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On Friday, January 19, 1996, a Providence-bound barge carrying four million gallons of household heating oil ran aground off Moonstone Beach, Rhode Island, after its tug boat burst into flames.[1] The barge, *The North Cape*, spilled more than 828,000 gallons of oil into Block Island Sound.[2] One Boston reporter noted that "[t]he worst oil spill in Rhode Island history couldn't have struck at a more pristine spot."[3] Moonstone Beach and its surrounding salt ponds and marshes are home to countless birds and abundant sea life, including world-famous lobsters, scallops, clams, and flounder.[4] Hundreds of thousands of lobsters washed ashore dead, hundreds of birds died from consuming oil, countless clams and mussels died or were severely contaminated, and government officials closed the beach and 250 square miles of fishing grounds.[5] The oil also defiled the habitat of the piping plover, an endangered species.[6]

Federal, state, and local government workers converged on the Rhode Island coast to contain the oil, begin the clean-up process, and assess the extent of the injury.[7] Eventually, the government officials will present a natural resource damage claim to the barge's owner, Ecklof Marine.[8] That

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1. Matt Bai, *Barge Lacked Critical Gear· Spill Might Have Been Avoided, Official Says*, BOSTON GLOBE, Jan. 26, 1996, at 21.

2. Mark Mueller, *Disaster Takes Devastating Toll on Area Wildlife*, BOSTON HERALD, Jan. 22, 1996, at 6.

3. *Id.*

4. *Id.*

5. Bai, *supra* note 1, at 21, Jules Crittenden, *Bird's Recovery Heartens Volunteers*, BOSTON HERALD, Feb. 10, 1996, at 8; Peter Lord, *Closed Fishing Grounds Still Not Safe*, PROVIDENCE J.-BULL., Feb. 9, 1996, at 16A.

6. Mueller, *supra* note 2, at 6.

7 *Id.*

8. Peter Lord, *North Cape Spill Vessel Fishes for Clues to Sound's Health*, PROVI-

claim will consist of the cost of assessing the damages, restoring the area to its prespill condition, and compensating the public for its temporary loss of this natural resource — not to mention the actual cost of removing the oil.[9] Before the federal and state officials can present that claim, they must determine precisely what these injured or destroyed natural resources are worth to the people of New England. The National Oceanic and Atmospheric Administration (NOAA) recently developed new procedures that will change the way the government determines natural resource value and compensates the public.[10] The oil spill in Rhode Island will be the first natural resource injury assessed under NOAA's new approach.[11]

I. Overview

In the Oil Pollution Act of 1990 (OPA),[12] Congress instructed NOAA to promulgate regulations establishing procedures for assessing natural resource damages resulting from the discharge of oil.[13] After nearly five years at the task, NOAA published a final rule on January 5, 1996 that outlines the new natural resource damage assessment process (the Final Rule).[14] For more than ten years, the Department of the Interior (DOI) has also studied natural resource damages and developed similar regulations under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).[15] NOAA's most recent regulations have benefitted from the collaboration and cumulative experience of the two agencies.[16]

DENCE J.-BULL., Feb. 4, 1996, at 1A, *Oil Spills: NOAA Natural Resource Damage Rule Applied to North Cape Spill Case*, Nat'l Env't Daily (BNA), Feb. 5, 1996, at 1 [hereinafter *North Cape Spill*].

9 *North Cape Spill*, *supra* note 8, at 1.

10. Natural Resource Damage Assessments, 61 Fed. Reg. 440 (1996) (to be codified at 15 C.F.R. § 990) [hereinafter Final Rule].

11. *North Cape Spill*, *supra* note 8, at 1. The natural resource trustees expect damages to surpass the costs of cleaning up the oil. *Id.* Experts have estimated the cost of federal government oversight alone in the first 15 days following the spill to be $3 million. *Id.*

12. The Oil Pollution Act of 1990, Pub. L. No. 101-380, 104 Stat. 484 (codified as amended at 33 U.S.C. §§ 2701-2761 (1994)).

13. 33 U.S.C. § 2706(e)(1).

14. Final Rule, *supra* note 10.

15. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Pub. L. No. 96-510, 94 Stat. 2767 (codified as amended at 42 U.S.C. §§ 9601-9675 (1994)). DOI published the first natural resource damage assessment final rule on August 1, 1986. Natural Resource Damage Assessments, 51 Fed. Reg. 27,674 (1986) (codified at 43 C.F.R. §§ 11.10-.93 (1987)).

16. *See* Final Rule, *supra* note 10, at 462-63 (noting that NOAA benefitted from

In the typical spill situation under the conventions of OPA or CERCLA, federal, state, and Indian officials (appointed as public trustees for natural resources) work with the parties responsible for injuring natural resources to return those resources to their normal functioning conditions. In addition, the governing statute authorizes the trustees to collect damages from the responsible parties for the interim and permanent loss of the natural resources. A natural resource damage assessment is the administrative procedure through which the natural resource trustees evaluate the injuries to natural resources in order to arrive at appropriate damage figures. Trustees conceptualize natural resource damages in several ways, the most obvious of which is the economic market value of the natural resource and the animals dependent on that resource. In addition, to facilitate an accurate determination of total value, trustees view the damage measurements in terms of lost use and nonuse values.[17] Use values represent the measurable direct or indirect human benefit from the natural resource[18] and can be measured using market or indirect market methods. Nonuse values represent a nonconsumptive value derived from a natural resource without any direct physical or aesthetic use and include option,[19] existence,[20] and bequest values.[21] Economists, ecologists, and regulators have struggled to

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DOI's experience in writing natural resource damage assessment (NRDA) regulations under CERCLA through DOI's involvement in interagency work group involved in developing Final Rule).

17 *See* Peter A. Diamond & Jerry A. Hausman, *Contingent Valuation Measurement of Nonuse Values*, *in* NATURAL RESOURCE DAMAGES: A LEGAL, ECONOMIC, AND POLICY ANALYSIS 61, 62-63 (Richard B. Stewart ed., 1995) (discussing history and definition of nonuse values, as opposed to use values).

18. *Id.*

19. Option values generally represent the value of knowing a natural resource exists without planned use — knowing one has the option to use the natural resource. *See* Carl V Phillips & Richard J. Zeckhauser, *Confronting Natural Resource Damages: The Economist's Perspective*, *in* NATURAL RESOURCE DAMAGES: A LEGAL, ECONOMIC, AND POLICY ANALYSIS, *supra* note 17, at 119, 140-41 & n.32 (noting that if option value is real future use, it should be treated as use value and if it is "merely wishful thinking about future use," then it should be treated as pure existence value).

20. *See* Phillips & Zeckhauser, *supra* note 19, at 141 (defining pure existence value as "benefits derived from just knowing a resource exists"); Jeffrey C. Dobbins, Note, *The Pain and Suffering of Environmental Loss: Using Contingent Valuation to Estimate Nonuse Damages*, 43 DUKE L.J. 879, 901 (1994) (defining nonuse values). Dobbins explains the concept of nonuse value and offers an example: "If no human were ever permitted to access or view a wilderness area, individuals might still place some value on the mere knowledge that such a pristine area existed." *Id.*

21. *See* Phillips & Zeckhauser, *supra* note 19, at 140-48 (defining components of nonuse values generally and discussing merits of including nonuse values in damages).

develop an acceptable method to calculate the accurate total value of natural resources. Common-law damage theory and previous damage assessment rules under CERCLA and OPA focused on procedures to calculate dollar figures representing (1) the cost to restore the natural resource to its normal condition, (2) the diminution in value of the resource pending restoration, or (3) both. One team of natural resource scholars described the general damage assessment scheme prior to NOAA's latest contribution:

> In large part because of its novel, hybrid character and its adoption of liability principles going far beyond the common law, the current system inevitably involves enormous transaction costs, profound factual and legal uncertainty, and the persistent threat of arbitrary and potentially enormous liabilities. These difficulties cannot be solved without fundamental rethinking and restructuring.[22]

NOAA's publication of the Final Rule is the latest of many fundamental rethinkings and restructurings of natural resource damage policy.[23] This Final Rule marks the culmination of several years of study by NOAA, including extensive communication with and input from the concerned public.[24] The result is a simplified damage assessment process that is different in practice and in theory from previous damage assessment regulations.[25] With a resurgent emphasis on restoration,[26] NOAA has sidelined the previously preferred monetary valuation techniques in favor of a relatively untested theory that is based on compensation for interim lost value

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Bequest value exists in the indirect benefit that an individual derives from knowing that future generations will enjoy a resource and thus directly benefit from it. *Id.* at 141.

22. Richard B. Stewart et al., *Evaluating the Present Natural Resource Damages Regime: The Lawyer's Perspective*, *in* NATURAL RESOURCE DAMAGES: A LEGAL, ECONOMIC, AND POLICY ANALYSIS, *supra* note 17, at 153, 156.

23. *See* Natural Resource Damage Assessments, 60 Fed. Reg. 39,804, 39,804 (1995) (to be codified at 15 C.F.R. § 990) (proposed Aug. 3, 1995) [hereinafter 1995 Proposed Rule] (referring to new approach as "fundamental restructuring of the rule to provide even greater emphasis upon restoration").

24. *See* Final Rule, *supra* note 10, at 440 (listing 11 Federal Register notices requesting information from public on approaches to developing natural resource damage assessment procedures and 14 regional workshops and public meetings to discuss several drafts of assessment procedures).

25. *See* Robert F Copple, *NOAA's Latest Attempt at Natural Resource Damages Regulation: Simpler But Better?*, 25 Envtl. L. Rep. (Envtl. L. Inst.) 10,671, 10,671 (Mar. 1995) (noting that NOAA's 1995 proposed rule "ostensibly focuses on the use of simplified procedures").

26. Within this Note and in the natural resource damage discourse generally, "restoration" refers to "restoring, rehabilitating, replacing, or acquiring the equivalent of, the damaged natural resources." 42 U.S.C. § 9607(f)(1) (1994).

in the form of compensatory natural resources — it's "not about collecting money "[27] This restoration emphasis is apparent in the practical and conceptual changes in the damage assessment process and represents a major step in the larger progression of valuation theory with potential ramifications throughout environmental policy.

This Note outlines the Final Rule and presents an analysis of its new methods for determining compensation to the public for injury to natural resources. The focus is on evaluating NOAA's new approach from the perspective of previous fundamental restructurings of natural resource damage assessment schemes and the larger evolution of valuation theory This Note places particular emphasis on the conceptual, controversial, and constantly evolving methods of measuring and compensating for lost nonuse values. Part II traces the development of compensation for natural resource damages from common-law damage theory through the enactment of natural resource damage legislation to the various attempts by DOI to promulgate damage assessment regulations.[28] Part II closes with a discussion of the first fundamental rethinking and restructuring of natural resource damage assessments in *Ohio v United States Department of the Interior*[29] Part III

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27 *See* Final Rule, *supra* note 10, at 482 (stating that "OPA is not about collecting money"); *id.* at 458 (listing public comment that new approach is untried theory). *But see id.* (responding to comment and noting that new approach embodies methods used in some successful and cooperative settlements).

28. *See infra* notes 35-145 (presenting evolution of NRDA legislation, regulation, and theory).

29. 880 F.2d 432 (D.C. Cir. 1989). In *Ohio*, the U.S. Court of Appeals for the District of Columbia Circuit considered a facial challenge to ten aspects of DOI's regulations by ten states, three environmental organizations, the chemical industry, a manufacturing company, and a utility company *Id.* at 438. Using the analysis of the validity of administrative regulations established by the Supreme Court in *Chevron U.S.A. v. NRDC*, 467 U.S. 837 (1984), the court first looked at each of the ten issues to determine if Congress had directly spoken to the precise issue. *Id.* at 441. As to three of the ten issues, the court found that Congress had expressed an intent regarding the issue and that the regulation did not reflect congressional intent. *Id.* at 441-62. First, the court addressed a challenge to the regulation's provision that damages for injury to natural resources should be the lesser of replacement costs or diminution in use values. *Id.* at 441-59. The court concluded that Congress evidenced a distinct preference for restoration costs as the measure of damages and thus held that DOI's lesser-of rule was invalid. *Id.* at 459. Second, the court examined the regulation's limit on collection of natural resource damages for injuries to land owned by governments and remanded the record to the agency for a clarification of the regulation's application to lands not publicly owned. *Id.* at 459-61. Third, the court scrutinized the regulation's "rigid hierarchy" of assessment methods that included a preference for (1) the price commanded by the resource on the open market, (2) the appraised value of the resource, and (3) the values derived with alternative methods, in that order. *Id.* at 462. The court concluded that DOI's emphasis on market values and the limited role for nonuse values was an unreasonable interpretation of

discusses the enactment of OPA, OPA's natural resource damage provisions, and NOAA's subsequent attempts to develop damage assessment regulations.[30] The final section of Part III presents the latest fundamental rethinking and restructuring, NOAA's 1996 Final Rule, outlines its new procedure, and identifies its new concepts.[31] Part IV focuses on the Final Rule's treatment of economic efficiency concerns, the emerging role for nonuse values and contingent valuation, and the theoretical progression that may explain the practical changes.[32]

The Final Rule is one more step in a progression of natural resource damage assessment regulation that is indicative of the evolving debate concerning environmental public goods and environmental policy in general.[33] Part V concludes that we should applaud NOAA for developing regulations that attempt to account for the variety of ways that people value natural resources while avoiding the controversial issues that have plagued natural resource damage assessments. In the short run, NOAA's preference for trustee flexibility over certainty and predictability may inhibit efforts to achieve economically efficient solutions. However, the ability to reduce transaction costs, implement efficient damage assessments, and achieve accurate compensation will come from experience and practical fine-tuning of the assessment methods within the progressing theory [34] In the long run,

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CERCLA. *Id.* at 463-64. The court examined and rejected the remaining seven challenges. *Id.* at 438. In addition, the court considered the listing of contingent valuation, often referred to as CV or CVM, as one of the alternative valuation methods and concluded that (1) it was a "best available procedure" as required by CERCLA and (2) inclusion of CV in the regulations was consistent with congressional intent. *Id.* at 474-78. *See generally* Raymond J. Kopp et al., *Natural Resource Damages: The Economics Have Shifted After* Ohio v. United States Department of the Interior, 20 Envtl. L. Rep. (Envtl. L. Inst.) 10,127 (Apr., 1990) [hereinafter Kopp et al. *The Economics Have Shifted*]; Erik D. Olson, *Natural Resource Damages in the Wake of the* Ohio *and* Colorado *Decisions: Where Do We Go From Here?*, 19 Envtl. L. Rep. (Envtl. L. Inst.) 10,551 (Dec. 1989). To the extent that the court in *Ohio* was simply revealing the true meaning behind CERCLA, the case serves as a delayed recognition of the fundamental restructuring that actually took place when Congress passed CERCLA.

30. *See infra* notes 146-73 and accompanying text (discussing enactment of OPA and NOAA's early attempts at NRDA regulations).

31. *See infra* notes 174-227 and accompanying text (outlining new process in Final Rule).

32. *See infra* notes 228-366 (discussing implications of Final Rule as it relates to three areas: economic efficiency, use of contingent valuation to value nonuse values, and progression of natural resource valuation theory and public policy).

33. *See generally* Brian Dickenson, *We Cannot Afford Public Apathy About Environmental Problems*, PROVIDENCE J.-BULL., Feb. 7, 1996, at 7B (arguing that topics of debate in environmental protection have changed and that public attention needs to adapt).

34. *See* Final Rule, *supra* note 10, at 440-41 (stating that due to increased public

recognizing that economists do not have all the answers to the natural resource valuation problems and further implementing the emerging theme of social responsibility will help the government to create better environmental policy Accounting for the diverse ways that people value natural resources will promote a satisfactory balance between protecting the environment and promoting commercial activity

II. The Evolution of Natural Resource Damage Assessment Theory

A. Common-Law Damage Theory and Economic Efficiency

In private actions at common law, the primary measure of damages for harm to land is the difference between the value of the land before the harm and the value of the land after the harm.[35] Under this depreciation or diminution-in-value measure, courts attempt to identify the decrease in a hypothetical prospective purchaser's willingness to pay as a result of the injury.[36] The hypothetical buyer will consider the long-term effects on the land, including the possibility that the land will recover to its normal condition.[37] A settled exception to the common-law norm provides that in an appropriate case the property owner may elect to receive the cost of restoring the land to its pre-injury condition, instead of the diminution in the property's value, as the measure of damages.[38] This option is only appropriate, however, when (1) the cost of returning the land to its normal condition is not disproportionate to the decrease in value of the land or (2) the owner has a personal reason for restoring the land to its original condition.[39] Thus, when the owner demonstrates a sufficient personal reason for restoration, courts will measure damages as the cost of restoring the property to its original state even though this amount may exceed the entire value of the land.[40] In addition, the owner may recover damages for

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participation in assessments, NOAA expects that trustees may achieve restoration quicker, with fewer transaction costs, and with a decrease in the likelihood of litigation).

35. RESTATEMENT (SECOND) OF TORTS § 929(1)(a) (1977).

36. *See id.* § 929(1)(a) cmt. a (noting that property loses present value due to impairment of future use and that test is from vantage of "reasonable prospective purchaser").

37 *See* Hudson v. Peavey Oil Co., 566 P.2d 175, 179 (Or. 1977) (measuring permanent damages for oil discharge from neighboring property as difference between value of injured land and value of land without injury, from perspective of an interested buyer).

