1993 TAMPA BAY OIL SPILL: A TALE OF TWO NRDAS, WITH ONE HAPPY ENDING

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[4]The NRDA described herein resulted from the dedication and work of many individuals, all of whom contributed to the cooperation achieved and its successful outcome. The following persons are recognized as key participants on behalf of the governments: For DEP - George Henderson of the Florida Marine Research Institute (FMRI), Nick Stratis and Pat Kingcade, Esq. and Maureen Malvern, Esq.; For NOAA - Doug Helton, David Chapman and Jim Jeansonne of NOAA's Damage Assessment Center and Michael Devaney and Don Wickham of NOAA's Restoration Center; For DOI/USFWS - Rick Dawson, Gregory Hogue, and Holly Deal, Esq; and For the U.S. Department of Justice: Jim Lofton, Esq.

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EXECUTIVE SUMMARY

On August 10, 1993, approximately 32,000 gallons of mixed light fuels and 330,000 gallons of #6 fuel oil were discharged into the Tampa Bay environment following collisions involving three vessels. The spill or associated response actions resulted in harm to a variety of natural resources, including birds, sea turtles, mangroves, seagrasses, salt marshes, oyster beds, surface waters, sediments and beaches, and significantly disrupted the use of area waterways, beaches and shellfish beds for public recreation.

The Tampa Bay spill the first major coastal oil spill in the nation following enactment of the Oil Pollution Act of 1990 (OPA) and the first major spill in Florida following enactment of Fla. Stat. 376.121, Florida's compensation statute for oil spills. It was also the first oil spill in which the Florida Department of Environmental Protection (DEP), the National Oceanic and Atmospheric Administration of the U. S. Department of Commerce (NOAA) and the U.S. Department of the Interior (DOI), acting through the U. S. Fish & Wildlife Service (USFWS), found themselves as co-trustees with concurrent jurisdiction and a joint interest in the conduct of a full natural resource damage assessment (NRDA).

The Trustees initially coordinated the collection of ephemeral field data and other information needed to identify the natural resource injuries and losses which occurred and, despite some initial uncertainty, also agreed to conduct a joint NRDA to address the natural resource injuries and losses. The Trustees sought to implement a restoration-based NRDA, to the maximum extent practicable.

The responsible parties (RPs) were early supporters of a restoration-focused NRDA process and became active and cooperative participants. Cooperation between the Trustees and RPs was not institutionalized in a Trustee/RP NRDA agreement, but rather was an ad hoc process with two primary mechanisms - a joint technical dialogue which focused on the substantive elements of the NRDA and a parallel set of discussions led by the parties' attorneys which considered and built on the areas of consensus or non-dispute which emerged from the joint technical discussions. Trustee/RP cooperation in this way was effective in developing the NRDA for the ecological injuries but did not prove workable for assessing the recreational service losses. As a result, the NRDA process evolved into two separate NRDAs - one addressing the ecological injuries and another addressing the recreational service losses - with two very different assessment experiences. A Damage Assessment and Restoration Plan (DARP Vol. I) covering the ecological injuries was completed in June 1997. The RPs' cooperation greatly facilitated the NRDA process for the ecological injuries, including the development of DARP Vol. I, and resulted in the early implementation of one restoration action on an emergency basis. Assessment activities to address the recreational service losses were undertaken separately by the Trustees due to early differences between the parties. Documentation of these activities in a DARP Volume II was pending when a settlement was reached.

All NRDA claims were resolved as part of a Consent Decree settlement which became final in May 1999. Under the settlement, NRDA claims for the ecological injuries were satisfied

consistent with DARP Vol. I. As part of the settlement, the RPs purchased more than 10 acres of severely degraded wetland/mangrove habitat prior to the execution of the consent decree for purposes of compensation for service losses during the incident. The RPs subsequently designed, permitted, made land form alterations, planted, and implemented monitoring of the site under the oversight of the Trustees. Ownership of the site has been conveyed to Pinellas County, Florida. The settlement also included compensation for the recreational service losses. Ecological restoration projects covered by the settlement are in various stage of planning and completion. A draft Restoration Plan/Environmental Assessment (Draft RP/EA) covering these losses and the use of those settlement funds was released for public comment on March 17, 2000.

2.1 DESCRIPTION OF THE INCIDENT

On the morning of August 10, 1993, the outbound freighter M/V BALSA 37 collided with the inbound tank barge OCEAN 255, and immediately thereafter collided with another inbound tank barge, the B-155, near the mouth of Tampa Bay, Florida. The OCEAN 255 caught fire upon impact and burned for approximately 18 hours. Collision damage to the B-155 resulted in the discharge of approximately 330,000 gallons of #6 fuel oil and of about 32,000 gallons of Jet A, diesel and gasoline oil from the OCEAN 255 into the waters of lower Tampa Bay. Initially, there was some oiling of exposed beaches, seagrass beds and mangroves in lower Tampa Bay (Fort DeSoto Park on Mullet Key and Egmont Key) but winds and currents carried most of the oil into open waters of the Gulf of Mexico, parallel to Pinellas County's heavily populated barrier islands, in the first few days after the spill. This oil, however, came rapidly ashore on August 14 and 15 on a strong storm front, stranding on the sandy beaches of the barrier island communities and moving through inlets into Boca Ciega Bay. The incident resulted in oiling of birds, sea turtles, mangroves, salt marshes, seagrasses, mud flats, oyster beds, seawalls in finger canals within Boca Ciega Bay and miles of shoreline, including sandy recreational beaches. Some of the fuel oil sank, forming mats on submerged sediments in offshore depressions, in passes, and in Boca Ciega Bay.

2.2 STATUS OF NRDA

Federal and State natural resource trustee agencies initiated a joint natural resource damage assessment process for this incident. A damage assessment and restoration plan (DARP Vol. I) for the ecological injuries and service losses was completed in June 1997. Work to plan and complete a damage assessment and restoration plan addressing the lost use of natural resources for public recreation was ongoing when all federal and state claims arising from the incident settled in May 1999. Restoration actions required to compensate for the ecological injuries and losses caused by the spill have been undertaken or are being funded under the settlement by parties responsible for the spill, consistent with DARP Vol. I. The settlement also included funds to plan and implement restoration actions to compensate for the lost recreational use of natural resources. A draft plan outlining restoration actions preferred for use to address the recreational services losses (Draft RP/EA) was released to the public for review on March 17, 2000.

2.3 TRUSTEES/RESPONSIBLE PARTIES

The Trustees involved in the NRDA process are the DEP, NOAA and DOI, acting through the USFWS (hereafter, "Trustees"). All three agencies have been active participants in assessment and restoration planning for the ecological injuries and losses. Restoration planning to address the recreational losses is being carried out by DEP and NOAA.

Bouchard Transportation Company, Inc. and Maritrans General Partners, Inc. were designated "Responsible Parties" by the U. S. Coast Guard under OPA as each owned and operated a spilling vessel (the B-155 and OCEAN 255, respectively). Tsacaba Shipping Company, the owner of the BALSA 37, and two entities involved in its operation at the time of the spill, Dowa Line America Co., LTD and Hiong Guan Navegacion Co., were also viewed as potentially responsible or liable for the spill incident and, as such, were invited to participate in the NRDA process[1]. The West of England P&I Club, the insurer of both the B-155 and the OCEAN 255, was also a participant, at least to the degree required to monitor and oversee the NRDA process on behalf of its interests. These entities are hereafter generally referred to as "the RPs".

2.4 RESOURCES AT RISK/INJURIES OR LOSS OF SERVICES SUSTAINED

The diversity and abundance of natural resources in the Tampa Bay environment combined with the large exposure area put many resources at risk. Within days of the initial discharge, the Trustees had identified 10 different natural resources with known or potential injuries or losses given the characteristics of the oil, its movement and fate in the environment, or response actions being undertaken. Three of these - beaches, surface waters, and shellfish beds - involved both ecological and human (recreational) service losses. The Trustees carried 13 natural resource injury or loss categories forward for further evaluation in the NRDA process[2]. Of these, 12 were actually assessed further in the NRDA process[3]. These 12 injury or loss categories are described briefly.

2.4.1 ECOLOGICAL INJURIES AND LOSSES

The assessment of ecological injuries focused on effects to nine different resources: mangroves, seagrasses, water column (i.e., surface waters), birds, sea turtles, salt marshes, shellfish beds, bottom sediments and beach as a physical habitat or resource. The injuries sustained to each are outlined in Table 2.4.

