

NOAA'S APPROACH TO NRDA: WHAT DO TRUSTEES WANT?

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Introduction

The Oil Pollution Act of 1990 (OPA) was enacted to reduce the probability of oil spills and to provide for a system of containment and cleanup. OPA also established liability for cleanup costs and for damages for the restoration of natural resources and services injured by oil spills. In the United States, government agencies have been appointed as "trustees" to act on behalf of the public for protecting and managing the environment. Under OPA, if natural resources are injured or lost as a result of a discharge of oil, or if the use of natural resources is impaired, trustees are directed to restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources or impaired uses of those resources. Natural resource trustees are not authorized to recover compensation for private losses: They are only authorized to recover for public losses.

In OPA, Congress directed the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) to develop regulations for conducting natural resource damage assessments (NRDA) under OPA. In January 1996, NOAA issued those regulations. The procedure represents a fundamental change in conducting damage assessments in the United States. Earlier procedures had emphasized damages establishing a monetary value for the loss of use of the injured resources. The new regulations focus the measurement of damages on the actual cost of restoring the injured natural resources to baseline (i.e., the condition had the incident not occurred). This new focus reflects the way NOAA's program approaches NRDA for all its cases, not just OPA cases.

The Damage Assessment and Restoration Program

NOAA established the Damage Assessment and Restoration Program (DARP) in 1990 to fulfill natural resource trustee responsibilities assigned under such laws as the Clean Water Act, the Comprehensive Environmental Response, Compensation, and Liability Act (or Superfund), the Oil Pollution Act of 1990 (OPA), and the National Marine Sanctuaries Act. The DARP mission is to restore injured marine and coastal resources and to compensate the public for the losses that result from incidents involving oil or hazardous substances or damage to a National sanctuary in the navigable waters and exclusive economic zone of the United States. To date, NOAA's efforts have generated over \$230 million for restoring coastal and marine resources.

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Active NOAA Restoration Sites

Case Name / Location	Restoration Funds	Restoration Activities
Commencement Bay:* Simpson, Champion, WDNR/ Tacoma, WA	\$775,000	Middle Waterway Shore Restoration Project has been completed, which constructed an intertidal marsh
Blackbird Mine/ Salmon, ID	\$77,153,000**	Water quality and anadromous fish habitat restoration and salmon reintroduction
Apex Houston/ San Francisco, CA	\$5,416,000	Common murre and murrelet habitat restoration ongoing
American Trader/ Huntington Beach, CA	\$3,285,000	Bird restoration and fish hatchery options identified; considering projects to address recreational losses
Mobil Mining/ Pasadena, TX	\$2,235,000**	Creation of tidal wetlands, upland buffer and freshwater wetland
Dixon Bay/ Mississippi River Delta, LA	\$15,000**	Emergent marsh created by freshwater diversion project
Greenhill Well Blowout/ Timbalier Bay, LA	\$845,000**	Creation of 21.7 acres of intertidal wetlands
Tampa Bay Oil Spill/ Tampa Bay, FL	\$2,900,000 \$15,000	Creation of up to 12 acres of salt marsh and mangroves by responsible party; Restoration actions for birds, turtles, sand loss, sediments, surface waters, and recreational uses of waterways and beaches; Emergency restoration of an oyster reef has been completed
Elpis/ Florida Keys National Marine Sanctuary, FL	\$1,600,000	Coral reef structural repair complete; biological restoration and monitoring ongoing
Alec Owen Maitland/ Florida Keys National Marine Sanctuary, FL	\$1,080,000	Coral reef structural repair complete; biological restoration and monitoring ongoing