38. RESTATEMENT (SECOND) OF TORTS § 929(1)(a) (1977).

39. *See id.* § 929(1)(a) cmt. b (noting that when cost of restoring land to its original condition is disproportionate to diminution in value, damages are measured by difference in value "unless there is a reason personal to the owner for restoring the original condition").

40. *Id.*, *see also* Rector, Wardens & Vestry of St. Christopher's Episcopal Church v C.S. McCrossan, Inc., 235 N.W.2d 609, 611 (Minn. 1975) (holding that measure of damages

the loss of use of the property pending recovery [41]

The common-law approach to damages for injury to land is based on a traditional view of social welfare economics.[42] Two components of economic efficiency are relevant to this view: the maximization of social utility through the proper allocation of resources and risk deterrence.[43] The first idea is based on the theory that one person's actions can lower the welfare of the unintended recipient of those actions thereby skewing the allocative mechanisms of the market.[44] In order to correct those mechanisms and make the injured party whole, the actor should pay the lowest amount that makes the plaintiff indifferent as to the choice between suffering the injury and recovering damages, or having never experienced the injury [45] This "perfect compensation" promotes the second efficiency concept — risk deterrence — by encouraging rational actors to internalize risk.[46] Achieving both elements of economic efficiency becomes increasingly difficult when the property owner values the property in a manner not expressible in economic or market terms.[47] Courts cannot balance the putative benefits to the actor from the

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for church trees destroyed by road contractor was replacement cost, instead of diminution in value, because of unique aesthetic and practical value of trees); Denoyer v Lamb, 490 N.E.2d 615, 618-19 (Ohio Ct. App. 1984) (entitling owners of residential lots to cost of restoring property to original condition for damages from trees recklessly cut down by logger instead of market value of timber removed).

41. RESTATEMENT (SECOND) OF TORTS § 929(1)(b) (1977).

42. *See* Douglas R. Williams, *Valuing Natural Environments: Compensation, Market Norms, and the Idea of Public Goods*, 27 CONN. L. REV 365, 384, 386 (1995) (describing common-law approach as having basis in traditional welfare economic principles).

43. *See* Phillips & Zeckhauser, *supra* note 19, at 119, 123-24 (explaining that key to efficient liability is ensuring that polluters pay for all harm inflicted on others and establishing price for pollution that is effective deterrent and thus leads to proper allocation of resources).

44. *See* Williams, *supra* note 42, at 386-87 (noting common law's attempt to correct breakdown in distributive and allocative mechanisms of market for public goods).

45. *See* ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 379-80 (1988) (discussing efficiency applications of tort law, costs of tortfeasor's actions on levels of utility, and perfect compensation in tort law context).

46. *Id.* A point of origination of modern economic principles of risk deterrence and cost internalization is *United States v. Carroll Towing Co.*, 159 F.2d 169 (2d Cir. 1947). In that case, Judge Learned Hand posited that a rational actor should take additional safety precautions when the cost of those precautions is less than the probability of an injury multiplied by the dollar amount of the typical injury *Id.* at 173. *See generally* COOTER & ULEN, *supra* note 45, at 381 (discussing tort modes of economic efficiency).

47 *See* Phillips & Zeckhauser, *supra* note 19, at 124 (noting that lack of market values for natural resources complicates calculation of damages and hinders goal of economic efficiency); Williams, *supra* note 42, at 386-87 (arguing that common-law framework for protecting property fails to realize alternative nonmarket modes of value).

activity against the decrease in personal or noneconomic utility to the land owner. Thus, compensating in kind by returning the land to its pre-injury condition is a solution cognizant of the common law's inability to balance economic and noneconomic values.[48] Restoration, as the exception to the common-law diminution-in-value rule, offers flexibility from the strict economic cost rationale to account for intrinsic value.[49] Thus, the goal of accurate compensation overcomes economic efficiency when dealing with non- or less-fungible goods.[50]

It is difficult to boil economic efficiency down to its core components, and the above description of its role in the common-law approach to property damages is simplified. In the natural resource context, the appropriate role for or emphasis on economic efficiency is even more difficult to determine.[51] Nonetheless, environmental economists have concentrated on aspects of efficiency in the context of natural resource damage assessments. Thus, one regulatory task has been the creation of a deterrent scheme for potential polluters by providing a measure of damages based on weighing the costs of an injury against the costs of avoiding the injury.[52] The absence of a ready market for many natural resources, however, impedes the realization of the

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48. *See* Williams, *supra* note 42, at 386-88 (explaining that common-law courts recognized inability of strict lesser-of rule to account for uniqueness of property outside of market domain).

49. *See* Robert F. Copple, *The New Economic Efficiency in Natural Resource Damage Assessments*, 66 U. COLO. L. REV. 675, 676-77 (1995) (describing restoration alternative under *Restatement* as reasonable or approximate economic efficiency). Mr. Copple presents a valuable analysis of the elements of economic efficiency in the *Restatement* and in NRDA regulations from DOI's 1986 rule up to and including NOAA's January 1994 proposed rule. *Id. passim*; *see infra* notes 230-64 and accompanying text (evaluating elements of NOAA's 1996 Final Rule in light of traditional economic efficiency and Copple's "new economic efficiency").

50. *See* Ohio v. United States Dep't of the Interior, 880 F.2d 432, 456 (D.C. Cir. 1989) (stating that "fatal flaw" of DOI's common-law approach was that it applied efficiency rationale associated with fungible goods); Williams, *supra* note 42, at 388 (noting that purposes of common law are not achieved when values cannot be "commodified").

51. *See generally* Copple, *supra* note 49, at 676-77 (discussing common-law origin of economic efficiency in natural resource damages law and undertaking task of determining proper role for economic efficiency in natural resource damage assessments generally); Heidi Wendel, Note, *Restoration As the Economically Efficient Remedy for Damage to Publicly Owned Natural Resources*, 91 COLUM. L. REV. 430 (1991) (presenting law and economics perspective of tort law efficiency as basis for arguing for restoration as most efficient measure of damages).

52. *See* Phillips & Zeckhauser, *supra* note 19, at 121 (discussing use of liability levels for achieving appropriate level of risk deterrence); *id.* at 123-25 (explaining that role of natural resource damages in economy, like price, is to create incentives that lead to correct allocation of resources).

value that the public places on natural resources and thus hinders the creation of a deterrent scheme.[53] Second, policymakers must determine the proper amount to spend on restoring an injured natural resource in light of the fact that restoration cost is often unrelated to both the social utility of the resource and the amount necessary to deter risky behavior by potential polluters.[54] Natural resource damage theory originated in a dissatisfaction with the common-law damage scheme's inability to account for the true value of natural resources.[55] Considering both this common-law foundation and the historical impediments to achieving economic efficiency facilitates an analysis of the statutory natural resource damage provisions, the corresponding regulations, and their supporting theories. Although policymakers have modified the natural resource valuation practice and theory, modern valuation is not completely distinct from its common-law origins.[56]

B. Building on Common-Law Damage Theory: Statutory Natural Resource Damages

In 1977, Congress passed amendments to the Federal Water Pollution Control Act and expanded liability for oil spills and releases of hazardous substances.[57] The Clean Water Act of 1977 (CWA) codified a public trust doctrine in which federal and state government officials act on behalf of the public as trustees of natural resources.[58] The trustees may recover damages for injury to natural resources and must spend all recovered funds to restore the prior level of social benefit from the resource.[59] The CWA also instructs the trustees to recover the cost of restoring the resource in addition to the

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53. *See id.* (adding that efficiency may suffer when trustees do not base damages on market value and that market value is appropriate mode to ensure adequate incentives).

54. *See id.* (noting that cost of restoration is not related to price that promotes proper incentives).

55. *See* Commonwealth v S.S. Zoe Colocotroni, 628 F.2d 652, 673-74 (1st Cir. 1980) (discussing enactment of state and federal oil pollution legislation on natural resource damages as response to limitations on recovery under common law), *cert. denied*, 450 U.S. 912 (1981).

56. *See id.* at 674 & n.21 (noting that principles applicable in natural resource damage cases attempting to ascertain reasonable cost of restoration are "not so completely removed from traditional valuation theory as might, at first blush, appear"); *see generally* Dobbins, *supra* note 20 (comparing common-law tort damages for pain and suffering with nonuse values for natural resource damages).

57 The Clean Water Act of 1977, Pub. L. No. 95-217, 91 Stat. 1566 (codified as amended at 33 U.S.C. §§ 1251-1354 (1994)).

58. 33 U.S.C. § 1321(f)(5).

59 *See id.* (providing that all damages recovered "shall be used to restore, rehabilitate, or acquire the equivalent of such natural resources by the appropriate agencies").

basic clean-up costs.[60] The CWA first codified the idea that the responsible parties should compensate the public for environmental damages above the loss measured by market values.[61] Thus, even the earliest statutory natural resource damage provisions departed from strict common-law damage theory, favored restoration as the measure of damages, and moved away from economic efficiency based purely on economic loss.

In 1980, CERCLA extended liability for parties causing harm to natural resources to include damages for all forms of injury to natural resources resulting from the discharge of oil or the release of hazardous substances, including the costs of assessing the injuries.[62] In furthering the public trust doctrine, Congress provided for the designation of federal and state trustees authorized to pursue claims for such injuries to natural resources under both the CWA and CERCLA.[63] CERCLA also requires that the trustees spend the damages collected on restoring the natural resource, but does not limit damages to the cost of restoration.[64] Congress instructed the President, who in turn delegated that authority to DOI, to promulgate regulations to lay out the appropriate techniques for assessing damages[65] and specified that the regulations should "identify the best available procedures to determine such damages."[66] Any damage assessment conducted in conformity with the regulations would receive a rebuttable presumption of accuracy in a proceeding to recover natural resource damages from a responsible party [67]

In August 1986, over three years past the statutory deadline, DOI first promulgated the damage assessment regulations mandated by CERCLA.[68]

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60. *See id.* § 1321(f)(4) (stating that trustees are to recover costs of restoration or replacement of natural resources damaged or destroyed due to discharge of oil or hazardous substance).

61. *See* Commonwealth v S.S. Zoe Colocotroni, 628 F.2d 652, 673-74 (1st Cir. 1980) (discussing enactment of CWA and noting that Congress decided "it is desirable to provide for environmental damages apart from the commercial loss, ordinarily measured by a market value yardstick"), *cert. denied*, 450 U.S. 912 (1981).

62. *See* 42 U.S.C. § 9607(a)(4)(C) (1994) (providing for recovery of "damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release").

63. *Id.* § 9607(f)(2).

64. *See id.* § 9607(f)(1) (noting that trustees must use damage recoveries "without further appropriation, for use only to restore, replace, or acquire the equivalent of such natural resources").

65. *See id.* § 9651(c)(1) (directing President to promulgate damage assessment regulations).

66. *Id.* § 9651(c)(2).

67. *Id.* § 9607(f)(2)(C).

68. Natural Resource Damage Assessments, 51 Fed. Reg. 27,674 (1986) (codified at

DOI based the damage measurement portion of the original DOI rule on a strict adherence to the economic efficiency principles derived from the common law [69] The rule mandated that the trustees select as the appropriate measure of damages the "lesser of: restoration or replacement costs; or diminution of use values as the measure of damages."[70] In justifying this approach, DOI reasoned that it would be more rational to compensate the public for their lost value from injury to the natural resource if the cost of restoring the resource was greater than the total lost use value.[71] Unlike the pure common-law approach, DOI did not identify a sufficient justification for selecting restoration when the diminution-in-value option was less costly [72] The original DOI theory reflected a predetermination that it was always economically *in*efficient to select a restoration option more costly than the diminution in value, even if a justification akin to a "reason personal" to the owner under the common law might warrant selection of the restoration alternative.[73]

When restoration cost was less than the diminution in value, and thus the proper measure of damages, DOI's 1986 rule operated somewhat like modern damage assessment regulations. The 1986 rule offered the concept

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43 C.F.R. pt. 11 (1987)). References herein to DOI's original regulations, the 1986 DOI rule, or DOI's pre-*Ohio* regulations all refer to the NRDA regulations codified in the 1987 Code of Federal Regulations.

69. *See* Marisa J. Mazzotta et al., *Natural Resource Damage Assessment: The Role of Resource Restoration*, 34 NAT. RESOURCES J. 153, 155 (1994) (concluding that original DOI rule was "based on the common law concept that compensation should make the injured party whole in the least costly manner").

70. 43 C.F.R. § 11.35(b)(2) (1987).

71. *See* Natural Resource Damage Assessments, 50 Fed. Reg. 52,126, 52,141 (proposed Dec. 20, 1985) (discussing rationale for lesser-of approach). The DOI reasoned that:

> [I]f use value is higher than the cost of restoration or replacement, then it would be more rational for society to be compensated for the cost to restore or replace the lost resource than to be compensated for the lost use. Conversely, if restoration or replacement costs are higher than the value of uses foregone, it is rational for society to compensate individuals for their lost uses rather than the cost to restore or replace the injured natural resource.

Id.

72. *See supra* note 40 and accompanying text (discussing common law's selection of restoration over depreciation when court finds that owner has appropriate personal reason to select restoration).

73. *See* Williams, *supra* note 42, at 385-86 (noting that primary reason for DOI's lesser-of rule was "simplistic appeal to principles of welfare economics"); *id.* at 395 (explaining premise of DOI's lesser-of rule as theory that cost of restoration exceeds its marginal benefit at point below full restoration).

of natural resource services as a way of understanding the value provided by natural resources[74] and allowed trustees to consider natural resource services when calculating restoration costs or diminution in value.[75] However, in no circumstance could the restoration alternative restore the lost natural resource to a condition greater than the resource's baseline[76] — the condition that would have existed absent the discharge of oil or release of the hazardous substance.[77] In addition, the natural resource trustees had discretion to include the interim diminution in value of the natural resource in addition to the restoration costs.[78] In light of (1) the ability to recover the diminution in value in addition to restoration costs,[79] (2) the requirement that trustees cap restoration at the original baseline,[80] and (3) the statutory mandate that trustees spend all recovered funds on restoring the resource,[81] trustees faced inconsistent instructions on what amount of funds to collect and how to spend those funds.[82]

Within the diminution-in-value alternative, the 1986 DOI rule established a hierarchy of methods to measure recoverable damages. First, this rule directed the trustees to measure the diminution in use value based on the actual market price of the injured natural resource.[83] Second, if the trustees determined that the market from which the value was derived was

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74. *See* 43 C.F.R. §§ 11.14(nn.), 11.35(c)(2) (1987) (defining resource services and using services as method for determining costs of restoration); Raymond J. Kopp & V Kerry Smith, *Understanding Damages to Natural Assets, in* VALUING NATURAL ASSETS: THE ECONOMICS OF NATURAL RESOURCE DAMAGE ASSESSMENT 6, 10-19 (Raymond J. Kopp & V Kerry Smith eds., 1993) (providing practical explanation of natural resource service flows).

75. *See* 43 C.F.R. § 11.81(c) (1987) (directing trustees to identify resource services provided by injured resource in its pre-injury and postinjury conditions to determine restoration cost); *id.* § 11.84(b) (directing trustees to identify uses of resource services in determining diminution in use value).

76. *See id.* § 11.82(d)(2)(i) (directing that restoration alternatives should restore lost services to "no more than their baseline level").

77 *Id.* § 11.14(e).

78. *See id.* § 11.81(b) (directing that damages based on restoration costs "may include any diminution of use values . occurring during the recovery period").

79. *Id.*

80. *Id.* § 11.82(d)(2)(i).

81. *See* 42 U.S.C. § 9607(f)(1) (1994) (mandating that money damages recovered from CERCLA natural resource damage claim be used "only to restore, replace, or acquire the equivalent of such natural resources").

82. *See* Stewart et al., *supra* note 22, at 163 (noting that regulations were ambiguous as to how trustees must spend diminution-in-value component of damages).

83. 43 C.F.R. § 11.83(c)(1) (1987).

not reasonably competitive or that a market price method was not appropriate, they would measure damages as the decrease in the appraised value caused by the injury.[84] Third, if determining the market or appraisal value was inappropriate, the trustees could then calculate diminution in value by using pricing methods such as the factor income, travel cost, or hedonic pricing methods.[85] In addition, the rule allowed trustees to use contingent valuation to determine use values.[86] Trustees could resort to contingent valuation to estimate nonuse values — such as option and existence values — only when the trustees could not measure any use values.[87] Perceptible only with methods at the bottom of DOI's hierarchy, nonuse values would be accounted for infrequently

C. *The First Fundamental Restructuring and Rethinking:* Ohio v United States Department of the Interior[88]

State governments, industry associations, and environmental groups immediately challenged the validity of DOI's original rule.[89] In *Ohio v*

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84. *Id.* § 11.83(c)(2).

85. *Id.* § 11.83(d)(1)-(4).

86. *Id.* § 11.83(d)(5)(i). Since the first NRDA regulations listed CV as a possible method for valuation of natural resource damages, that method has become a center of controversy Generally, CV involves the use of surveys to elicit responses from randomly selected individuals as to what value they place on natural resources. The survey formats vary greatly, but typically involve questions as to what the individual would be willing to sacrifice to see that the injured natural resource is returned to its normal condition. *See generally* NOAA, Natural Resource Damage Assessments Under the Oil Pollution Act, 58 Fed. Reg. 4601 (1993) [hereinafter NOAA CV Study] (describing CV, noting controversy surrounding its use, outlining its value in determining nonuse values, and concluding that CV is valid method if used in accordance with strict and conservative guidelines); Brian R. Binger et al., *The Use of Contingent Valuation Methodology in Natural Resource Damage Assessments: Legal Fact and Economic Fiction*, 89 NW U. L. REV 1029 (1995) (discussing use of CV in NRDAs, results of NOAA's CV study and embedding effect, and concluding that further research is necessary before placing undue reliance on largely experimental valuation method).

