

## **Chapter 4: Restoration Alternatives and Environmental Consequences**

The Trustees have evaluated a number of potential restoration options that will restore the affected natural resources to pre-spill levels and compensate for interim losses from this spill.

In developing this plan, the Trustees have taken into consideration the emergency restoration for the western snowy plover, completed by the Trustees and the RPs during the early stages of this incident, initial scoping comments provided by the public up to July 30, 2004, and the comments received during the May 24-July 8, 2005 comment period.

In this section, the Trustees will describe several alternatives, including the Trustees' proposed alternative, for restoring the natural resources lost as a result of the spill. In addition, as required by the NRDA regulations, Trustees will explain the basis for selection or rejection of the alternatives.

### **4.1 Restoration Under the OPA Regulations**

The goal of the damage assessment process for the *M/V New Carissa* spill is restoration of injured natural resources and compensation of the public for the interim lost uses of, or services provided by, those resources. OPA requires that this goal be achieved by returning injured natural resources to their baseline condition and by compensating for any interim losses of natural resources and services during the period of recovery to baseline.

Restoration actions under the OPA regulations are either primary or compensatory. Primary restoration returns injured natural resources and services to their baseline condition usually on an accelerated time frame. Primary restoration alternatives can range from the no action, natural recovery, to actions that prevent interference with natural recovery to more intensive actions expected to return injured natural resources and services to baseline faster or with greater certainty than natural recovery alone.

Compensatory restoration includes actions taken to compensate for the interim losses of natural resources and/or services pending recovery. The type and scale of compensatory restoration may depend on the nature of the primary restoration action and the level and rate of recovery of the injured natural resources and/or services, given the primary restoration action. When identifying the compensatory restoration components of the restoration alternatives, the Trustees must, to the extent practicable, first consider compensatory restoration actions that provide services of the same type and quality and of comparable value as those lost. If compensatory actions of the same type and quality and comparable value cannot provide a reasonable range of alternatives, the Trustees then consider other compensatory restoration actions that will provide services of at least comparable type and quality as those lost.

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Compensatory restoration alternatives must be scaled to ensure that the size or quantity of the proposed project reflects the magnitude of the injuries from the spill. The Trustees selected different quantification approaches for the lost bird and human use values. Those approaches will be discussed in the sections presenting the various restoration alternatives.

Several of the restoration alternatives discussed in this chapter are based on discrete restoration criteria but the exact actions may lack specificity. For example, the restoration alternative for habitat acquisition may not identify specific parcels. At this stage, the Trustees have established specific criteria for the quality, quantity and general location of habitat that could be potentially acquired to fully restore the documented losses.

Another example would be some of the projects proposed for restoring the lost recreational values. Some of these proposed projects are in the form of conceptual designs rather than detailed engineering design work or operational plans. Therefore, details of specific projects may require additional refinements or adjustments to reflect site conditions or other factors before implementation.

Restoration projects and designs also may change to reflect public comments and further Trustee analysis. For scaling purposes, Trustees are assuming that implementation of restoration will begin in 2005 or later.

Trustees will monitor all projects to determine if anticipated objectives are being met and will prepare annual assessments and reports to document outcomes and expenditures. Table 13 at the end of this section, summarizes monitoring and reporting requirements.

### **4.2 Evaluation Criteria**

The OPA regulations (15 CFR § 990.54) require that Trustees develop a reasonable range of primary and compensatory restoration alternatives and then identify the preferred alternatives based on the six criteria listed in the regulations:

1. Cost to carry out the alternative;
2. Extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses;
3. Likelihood of success of each alternative;
4. Extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative;

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5. Extent to which each alternative benefits more than one natural resource and/or service; and
6. Effect of each alternative on public health and safety.

The National Environmental Policy Act (NEPA) applies to restoration actions taken by Federal Trustees. To reduce transaction costs and avoid delays in restoration, the OPA regulations encourage the Trustees to conduct the NEPA process concurrently with the development of the restoration plan.<sup>14</sup>

To comply with the requirements of NEPA, the Trustees analyzed the effects of each alternative on the quality of the human environment. NEPA's implementing regulations direct Federal agencies to evaluate the potential significance of proposed actions by considering both context and intensity. For the actions proposed in this Restoration Plan/ Environmental Assessment, the appropriate context for considering potential significance of the action is local, as opposed to national or world-wide.

### **4.3 Summary of the Proposed and Other Restoration Alternatives**

In developing restoration alternatives for the *M/V New Carissa* incident, the Trustees considered habitat and species-specific restoration projects. As discussed earlier, the Trustees identified five categories of natural resources or services warranting restoration: 1) Western Snowy Plover; 2) Seabirds; 3) Marbled Murrelet; 4) Shorebirds; and 5) Recreation Use. At least two alternatives were considered for each category. These alternatives are summarized in Table 9 and described in more detail below.

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<sup>14</sup> NEPA uses the term "proposed alternative" for a proponent's selected alternative in an environmental assessment; OPA refers to the Trustees' selected option as the "preferred alternative". For purposes of this DARP/EA we will consider these two terms interchangeable.

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Table 9: Summary of Alternatives considered for M/V New Carissa Restoration

<b>Restoration Category</b>	<b>No Action</b>	<b>Proposed Alternative</b>	<b>Other Alternatives</b>
Western snowy plover (WSP)	X	Maintain WSP nesting habitat on Coos Bay BLM's North Spit 1998 HRA for 30 years; implement a snowy plover education project.	No alternative projects
Seabirds (except marbled murrelet)	X	Acquire and manage a key parcel to protect adjacent seabird nesting colony; manage predators on selected seabird colonies and through refuse management at selected State Parks; implement a seabird education project.	Acquire an alternate property to protect nesting seabirds.
Marbled Murrelet	X	Acquire 1269 acres of mature marbled murrelet nesting habitat.	Acquire conservation easements on 2,642-38,478 acres of younger potential murrelet habitat.
Shorebirds	X	Acquire and restore key shorebird parcels on the Oregon coast; implement a shorebird education project.	Acquire and manage alternate properties for shorebirds on the Oregon coast.
Recreation Use	X	Implement top priority project list for North Spit, ODNRA and Gov. Patterson Memorial State Recreation Area.	Implement lower priority projects for the North Spit and ODNRA.

**4.3.1 No Action Alternative (Natural Recovery Alternative)**

NEPA requires the Trustees to consider a “no-action” alternative and the OPA regulations require consideration of the equivalent, the natural recovery option. Under this alternative, the Trustees would take no direct action to restore injured natural resources or compensate for lost services pending environmental recovery. Instead, the Trustees would rely on natural processes for recovery of the injured natural resources. While some natural recovery might occur over varying time scales for some of the species, most of the species affected by the spill are already thought to be declining, further reducing the likelihood of a natural recovery for them. In addition, the interim losses suffered would not be compensated for under the no-action alternative.

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OPA, however, clearly establishes Trustee responsibility to seek compensation for primary and for interim (compensatory) losses. Neither of these responsibilities can be addressed through a “no-action” alternative in the present case. While a few of the species may have a natural recovery, the vast majority would likely not, and, under this alternative, there would be no compensatory restoration for the interim losses.

Conclusion: Injuries to the trust natural resources have occurred as a result of this incident and technically feasible, cost-effective alternatives exist to compensate for these losses.

### **4.3.2 Western Snowy Plover Restoration Alternatives**

#### **4.3.2.1 Scaling Approach**

##### **Background Information on the REA Scaling Method used for All Birds**

Trustees have identified specific injuries to a variety of seabirds and shorebirds as a result of this spill. To restore these injured resources, Trustees must somehow identify the economic value of those lost resources. The value in economic terms of a snowy plover, or a marbled murrelet, or any bird can be difficult to quantify in economic terms. Exactly how much are they worth to the public?

An alternative approach to economic valuation is resource equivalency analysis (REA). An REA responds to the question, “What, but for the release, would have happened to the injured species?” In this case, what services would 4-8 western snowy plovers, or 262 marbled murrelets, for example, have provided over their expected life spans (direct injury), including fledglings (indirect injury) if they had not been killed by the oil spill? With REA, the replacement services are quantified in physical units of measure such as bird-years.<sup>15</sup>

The selected restoration projects are then scaled so that the quantity of replacement services equals the quantity of lost services in present value terms. The Trustees then implement projects (funded by the RPs or the NPFC) that are sufficient to cover the public’s interim losses (Skrabis 2005).

#### **Western Snowy Plover**

The emergency restoration, completed for the western snowy plover during the first several months of the incident, was scaled to determine if it was sufficient to restore the injuries to the plovers from the incident.

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<sup>15</sup> A bird-year refers to all services provided by one bird for one year. This measure of services is specific to the type of bird since different birds provide different services. So, e.g., the replacement services for 20 bird-years could be 20 birds for only one year, one bird over 20 years, or anything in between (Skrabis 2004).

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Four to eight western snowy plovers were killed by the *M/V New Carissa* oil spill. Trustees used a resource equivalency analysis (REA) to evaluate the direct loss (birds killed) and indirect loss (lost production) over time.

Two compensation approaches were used: (A) identify in bird-years whether the emergency restoration conducted by the RPs compensated the public for its losses; and (B) identify the number of acres needed to compensate the public based on the assumption that 30 acres produces 1 plover (Scenario 1) to 2 plovers (Scenario 2) annually (Skrabis 2005).

With either approach, other than the unlikely worst case scenario, the emergency restoration, if maintained properly for 30 years, would compensate for the original injury (Skrabis 2005).

### **4.3.2.2 Proposed Alternative for Western Snowy Plover**

Although the injuries to snowy plovers were restored by the emergency restoration that the RPs and the Trustees funded, there were no provisions for maintenance of the restored habitat.