R/V Columbus Iselin/ Florida Keys National Marine Sanctuary, FL	\$3,042,800	Preferred restoration includes reef stabilization and recreating pre-existing habitat structure
Jacquelyn L/ Florida Keys National Marine Sanctuary, FL	\$125,127	Preferred restoration is on-site coral transplanting, rubble stabilization, framework repair, and monitoring
M/V Fortuna Reefer/ Mona Island, Puerto Rico	\$1,050,000	Emergency restoration of living corals completed; compensatory restoration projects under consideration
Army Creek/ New Castle Co., DE	\$800,000	Upland wetland and anadromous fish habitat restoration; state completed survey of marshes and surface waters
Presidente Rivera/ Delaware River, PA	\$2,141,000	Acquisition and restoration or coastal habitat, shoreline stabilization under consideration
Exxon Bayway/ Arthur Kill, NY/NJ	\$14,021,913	Draft regional restoration plan completed; marsh restoration and habitat acquisition underway
Nautilus/ Kill Van Kull, NY/NJ	\$3,300,000	Piping plover restoration underway; educational Interpretive Center constructed
World Prodigy/ Narragansett Bay, RI	\$567,000	Salt marsh restoration, lobster habitat enhancement, shellfish spawner sanctuary, and eelgrass bed restoration
New Bedford Harbor/ New Bedford Harbor, MA	\$18,954,192	Evaluation of restoration options pending EPA actions; projects will address injuries to wetlands, recreational areas, water column, habitat, living resources and endangered species

* Partial settlements to date ** Estimated amount/in-kind services

Source: NOAA (1995)

Why is Restoration Important?

Today, more than sixty percent of the U.S. population lives along its coastal areas. Estuaries and coastal areas, both land and water, provide critical habitat for many species including waterfowl, wildlife, fish, and marine mammals. Yet coastal areas are no longer the clean, abundant habitats they once were.

Restoration is a crucial component of efforts to reverse the effects of coastal pollution; it is the only activity that directly addresses environmental harm caused by humans. By rehabilitating or replacing resources, restoration offsets some of the pressures put on our coasts and helps ensure valuable resources will be available to future generations.

Oil spills can degrade the environment and harm many species. When injury occurs, natural resource trustees are responsible for restoring the affected resources on behalf of the public. Trustees assess the injuries and pursue compensation to restore or replace injured resources, as well as recover the cost of assessing damages. Following the principle of "polluter pays," trustees recover damages from those responsible for the pollution to compensate for the impacts to public trust resources. Under law, recovered damages must be used to correct or offset resource loss or degradation. Funds may not be used for other purposes, such as compensation of budget deficits or support of unrelated programs.

What is Restoration?

Natural resource trustees' goal in planning restoration after a spill or release is to achieve primary and compensatory restoration. Primary restoration encompasses actions taken by trustees to accelerate the recovery of an injured resource to its baseline -- the condition of the resource had the incident not occurred. Natural recovery is considered in the analysis of options for implementing primary restoration. A key point is that trustees attempt to restore the resource to baseline rather than to pristine conditions. To do otherwise would unfairly burden the responsible party who pays for these activities.

Compensatory restoration compensates for the interim loss of the resource from the time the injury occurs until restoration is complete. While the resource is impaired, it is unable to carry out the complete suite of functions on which people and other elements of the ecosystem rely. For example, contaminated fish cannot be eaten, fouled beaches cannot be used, and reduced populations of fish and shellfish may not be harvested. Trustees replace these interim losses by enhancing productivity and access or by providing replacement resources.

Greenhill Oil Spill

On September 29, 1992, a petroleum oil well blowout occurred in Timbalier Bay, Louisiana. The blowout released between 72,000 and 122,000 gallons of Louisiana crude oil. The spill affected intertidal marshes that provide wildlife and estuarine nursery habitat and promote storm erosion protection. The spill also adversely affected marine and estuarine fish, bottom dwelling species, birds, and sediments.

NOAA worked with co-trustees to conduct a natural resource damage assessment for this incident. The trustees undertook an ecological analysis to determine the scale of wetland creation necessary to compensate for injuries, while minimizing both the cost and duration of the assessment. Greenhill, the party responsible for the spill, presented several restoration options to

the trustees. The final settlement provided for the creation of 22-acres of tidal marsh and monitoring of the created wetlands. The responsible party agreed to implement the project with trustee oversight. Greenhill began creation of new marsh areas in December 1993. The major construction and planting was completed by October 1994.

M/V Fortuna Reefer Vessel Grounding

On July 24, 1997, the container ship *Fortuna Reefer* ran aground on the fringing coral reef surrounding Mona Island, Puerto Rico. The grounding site was dominated by a well-established thick of elkhorn coral, *Acropora palmata*. As a result of the incident, 6.8 acres of the reef area were impacted.