87 43 C.F.R. § 11.83(d)(5) (1987); *see* Natural Resource Damage Assessments, 51 Fed. Reg. 27,674, 27,719 (1986) (noting that regulations preferred use values over nonuse values because "more is known about the determination of use values than option and existence values. Option and existence values are less well-defined and more uncertainty surrounds their measurement").

88. 880 F.2d 432 (D.C. Cir. 1989) (holding that DOI's damage assessment regulations pursuant to CERCLA were contrary to express intent of Congress).

89. *See id.* at 443-59 (examining evidence of congressional intent in statute and legislative history). Shortly after the promulgation of the 1986 DOI regulations, Congress amended CERCLA in the Superfund Amendments and Reauthorization Act (SARA) which

United States Department of the Interior, the United States Court of Appeals for the District of Columbia Circuit scrutinized DOI's regulations in relation to congressional intent regarding the valuation of natural resource damages in CERCLA.[90] After examining the statutory language and its extensive legislative history, the court of appeals held that several portions of the DOI's 1986 rule contradicted the congressional intent underlying CERCLA.[91] The opinion dramatically affected the popular thinking behind compensating the public for injuries to natural resources and focused subsequent debate on three main issues: common-law economic efficiency, the role of nonuse values, and the use of contingent valuation.[92]

First, the court of appeals considered the states' and environmental groups' challenge to DOI's strict adherence to common-law economic efficiency in the lesser-of rule.[93] The court determined that damaged natural resources cannot be treated as replaceable personal property[94] and disagreed with DOI's implementation of a common-law efficiency limitation in the realm of natural resource damages.[95] The court soundly rejected the lesser-of rule's central premise — that it was always economically *in*efficient to restore a resource when its use value was less than the cost of restoration.[96] Thus, in light of Congress's distinct preference for restoration as the measure of damages, DOI erroneously treated use value and restoration cost "as having equal presumptive legitimacy as a measure of damages."[97]

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forced DOI to revise its NRDA regulations. *Id.* at 440. Additional parties filed challenges to the revised rules, and the court consolidated the cases. *Id.*

90. *Id.* at 438-80.

91. *Id.* at 481.

92. The discussion of nonuse values in *Ohio* is important in the context of the OPA regulations because Congress expressed its intent that OPA be consistent with the court's analysis on valuing natural resources. *See infra* notes 152-59 and accompanying text (discussing OPA's legislative history); notes 277-83 and accompanying text (same).

93. *See Ohio*, 880 F.2d at 441-59 (stating that "[t]he most significant issue in this case concerns the validity of the regulation providing that damages for the despoilment of natural resources shall be 'the *lesser of*: restoration or replacement costs; or diminution of use values'").

94. *See id.* at 456 ("The fatal flaw of Interior's approach, however, is that it assumes that natural resources are fungible goods, just like any other.").

95. *See id.* at 447 (commenting that DOI's misinterpretation of measure of damages provision in CERCLA comes from reading "a common-law limitation into the word 'damages'").

96. *Id.* at 455-57

97 *Id.* at 443-44. The statutory evidence that the court relied on in finding a legislative preference for restoration included the CERCLA provision that mandates that funds

However, before examining the statutory text and legislative history underlying the lesser-of rule, the court paused to recognize the practical and administrative feasibility of the economic efficiency elements in the common-law approach.[98] The court compared DOI's approach to the economic rationale concerning a collision-damaged car.[99] A reasonable individual would not pay $8000 to repair a damaged used car worth $5000.[100] The rational car owner would spend $5000 to buy a car of a value equal to the damaged car before the collision.[101] However, the court looked to the common-law exception that recognizes restoration as the proper measure of damages when the owner has a personal reason for preferring restoration.[102] In doing so, the court indicated that the non-fungible quality of natural resources is analogous to such a personal reason for restoration.[103] The court did not condemn DOI's attempt to promote economic efficiency, but did reject the strict interpretation of the common law because that interpretation failed to account for the total value of the resource.[104] In addition, the court specifically sanctioned one element of economic efficiency related to DOI's lesser-of rule:[105] the court suggested that use value may function as the appropriate measure of damages when the cost of restoration is "grossly disproportionate to the use value of the

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recovered in a natural resource damage claim be used "only to restore, replace, or acquire the equivalent of such natural resources." *Id.* at 444 (quoting 42 U.S.C. § 9607(f)(1) (1988)). In OPA, Congress was even more direct in displaying its preference for restoration. *See infra* notes 152-58 and accompanying text (discussing OPA's express preference for restoration as measure of damages).

98. *See Ohio*, 880 F.2d at 442 (stressing practical significance of lesser-of rule).

99 *Id.* at 443

100. *Id.*

101. *Id.*

102. *See supra* notes 38-50 and accompanying text (discussing exception to common-law preference for diminution in value as measure of damages).

103. *See Ohio*, 880 F.2d at 457 & n.41 (citing Trinity Church v John Hancock Mut. Life Ins. Co., 502 N.E.2d 532, 536 (Mass. 1987) (asserting that "even the common law recognizes that restoration is the proper remedy for injury to property where measurement of damages by some other method will fail to compensate fully for the injury"); Weld County Bd. of Comm'rs v. Slovek, 723 P.2d 1309, 1316-17 (Colo. 1986).

104. *See* KEVIN M. WARD & JOHN W DUFFIELD, NATURAL RESOURCE DAMAGES: LAW AND ECONOMICS § 8.7 (1992) (emphasizing that *Ohio* did not reject theory of economic efficiency itself but idea that efficiency should be measured against use value alone, as opposed to use and nonuse values); Copple, *supra* note 49, at 687-88 (noting that court's problem with lesser-of rule resulted from reliance solely on use values in valuation equation and not nonuse values as well).

105. *See Ohio*, 880 F.2d at 443 (recognizing that DOI has some latitude in deciding which measure of damages to apply).

resource."[106] Thus, the court reserved a small role for economic efficiency while otherwise voiding DOI's common-law damage scheme in favor of a restoration-based system.[107] Neither DOI nor the *Ohio* court addressed the issue of measuring damages based partially on restoration costs and partially on diminution in value.[108]

Second, the court of appeals discussed the environmentalist petitioners' challenge to DOI's hierarchy of assessment methods and instructed DOI to re-evaluate its treatment of nonuse values.[109] The court found DOI's almost exclusive reliance on market valuation techniques offensive in light of Congress's manifest intent that damage assessment regulations "capture fully all aspects of loss."[110] The court's analysis validated the position held by economists[111] and the environmentalist petitioners that market values alone will rarely, if ever, accurately represent the true value of natural resources.[112] The court found that market prices were inadequate surrogates for true value and that the deficiencies of market values created the need for

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106. *Id.* The court of appeals further suggested that regulators may cap restoration cost at "three-times the amount of use value" or that DOI may measure damages by use value when the ability of the resource to recover is doubtful. *Id.* at 443-44 n.7 For example, if the cost of restoration is $4 million, but the total value of the resource is only $1 million, the amount of damages sought by natural resource trustees would be $3 million. Although the court only offered the three-to-one ratio as an example, some commentators expected it to function as the new yardstick for economic efficiency and the primary issue for litigation concerning maximum damage calculations. *See* Copple, *supra* note 49, at 689 (noting potential interpretations of court's three-to-one ratio to determine when damages are grossly disproportionate).

107 *See Ohio*, 880 F.2d at 459 (concluding that DOI may establish standard for when to use measures other than restoration, but that Congress preferred restoration as norm). The court further clarified that it was not saying that Congress had forsworn the goal of efficiency· "'Efficiency,' standing alone, simply means that the chosen policy will dictate the result that achieves the greatest value to society Whether a particular choice is efficient depends on *how the various alternatives are valued.*" *Id.* at 456; *see also* Copple, *supra* note 49, at 686 (noting that *Ohio* "cannot be read as either rejecting all considerations of economic efficiency in natural resource damage assessments or as absolutely mandating restoration costs as the appropriate measure of damages").

108. *See* WARD & DUFFIELD, *supra* note 104, § 8.8 (noting that DOI regulations and *Ohio* reflect confusion as to what is efficient level of damages and suggesting that true efficiency may be achieved by "some intermediate level of restoration plus compensation").

109. *Ohio*, 880 F.2d at 462-64.

110. *Id.* at 463.

111. *See* NOAA CV Study, *supra* note 86, at 4602 (noting that economists have recognized for over 25 years that people not using natural resources still derive satisfaction from them).

112. *See Ohio*, 880 F.2d at 462-63 (explaining that although it is not irrational to consider market value in valuing natural resources, it is unreasonable to view it as exclusive or even predominant factor).

alternative valuation techniques such as contingent valuation.[113] The court instructed DOI to develop assessment methods that fully consider use and nonuse values — such as option and existence values — and suggested that a valuation not accounting for nonconsumptive values would be incomplete.[114] The *Ohio* court further legitimized the view that "[o]ption and existence values may represent 'passive' use, but they nonetheless reflect utility derived by humans from a resource, and thus, *prima facie*, ought to be included in a damage assessment."[115]

Third, the court of appeals examined the use of contingent valuation to determine use and nonuse values.[116] Ultimately, the court rejected the industry petitioners' three-fold claim that (1) the use of contingent valuation conflicted with common-law damage assessment principles, (2) contingent valuation was less than a "best available procedure," and (3) granting a rebuttable presumption to damage assessments conducted with contingent valuation was arbitrary and capricious.[117] The industry petitioners argued that because contingent valuation did not ask the survey respondents to pay actual money, it overstated a respondent's willingness to pay for the natural resource.[118] The D C. Circuit admitted that a tendency for overstatement inhered in the method, but found that sophisticated questioning could effectively safeguard against inflated results.[119] In addition, the court rejected the argument that contingent valuation is inherently biased because it is conducted in the midst of media attention to an oil spill or hazardous substance leak.[120] The court found that trustees could structure a contingent valuation survey to avoid inherent "undue upward biases" and held that, for the time being, that method was a best available procedure under the mandate of CERCLA.[121]

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113. *Id.* at 463 (citing United States v Commodities Trading Corp., 339 U.S. 121, 123 (1950)). The court asserted that most natural resources have no markets, and for the few natural resources that do have markets, market price alone cannot capture the total value. *See id.* at 457-63 & n.40 (noting that market fails to account for important ecological attributes, including consumer surplus — difference between willingness to pay and market price — and, presumably, ecological services).

114. *See Ohio*, 880 F.2d at 464 (noting that market value alone represents incomplete valuation and instructing DOI that limiting role of nonconsumptive values is erroneous reading of CERCLA).

115. *Id.* (citing Frank B. Cross, *Natural Resource Damage Valuation*, 42 VAND. L. REV 269, 285-89 (1989)).

116. *Id.* at 474-81.

117 *Id.* at 476.

118. *Id*; *see supra* note 86 (generally describing use of CV method to assess damages).

119. *Ohio*, 880 F.2d at 477-78.

120. *Id.* at 478.

121. *Id.*

In a related argument, the industry petitioners claimed that the 1986 DOI rule gave natural resource trustees insufficient guidance on the use of contingent valuation in damage assessments.[122] The court defended the rule's flexibility, citing the many different scenarios of natural resource damages that natural resource trustees must confront.[123] The court noted that the nature and extent of the oil or hazardous substance spill or leak and the characteristics of the physical area damaged will dictate what procedures a trustee should use and how to use them.[124] Thus, the court found that the 1986 DOI rule provided sufficient guidance to natural resource trustees, and that the degree of flexibility and discretion afforded trustees was necessary [125]

The court's discussion of common-law damage theory, damage valuation techniques, and contingent valuation did more than force DOI to change its rule. Partly because judicial review of the natural resource damage valuation process is rare, the case fundamentally restructured natural resource damage assessments.[126] The court sought to ensure that damage assessments capture the total value of the injured resource and focused attention on nonuse values. The court succeeded in changing the direction of natural resource valuation and legitimized the idea that restoration is the better measure to capture the true value of a resource and compensate the public. However, *Ohio* and the regulations that it scrutinized evidence a preoccupation with reducing all economic and noneconomic values to a single metric: the court failed to explore the inadequacies of reducing the valuation of nonfungible goods to a pricing model.[127]

D. DOI Revises Its Damage Assessment Regulations

In order to comply with the court's decision in *Ohio*, DOI reproposed its regulations in April 1991.[128] When DOI finalized those regulations almost two years later, it reserved the section on recovery of nonuse values for further study[129] and expressed a willingness to follow NOAA's lead on

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122. *Id.* at 479-80.

123. *Id.*

124. *Id.*

125. *Id.* at 480.

126. *See* Kopp et al., *The Economics Have Shifted*, *supra* note 29, at 10,127 (noting that *Ohio* "dramatically change[d] the playing field for conflicts between plaintiffs and defendants in natural resource damage cases").

127 *See* Williams, *supra* note 42, at 383-94 (explaining that although *Ohio* promoted restoration-based compensation, it also further entrenched pricing rhetoric).

128. Natural Resource Damage Assessments, 56 Fed. Reg. 19,752 (proposed April 29, 1991).

129. Natural Resource Damage Assessments, 59 Fed. Reg. 14,261, 14,262 (Mar. 25,

nonuse valuation.[130] The damage assessment regulations promulgated by DOI in 1991 applied to natural resource damages resulting from the discharge of oil until February 6, 1996.[131]

The fundamental change in the revised DOI regulations was the implementation of CERCLA's preference for restoration as the appropriate measure of damages.[132] As a result, the provision in the original regulations allowing trustees to include diminution in value pending recovery assumed greater importance. In place of measuring damages as the lesser of the diminution in value *or* restoration cost, DOI adopted a measure based on varying degrees of restoration *plus* interim diminution in value.[133] As part of the new measure of damages, DOI introduced the concept of "compensable value," which represents the diminution in value of the natural resource and its services from the time of the injury until recovery, independent of and in addition to the cost of restoration.[134] Moreover, DOI directed that the compensable value include nonuse values as well as use values.[135] Consequently, DOI expanded the recoverable damages in two ways: (1) the trustees could seek to recover the cost of restoration in

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1994) (codified at 43 C.F.R. pt.11) (effective April 25, 1994). The current form of DOI's regulations is an amalgamation of various final rules: 51 Fed. Reg. 27,674 (Aug. 1, 1986), 52 Fed. Reg. 9042 (Mar. 20, 1987), 53 Fed. Reg. 5166 (Feb. 22, 1988), 53 Fed. Reg. 9769 (Mar. 25, 1988), and 59 Fed. Reg. 14,261 (Mar. 25, 1994).

130. *See* Natural Resource Damage Assessments, 59 Fed. Reg. 23,098, 23,098 (proposed May 4, 1994) (soliciting comments on NOAA's prior proposed rulemaking at 59 Fed. Reg. 1167 (Jan. 7, 1994) and ending comment period on July 7, 1994). DOI has not issued a final rule regarding nonuse issues within Type B assessments but has expressed a desire to conform its final rule with NOAA's Final Rule. *See* 59 Fed. Reg. 23,098, 23,099 (noting DOI will consider ways to "ensure the greatest consistency appropriate" with NOAA's regulations).

131. *See* Final Rule, *supra* note 10, at 502 (to be codified at 15 C.F.R. § 990.20) (stating that DOI's regulations apply to natural resource damages resulting from discharge of oil, that Final Rule supersedes those regulations as to that type of damages, and that trustees may complete assessments commenced before February 5, 1996, in compliance with existing CERCLA regulations); *see also* 33 U.S.C. § 2702(a) (1994) (stating that notwithstanding any other provision of law, party responsible for discharge of oil is liable under OPA).

132. *See* Copple, *supra* note 49, at 690 (describing DOI's incorporation of restoration preference as most significant change in rules).

133. *See* 43 C.F.R. § 11.80(b) (1995) (noting that trustees have discretion to include value of lost services from time of release to attainment of restoration); Copple, *supra* note 49, at 691 (describing expansion of recoverable damages in new DOI regulations).

134. *See* 43 C.F.R. § 11.83(c) (1995) (defining compensable value).

135. *See id.* (noting that compensable value includes "the value of lost public use of the services provided by the injured resources, plus lost nonuse values such as existence and bequest values").

addition to a temporary diminution in value, and (2) the new diminution-in-value component — compensable value — would include nonuse values.[136]

DOI chose to forgo the efficiency inherent in the lesser-of rule and chose not to replace it with any explicit efficiency constraint.[137] In its place, DOI established a set of criteria to guide the trustees in selecting the cost estimation and valuation methods.[138] DOI instructed trustees to select assessment procedures that are performable at a reasonable cost and that are cost-effective.[139] In addition, DOI implemented a list of ten criteria that natural resource trustees must use to evaluate the several damage alternatives that they have developed by using the cost-effective procedures.[140] The second of these ten factors requires that trustees evaluate the expected costs of every restoration alternative in relation to the expected benefits it will produce.[141] One commentator described the result as a "new economic efficiency" implicit in conducting a cost-benefit analysis for each of several alternative actions comprised of differing levels of restoration and compensation.[142] This hybrid solution — addressed neither by DOI in 1986 nor by the *Ohio* court — prevailed in DOI's revised regulations.[143] The trustees

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136. *See* Williams, *supra* note 42, at 427-34 (describing significant role of compensable value in revised DOI rule and arguing that it embodies purely economic approach to damages).