Rationale: Without annual maintenance to remove the reinvading European beachgrass (*Ammophila arenaria*) and to periodically restore shell hash to the restored nesting area, the nesting habitat will lose its value as nesting habitat. In fact, during 2003 there was no maintenance performed, and plovers did not nest in that habitat.

#### **Maintenance of Restoration Site**

To complete restoration for the western snowy plover, the Trustees are proposing to complete maintenance on the restored area every year, for the next thirty years, to meet the productivity assumptions in the western snowy plover REA. Maintenance will entail an annual disking (or other appropriate measure to remove reinvading vegetation) and periodic replacement of shell hash to increase the attraction of the habitat to nesting plovers. The estimated cost/year is \$3,000, for a total of \$90,000 needed for the thirty year maintenance schedule.

#### **Education Project**

Western Snowy Plover Docent Program. The Trustees are proposing a multi-agency program to design and implement a coordinated docent program that can effectively recruit, train, place and monitor docents for critical plover breeding areas. In other areas of the plover's range, docent programs have been successful, when combined with other management actions, to establish snowy plover breeding in previously unoccupied suitable breeding habitat. This program would be a partnership between the Trustee agencies and a non-profit organization. Estimated cost for this program is \$90,000.

### **4.3.2.2.1 Trustee Evaluation of Proposed Alternative under OPA**

This alternative would meet the Trustees' objectives of fully restoring the losses to western snowy plovers as a result of the incident in a cost effective manner. The likelihood of success is very high because resource agencies along the Oregon coast (BLM, USFS, USFWS and OPRD)

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have been successfully performing similar maintenance on habitat restoration areas for more than a decade to ensure snowy plover's continued nesting. Although western snowy plovers would be the primary beneficiary of the habitat maintenance, other native nesting birds in the vicinity would also benefit because removing European beachgrass removes habitat for non-native red fox and skunk, both predators on ground-nesting birds. There would be no effect on public health and safety with this alternative.

### **4.3.2.2.2 Environmental Consequences**

#### Beneficial Effects

This project has been specifically designed to improve habitat for the western snowy plover. The project would maintain the nesting habitat created for the snowy plover during implementation of the Trustees' emergency restoration measures. This maintenance would allow the emergency restoration area to continue to function as snowy plover nesting habitat thereby producing the number of plover fledglings anticipated in the restoration scaling exercise (Skrabis 2005). Other ground-nesting birds in the area would likely benefit from the reduced cover for ground predators.

#### Adverse Effects

The only identified adverse effects would be a small amount of noise and air pollution from the tractor when the habitat is disked.

### **4.3.2.2.2 Performance Criteria and Monitoring**

BLM will conduct annual monitoring of the 1998 HRA on the North Spit to determine the effectiveness of the maintenance activities. Success will be determined by western snowy plovers nesting on the habitat on an annual basis for thirty years. BLM will prepare an annual report to the Trustees summarizing results of the maintenance and plover nesting.

For the first three years following funding, the Snowy Plover Working Group will prepare an annual report to the Trustees outlining the implementation and accomplishments of the Plover Docent educational program.

## **4.3.3 Seabird and Waterfowl Restoration Alternatives**

### **4.3.3.1 Scaling Approach**

#### **4.3.3.1.1 Marbled Murrelet**

Trustees have estimated that 262 threatened marbled murrelets were killed by the spill. Using an REA, Trustees calculated that the direct injury to the marbled murrelets was 1,601.88 bird-years, and the indirect injury was 841.87 bird years, totaling 2,443.75 bird-years (Appendix 7).

Trustees then evaluated restoration options that would provide the equivalent production of marbled murrelet bird years.

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### 4.3.3.1.2 Seabirds and Waterfowl

Because of the wide variety of species amongst the 2,203 individual seabirds (excluding marbled murrelet) and waterfowl that were killed or injured by the spill, Trustees grouped these birds into nine major groups for the REA (Table 10).

Table: 10 Direct and Indirect injuries, in bird-years, for the species groups injured by the *M/V New Carissa* spill (Skrabis 2005).

<b>Species Group</b>	<b>Direct Injury (bird-years)</b>	<b>Indirect Injury (bird-years)</b>	<b>Total Injury (bird-years)</b>
Loons	736.85	559.94	1,296.79
Grebes	460.93	2,054.95	2,515.88
Northern Fulmar	2,289.87	5,178.69	7,468.56
Storm-petrels & Shearwaters	322.05	256.06	578.11
Cormorants	589.94	529.87	1,119.81
Scoters & Ducks	1,664.13	10,837.7	12,501.83
Gulls & Kittiwakes	1,595.79	6,501.25	8,097.04
Common Murre & Puffin	2,464.37	5,373.99	7,838.36
Auklets & Ancient Murrelet	1,414.53	1,232.26	2,646.79
<b>All Species Total</b>	<b>11,538.46</b>	<b>32,524.71</b>	<b>44,063.17</b>

A total of 44,063.17 seabird and waterfowl bird-years were lost as a result of the *M/V New Carissa* spill (Skrabis 2005). Trustees have developed a suite of seabird restoration projects that will generate enough bird-years to offset these losses.

### 4.3.3.2 Proposed Alternative for Marbled Murrelet Restoration

To address the injury to marbled murrelets the Trustees' proposed alternative is to protect currently unprotected occupied habitat on private lands. The Trustees propose to accomplish this by acquiring currently occupied marbled murrelet habitat on private land from willing sellers. Once acquired, the parcels would be enhanced and managed for the continued benefit of the marbled murrelet. The Trustees' scaling calculations (Skrabis 2005) have determined that 1269 acres of suitable marbled murrelet nesting habitat are needed to offset the loss of the 262 marbled murrelets killed by this incident.

Rationale: The Marbled Murrelet Recovery Plan (USFWS 1997) is the primary source of conservation recommendations for the species. The Trustees also used information from the Fish and Wildlife Service's "Marbled Murrelet 5-Year Review" (McShane et al., 2004). These documents, and the recommendations of a number of species experts, list the loss of nesting habitat and poor reproductive success as the primary reasons for the species decline. The Recovery Plan indicates that remaining tracts of potentially suitable habitat on private lands in Oregon are currently subject to continuing timber harvest operations which will lead to a further decline of this species. The recovery plan recommends that existing marbled murrelet nesting

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habitat be maintained and protected and that acquisition of habitat on private land from willing sellers is an effective way to protect occupied sites.

Using information and recommendations from the Marbled Murrelet Recovery Plan (USFWS 1997), Trustees have defined criteria for selecting appropriate tracts of marbled murrelet habitat for acquisition.

### **Criteria for Acquiring Marbled Murrelet Habitat**

#### **A. Geographical Area for Acquisition Priorities (in order of priority)**

1. Oregon's north coast, as recommended in the recovery plan (USFWS 1997) from about Newport north to the Columbia River and inland up to 35 miles; tracts closer to the coast would generally rank higher.
2. Oregon's mid coast, from Coos Bay to Newport.
3. Oregon's south coast, from Coos Bay to the Winchuck River.
4. Washington and California areas

#### **B. Habitat Quality Factors (not necessarily in order of priority)**

1. Current occupied marbled murrelet habitat;
2. Potential nesting habitat, generally stands >125 years old with potential nest trees<sup>16</sup>, or stands 60 to 125 years old with remnant older trees suitable for marbled murrelet nesting;
3. Larger (>300 acres) stand, contiguous tracts; minimum stand size of around 25 acres, unless adjacent to existing protected marbled murrelet habitat;
4. Adjacent to existing marbled murrelet reserve;
5. Marbled murrelet buffer habitat present;

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<sup>16</sup> Potential nest trees include large trees, generally more than 32 inches diameter at breast height with the presence of potential platforms or deformities such as large or forked limbs, broken tops, dwarf mistletoe, witches' broom, or other formations providing platforms of sufficient size to support adult marbled murrelets (USFWS 1997).

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6. Generally isolated from human dwellings or disturbance activities and predator concentrations;
7. Near at-sea populations;
8. Possesses other wildlife or fisheries natural resource values.

### **C. Manageability**

1. Adjacent to protected habitat, preferred;
2. No conflicting management issues (e.g. outstanding mineral rights, potential hazardous material sites; access issues, intensive recreation, etc.).

As a part of any land acquisition for marbled murrelet habitat protection, the Trustees expect that in most cases some land adjacent to or surrounding the required nesting habitat will also need to be purchased. This depends on exactly what the available parcels actually contain. Much of this will be related to the scattered and fragmented nature of the remaining marbled murrelet habitat on private lands and the fact that neither the seller nor the Trustees, nor a third party conservation organization, want to end up with a tract of land that is difficult or impossible to manage (e.g. a “checkerboard” pattern of ownership). Other reasons for acquiring additional land relate to access issues, watershed boundaries, and the need to provide sufficient buffer habitat around the areas where murrelets are nesting.

Based on comments received on the draft restoration plan, the Trustees are focusing on a private organization with experience in managing forest lands for conservation to serve as a manager of the acquired marbled murrelet tracts. This option, among other benefits, would allow the property taxes to continue to be paid to the appropriate county.

The Confederated Tribes of the Siletz Indians, and the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians, two of the Trustees in this case, have also asked to be considered for managing the marbled murrelet tracts. Trustees have agreed to consider the Tribes, along with several private conservation groups, as their first choices for management of the marbled murrelet tracts. The Tribes would be evaluated for receiving the lands with the same standards as the conservation groups.