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1 Lane Cameron of Dames & Moore, Seattle, Washington, was designated as an "observer" for the interests of the BALSA 37 during the NRDA.

2 Initially, marine mammals and dune vegetation on sandy shorelines were considered at risk by the Trustees. These were dropped from further consideration during the preassessment review because there was no evidence to indicate either resource was affected by any oil or response actions.

3 One resource loss category - the lost use of Tampa Bay surface waters for commercial navigation - was later dropped from the assessment. Commercial navigation into and out of Tampa Bay was affected by a closure and traffic restrictions required to protect public safety and accommodate the response to the fire aboard the OCEAN 255, the oil spills and the damaged vessels. It was dropped because its public claim potential was later judged to be limited and insufficient to warrant anticipated assessment costs. Further, no third party claims were presented to the RPs related to the disruption of commercial navigation.

Table 2.4 Ecological Injuries and Losses

Resource	Injury Sustained
Mangroves	Estimated 5.5 acres moderately to heavily oiled; mortality & ecological services impairment.
Seagrasses	Estimated 2.5 acres of seagrasses lost due to smothering (submerged oil) or physical impacts (response).*
Water Column	Water-soluble fractions & oil droplets (surf zone) in water column; harmful to planktonic organisms/fishery resources present; about 327 sq. miles of surface waters potentially exposed.
Birds	366 oiled/injured birds; injuries incl. death & effects of oiling, ingestion, & stress.
Sea Turtles (incl. endangered and threatened species)	One juvenile green sea turtle (endangered) and 2177 loggerhead sea turtle (threatened) hatchlings and eggs injured by oiling or response; injuries incl. death, reduced hatching success & other effects of oiling & disturbance.
Salt Marsh	Estimated 0.75 acres of salt marsh vegetation w/observable effects from oiling.
Shellfish Beds	9,477 sq. ft. of intertidal oyster beds lost due to smothering (submerged oil) or physical impact (response); about 1 vertical ft. of 20 linear miles of shellfish encrusted seawalls also oiled.
Sediments	Estimated 58,540 sq. ft. of subtidal sediments injured due to cover/smothering by sunken oil; injuries incl. mortality to subtidal organisms.
Beach Physical Loss (Sand Removal)	Estimated 39,827 cubic yards of sand removed from public beaches incident to response.

* Potential effects to another 255 acres (exposure from floating oil) were also evaluated, but led to finding of no detectable injury by the Trustees.

2.4.2 Lost Services of Resources for Public Recreation

The assessment of recreational service losses to the public was concerned with the lost access to or use of three resources for recreation: area surface waters, shoreline beaches and shellfish beds. Each is used by both residents and tourists for a variety of recreational activities, including swimming, fishing, boating, and sunbathing. Waterway closures and other response actions restricted the public's access to and use of waters of both Boca Ciega Bay and lower Tampa Bay for recreation. The oil hazard and cleanup resulted in actual or de facto closure of about 13 miles of popular recreational beaches for three weeks. Shellfish beds in lower Tampa Bay and southern Boca Ciega Bay known to be used for recreational shellfishing were closed due to hydrocarbon levels found in shellfish. The beds in Boca Ciega Bay were closed for 109 days and in lower Tampa Bay for 42.

2.5 Response Actions and Effectiveness Re: NRDA

Maritrans and Bouchard accepted their designation as Responsible Parties and conducted the spill response under the supervision of federal and state authorities. Spill response activities included source control, containment, diversion, and cleanup of oil from surface waters and

affected shorelines. Special spill response efforts were also directed toward the care and treatment of oiled birds and the protection of sea turtle nests and nesting areas. Response actions were very effective in removing the oil from public beaches. All oiled beaches were cleaned and available for normal public use by September 1. The removal of oil from mangroves, seagrasses, salt marshes, and shellfish beds was more difficult. Minimizing unnecessary further harm to these resources was a critical consideration. The RPs recognized the need to minimize injury to several resources in the course of cleanup operations. Oiled mangroves were carefully treated with specialized techniques and equipment and very closely monitored by personnel. This treatment resulted in low mortalities as compared with other incidents and lower mortalities than anticipated for this resource. In some instances (e.g., seagrasses and oyster beds), with the Trustees' concurrence, further oil removal was judged to risk greater harm than leaving oil in place. Clean-up methods appropriate for use in these habitats were also generally less efficient. Submerged oil on bottom sediments proved hard to locate due to its patchy distribution, continued movement and burial by natural processes. When located, it also proved very difficult to effectively remove. Some periodic re-oiling of beaches incident to storms occurred up to the spring of 1996. Submerged oil was located incident to beach renourishment dredging and led to additional response actions in early 2000 (discussed in Section 3.2.3). The potential effects of residual oil were considered in the injury assessment, and in one instance (also discussed in Section 3.2.3), gave rise to an emergency restoration action early in the cooperative NRDA process.

2.6 SUMMARY/DESCRIPTION OF NRDA PROCESS

2.6.1 INTRODUCTION

The NRDA process for the Tampa Bay oil spill was initiated coincident with the response and remained an active process until settlement. The Trustees documented their decision to proceed with a formal NRDA (Preassessment Screen Determination, 11/2/93) and several months later publicly outlined their assessment strategy (Natural Resource Damage Assessment Strategy, May 1994). The RPs were promptly invited and accepted the Trustees' invitation to participate in a cooperative NRDA process.

From the beginning, both the Trustees' and RPs' strategy was to integrate resource restoration objectives to the maximum extent practicable in conducting the assessment of resource injuries and losses and to expedite the NRDA process. Informal Trustee/RP meetings to discuss assessment issues and plans from a scientific perspective began in the field in the first week of the incident. The parties worked on a Trustee/RP Memorandum of Agreement (MOA) in earnest starting in October 1993 to support the conduct of a cooperative NRDA but could not readily agree on its terms and, as the technical dialogue progressed effectively on an ad hoc basis, time spent on resolving MOA issues waned. An MOA was never completed[4]. The ad hoc technical dialogue between the parties continued over many meetings and several years, in parallel to the Trustees' assessment activities.

[4] The inability of the parties to complete an MOA is perhaps not surprising considering this was the first major cooperative NRDA under OPA and was further complicated by the unusual and complicated fact pattern of a three-way collision and multiple RPs.

The Tampa Bay NRDA process evolved into two separate NRDAs - one for the ecological injuries and another for the recreational service losses. The paths for assessing these two types of claims diverged fairly early on and, as a NRDA case study, present two very different assessment experiences, including interactions between the Trustees and RPs. The NRDAs for these two types of claims are described separately in this section.

Finally, both the timing and the context in which this NRDA occurred are important to understanding the assessment process as it came to be defined, including the cooperation which occurred between the parties. Viewed in retrospect, it can be seen as shaped or influenced by many factors, including some - like the larger 'political' climate then surrounding NRDA - beyond the control of those directly involved in this process. The 'political' climate, for instance, is relevant to an understanding of the differences between the NRDA processes undertaken for the ecological and recreational service losses. Such factors are noted where relevant to issues discussed below.

2.6.2 ORGANIZATION OF TRUSTEE COUNCIL

The Trustee Council was identified in a Trustees' Memorandum of Understanding (MOU) (final 3/1/94) and comprised of one representative from each Trustee agency. For NOAA and DOI, designated Council members were also technical personnel actively involved in the assessment, including the Trustee/RP technical dialogue. DEP was represented on the Council by the head of its Bureau of Emergency Response. Other DEP technical personnel were generally relied upon to represent DEP in assessment planning and Trustee/RP technical meetings.

2.6.3 ORGANIZATION OF RPS' TEAM

Initially, the West of England dispatched two separate teams to deal with this incident, because it was unclear whether one or both of the vessels had caused injury, and whether the injuries caused by the spills may have overlapped. However, it was quickly decided by the RPs' that collision liability issues should be kept separate and distinct from the NRDA. Since both the OCEAN 255 and the B-155 were insured by the West of England, the Club and these RPs quickly reached agreement to jointly participate in the NRDA. Eugene J. O'Connor, Esq. was the coordinator of the RPs' NRDA team and advised on Federal legal issues. Robert B. Parrish, Esq. acted as local counsel and advisor on all State legal issues. Gary S. Mauseth was the primary technical consultant on scientific issues and Rick Dunford was the primary economic consultant on public loss of use issues.