137 *See* Copple, *supra* note 49, at 692-701 (detailing omission of lesser-of rule and lack of replacement with any grossly disproportionate standard). Copple ultimately finds alternative elements of an implicit "new economic efficiency " *Id.*

138. *See* 43 C.F.R. § 11.83(a)(3) (1995) (directing trustees to use methods that: (1) are feasible and reliable for particular incident, (2) are performable at reasonable cost, (3) prevent double counting, and (4) are cost-effective).

139. *Id.* § 11.83(a)(3)(ii),(iv).

140. *Id.* § 11.82(d). The 10 factors include, generally· (1) technical feasibility, (2) the relationship of the cost of the alternative to its benefits, (3) cost-effectiveness, (4) results of actual or planned response actions, (5) potential for additional injury resulting from the action, (6) the natural recovery period, (7) ability of the resource to recover with or without action, (8) potential effects of the action on human health and safety, (9) consistency with federal, state, and tribal policies, and (10) compliance with federal, state, and tribal policies. *Id.*

141. *Id.* § 11.82(d)(2).

142. *See* Copple, *supra* note 49, at 693-701 (finding "new economic efficiency" in "some form of a sliding scale with minimal restoration or natural recovery plus higher lost future compensable value at one end, and at the other end, significant and intensive restoration plus more minimal lost future compensable value" that results from application of enumerated factors).

143. *See supra* notes 88-127 and accompanying text (discussing *Ohio* decision generally and noting that neither DOI nor court of appeals in *Ohio* discussed hybrid solution of part restoration cost plus part diminution in value).

will look at several combinations of varying degrees of restoration and monetary damages and consider each alternative's total economic efficiency [144] The natural resource trustees act within a two-tiered check on economic efficiency that relies on cost-benefit and cost-efficiency analyses conducted both when selecting the assessment procedures and when evaluating the restoration alternatives.[145]

III. NOAA Assumes the Lead in Natural Resource Damage Assessment Regulation

In March 1989, the *Exxon Valdez* ran aground off the coast of Alaska and spilled more than eleven million gallons of oil into Prince William Sound.[146] Scores of scientists descended on Alaska and spent over $100 million studying the effects of the spill and developing information to use in litigation against Exxon.[147] The natural resource trustees valued the damage at over $3 billion, but eventually settled their claim against Exxon for just over $1 billion.[148] The trustees arrived at the $3 billion figure by relying on the contingent valuation method, and the controversy surrounding that method gained public attention.[149] As the federal and state regulatory agencies were cleaning up the oil and assessing damages in Prince William Sound, Congress began considering oil pollution legislation.[150] In August 1990, sixteen months after the Exxon spill, the House and Senate passed OPA with no dissenting votes, thus revamping mandatory oil pollution prevention and liability measures.[151]

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144. *See* Williams, *supra* note 42, at 433 (arguing that revised DOI rule requires trustees to justify restoration costs in terms of efficiency of total damages).

145. *See* Kopp & Smith, *supra* note 74, at 9 (noting that revised DOI regulations actually provide trustees with discretion to ensure that damages correspond to economic view of damages); Williams, *supra* note 42, at 426-34 (noting that cost-benefit comparisons in revised DOI rules continue emphasis on pricing rhetoric and efficiency and amount to finely tuned lesser-of rule).

146. Wesley Loy, *Dredging for Lessons from the Tragedy in Prince William Sound*, WASH. POST, Feb. 15, 1993, at A3. The Exxon spill spread oil over an area 15 times the size of the state of Rhode Island and was the largest spill in United States history *Id.*

147 *Id.*

148. *See id.* (discussing eventual settlement).

149 *See* Frank B. Cross, *Restoring Restoration for Natural Resource Damages*, 24 U. TOL. L. REV 319, 328 (1993) (noting that plaintiffs in Exxon spill built case for damages largely on contingent valuation).

150. Don Phillips, *Oil Spill Legislation Sweeps Through Congress: Bill Would Raise Liability of Tanker Owners and Require Double Hulls on Ships by 2010*, WASH. POST, Aug. 5, 1990, at A18.

151. *Id.*

A. OPA's Provision for Assessing Natural Resource Damages

The emphasis on restoration in CERCLA that was apparent to the D.C. Circuit is even more evident in OPA.[152] First, Congress expanded the statutory components of natural resource damages and mandated recovery of: (1) the cost of restoration, (2) the diminution in value of the resource pending restoration, and (3) the reasonable cost of assessing the first two components.[153] Second, Congress not only mandated that trustees spend all sums recovered from a natural resource damage claim on enhancing the natural resource,[154] it instructed the natural resource trustees to develop and implement the plan for restoration on which the damage claim was based.[155] In addition, Congress made it clear that trustees must include lost use and nonuse values in the diminution-in-value component of damages.[156] The legislators cited, with full approval, the reasoning in *Ohio* as to the measurement of interim diminution in value.[157] Thus, it is evident that Congress, responding to the public reaction to the catastrophe in Prince William Sound, sought to mandate full restoration of the entire economic value of damaged natural resources[158] and took another step toward fully recognizing the public's loss from natural resource injuries. However, by following *Ohio*, Congress and NOAA remained focused on the economic pricing of

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152. *See* Mazzotta et al., *supra* note 69, at 157-58 (noting that preference for restoration is abundantly evident in OPA).

153. *See* 33 U.S.C. § 2706(d)(1) (1994) (providing measure of natural resource damages as sum of "(a) the cost of restoring, rehabilitating, replacing, or acquiring the equivalent of, the damaged natural resources; (b) the diminution in value of those natural resources pending restoration; plus (c) the reasonable cost of assessing those damages").

154. *Id.* § 2706(f).

155. *See id.* § 2706(c) (directing federal, state, foreign, and Indian trustees to "develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent, of the natural resources"); Mazzotta et al., *supra* note 69, at 158 (inferring that trustees must implement same restoration plan that served as basis for assessment).

156. *See* S. REP. NO. 101-94, at 15 (1990), *reprinted in* 1990 U.S.C.C.A.N. 722, 736-37 (noting that trustees must use all sums recovered in natural resource damages claim to restore or acquire equivalent resources).

157 *See id.* (stating that OPA is intended to be consistent with *Ohio*); H.R. CONF REP. No. 101-653, at 108 (1990), *reprinted in* 1990 U.S.C.C.A.N. 779, 786 (referring to *Ohio* for explanation of diminution-in-value measurement and other standards for measuring damages).

158. *See* S. REP. NO. 101-94, at 15, *reprinted in* 1990 U.S.C.C.A.N. 722, 737 ("The bill makes it clear that forests are more than board feet of lumber, and that seals and sea otters are more than just commodities traded on the market. It would clarify that in the wake of spills like the *Exxon Valdez*, all reasonable demonstrable natural resource damages caused by a spill are paid by the responsible parties, rather than borne by the public.").

nonuse values, disregarding the diversity of incommensurable values inherent in most natural resources.[159]

B. NOAA's Early Attempts at Damage Assessment Regulations Under OPA

Although OPA allowed two years for NOAA to promulgate regulations on the assessment of natural resource damages, NOAA did not propose damage assessment regulations until January 1994.[160] At least part of this delay resulted from NOAA's study to determine if the positive aspects of using contingent valuation in damage assessments outweighed the controversy surrounding that method.[161] The study resulted in a qualified endorsement of contingent valuation's ability to convey useful information on nonuse values.[162] NOAA admitted that trustees should expect some bias and overstatement of willingness to pay when using contingent valuation, but noted that trustees can correct or offset those flaws if they follow certain recommended guidelines.[163]

NOAA's first attempt at damage assessment regulations, in January of 1994, mirrored DOI's revised regulations in many respects.[164] However, NOAA expanded the number of categories of assessments[165] and directed

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159 *See infra* notes 331-36 and accompanying text (discussing economic pricing theory's inability to gauge diverse ways that people value natural resources).

160. Natural Resource Damage Assessments, 59 Fed. Reg. 1061 (proposed Jan. 7, 1994) (to be codified at 15 C.F.R. pt. 990) [hereinafter 1994 Proposed Rule]; *see* 33 U.S.C. § 2706(e)(i) (1994) (directing President to act through various agencies to promulgate regulations for assessment of natural resource damages resulting from discharge of oil no later than August 18, 1992).

161. *See* NOAA CV Study, *supra* note 86, at 4601 (noting positive and negative aspects of CV). NOAA's CV Study noted that opponents of CV argue that responses are inconsistent with rational choice, respondents do not understand the questioning, and that the surveys lead to overstated values. *Id.* at 4601-03. NOAA added that CV was probably the only method to determine the nonuse values of natural resources. *Id.* at 4603.

162. *See id.* at 4610-11 (concluding that CV surveys can produce estimates to serve as starting point for NRDA litigation if studies follow strict guidelines).

163. *Id.*

164. *See* Copple, *supra* note 25, at 10,673 (outlining parallel between DOI rules and NOAA's first attempt); Williams, *supra* note 42, at 428-29 (noting that NOAA and DOI rules are similar but that NOAA rule is "much less resistant to restoration costs as the presumptive measure of damages"); *see generally* Susan A. Austin, *The National Oceanic and Atmospheric Administration's Proposed Rules for Natural Resource Damage Assessment Under the Oil Pollution Act*, 18 HARV ENVTL. L. REV 549 (1994) (discussing 1994 proposed rule in detail and its implications).

165. The four assessment procedures were: (1) compensation formulas, (2) computer models, (3) Expedited Damage Assessments, and (4) Comprehensive Damage Assessments.

trustees to recover all restoration costs in addition to a compensable value that included monetized use and nonuse values.[166] For the most comprehensive category of assessments, the 1994 proposed rule specifically listed five methods for measuring compensable values.[167] NOAA limited the use of each of the methods, except contingent valuation, to specific damage scenarios.[168] NOAA's proposed rule gave natural resource trustees extensive guidance on how to use contingent valuation, but placed little limitation on when trustees may use that method.[169] NOAA did suggest, however, that when the trustees decide between valuation alternatives, they should select the alternative that would underestimate, rather than overestimate, the damages.[170]

In response to the voluminous comments received on the January 1994 proposal, NOAA "fundamentally restructured" the damage assessment procedure to place even greater emphasis on restoration and reproposed its regulations in August 1995.[171] NOAA summarized the differences in the new approach as: (1) the elimination of the need to determine compensable values as a separate component of natural resource damage claims, (2) a

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1994 Proposed Rule, *supra* note 160, at 1061.

166. *Id.* at 1182 (to be codified at 15 C.F.R. § 990.77(g)-(h)).

167 *See id.* at 1182-83 (to be codified at 15 C.F.R. § 990.78(b)(1)-(5)) (listing travel cost method, factor income method, hedonic price method, market methods, and CV). In addition, NOAA listed two "alternative method" the benefits transfer approach and the habitat or species replacement cost method. *Id.* at 1183-84 (to be codified at 15 C.F.R. § 990.78(c)).

168. *See id.* at 1182 (to be codified at 15 C.F.R. § 990.78(b)(1)-(4)) (limiting use of travel cost method to estimation of value of recreational services; limiting use of factor income method to valuation of services that function as input to production process; limiting use of hedonic price model to valuation of nonmarket services provided by natural resource; and limiting use of market methods of supply and demand to valuation of natural resources traded in markets).

169. *See id.* at 1182-83 (to be codified at 15 C.F.R. § 990.78(b)(5)) (permitting use of contingent valuation "to determine individuals' valuation of natural resources or of the services provided by natural resources in order to estimate compensable values"); Williams, *supra* note 42, at 437 (stating that proposed NOAA and DOI rules authorize "general resort" to contingent valuation).

170. 1994 Proposed Rule, *supra* note 160, at 1146; *see* Austin, *supra* note 164, at 559-60 (discussing NOAA's underestimation preference, adoption of 50% discount factor, and use of willingness-to-pay over willingness-to-accept criterion within CV surveys as elements of "a conservative approach").

171. *See* Natural Resource Damage Assessments, 60 Fed. Reg. 39,804, 39,804 (proposed Aug. 3, 1995) [hereinafter 1995 Proposed Rule] (stating that, based on numerous public comments, "NOAA is considering a fundamental restructuring of the rule to provide even greater emphasis upon restoration").

new emphasis on restoration of what actually was lost — the natural resource and its human and ecological services, (3) an increased public involvement in the selection of the restoration action, and (4) the increased flexibility afforded natural resource trustees to determine appropriate assessment methods on a case-by-case basis.[172] A tight judicial deadline forced NOAA to limit the public comment period to thirty days and to submit a final rule for publication by December 31, 1995.[173]

C. *NOAA's 1996 Final Rule*

NOAA published its long-awaited Final Rule on January 5, 1996, maintaining the fundamental changes introduced in its 1995 proposal. Like previous damage assessment regulations, the Final Rule seeks to return the injured natural resource to its baseline promptly and to compensate the public for the permanent or interim loss resulting from the natural resource injury.[174] However, unlike previous regulations, the Final Rule states that the purpose of OPA and NRDA regulation is to "make the environment and public whole," as opposed to previous rules that sought only to "make the public whole."[175] This subtle change in phrasing of the stated purpose symbolizes the change in focus in the new approach.[176]

To comprehend the new concepts in valuation and compensation, it is helpful first to understand the Final Rule's assessment procedure. Like prior NRDA rules, NOAA's Final Rule is divided into phases: Preassessment, Restoration Planning, and Restoration Implementation.[177] In Preassessment, the trustees pursue limited data collection[178] to determine whether they have jurisdiction to conduct restoration under OPA and whether it is appropriate to do so.[179] If the trustees decide to proceed to the next phase, they must

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172. *Id.*

173. *See id.* (cautioning reviewers of 1995 proposed rule that final rule is subject to deadline in consent decree in *NRDC v. United States Coast Guard*, No. CV-94-4892 (E.D.N.Y June 26, 1995) (order for partial settlement)).

174. Final Rule, *supra* note 10, at 500 (to be codified at 15 C.F.R. § 990.10).

175. *Compare* Final Rule, *supra* note 10, at 440 ("The goal of the [OPA] is to *make the environment and public whole*"), *with* 1994 Proposed Rule, *supra* note 160, at 1139-40 (noting that trustees should "use the diminution-in-value sums in a way to *make the public whole* [and] the purpose of the litigation is to *make the public whole*").

176. *See infra* notes 293-98 and accompanying text (discussing effect of concentrating on ecological services, rather than services to public, to compensate environment).

177 Final Rule, *supra* note 10, at 500 (to be codified at 15 C.F.R. § 990.12).

178. *See id.* at 477 (noting that any data collection must be limited to that which is reasonably related to trustees' goals at that stage of assessment).

179 *Id.* at 505 (to be codified at 15 C.F.R. § 990.40).

first publish a Notice of Intent to Conduct Restoration Planning, open an administrative record,[180] and invite the responsible parties to participate in the damage assessment no later than the publication of the Notice.[181]

NOAA broke down the next phase, Restoration Planning, into Injury Assessment — the evaluation and quantification of potential injuries — and Restoration Selection — the determination of the need for and scale of restoration.[182] To perform the Injury Assessment, the trustees identify injuries from the release of oil, determine which injuries deserve attention, and quantify those injuries.[183] The trustees' approach to quantification may range from emphasis on the physical nature of the injured natural resource to exclusive evaluation of the impaired natural resource services.[184]

The Restoration Selection portion of the Restoration Planning Phase embodies NOAA's new approach to natural resource valuation.[185] In that stage, the trustees consider a reasonable range of restoration alternatives, each comprising primary and compensatory restoration components that together make the environment and public whole. Primary restoration connotes the traditional meaning of restoration, as used in prior regulations, and consists of human intervention or natural recovery that returns the injured resource to its baseline condition.[186] In the primary restoration component of each alternative, the trustees must consider at least one natural recovery alternative and at least one active primary restoration alternative.[187]

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180. *Id.* at 505-06 (to be codified at 15 C.F.R. §§ 990.44- 45).

181. *Id.* at 500 (to be codified at 15 C.F.R. § 990.14(c)(1)-(2)).

182. *Id.* at 441, 506 (to be codified at 15 C.F.R. § 990.50).

183. *Id.* at 506-07 (to be codified at 15 C.F.R. §§ 990.51-.52). A significant change in the Final Rule not discussed in this Note is the new definition of injury NOAA now defines injury as "an observable (i.e., qualitative) or measurable (i.e., quantitative) adverse change in a natural resource or impairment of a natural resource service." *Id.* at 447 Consequently, "the 'mere presence' of oil will not constitute an injury under the rule." *Id.* at 472; *see* Copple, *supra* note 25, at 10,674-75 (discussing change to definition of injury).

184. Final Rule, *supra* note 10, at 506 (to be codified at 15 C.F.R. § 990.52(b)).

185. *Id.* (to be codified at 15 C.F.R. § 990.53); *see* Copple, *supra* note 25, at 10,674 (noting that Restoration Planning Phase "encompasses the bulk of NOAA's new conceptual approach" and is what "ostensibly make[s] the 1995 Proposed Rule different from its predecessors").

186. Final Rule, *supra* note 10, at 505 (to be codified at 15 C.F.R. § 990.30).

187 *Id.* at 507 (to be codified at 15 C.F.R. § 990.53(b)). In the natural recovery alternative, "no human intervention would be taken to directly restore injured natural resources and services to baseline." *Id.* (to be codified at 15 C.F.R. § 990.53(b)(2)). An active primary restoration alternative is "an alternative comprised of actions to directly restore the natural resources and services to baseline on an accelerated time frame." *Id.* (to be codified at 15 C.F.R. § 990.53(b)(3)). Primary restoration can include "on-site, off-site, in-kind, and/or out-of-kind restoration actions." *Id.* at 483.