NOAA worked with co-trustees and the responsible party (Rama Shipping Company of Thailand) to plan and initiate an emergency restoration effort. The major resource concern at the time of the grounding was the timely removal of injured coral from sand areas where they were being smothered. This removal also minimized additional damage to the broken coral pieces from swell and wave motion. The emergency restoration re-established the physical structure of the coral reef community and reduced coral mortality. Restoration consisted of immobilizing loose branches of elkhorn coral by securing them to the reef buttress with stainless steel wire and nails.

A number of stabilization methods were tested to determine the optimum approach. Due to the density and hardness of the reef structure, the selected method consisted of drilling holes into the reef, driving nails into the holes and wiring corals to the reef. Stainless steel materials were used to minimize corrosion and increase the longevity of the repair effort. From September until mid-October 1997, 1,857 coral fragments were stabilized and monitoring stations established to track the success of the restoration effort. Within a two and a half month period after the grounding, all emergency restoration work was accomplished.

Natural Resource Damage Assessment Under the OPA Rule

The regulations for conducting NRDA under OPA were built upon NOAA's experience in DARP. This experience led NOAA to change the way of determining environmental liability following an oil spill. Instead of collecting damages, then determining how to spend that money on restoration, the goal of the assessment is timely, cost-effective restoration of the natural resources that have been injured.

The assessment process described under the OPA NRDA regulations strives for a coordinated and open NRDA process. Both the responsible party and the public are invited to participate from the beginning of the NRDA. Settlement of claims without litigation is more likely when the responsible party has participated in evaluating alternatives and developing the final restoration plan. Final restoration plans are presented to responsible parties for funding. In addition, the rule allows responsible parties to implement trustee-approved and monitored restoration plans. Of course, if there is no settlement, NOAA may bring a civil action against the

responsible party or seek payment from the Oil Spill Liability Trust Fund established under OPA.

The rule provides for the use of a range of appropriate and cost-effective procedures for an assessment. Procedures allowed under the regulations must meet the following standards: relevant to the type and scale of restoration appropriate for a particular injury; additional cost of a more complex procedure must be reasonably related to the expected increase in the quality and/or quantity of information provided; and reliable and valid for the particular incident. If there are two or more equally appropriate assessment procedures, trustees must select the one procedure that is most cost-effective.

The natural resource damage assessment process in the rule has three phases: 1) preassessment; 2) restoration planning; and 3) restoration implementation. Each of these phases is to be focused on the goal of determining the need for and scope of restoration. This process is designed to result in feasible, cost-effective and timely restoration of those natural resources and services injured by an incident.

Preassessment Phase

When notified by response agencies of an incident, trustees first determine if the natural resource damage provisions of OPA are applicable to the incident and if there are natural resources at risk of injury. Trustees then make a preliminary determination whether natural resources or services have been or are likely to be injured. Through coordination with response agencies, trustees next determine whether response actions will eliminate the threat of ongoing injury. If injuries are expected to continue, and feasible restoration alternatives exist to address such injuries, trustees may proceed with the assessment.

Restoration Planning Phase

The purpose of restoration planning under the rule is to evaluate potential injuries to natural resources and services and use that information to determine the need for and scale of restoration actions. Restoration planning is where potential injuries to natural resources and their services are evaluated to determine the need for and scale of restoration. This planning process provides the link between injury and restoration.

The trustee conducts injury assessment to determine the nature and extent of injuries to natural resources and services, thus providing a technical basis for evaluating the need for, type of, and scale of restoration actions. Trustees must also quantify the degree, and spatial and temporal extent of injuries. Injuries are quantified by comparing the condition of the injured natural resources or services to baseline, where necessary.

Once injury assessment is complete, trustees must develop a plan for restoring those natural resources and services that have been injured. First, the trustee develops a reasonable range of restoration alternatives, consisting of feasible, cost-effective actions. Restoration

actions under the rule are either primary or compensatory, as defined previously. Primary restoration refers to actions taken to return the injured natural resources and services to baseline - that is where the natural resources and services would have been but for the incident - on an accelerated time frame. Natural recovery also must be considered under primary restoration, in which no human intervention is taken to directly restore injured natural resources and/or services to baseline. Compensatory restoration includes actions to compensate for interim losses of natural resources and/or services pending recovery.