2.6.4 COOPERATIVE ASSESSMENT AGREEMENT AND PROCESS

As noted above, there was no MOA between the Trustees and RPs to document planning objectives or the terms and procedures for the conduct of a cooperative NRDA. Cooperation between the Trustees and RPs during the NRDA became an ad hoc process, with two primary mechanisms. The first was a joint Technical Working Group (TWG) comprised of the consultants or technical personnel working on behalf of the various parties on the NRDA or on NRDA issues. From the early days following the spill, this group, or subparts thereof, met or conferred frequently to discuss the substantive elements of the NRDA from a scientific or technical perspective, i.e., the quality and appropriate interpretation of data bearing on the

natural resource injuries and losses, methods available to assess injuries, additional data requirements, methods for valuing these injuries or losses, including restoration terms, and the form of restoration appropriate to provide for resources or services lost. The second mechanism was embodied in periodic meetings or conference calls among the attorneys for the parties, often with technical representatives participating. An attorney from the U.S. Department of Justice also participated. The attorneys' discussions largely worked from the issues, discussions, and progress of the technically-focused assessment dialogue. In these discussions, the restoration and compensation requirements emerging from the technically-focused assessment were considered as elements of a potential settlement and details for incorporating them into a settlement were addressed (e.g., acquisition of Cross Bayou property as restoration site, protocols for Trustee oversight of restoration actions to be implemented by RPs, and providing for transfer of property to public ownership). Both mechanisms featured open and constructive discussions of issues. These dual dialogues served to identify a technically appropriate NRDA for the ecological injuries as well as the eventual settlement of the NRDA claims.

The Trustees invested in the TWG dialogue as a means of identifying areas of technical agreement, which would serve to expedite the NRDA process, including restoration of resources or services agreed by both sides to be appropriate, and to facilitate the eventual resolution of all NRDA claims for this spill. The process was effective for the ecological injuries, although not in the way originally envisioned by the agencies. In seeking a formal MOA, the Trustees expected and proposed that areas of technical agreement be jointly acknowledged and documented by the TWG. This type of documentation by the TWG was not achieved. As early as June 1994, however, the dual dialogues had produced tentative agreement on compensation for some ecological injury categories. By June 1995, the parties were in general agreement on compensation for all ecological injuries, including the amount, type and location of the restoration to be implemented by the RPs as compensation for the mangrove and salt marsh injuries and the sums to be paid to support restoration actions for all other ecological injury categories. These agreements were consistent with DARP Vol. I, the Trustees' assessment and restoration plan for these losses. That plan was presented in draft for public review and comment in January 1996 and finalized in June 1997. Details of the parties' restoration and compensation agreements were documented as part of the Consent Decree settlement.

The TWG did not prove to be a workable forum for addressing the NRDA for recreational service losses. Preliminary discussions of the issues, methods and data needed to implement that assessment were marked by apparent differences on many fundamental technical issues, and ended fairly early in the TWG dialogue[5]. Therefore, under funding provided by DEP, the Trustees initiated a survey of recreational use of affected beaches in 1994, during the time corresponding to the "spill period", to indicate baseline use levels and a travel cost study to provide a basis for estimating the value of the lost recreational use of these beaches. As this work progressed, NOAA and DEP also began developing information on the potential project opportunities in the affected communities capable of restoring recreational access, services or

[5] This, too, is perhaps understandable, bearing in mind that in 1993 the maritime industry was greatly concerned about the prospect of Trustees assessing the loss of public use for recreational resources (e.g., beach use) by utilizing the controversial contingent valuation methodology, which had come under heavy criticism from some quarters.

benefits like those lost. The Trustees anticipated using information from this restoration scoping effort in outlining an assessment and restoration plan for the recreational losses (i.e., a DARP Vol. II). That NRDA task was still pending when the settlement was reached.

The RPs embarked on a parallel course of action and retained their own team of experts, who also designed and carried out a survey of recreational use of the impacted beaches and used a random utility model to estimate the value of the lost recreational use of these beaches. Both the Trustee and RP studies were still pending when the settlement was reached.

2.6.5 EPHEMERAL DATA AND SAMPLE COLLECTION

An extensive network of universities, research facilities and governmental agencies with a vested interest in Tampa Bay began collecting ephemeral data before the fire was extinguished on the OCEAN 255. The Trustees' representatives began coordinating and focusing their efforts and contractual resources within the next day or two. The initial area for resource impacts was relatively discrete, which facilitated this early coordination. Initial data collection included source oil collection, wildlife surveys, sea turtle nest monitoring, water column sampling, shellfish tissue sampling, aerial mapping of oil plume, ground surveys of impacted sites, documentation of marine traffic restrictions, ichthyoplankton (larval fish) sampling and faunal and epifaunal sampling in seagrass beds. When the oil plume was blown back onshore four days later, the level and extent of resource impacts greatly increased. Sampling was expanded to include the seagrasses and mangroves within Boca Ciega Bay, ground surveys were extended to other areas, wildlife surveys were expanded, aerial infrared photography of oiled shoreline vegetation was initiated, and ongoing studies of beach surf zone fishes and sand beach infauna were expanded.

RP representatives actively participated in the study design and collection of some of these data.

2.6.6 INJURY ASSESSMENT STUDIES

The Trustees' and RPs' technical staff met early on to identify resources at risk using local knowledge and environmental sensitivity index maps. Once identified as "at risk", each resource was evaluated as to the level of impact, if any, sustained. Once the crisis phase of the spill passed, the Trustees' technical staff conducted a preassessment review of all the data and other information documenting resource injuries. This preassessment screen also served to focus and resolve further data collection needs. As noted in Section 2.4, ten resources were initially identified as "at risk". The preassessment screening review process indicated nine actually suffered injury or a service loss of some kind. Thirteen types of injury or loss were initially represented, with 12 addressed further in the injury assessment process. The injuries or losses sustained are summarized in Table 2.4.

Ecological Injuries: For some years, Tampa Bay has been the subject of extensive monitoring and research. The bay environment is recognized as an integral part of both the high quality of life and the foundation for many of the area's industries. Therefore, substantial existing data bearing on resource conditions within the system was available for use as a baseline for assessment activities. Many research scientists had existing projects within the spill zone and

were available to assess spill impacts within their study sites, in comparison with existing, longer-term data. The Trustees' and RPs' technical staff reviewed long-term research projects within the spill zone to ascertain which projects would be relevant in assessing injuries and, where appropriate, incorporated these opportunities into the injury assessment process.

Under funding provided by NOAA and DEP, studies were initiated to document lethal and sub-lethal injuries to the mangroves in Boca Ciega Bay. These studies were designed to assess injuries from all degrees of oiling (from sheen to heavy oiling) and to provide data needed to support the application of a Habitat Equivalency Analysis (HEA) as a basis for defining resource compensation. The Trustees' technical staff determined that a HEA would be the most effective quantitative tool to identify restoration-based compensation for the injured mangroves. These studies continued on a monthly basis until April 1996. While the Trustees' and RPs' technical representatives did not necessarily agree on the values for several input parameters, the HEA served to narrow the scope of potential restoration actions and facilitated settlement.

Table 2.6 outlines the injury assessment methods used to address the ecological injuries and losses.

Recreational Service Losses: Aerial photography of oiled beach areas and other documentation obtained or generated during the spill period indicated that the spill and associated response actions substantially impacted recreational use of area waterways and beaches. Beach use levels were substantially impacted until September 1, 1993, to the point of having virtually no recreational use during this period. As noted previously, under funding provided by DEP, the Trustees initiated a survey of recreational use of affected beaches in 1994, during the time corresponding to the "spill period", to indicate baseline use levels. Analysis of this information provided an estimate of the "beach user days" that would normally have occurred absent the spill, with 280,000 such days estimated by the Trustees to have been lost. The RPs estimated about 172,000 lost beach user days based on surveys conducted by their experts.

2.6.7 DAMAGE ASSESSMENT

Ecological Injuries: For each resource injury category, the extent and rate of natural recovery and the interim loss until full recovery was evaluated by the joint TWG. In 1994, a secondary field survey was performed to evaluate the extent of natural recovery for mangroves, seagrasses, saltmarsh & shellfish beds. Based on that survey, it was determined that action would be necessary to facilitate and ensure the recovery of two resources in Boca Ciega Bay - mangroves and shellfish beds. An emergency restoration project was undertaken by the RPs, under Trustee oversight, to further remove contaminated oyster reef and to then stabilize the oyster reef and adjacent mangrove system by replacing clean fossilized shell.