As a component of each alternative, the trustees must also consider compensatory restoration actions — actions designed to compensate the public for the interim loss of the injured natural resources and services pending recovery in the form of actual natural resources and services.[188] Compensatory restoration, which replaces the concept of compensable value,[189] is based on the idea that returning the natural resource to its baseline condition and paying monetary damages for interim lost value are insufficient to accomplish the goal of making the environment and public whole. Thus, whenever the injury involves a loss of natural resource services pending restoration, the trustees must consider compensatory restoration.[190] NOAA uses the example of a public beach closed due to oil-soaked sand after an oil spill.[191] Restoring the beach alone would not compensate the public for its loss of recreational beach days during the closure. However, the trustees can design compensatory restoration to create an additional number of recreational beach days over time, perhaps by improving access to the existing beachfront.[192] The Final Rule requires that trustees first consider compensatory restoration actions that provide replacement resources or services of the same type and quality and of comparable value as those injured.[193] When consideration of the same type and quality of replacement services would be infeasible or would not provide a reasonable range of alternatives, the trustees may then consider replacement services of a comparable type and quality [194] The abandonment of the concept of compensable value, in favor of compensatory restoration, is perhaps the most significant practical and theoretical change in the new approach.[195]

After identifying a range of alternatives that consist of primary and compensatory restoration, the trustees must determine the appropriate scale

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188. *Id.* at 507 (to be codified at 15 C.F.R. § 990.53(c)). Compensatory Restoration is defined as "action taken to compensate for interim losses of natural resources and services that occur from the date of the incident until recovery " *Id.* at 505 (to be codified at 15 C.F.R. § 990.30); *see* Mazzotta et al., *supra* note 69, at 170-74 (outlining process for restoration-based compensation similar to compensatory restoration in Final Rule).

189 *See supra* note 134 and accompanying text (discussing concept of compensable value).

190. Final Rule, *supra* note 10, at 483.

191. *Id.* at 453, 484.

192. *Id.* at 453.

193. *Id.* at 507 (to be codified at 15 C.F.R. § 990.53(c)(2)).

194. *Id.*

195. *See infra* notes 265-366 and accompanying text (discussing practical and theoretical significance associated with new concept of compensatory restoration).

of each alternative that will make the environment and public whole.[196] NOAA uses the term "scaling" to mean the creation of a quantitative equivalency between lost resources and services and the replacement resources and services over time.[197] This equivalency or balance is struck when the replacement services will make the environment and public whole. The Final Rule indicates that trustees must scale those primary restoration actions that involve replacement or acquisition of equivalent resources and all compensatory restoration actions.[198] NOAA developed two possible types of scaling approaches: (1) the resource-to-resource and service-to-service approaches (collectively referred to herein as the service-to-service approaches) and (2) the valuation approach.[199] The former approach is new to damage assessment regulations.

Under the Final Rule, the trustees must consider the service-to-service scaling approaches for restoration actions that provide natural resources and services of the same type and quality and of comparable value as those lost.[200] This approach is based on matching quantities and qualities of the lost resources and services with other additional resources and services over time.[201] Trustees will strike a balance between lost resources and services and the compensatory resources, adjusting for the time it will take replacement services to fully develop.[202] NOAA recommends the use of Habitat Equivalency Analysis (HEA) under the service-to-service approaches when the spill consists of injury to indirect or off-site human use.[203] In a brief description of HEA, NOAA notes that it involves creating a balance between the present value of the quantity of the lost services and the present value of the quantity of services contemplated by the restoration action, which will produce resource value over time.[204] HEA, an economic annuity approach, appears to be a method well suited to serve the Final Rule's

196. Final Rule, *supra* note 10, at 507 (to be codified at 15 C.F.R. § 990.53(d)).

197 *Id.* (to be codified at 15 C.F.R. § 990.53(d)(2)).

198. *Id.* at 485-86.

199. *Id.* at 452-53, 507 (to be codified at 15 C.F.R. § 990.53(d)(2)-(3)).

200. *Id.* at 507 (to be codified at 15 C.F.R. § 990.53(d)(2)).

201. *Id.* (to be codified at 15 C.F.R. § 990.53(d)(2)).

202. *See id.* at 453-54 (noting that resource-to-resource approach must be discounted to account for differences in time of injury and replacement resources).

203. *Id.* NOAA does not limit the trustees to any one procedure or set of procedures, but permits trustees to use any procedure deemed appropriate under 15 C.F.R. § 990.27 *Id.* at 498; *see infra* notes 215-20 and accompanying text (discussing criteria for assessment procedure selection). This latest rulemaking procedure from NOAA is the first to recommend HEA.

204. Final Rule, *supra* note 10, at 498.

emphasis on compensating for interim lost values with additional services.[205] Like the new approach, HEA avoids using dollar values and focuses on replacing lost environmental services with additional environmental services.[206] In addition, both are based on discounting future restoration to present value by using a rate to reflect social preference for present as opposed to future natural resources.[207]

When considering only restoration alternatives that consist of resources of the same type and quality as those lost will not allow the trustees to produce a reasonable range of alternatives, or when the trustees determine that the service-to-service approaches are inappropriate, the trustees may resort to a valuation approach.[208] Under the valuation approach, the trustees determine a precise value of the injured resource and its services and scale the replacement resources and services to that value.[209] The trustees may use a variety of units of value, including units of resource service or dollars.[210] The Final Rule lists several valuation approaches that may be appropriate,[211] but unlike NOAA's 1994 proposed rule, the Final Rule does not offer guidance as to when trustees must use each valuation procedure.[212] However, the Final Rule does indicate that trustees may resort to calculat-

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205. *See generally* Robert E. Unsworth & Richard C. Bishop, *Assessing Natural Resource Damages Using Environmental Annuities*, 11 ECOLOGICAL ECON. 35 (1994) (recommending environmental annuities in place of more costly and lengthy traditional valuation methods and applying annuity approach to oil spill). Environmental annuities are based on the assumption that the government can compensate the public for lost environmental services by providing additional services over time. *Id.* at 35-36.

206. *See id.* at 37 (noting that annuity concept does not use "the usual dollar metric" and that it can use, for example, replacement wetland acres).

207 *Compare id.* (stating that goal is to find amount of "environmental services in perpetuity that is sufficient in present value terms to equal the present value of damages"), *with* Final Rule, *supra* note 10, at 489 (directing trustee to use "the rate at which society is willing to trade off natural resources during the period of the incident for natural resources during the period of restoration action").

208. Final Rule, *supra* note 10, at 507 (to be codified at 15 C.F.R. § 990.53(d)(3)(i)). The service-to-service approaches may not be appropriate when the restoration action involves resources that are not of the same type and quality or not of comparable value. *See id.* at 453 (directing that trustees "must consider" resource-to-resource approach when restoration action involves resources of same type and quality).

209 *Id.* at 453.

210. *Id.*

211. *See id.* at 498-99 app. B (listing valuation procedures, including travel cost method, factor income approach, hedonic price model, market models of demand and supply, contingent valuation, conjoint analysis, and benefits transfer approach).

212. *See supra* notes 167-69 (discussing less flexible parameters for use of certain valuation methods in NOAA's 1994 proposed rule).

ing a monetary value only when they cannot conduct a service-to-service or valuation approach at a reasonable cost or within a reasonable time.[213] Only then may the trustees calculate the dollar value of the lost services and select replacement services of the same dollar value.[214]

In the Final Rule, NOAA gives natural resource trustees flexibility to determine which assessment procedures they will use.[215] Instead of specifying when to use certain economic and scientific methods, as in prior rules, NOAA simply offers a list of criteria for the trustees to use in evaluating assessment procedures. The Final Rule specifies that: (1) the procedure must be capable of determining the type and scale of the restoration action, (2) the additional cost of a procedure must relate to the additional quantity and quality of information it provides, and (3) the procedure must be "reliable and valid" for the specific injury [216] When more than one assessment procedure providing the same type and quality of information is available, the trustees must use the most cost-effective procedure.[217] The Final Rule also allows responsible parties to request procedures other than those selected by the trustees.[218] The parties may request other procedures if they identify and support their procedures, agree to advance the costs of the procedures, and agree not to challenge the results of those procedures.[219] Nevertheless, the Final Rule allows the trustees a new breadth of discretion to reject a responsible party's request for different procedures.[220]

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213. Final Rule, *supra* note 10, at 507 (to be codified at 15 C.F.R. § 990.53(d)(3)(ii)).

214. *Id.*

215. *See* Copple, *supra* note 25, at 10,677 (noting increased flexibility to trustees in NOAA's 1995 proposed rule and concluding that increased flexibility will result in increased transaction costs).

216. Final Rule, *supra* note 10, at 503 (to be codified at 15 C.F.R. § 990.27(a)). The Final Rule notes that any assessment procedure:

> [M]ust comply with all of the following standards if they are to be in accordance with this part: (1) The procedure must be capable of providing assessment information of use in determining the type and scale of restoration appropriate for a particular injury; (2) The additional cost of a more complex procedure must be reasonably related to the expected increase in the quantity and/or quality of relevant information provided by the more complex procedure; and (3) The procedure must be reliable and valid for the particular incident.

Id.

217 *Id.* at 503 (to be codified at 15 C.F.R. § 990.27(c)(2)).

218. *Id.* at 501 (to be codified at 15 C.F.R. § 990.14(c)(6)).

219. *Id.* (to be codified at 15 C.F.R. § 990.14(c)(6)(i)).

220. *Id.* at 501 (to be codified at 15 C.F.R. § 990.14(c)(6)(ii)) (listing five potential reasons for rejection of responsible party's request for procedures).

Once the trustees develop a reasonable range of restoration alternatives, they must evaluate each of the scaled alternatives according to six standards.[221] If the trustees determine that two or more restoration alternatives are equally preferable based on these six standards, they must select the most cost-effective alternative.[222] After evaluating the alternatives, the trustees must develop, for public comment, a Draft Restoration Plan that includes their preferred restoration alternative and a discussion of the range of alternatives considered and rejected.[223] In response to the public comments, the trustees must publish a Final Restoration Plan with explanations of resulting modifications, or the lack thereof, in the final plan.[224] Finally, the trustees will present a demand to the responsible parties either to implement the Final Restoration Plan under trustee oversight or to advance to the trustees a sum representing all costs associated with implementing the Final Restoration Plan with future restoration costs discounted to present value.[225] NOAA gives trustees the authority and discretion to settle a natural resource damage claim with the responsible parties at any time in this process provided the trustees find the settlement adequate to satisfy the goals of OPA.[226] All funds received by the trustees in satisfaction of the damage claim must be used to reimburse the trustees and to implement the restoration plan.[227]

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221. *Id.* at 507 (to be codified at 15 C.F.R. § 990.54(a)). The standards include: (1) the cost, (2) the extent to which the alternative is expected to return the resource and services to baseline and compensate the public for the interim losses, (3) the likelihood of success, (4) the extent to which the alternative prevents future or collateral injuries, (5) the extent to which the alternative benefits more than one natural resource, and (6) the effect of the alternative on public health and safety *Id.*

222. Final Rule, *supra* note 10, at 508 (to be codified at 15 C.F.R. § 990.54(b)); *see infra* notes 230-52 and accompanying text (discussing elements of economic efficiency in Final Rule's six preferred restoration plan selection standards).

223. Final Rule, *supra* note 10, at 508 (to be codified at 15 C.F.R. § 990.55(a)-(b)).

224. *Id.* at 508 (to be codified at 15 C.F.R. § 990.55(d)).

225. *Id.* at 509 (to be codified at 15 C.F.R. § 990.62(b)).

226. *See id.* at 503 (to be codified at 15 C.F.R. § 990.25) (allowing trustees to settle claims at any time, if they find that the settlement is "adequate in the judgment of the trustees to satisfy the goal of OPA and is fair, reasonable, and in the public interest, with particular consideration of the adequacy of the settlement to restore, replace, rehabilitate, or acquire the equivalent of the injured natural resources and services").

227 *Id.* at 509 (to be codified at 15 C.F.R. § 990.65(a)).

IV. Analysis of the New Approach

> Money does not pay for anything, never has, never will. It is an economic axiom as old as the hills that goods and services can be paid for only with goods and services.
>
> — Albert J. Nock[228]

NOAA has developed a damage assessment theory that reflects Nock's idea — lost natural resources and services can be paid for only with other natural resources and services. Implicit in this idea is that reducing the value of a good, service, or natural resource to monetary terms distorts that value. With the *Ohio* decision and the subsequent adoption of the restoration solution in CERCLA and OPA, U.S. environmental policy has largely accepted restoration as the primary measure of damages for injuries to natural resources.[229] Thus, a question arises as to the best method of effectively and accurately compensating the public for its loss pending full restoration. Two themes in this evolving discussion reflect Nock's sentiment and appear in the Final Rule: (1) the avoidance of monetizing any aspect of damages at any stage in the assessment and (2) the focus on compensating for interim and permanent lost natural resources and services in the form of additional natural resources and services. NOAA has assumed the lead in the ongoing natural resource valuation discourse, has furthered these two themes, and has taken the next step in resolving the difficult issues. Three aspects of the Final Rule embody a new course of policy discussion on natural resource damage assessments and warrant special attention: (1) the elements of economic efficiency and their relation to trustee flexibility, (2) the evolving role of nonuse values and contingent valuation, and (3) the progression away from an economic pricing theory of the valuation of public goods toward a recognition of the public's diversity of incommensurable values of natural resources.

A. The Role of Economic Efficiency and Trustee Flexibility

In determining accurate compensation for accidents under the common law, two basic components of economic efficiency are typically consid-

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228. ALBERT J. NOCK, MEMOIRS OF A SUPERFLUOUS MAN 246 (1943).

229. *See* Copple, *supra* note 49, at 675 (noting that NOAA and DOI regimes prefer restoration as natural resource damages). *But see* Phillips & Zeckhauser, *supra* note 19, at 133-36 (arguing that it is economically inefficient to fully restore injured natural resources and that recovered funds may be better spent on other projects); Williams, *supra* note 42, at 375 (noting that "the choice between restoration and diminution in market value measures continues to dominate public discussion of natural resource valuation").

ered.[230] Although these traditional components of efficiency are no longer the guiding principles in developing damage assessment regulations, they remain relevant.[231] First, damage assessment regulations should ensure that oil polluters fully compensate the public for all harm from the pollution injury at the lowest possible cost to the polluter. Second, writers of damage assessment regulations should seek to develop an assessment process that will arrive at the amount of damages necessary to promote proper efforts at risk management in the oil industry [232] The first goal of perfect compensation — the indifference of the victim between having the injury and the compensation, or having never suffered the injury — is key to the establishment of the second goal of proper risk deterrence.[233] Together, the two concepts promote the efficient allocation of scarce resources.[234] A modern concern is whether trustees can implement efficient compensation within the restoration framework.[235] Since the rejection of certain common-law efficiency principles in *Ohio*, commentators have discussed a "new economic efficiency" arising from a cost-benefit comparison for each of the several damage measures.[236] In the Final Rule, NOAA has subordinated

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230. *See supra* notes 42-56 and accompanying text (discussing dual role of economic efficiency).

231. *See* Williams, *supra* note 42, at 384-85 ("Although DOI's initial lesser-of rule was set aside in *Ohio v. United States Department of the Interior* as inconsistent with the purposes of the statute, its internal logic continues to exert powerful influences on the choices DOI and NOAA have made as they have attempted to fashion NRDA rules.").

232. *See* Phillips & Zeckhauser, *supra* note 19, at 139-40 (explaining that optimal incentives depend on accurate valuation of natural resource injury and that "right assessment" leads to "right incentives").

233. *See* COOTER & ULEN, *supra* note 45, at 380 (explaining that concept of perfect compensation based on indifference is fundamental to establishing economic incentives). *But see* Cross, *supra* note 149, at 342-43 (arguing that natural resource damages do not need to seek deterrence levels because private party claims and criminal and civil penalties function as effective deterrents); Williams, *supra* note 42, at 374 (arguing that variety of civil and criminal sanctions are effective to create incentives and to induce pollution control).

234. *See* COOTER & ULEN, *supra* note 45, at 380 (noting that perfect compensation and risk deterrence are components of any compensatory damages scheme); WARD & DUFFIELD, *supra* note 104, §§ 10.2-10.3 (discussing components of optimal allocation of resources and application of law and economics standard of efficiency to natural resource damages).

235. *See* Ohio v United States Dep't of the Interior, 880 F.2d 432, 456 (D.C. Cir. 1989) ("To say that Congress placed a thumb on the scales in favor of restoration is not to say that it forswore the goal of efficiency "). The court elaborated on the relationship between efficiency and valuation: "'Efficiency,' standing alone, simply means that the chosen policy will dictate the result that achieves the greatest value to society Whether a particular choice is efficient depends on *how the various alternatives are valued.*" *Id.*

236. *See* Copple, *supra* note 49, at 692-709 (explaining how cost-benefit criteria used to evaluate potential restoration alternatives create sliding scale of "new economic effi-

these norms of efficiency to the goals of environmental effectiveness. The Final Rule advances these goals by elevating the environmental factors over economic efficiency factors in the selection of a restoration plan and by increasing the flexibility afforded trustees to confront a diversity of environmental injuries occurring in a diversity of ecosystems.

