potential marine habitat and fish (Lower Elwha Klallam Tribal Fisheries 2008). Survey results indicated that the ocean floor is composed primarily of gravels and sands, with intermittent small rock outcroppings. At the time of the survey, algal communities were dominated by kelps and other brown algae, with a variety of red algal species intermixed. Algal communities were generally of low density, likely due to the highly mobile substrate from the exposed nature of the shoreline to prevailing winds out of the northwest. No eelgrass beds were found at the existing WTP outfall or along the proposed pipeline for the new outfall. Geoduck clam (*Panopea abrupta*) densities were generally low and were below commercial density (<0.02 geoduck per square foot) in the survey area. Other species found in the survey area included small numbers of Red Rock and Dungeness crab (*Cancer* spp.), sea anemones, tube worms, sea stars (*Pycnopodia* sp.), and other hardshell clams (e.g., cockles and horse clams). Juvenile salmon may use this area as part of their late spring/early summer migration, but no salmonids were found during the July and August surveys.

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts of the Alternative

Under the No Action Alternative, there would be no improvements to the Nippon WTP or extension of the discharge outfall and no new disturbances to the marine environment. Shoreline discharges would have long-term minor adverse effects to marine resources in a localized area of the Nippon paper mill outfall at the base of the Ediz Hook. Invertebrates and fish species would be subject to periodic high turbidity in this localized area. No eelgrass beds would be impacted by continued shoreline WTP discharges because none were found in the project area (Lower Elwha Klallam Tribal Fisheries 2008).

Cumulative Impacts

Past actions such as construction of the Elwha River dams, use of riprap armoring of the shoreline, and nearby commercial and shoreline developments all contribute to the cumulative effect on the marine environment near the project area by affecting water quality and habitat in the Strait. Sediment discharges from the Nippon WTP would contribute slightly to the overall cumulative sediment increases expected during dam removal in the Elwha River. WTP discharges contain sediments that under natural conditions would be part of the Elwha River discharges. Hence, the net delivery of sediment to the Strait would be

similar with or without the WTP discharges. Elwha River restoration, including the removal of Elwha and Glines dams, will improve the overall ecosystem by restoring riverine and estuarine nearshore habitats, restoring natural levels of sediment transport, and improving conditions for reestablishment of native anadromous fish populations. The No Action Alternative would contribute slightly to the adverse effects on marine resources associated with pulses of high turbidity water into the Strait from dam removal. Increased sediment could potentially reduce primary productivity, resulting in reduced levels of dissolved oxygen in the localized intertidal marine environment at the Nippon WTP outfall.

Conclusion

Continuation of Nippon WTP shoreline discharges during the dam removal phase would have a long-term minor adverse effect to marine resources in a localized area at the base of the Ediz Hook, although such sediment discharges contribute to the natural supply of sediment that would normally reach the Strait via the Elwha River. Contributions to cumulative effects would be minor in relation to the overall long-term beneficial effects associated with the Elwha River restoration.

Improve Nippon WTP—Preferred Alternative

Direct and Indirect Impacts of the Alternative

Implementation of the Preferred Alternative would result in increased sediment discharges from the Nippon WTP during dam demolition and the erosion phase. The extension of the discharge outfall 1,200 feet into the Strait would allow for better mixing and dilution of the additional sediments (URS 2007a). The discharge would occur in an area of the Strait where erosion and deposition regularly occur. The discharge of solids in this environment would likely disperse and mix with existing sediments, which supports deposition of sediments along Ediz Hook. This would produce suitable conditions for the growth of eelgrass beds, which support forage fish populations and create cover for forage and juvenile groundfish, pelagic, and anadromous fish populations.

The use of PAC to coagulate sediments at the EWTP would have minimal impacts on marine life based on toxicity testing (WDOE 2005). Use of PAC may result in reduced invertebrate populations in the localized region of the diffuser; however, with the anticipated level of dispersal and low-densities of geoducks (below commercial densities) in the area of the project (Lower Elwha Klallam Tribal Fisheries 2008), long-term impacts should be minor. The potential use of sodium hydroxide for pH control to assist with coagulating sediments would have minimal net effect on the pH of Nippon WTP discharges because PAC lowers pH and sodium hydroxide would raise pH. No impact to marine life is anticipated because the net effect to the pH of discharges would be minimal and because of the large buffering capacity of ocean waters in the Strait. The use of sodium hypochlorite to remove soluble iron and manganese from water used at Nippon would result in the discharge of insoluble iron and manganese in Nippon WTP discharges. This would have minimal effect on marine resources because insoluble forms of these metals would not be in a form available for biological uptake.

In addition to the long-term discharges of sediment at the WTP outfall, marine resources would be affected by a short-term increase in turbidity, potential entrainment, noise, and disruption of essential groundfish habitat from the trench excavation required to bury about 900 feet of the pipeline. This short-term increase in turbidity would have minor adverse

impacts on marine resources in the localized vicinity of construction including decreased dissolved oxygen levels from reduced primary production and potential direct fish injury due to suspended solids. Invertebrates and fish located in the construction area have the potential to become trapped during the uptake of sediment and water by excavation machinery. Noise from excavation machinery may disrupt and influence the behavior of fish and marine mammals. Sound is important in hunting, predator avoidance, and social interactions in fish and marine mammals. The noise created by excavation machinery is expected to reflect the noise level of normal marine vessel activity and, therefore, should not require mitigation other than completion of work as quickly and efficiently as possible. Best management practices available for marine excavation and suggestions provided by NOAA for nonfishing impacts to essential fish habitat would be used to minimize impacts (NOAA 2003).