As a second option, the Trustees would consider the USFS and the BLM as recipients and managers of the habitat. One exception is that USFS will receive priority consideration for a Trustee priority parcel under 500 acres that is primarily surrounded by Siuslaw National Forest lands in Lincoln county.

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Trustees will consider a number of factors when evaluating any organization as a recipient and manager of a parcel acquired for the benefit of marbled murrelets. These include the following:

- Demonstration of the technical expertise, successful track record, and resources needed to manage forested habitat for conservation purposes.
- Willingness and ability to continue to pay all applicable property taxes to the county in which the parcel is located. (Federal agencies would be excepted from this provision).
- Willingness and ability to protect and enhance the marbled murrelet habitat and manage the non-murrelet habitat using sound, sustainable, conservation forestry practices to benefit a tract's natural resources.

Any acquiring entity will be required, unless waived by the Trustees, to enter into a legally binding, recorded agreement with the Trustees, or their designee, assuring that the parcel will be managed for the benefit of marbled murrelets and other natural resources.

Furthermore, it will be important that any recipient organization not seek substantial financial returns from the management; instead, the Trustees must be assured that proceeds from conservation forestry operations be utilized for managing the land and the benefit of the natural resources. In addition, the Trustees expect the recipients to use local contractors whenever possible for maintenance and forestry operations, to bring economic benefit to the local community.

Although outright purchase is the preferred acquisition option, Trustees will consider other options including conservation easements. Trustees clearly acknowledge that any acquisition will be from willing sellers and will not be part of any condemnation or eminent domain proceeding or action.

In addition to the typical costs associated with acquisition such as necessary appraisals, title searches, clearances and other customary real estate costs, the Trustees envision that most tracts will require immediate management actions to ensure that they continue to function as marbled murrelet nesting habitat. Trustees will be seeking such management funds in their claim to the National Pollution Fund Center in addition to those necessary for acquisition. Such actions may include, but are not limited to, necessary inventories (e.g. stand exams, weed surveys, stream surveys), access management (e.g. maintenance and repair of roads, culverts, road decommissioning and closing), forest management (e.g., thinning to accelerate the growth of younger trees into potential nesting habitat) and monitoring (e.g. marbled murrelet occupancy surveys) to determine if the properties are meeting the intended restoration goals.

### **4.3.3.2.1 Trustee Evaluation of Proposed Alternative under OPA**

This alternative would meet the Trustees' objectives of restoring the loss of 262 marbled murrelets in the most cost effective manner possible. The likelihood of success is high because Trustees would only select habitat for purchase that is either currently occupied by marbled

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murrelets or has a high likelihood of being occupied in the near future. Although the marbled murrelet would be the primary beneficiary of the acquisitions, a whole host of other mid and late successional forest species would potentially be benefited, depending on the specific tract acquired. Several of the tracts evaluated contain forest habitat suitable for northern spotted owl and riparian and aquatic habitat suitable for salmon.

The proposed restoration would have no adverse effect on public health and safety.

### **4.3.3.2.2 Environmental Consequences**

#### Beneficial Effects

The acquisition, enhancement, and management of more than 1269 acres of marbled murrelet nesting habitat would guarantee that it remains in existence for the future use and benefit of this unique species. Other mid and late successional species also would benefit from this acquisition. The acquired lands would be open for public use and enjoyment to the extent that it would not adversely affect murrelet values. Additionally, protection of a species listed as threatened or endangered on public lands can result in less pressure on the surrounding private lands and could improve the degree of flexibility for private landowners to harvest timber. If the lands are transferred to a private conservation organization or one of the two Trustee tribes, the Trustees' first choice, the appropriate property taxes would be paid and the lands would be open to conservation forestry operations. Private conservation organizations frequently use local contractors for operations, and, thus, employment benefits would arise in the local area.

#### Adverse Effects

There would be a potential reduction in property taxes to a county, if any privately-owned tracts were transferred to a Federal Trustee, the Trustees' second choice for receiving murrelet parcels, with the exception of one parcel in Lincoln county. Trustees estimate that, on average, about \$2.50/acre/year in property taxes might be forgone. This would be partially offset by Payment in Lieu of taxes that the Federal government pays to counties to specifically offset property tax losses. In 2005 this amount averaged about \$.20/acre for Lincoln and Tillamook counties. An additional offset might occur if the acquired lands would protect viewsheds of populated areas or protect water supplies, thereby enhancing property values.

If a conservation organization or one the Trustee tribes acquired the parcels, the county would continue to receive the appropriate property tax revenue based on the Trustees' conditions.

In either case because 1269 acres of land would essentially be removed from the timber base, there may be a reduction in the economic benefits in the form of lost jobs and lost harvest tax revenue. Some of this potential loss in revenue may be offset by forest thinning sales that would still occur under Federal or private conservation organization ownership. In addition, Trustees estimate that more than \$500,000 in restoration and management costs (such as for road repair, culvert replacement, noxious weed removal and pre-commercial thinning) would be necessary to bring the parcels up to management standards. Many of these tasks would be accomplished through contracts with private companies and would help offset some of the lost revenue by

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removing some of the land from the timber base.

There will be no significant environmental impacts from acquiring the land because the environment will not be significantly changed through transfer of title. Rather, the existing habitat will be protected and enhanced. To the extent a Federal agency acquires the lands, future site-specific actions which are not analyzed in this EA will be subject to NEPA analysis specific to those actions. To the extent a private conservation organization or one of the Trustee tribes ultimately acquire the parcels, the management will be subject to a binding agreement requiring protection and enhancement of habitat for marbled murrelets. Under this alternative, the marbled murrelet habitat would be appropriately protected and buffered and the potential adjoining acreage would remain open to conservation forestry. In comparison to the industrial-rotation period and even-aged stand management currently utilized on private timber lands under consideration, it is expected that any future sustainable forestry on the acquired adjoining acreage under this restoration plan will be conducted in a manner to move even-aged stands into a forest providing more diverse habitat. It is expected that such conservation forestry will have minimal short-term environmental impacts and will improve habitat in the long term.

### **4.3.3.2 Performance Criteria and Monitoring**

Success will be based on acquiring the appropriate acres of habitat and verifying marbled murrelet occupancy. The recipient of a parcel will be required to monitor that parcel on an ongoing basis, in accordance with the Pacific Seabird Group or other appropriate standards to determine marbled murrelet occupancy. An annual report to the Trustees will be completed for the first ten years after acquisition documenting habitat management and monitoring results. A final report will be completed at the end of ten years or after it has been demonstrated that marbled murrelet occupancy within the parcel is stable or increasing.

### **4.3.3.3 Other Alternative Considered for Marbled Murrelet Restoration**

An alternative for marbled murrelet restoration would involve acquiring younger stands (either through outright acquisition or conservation easement) and managing them until they became functioning marbled murrelet nesting habitat, typically around 130 years of age. Although habitat with younger trees would initially cost less per acre than currently functioning nesting habitat, interim losses would continue until the parcels are functioning marbled murrelet nesting habitat, substantially increasing the compensatory restoration needed. Depending on the age of the acquired stands, and the length of term of the acquisition, Trustees have determined that from about 3,500 to 51,507 acres of younger aged habitat would have to be acquired to meet both primary and compensatory restoration needs (Skrabis 2005; Appendix 7).

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### **4.3.3.3.1 Trustee Evaluation of Alternative under OPA**

Although this alternative would theoretically meet the overall objective of restoring the 3,271 marbled murrelet years lost as a result of the *M/V New Carissa* incident, it would not do so in the most cost effective or timely fashion. Depending on the age of the stands purchased, it could take up to 130 years before some of the youngest stands would function as marbled murrelet nesting habitat. This alternative would require the acquisition of from 3 to 40 times the amount of habitat required by the proposed action. There would be additional management costs for this alternative over the proposed action to ensure that all the stands developed into suitable marbled murrelet nesting habitat.

The likelihood of success is not as high compared to the proposed action because this alternative relies on the assumption that marbled murrelets will discover and occupy this newly created habitat once it reaches maturity (which could take as long as 130 years). In contrast, the proposed action would provide benefits to marbled murrelets immediately.

Under this alternative, once the stands reach sufficient maturity, it too would provide habitat for a variety of other mid and late successional forest species.

This alternative would have no effect on public health and safety.

### **4.3.3.3.2 Environmental Consequences**

#### Beneficial Effects

Although the timeframe for this alternative to provide protected nesting habitat for the marbled murrelet is longer than the proposed action, ultimately this alternative would provide more protected habitat for murrelets and a variety of other species than the proposed action.

#### Adverse Effects

This alternative would reduce property taxes revenue to counties more than what the proposed action, and would result in a much greater loss of economic benefits for timber harvesting due to the greater number of acres removed from the timber base.

### **4.3.3.4 Proposed Alternative for Seabirds and Waterfowl Restoration**

Trustees are proposing three separate projects to restore the losses (44,063 seabird-years) from the *M/V New Carissa* spill: Parcel Acquisition, Predator Management and an Education Project.

#### **Parcel Acquisition**

Trustees propose to protect an existing seabird colony by acquiring from willing sellers a developable parcel adjacent to the colony. Development could cause disturbance and even abandonment of the colony. The parcel would be managed as part of the Oregon Island National Wildlife Refuge to protect the seabird colony on and adjacent to the property in perpetuity.

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Rationale: The adverse effects of human-related disturbances upon wildlife have been widely acknowledged in the scientific literature, as recently summarized by Beale and Monaghan (2004). Birds often view people as potential predators and human activity near a seabird colony can cause a change in birds' normal behavior. The effects can range from the insignificant to the disastrous:

- Birds are distracted from normal activities, but don't fly away or change behavior.
- Parent birds spend less time tending young or eggs.
- Parent birds fly away from nest, leaving eggs or chicks vulnerable to avian and mammalian predators and cold.
- Nests are destroyed.
- Parent birds are injured or killed.
- Seabirds entirely abandon colony.