Like all damage assessment regulations developed after *Ohio*, the Final Rule does not contain an explicit grossly disproportionate standard to dictate when interim lost value trumps restoration costs as the measure of damages.[237] NOAA states, without substantial justification, that following the procedures in the Final Rule will ensure that the restoration action is commensurate with the value of the natural resource losses and, consequently, that no grossly disproportionate standard is needed.[238] Unlike the existing DOI regulations, NOAA's Final Rule does not replace the grossly disproportionate standard with an alternative economic efficiency device.[239] However, like the existing DOI rule, the Final Rule employs an approach that consists of two tiers of criteria that guide the damage assessment. The first tier consists of certain standards with which all assessment procedures must comply [240] Under one standard, the trustees must determine that the

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ciency").

237 *See* Faith A. Bulger, *The Evolution of the "Grossly Disproportionate" Standard in Natural Resource Damage Assessments*, 45 BAYLOR L. REV 459, 467, 470 (1993) (tracing meaning and evolution of grossly disproportionate standard in damages assessment regulation and noting that most recent damage assessment regulations do not contain explicit ratios or specific grossly disproportionate standards).

238. *See* Final Rule, *supra* note 10, at 490 (responding to commenters who encouraged inclusion of grossly disproportionate standard and stating that "evaluation and selection of restoration alternatives according to the factors provided in the rule will ensure that preferred actions are commensurate with the value of natural resource losses").

239 *See* Copple, *supra* note 49, at 699-700 (explaining that 10 factors considered in selecting restoration plan amount to an alternative grossly disproportionate standard). In support of this proposition, Copple quotes the following passage from DOI's 1991 proposed rulemaking:

> This determination of the relationship of cost to benefits is not an attempt to define in quantitative terms, as suggested by the court, what costs might be "grossly disproportionate" to the value of the services lost. Instead, the proposed revision would require that *all of the various factors listed be considered by the trustee in selecting the most appropriate alternatives* for restoration, rehabilitation, replacement, and/or acquisition of equivalent resources. These factors, when considered together, would encompass the "grossly disproportionate" determination suggested by the [*Ohio*] court.

Id. (citing Notice of Proposed Rulemaking, 56 Fed. Reg. 19,752, 19,758 (1991)).

240. *See supra* note 216 and accompanying text (listing and discussing criteria for assessment procedures from Final Rule).

additional cost of a more complex procedure is reasonably related to the increase in quality or quantity of information it will produce.[241] In addition, when confronted with two equally effective procedures, the trustees must select the more cost-effective alternative.[242] These two factors promote economic efficiency at the procedure selection stage by ensuring that the trustees will not spend additional funds, borne by the polluter and, ultimately, the public, on costly procedures unless they first determine that the extra information is worth the added expense.

The second tier consists of criteria used to evaluate all restoration alternatives when selecting the preferred restoration plan.[243] Of the six factors that the trustees must initially consider, only one specifically relates to cost.[244] The trustees must consider the "cost to carry out the alternative," but not in relation to the expected benefits of that plan.[245] In contrast, the existing DOI regulations and NOAA's 1994 proposed rule contain

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241. *See* Final Rule, *supra* note 10, at 503 (to be codified at 15 C.F.R. § 927(a)(2)) (stating that "the additional cost of a more complex procedure must be reasonably related to the expected increase in the quality and/or quantity of relevant information provided by the more complex procedure").

242. *Id.* (to be codified at 15 C.F.R. § 927(c)(2)).

243. *See id.* at 507-08 (to be codified at 15 C.F.R. § 990.54(a)-(b)) (listing set of standards by which to evaluate reasonable range of restoration alternatives). The standards for selecting the preferred restoration plan are as follows:

> (a) Evaluation standards. Once trustees have developed a reasonable range of restoration alternatives they must evaluate the proposed alternatives based on, at a minimum:
>
> (1) The cost to carry out the alternative;
>
> (2) The extent to which each alternative is expected to meet the trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses;
>
> (3) The likelihood of success of each alternative;
>
> (4) The extent to which each alternative will prevent future injury as a result of the incident, and avoid collateral injury as a result of implementing the alternative;
>
> (5) The extent to which each alternative benefits more than one natural resource and/or service; and
>
> (6) The effect of each alternative on public health and safety
>
> (b) Preferred restoration alternatives. Based on an evaluation of the factors under paragraph (a) of this section, trustees must select a preferred restoration alternative(s). If the trustees conclude that two or more alternatives are equally preferable based on these factors, the trustees must select the most cost-effective alternative.

Id.

244. *Id.* at 507 (to be codified at 15 C.F.R. § 990.54(a)(1)).

245. *Id.*

explicit requirements that the trustees evaluate the relationship between the cost and expected benefits of each alternative.[246] The remaining five criteria relate to the "environmental effectiveness" of the restoration alternatives.[247] The trustees will evaluate cost-effectiveness only when they decide that two or more restoration actions are equally preferable under the predominantly environmental considerations.[248] Because the cost-effectiveness factor acts only as a tie-breaker between equally environmentally sound alternatives, trustees may not consider cost-effectiveness at this second stage. In addition, any requirement to consider the relationship between costs and benefits (as opposed to cost-effectiveness) is conspicuously absent.[249] The only guaranteed cost-benefit comparison occurs at the procedure selection stage.

Good or bad, the Final Rule appears to subordinate economic efficiency to the environmental effectiveness criteria.[250] Moreover, it is unclear whether the selection of economically efficient procedures will translate into

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246. *See* 43 C.F.R. § 11.82(d)(2) (1995) (listing "relationship of the expected costs of the proposed actions to the expected benefits from the restoration" as one factor that trustees must consider in selecting among alternatives); 1994 Proposed Rule, *supra* note 160, at 1134 (to be codified at 15 C.F.R. § 990.75(b)(2)) (listing "[r]elationship of expected costs to expected benefits" as one factor that trustees must consider in selecting among restoration alternatives).

247 *See* Copple, *supra* note 49, at 704-05 (contrasting "environmental effectiveness" factors with "relative cost" factors in NOAA's 1994 proposed rule).

248. *See* Final Rule, *supra* note 10, at 507-08 (to be codified at 15 C.F.R. § 990.54(b)) (stating that "[i]f the trustees conclude that two or more alternatives are equally preferable based on these [six] factors, the trustees must select the most cost-effective alternative").

249. *See* Copple, *supra* note 49, at 693-94 & n.73 (explaining that cost-benefit consideration is "focal point" of economic efficiency, rather than simple cost or cost-effectiveness considerations).

250. *See id.* at 693 & n.73 (explaining that in existing DOI regulations, comparison of expected costs to expected benefits is primary promoter of economic efficiency). Copple adds that cost-effectiveness is limited to a strict comparison of two equal alternatives and that the cost-benefit consideration is the factor that produces economic efficiency *Id.* at 693-94. In contrast, the preamble to the Final Rule offers an ambiguous explanation of the restoration selection factors. After listing the six primary factors, none of which refer to cost-efficiency or cost-benefit relationships, NOAA states:

> When selecting a restoration alternative, trustees should consider the relationship between costs and benefits. However, reducing the selection process to a strict comparison of restoration costs to monetized natural resource values is not required and may not be appropriate. Instead, the rule requires trustees to evaluate each alternative according to the factors listed above and identify a preferred alternative. NOAA believes this approach provides adequate protection against selection of an inappropriately costly alternative.

Final Rule, *supra* note 10, at 454.

overall economic efficiency [251] Some commentators have argued that the emphasis on restoration is inherently less efficient than a monetized measure of damages.[252] Thus, the replacement of the only remaining monetized portion of damages with compensatory restoration will further reduce the economic efficiency of the assessments conducted under the Final Rule.

The second major detraction from economic efficiency in the Final Rule results from the increased trustee flexibility and consequent uncertainty Increased uncertainty thwarts the goals of economic efficiency by removing predictability from damage figures and hindering the ability of potential polluters to internalize their cost of risk avoidance.[253] A primary contributor to uncertain outcomes in the Final Rule is the variety of provisions granting trustees increased discretion.[254] First, the Final Rule offers minimal guidance as to which valuation procedures trustees should use.[255] The major constraint on procedure selection is that all procedures must be "reliable and valid."[256] Yet NOAA fails to define the terms "reliable and valid" and allows the trustees to make that determination relatively free of guidance.[257] Second, although NOAA introduces the new idea of compensatory restoration, it offers little instruction on how to determine compensatory restoration.[258] NOAA's preference for the service-to-service ap-

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251. *See* Williams, *supra* note 42, at 431-33 (discussing how "relative cost" factor in selecting restoration alternative in existing DOI rule and in original NOAA proposal promotes efficiency in economic pricing).

252. *See* Phillips & Zeckhauser, *supra* note 19, at 133-39 (arguing that restoration is inherently inefficient because marginal costs exceed marginal benefits at point before full restoration).

253. *See id.* at 125-28 (explaining relationship of uncertainty and efficiency and noting that absence of explicit guidance will lead to lengthy and expensive litigation in many cases).

254. *See* Final Rule, *supra* note 10, at 478 (stating public comment that "the rule provides so little meaningful restraint on trustee discretion" that limiting judicial review to record review is "patently unfair").

255. *See* Mazzotta et al., *supra* note 69, at 166 (arguing that it is important to have established assessment procedures because lack of guidance will complicate and lengthen assessment process); *see also supra* notes 215-20 and accompanying text (discussing criteria in 15 C.F.R. § 990.27 with which all assessment procedures must comply).

256. Final Rule, *supra* note 10, at 503 (to be codified at 15 C.F.R. § 990.27(a)(3)); *see also id.* at 487 (explaining that standards in 15 C.F.R. § 990.27 are main constraints in selecting assessment procedures).

257 *See id.* at 464 (responding to commenter's suggestion that "reliable and valid" be defined). NOAA declined the invitation to define "reliable and valid" and defers to experts' judgments that the selected procedures are consistent with the "best technical practices." *Id.*

258. *See* Copple, *supra* note 25, at 10,677 (discussing inherent problems in 1995 proposed rule and noting that "by failing to provide real limits or science-based protocols

proaches is clear, but the explanations of those procedures are more conceptual than functional.[259] Third, the Final Rule gives trustees great discretion in settling damage claims.[260] The trustees may settle the claim at any time during the assessment process if they determine that the settlement satisfies the goals of OPA and is "fair, reasonable, and in the public interest."[261] The increase in trustee flexibility and discretion is likely to result in an increase in challenges by responsible parties to the exercise of that discretion.[262] Consequently, NOAA may expect continued high transaction and litigation costs, unpredictable damage amounts, and therefore a less economically efficient process.[263] This result is inconsistent with the Final Rule's explicit goal of reducing transaction costs.[264]

In the Final Rule, NOAA subordinates the goals of economic efficiency to the goal of making the environment and the public whole and provides the natural resource trustees with flexibility to approach a variety of spill conditions. It is unclear whether the new approach can produce economically efficient solutions, under traditional standards, with any degree of uniformity in light of: (1) the downplaying of cost-benefit analysis as a factor in selecting the ultimate restoration action and (2) the level

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for equivalency analyses or valuation methods, NOAA is providing trustees with incredible flexibility in establishing compensatory restoration claims" and that "[t]his lack of standards will, by itself, greatly increase the likelihood that assessments will be vigorously contested at both administrative and judicial levels").

259. *See* Final Rule, *supra* note 10, at 453 (describing service-to-service approaches as "obtaining equivalencies" and discounting for differences in time). In fairness to NOAA, the Final Rule does recommend the use of HEA in the service-to-service approaches. *Id.* However, that method is relatively unexplained in the Final Rule. *Id. But see id.* at 488 (arguing that Final Rule adequately specifies conditions in which trustees may use valuation approach).

260. *See id.* at 503 (to be codified at 15 C.F.R. § 990.25) (allowing trustees to settle at any time in assessment process).

261. *See id.* at 446, 463, 503 (explaining trustee discretion in deciding to settle).

262. *See* Mazzotta et al., *supra* note 69, at 166 ("It is particularly important to have established techniques for use in natural resource damage assessment, where lack of guidance may complicate and lengthen the negotiation process.").

263. It is well recognized that high transaction costs are an impediment to effective restoration and environmental policy in general. *See* Phillips & Zeckhauser, *supra* note 19, at 124 (noting that "[t]ransaction costs prevent market bargains about natural resource injury from being struck between those engaged in activities that threaten injuries and those who wish to preserve resources. Hence, there is no market price for natural resource injuries.").

264. *See* Final Rule, *supra* note 10, at 440-41 (listing reduction of transaction costs as goal of Final Rule and reasoning that because assessments will be conducted with public and responsible party involvement "it is expected that restoration will be achieved more quickly, transaction costs will decrease, and litigation will be avoided"); Copple, *supra* note 25, at 10,677 (noting that NOAA did not intend to continue escalation of transaction costs).

of uncertainty, indicative of most natural resource damage assessment schemes, that is heightened in the Final Rule.

B. *The Lingering Role for Nonuse Values and Contingent Valuation*

The policy debate over the measurement of nonuse values in assessing damages to natural resources will not produce a resolution in the near future.[265] Until more extensive collaboration between the environmental and social sciences produces a better understanding of nonuse values, contingent valuation will remain the only recognized method for assessing those intangibles.[266] Although the controversy over contingent valuation continues,[267] NOAA has adopted an assessment procedure that minimizes both the role that contingent valuation may play in an assessment and its inflationary tendencies once employed. The Final Rule sets up a hierarchy of assessment methods that allows for infrequent resort to explicit monetary valuation of nonuse values and use of contingent valuation.[268] Such a

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265. *See* Phillips & Zeckhauser, *supra* note 19, at 143 (noting that economists have been unable to develop reliable technique for distinguishing and accounting for nonuse values).

266. *See id.* at 142 (noting that contingent valuation is only valuation method considered to measure nonuse values, but that even CV's precision, reliability, and bias are questionable); Stewart et al., *supra* note 22, at 165 (stating that "CVM is the only methodology recognized for assessing nonuse values").

267 *See* Stewart et al., *supra* note 22, at 166 (noting that use of CV is single most controversial issue in natural resource damage assessment debate); *see also* Dobbins, *supra* note 20, at 921-33 (outlining economic and legal criticisms of CV). As used in this Note, the "controversy" surrounding contingent valuation refers to the criticisms surrounding its use to measure nonuse values. Some commentators have highlighted the main economic criticisms associated with contingent valuation: (1) "indifference to quantity" — meaning respondent's values do not correspond to the quantity of injured resources; (2) "embedding" — meaning that individuals will express their value derived from the environment as a whole and not the specific resource injured; (3) "sequence" — meaning that values are overly dependent on the injured resource's proximity and sequence with other resources; (4) lack of budget constraints on willingness to pay hypothetical dollars; (5) large variations in value for small variations in the survey instrument; (6) "bimodal responses" — meaning that most responses are either zero or an enormous number; and (7) "implausibly high responses." Dobbins, *supra* note 20, at 923-29; Stewart et al., *supra* note 22, at 168. The legal criticisms include: (1) that CV's complexity and uncertainty complicate the legal process and (2) that CV is not reliable enough to comply with the rules of evidence regarding admissibility Dobbins, *supra* note 20, at 929-33. The practical concern is CV's tendency to produce "enormous" awards. *Id.* at 933-35; *see also* Williams, *supra* note 42, at 401 (stating that main criticism of CV is that participants are not required to "put their money where their mouth is"). *See generally* NOAA CV Study, *supra* note 86 (providing detailed discussion of pros and cons of contingent valuation).

268. *See* Copple, *supra* note 25, at 10,675-76 (identifying "three-part hierarchy of

hierarchy is reminiscent of DOI's 1986 regulation that was rejected in the *Ohio* decision.[269] Although Congress sought to incorporate the *Ohio* court's rejection of that hierarchy when it passed OPA, NOAA's new assessment method hierarchy is nonetheless valid under *Ohio* and capable of accounting for lost nonuse values through compensatory restoration.[270]

In the Final Rule, NOAA strongly prefers that natural resource trustees implement compensatory restoration consisting of resources of the same type and quality as those lost.[271] In scaling that compensation, the Final Rule requires that trustees consider the service-to-service approaches.[272] Only if the trustees determine that using replacement resources of the same type and quality is infeasible or that the service-to-service approaches are not appropriate can they scale the compensation using a valuation approach.[273] The Final Rule suggests contingent valuation as one method of the valuation approach.[274] If valuation would be costly or unreasonably time consuming, the trustees may then resort to a monetary valuation of the injury and provide compensation based on that dollar amount.[275] This assessment method hierarchy, like its predecessor in DOI's original regulations, prefers assessment methods that do not explicitly account for nonuse values.[276]

At first glance, this new assessment method hierarchy seems to offend congressional intent that OPA embody the *Ohio* court's reasoning concerning nonuse valuation.[277] Although Congress expressed a strong preference

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methods" in scaling approach in NOAA's 1995 proposed rule).

269. *See supra* notes 68-127 and accompanying text (discussing initial DOI regulations and court decision invalidating those regulations).

270. *See supra* notes 188-95 and accompanying text (discussing concept of compensatory restoration).

271. Final Rule, *supra* note 10, at 507 (to be codified at 15 C.F.R. § 990.53(c)(2)).

272. *Id.* at 507 (to be codified at 15 C.F.R. § 990.53(d)). NOAA recommends use of Habitat Equivalency Analysis, which is based on the creation of a direct equivalency between injured and replacement resources, as the preferred method in the service-to-service approaches. *Id.* at 453.