The estuarine nearshore is considered essential fish habitat (EFH) for groundfish species. According to the surveys completed in the project area by the Lower Elwha Klallam Tribal Fisheries (2008), no eelgrass beds were found and kelp densities were low. Placement of the pipeline in this location, a region with low potential for environmental damage, is in accordance with NOAA's recommended conservation measures for EFH during pipeline installation (NOAA 2003). Impacts would not be expected to be outside the natural range of variability of native species' populations, their habitats, or the natural processes sustaining the species. In the long term, this alternative would increase the dispersal of sediment loads, which could benefit water-dependent species. Marine species displaced during construction would most likely return to the area once construction is completed. Thus, adverse impacts on marine resources resulting from the Preferred Alternative would be short-term, minor, and highly localized.

Overall, implementation of the Preferred Alternative would result in a long-term beneficial effect to marine resources in the Strait by providing better mixing and dilution of sediment currently discharged at the shoreline, resulting in a reduction of impacts in the intertidal regions over existing conditions.

Cumulative Impacts

Past actions such as construction of the Elwha River dams, use of riprap armoring of the shoreline, and nearby commercial and shoreline developments all contribute to the cumulative effect on the marine environment near the project area by affecting water quality and habitat in the Strait. Restoration of anadromous fish habitat in the Elwha River and sedimentation processes in the Strait from the Elwha River restoration will benefit this portion of the Puget Sound Estuary Ecosystem. The contribution to cumulative sediment discharges into the Strait from the proposed Nippon WTP outfall, in addition to those from removal of the dams, would be negligible in comparison to those anticipated from the Elwha River. Over the long term, Nippon WTP releases would decrease as the Elwha River channel reaches a new equilibrium and turbidity in the Elwha River declines. Increased turbidity during dam removal plus increased turbidity, potential entrainment, noise, and habitat disruption during installation of the Nippon WTP discharge outfall would impose highly localized short-term minor adverse impacts. Cumulative impacts to marine resources from the reasonably foreseeable actions and the Preferred Alternative would provide a long-term beneficial effect to marine resources in terms of habitat restoration, resulting in ecosystem food web and anadromous fish population enhancement.

Conclusion

Implementation of the Preferred Alternative would result in a long-term beneficial effect to marine resources in the Strait by providing better mixing and dilution of sediment discharges. This would alleviate high turbidity discharges, which can reduce primary production, resulting in lower dissolved oxygen in the intertidal nearshore habitat. A short-term increase in turbidity, potential entrainment, noise, and habitat disturbance during construction would have a minor short-term adverse impact on marine resources in the localized vicinity during construction. Cumulative impacts would primarily be beneficial over the long term, with only a slight contribution to increased sediments in the Strait from the Nippon WTP in relation to the discharges from removal of the dams as part of the Elwha River restoration.

SPECIAL STATUS SPECIES

Affected Environment

Special status species include species listed as threatened or endangered under the ESA; state endangered, threatened, sensitive, or candidate species; FWS species of concern; and fish species with EFH. WDFW state listed candidate species are fish and wildlife species that are under review for possible listing as state endangered, threatened, or sensitive. FWS species of concern are those species for which conservation status is of concern to the FWS, but which requires additional information before listing. Federal and state listed species potentially occurring in the general region of the project area are shown in Table 9.

TABLE 9. FEDERAL AND STATE SPECIAL STATUS SPECIES

Common Name	Scientific Name	Federal Status	State Status
Fish			
Hood Canal summer chum	*Oncorhynchus keta*	Threatened	Candidate
Puget Sound Chinook	*Oncorhynshus tshawytscha*	Threatened	Candidate
Pacific herring	*Clupea pallasi*	Species of concern	Candidate
Bull trout	*Salvelinus confluentus*	Threatened	Candidate
Puget Sound steelhead	*Oncorhynchus mykiss*	Threatened	—
Mammals			
Stellar sea lion	*Eumetopias jubatus*	Threatened	Threatened
Southern resident killer whales/orca	*Orcinus orca*	Endangered	Endangered
Birds			
Brown pelican	*Pelicanus occidentalis*	Endangered	Endangered
Marbled murrelet	*Brachyramphus marmoratus*	Threatened	Threatened
Western snowy plover	*Charadrius alexandrinus nivosus*	Threatened	Endangered

Source: Elwha-Dungeness Planning Unit (2005).

The NMFS Biological Opinion (2006) for the Elwha River restoration, which included the same action area as the proposed project, focused on potential effects to the threatened Puget Sound (PS) Chinook Salmon Evolutionary Significant Unit (ESU), the PS steelhead

Distinct Population Segment (DPS), Southern Resident Killer Whales DPS, and bull trout. These same fish and marine mammals could potentially use nearshore habitat near the current and proposed Nippon WTP outfall.