The assessment process took into account the length of the interim loss until these resources recovered to their pre-spill baseline. For each injury or loss category, restoration objectives were identified and restoration options separately evaluated. For the injured habitats, the TWG sought to use in-kind restoration at the site of injury whenever possible as the basis for compensating for interim losses, however, this option was not available for a number of injury

categories. For mangroves, for instance, on-site restoration activities would have caused further harm to the injured resources.

The HEA was used to evaluate and scale both mangrove and seagrass losses. Application of specific parts of the NRDAM/CME computer model[6] were used to scale water column and bottom sediment damages.

Table 2.6 outlines the damage assessment methods used to address the ecological injuries and losses.

Recreational Service Losses: As noted previously, under funding provided by DEP, the Trustees initiated a travel cost study to estimate the value of the lost recreational use of the affected beaches. While this work proceeded, NOAA and DEP began developing information on restoration project opportunities in the affected area capable of restoring recreational access, services or benefits like those lost. Table 2.6 also outlines the assessment and restoration planning approach for these losses. The RPs funded a separate study utilizing a random utility model for the same purpose.

2.6.8 RESTORATION OPTIONS INCLUDING NATURAL RECOVERY

For several injured resources, natural recovery processes (the "no action" restoration option) were found sufficient to provide for recovery, i.e., the return to baseline conditions or service levels, within a reasonable period of time. Primary restoration actions were identified only to facilitate the recovery of birds, sea turtles, shellfish beds and adjacent mangroves in Boca Ciega Bay, and the physical loss of sand from the beaches. The Trustees found further restoration actions to be necessary or appropriate to compensate for the interim loss of resource services associated with their injury due to the spill for all injuries or loss categories except birds, sea turtles and the physical beach sand loss. Table 2.6 summarizes the Trustees' restoration strategies.

[6] This refers to the Natural Resource Damage Assessment Model/Coastal and Marine Environments computer model promulgated under 43 C.F.R. Part 11.

Table 2.6 Tampa Bay Oil Spill NRDA Components

Injury	Injury Assessment Method	Damage Assessment Method	Restoration Approach
Mangroves	Ground surveys, aerial photography, and resource impact studies used to determine extent, nature, and duration of injury.	Use HEA to determine appropriate scale of restoration; determine cost to implement the appropriate projects plus cost of any actions to promote recovery of injured area.	* Promote natural recovery of injured areas by stabilizing fringing oyster reef (see shellfish beds below) & protecting oil-exposed islands with fringe plantings of salt marsh grasses or mangrove propagules, as needed; * Replace interim loss by creating/enhancing mangrove habitat in the Boca Ciega Bay system.
Seagrasses	Aerial photography, exposure surveys, and community analysis used to determine amount of area injured and estimate recovery rate.	Use HEA to determine appropriate scale of restoration; determine cost to implement the appropriate projects.	* Natural recovery for injured areas; * Replace interim loss by improving Boca Ciega Bay water quality, with preference for projects with benefit for seagrass communities.
Water Column	Define water column injury using NRDAM/CME model; use collected information to apply.	Determine compensation by applying/using NRDAM/CME model output for water column injury only.	* Natural recovery for water column injuries; * Compensate for interim loss by funding water quality improvement projects and/or for artificial reefs or seawall encrusting communities in the area.
Birds	Used records of injured birds from bird rehabilitation centers as representing 50% of birds actually injured; total injured birds ' rehab # (366) times 2 or 732 birds.	Cost to replace the number of birds injured.	* Rehabilitate or protect birds that otherwise would be lost by augmenting and/or enhancing existing bird rehabilitation programs, maintaining or augmenting bird rescue equipment, or removing fishing line from bird habitats.
Sea Turtles	Response records used to estimate number of sea turtles & eggs exposed to oil or disrupted by response activities.	Cost to improve or augment existing programs to replace or protect turtles in the area of the spill.	* Promote recovery to baseline by expanding nest monitoring and protection programs or through funding of other priority unfunded activities in the Federal Turtle Recovery Plans.

Injury	Injury Assessment Method	Damage Assessment Method	Restoration Approach
Salt Marshes	Ground surveys & aerial photography used to determine extent, severity, and duration of injury.	Cost of any on-site restoration actions plus cost of replacing one year of ecological services provided by .75 acres of salt marsh.	* Natural recovery for most injured areas; where recovery impeded, limited planting of marsh grasses; * Replace interim loss by enhancing/creating salt marsh habitat, preferably in conjunction with creating/enhancing mangrove habitat in Boca Ciega Bay system, as noted above.
Shellfish Beds	Data from response surveys and independent field evaluations used to determine area and duration of injury.	Cost of restoring fringing reef to baseline plus compensation for interim loss based on costs to create or enhance equivalent new reef areas.	* Promote recovery to baseline by removing oiled substrate & replacing w/stable oyster cultch materials; * Replace interim loss of shellfish services through new oyster reef communities created, preferably in conjunction with mangrove or water quality improvement projects described above.
Sediments	Response surveys used to estimate exposed area; effects evaluated based on scientific literature.	Determine compensation using cost factors for sediment restoration in the NRDAM/CME model.	* Natural recovery for injured areas; * Compensation for interim loss used to improve water quality in the vicinity of sediments injured in Boca Ciega or lower Tampa Bay.
Beach Physical	Response records used to determine amount of sand removed during cleanup.	Cost to replace appropriate amount of beach sand replacement.	* Return beaches to baseline by replacing sand volume equivalent to that removed by response; * Loss of interim services could not be documented, so no replacement of interim loss is proposed.
Shorelines Lost Use for Recreation	Site-specific aerial (during spill) & ground survey (1yr post-spill) to establish baseline recreational use levels on ~ 13 miles of recreational beaches oiled; estimated @ 280,000 beach user days lost.	Survey of recreational baseline use & travel cost study.	* Beach cleaned as part of response; natural recovery after cleaning complete. * Compensation for interim loss through projects to increase or enhance recreational beach use.

Injury	Injury Assessment Method	Damage Assessment Method	Restoration Approach
Surface Water Lost Use for Recreation	Response records used to document lost access to waterways for boating; baseline data inadequate; level impact/potential assessment cost did not justify further study.	N/A	* Recovery of use when waterways reopened; * Compensate for unquantified interim loss in planning/selecting restoration projects to increase or enhance access to surface waters for recreational boating in the area.
Shellfish Beds Lost Use for Recreation	Estimated 14,424 acres closed in lower Tampa Bay for 42 days and estimated 14,105 acres closed in lower Boca Ciega Bay for 109 days	Determined lost use using historic human use data from DEP; ~10 persons per day in Boca Ciega and 5 persons per day in lower Tampa Bay ' ~1300 recreational shellfish harvesting days lost.	* Natural recovery of shellfish to safe condition; recovery of recreational use w/end of closures; * Compensate for interim loss by including benefits to recreational shellfish resources, access or use as a factor in planning/selecting restoration projects to increase or enhance recreational beach or surface water use.

2.7 SETTLEMENT PROCESS

As it relates to NRDA, the settlement process took the form of periodic conference calls or meetings among the attorneys for the parties, frequently with technical representatives also included. An attorney from the U.S. Department of Justice also participated. These discussions paralleled the issues, discussions, and progress of the technically-focused assessment dialogue. These calls and meetings were also characterized by open and constructive discussions of issues.

The Parties reached verbal agreement at an early stage in the NRDA process regarding cash settlements of $600,000 for injuries to birds, turtles, water column, sediment and loss of sand on the beaches. Technical representatives of the Trustees and RPs agreed in principle to the extent of injury to mangroves and that an appropriate restoration measure would be acquisition of mangrove habitat. However, they differed sharply over the amount of acreage required, the Trustees calculating 13 acres and the RPs' approximately 3 acres. The RPs initiated a search for suitable mangrove habitat that might be available in the Tampa area, and discovered that there was 11 acres of salt marsh/mangrove habitat available at Cross Bayou. The acreage was within acceptable parameters to the Trustees, and the cost was within acceptable parameters to the RPs. This left as the remaining open issues, the response costs of the Federal and State government and the NRDA costs of the Trustees, which essentially only required an audit by the RPs. The final issue, the loss of recreational use claims, was resolved by an offer of a lump sum cash payment of $8 million to cover response costs, damage assessment costs, the $600,000 for various resources described above, and loss of recreational use.