In addition to disturbance by people, human occupation of a site adjoining a colony can lead to nesting loss as a result of the activities of domestic animals harassing or preying on birds, yard or house lights which can disturb and disorient nocturnally-active seabirds, and buildings or structures which may become lethal developments when constructed too close to nesting or roosting sites.

Lowe (2004) cites an example of the adverse effects of unregulated public use on several seabird colonies on and adjacent to an Oregon coastal headland and the remarkable recovery of those colonies once public use was properly managed. Yaquina Head, just north of Newport, Oregon, is managed cooperatively under a Memorandum of Agreement among the BLM, USFWS and the U. S. Coast Guard to protect the area's natural resources. Lowe documents the dramatic recovery of seabirds on the headland and adjacent rocks after implementing intensive visitor management, wildlife resource protection and environmental education and interpretation.

To further illustrate the value of visitor management and an environmental education and interpretation program (which the Trustees have proposed as a second component of the seabird restoration), Lowe (2004a) also documents the recovery and protection of seabird nesting areas at two other Oregon sites, Blast Rock at Heceta Head and Haystack Rock at Cannon Beach. Methods used in these successful management projects involved creating a physical barrier to prevent people from accessing Blast Rock and, in the case of Haystack Rock, improving public understanding of the seabirds nesting on Haystack Rock by developing a model environmental awareness program (Haystack Rock Awareness Program). This program receives valuable support and assistance from the City of Cannon Beach.

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### **Criteria for Acquiring Habitat to Protect Nesting Seabirds**

Trustees have developed the following criteria for selecting parcels for the seabird restoration. Parcel(s) must provide the equivalent total number of seabird years (44,063) lost as a result of the spill. In addition, any parcel should:

- Be located on the Oregon coast;
- Be adjacent to an existing or former seabird nesting area;
- Be in private ownership and potentially developable so as to constitute a potential threat or disturbance to an existing or former nesting area;
- Have a willing seller.

Trustees have determined that parcels exist that meet Trustee objectives and standards for seabird restoration.

### **Parcel Acquisition**

One or more potential parcels, located on the central Oregon coast, if acquired, would protect existing seabird populations both on and adjacent to the property. The Trustees estimate that acquisition and management of this property would produce approximately 18,000 seabird-years.

### **Predator Management**

As part of the proposed action the Trustees are recommending that predator management be initiated on seabird colonies on the southern Oregon Coast as partial restoration for the losses to seabirds as a result of the spill.

The USFWS' Oregon Coast National Wildlife Refuge Complex includes six refuges along the Oregon coast. Two of these refuges, Oregon Islands National Wildlife Refuge (NWR) and Three Arch Rocks NWR, provide key nesting habitat and protection for the majority of the estimated 1.2 million nesting seabirds in Oregon. Mammalian predators have recently reduced or eliminated seabird nesting colonies on Middle Coquille, Elephant, and Haystack Rocks near Bandon.

The primary objective of this alternative action would be to prevent further declines of seabirds within the Oregon Islands NWR initially in the vicinity of Coquille Point and other areas along the Oregon coast.

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The proposed action includes the following primary goals:

1. Assess mammalian predation impacts on seabirds within the Oregon Islands NWR in the vicinity of Coquille Point and other areas of the southern Oregon Coast potentially including the Gregory Point area.
2. Reduce predation where mammalian predators have been determined to be a threat to populations of seabirds within the Oregon Islands NWR near Coquille Point and other areas of the southern Oregon coast potentially including the Gregory Point area.

Efforts to reduce mammal predation on seabirds would initially focus on the Coquille Point unit of Oregon Islands NWR and adjacent mainland areas. Birds expected to benefit from the predator management project include: Brandt's, pelagic and double-crested cormorants, tufted puffins, black oystercatchers, pigeon guillemots, common murrelets, western gulls, and Leach's storm-petrels. The Trustees estimate that this project will produce approximately 37,000 seabird-years.

Trustees envision contracting with Wildlife Services, a branch of the USDA's Animal and Plant Health and Inspection Service (APHIS) to conduct the predator management and monitoring necessary to determine the project's effectiveness. The estimated contract costs for 30 years of predator management for seabirds is \$750,000 (\$50,000 for the first 5 years, then \$20,000/year for the next 25 years). If the Confederated Tribes of the Coos, Lower Umpqua and Siuslaw acquire management authority for Chief's Island (Gregory Point), about \$35,000 of the above amount could be used by the Tribes for predator management on and around the island's seabird colony. The Trustees envision that up to \$2,000 of this amount could be used to evaluate the footbridge to see if there are any minor alterations practicable to make the structure more predator proof.

The Trustees are also proposing to reduce the effects of predators on seabirds (and shorebirds) by providing Oregon Parks and Recreation Department the necessary funds to fabricate 150 predator-proof garbage cans, through their "Parks and Prisons" program. Oregon Parks and Recreation Department manages numerous parks near or adjacent to seabird and shorebird nesting areas. Populations of avian predators, especially crows and ravens which often feed on park refuse, are thought to be kept at levels much higher than normal, leading to increased chick predation on nearby seabird and shorebird populations. Four of the predator-proof garbage cans would be made available to the Confederated Tribes of the Coos, Lower Umpqua and Siuslaw for use at Gregory Point, if appropriate. The estimated cost of 150 fabricated predator proof garbage cans is \$45,000 (150 garbage cans X \$300/each = \$45,000). The Trustees' total estimate for Predator management, including FWS oversight and management is \$851,000.

### **Education Project**

For the educational component of the seabird restoration, Trustees have selected a project that will inform visitors of the protected status of the Oregon Islands National Wildlife Refuge and its resources. This project involves identifying all access sites along the Oregon coast (including

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the Gregory Point area) that lead visitors to or near seabird colonies or pinniped (seals and sea lions) haulout sites. Once identified these access points will be posted with signs that will inform visitors that the nearshore rocks and islands are part of the refuge system and are closed to public access. The signs also will educate the public about the need to protect nesting seabirds from human disturbance. Signage at Gregory Point would include information on Tribal and natural resources on adjacent Chief's Island. Many of the access sites are located within State Parks that receive heavy public use and are immediately adjacent to major and minor seabird colonies. Signs and mounting structures will need to be designed, fabricated and installed. Installations at many sites may involve rock drilling. All species of seabirds except marbled murrelets will benefit from this project. The project will be completed in three phases. Phase one will document all access sites where human interactions with nesting seabirds could occur. Phase two involves developing and fabricating the signs. Phase three includes installation and maintenance. Cost: \$808,000 (includes personnel, equipment, and contract costs).

### **4.3.3.4.1 Trustee Evaluation of Alternative under OPA**

The proposed alternative would meet the Trustees' objectives of restoring the loss of over 44,063 bird years in a cost effective manner. The likelihood of success of the acquisition is very high because there are existing seabird colonies on and adjacent to the parcel (s) being considered which would be protected from future development immediately and perpetually. The likelihood of success of the predator management project is high as a number of studies have documented the restoration of seabird colonies after successful eradication of non-native predators. The likelihood of success of the education project is high because resource agencies on the Oregon coast have already demonstrated how managing visitor use near seabird colonies reduces disturbance and increases seabird productivity (Lowe 2004a). Of all the education projects considered, this project will benefit the greatest number of seabirds. All three projects will protect multiple seabird species and may have a small beneficial effect on public health and safety by keeping the public off some unsafe cliffs and rocks. The predator management project is expected to have no effect on public safety given APHIS' strict policies dealing with health and safety.

### **4.3.3.4.2 Environmental Consequences**

#### Beneficial Effects

The proposed action would both guarantee production for a seabird colony for the long term and restoration of seabird colonies adversely affected by predators. An environmental assessment of the effect of predator management on seabird colonies has been prepared by the USFWS and cooperating agencies (USFWS 2005). The reader is referred to that document for more information on the analysis of predator management. The analysis in that document is being considered by the Trustees and is incorporated by reference into this document. The education project would also protect sensitive seabird and some pinniped sites by modifying potentially disruptive human behavior.

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### Adverse Effects

Acquisition of private lands by Federal or State Trustees could ultimately reduce the property tax payments that a county might expect to receive. For the properties in consideration for the seabird colony protection, this amount is expected to be minimal, and would be potentially partially offset by the Refuge Revenue Sharing Act, which authorizes payments to counties to offset tax payments lost as a result of refuge acquisitions. There will be no significant environmental impacts from acquiring the land because the environment will not be significantly changed through transfer of title. Rather, the existing habitat will be protected and enhanced. To the extent a Federal agency (likely USFWS) acquires the lands, future site-specific actions which are not analyzed in this EA will be subject to NEPA analysis specific to those actions. There might be some minor, short term disturbances to wildlife when the informational/educational signs are initially installed, however, installation would occur during the non breeding season or at a distance that would not affect nesting birds. Preservation of open space, however, may enhance other property values in a community.

### **4.3.3.4.3 Performance Criteria and Monitoring**

Success of the proposed seabird restoration will be determined individually for the three projects:

#### **Parcel Acquisition**

Success of the acquired parcel (s) will be characterized as the documented, successful continued use of the parcel by nesting seabirds. The Oregon Islands NWR will monitor seabird use and productivity on the parcel annually for the first five years following acquisition. An annual report will be prepared for the Trustees documenting the status of the colony, and any activities performed on the parcel (such as maintenance, replacing signage, etc.).