The nearshore environment of the project area is designated as critical habitat for the PS Chinook (NMFS 2006). The abundance of naturally spawning PS Chinook in the Elwha River has decreased substantially from historical populations due to a number of factors, including the loss of available spawning habitat in the river. The nearshore environment in the vicinity of the project area provides habitat for growth, maturation, and survival; and migrating habitat for juvenile and adult PS Chinook. Fish survey data from 2007 indicates that juvenile PS Chinook at Ediz Hook were most common in May and occurred in low numbers or were absent in the months of June through October (WDFW 2007), although Chinook were found in June and July west of Ediz Hook. Migrating PS steelhead that return to the Elwha River in the winter, spawn in the spring, and then return to the marine environment after one or two years in fresh water could occasionally be present in the project area. Migrating bull trout also may use nearshore marine waters near or in the project area during a portion of their life history stage. Three pods of SRKW spend part of the year in the Strait, primarily during the late spring, summer, and fall. While SRKW migrate and forage in the Strait, it is not clear to what extent they use marine waters near the mouth of the Elwha River (NMFS 2006). No special status species were observed in the project area during surveys in July and August 2008 (Lower Elwha Klallam Tribal Fisheries 2008).

Pacific herring is an important forage fish in Puget Sound, but there are no spawning grounds near Port Angeles or the project area (WDFW 2008). No Stellar sea lion rookeries are found in Washington and there are no haulout sites near the project area (Jeffries et al. 2000). Stellar sea lions are more commonly found on the Vancouver Island side of the Strait. Hood Canal summer chum are primarily associated with streams in the Hood Canal drainages and the eastern Strait, and are less likely to be present in the project area (Ames et al. 2000). Brown pelican and marbled murrelet could occasionally forage for small fish in the vicinity of the project area. Western snowy plovers are a shorebird with no suitable habitat in the project area or known nest sites near the project area (Pearson et al. 2008).

The Elwha estuarine nearshore, including the project area, is considered EFH for groundfish pursuant to the Magnuson-Stevens Act (MSA) (NMFS 2006; NOAA 2008) (Table 10). In estuary and marine environments, designated salmon EFH includes the nearshore and tidal submerged areas out to deep water habitat. EFH provides growth, maturation, and survival habitat during different life stages.

TABLE 10. SPECIES OF FISH WITH DESIGNATED EFH OCCURRING IN THE STRAIT OF JUAN DE FUCA

Groundfish Species		
spiny dogfish *Squalus acanthias*	quillback rockfish *S. maliger*	lingcod *Ophiodon elongatus*
big skate *Raja binoculata*	redbanded rockfish *S. babcocki*	kelp greenling *Hexagrammos decagrammus*
California skate *Raja inornata*	redstriped rockfish *S. proriger*	sablefish *Anoplooma fimbria*
longnose skate *Raja rhina*	rosethorn rockfish *S. helvomaculatus*	Pacific sanddab *Citharichthys sordidus*

Groundfish Species		
ratfish *Hydrolagus colliei*	rosy rockfish *S. rosaceus*	butter sole *Isopsetta isolepus*
Pacific cod *Gadus macrocephalus*	rougheye rockfish *S. aleutianus*	cuffin sole *Pleuronichthys decurrens*
Pacific whiting (hake) *Merluccius productus*	sharpchin rockfish *S. zancentrus*	Dover sole *Microstomus pacificus*
black rockfish *Sebastes melanops*	splitnose rockfish *S. diloproa*	English sole *Parophrys vetulus*
bocaccio *S. paucispinis*	striptail rockfish *S. saxicola*	flathead sole *Hippoglossides elssodon*
brown rockfish *S. auricilatus*	tiger rockfish *S. nigrocinctus*	petrale sole *Eopsetta jordani*
canary rockfish *S. pinniger*	vermilion rockfish *S. miniatus*	rex sole *Glyptocephalus zachirus*
China rockfish *S. nebulosus*	yelloweye rockfish *S. ruberrimus*	rock sole *Lepidopsetta bilineata*
copper rockfish *S. caurinus*	yellowtail rockfish *S. flavidus*	sand sole *Psettichthys melanostictus*
darkblotch rockfish *S. crameri*	shortspine thornyhead *Sebastolobus alascansus*	starry flounder *Platichthys melanostictus*
greenstriped rockfish *S. elongatus*	cabezon *Scorpaenichthys marmoratus*	arrowtooth flounder *Atheresthes stomias*
Pacific ocean perch *S. alutus*		
Coastal Pelagic Species		
anchovy *Engraulis mordax*	Pacific sardine *Sardinops sagax*	Pacific mackerel *Scomber japonicus*
market squid *Loligo opalescens*		
Pacific Salmon Species		
Chinook salmon *Oncorhynchus tshawytscha*	coho salmon *O. kisutch*	Puget Sound pink salmon *O. gorbuscha*

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts of the Alternative

Under the No Action Alternative, the current WTP outfall on the intertidal nearshore would result in sediment discharges that could potentially affect marine special status species in the localized area at the base of the Ediz Hook. Marine special status species, including federally protected juvenile salmonids, trout, and fish species with EFH in the project area, would be subject to high turbidity in the immediate vicinity of the Nippon WTP outfall, potentially resulting in direct fish injury. No eelgrass beds, which are important habitat to forage fish, would be impacted by shoreline sediment discharges (Lower Elwha Klallam Tribal Fisheries 2008).