The agreement-in-principle on the terms for settlement was confirmed in April 1998. Drafting of the Consent Decree was completed in the fall of 1998, was executed, and filed with state and federal courts on January 28, 1999. The public was given an opportunity to review and comment on the settlement but no comments were received. The settlement became final in May 1999.

2.8 CONSENT DECREE

The Consent Decree covered all state and federal claims related to the spill, including response costs, National Pollution Fund Center claims, and NRDA claims, and also protected state and federal pollution trust funds from future RP claims[7]. NRDA claims were resolved in the Decree through the RPs' agreement to implement two restoration projects specified in the Decree under the Trustees' oversight, to pay $3.1 million as additional compensation for the natural resource injuries and losses and to pay further sums for assessment costs reimbursement. The in-kind

[7] Potential RP claims (cleanup costs and other claims paid in excess of claimed liability limits) may have exceeded $40 million. Although the designated RP for the No. 6 fuel oil, Bouchard believed it had a viable 'sole third party fault' defense under applicable federal and state law which would entitle it to reimbursement of clean up expenditures in excess of its limitation amount, it was concluded that this would only shift liability to the other vessels involved in the collision, who would undoubtedly be impleaded by the fund. All of the RPs essentially had the same insurers due to pooling agreements and excess insurance arrangements by their respective P&I Clubs. In the end, therefore, the underwriters would not have succeeded in saving substantial money even if Bouchard had prevailed.

restoration projects and $600K of the $3.1 million addressed the ecological injuries, in accordance with the assessment and restoration plan for these injuries outlined in DARP Vol. 1. The remaining $2.5 million compensated for recreational service losses. This settlement provides restoration as follows:

Table 2.8 Compensation and Restoration

Resource Injuries	Compensation/Restoration
Mangrove & Salt Marsh	Creation/improvement of 11 acres of salt marsh/mangrove habitat on Cross Bayou site; transfer to public ownership.
Salt Marsh & Seagrasses	Additional salt marsh plantings (1.5 to 2.0 acres) by RPs in Boca Ciega Bay, at select sites.
Sea Turtles	Nest monitoring, protection or population recovery projects in spill area ($100K).
Birds	Projects to enhance bird recovery/rehabilitation in spill area ($15K).
Water Column & Sediment	Projects improve water/sediment quality in spill area ($133K).
Beach Physical (Sand Loss)	Replacement of sand on affected beach areas ($198K available[1]).
Shellfish Beds	None additional[2].
Recreational Service Losses	Projects to increase/enhance recreational use of waterways & beaches in spill area ($2.5M to plan & implement).

[1]Partial sand replacement occurred in May 1996 funded by DEP ($200K) and was included in direct costs reimbursement to DEP under the Consent Decree.
[2]Addressed by 1995 emergency restoration action implemented by RPs and through recruitment/establishment of oysters within Cross Bayou project.

3.1 TRUSTEE ISSUES & PERSPECTIVE

- State/Federal Partnership
- RPs' Participation in NRDA Process
- Relationship of Response Action to Later Resource Restoration Needs
- Oyster Reef
- Postscript Regarding Submerged Oil
- NRDA for Recreational Losses

3.1.1 STATE/FEDERAL PARTNERSHIP

The Tampa Bay spill was the first oil spill in which DEP, NOAA and DOI found themselves as co-trustees with concurrent jurisdiction and a joint interest in the conduct of a full NRDA. At the same time, it was also the first major coastal oil spill in the nation following enactment of the Oil Pollution Act of 1990 (OPA) and the first major spill in Florida following enactment of Fla. Stat. 376.121, Florida's compensation statute for oil spills. This combination of "firsts" presented an immediate challenge for the Trustees - determining whether and to what extent it would be possible for the State and Federal Trustees to conduct a joint NRDA for this incident. Several factors initially affected the Trustees' ability to effectively address this question.

First, although resource restoration is a principal goal of both laws, there are differences in the manner that OPA and Fla. Stat. 376.121 establish and use resource compensation for oil spills. The State law embodies a compensation formula. Its application is considered mandatory for spills of 30,000 gallons or less. It is also used to calculate NRDA damages for spills greater than 30,000 gallons unless an RP timely elects to have damages determined in accordance with an incident-specific assessment. The "opt out" procedure requires the RP to make an initial natural resources damage payment to the State[8]. NRDA damages recovered by DEP, including this initial payment, may be expended on restoration of injured resources but may also be used to fund other specifically listed activities. The extent to which these differences would either accommodate or prevent a joint NRDA process for this spill was not initially clear to the Trustees. Each agency also exhibited a strong interest in ensuring that any NRDA conducted for

[8] The amount is calculated as a 30,000 gallon spill volume under the formula, with values added for observable damage to certain natural resources and for the death of endangered or threatened species pursuant to Fla. Stat. 376.121(4)(a)-(d).

this spill would comply with their respective authorities and provide a precedent for future NRDAs.

Second, the State and Federal program and staff relationships needed to coordinate, support and effectively conduct a complex, multifaceted NRDA for an oil spill in Florida did not exist at the time of the spill. While previous State and Federal staff interactions on NRDA issues for spills were not problematic, they had largely been limited to general policy discussions or minor events up to that time. It was more difficult for the State and Federal agencies to evaluate the efficacy of a NRDA partnership absent significant prior experience on a spill NRDA.

Finally, DEP's participation in assessing natural resource damages from this spill was assured from the day of the spill. In contrast, NOAA and DOI deferred their decision on participation in a full NRDA until the response phase was complete and the data and information bearing on the impacts to natural resources could be reviewed. While deferral was consistent with federal regulatory guidance on this preassessment decision, DEP saw the delay as representing uncertainty over whether Federal Trustee participation would continue.

Through a combination of efforts and events, the initial uncertainty regarding the State/Federal NRDA partnership resolved itself fairly expeditiously. The size of the spill, the large area over which oil spread and the many different types of resources affected or at risk made covering all initial data collection for NRDA a challenge. Immediate coordination on the natural resources at risk, assessment data needs, available agency resources and task allocation among the Trustees became a necessity. Staff quickly found many of the data mandates, current work or program capabilities of their respective programs were NRDA-useful and complimentary. For example, DEP's mandate for data collection pursuant to the State formula provided a blueprint for collection of certain types of data, such as physical surveys of oiled areas, and State resources to rapidly implement this data collection were in place pre-incident. Similarly, NOAA's Rapid Assessment Program capabilities were able to deal with other types of data collection, such as for mangrove injuries or for documenting impacts to recreational beaches. The process had a team building effect at the ground level and led to effective working relationships among staff. The potential for legally incompatible assessment strategies resolved when both Bouchard and Maritrans elected on August 25, 1993 to "opt out" of a formula-based assessment under State law. Although expected, the action of these RPs allowed the Trustees to move forwarded on defining a joint assessment strategy based on their common interest in the restoration of natural resources harmed by the spill. DEP also considered the federal NRDA guidance at 43 C.F.R. Part 11 as providing a useful framework for an incident-specific NRDA, as no State rules had been promulgated to define NRDA following an "opt out". By September, the Trustees were on a joint NRDA course.

3.1.2 RPs' Participation in NRDA Process

The RPs were early supporters of a cooperative, restoration-focused process and agreed to participate in the technical discussions which eventually defined the assessment and restoration plan for the ecological injuries. The TWG dialogue was characterized by a real time sharing of data and information bearing on the injuries and an open, constructive exchange of opinions and views regarding the assessment data and methods available. It was a balanced forum within which to raise and vet the injury assessment and restoration scaling issues. The technical

focus also helped reinforce the non-punitive nature of the NRDA assessment process. Although not a "cooperative NRDA" in a formal sense, the RPs' presence and cooperation in the NRDA planning process for the ecological injuries was unprecedented and provided very directly for the restoration of resources or services lost due to the spill.

Through the TWG discussions, common ground or views at the technical level were often identified. This facilitated the use of simplified assessment methods (e.g., modeling water column injuries and using sediment restoration cost factors from the NRDAM/CME model) so that compensation for all losses could be determined at minimal or reasonable cost. For some injury categories, further potential studies were eliminated as unnecessary. As consensus on assessment elements emerged, non-disputed elements of the assessment were taken off the table. This kept both the TWG and the settlement dialogues focused on unresolved elements. The TWG dialogue saved time and money in the assessment, avoided additional resource losses through an emergency restoration action which the TWG jointly identified, and ultimately expedited the settlement of the public NRDA claims for the ecological injuries.