Once the trustee has identified a range of possible restoration actions, the trustee must determine the correct scale of these actions to ensure that those actions would appropriately address the injuries identified. The trustee should consider actions that will provide natural resources and/or services of the same type, quality, and value as those injured. Determining the scale of these actions is necessary to ensure that a restoration action appropriately addresses the injuries resulting from an incident.

When trustees consider actions that provide natural resources and/or services of the same type, quality, and value as those lost, trustees may use the resource-to-resource (for example, replanting marsh grass to replace marsh grass killed by oiling) or service-to-service (for example, extending fishing season by three days to make up for three days lost due to closure of the fishing site during response to a spill) approach for scaling restoration actions in order to determine the appropriate quantity of replacement natural resources and/or services to compensate for the amount of injured natural resources or services.

When trustees must consider actions that provide natural resources and/or services that are of a different type, quality, or value than the injured natural resources and/or services, trustees may use the valuation approach to scaling. When using the valuation approach to scaling, trustees first calculate the value of the lost services and then determine the value gained from different scales of the restoration action. Trustees then select the scale of the restoration action under consideration that would provide value equal to the value lost. Responsible parties are liable for the cost of implementing the restoration action that would generate the equivalent value, not for the calculated interim loss in value.

Claims for "economic damages" have been eliminated under this approach. The rule fully responds to the goal of OPA to make the environment and public whole for natural resource injuries. To do so, the public must be compensated for the losses of natural resources and their services from the time of injury until recovery of the natural resources. Following the rule, the trustees identify what compensatory restoration actions are to be implemented in order to compensate the public for the interim losses. The claim is the cost of those actions -- not for the interim loss in value.

The identified restoration alternatives are evaluated based on a number of factors including, but not limited to, cost, likelihood of success, etc. Trustees must select the most cost-effective of two or more equally preferable alternatives. A Draft Restoration Plan will be made available for review and comment by the public. The Draft Restoration Plan will describe the

trustees' preassessment activities, as well as injury assessment activities and results, evaluate restoration alternatives, and identify the preferred restoration alternative(s). After reviewing public comments on the Draft Restoration Plan, trustees must develop a Final Restoration Plan. The Final Restoration Plan will become the basis of a claim for damages.

Restoration Implementation Phase

The Final Restoration Plan is presented to the responsible parties to implement or to fund the trustees' costs of implementing the plan, thus providing the opportunity for settlement of damage claims without litigation. Should responsible parties decline to settle a claim, OPA authorizes trustees to bring a civil action for damages in federal court or seek the cost of implementing the restoration plan from OPA's Oil Spill Liability Trust Fund.

Cooperative NRDA: What Trustees Need

When approaching a potential cooperative assessment with trustees, companies should understand that there are certain things trustees want and things trustees are required by law to have. Trustees have a great deal of flexibility in working within a cooperative assessment when these minimum conditions are met.

One important condition for trustees is to focus the cooperative assessment on restoration. "Restoration" planning in this context has two objectives. The first is to consider actions that will prevent or minimize further injuries to natural resources. Where response or remedial planning processes are initiated, the trustees can work with companies and response/remedial agencies to ensure this first objective is achieved through response/remedial actions. The second objective is to consider the nature and scale of restoration actions that are appropriate to compensate for interim losses of natural resources or resource services.

Another consideration is the need to have an identified framework for cooperative planning. The framework should identify and organize the participants and set forth the process for cooperative planning. The framework should also define the effect products of the cooperative planning process will have on the legal relationship of the parties. This framework can take various forms, e.g. Memorandum of Agreement, Consent Decree, etc.

A third condition is the need to reach consensus decisions within the cooperative assessment group. Although trustee authority to make assessment decisions cannot be abrogated, cooperative planning should strive for consensus among the parties on the nature and extent of any injury assessment and/or restoration planning work to be undertaken. The opportunity for consensus may extend to the overall structure for the assessment/restoration planning process (e.g., potential injuries to be included, phasing, etc), the specific design and analytical protocols to be used in any additional sampling or other investigations in the estuary, the entity or contractor who will implement the work, the form for data delivery, etc.