Cumulative Impacts

Past actions such as construction of the Elwha River dams, use of riprap armoring of the shoreline, and nearby commercial and shoreline developments all contribute to the cumulative effect on marine environment near the project area by affecting water quality and habitat in the Strait. Sediment discharges from the Nippon WTP would contribute slightly to the overall cumulative sediment increases expected during dam removal in the Elwha River. WTP discharges contain sediments that under natural conditions would be part of the Elwha River discharges. Hence, the net delivery of sediment to the Strait would be similar with or without the WTP discharges. The No Action Alternative would contribute slightly to the effects on marine special status species associated with pulses of high turbidity and low dissolved oxygen, resulting in decreased primary productivity in the localized intertidal marine environment at the Nippon WTP outfall.

Conclusion

Continuation of Nippon WTP shoreline discharges during the dam removal phase of the Elwha River restoration may affect, but is not likely to adversely affect special status species in a localized area at the base of the Ediz Hook. Sediment discharges would contribute to the natural supply of sediment that would normally reach the Strait via the Elwha River. Contributions to cumulative effects would be minor in relation to the overall long-term beneficial effects associated Elwha River restoration.

Improve Nippon WTP—Preferred Alternative

Direct and Indirect Impacts of the Alternative

Potential impacts to marine special status species would be similar to those described in the marine resources section. The discharge of sediments at the offshore Nippon WTP outfall would have a long-term beneficial effect on marine special status species and EFH because of the improved mixing and dilution. The main contribution of impacts on marine special status species would occur from a short-term increase in turbidity, potential entrainment, noise, and disruption of essential groundfish habitat from the trench excavation required to install about 1,200 feet of pipeline. This short-term increase in turbidity could potentially affect special status species in the localized vicinity of construction, including potential direct fish injury due to suspended solids. Smaller fish species located in the construction area have the potential to become trapped during the uptake of sediment and water by excavation machinery. Noise from excavation may disrupt and influence the behavior of fish and marine mammals, with particular concern for SRKW who rely on sensitive hearing for hunting and social interaction. However, the noise created by excavation machinery is expected to reflect the noise level of normal marine vessel activity and, therefore, should not require mitigation other than completion of work as quickly and efficiently as possible.

Construction of the WTP outfall in the spring could affect migrating juvenile salmon (Lower Elwha Klallam Tribal Fisheries 2008). Although juveniles can be present year-round (Elwha-Dungeness Planning Unit 2005), recent survey data (WDFW 2007) indicates that they are less likely to be present in the summer and fall. Thus, proposed installation of the discharge pipeline between June and October would minimize potential effects to juvenile salmon. While construction in the summer and early fall could affect returning adult salmonids, adults are less likely to be affected by construction activities and could probably better avoid the small construction area. Some limited effect to marine mammals that prey on

returning adult salmonids is possible; however, marine mammals are likely to avoid the area during construction.

As described in the marine resources section, the estuarine nearshore is considered EFH for groundfish species. According to the surveys completed by the Lower Elwha Klallam Tribal Fisheries (2008) in the vicinity of the project, no eelgrass beds were found and kelp densities were low. Placement of the pipeline in this location, a region with low potential of environmental damage, is in accordance with NOAA's recommended conservation measures for EFH during pipeline installation (NOAA 2003). Also, impacts would not be expected to be outside the natural range of variability of native species' populations, their habitats, or the natural processes sustaining the species. In the long term, this alternative would increase the dispersal of sediment loads, which could benefit water-dependent species. Species of concern displaced during construction would most likely return to the area once construction is completed. .

No adverse effect is anticipated for brown pelican, marbled murrelet, western snowy plover, Pacific herring, Hood Canal summer chum, or Stellar sea lion because of the lack of suitable habitat or infrequent activity of these species in the project area. The Preferred Action may affect, but is not likely to adversely affect PS Chinook salmon, PS steelhead trout, or SRKW because disturbances would be short-term in localized area, with long-term benefits. There would be no effect on federally listed plants in the project area because none are present.

Cumulative Impacts

Past actions such as construction of the Elwha River dams, use of riprap armoring of the shoreline, and nearby commercial and shoreline developments all contribute to the cumulative effect on marine environment near the project area by affecting water quality and habitat in the Strait. Increases in turbidity during dam removal would result in localized short-term minor adverse impacts. Cumulative impacts to marine special status species from the reasonably foreseeable actions and the Preferred Alternative would provide a long-term beneficial effect to special status species in terms of habitat restoration, resulting in ecosystem food web and anadromous fish population enhancement.