#### **Predator Management**

Success will be determined by the removal of targeted mammalian predators from seabird colonies on the southern Oregon coast and a return to historic, pre-predator, seabird production levels. Annual monitoring will be conducted during the predator management to determine effectiveness of predator management efforts and the nesting response of seabirds. The Oregon Islands NWR will complete an annual report to the Trustees documenting results of the predator management project. Within one year of receiving funds, OPRD will prepare a report to the Trustees documenting the specific placement of the predator proof garbage cans.

#### **Education Project**

Success of the sign project will be defined by the development and installation of the signs at the designated areas along the Oregon coast. The Oregon Islands NWR will prepare an annual report to the Trustees outlining the progress in designing and placing the signs and a final report upon completion of the project. The project will be completed within five years of receiving the necessary funds.

#### **4.3.3.5 Other Alternatives Considered for Seabird Restoration**

##### **Alternative Parcel Acquisition**

Trustees considered acquisition of an alternate parcel, also on the central Oregon Coast, adjacent to an existing seabird colony. The parcel itself provides nesting habitat for a few seabirds as well. The number of seabirds nesting on the colony adjacent to the alternate parcel is similar to the number nesting on the preferred parcel(s).

##### **Other Education Projects Considered**

###### **Seabird Disturbance Video**

A professional quality video would be produced that would cover the life history requirements of seabirds and detail their susceptibility to and impacts from human disturbance and colony intrusion. The video would be prepared in four segments including a lead-in with seabird life history, followed by segments covering disturbance by boats, aircraft, and people on foot. The video would be produced in digital format for easy, high quality reproduction. Segmenting the three disturbance types would allow for targeting and distribution to appropriate audiences. All species of seabirds would benefit from this project.

Cost: \$100,000.

###### **Oregon Seabird Brochure**

A high quality, full-color brochure would be produced describing the life history of seabirds in Oregon. The brochure would cover all human-induced impacts to seabirds and provide guidelines for protection measures. The brochure would also highlight public viewing areas where seabirds can be easily observed without impacting the resources. The brochure would be distributed throughout the coastal region at visitor facilities, Chambers of Commerce, State Parks, festivals, and trade shows. All species of seabirds would benefit from this project. A print run of 250,000 copies would be made. Cost: \$30,000.

###### **Seabird Suitcase**

The seabird suitcase is a traveling education exhibit that can be loaned to schools and other educational institutions. The exhibit would contain educational literature designed for all grade levels and includes "hands-on" materials such as life-sized carvings or decoys of various seabird species, imitation eggs, and feathers. Also included would be books, brochures, posters, and videos. All species of seabirds would benefit from this project. Cost: \$75,000.

###### **Seabird Traveling Exhibit**

A free standing traveling exhibit would be developed for use at coastal festivals, trade shows, schools, universities, visitor centers, and other locations. The exhibit would focus on the life history and needs of seabirds and how the public can help protect these resources. All species of seabirds would benefit from this project. Cost: \$25,000

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### **Electronic Seabirds Colony Catalog**

This project involves the production of an electronic seabird colony catalog showing all seabird nesting colonies in Oregon and all existing data for each colony. Each colony would be mapped and photographed and data would be accessible by query or by delineating colonies on the map. The final product would be contained on a CD-ROM for mobile use and wide distribution. Completion of this product would allow for improved management and protection of seabird resources by having the information readily accessible to all management agencies. Cost: \$100,000.

### **Learn About Seabirds/Teach the Teachers**

*Learn About Seabirds* is an educational program that would develop a curriculum to teach teachers and students about Oregon seabirds. The curriculum would include seabird life history and identification, food webs, population dynamics, predator/prey relationships, seabird adaptations to their environment, habitat needs, and human impacts to seabirds and their habitats. The interdisciplinary activities are sequenced so important concepts build upon one another. *Teach the Teachers* involves conducting a series of workshops for teachers once the curriculum has been developed so they can design and execute the education program for their area and grade level. All species of seabirds would benefit from this project. Cost: \$130,000.

### **Interpretive Panels**

A series of two custom panels would be developed for each of eight locations along the Oregon coast. The interpretive panels would discuss life history, populations and threats to the resources, as well as protection measures. Sites include Harris Beach, Myers Creek, Coos Head, Sea Lion Caves, Seal Rock, Oceanside, Cannon Beach, and Ecola Point. All species of seabirds will benefit from this project. Cost: \$150,000.

#### **4.3.3.5.1 Trustee Evaluation of Alternative under OPA**

Acquisition of the alternate parcel would contribute toward meeting Trustees' objectives in a cost effective manner, however, the potential level of threatened disturbance to seabirds is far less on this parcel because of the distance and topography between the seabird colony and the developable portion of the lot. Also, the alternate parcel is not as biologically diverse as the preferred parcel (s). The likelihood of success of acquiring the alternate parcel would be similar to that of acquiring the preferred parcel.

Although the education projects considered in this alternative are less costly than the proposed education project, this alternative would be nowhere near as effective at meeting the Trustees' objectives of restoring lost seabird years.

There would be no adverse effect on public health or safety of this alternative.

#### **4.3.3.5.2 Environmental Consequences**

##### Beneficial Effects

This alternative would protect an existing seabird colony in perpetuity. Other resources would also be protected by acquisition, although fewer than would be protected by acquiring parcels under the preferred alternative. All seabird species would potentially benefit from any of the educational projects, although the specific amount of benefit is difficult to quantify. As discussed above, acquisition would not have significant environmental impacts because existing habitat would be protected.

##### Adverse Effects

Acquisition of private lands by Federal or State Trustees could ultimately reduce the payments that the county might expect to receive.

#### **4.3.4 Shorebird Restoration Alternatives**

##### **4.3.4.1 Scaling Approach and Summary**

Trustees have estimated that 672 shorebirds (other than snowy plovers) were injured or killed as a result of the *M/V New Carissa* spill. Most of these were Sanderlings. Using the life history and demographic parameters of the sanderling, the Trustees calculated that shorebird losses totaled 7,044.63 bird-years. Trustees then developed several restoration options that would produce an equivalent number of bird-years.

##### **4.3.4.2 Proposed Alternative for Shorebird Restoration**

Trustees have chosen a combination of acquisition and restoration to replace the 7,045 shorebird-years lost as a result of the spill.

Rationale: The majority of the shorebirds injured by the spill nest in the arctic and only winter in or migrate through the area affected by the spill. Trustees felt that acquiring and restoring historical shorebird wintering and migratory habitat near the Oregon coast would be the best way to compensate for shorebird losses from the *M/V New Carissa*.

##### **Criteria for Selecting Shorebird Habitat for Acquisition and Management**

Trustees have defined criteria for selecting parcels for the shorebird restoration. Parcel(s) must provide the equivalent number of shorebird-years lost as a result of the spill. Any parcel also should be:

- Within 5 miles of the Oregon coast;

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- In an area known to support or have the potential to support high numbers of migrating and wintering shorebirds;
- Adjacent to other blocks of protected habitat to further enhance their value;
- Available for outright purchase or for purchase of conservation easements from willing sellers.

Trustees have identified two areas (Shorebird Acquisitions A and B) for potential acquisition and restoration.

### **Habitat Restoration Project**

This project entails the acquisition of a small (<9 acre) parcel and restoration of the surrounding 500 acres of tidal marsh, now currently pasture. The small parcel will be added to the adjacent national wildlife refuge, and the entire area will be managed as wintering/resting habitat for migratory shorebirds. When completed, this project will be the largest tidal marsh restoration on the Oregon coast. The wetlands to be restored will include mudflats, tidal sloughs and marsh, forested wetlands, a freshwater marsh, riparian habitat, and a small anadromous fish stream. Sanderling and 14 other species of shorebirds will benefit from this restoration.

### **Education Project**

Trustees have selected the Sister Shorebird Program for implementation. This program teaches teachers about shorebirds through workshop training and a curriculum guide. The Curriculum Teachers Guide for arctic nesting shorebirds has already been developed. This project would develop a new chapter for this guide specific to nesting and wintering Oregon shorebirds. This project would also sponsor free workshops to educate groups of Oregon teachers.

#### **4.3.4.2.1 Trustee Evaluation of Alternative under OPA**

The proposed action would meet the objectives of restoring 7,045 shorebird years in a cost effective manner. The likelihood of success is high as the resource agencies have substantial expertise in restoring wetlands along the Oregon coast. In addition, the acquisition/restoration projects will benefit a number of other species including a very substantial number of waterfowl and anadromous fish. The project will have no adverse effect on public health and safety.

The proposed education project will also benefit shorebirds but the specific numbers are difficult to quantify.

#### **4.3.4.2.2 Environmental Consequences Shorebird Restoration Proposed Action**

##### Beneficial Effects

In addition to benefiting 15 species of shorebirds, the proposed action will benefit a variety of other migratory birds as well as several species of anadromous fish. And while the planned restoration activities are intended to benefit wildlife populations, the refuge anticipates increased visitor use to the area as a result of the increased opportunities to view the migratory birds and other wildlife associated with the restored wetlands.

##### Adverse Effects

There would only be short term adverse impacts to some vegetation during restoration activities. The small acreage of private lands to be acquired will result in a small loss in property tax revenue to the county. However, under the Refuge Revenue Sharing Act, much of that loss would be recovered by payments from the USFWS. The sizeable amount of restoration work (much of it through contract with private companies) will also help compensate for the loss of property tax revenue. Additionally, after restoration is complete, the refuge expects an increase in visitor use days generated by the increased opportunity to view migratory shorebirds and waterfowl. Overall, the net impact to the local economy would be positive.