Also important to trustees and companies is data sharing. Data produced cooperatively should be fully available to all parties. The best way to ensure that all parties are comfortable with working in a consensus mode is to make sure that these parties all have the same information base.

Another important factor for trustees is public participation in the assessment. The cooperative process needs to leave open, or even plan for, the opportunity for public participation at appropriate times and places as restoration plans are developed. Trustees are required by law to ensure public involvement in NRDA's except in certain limited circumstances, e.g., emergency actions, settlement negotiations, etc. Therefore, this component is one that trustees cannot ignore.

Finally, another consideration for trustees is funding for the cooperative assessment. The cost of cooperative assessment and restoration planning activities, including the trustees' participation, will be borne by company participants. Terms and procedures for covering this element should be included in any cooperative agreement defining the cooperative assessment and restoration planning process.

This listing of trustee wants and needs is not intended to be a complete accounting of what will be involved in every cooperative assessment, but is intended to provide a general understanding for companies of the various qualities of a successful cooperative assessment. An example of how these issues are incorporated into an actual cooperative assessment is Lavaca Bay.

Lava Bay Cooperative Assessment

The Alcoa Point Comfort/Lavaca Bay Site was added to the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), on March 25, 1994 (59 Fed. Reg. 8794, February 23, 1994). The listing was primarily based on levels of mercury found in several species of finfish and crabs in Lavaca Bay, a fisheries closure imposed by the Texas Department of Health (TDH) in 1988 due to mercury levels found in fish, and levels of mercury detected in bay sediments adjacent to the facility. Alcoa, the State of Texas, and the U.S. Environmental Protection Agency (EPA) signed an Administrative Order on Consent (AOC) under CERCLA in March 1994 for the conduct of a remedial investigation and feasibility study (RI/FS) for the site. The AOC set out the schedule and terms for planning and implementing the Remedial Investigation/Feasibility Study (RI/FS).

Once the site was listed on the National Priorities List (NPL) and the AOC was issued, the focus of NRDA planning shifted to maximizing the usefulness of the remedial process to minimize and define any NRDA claim residual to the remedial action. A Cooperative Management Agreement (CMA) between the federal and state response and trustee agencies was signed. The CMA established coordination procedures among the agencies deemed necessary to facilitate the development of the FI/FS investigations at the site and remediation decisions that

would also address trustee needs and interests. Alcoa also agreed to fund consultations for up to 2 years with trustees on NRDA data needs, concerns, and issues that related to the development and implementation of the RI/FS.

As RI/FS planning proceeded under the AOC, the Trustees and Alcoa entered into a Memorandum of Agreement (MOA). The MOA established objectives and framework procedures for the conduct of a cooperative assessment of natural resource injuries attributable to the site and of the restoration actions that would be appropriate to compensate for those injuries. The provisions of the MOA were intended to facilitate an expedited, restoration-focused, cost-effective and efficient injury assessment and restoration planning process. Early in the cooperative assessment process, Alcoa funded and participated in early sediment sampling in the bay and in the development of a conceptual food web model, as a precursor to potential further NRDA work.

Cooperative assessment planning pursuant to the MOA has proceeded in parallel to the RI/FS underway for the site. Where appropriate, assessment planning has incorporated and considered data and other information from investigations or analyses undertaken as part of the RI/FS process. Throughout the assessment process, the Trustees have sought to ensure that its outcome - the identification of appropriate restoration actions - would function to make the public and environment whole for any resource injuries or service losses attributable to site releases or necessary remedial actions. Details regarding the application of the approach to identify and quantify particular resource injuries or service losses are outlined in a series of Technical Memoranda being developed by the trustees and Alcoa to describe the methods used to assess each injury or loss.