273. *Id.*

274. *See id.* (noting that variety of valuation procedures includes "travel cost method, factor income approach, hedonic price models, models of market supply and demand, contingent valuation, and conjoint analysis"); *see also infra* notes 304-05 (discussing Final Rule's preference for using contingent valuation without using monetary metric).

275. *Id.* at 507 (to be codified at 15 C.F.R. § 990.53(d)(3)).

276. *See supra* notes 83-87, 109-15, and accompanying text (discussing DOI's 1986 regulation's hierarchy of assessment methods and court's rejection of subordination of nonuse values).

277 *See* S. REP. No. 101-94, at 15 (1990), *reprinted in* 1990 U.S.C.C.A.N. 722, 737

for restoration as the measure of damages, it instructed NOAA to issue regulations to measure interim diminution in value in the manner intended by the D C. Circuit.[278] The *Ohio* court explicitly rejected an assessment method hierarchy that tended to exclude nonuse values.[279] That court held that nonuse values are an essential component in measuring diminution in value and one that trustees must consider in order to make the public whole.[280] In addition, the court rejected the industry petitioners' challenge to the use of contingent valuation and upheld that method as a best available procedure.[281] Given that contingent valuation is the only recognized method for determining nonuse values and that it rests at the bottom of NOAA's new hierarchy of assessment approaches, it is difficult to reconcile this hierarchy with Congress's express intent that compensation for diminution in value account for nonuse values. One might conclude that if the natural resource trustees follow the Final Rule's hierarchy, nonuse values will be considered only to the extent that compensatory resources of the same type and quality are not available.[282]

However, in a scheme based on compensatory restoration and the service-to-service approaches, natural resource trustees may be able to achieve the congressional objectives without explicit measurement of nonuse

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("This bill as amended is intended to be consistent with the recent unanimous decisions [in *Ohio*] reversing the Interior Department's narrow market value and use value based approach to assessing damages "); *supra* notes 93-115 and accompanying text (discussing *Ohio* court's finding congressional preference for restoration and inclusion of nonuse values).

278. *See* H.R. CONF REP NO. 101-653, at 108, *reprinted in* 1990 U.S.C.C.A.N. 779, 786 ("Diminution of value refers to the standard for measuring natural resource damages used in the recent D.C. Circuit Court decision "). The purpose of compensatory restoration is to provide for interim diminution in value. Compensable value, the original NRDA concept, and its replacement, compensatory restoration, are both rooted in the provision of OPA that includes interim diminution in value as a component of damages. *See* Final Rule, *supra* note 10, at 474 (noting that both compensable value and compensatory restoration are rooted in OPA damages provision).

279 *See* Ohio v United States Dep't of the Interior, 880 F.2d 432, 464 (D.C. Cir. 1989) (instructing DOI that its exclusion of nonuse values "rests on an erroneous construction of the statute").

280. *See id.* at 464, 476-77 (interpreting CERCLA to require inclusion of nonuse values in NRDAs in most, if not all, circumstances); Stewart et al., *supra* note 22, at 166 (noting that *Ohio* court required that passive use values be included in calculation of lost value).

281. *Ohio*, 880 F.2d at 474-78.

282. *See* Final Rule, *supra* note 10, at 507 (to be codified at 15 C.F.R. § 990.53(c)(2)) (directing trustees to first consider replacement resources of same type and quality); *id.* (to be codified at 15 C.F.R. § 990.53(d)(2)) (directing trustees to use service-to-service approaches for replacement resources of same type and quality).

values.[283] Compensatory or resource-based compensation is premised on the idea that, aside from the primary restoration action, trustees can compensate the public for interim diminution in value by providing or improving other natural resources of the same type and quantity as those lost.[284] In determining what level of resources to provide, trustees will focus on the services that the injured resource produced and attempt to provide additional resources that produce those same services.[285] The Final Rule's concept of services includes direct services and the nonuse values provided by those services.[286] Under the service-to-service approaches, trustees strike a balance between lost human and ecological services and replacement services of the same type and quality.[287] Thus, trustees account for and replace the nonuse values that are bound up in the human and ecological services without expressly measuring or monetizing them.[288] In response to public comments on the definition of services, NOAA made it clear that "compensable services include both direct and passive uses, and that the rule provides for recovery of both."[289]

Accepting that compensatory restoration based on the service-to-service approaches can implicitly account for nonuse values, the next question is whether an implicit accounting of nonuse values is valid under OPA's mandate. Or, on the other hand, did the *Ohio* court and Congress, in

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283. *See* Dennis M. King, *Economics of Ecological Restoration, in* NATURAL RESOURCE DAMAGES: LAW AND ECONOMICS 493, 494 (Kevin M. Ward & John W Duffield eds., 1992) (noting that trustees can avoid valuation problems by using physical or biological indicators instead of dollars in restoration).

284. *See generally* Mazzotta et al., *supra* note 69 (proposing, outlining, and applying resource-based compensation scheme).

285. *See* Final Rule, *supra* note 10, at 452 (explaining compensatory restoration as providing "services of the same type and quality, and of comparable value as those injured").

286. *See* Stewart et al., *supra* note 22, at 161 (suggesting that focus on replacing natural resource services will account for "preservation and other nonuse values").

287 Final Rule, *supra* note 10, at 507 (to be codified at 15 C.F.R. § 990.53(d)(2)).

288. *See* Cross, *supra* note 149, at 333 (stating that restoration can embrace nonuse as well as use values, perhaps better than contingent valuation).

289 Final Rule, *supra* note 10, at 475; *see id.* at 486 (responding to comments on role of passive use values). NOAA outlined its view of passive use values in the Final Rule:

> Where appropriate, NOAA supports the inclusion of reliably calculated passive use values in the scaling process. NOAA notes that some of the commenters' concern about inclusion of passive use losses may have been addressed by defining compensation for interim losses in terms of the cost of compensatory restoration actions rather than as the value of interim losses In this case it is not necessary to elicit a monetary value for natural resources.

Id.

passing OPA, truly require explicit monetization of nonuse values by using contingent valuation?[290] Congress did not express a preference for monetization of a compensable value. In fact, when referring to the *Ohio* decision, Congress's primary concern was that OPA should be consistent with the court's rejection of valuation based solely on market and use values.[291] The rejection of monetization based exclusively on market values reveals only an intent that the responsible parties restore the full value of natural resources. The D C. Circuit specifically stated, as Congress was aware, that many scholars are skeptical of the ability to monetize natural resource values.[292]

Although compensatory restoration can account for nonuse values and is valid under OPA, the new approach is not without potential flaws. One such flaw is that adherence to the service-to-service approaches may skew the use of the public trust doctrine to make the injured party whole.[293] The Final Rule instructs trustees, in the context of scaling, to determine compensatory restoration based on the replacement of ecological as well as human services.[294] The potential exists that trustees will focus unduly on the lost services that the injured resource provided to the surrounding resources and the ecosystem, rather than on the loss to the public.[295] Although the public trust doctrine has grown to protect environmental values,[296] it remains a theory of protection of the public interest, aimed at

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290. *See* Denis Swords, Note, Ohio v United States Department of the Interior: *A Contingent Step Forward for Environmentalists*, 51 LA. L. REV 1347, 1348 (1991) (noting that court effectively mandated use of contingent valuation in all damage assessments because trustees can only determine nonuse values with that method).

291. S. REP NO. 101-94, at 15 (1990), *reprinted in* 1990 U.S.C.C.A.N. 722, 737

292. *See* Ohio v. United States Dep't of the Interior, 880 F.2d 432, 457 & n.40 (D.C. Cir. 1989) (noting that CERCLA text and legislative history suggest that Congress and many scholars were skeptical of ability to measure true value of natural resources).

293. *See* 42 U.S.C. § 9607(f)(1) (1994) (codifying public trust doctrine and providing for "public trustees"); *see also* 33 U.S.C. § 2706(b)(1) (1994) (designating trustees to "act on behalf of the public").

294. *See* Final Rule, *supra* note 10, at 505 (defining services as "functions performed by a natural resource for the benefit of another natural resource"). The Final Rule defines ecological services as "physical, chemical, or biological functions that one natural resource provides for another"). *Id.* at 448; *see also* Williams, *supra* note 42, at 414-15 (explaining that concept of services includes services other than those to humans).

295. *See* Final Rule, *supra* note 10, at 475 (responding to commenters' opinions that compensatory restoration is too focused on replacing ecological services, NOAA argues that "humans and other species in the ecosystem are inextricably linked"). NOAA further argues that it will be more effective to account for ecological services at the site of the resource rather than indirect human services at a point distant from the resource. *Id.*

296. *See* WARD & DUFFIELD, *supra* note 104, § 2.3 (noting that courts have expanded

safeguarding the public's use (and nonuse) of natural resources.[297] Technical implementation of compensatory restoration based on replacing services, including ecological services, may result in a restoration plan that endeavors to make the *environment* whole, which ignores the trustees' true purpose under the public trust doctrine — to make the *public* whole.[298]

In addition, the concept of compensatory restoration as compensation for interim diminution of nonuse values contains an internal inconsistency Often, a portion of the nonuse value of a natural resource exists in the public's appreciation of the uniqueness of that resource.[299] To the extent that a resource's nonuse value derives from its uniqueness, replacement resources cannot compensate the public for that loss. Essential to the concept of a unique good is the complete lack of adequate substitutes.[300] This absence of adequate substitutes means that the replacement of natural resources cannot make the public whole.

A third potential flaw arises when one views primary and compensatory restoration together. If primary restoration returns the injured natural resource to its baseline condition, then compensatory restoration may involve restoring that resource to a state "above" its natural baseline condition. In contrast, previous damage assessment regulations required that trustees not restore the resource to a condition above its baseline level.[301]

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public trust doctrine to protect variety of public uses of natural resources, including preservation of environment).

297 *See* Mazzotta et al., *supra* note 69, at 165 ("Under the public trust doctrine, the trustee acts on behalf of the public interest in natural resource amenities, not on behalf of the resource itself."); WARD & DUFFIELD, *supra* note 104, § 2.3 (describing public trust doctrine by reference to public uses of environment).

298. *See* Mazzotta et al., *supra* note 69, at 165-66 (explaining that under public trust doctrine, trustees should act on behalf of public interest and resist tendency to act "on behalf of the resource itself" when conducting restoration based on equivalency of resources or services); Phillips & Zeckhauser, *supra* note 19, at 145-46 (noting that nature does not have standing legally or economically and that individuals are proper basis for cost-benefit comparisons and welfare economics in general).

299. *See* A. Myrick Freeman, III, *Nonuse Values in Natural Resource Damage Assessment*, *in* VALUING NATURAL ASSETS: THE ECONOMICS OF NATURAL RESOURCE DAMAGE ASSESSMENT 264, 298 (Raymond J. Kopp & V Kerry Smith eds., 1993) (noting nonuse values can arise from uniqueness of natural resource, which presents additional problem of accounting for absence of substitutes).

300. *See* Copple, *supra* note 25, at 10,677 (noting that "concepts of replaceable services and unique aesthetic values somehow seem incongruent and deserve further attention").

301. *See* 43 C.F.R. § 11.82(d)(2)(i) (1987) (directing that range of restoration alternatives should restore "lost services to no more than their baseline level"); *id.* § 11.82(b)(1)(iii) (1995) (limiting restoration alternatives to those that restore resources to "no more than their baseline").

The wisdom of tampering with and elevating the natural state of the environment is questionable and could be counterproductive.[302]

Although the explicit consideration of nonuse values and the use of contingent valuation will be infrequent, those concepts still have roles in damage assessments conducted under the Final Rule. However, when natural resource trustees use contingent valuation in the context of the valuation approach, it will operate differently from the traditional and controversial view of that method.[303] Instead of surveying individuals about the monetary value of the resource, the contingent valuation survey will seek to determine what level of replacement resources will equal the lost resources and thus make the public whole[304] — the surveys will ask respondents to value their feelings for natural resources in terms of other natural resources.[305] In fact, the Final Rule avoids the monetization of nonuse values and the inaccuracy associated with converting those uncertain values into dollars.[306]

In addition, the Final Rule may deny trustees the ability to resort to contingent valuation altogether. NOAA has directed that all assessment procedures "must be reliable and valid for the particular incident."[307] Since the *Ohio* decision, legal and economic commentators have come forward and strongly argued that contingent valuation is neither reliable nor valid.[308]

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302. *See* Cross, *supra* note 149, at 333-39 (arguing that achieving exact replication, or more, of environment is "artificial, ineffective, or even counterproductive").

303. *See supra* note 267 (outlining controversy surrounding use of contingent valuation).

304. *See* Final Rule, *supra* note 10, at 442 (noting that "possible use of contingent valuation (CV) and other stated-preference methods of valuation to determine what scale of compensatory restoration provides an equivalent value to the lost services avoids many problems identified by commenters regarding the use of CV to calculate a dollar value for the damages as included in the 1994 proposal"). NOAA also states that:

> Furthermore, in the revised format for claims, valuation procedures, including stated preference methods [such as CV], are used to make relative comparisons between the loss and the compensatory restoration action gains, rather than to generate absolute dollar amounts of lost value for a claim. Scaling compensatory restoration actions may involve a single survey eliciting the direct resource-to-resource trade offs between the injured natural resources and potential compensatory natural resources.

Id. at 486.

305. *See* Cross, *supra* note 149, at 329-30 (noting that most people are unaccustomed to thinking about resources in economic terms).

306. *See* Final Rule, *supra* note 10, at 453 (allowing trustees to calculate monetary values only if other methods are too costly or time consuming or if responsible parties so request).

307 *Id.* at 503 (to be codified at 15 C.F.R. § 990.27(a)(3)).

308. *See* Binger et al., *supra* note 86, at 1108 (concluding that further research is necessary before undue reliance on largely experimental contingent valuation method);

In fact, immediately after the publication of the Final Rule, the oil industry expressed confident optimism that the reliable and valid requirement could be used to keep contingent valuation out of damage assessments altogether.[309] This issue is further complicated by NOAA's leaving those key terms — reliable and valid — undefined in the Final Rule.[310] Consequently, the roles for contingent valuation and the monetization of nonuse values in the Final Rule are either repressed or nonexistent.[311] Responsible parties should be aware, however, that trustees may use or at least threaten to use contingent valuation to encourage an early out-of-court settlement.[312]

The measurement of nonuse values and the role of contingent valuation have been a focal point of the public discourse on damage assessments since the court of appeal's ruling in *Ohio*. In the Final Rule, NOAA has created a hierarchy of assessment methods that results in infrequent use of contingent valuation and explicit measuring of nonuse values. Nonetheless, NOAA has ensured that trustees will compensate the public for nonuse values and make the public whole in a compensatory restoration scheme based on replacement of injured services with services of the same type and quality When trustees employ a contingent valuation survey to measure nonuse values, they modify that method to value the injured resources in terms of replacement resources. NOAA has crafted a creative solution to the controversy surrounding nonuse values and the potentially inflationary

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Cross, *supra* note 149, at 328-33 (arguing that "reliance upon contingent valuation would be erroneous" and that "contingent valuation has serious shortcomings that counsel against its widespread use"); *supra* note 267 (describing economic and legal criticism of contingent valuation).

309. *See* Kimberley Music, *Industry Sees Hope in Changes Planned for Assessment Rule*, OIL DAILY, Jan. 8, 1996, at 1 ("While it still is possible that an attempt would be made to use a formula or contingent valuation, those methods would have to be shown to be 'reliable and valid,' the source said, and the oil industry is pretty confident that neither of the two [i.e.,valuation formulas or contingent valuation] can ever be shown to be reliable and valid.") (quoting oil industry official).

310. *See* Final Rule, *supra* note 10, at 464 (noting that term "reliable and valid" is not defined in Final Rule, but deferring to technical judgments by experts).

311. The counterargument — that contingent valuation is reliable and valid — may be supported by (1) the NOAA CV Study that cautiously endorsed a restricted use of contingent valuation, *supra* note 86, and (2) the fact that NOAA listed that method in an appendix to the Final Rule. *See* Final Rule, *supra* note 10, at 449 app. B.

312. *See* Kopp et al., *supra* note 29, at 10,131 (noting that "[i]t should come as no surprise that the position of trustees in negotiating out-of-court settlements has been considerably strengthened" by approval of contingent valuation in *Ohio*); Richard C. Paddock, *How Much Is a River Worth? Assessing Damage in the Dunsmuir Spill*, 14 CAL. LAW. 33, 34 (1994) (noting that possibility of using passive use values "can serve as leverage to bring the responsible parties to a negotiated settlement").

bias of contingent valuation,[313] and thus realized that nonuse values are only important to the extent that they aid the trustees in determining the total value of the lost resource.[314] The Final Rule aims to gauge the total value of natural resources and make the public whole while avoiding the controversies associated with natural resource valuation.

C. *The Fundamental Progression of Natural Resource Valuation Theory*

In the larger evolution of natural resource policy, the significance of NOAA's Final Rule goes beyond the subordination of economic efficiency and the circumvention of the controversy surrounding nonuse values and contingent valuation. The Final Rule reflects a theoretical progression away from the primarily economic pricing of natural resources toward a broader recognition of the diverse ways that people value the environment.[315] At the traditional end of this theoretical spectrum, economists rely heavily on market-based theories and methods to account for the lack of market assistance in pricing natural resources. Under this theory, natural resource trustees attempt to supply market mechanisms to determine how people would behave if natural resources were exchanged with a uniform currency Commodifying natural resource values promotes utility maximization and risk deterrence.[316] At the other end of this spectrum, a contrasting valuation theory emphasizes the plurality of "kinds"[317] of value and the inability of a market-based model to capture all the ways that people value natural

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313. Several commenters noted that the compensatory restoration approach is "an attempt to circumvent the difficulties in accurately measuring interim lost values." Final Rule, *supra* note 10, at 484. Although this comment is accurate, we should not fault NOAA for avoiding controversy as long as trustees can still make the public whole.