Conclusion

The increase in turbidity, potential entrainment, noise, and habitat disturbance during construction may affect, but is not likely to adversely affect federally listed marine species, including PS Chinook, PS steelhead, SRKW, or bull trout. Localized short-term minor effects to fish species with EFH are possible during construction. There would be a long-term benefit to marine special status species from the discharge of sediments at the offshore Nippon WTP outfall because of improved mixing and dilution. No adverse effect is anticipated for brown pelican, marbled murrelet, western snowy plover, Pacific herring, Hood Canal summer chum, or Stellar sea lion because of the lack of suitable habitat or infrequent activity by these species in the project area. There would be no impact on federally listed plants in the project area because none are present. Cumulative effects to marine special status species may affect, but is not likely to adversely affect federally listed species or EFH and should provide long-term benefits. The Preferred Alternative would contribute to the long-term beneficial effects of the overall Elwha River restoration.

SOCIOECONOMICS

Affected Environment

The Nippon paper mill is located in Port Angeles, Washington. The town was established in 1862 on the natural harbor created by the sand spit of Ediz Hook by American settlers that began living among the native Klallam villagers (History Link 2008). Port Angeles became the Clallam County seat in 1892. The city is located along the Strait of San Juan de Fuca and the natural harbor provides a deepwater port for ships of all sizes, including ferry service to Victoria British Columbia. Port Angeles provides a gateway into the Olympic Peninsula and ONP. The population of Port Angeles has remained level for the past decade with a 2007 population of about 18,800 (U.S. Census Bureau 2008).

The primary industry in the early years was associated with lumber industry and logging of large trees in the Olympic Mountain range. Currently, the city is more economically diversified and supports a large tourism industry, headquarters for ONP, and a variety of other commercial and business enterprises, along with local government services. The average annual resident civilian labor force in Clallam County was 29,500 in 2006 (Clallam Economic Development Council 2008). Principal employers are the Olympic Medical Center, Port Angeles School District, Peninsula College, Clallam Bay Correctional Center, local government, businesses, and industry. The closure of the Rayonier sulfite pulp mill in 1997 eliminated a number of jobs.

Lumber, pulp, paper, and plywood mills were the primary economic enterprises for most of the twentieth century in Port Angeles (History Link 2008). Zellarbach Paper Company (and later, Crown Zellarbach) began producing paper in Port Angeles in 1921. The pulp mill at Ediz Hook changed ownership to Daishowa America, and then later to the current owner, Nippon Paper Industries. The Nippon paper mill currently produces about 155,000 tons of lightweight groundwood paper, which is used to print telephone directories (Reed, pers. comm. 2008). The mill operates 24 hours a day and about 362 days per year. Currently, the Nippon mill is one of the largest employers in the county with 240 employees. The Nippon mill contributes about $65 million annually to the local and regional economy, including about $26 million in salaries and benefits, $1.7 million in taxes, the purchase of about $15 million in wood chips in Clallam County, with another $24 million in purchases for raw materials, chemicals, and supplies in Washington.

Environmental Consequences

No Action Alternative

Direct and Indirect Effects of the Alternative

Under the No Action Alternative, there would be no additional expenditures to upgrade the Nippon WTP facilities or to extend the discharge outfall to an offshore location. Water diversions from the Elwha River would be treated at the EWTP during and after dam removal prior to delivery to Nippon, but the water would have higher turbidity than current conditions. Without Nippon WTP upgrades and additional treatment, the paper mill would have to use water with higher turbidity for paper production. The use of lower quality water in the paper mill would increase maintenance and operating costs (Reed, pers. comm. 2008). Failing to develop measures to provide water of a quality comparable to current conditions to Nippon would not be in conformance with the Elwha Act, which requires protection of the

existing quality of water from the Elwha River for industrial use as a result of adverse impacts of dam removal. The No Action Alternative would have a long-term minor adverse effect on Nippon paper mill operations and costs.

Cumulative Impacts

Past and ongoing manufacturing operations including the Nippon paper mill, the former Rayonier mill, and current commercial, tourism, and other businesses in the City of Port Angeles have contributed to the cumulative economic conditions in the project area. Removal of the dams on the Elwha River and cleanup of the Rayonier site would provide beneficial effects to employment and the local economy. The increased operating costs for the Nippon paper mill facilities would add a long-term minor adverse effect to the overall beneficial effect of reasonably foreseeable actions.

Conclusion

The No Action Alternative would increase operating and maintenance costs at the Nippon paper mill, which would result in a long-term minor adverse effect to the cost of paper production. Cumulative effects to the local economy from Elwha River restoration activities and cleanup of the Rayonier site would result in long-term beneficial effects to the local economy with a minor adverse contribution from the No Action Alternative due to increased operating costs for the Nippon paper mill.

Improve Nippon WTP—Preferred Alternative

Direct and Indirect Impacts of the Alternative

Implementation of improvements to the Nippon WTP would allow continued operations of the paper mill with water quality similar to current conditions. The quality of the paper products also would remain similar to existing conditions. Expenditures of about $2.2 million for upgrades to the WTP and extension of the discharge outfall would result in local and regional spending for materials and equipment, and would provide temporary employment opportunities. The Preferred Alternative would have a short-term beneficial effect on the local economy during construction and a long-term beneficial effect from continued operation of the paper mill.