#### **4.3.4.2.3 Performance Criteria and Monitoring**

Success of the shorebird project will be based on restoration of a functioning tidal wetland, with the concomitant increase in use by wintering and migrating shorebirds. The USFWS will conduct annual monitoring before and after restoration to document the change in use by shorebirds on the restored areas. The USFWS will submit an annual report to the Trustees summarizing acquisition and restoration actions, and the results of yearly shorebird monitoring.

The success of the educational project will be defined as the development and implementation of the program as described. The USFWS will prepare an annual report for the Trustees outlining accomplishments and results of the program

#### **4.3.4.3 Other Alternatives Considered for Shorebird Restoration**

Trustees evaluated four alternative parcels for restoration but only scaled alternative 1.

##### **Shorebird Acquisition and Restoration Alternative Property 1**

This acquisition and restoration proposal covers a number of parcels in a key wetland area. The area includes several habitat types that could be enhanced for shorebird use, including open dunes, freshwater wetlands, pastures, and other grasslands. Acquisition and restoration would provide excellent benefits to many migratory and wintering shorebird species, including western and least sandpiper, whimbrels, marbled godwits, long-billed curlews, dowitchers, black-bellied plovers, and dunlin. There would also be substantial waterfowl benefits from the restoration. Acquisition could be outright purchase or purchase of a conservation easement from willing sellers. This alternative provides more than six times the required productivity and is estimated

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to cost about three times more than the proposed alternative.

### **Shorebird Acquisition and Restoration Alternative Property 2**

This lowland property, within a major central Oregon coast watershed, was historically tidal marsh, but was diked and drained in the 1930's and is now a freshwater system. Until the late 1980's the lowlands were managed as short-grass pasture, but these areas have not been grazed for over a decade and vegetation is now largely limited to invasive reed canarygrass and slough sedge. Restoration of these lowlands to a short-grass pasture would improve habitat for sanderlings, dunlin, western and least sandpipers, yellowlegs spp., dowitchers spp., whimbrels, black-bellied plovers, and waterfowl. If acquired, this parcel would likely be added to a wildlife refuge.

### **Shorebird Acquisition and Restoration Alternative Property 3**

This property, in a major southern Oregon watershed, has been used for livestock grazing and as a spoil area for dredged material. The acreage currently provides habitat for a variety of waterfowl and other wetland-dependant species. An assortment of shorebirds has been observed on the island, and restoration work would enhance species diversity and abundance. Shorebird species benefited include dunlin, western and least sandpipers, yellowlegs spp., dowitchers spp., black-bellied plover, and whimbrel.

### **Shorebird Acquisition and Restoration Alternative Property 4**

This property, along a central Oregon coast creek, has been diked, farmed and grazed for decades. Historically the property would have supported numerous species of shorebirds especially during high tide when birds are pushed out of a nearby bay. Restoration of this parcel subsequent to acquisition will be essential, and is expected to benefit several species of shorebirds including sanderlings, dunlin, and western and least sandpipers, yellowlegs spp., dowitchers spp., black-bellied plovers, whimbrels, and black turnstones. Restoration will involve structural protection, dike removal, and re-contouring of the bottom to create shorebird habitat. If this property were acquired, it would be incorporated into a nearby wildlife refuge.

## **Shorebird Education Project Alternatives**

### **Recreational Disturbance Education**

Many people are unaware that letting their dog run free, driving, or simply flying kites on the beach can compromise fitness in resident and especially migratory shorebirds. Recreationists could be made aware of the negative consequences of their actions through the development and distribution of a variety of education materials such as brochures, slide shows, posters, and media releases. These outreach tools will highlight shorebird life history in the context of sharing appreciation (viewing opportunities) and desired behaviors to lessen recreation and development impacts for a variety of target audiences. These outreach materials would be made available to visitors and residents at a variety of venues including visitor information centers, chambers of commerce, campgrounds, veterinarian offices, pet stores, local doggie daycare centers, and other dog-related sites for resident dog owners. Estimated cost: \$120,000.

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### **Estuary Observation Platforms and Kiosks**

Several potential sites lend themselves to shorebird observation. Interpretation at these sites would focus on appreciation and understanding of shorebird management needs. Potential sites include BLM/Navy land on the south side of the Coos River estuary and the Siltcoos estuary. Estimated cost: \$300,000.

#### **4.3.4.3.1 Trustee Evaluation of Alternative per OPA**

Although each of the alternatives, either independently, or in combination with one another, would meet the Trustees' objectives of restoring the lost seabird-years, none of the projects will result in the quality of habitat as in the proposed action. There would be no effect to public health or safety from any of these alternatives.

#### **4.3.4.3.2 Environmental Consequences of Shorebird Restoration Alternative Projects**

##### Beneficial Effects

In addition to benefiting 12 species of shorebirds, the alternative action will benefit other species of migratory birds (primarily waterfowl). And while the planned restoration activities are intended to benefit wildlife populations, the refuge anticipates increased visitor use as a result of the increased opportunities to view the migratory birds and other wildlife associated with the restored wetlands.

##### Adverse Effects

There would only be short term adverse impacts to some vegetation during restoration activities. The small acreage of private lands to be acquired will result in a small loss of property tax revenue to the county. However, under the Refuge Revenue Sharing Act, much of that loss would be recovered by payments from the USFWS. The sizeable amount of restoration work (much of it through contracts with private companies) will also help to compensate for the loss in property tax revenue. Additionally, after restoration is complete, the refuge expects an increase in visitor use days generated by the increased opportunity to view migratory shorebirds and waterfowl. Overall, the net impact to the local economy would be positive.

#### **4.3.5 Recreational Loss Restoration**

The Trustees conducted a study to determine the nature and extent of recreation site closures and to document the historical recreation use levels at locations affected and potentially affected by the 1999 *M/V New Carissa* groundings so as to provide an estimate of the economic value of recreational losses resulting from this incident (Carlson and Fujimoto 2001).

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### 4.3.5.1 Scaling Approach and Summary

Trustees used the average consumer surplus per trip as the measure of net economic value of the recreational activities. Consumer surplus is the measure of an individual's value for a good, in this case recreation, above and beyond any payments that are necessary to obtain that good. The change (net) in consumer surplus as a result of this incident is the consumer's measure of economic loss.

This concept of net consumer surplus is applied in economics to measure losses under a wide range of circumstances; for example, impacts on consumers from changes in food prices, losses from outages in water or power supply, as well as disruptions of outdoor recreation due to oil spills. In the case of recreation, net consumer surplus per trip is the monetary measure of a consumer's loss of enjoyment of recreational opportunities because of changes in the quality of recreation sites or site closures. With oiled recreation sites, losses can occur if a site is closed and an individual forgoes recreation trips. Losses can also occur if an individual is forced to incur extra costs in terms of time and money to travel to an alternative location, or if an individual must recreate at a less valued site due to a spill. A less valued site could either be the now oiled area or an alternative non-oiled location with less desirable characteristics (Carlson and Fujimoto 2001).

Although the available data are limited to initial collection efforts, the analysis presented for this report presents the two main components needed to make a preliminary estimate of the loss of consumer surplus resulting from the *M/V New Carissa* incident: (1) an estimate of the number of recreation trips affected either through lost trips or trips of reduced quality; and (2) an estimate of the unit value (consumer surplus) per trip for each of these affected recreational activities. The estimate of the aggregate lost recreational use value caused by the *M/V New Carissa* is computed as the product of the number of trips affected times the unit value per trip, summed over the recreational activities considered (Carlson and Fujimoto 2001).

For this assessment, Trustees used a standard beach value of \$14.39 as the average lost consumer surplus for each trip lost by the *M/V New Carissa* incident. Trustees used half that value (\$7.20) for the diminished trips. The total preliminary estimated loss in consumer surplus from the *M/V New Carissa* incident ranges from \$395,356 to \$413,056, depicted in Table 10 (Carlson and Fujimoto 2001).

**Table 11: Estimate of the Recreational Losses Resulting from the *New Carissa* Incident**

	<b>Number of Trips</b>	<b>Consumer Surplus Loss Per Trip</b>	<b>Total Losses</b>
Lost Trips	26,974 – 28,204	\$14.39	\$388,156 to \$405,856
Diminished Trips	1,000	\$7.20	\$7,200
<b>Total</b>			<b>\$395,356-\$413,056</b>

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### **4.3.5.2 Proposed Alternative for Public Recreation Restoration**

The Trustees' New Carissa Lost Recreation Task Group has developed a list of proposed and alternative projects modified from the original list in Carlson and Fujimoto (2001) to compensate for recreational losses resulting from the *M/V New Carissa* incident.

This list of projects was developed in October 2004, following the initiation of Restoration Planning on June 28, 2004. The task group met in the Coos Bay BLM office on October 27 and reviewed projects to see which were still viable, updated project costs, eliminated projects completed in the interim, and identified new projects.

In addition to ensuring that all projects met the overall objective of restoring lost public use resulting from the incident, Trustees used the following screen, modified slightly from the criteria Trustees used for the other restoration projects, to better evaluate recreation type projects:

- a. Project occurs within the area affected by the incident
- b. Project has multiple resource benefits
- c. Project has multiple agency benefits
- d. Likelihood of project success is high; administrative procedures completed
- e. Project intended to prevent future public injury
- f. Project improves public health and safety
- g. Project has funding available from other sources
- h. Project leverages funding through partnerships or other funding sources
- i. Project meets other laws/regulatory requirements (such as Americans with Disabilities Act)

All projects met criteria a. Projects meeting criteria g were dropped in favor of projects that had no other agency funding identified in the short-term.