The HEA method proved effective in advancing the TWG participants toward common ground on the assessment of the mangrove and seagrass injuries. HEA's analytical framework helped focus the TWG participants on the technical questions which were key to determining the appropriate restoration and scale necessary to provide ecological services equivalent to those lost. The TWG worked to jointly develop the technical input parameters appropriate to its application. It facilitated agreement on restoration requirements (HEA output) even where the TWG participants had not yet reached consensus on all aspects of these analyses.

While exemplary, however, the cooperative process wasn't totally seamless or stress-free from the Trustees' perspective. The different RPs in this three vessel collision scenario were initially confronted with complex response, liability, private claims, public relations and procedural issues. Tension among representatives of the different RPs was palpable to the Trustees in the first Trustee/RP meetings. It was not immediately clear to the Trustees that the RPs would be able to work with each other in a NRDA context. Trustee staff expected representatives of Bouchard and Maritrans to resolve any initial relationship issues because of their common insurer, but were less optimistic about the willingness of the BALSA 37's owner and operators to do so. The RPs expressed doubt about the Trustees' ability to pursue a joint assessment but also seemed wary about prematurely or over-committing to the NRDA process. These impressions were formed during talks about the terms of a Trustee/RP MOA and in the first several months of active TWG discussions. This was also a time, of course, when cooperative NRDA examples were few and NRDA still loomed large in national debates of the day. The Trustees were not optimistic that a cooperative NRDA process with this group of RPs would be workable or result in success but embarked on the TWG dialogue anyway, recognizing that the only way to find out was to give it a try. Given the perceived RP hesitancy to fully invest in a cooperative process, however, the Trustee representatives also exhibited caution in the first several months of discussions.

In the TWG meetings, it was unclear to the Trustees what, if any, authority the RPs' outside technical consultants actually had to speak for or define the RPs' position on any issue in the assessment. Also, some RP representatives rotated in and out of the TWG discussions without explanation, which added to the confusion over participation and authority. Trustee staff found

that areas of consensus or non-dispute could not be jointly documented. Without a NRDA MOA or some other means of documenting agreements, the Trustees could not be certain that assessment elements for which there was consensus or no dispute could be relied upon in the NRDA process, would survive to settlement or otherwise be counted upon if no settlement was reached. The lack of such documentation seriously concerned the Trustees and the inability to achieve it was frustrating to their staff. Discussion of the NRDA for recreational losses ended during this time of tentativeness, uncertainty and frustration in TWG interactions.

Over time, however, the areas of non-dispute or consensus carried over into and found support in the parallel attorneys' meetings. While it did not completely resolve the problem or remove the risks to the public, it helped alleviate some of the frustration and concern over the lack of record documentation within the NRDA. As the various representatives engaged each other over a longer period of time, as trust was earned by and credited to both sides, as these agreements became embedded as basic settlement elements and as the RPs' independent investment in these elements grew (as through the purchase of land for use as a restoration site), it became less of an issue for the Trustees.

3.1.3 Relationship of Response Decision to Eventual Resource Restoration Need

Oyster Reef: During response, cleanup of oil in the intertidal oyster reefs at Elnor Island was very difficult. Oil penetrated into the sediments between the oyster clumps. This oil could not be effectively removed without removing portions of the reef and associated sediments. Further, it was recognized that removal of the oiled oyster shell would threaten the physical integrity of the adjacent mangrove islands by exposing them to additional erosion and that other response activities were already having a negative impact on the mangroves there. While the ecological value of these reefs as oyster habitat was recognized as important, the short-term loss of the area oiled posed less of a threat to the overall ecology than the loss of the mangrove island behind it. Response officials decided, with the concurrence of the Trustees, not to undertake further actions to remove the contaminated oyster shell at the time of the initial response.

Trustee technical representatives continued to monitor the oiled reefs for evidence of natural recovery. By 1994, this monitoring indicated that these areas were not recovering as expected. Some of the oiled reef areas adjacent to Elnor Island were structurally deteriorating due to wave action, had no recruitment of spat and were continuing to be a source for re-contamination of other natural resources. The physical deterioration of these reefs represented a loss of erosion protection for the adjacent mangrove island, creating a risk of additional losses of mangroves there. Field studies in June 1994 by a University of South Florida/Mote Marine research team analyzed seep water samples collected from coring holes in the oyster beds on the east and west sides of Elnor Island. Three seep water samples had hydrocarbons in the range of 12-97 micrograms per liter. Live oyster and shell hash also showed contamination within live tissue.

The TWG jointly determined that these reef areas could and should be removed and replaced with clean shell[9] expeditiously both to ensure recovery of the injured oyster beds and to prevent additional resource injuries or losses. The RPs technical representatives developed a plan for this action which was approved by the Trustees as emergency restoration on June 2, 1995. (Trustee Council Resolution No. 95-01). The plan was then implemented by the RPs, under Trustee oversight. Contaminated oyster shell was removed using hand tools from the front of Elnor Island and replaced with 25 tons of clean fossilized oyster shell.

Subsequent monitoring of this area by the Trustees indicated that recolonization of oyster spat on the fossilized shell was occurring and that mangrove seedlings were successfully recruiting in the area. The Trustees certified the emergency oyster reef restoration as complete on January 23, 1997.

Postscript Regarding Submerged Oil: In late 1999, the U.S. Army Corps of Engineers (USCOE) and Pinellas County initiated two projects to maintenance dredge John's Pass and Blinds Pass and to use the beach quality sand removed from these passes to renourish beaches at Upham Beach (St. Pete Beach) and Sunset Beach (Treasure Island). In accordance with their project permits, 15 geotechnical borings were conducted in both passes to determine the sand quality and identify any areas of unsuitable material. These borings produced no clear indication of the presence of residual oil, with only one boring from within Blinds Pass exhibiting a fuel odor.

Dredging of Blinds Pass commenced on Friday, January 7, 2000, with sand placement on Upham Beach. Three different dredge locations had yielded beach quality sand when small pockets of oil (50 gallons estimated) were first encountered. Dredging operations where stopped while the U.S. Coast Guard initiated oil containment and cleanup of this oil. Samples of the oil were a positive match with the #6 fuel oil spilled in 1993 from the B-155.

Because this occurred post-settlement, the dredging project was put on standby pending further discussions among the governmental agencies as to the responsibility and funding for response or mitigation actions to address this found oil. The USCOE had no funding mechanisms in place to handle the cleanup of oil recovered during dredging operations, but was willing to continue the dredging project with modifications as long as some entity would assume responsibility and costs of cleanup. DEP's Beaches and Coastal Systems (permitting section for renourishment activities), Pinellas County and the involved cities were insistent that the dredging/ renourishment projects continue due to the critical need for these actions. These entities further felt that whatever oil was still buried in Blinds Pass or John's Pass had to be removed because both passes are designated as material sources for beach quality sand for future permitted beach renourishment projects. Substitute sand sources would be cost prohibitive and likely delay the current renourishment project by up to 2 years.

[9] Because of the potential for overlap with the USCG's response authority, the TWG consulted with the Federal On-scene Coordinator (FOSC) to determine whether the situation should be regarded as response or presenting a resource recovery/primary restoration issue. The FOSC concurred with the TWG addressing this as a resource recovery/restoration issue.

As these discussions proceeded, the U.S. Coast Guard asked that additional borings be done within Blinds Pass. On January 19 through 24, 50 additional cores were taken which provided a more detailed map of where residual oil pockets were located. The U.S. Coast Guard activated an Environmental Assessment Team to make recommendations as to how this situation could be addressed. The Team included representatives from USCG, DEP's Bureau of Emergency Response and Beaches and Coastal Systems section, NOAA, including the National Marine Fisheries Service, the USFWS, USCOE, Pinellas County, and FMRI on behalf of the Florida Fish and Wildlife Conservation Commission. The Team recommended the continuation of the dredging project in Blinds Pass as the best method for removal of the submerged oil. Dredging operations resumed on February 2, 2000 and, thus far, approximately 20,000 gallons of oil/water have been recovered.

The condition of this submerged oil after almost seven years in the natural environment is technically noteworthy. When found, the oil was still fairly fluid, producing sheens and releasing volatile or aromatic fractions. Substantial degradation due to aerobic or anaerobic processes was not evident.