Cumulative Impacts

Past and ongoing manufacturing operations including the Nippon paper mill, the former Rayonier mill, and current commercial, tourism, and other businesses in the City of Port Angeles have contributed to the cumulative economic conditions in the project area. Short-term employment opportunities from implementation of Nippon WTP improvements would contribute cumulative benefits to the local economy in addition to the employment for cleanup and redevelopment of the Rayonier site and removal of the Elwha River dams.

Conclusion

The Preferred Alternative would provide continued availability of high quality water for paper production and the operation of the Nippon paper mill. Construction-related spending would have a short-term beneficial effect to the local economy and continued operation of the paper mill would have a long-term benefit to the local economy. Implementation of the WTP improvements would result in cumulative beneficial effects to employment and the local economy in combination with reasonably foreseeable actions.

CONSULTATION AND COORDINATION

SCOPING/CONSULTATION

ONP conducted public scoping from October 9 to November 10, 2008. Information about the project was posted on the park website and on the NPS PEPC website. A news release was faxed and e-mailed to about 120 individuals and media outlets. In addition, the park notified about 45 elected officials, park neighbors, organizations, area tribes, and agencies on the park's mailing list via a mailed letter. The purpose of public scoping was to solicit input on the issues or comments related to the proposed project and identify potential projects in the area that could lead to cumulative impacts.

Consultation was initiated with the FWS and the NMFS as part of the Elwha River Ecosystem and Fisheries Restoration EIS to address potential impacts to federally listed threatened or endangered species and EFH. Additional consultation with the FWS/NMFS was conducted in January 2009 regarding potential effects on threatened and endangered species and EFH. The park consulted with the WDOE and U.S. Army Corps of Engineers through the submittal of a Joint Aquatic Resource Permit Application (JARPA) for dredge and fill activities in a navigable water of the U.S. and placement of a portion of the pipeline on the ocean floor. To meet the requirements of Section 106 of the NHPA, the Washington State Historic Preservation Office and Lower Elwha Tribe were consulted and they concurred with the finding of no effect to historic properties.

Agencies and organizations contacted to assist in identifying issues and/or were provided an opportunity to review or comment on this EA include, but are not limited to, the following:

Federal Agencies

Department of Agriculture, U.S. Forest Service, Olympic National Forest
Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service
Department of Interior, U.S. Fish and Wildlife Service, Western Washington Office
U.S. Army Corps of Engineers

Congressional Representatives

Senator Patty Murray
Senator Maria Cantwell
Senator Jim Hargrove
Rep. Norm Dicks
Rep. Lynn Kessler

State Agencies

Department of Natural Resources
Department of Ecology
Department of Fish and Wildlife
Department of Parks and Recreation
Office of Archeology and Historic Preservation

Local Agencies

Port Angeles Chamber of Commerce
Clallam County Commissioners
Clallam County Economic Development Council
City of Port Angeles
City of Sequim

American Indian Tribes

Lower Elwha Klallam Tribe

Organizations and Businesses

Eastern Washington Steelhead Foundation
Federation of Fly Fishers
Institute for Policy Research
National Audubon Society
National Parks and Conservation Association-NW Regional District
North Olympic Peninsula Visitors and Convention Bureau
Northwest Ecosystem Alliance
Olympic Coast National Marine Sanctuary
Olympic Forest Coalition
Olympic Park Associates
Olympic Peninsula Intertribal Cultural Advisory Committee
Protect the Peninsula's Future
Sierra Club-Cascade Chapter
The Wilderness Society
University of Washington, Olympic Resource Center
Washington Environmental Council
Washington's National Park Fund
Wilderness Watch

Area Libraries

North Olympic Library System
- Port Angeles Branch
- Sequim Branch
- Forks Branch

Timberland Regional Library
- Aberdeen Branch
- Amanda Park Branch
- Hoquiam Branch

COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The NPS would comply with all applicable federal and state regulations when implementing the Preferred Alternative to improve the Nippon WTP. Permitting and regulatory requirements are listed in Table 11.

TABLE 11. ENVIRONMENTAL COMPLIANCE REQUIREMENTS

Agency	Statute, Regulation, or Order	Purpose	Project Application
Federal			
National Park Service	National Environmental Policy Act	Applies to federal actions that may significantly affect the quality of the environment.	Environmental review of proposed action and decision to prepare a FONSI or EIS.
	National Historic Preservation Act, Section 106	Protection of historic and cultural resources in coordination with the Washington State Historic Preservation Office.	No cultural resources were found. The Washington State Historic Preservation Office and Lower Elwha Tribe were consulted and concurred with the finding of no effect to historic properties.
	Executive Order 11990, Protection of Wetlands	Requires avoidance of adverse wetland impacts where practicable and mitigation, if necessary.	No wetlands present.
	Executive Order 11988, Floodplain Management	Requires avoidance of adverse floodplain impacts where practicable and mitigation, if necessary.	Coastal shoreline present, but no impact to coastal floodplains.
	NPS Order No. 77-2 Floodplain Management	Protection of natural resources and floodplains.	Coastal shoreline present, but no impact to coastal floodplains.
National Oceanic & Atmospheric Administration (NOAA)/ NMFS and U.S. Fish and Wildlife Service	Endangered Species Act, Magnuson-Stevens Fishery Conservation Management Act, and Sustainable Fisheries Act; Coastal Zone Management Act	Protection of federally listed threatened and endangered species, EFH, and protection of coastal resources.	NPS consulted with NMFS on potential effects to federally listed species and EFH.
U.S. Army Corps of Engineers (Corps)	Clean Water Act – Section 404 Permit to discharge dredge and fill material	Authorizes placement of fill or dredge material in waters of the U.S. including wetlands.	The park acquired a 404 Permit from the Corps for installation of the discharge outfall pipeline.
	Section 10 of the Rivers and Harbors Act of 1899	Authorizes work under navigable waters of the U.S., which affects the course, location, condition, or capacity of such water.	Park compliance with Section 10 occurred as part of the 404 permitting process.

