

trustees must establish whether natural resources were exposed, either directly or indirectly, to the discharged oil from the incident, and estimate the amount or concentration and spatial and temporal extent of the exposure. Trustees must also determine whether there is a pathway linking the incident to the injuries. Pathways may include, but are not limited to, the sequence of events by which the discharged oil was transported from the incident and either came into direct physical contact with a natural resource, or caused an indirect injury.

(e) *Injuries resulting from response actions or incidents involving a substantial threat of a discharge.* For injuries resulting from response actions or incidents involving a substantial threat of a discharge of oil, trustees must determine whether an injury or an impairment of a natural resource service has occurred as a result of the incident.

(f) *Selection of injuries to include in the assessment.* When selecting potential injuries to assess, trustees should consider factors such as:

- (1) The natural resources and services of concern;
- (2) The procedures available to evaluate and quantify injury, and associated time and cost requirements;
- (3) The evidence indicating exposure;
- (4) The pathway from the incident to the natural resource and/or service of concern;
- (5) The adverse change or impairment that constitutes injury;
- (6) The evidence indicating injury;
- (7) The mechanism by which injury occurred;
- (8) The potential degree, and spatial and temporal extent of the injury;
- (9) The potential natural recovery period; and
- (10) The kinds of primary and/or compensatory restoration actions that are feasible.

**§ 990.52 Injury assessment—quantification.**

(a) *General.* In addition to determining whether injuries have resulted from the incident, trustees must quantify the degree, and spatial and temporal extent of such injuries relative to baseline.

(b) *Quantification approaches.* Trustees may quantify injuries in terms of:

- (1) The degree, and spatial and temporal extent of the injury to a natural resource;
- (2) The degree, and spatial and temporal extent of injury to a natural resource, with subsequent translation of that adverse change to a reduction in services provided by the natural resource; or
- (3) The amount of services lost as a result of the incident.

(c) *Natural recovery.* To quantify injury, trustees must estimate, quantitatively or qualitatively, the time for natural recovery without restoration, but including any response actions. The analysis of natural recovery may consider such factors as:

- (1) The nature, degree, and spatial and temporal extent of injury;
- (2) The sensitivity and vulnerability of the injured natural resource and/or service;
- (3) The reproductive and recruitment potential;
- (4) The resistance and resilience (stability) of the affected environment;
- (5) The natural variability; and
- (6) The physical/chemical processes of the affected environment.

**§ 990.53 Restoration selection—developing restoration alternatives.**

(a) *General.* (1) If the information on injury determination and quantification under §§ 990.51 and 990.52 of this part and its relevance to restoration justify restoration, trustees may proceed with the Restoration Planning Phase. Otherwise, trustees may not take additional action under this part. However, trustees may recover all reasonable assessment costs incurred up to this point.

(2) Trustees must consider a reasonable range of restoration alternatives before selecting their preferred alternative(s). Each restoration alternative is comprised of primary and/or compensatory restoration components that address one or more specific injury(ies) associated with the incident. Each alternative must be designed so that, as a package of one or more actions, the

alternative would make the environment and public whole. Only those alternatives considered technically feasible and in accordance with applicable laws, regulations, or permits may be considered further under this part.

(b) *Primary restoration*—(1) *General*. For each alternative, trustees must consider primary restoration actions, including a natural recovery alternative.

(2) *Natural recovery*. Trustees must consider a natural recovery alternative in which no human intervention would be taken to directly restore injured natural resources and services to baseline.

(3) *Active primary restoration actions*. Trustees must consider an alternative comprised of actions to directly restore the natural resources and services to baseline on an accelerated time frame. When identifying such active primary restoration actions, trustees may consider actions that:

(i) Address conditions that would prevent or limit the effectiveness of any restoration action;

(ii) May be necessary to return the physical, chemical, and/or biological conditions necessary to allow recovery or restoration of the injured natural resources (e.g., replacing substrate or vegetation, or modifying hydrologic conditions); or

(iii) Return key natural resources and services, and would be an effective approach to achieving or accelerating a return to baseline (e.g., replacing essential species, habitats, or public services that would facilitate the replacement of other, dependent natural resource or service components).

(c) *Compensatory restoration*—(1) *General*. For each alternative, trustees must also consider compensatory restoration actions to compensate for the interim loss of natural resources and services pending recovery.