The final list of projects is:

**1. Gov. Patterson Memorial State Recreation Site Beach Trail and Parking Lot - \$44,000.**

There are two parts to this project.

Beach Trail--The beach trails at Governor Patterson were in a State of disrepair prior to the second *M/V New Carissa* incident; however, additional deterioration occurred during the second grounding of the *M/V New Carissa*. The scope of this project would include digging out and repairing uneven surfaces with crushed rock, placing a 2-inch compacted overlay of class "C" asphalt, and placing a 6-inch wide band of 3/4 minus "shoulder rock" after installation of the asphalt.

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Parking Lot--Resurfacing the parking lot with a 2-inch lift of class "C" asphalt beginning at an east-west line drawn approximately at the north beach trail, continuing north to include the remainder of the parking lot. This project would also include replacing the curbs in this area and re-stripping of the lot.

This project meets criteria a, b, d, f, and i. NEPA is not needed on Oregon State Park's lands. There are large harbor seal haul out areas across the Alsea River from the Governor Patterson Memorial State Recreation Site. These harbor seals are protected under the Marine Mammal Act. Any potential effects to the harbor seals from construction of this restoration project would be assessed before any work is done.

### **2. North Spit and Horsfall area directional sign and 2 entry kiosks - \$42,500.**

There are three parts to this project:

- a. A simple directional sign at the Horsfall/North Spit turn-off (intersection of Transpacific Parkway and Horsfall Road). (\$2,500) (Note: this installation requires County approval)
- b. An entry kiosk, located at the BLM boat ramp, with information and directions about the Horsfall and North Spit areas. Information on signs or panels would include points of interest, maps, warnings, natural resources, watchable wildlife, etc., (\$20,000).
- c. A replacement entry kiosk similar to item b, located on the Horsfall Road near Horsfall Campground (\$20,000).

This project meets criteria a, b, c, d, e, and f.

### **3. North Spit and Horsfall area State/Federal Beach Sign Program - \$13,000.**

This project would place beach signs, with steel H-pilings as posts, at three locations: at the northern boundary of the plover nesting area (by the FAA tower), at the southern boundary of the plover nesting area (north of the jetty) (these two signs total \$9,000), and at the USFS/Oregon State Parks boundary near the Horsfall access (\$4,000).

This project meets criteria a, b, c, e, and f.

### **4. Horsfall Day Use Area Expansion - \$155,500.**

Since 2000 to 2001, this project has been reconfigured and a new EA prepared. The current plan is to relocate the staging area several hundred yards west of the existing facility to an area known as the Bark Road. The new staging area will have either 42 or 70 parking sites and will cost \$600,000 or \$800,000, respectively. Restoration funding would pay only a portion of the total project cost. The balance of the project cost, above the restoration request, will come from recreation user fees and partnership funds. Project implementation (design phase) would likely begin in 2005. This expansion is in accordance with the Forest Management Plan.

This project meets criteria a, d, f, g, h, and i.

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**5. North Spit (interior) trail rehabilitation - \$10,000.**

This project would rehabilitate existing trails within the interior of the North Spit, to create a connected trail system for foot and horse traffic, with signs, to encourage hikers and horse users, and discourage vehicle users in the interior of the spit. The project may include a small, simple equestrian staging area. Half of the project costs would come from the natural resource damage claim (\$10,000), and half of the costs would come from regular BLM funding sources (\$10,000).

This project meets criteria a, b, and g.

**6. Horsfall Campground Accessible sites - \$30,000.**

This project will upgrade 7 sites (10% of campground capacity) to fully accessible status. The work will be done in conjunction with some planned campsite rehabilitation. The estimated project cost is \$30,000.

This project meets criteria a, d, f, g, and i.

**7. Fence removal - \$10,000.**

This project will remove dilapidated fences and fence posts from three locations on the North Spit: the old plover area next to the South Dike Road, the WWII bunker fence, and miscellaneous fences gathered, piled, and flagged in the southern interior. The project will remove unsafe, deteriorating fence structures to improve public safety.

This project meets criteria a, d, and f.

**8. Signs and placement of signs on sand roads - \$10,000**

This project will implement the BLM sign strategy. BLM has a signage plan for the sand roads to inform visitors about access restrictions and remind visitors to "Leave No Trace."

This project meets criteria a, b, c, d, and f.

**9. Bluebill Campground Toilet Replacement - \$60,000**

This project will correct a problem that has emerged since 2000 to 2001. It would replace the current Bluebill Campground toilet and septic system with a double unit sealed vault system. The current septic system is leaking and is a considerable water quality concern because of the high water table in the area. The current toilet building is beyond its service life, requires frequent repairs and only marginally meets accessibility standards for people with disabilities. The project would remove the defunct septic system, eliminating the potential for water quality degradation, while providing toilets that are fully accessible for people with disabilities.

This project meets criteria a, b, d, f, g, and i.

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**10. Horsfall Road OHV Fencing - \$20,000**

This project is intended to alleviate OHV operations in areas along Horsfall Road where such use is causing unacceptable resource impacts and other management problems. The project would install a barrier fence along the north side of Horsfall Road from the Transpacific Parkway intersection to the Horsfall Campground entrance. It will discourage OHVs originating from the Transpacific intersection from accessing the NRA at numerous undesignated locations off the Horsfall Road.

This project meets criteria a, b, c, d, and g.

**11. BLM Sand Road upgrade - \$9,000**

The seasonal re-route of the Foredune Road was created to bypass snowy plover nesting habitat during the nesting season. It is a one-lane sand road with two-way traffic. It is open for use throughout the year but is the only access to the jetty during the nesting season. There are several places which become dangerous in late summer due to drifting sand and blind curves. The entire project is 0.55 miles in length of which 0.3 miles would benefit by having the grade raised. Raising the grade three feet would require about 2,300 cubic yards of sand. Sand could be obtained from the adjacent slope and drifted onto the roadbed with a medium sized dozer or large front end loader. The project should be carried out during the winter season when sand moisture would be optimum to facilitate compaction.

This project meets criteria a, b, e, and f.

The recreation projects and costs are summarized below.

**Table 12: Recreation Project Cost Summary**

<b>Project #</b>	<b>Project Name</b>	<b>Cost \$</b>
<b>1</b>	<b>Governor Patterson Site</b>	<b>44,000</b>
<b>2</b>	<b>Entry kiosk and satellites</b>	<b>42,500</b>
<b>3</b>	<b>Beach Restriction Signs</b>	<b>13,000</b>
<b>4</b>	<b>Horsfall day use expansion</b>	<b>155,500</b>
<b>5</b>	<b>North spit trail rehabilitation</b>	<b>10,000</b>
<b>6</b>	<b>Horsfall campground accessible</b>	<b>30,000</b>
<b>7</b>	<b>Fence removal</b>	<b>10,000</b>
<b>8</b>	<b>Sand roads signs</b>	<b>10,000</b>
<b>9</b>	<b>Bluebill CG toilet replacement</b>	<b>60,000</b>
<b>10</b>	<b>Horsfall Road OHV fencing</b>	<b>20,000</b>
<b>11</b>	<b>Sand Road upgrade</b>	<b>9,000</b>
	<b>TOTAL COSTS</b>	<b>\$404,000</b>

#### **4.3.5.2.1 Trustee Evaluation of Alternative per OPA**

Overall the proposed alternative would meet the Trustees' objectives of restoring the lost public use as a result of the oil spill. Trustees have rated each of the recreation projects by separate criteria which include the criteria outlined in OPA. Trustees' ratings are included with the discussion of each project.

#### **4.3.5.2.2 Environmental Consequences of Lost Recreation Compensation Projects**

Any site specific impacts of the recreation projects will be further analyzed in project Environmental Assessments, as appropriate.

##### Beneficial Impacts

Overall, the proposed projects would restore the lost visitor use experienced as a result of the spill. Some projects would improve visitor access, several would contribute to visitor convenience, health and safety, and several would help protect plant and animal resources through education and visitor management.

##### Adverse Impacts

Overall, several of the projects such as placement of signs and fence removal would have negligible impacts on resources. Others would have minor effects such as repaving an existing parking lot, rehabilitation of trails, and placement of fencing or barriers. Additional Environmental Assessments may be prepared, as necessary, to document site specific effects of some of the construction projects.

#### **4.3.5.2.3 Performance Criteria and Monitoring**

Success of the restoration will be determined by successful accomplishment of the proposed projects. USFS, BLM, and OPRD will prepare annual summary reports to the Trustees outlining accomplishments and progress toward completion of the proposals.

#### **4.3.5.3 Other Alternatives Considered for Public Recreation Restoration**

Trustees considered alternate projects as substitutes for those in the proposed alternative. Overall, the Trustees perceived these as lower priorities, based on funding availability and perceived benefits to the public.

##### **North Spit-Weyerhaeuser trail expansion - \$160,000.**

This project would expand the existing loop trail currently on Weyerhaeuser land across BLM and/or USFS-ODNRA land and allow for ocean access. The trail will follow existing sand trails as much as possible and will maintain natural surfaces, i.e., sand and dirt except in areas needing elevation and boardwalk. Some seasonal wetlands must be crossed; a boardwalk is necessary for these low areas. The scope of this project will include a cooperative environmental assessment process, trail

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marking and creation of boardwalks. Trail uses will include hiking and possibly equestrian.