3.1.4 NRDA FOR RECREATIONAL LOSSES

During the active response period, the Trustees worked to document the disruptions in public use of area resources. The Trustees also sought to locate existing information on the usual levels of recreation and the value of these resource services to the public. Little useable information was found, however, and the Trustees quickly realized one or more specific studies would be needed to provide a basis for assessing these losses. The methods and analyses involved in this type of work were known to be both technically complex and expensive but the losses at issue represented a potentially sizable and publicly important NRDA claim. Further, these impacts were direct and well publicized, which heightened the need to give them due consideration in the NRDA process. Planning and implementing an assessment of these losses turned out to be one of the most challenging parts of the NRDA process for the Trustees.

From the outset, the Trustees and RPs brought somewhat different attitudes and views to their discussion of these losses. The Trustees viewed these losses as a viable NRDA claim which could be reliably quantified and valued for assessment purposes using accepted economic methods. They were open to planning the assessment of these losses as part of a cooperative NRDA process. The RPs' representatives appeared more guarded in discussions of these losses. The size of the potential claim as a NRDA component was no doubt one concern. Its relationship to the thousands of private claims then pending may have been another. In TWG discussions, representatives of the Trustees felt the RPs' representatives also seemed generally less willing to concede a place for these losses in the NRDA process and more skeptical about whether the losses could be reliably assessed. Early technical discussions were marked by some fundamentally different thoughts about some of the issues involved in designing and implementing assessment studies.

To some degree, this may have been a sign of the times. In 1993, the NRDA world was both embattled and in a state of flux. Larger stages, e.g. in rulemakings and before Congress, featured active, and at times contentious, debates over issues bearing on NRDA's scope and practice under CERCLA, OPA and other laws. The RP community was reluctant to embrace

natural resource services as a part of NRDA and opposed some methods for valuing such losses as unreliable.

The lack of any meaningful common ground on the assessment of recreational losses resulted in its fairly early exit from the parties' joint consideration of NRDA issues. In the short term, this greatly simplified the process for the Trustees. A common strategy was identified fairly quickly and experts were hired to plan and implement this work within the first year. What the joint case team could not have predicted - and what may be forever unique to this single case - is the major shift in federal NRDA paradigm which occurred after the Trustees' value-focused assessment strategy in this case was initiated and well underway.

The Trustees sought to integrate resource restoration objectives to the maximum extent practicable in conducting the assessment of all resource injuries and losses. This strategy reflected OPA's clear emphasis on restoration as a foundation for NRDA and resulted in a general preference for the use of restoration-based methods in the Tampa Bay assessment, where available. Methods development for relating human service losses to restoration benefits, however, was only beginning in 1993. Absent a viable alternative, the Trustee-initiated recreational loss assessment for Tampa Bay took into account the NRDA guidance found in the regulations promulgated by DOI under CERCLA at 43 C.F.R. Part 11 (the DOI rule). In 1993, the DOI rule represented the only federal regulatory guidance on the conduct of NRDAs available and continued reliance on this guidance was permitted pending development of an OPA-specific NRDA rule. A valuation approach to assessing the recreational loss claim, with restoration planning following and based strictly on the amount recovered (value-to-cost approach), was consistent with the DOI rule.

In 1993, NOAA's programmatic efforts to develop an OPA-specific NRDA rule were underway. NOAA released a first proposed rule in January 1994. This proposed rule allowed valued-based assessments and afforded substantial discretion to the Trustees in choosing an assessment approach. That proposed rule, however, did little to quell the ongoing debates over issues bearing on NRDA scope and practice, in part because of its openness to the continued use of resource valuation methods. Based on the response to the 1994 proposed rule, NOAA released a new proposed OPA NRDA rule in August 1995. This proposed rule outlined a substantially different NRDA paradigm, one with greater emphasis on OPA's resource restoration objectives. Under this approach, restoration planning is the primary assessment process and the value-to-cost approach is the approach of last resort to support restoration planning. The OPA NRDA rule incorporating this paradigm was finalized in 1996.

As this shift in federal policy was taking shape, NOAA and DEP began developing information on restoration project opportunities in the affected communities which might be capable of addressing the recreational services lost. They anticipated using information from this restoration scoping effort in outlining an assessment and restoration plan for the recreational losses. In consideration of the new paradigm, NOAA and DEP also began exploring and discussing the efficacy of additional assessment work to assist in identifying restoration actions with effects or benefits sufficient to offset the losses assessed.

Addressing these issues some 4 to 5 years after the spill and after a substantial investment of time and money in pursuing the original assessment strategy was very stressful for the

Trustees' case team representatives. NOAA and DEP were both concerned about the additional time and money which would be required to adapt to this shift so late in the assessment process, meeting the public's expectations regarding satisfaction of its claims, and the use of methodologies whose application in a NRDA context was still relatively new. Development of the assessment and restoration plan for recreational losses was still pending when the settlement-in-principle was confirmed.

This assessment "problem" was perhaps the first time the question of how to reliably determine compensation for lost resource services to humans in restoration terms presented itself in a practical NRDA context. The technical thinking and methods exploration which began in this case were not wasted, however. They served as the foundation for the development and use of a survey and modeling analyses which marry the value of services losses to restoration gains in an assessment of recreation fishing losses at a NPL site in Texas (Lavaca Bay). It is believed to be the first use of such a method in a NRDA in the country. It is also notable for having been developed and implemented by the RP as part of a fully cooperative NRDA process at the site. More recently, this approach has adopted in an assessment underway for a site in Wisconsin (Fox River) and may represent a trend for future assessments.

3.2 RPs' ISSUES & PERSPECTIVE

- Inability to reach an early settlement based on 6 months collection of data and using best professional judgment/estimates, rather than following a formal NRDA (at the expense of the RP).

- Drafting the DARP - a jointly drafted DARP reflecting the agreement by the parties is preferable to a DARP unilaterally drafted by the Trustees reflecting their "settlement demand."

3.2.1 RPs' PERSPECTIVE

The RPs were initially dismayed at the sheer number of Federal and State representatives attending the early NRDA meetings, particularly since the RPs would be asked to pay all of their costs. Fortunately, the Trustee team was eventually reduced to those described at the beginning of this report, and proved to be a relatively straightforward working group. Although the RPs, too, would have preferred that a formal MOA be executed, it was more important from the RPs' perspective, that the Federal and State agencies execute an MOU among themselves, so that the RPs could be sure they were dealing with a united Trustee front.

Nevertheless, it seemed clear to the RPs' that there remained something of a "turf battle" among the various Federal and State Trustees. The RPs' remained very concerned that in order to satisfy these sometimes competing Trustees, the settlement cost might be driven higher than was actually warranted.

The RPs' primary agenda was to conclude the NRDA as cost effectively as possible. However, from the RPs' judgment, this was not inconsistent with participation in a cooperative NRDA. The cooperative NRDA process was ultimately satisfactory in resolving the assessment of injury to ecological sources, and appropriate restoration measures.

A cooperative assessment simply never got off the ground with regard to loss of recreational use of the beaches. At least in the perception of the RPs, it was almost a foregone conclusion that the Trustees study would result in substantial damages, whereas the RPs' study would show comparatively minimal damages. As it turned out, the amount allocated by the Trustees in the settlement to loss of use ($2.5 million) was very close to the result that the RPs' random utility model study produced.

The parties met in Atlanta in March 1994 to exchange initial settlement demands and counter offers. The RPs, based on the data collected at that time which was more or less complete as to ecological injuries, and based on the best professional judgment of their legal and technical advisors, offered to pay $2 million plus all federal and state response and assessment costs, which turned out to be about $4.5 million. The Trustees' proposal was $19.8 million plus response and assessment costs. From the RPs' perspective, it appeared that the Trustees were locked into a formal NRDA process and, unfortunately, it took another 3 years (with mounting NRDA costs, all at the RPs' expense) before the case settled. The ultimate settlement of about $8.6 million, including the cost of the Cross Bayou mangrove project, and also including federal and state response and NRDA costs of about $4.5 million, was not significantly far off the RPs' opening offer. The RPs' believe that if the Trustees had able to settle the case based on best professional judgment/estimates, rather than following all of the steps of a formal NRDA, the case might have settled earlier and with less expense.