(2) *Compensatory restoration actions*. To the extent practicable, when evaluating compensatory restoration actions, trustees must consider compensatory restoration actions that provide services of the same type and quality, and of comparable value as those injured. If, in the judgment of the trustees, compensatory actions of the same type and quality and comparable value

cannot provide a reasonable range of alternatives, trustees should identify actions that provide natural resources and services of comparable type and quality as those provided by the injured natural resources. Where the injured and replacement natural resources and services are not of comparable value, the scaling process will involve valuation of lost and replacement services.

(d) *Scaling restoration actions*—(1) *General*. After trustees have identified the types of restoration actions that will be considered, they must determine the scale of those actions that will make the environment and public whole. For primary restoration actions, scaling generally applies to actions involving replacement and/or acquisition of equivalent of natural resources and/or services.

(2) *Resource-to-resource and service-to-service scaling approaches*. When determining the scale of restoration actions that provide natural resources and/or services of the same type and quality, and of comparable value as those lost, trustees must consider the use of a resource-to-resource or service-to-service scaling approach. Under this approach, trustees determine the scale of restoration actions that will provide natural resources and/or services equal in quantity to those lost.

(3) *Valuation scaling approach*. (i) Where trustees have determined that neither resource-to-resource nor service-to-service scaling is appropriate, trustees may use the valuation scaling approach. Under the valuation scaling approach, trustees determine the amount of natural resources and/or services that must be provided to produce the same value lost to the public. Trustees must explicitly measure the value of injured natural resources and/or services, and then determine the scale of the restoration action necessary to produce natural resources and/or services of equivalent value to the public.

(ii) If, in the judgment of the trustees, valuation of the lost services is practicable, but valuation of the replacement natural resources and/or services cannot be performed within a reasonable time frame or at a reasonable cost, as determined by § 990.27(a)(2)

of this part, trustees may estimate the dollar value of the lost services and select the scale of the restoration action that has a cost equivalent to the lost value. The responsible parties may request that trustees value the natural resources and services provided by the restoration action following the process described in § 990.14(c) of this part.

(4) *Discounting and uncertainty.* When scaling a restoration action, trustees must evaluate the uncertainties associated with the projected consequences of the restoration action, and must discount all service quantities and/or values to the date the demand is presented to the responsible parties. Where feasible, trustees should use risk-adjusted measures of losses due to injury and of gains from the restoration action, in conjunction with a riskless discount rate representing the consumer rate of time preference. If the streams of losses and gains cannot be adequately adjusted for risks, then trustees may use a discount rate that incorporates a suitable risk adjustment to the riskless rate.

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**§ 990.54 Restoration selection—evaluation of alternatives.**

(a) *Evaluation standards.* Once trustees have developed a reasonable range of restoration alternatives under § 990.53 of this part, they must evaluate the proposed alternatives based on, at a minimum:

- (1) The cost to carry out the alternative;
- (2) The 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) The likelihood of success of each alternative;
- (4) The 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;
- (5) The extent to which each alternative benefits more than one natural resource and/or service; and
- (6) The effect of each alternative on public health and safety.

(b) *Preferred restoration alternatives.* Based on an evaluation of the factors under paragraph (a) of this section, trustees must select a preferred restoration alternative(s). If the trustees conclude that two or more alternatives are equally preferable based on these factors, the trustees must select the most cost-effective alternative.

(c) *Pilot projects.* Where additional information is needed to identify and evaluate the feasibility and likelihood of success of restoration alternatives, trustees may implement restoration pilot projects. Pilot projects should only be undertaken when, in the judgment of the trustees, these projects are likely to provide the information, described in paragraph (a) of this section, at a reasonable cost and in a reasonable time frame.

**§ 990.55 Restoration selection—developing restoration plans.**

(a) *General.* OPA requires that damages be based upon a plan developed with opportunity for public review and comment. To meet this requirement, trustees must, at a minimum, develop a Draft and Final Restoration Plan, with an opportunity for public review of and comment on the draft plan.

(b) *Draft Restoration Plan.* (1) The Draft Restoration Plan should include:

- (i) A summary of injury assessment procedures used;
- (ii) A description of the nature, degree, and spatial and temporal extent of injuries resulting from the incident;
- (iii) The goals and objectives of restoration;
- (iv) The range of restoration alternatives considered, and a discussion of how such alternatives were developed under § 990.53 of this part, and evaluated under § 990.54 of this part;
- (v) Identification of the trustees' tentative preferred alternative(s);
- (vi) A description of past and proposed involvement of the responsible parties in the assessment; and
- (vii) A description of monitoring for documenting restoration effectiveness, including performance criteria that will be used to determine the success of restoration or need for interim corrective action.

(2) When developing the Draft Restoration Plan, trustees must establish