### **North Spit equestrian staging area - \$60,000**

This project would create an equestrian staging facility on BLM land across the road from the existing BLM boat ramp. It would create the only facility to specifically accommodate equestrian users on the North Spit. The basic concept is a specialized parking lot with access roads and appropriate signage. Size could range from accommodating 8 to 16 truck/horse trailers. Also, surface type could range from all blacktop to all gravel. By locating the facility at this site, horseback riders would be able to come in with their vehicles, unload their horses, and ride directly from the parking lot over to the Foredune Road without having to cross the Transpacific Parkway. The project was not previously analyzed in the Coos Bay Shorelands Plan, so a NEPA analysis would need to be prepared for this, as would consultation with USFWS. Cost would vary depending on the size and surface type selected for the project with a range of \$30,000 to \$100,000.

### **Horsfall Road Entry Kiosk - \$25,000**

This is a new project since 2000 to 2001. It complements a current larger project of implementing a new recreation sign plan for the South Zone of the Siuslaw Forest, including the ODNRA. The project would develop a new entry kiosk for visitors along the Horsfall Road and is an upscale version of the proposal, 2-c. The estimated project cost is \$25,000.

### **4.3.5.3.1 Environmental Consequences of Lost Recreation Compensation Alternative Projects**

#### Beneficial Impacts

Overall, these alternative projects would restore some of the lost visitor use experienced as a result of the spill.

#### Adverse Impacts

Overall, there would be some surface disturbance as a result of expansion of the North spit-Weyerhaeuser trail system. Expansion of the equestrian staging area would have some minor ground disturbances, as the sight was considerably disturbed previously when used as a storage area for jetty replacement rock.

### **4.3.6 Overall Summary of Environmental Consequences of Proposed Alternative and Other Alternatives including Cumulative Effects**

Overall, the proposed alternative would have overwhelming beneficial effects on the environment as Trustees restore the natural resources and services lost as a result of the *M/V New Carissa* spill. Adverse effects include some ground disturbing activities associated with the recreation projects. Under the Trustees' proposed alternative in which a conservation

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organization would receive the murrelet parcels, a county would continue to receive the appropriate property tax revenues. Because 1269 gross acres (including acres already off limits to logging) of land would essentially be removed from the timber base, there may be a reduction in economic benefits in the form of lost jobs and lost harvest tax revenue. Some of this potential loss in revenue may be offset by forest thinning sales that would still occur under private conservation organization or Trustee ownership on some of the acquired lands. In addition, Trustees estimate that more than \$500,000 in restoration and management costs would be accomplished, many through contracts with private companies. There are no identified cumulative effects of the proposed action and alternatives.

### **4.3.7 Finding of No Significant Impact (FONSI)**

**Finding of No Significant Impact (FONSI)  
For  
The Damage Assessment Restoration Plan (DARP) & Environmental Assessment (EA)  
For the  
*M/V New Carissa* Oil Spill**

#### **Background and Proposed Action**

On February 4, 1999, the *M/V New Carissa*, a bulk cargo ship in ballast, went aground on Coos Bay Oregon's North Spit and within a few days began leaking oil. After an attempt to burn off the vessel's fuel oil and after the ship had split in two and spilled more oil, the bow section was eventually refloated and towed offshore, only to break its tow and re-ground further north on Oregon's coast near Waldport spilling additional oil. On March 8, 1999, the bow section was again refloated, towed to sea, and sunk on March 10. During this incident, estimates of the total amount of oil released from the *M/V New Carissa* ranged from 25,000 to 140,000 gallons. The stern section of the vessel remains stranded in the surf near the entrance to Coos Bay.

Under the Oil Pollution Act of 1990, designated Natural Resource Trustees may conduct a Natural Resource Damage Assessment to document and quantify injuries to natural resources and services impacted by the release of oil. Trustees can then prepare a plan to restore those injured natural resources and the services they provide to the conditions that would have existed had a release of oil not occurred.

The Trustees for this case are the Department of Interior (lead), the Department of Agriculture, the State of Oregon, the Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians and the Confederated Tribe of Siletz Indians of Oregon. The Trustees have determined the following injuries/losses and are proposing the following restoration actions:

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<b>Injury/Loss</b>	<b>Proposed Restoration</b>
4-8 western snowy plovers	Annual maintenance of habitat in emergency restoration area on Coos Bay’s North Spit; implement snowy plover education project.
672 shorebirds	Acquisition and restoration of unprotected shorebird nesting and resting habitat; implement shorebird education project.
262 marbled murrelets	Acquisition of 1,269 acres of suitable, unprotected marbled murrelet nesting habitat
2,203 seabirds	Acquisition of unprotected habitat adjacent to seabird nesting colony; implement predator management for seabirds; implement seabird education project.
27,974-29,204 lost/diminished recreation trips	Implement recreation projects on Coos Bay’s North Spit, the Dunes National Recreation Area, and at Governor Patterson Memorial State Recreation Site.

A careful review of the DARP and EA indicates that there will not be a significant impact on the quality of the human environment as a result of the proposals therein. I agree with this conclusion, and therefore, determine that an Environmental Impact Statement (EIS) will not be prepared because:

1. The proposed activities will occur in localized areas near or along the Oregon coast. The proposed activities are not national or regional in scope.
2. The proposed activities will not significantly affect public health and safety. Recreation projects will be constructed to standards to protect public health and safety; several such projects are expected to improve visitor safety; the methods used to control mammalian predators are highly target-specific and are not likely to affect public health and safety.
3. The proposed activities will not have any adverse impacts on unique characteristics of the geographic area such as historical or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas. Neither implementing the recreation projects or the predator management projects are expected to permanently affect the physical environment. Some minor visual and aesthetic impacts may occur during construction and maintenance activities, but overall, the proposed action is expected to have a notable positive benefit to the environment by improving and maintaining western snowy plover nesting habitat, protecting and managing key shorebird habitat, protecting and managing marbled murrelet and other seabird’s habitat, and reducing the adverse effects of primarily non-native predators on nesting seabirds.

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4. The effects on the quality of the human environment from the proposed activities are not highly controversial. Although some people are opposed to some aspects of predator management, the methods and impacts are not controversial among experts. These activities have previously been found to have no significant impact in analyses conducted by USFWS. An environmental assessment of the effect of predator management on seabird colonies has been prepared by the USFWS and cooperating agencies (USFWS 2005). The reader is referred to that document for more information on the analysis of predator management. The analysis in that document is being considered by the Trustees and is incorporated by reference into this document.
5. The possible effects of the proposed activities on the quality of the human environment are not highly uncertain and do not involve unique or unknown risks. With regard to acquisition of title to lands to protect habitat, the existing habitat will be managed to protect its habitat values. Thus, land acquisition is not expected to have significant impacts. The USFWS has a categorical exclusion from NEPA for land acquisition where continuance or minor modification to the existing land use is planned. 516 DM 6 Appendix 1.4 (1997).
6. The proposed activities do not establish a precedent for actions with future significant effects or represent a decision in principle about future considerations.
7. There are no significant cumulative effects identified by this assessment. All predator removal will be coordinated with ODFW and will stay within management objectives set for each species.
8. The proposed activities will not affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, or will they cause loss or destruction of significant scientific, cultural, or historical resources.
9. The proposed activities will fully comply with the Endangered Species Act of 1973, as amended.
10. There are no irreversible or irretrievable resource commitments identified by this assessment, except for a minor consumption of fossil fuels for routine operations.
11. The proposed activities will not violate Federal, State, or local laws or requirements imposed for the protection of the environment.

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**Table 13: Monitoring Summary for M/V New Carissa DARP**

Restoration Project	Monitoring Requirements and Reporting Summary	Monitoring Responsibility	Monitoring Frequency and Timeframe
<b>A. Western Snowy Plover</b>			
1. Habitat Maintenance	Maintenance activity on 1998 HRA; WSP use and productivity on 1998 HRA; budget/expenditures	BLM-Coos Bay District	Annually for 30 years; written report to Trustees for first five years; then TBD
2. Plover Docent Program	Progress and accomplishments of Docent program; budget/expenditures	OR/WA Snowy Plover Working Group	Annually, for first five years; then TBD
<b>B. Marbled Murrelet</b>			
1. Marbled Murrelet Habitat Acquisition	Progress on acquisition accomplishments, and monitoring of murrelets on acquired properties; budget/expenditures	Manager of acquired tracts.	Annually for first decade; then TBD
<b>C. Seabirds</b>			
1. Habitat Acquisition	Progress on acquisition and results of seabird monitoring; budget/expenditures	USFWS	Annually, for first five years; then TBD
2. Predator Management			
a. Predator Management on Seabird Colonies	Accomplishments of predator management and seabirds' response to control measures; budget/expenditures	USFWS/APHIS	Annually
b. Garbage Management at Oregon State Parks	Number of cans purchased and number of parks serviced; budget/expenditures.	OPRD	At end of first year after receiving funding
3. Sign Development and Installation	Accomplishments of program; budget/expenditures	USFWS	Annually, until completed
<b>D. Shorebirds</b>			
1. Habitat Acquisition and Restoration	Acquisition and restoration accomplishments; response of shorebirds; budget/expenditures	USFWS	Annually, until five years after restoration is complete
2. Sister Shorebird Program	Program Accomplishments; budget/expenditures	USFWS	Annually, for first five years
<b>E. Recreation Projects</b>			
1. ODNRA Projects	Annual report on recreation projects accomplished; budget/expenditures	USFS-ODNRA	Annually, until projects are completed
2. BLM Projects	Annual report on recreation projects accomplished; budget/expenditures.	BLM-Coos Bay District	Annually, until projects are completed
3. OPRD Project	Report on recreation project accomplished; budget/expenditures	OPRD	Annually, until project is completed
<b>F. Case Management</b>			
Summary Monitoring Report to Trustees and Public	Summarize all monitoring reports and accomplishments in Trustee Annual Report; budget/expenditure summary	Case Manager	Annually, for first 5 years, then TBD