Agency	Statute, Regulation, or Order	Purpose	Project Application
State of Washington			
Washington Department of Fish and Wildlife and Department of Ecology	Joint federal and state permit application for activities in aquatic habitat; addresses habitat protection, 401 water quality certification, 404 permitting, Section 10 – Rivers and Harbor Act permitting, Hydraulic Project Approval	Protection of aquatic habitat.	A Joint Aquatic Resource Permit Application (JARPA) was submitted for a 404 Permit for dredge and fill activities in a navigable water of the U.S. and placement of a portion of the pipeline on the ocean floor.
	Shoreline Management Act	Protection of natural shorelines.	As part of the JARPA process, the WDOE concurred that the proposed project was consistent to the maximum extent practicable with Washington coastal zone management programs.

LIST OF PREPARERS AND CONTRIBUTORS

NATIONAL PARK SERVICE, OLYMPIC NATIONAL PARK

Dick Bauman, Elwha Project Coordinator
Brian Winter, Elwha Restoration Manager
Barb Maynes, Public Information Officer
Paul Gleeson, Chief of Cultural Resource Management

NATIONAL PARK SERVICE, DENVER SERVICE CENTER

Elaine Rideout, Natural Resource Compliance Specialist
Tracy Gilchrist, Project Specialist
Greg Cody, Cultural Resource Compliance Specialist
Karl Von Rosenberg, Project Manager

ERO RESOURCES CORPORATION

Mark DeHaven, Project Manager
Barbara Galloway, Hydrologist
Dave Hesker, Graphic Designer
Kay Wall, Technical Editor

GEI Consultants, Chadwick Ecological Division

Kim Barber, Marine Biologist
Steve Canton, Aquatic Biologist

REFERENCES

Ames, J., G. Graves, and C. Weller. 2000. Summer chum salmon conservation initiative. An implementation plan to recover summer chum in the Hood Canal and Strait of Juan de Fuca. Washington Department of Fish and Wildlife Point-No-Point Treaty Tribes.

City of Port Angeles. 2008a. Comprehensive Plan for the City of Port Angeles. Amended May 25, 2008.

City of Port Angeles. 2008b. City of Port Angeles Community and Economic Development. The Rayonier Site. Available at: <http://www.cityofpa.us/rayonieroutreach.htm>. Accessed December 9, 2008.

Clallam Economic Development Council. 2008. Labor and work force. Available at: <http://www.clallam.org/>. Accessed December 8, 2008.

Elwha-Dungeness Planning Unit. 2005. Elwha-Dungeness Watershed Plan, Water Resource Inventory Area 18 (WRIA 18) and Sequim Bay in West WRIA 17. Published by Clallam County. Volume 1: Chapters 1-3 and 15 appendices; Volume 2: Appendix 3-E. May.

HDR. 2009. Geotechnical Report. Nippon Paper Industries. Water Quality Improvements (NPIWQI) Project Elwha River Restoration. Prepared for National Park Service, Denver Service Center. January 12.

History Link. 2008. Port Angeles Thumbnail history. Available at: <http://www.historylink.org/index.cfm?DisplayPage=output.cfm&File_Id=8210>. Accessed December 8, 2008.

Jeffries, S.J., P.J. Gearin, H.R. Huber, D.L. Saul, and D.A. Pruett. 2000. Atlas of Seal and Sea Lion Haulout Sites in Washington. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia WA.

Lewarch, D.E. and L.L. Larson. 2004. WSDOT Port Angeles Graving Dock Facility: Treatment and Monitoring Plans for the Tse-Whit-Zen Site (45CA523) and Shotwell Recycling Property Recovery.

Lower Elwha Klallam Tribal Fisheries. 2008. Eel grass / macroalgae and geoduck (*Panaopea Abrutpta*) subtidal survey at proposed Nippon Paper Industries wastewater outfall, Port Angeles, WA. Prepared for the Bureau of Reclamation and National Park Service.

Mackas, D.L. and P.J. Harrison. 1997. Nitrogenous nutrient sources and sinks in the Juan de Fuca/Strait of Georgia/Puget Sound Estuarine System: Assessing Potential for Eutrophication. Estuarine, Coastal, and Shelf Science 44. 1-21.

NMFS (National Marine Fisheries Service). 2006. Endangered Species Act-Section 7 Consultation Biological and Conference Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation. Elwha River Ecosystem and Fisheries Restoration. November 20.