4.1 OBSERVATIONS FROM A TRUSTEE PERSPECTIVE

State/Federal Partnership: DEP, NOAA and DOI first faced becoming partners in a complex NRDA on August 10, 1993, in the midst of a dynamic crisis. This relationship was tested in many ways throughout the first few weeks, including in coordinating ephemeral data collection and in attempting to identify a common assessment strategy. Differences in the State and Federal statutes providing for the conduct of NRDAs were a primary concern in strategy discussions. Florida's compensation formula and prepayment procedure were considered a possible impediment to joint NRDA process. In this case, the Trustees overcame these early challenges by focusing on the goal of restoring natural resources harmed by the spill, a common objective of both statutes. An external event - the RPs' selection of an incident-specific, scientifically-based assessment under Florida law - removed a potential procedural impediment to the joint NRDA process. The State/Federal NRDA partnership also had practical benefits as it brought the resources of multiple agencies to the planning and conduct of this multifaceted NRDA.

Looking back, it is clear that the sources of angst for the Trustees - the agencies' inexperience with each other on a prior notable assessment, the potential differences in the State and Federal assessment procedures, the uncertainty for the State about further Federal participation, etc. - took time and did increase the number of tasks required of the Trustee representatives during the crisis phase of the incident. The preassessment screening process and State/Federal MOA succeeded in eliminating uncertainties and set ground rules for further coordination among the Trustees, including dispute resolution. For State and Federal Trustees, the preassessment screening process and MOA were unifying and also strengthened the Trustees' ability to interact with the RPs on NRDA issues.

Since 1993, in addition to their continued work on the Tampa Bay NRDA and restoration implementation post-settlement, the Trustees have actively sought to maintain and strengthen the working relationships among their technical and legal staffs with numerous joint workshops, drills and staff meetings. In February 2000, State and Federal Trustee representatives met for two days in Tallahassee, Florida in a first "NRDA Summit" in an effort to comprehensively identify specific issues or problems which may impede coordination on NRDA's in Florida. A Florida NRDA Working Group was formed, problem areas were identified and ranked, action items for addressing these areas were developed and specific sub-groups were assigned to complete various action items. Future summits will be used to coordinate and assess progress on these issues.

Trustee/RP MOA & Communications: The lack of a Trustee/RP MOA in this case contributed to or exacerbated issues or problems in the joint technical dialogue. It also fostered an early sense of distrust. This distrust, coupled with the ambiguity attending the authority of the RPs' technical representatives to make commitments for the RPs, created doubt about the durability of technical resolutions identified by the TWG. In the Tampa Bay case, for many of the smaller

ecological injury categories, the assessment approach, restoration objective and compensation requirement were technically dependant on agreements reached early in the NRDA process. For the Trustees, these remained at risk in the absence of commitment by the RPs. Finally, without an MOA there was no firm dispute resolution mechanism in place.

While the lack of an MOA did not ultimately prevent the Trustees and RPs from reaching agreement on injury or loss compensation in this case, it added time and inefficiency to the process. Doubts about the durability of agreements lessened over time but only as these agreements became embedded as basic settlement elements and as the RPs' independent investment in these elements grew. Credit for surviving to that point largely goes to the particular individuals involved in the technical and legal dialogues for both sides. Over time, the nature and quality of their interactions was key to the trust in the outcome which was exhibited by both sides. These conditions will not necessarily be present in every case nor can faith always be counted on to serve the public interest. A Trustee/RP MOA, even a basic one, can go a long way towards removing uncertainties about NRDA procedures and the positions of Trustees or RPs on NRDA issues or elements, and make the NRDA process itself more efficient.

Even with an MOA, however, the ultimate "success" of any cooperative relationship between Trustees and RPs is greatly dependent on the nature and quality of the communications between the parties. A willingness and ability to openly, constructively and patiently discuss issues is key. The participation and staffing of all parties needs to be unambiguous. Early difficulties within the TWG dialogue could have been alleviated to some degree simply by clarifying for the Trustees which RPs were participating, their participation objectives, and the authority of the technical representatives which they hired and sent to the TWG discussion. When contract personnel are used in technical discussions, company representatives should consider attending, even if only periodically, to confirm or clarify RP views or positions regarding the assessment.

Parallel Technical and Legal Dialogues: In the Tampa Bay NRDA, the parallel dialogues proved to be invaluable. The TWG dealt with the NRDA as a technical process and, for the ecological injuries, allowed the scientific understanding of resource injuries and ecologically-appropriate restoration objectives to define its parameters. The TWG discussions were a primary assessment planning tool.

The legal dialogue, however, was equally important. These discussions did not detract from the technical focus of the assessment. Rather, areas of technical accord from the TWG were absorbed as a basis for defining settlement. Further, these separate discussions were perhaps most valuable where technical consensus, whether on injury data or a HEA input, did not arise. Outside the TWG, the significance of these areas of non-agreement could be considered by the parties in light of other factors bearing on their acceptability for settlement purposes (e.g., effect on restoration scale, additional cost, restoration site availability, etc.). As a result, unresolved technical issues neither ended constructive assessment planning nor paralyzed progress towards settlement. Indeed, in the end, the resolution of the recreational service loss claims as part of the global settlement is attributable to this separate forum.

Technically-Focused, Restoration-Based NRDA & HEA Methodology: The Trustees proposed an assessment process that would define injuries based upon data and science, and use restoration as a basis for compensation. Whenever possible, that process was based on technical consensus between the Trustee and RPs. Tampa Bay has been the site of numerous restoration projects. The Tampa Bay community, through its numerous governmental agencies, has identified and prioritized restoration actions which would benefit the Tampa Bay area. This background gave the Trustees and RPs a significant information base from which to identify and scale appropriate projects.

The HEA is a defensible assessment approach which serves as both an injury assessment and restoration scaling tool. In this instance, it proved very useful in framing resource compensation discussions and helped to focus all parties on the questions important to restoration scaling. Even when the Trustees and RPs didn't agree on HEA input parameters, agreement could be reached on appropriate compensation (HEA outputs). For example, while the Trustees and RPs had not reached agreement on some of the mangrove HEA inputs, the question became a non-issue to achieving settlement when the RPs' located property suitable for use as a restoration site (at an appropriate price) which fit the Trustees' restoration goals, and purchased it.

Examples such as this reinforce the point that the law and regulations relating to NRDAs are not punitive in nature but are focused on the restoration of natural resources and resource services.

4.2 OBSERVATIONS FROM THE RPS' PERSPECTIVE

The RPs concur that it would be preferable to have an MOA between the Trustees and the RPs and consider it fortunate that a good working relationship developed among the personnel handling this NRDA on both sides. The RPs chalk up the inability to conclude an MOA in this case to the fact that it was the first major cooperative NRDA, and there were multiple RPs, hence, no "template" to work from. As time went on and the NRDA/settlement seemed to be making progress, the subject of the MOA was simply dropped.

In response to the rest of the concerns expressed above, frankly, the RP's are surprised that the Trustees perceived a disconnect between the RP's technical representatives and "decision makers." Perhaps this is an illustration of the difference between perception and reality.

It should be understood that essentially, RP's and their P&I Clubs treat U.S. oil spill cases in much the same way as they would defend any other major claim. Obviously, they work within the context of the legal framework they face, which in this case was OPA '90 and the Florida oil pollution statute, and are aware that the "plaintiffs", i.e., the Trustees, have certain rules and regulations they will follow in assessing damages to natural resources. These RP's viewed the cooperative NRDA as essentially a settlement process. Their technical consultants made recommendations to the attorneys in charge of the case, who in turn sought and obtained authority from their clients, the RP's and ultimately their common P&I Club underwriter - the same procedure as would be followed in any defense case. Normally, neither lawyers nor experts have blanket authority from their clients. However, in this case, the legal consultants had unusually good and long-standing relationships with both the RP's and the P&I Club, and quickly developed a rapport with the appointed technical consultants.

In fact, the two RP's, Maritrans and Bouchard, and their common P&I Club, the West of England, quickly agreed that it was in their common interest to present a united front in the NRDA, leaving the apportionment of their respective liabilities to the collision case, which was handled by entirely separate and distinct defense teams, than those handling the NRDA. Aside from the very early days of this incident, i.e., before it was clear that the majority of the injury to resources was caused by the No. 6 oil from the B-155 and not also by the jet fuel from the OCEAN 255 to any significant extent (again, putting cross liability issues aside), the Responsible Parties acted as one. The RP's believe that from the early stages of this case, they were one team. Basically, the legal and technical experts were acting for their P&I Club, who in the end pays the costs.