This cooperative approach with Alcoa has facilitated a conservative, rapid evaluation of the resource injuries that may be attributable to the site, as well as the potential extent of such injuries. It is allowing determinations of natural resource injuries and service losses in this assessment to take advantage of the considerable amount of relevant, existing data and information, including from historic sources, remedial investigations, and other relevant scientific reports or investigations. Where existing information provides credible scientific parameters and a technical foundation for conservative (favoring the public's interests) but reasoned judgments about resource injuries attributable to the site, the approach allows the assessment process to proceed without pursuing specific injury studies. Minimizing the need for specific injury studies to complete the assessment saves time and results in a more efficient and cost-effective process. It also serves to accelerate the trustees' ability to identify and scale restoration actions appropriate to compensate for natural resource injuries and services losses and, in a cooperative assessment, can expedite the trustees' ability to obtain the restoration actions found to be appropriate to make the public and the environment whole.

New Directions for NRDA

NOAA is committed to increasing the effectiveness and timeliness of damage assessment and restoration efforts. NOAA strives to improve a common understanding of the NRDA

process, develop consistent natural resource trustees approaches, and adopt approaches that make the process less onerous. Additionally, NOAA is aggressively exploring new ways to streamline the damage assessment process and expedite restoration of the public's natural resource heritage.

One example is NOAA's consideration of initiating a program to allow responsible parties to voluntarily address their liability for natural resource damages. The concept for this new program is that cooperative companies will have the opportunity to help determine how their natural resource liability will be resolved through a joint process designed and supervised by trustees. This will enhance the restoration results generated by both the government and industry, and is directly responsive to industry's desires to minimize both the costs of assessment and uncertainty surrounding the timing of NRDA activities.

Another example is a study being conducted by NOAA on finding the optimum path to recovery following oil spills. As a natural resource trustee, NOAA believes that spill response actions should take the optimum path to recovery of the environment and people affected by a spill. Reorienting U.S. response actions to this approach will require both assessing economic and policy forces at work in spills and developing quantitative, scientifically based measures of success. This study will undertake two avenues of investigation: The first will focus on the policies and practices that control responders and the public during a response; and the second will look at scientific investigations necessary to develop meaningful environmental measures of a successful response. NOAA is hopeful that the results of this study will help reduce to a practical minimum the time for environmental recovery.

NOAA is also active in the international arena, dealing with various issues concerning the marine environment. NOAA participates in the International Maritime Organization (IMO) Legal Committee, the Marine Environmental Protection Committee, and the Maritime Safety Committee. Through its work at IMO, NOAA endeavors to gain a greater understanding of how the international community deals with environmental issues and to engage in sharing information and experiences.

Finally, NOAA has developed numerous technical guidance documents concerning different aspects of oil spills and other pollution events. In addition to these documents, NOAA has also developed guidance documents on how to determine and quantify injuries to natural resources resulting from oil spills and on how to restore those injured natural resources.

These examples demonstrate the commitment NOAA has made to improving NRDA for everyone involved in the process. We look forward to working with industry groups to identify new opportunities for improving NRDA and ensuring timely restoration of our common natural resources.

Conclusion

The natural resource damage assessment experiences of NOAA's Damage Assessment and Restoration Program over the years have led to the following conclusions:

- working cooperatively with responsible parties expedites restoration and reduces costs;
- restoration planning should begin as early as possible; and
- focusing on determining the appropriate scale of restoration projects is preferable to focusing on the monetary amount of damages.

These principles are reflected in the regulations for conducting natural resource damage assessments under OPA regulations.

NOAA's damage assessment and restoration efforts have made responsible parties more aware of releases of hazardous materials and their detrimental impacts on the nation's coastal and marine resources. In addition to restoring injured resources, the process provides incentives to the private sector to prevent injury, makes the polluter pay to restore public resources, and demonstrates that small investments in the damage assessment process yield big returns in restoration. Other benefits of NOAA's Damage Assessment and Restoration Program include: developing consistent approaches to NRDA among state, federal, and tribal trustees; establishing partnerships with industry to protect and restore natural resources; advancing the state of the art in environmental science and natural resource economics; and enhancing awareness among the general public of natural resource stewardship through public participation in the restoration planning process.

For further information on NOAA's Damage Assessment and Restoration Program, please visit the Program's website at: www.darp.noaa.gov