NOAA (National Oceanic and Atmospheric Administration Fisheries). 2003. Non-fishing Impacts to Essential Fish Habitat and Recommended Conservation Measures. Available at: <http://www.nwr.noaa.gov/Salmon-Habitat/Salmon-EFH/upload/EFH-nonfishing.pdf>.

NOAA (National Oceanic and Atmospheric Administration Fisheries). 2008. NOAA Fisheries Office of Habitat Conservation website. Available at: <http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/index.htm>. Accessed May 9, 2008.

NPS (National Park Service)
1995. Elwha River Ecosystem Restoration: Final Environmental Impact Statement.
1996a. Statement of Management: Olympic National Park.
1996b. Elwha River Ecosystem Restoration Implementation. Final Environmental Impact Statement.
2005. Elwha River Ecosystem Restoration Implementation. Final Supplement to the Final Environmental Impact Statement.
2006. National Park Service Management Policies.
2008. Olympic National Park General Management Plan

Pearson, S. F., K. Brennan, C. Sundstrom, and K. Gunther. 2008. Snowy plover population monitoring, research and management actions:2007 Nesting season research progress report. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia.

Reed, D. 2008. Engineering manager, Nippon Paper Industries. Personal communication with Mark DeHaven, ERO Resources Corporation. December 2.

Shaffer, J.A., P. Crain, M. McHenry, B. Winter, and C. Lear. 2006. Nearshore of the Central Strait of Juan de Fuca and Removal of the Elwha and Glines Canyon Dams: An overview. Available at: <http://www.elwhainfo.org/files/Elwha%20Nearshore%20Overview_0.pdf>.

URS. 2004a. Evaluation and recommendations for the Nippon Paper Industries water treatment plant facilities. July 15.

URS. 2004b. Elwha Water Treatment Plant Predesign, Clallam County, Washington. Addendum 1. Treated water and residual solids toxicity. Prepared for U.S. Bureau of Reclamation. Boise, ID. September 1.

URS. 2005. Elwha Water Treatment Plant Predesign, Clallam County, Washington. Addendum 3. Treated water and residual solids toxicity. Prepared for U.S. Bureau of Reclamation. Boise, ID. June 13.

URS. 2007a. Elwha River Restoration Project, NPI Filter Backwash Outfall Predesign, AKART Evaluation for Backwash and Sedimentation Underflow Disposal. Letter from Cameron Ochiltree, Project Engineer, URS and James Ris, Program Manager, URS to Robert Hamilton, Bureau of Reclamation. Boise, ID. May 8.

URS. 2007b. Nippon Paper Industries Water Treatment Plant Outfall. Preliminary Design Report. Port Angeles, WA. Prepared for Bureau of Reclamation. Boise, ID.

U.S. Census Bureau. 2008. Available at: <http://www.census.gov/popest/cities/tables/SUB-EST2007-04-53.xls>. Accessed December 8, 2008.

WDFW (Washington Department of Fish and Wildlife). 2007. Unpublished fish survey data on fish Ediz Hook and Ediz Bluff.

WDFW (Washington Department of Fish and Wildlife). 2008. Forage Fish Biology. Available at: <http://wdfw.wa.gov/fish/forage/herring.htm>. Accessed December 24, 2008.

WDOE (Washington Department of Ecology). 2005. Elwha River restoration – Polyaluminum chloride. Letter from Kelly Susewind, Water Quality Program, Southwest Regional Office, Olympia Washington to Brian Winter, NPS Elwha Restoration Manager and Dick Bauman, Reclamation Project Coordinator. Port Angeles, WA. October 11.

WDOE (Washington Department of Ecology). 2006. Water quality standards for surface waters of the State of Washington. Chapter 173-201A WAC. Amended November 20, 2006.

WDOE (Washington Department of Ecology). 2007a. Letter from Merley McCall, Industrial Section Supervisor and Teddy Le, Environmental Engineer, WDOE to Brian Winter, Elwha River Restoration Project Manager, National Park Service. July 11.

WDOE (Washington Department of Ecology). 2007b. Fact sheet for NPDES Permit WA 000292-5. Nippon Paper Industries. Port Angeles, WA.

APPENDIX A
AGENCY CONSULTATION LETTERS

STATE OF WASHINGTON

Department of Archaeology and Historic Preservation

1063 S. Capitol Way, Suite 106 • PO Box 48343 • Olympia, Washington 98504-8343
Phone (360) 586-3065 • Fax Number (360) 586-3067
http://www.dahp.wa.gov

January 22, 2009

Ms. Karen Gustin
Olympic National Park
600 East Park Avenue
Port Angeles, Washington 98362-6798

Re: Nippon Industries Water Treatment Plant Outfall
Log No: 020408-07-NPS

Dear Ms. Gustin;

Thank you contacting our department. We have reviewed the material you provide for the proposed Nippon Industries Water Treatment Plant Outfall at Port Angeles, Clallam County, Washington.

We concur with your determination of No Historic Properties Affected.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on the behalf of the State Historic Preservation Officer in conformance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 586-3080
email: robw@cted.wa.gov

As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS D-445 / May 2009 / Printed on recycled paper

National Park Service
U.S. Department of the Interior

Olympic National Park
Washington

Olympic National Park
600 East Park Avenue
Port Angeles, WA 98362-6798