314. *See* Freeman, *supra* note 299, at 299 (urging more focus on total values). Freeman states: "I urge that we not accept uncritically the present conventions for distinguishing between use and nonuse values. Ultimately, for policy purposes or for determining compensation, we want to be able to measure total value. Any distinction between use and nonuse values is itself useful only if it helps in the task of measuring total values." *Id.*

315. *See* Williams, *supra* note 42, *passim* (juxtaposing pricing and corrective justice theories of natural resource valuation); *see generally* Cass R. Sunstein, *Incommensurability and Valuation in Law*, 92 MICH. L. REV 779 (1994) (addressing problem of valuing all goods along single metric). Professor Sunstein discusses the inadequacy of a single method of valuing goods and describes incommensurability as "when the relevant goods cannot be aligned along a single metric without doing violence to our considered judgments about how these goods are best characterized." *Id.* at 796.

316. *See supra* notes 42-56 and accompanying text (discussing traditional components of economic efficiency in measurement of damage).

317 *See* Sunstein, *supra* note 315, at 795 (noting that debate in valuing certain goods should be about appropriate "kinds" rather than "levels" of valuation).

resources. If we accept that these values are not convertible to a common currency, the economic efficiency goals are much less relevant. The dissonance of these opposing theories appears in many contexts,[318] but is especially evident in the context of valuing damages to natural resources and crafting damage assessment regulations.[319] NOAA's Final Rule is a step in a continuing progression toward a noneconomic or "corrective justice" theory of natural resource valuation.[320]

Nonuse values of natural resources that the federal government regulates and protects are a form of pure public good and thus are not subject to the market forces associated with private property rights.[321] The market pricing theory behind measuring natural resource values is built on the idea that trustees can determine the precise value of natural resources by creating pricing models that employ a uniform metric.[322] When values are not readily ascertainable by reference to a market, an indirect or hypothetical market is supplied with the goal of achieving monetized values.[323] Thus, economists attempt to remove the market failures associated with public goods to determine how the public would value the resource if traded in market transactions. Toward this end, damage assessment regulations seek to identify, analyze, and aggregate individual preferences to obtain a monetized value. Under this market-based pricing theory, damage assessments will only account for those nonuse values that are capable of translation into a willingness to pay for the natural resource.[324] By using a single

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318. *See id.* at 824-53 (discussing incommensurability theory in nine different legal contexts).

319. *See* Williams, *supra* note 42, at 384 (noting that "tension between corrective justice and pricing rhetoric has been particularly noticeable as DOI and NOAA have attempted to fashion these rules").

320. The term "corrective justice" as used in this Note refers to the "particularized conception" of that term developed by Professor Douglas Williams in *Valuing Natural Environments: Compensation, Market Norms, and the Idea of Public Goods*, *supra* note 42. This section builds on Professor Williams's contrast of the pricing rhetoric and corrective justice models of natural resource valuation, but does not adopt Professor Williams's conclusions.

321. *See* Kopp & Smith, *supra* note 74, at 16-19 (explaining concept of pure public goods and noting problems of valuing public goods and nonuse value); *see generally* Daniel S. Levy & David Friedman, *The Revenge of the Redwoods? Reconsidering Property Rights and the Economic Allocation of Natural Resources*, 61 U. CHI. L. REV 493 (1994) (arguing from premise that market valuation fails for goods that are not freely substitutable).

322. *See* Williams, *supra* note 42, at 367-69 (noting that parameters of pricing rhetoric approach are based on market norms and traditional concerns with efficiency).

323. *See* Phillips & Zeckhauser, *supra* note 19, at 140-51 (explaining that economic approach to valuing natural resources is based on observing market transactions or on constructing hypothetical market transactions for intangible goods not traded in markets).

324. *See id.* at 141-42 (explaining that as long as someone is willing to give up some-

metric of valuation, natural resource trustees can compare costs and benefits and work to implement economically efficient outcomes, maximizing social utility and deterring risks.[325]

Damage assessment regulations have generally contained two products of this economic pricing theory of valuation: (1) the emphasis on monetization of damage figures evident in the concept of "compensable value" and (2) the use of economic models to determine the true value of nonmarket resources.[326] Although the primary component of natural resource damages since *Ohio* has been restoration cost, trustees have also been able to recover a compensable value — a diminution in value pending resource restoration.[327] This concept reflects the idea that the public can and should be compensated in the form of money for lost values of a natural resource pending restoration.[328] To monetize use and nonuse values, the damage assessment regulations offered trustees a variety of economic methods, all aimed at determining the public's aggregate willingness to pay for natural resources.[329] Contingent valuation is an archetypal economic pricing device that asks survey respondents in a hypothetical market to place a monetary value on their intangible feelings about the injured natural resource.[330]

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thing for nonuse values they are real values and should be included in damage assessment).

325. *See* WARD & DUFFIELD, *supra* note 104, §§ 10.2-10.3 (noting that much of natural resource theory surrounds narrow goal of efficient allocation of resources based on units of individual welfare).

326. *See* Williams, *supra* note 42, *passim* (arguing that monetization, market models, and concept of compensable value are based on pricing theory that fails to account for true value of natural resources).

327 *See* 43 C.F.R. § 11.83(c) (1995) (defining compensable value as "amount of money required to compensate the public for the loss in services provided by the injured resources"); *see also supra* notes 134-36 and accompanying text (discussing compensable value).

328. *See* Mazzotta et al., *supra* note 69, at 168 (noting that compensable value determination involves the complicated step of asking people to place dollar values on natural resources).

329. *See* 43 C.F.R. § 11.83(c)(2) (1995) (listing "valuation methodologies" to estimate "willingness to pay"); *see also* Mazzotta et al., *supra* note 69, at 166-67 (explaining that "compensable value" is based on calculating monetary well-being before and after natural resource injury); Williams, *supra* note 42, at 385 (arguing that pricing rhetoric introduces enormous difficulties in valuation yet "DOI and NOAA have stubbornly and persistently adhered to its basic logic as a foundation on which to build appropriate valuation techniques").

330. *See* Levy & Friedman, *supra* note 321, at 496 (noting that contingent valuation is alternative to market methods to determine public's willingness to pay for intangible qualities of natural resources).

A chief criticism of valuing natural resources under an economic pricing theory is that it disregards the multiple ways that the public values natural resources, many of which cannot be translated into a desire to pay or receive money.[331] Implicit in this criticism is the idea that the process of reducing nonuse values to a willingness to pay inevitably distorts the true value.[332] Economic pricing accounts for the stated preferences of individuals while ignoring the reasons for, and sources of, those preferences.[333] In contrast, the corrective justice theory focuses on and promotes recognition of the multiple and nonquantifiable ways in which humans value natural resources.[334] One example of an alternative source of value is the value derived from strongly held ethical beliefs that humans have a duty to protect the natural environment.[335] A theory based on economic pricing can capture these ethical values only to the extent that individuals are willing to support them with cash. An unappealing corollary to this idea is that

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331. *See* Williams, *supra* note 42, at 378 (stating that "[t]he importation of market norms into the sphere of publicly managed natural environments goes a long way down the path to dissolving the institutional lines that protect the plurality of ways in which natural environments are valued"); *see also* Phillips & Zeckhauser, *supra* note 19, at 143 (arguing that some nonuse values, such as "'warm glow' from doing something good for the environment" should not be considered true values but that CV may not be able to distinguish untrue values).

332. *See* Donald H. Rosenthal & Robert H. Nelson, *Why Existence Value Should Not Be Used in Cost-Benefit Analysis*, 11 J. POL'Y ANALYSIS & MGMT. 116, 117 (1992) (noting that accurate measurement of nonuse values may be impossible because trying to measure nonuse value changes that value). Some commentators argue that when people are asked about nonuse values, they discover them. *Id.*, *see also* Sunstein, *supra* note 315, at 784-85 (arguing that reduction of valuation to single "superconcept" like utility, "produces significant loss because it yields an inadequate description of our actual valuations when things are going well").

333. *See* Sunstein, *supra* note 315, at 794 (arguing that "idea of 'revealed preferences' is a predictive failure; to make predictions from choices, we need to offer an account of what lies behind choices"). Professor Williams argues that "tallying up of individual willingness-to-pay offers no opportunity for citizens to articulate reasons for protecting natural environments, nor does it offer an opportunity for citizens to share in and respect the values of other citizens; it is an anonymous process that encourages unreflective and uncritical responses, based on untested beliefs." Williams, *supra* note 42, at 476.

334. *See* Williams, *supra* note 42, at 375-77 (explaining that corrective justice theory is based on "a plurality of substantive conceptions of why natural environments are valuable").

335. *But see* Phillips & Zeckhauser, *supra* note 19, at 143 (arguing that value derived from justice and reverence for environment are values of environment as whole, not particular resource injured). Phillips and Zeckhauser conclude that an individual's ethical values for the environment as a whole are not lost in a specific natural resource injury and thus, trustees should not consider them in damage assessments. *Id.*

individuals are entitled to their ethical values only to the extent that they can afford to pay for them.[336]

The designation of restoration costs as the primary measure of damages is the product of a corrective justice theory of natural resource valuation.[337] The trustees seek to make the public whole by maintaining the natural metric and restoring the resource to its pre-injury condition.[338] The emphasis on restoration is one manifestation of the corrective justice theory's larger conceptual yield — social responsibility [339] Instead of expecting monetary compensation from those who pollute or destroy our natural assets, we can expect the polluter to assume the responsibility to restore the environment and the public to the pre-injury condition.[340] This theory replaces an economic equilibrium between the public and the polluter with a moral equilibrium based on a plurality of values.[341] Corrective justice prevails over distributive justice.[342]

As suggested above, NOAA and DOI have endorsed the corrective justice theory in their damage assessment regulations to a certain degree.[343] For example, both CERCLA and OPA regulations employ restoration costs as the presumptive measure of damages and mandate that trustees use all sums recovered to enhance the environment.[344] However, NOAA's Final Rule furthers the movement of environmental policy toward this socially

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336. *See* Williams, *supra* note 42, at 368-69 (finding it "alarming" that market norm approach only gauges social and ethical values as long as they are backed by cash).

337 *See id.* at 371 (explaining corrective justice approach and noting that combining right to compensation with duty of polluter to restore creates notion of social responsibility within corrective justice theory).

338. *See id.* at 374 (expressing approval of restoration costs as primary measure of damages because primary purposes of OPA and CERCLA are compensatory).

339 *See id.* at 371-73 (explaining corrective justice as promoting accountability and social responsibility).

340. *See id.* at 372 (discussing combination of public's right of compensation with polluter's duty to repair in order to create social responsibility).

341. *See id.* at 372-73 (discussing ability of corrective justice theory to restore "moral balance").

342. *See id.* (noting that corrective justice largely removes consideration of and need for distributive justice).

343. *See id.* at 372-74 (noting that NOAA and DOI now understand that purposes of OPA and CERCLA are indicative of corrective justice theory); *id.* at 398-400 (explaining that inclusion of nonuse values in natural resource valuation is step toward including totality of ways people care for natural resources, but adding that efforts to quantify nonuse values in economic terms is intuitively misplaced).

344. *See id.* at 378 (stating that two primary claims of corrective justice are presumption that restoration costs are correct measure of damages and requirement that recovered damages be spent to effect restoration).

enlightened theory of natural resource values. First, the Final Rule introduces the notion that polluters pay all damages in the "currency" of actual natural resources.[345] Not only are restoration costs the primary measure of damages, but the new concept of compensatory restoration commands that the polluter pay the public for interim diminution in value in the form of added or improved natural resources.[346] By providing for compensation in kind, NOAA is avoiding market valuation and market failure.[347]

Second, the Final Rule avoids the reduction of natural resource values to monetary terms at any stage in the scaling process.[348] Although previous damage assessment regulations required trustees to include nonuse values in natural resource valuation, those regulations focused on converting nonuse values into economic terms.[349] The inclusion of nonuse values is an attempt to fully account for public value.[350] However, by pricing nonuse values through various market, nonmarket, and stated preference methods, trustees resort to pricing norms and, consequently, lose at least part of the public care that comprises the nonuse values.[351] The Final Rule, in contrast, seeks to establish a direct equilibrium between injured and replacement resources and services and avoids the additional monetary step to link the injury and its compensation.[352] When trustees must resort to a valuation

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345. *See* Mazzotta et al., *supra* note 69, at 170-71 (explaining theory that resource-based compensation is premised on determining relative value of resources with less emphasis on monetary values).

346. *See* Final Rule, *supra* note 10, at 448 (explaining that compensatory restoration is action to compensate for interim loss in value with additional resources or services).

347 *See* Mazzotta et al., *supra* note 69, at 167 (explaining that resource-based compensation is based on finding level of resource that will put public well-being at same level before and after natural resource injury); Williams, *supra* note 42, at 486-90 (developing theory of "comprehensive restoration" in place of pricing rhetoric's compensable value). Professor Williams endorses a comprehensive restoration scheme as consistent with the purposes of CERCLA and OPA and the goals of corrective justice theory. *Id.*

348. *See supra* notes 268-76 and accompanying text (discussing hierarchy of assessment methods with contingent valuation and monetization at bottom of hierarchy in Final Rule).

349. *See* Williams, *supra* note 42, at 400-03 (noting that attempts to monetize nonuse values are misplaced).

350. *See* Ohio v United States Dep't of the Interior, 880 F.2d 432, 464 (D.C. Cir. 1989) (noting that passive use values represent utility derived by humans and ought to be included in damage assessments).

351. *See* Williams, *supra* note 42, at 402-03 (noting failure of recognized methods to gauge nonuse values inherent in setting up hypothetical markets).

352. *See* Mazzotta et al., *supra* note 69, at 167-68 (explaining that resource-based compensation has no link to monetary aspects of lost services). *But see* Williams, *supra* note 42, at 413-14 (noting that undue focus on services produced by injured resource "shifts the focus of the damages remedy dramatically away from the principles of corrective justice").

method, they may do so in units of actual resources.[353] Contingent valuation is the typical hypothetical market method that conforms with the pricing theory; however, NOAA has modified its use in the Final Rule. NOAA envisions natural resource trustees using contingent valuation surveys to ask respondents to match replacement resources with lost resources, rather than to place a dollar value on the lost resource.[354] In the Final Rule, the calculation of the monetary values of injured and replacement resources is a last resort.[355]

Finally, the Final Rule further implements the social responsibility notion of the corrective justice view of natural resource valuation. NOAA promotes increased polluter involvement by requiring trustees to invite responsible parties to participate in the assessment process at an early stage.[356] In addition, responsible parties can suggest assessment procedures that trustees will use throughout the damage assessment.[357] When the assessment procedure is complete, the responsible parties have the option of implementing the restoration action themselves instead of simply paying the trustees the costs of performing the restoration.[358] Thus, the polluters can act as a type of general contractor hiring subcontractors to rebuild the injured environment. In contrast to previous damage assessment regulations, the Final Rule ensures that restoration will actually be implemented and that the public will receive the full value that the polluter pays.[359] This is a major step toward the realization of the true value of natural resources

353. *See* Final Rule, *supra* note 10, at 453 (explaining that trustees may use natural resource services as units of exchange in valuation approach and detailing conditions when trustees may resort to calculating monetary value).

354. *See supra* note 304 (quoting passage from Final Rule concerning differences in new implementation of contingent valuation based on equivalencies of resources rather than monetization of losses).

355. *See* Final Rule, *supra* note 10, at 453 (permitting trustees to calculate dollar value of injured resource and select scale of replacement resources with same value if service-to-service method cannot be performed within reasonable time or at reasonable cost).

356. *See id.* at 501 (to be codified at 15 C.F.R. § 990.14(c)(2)) (stating that trustees must invite responsible parties to participate in assessment no later than delivery of Notice of Intent to Conduct Restoration Planning, which is before injury quantification begins).

357 *See id.* (to be codified at 15 C.F.R. § 990.14(c)(6)) (allowing responsible parties to request assessment procedures other than those selected by trustees).

358. *See id.* at 509 (to be codified at 15 C.F.R. § 990.62(b)) (allowing responsible parties to implement restoration plans).

359. *See* Stewart et al., *supra* note 22, at 163 (noting that under prior regulations literal compliance with statutory requirement that all damages be spent on restoration has not been accomplished, partly due to lack of guidance from governing statutes and regulations).

and maximization of social welfare within a system that shuns economic pricing.[360]

This movement toward corrective justice theory can explain both NOAA's subordination of economic efficiency and avoidance of the controversy associated with contingent valuation.[361] In a corrective justice model, economic efficiency is correctly subordinated to effective restoration of the environment. The focus shifts from what economists say the public has lost to what scientists say the environment has lost — from what society expects from the environment to what the environment offers society.[362] Thus, economic tactics for monetizing individual preferences are largely irrelevant and the subjugation of contingent valuation to resource equivalencies is understandable.[363] However, the goal of efficiency is not lost within NOAA's corrective justice bent. For example, the Final Rule mandates that trustees evaluate more costly assessment procedures in relation to the additional information the increased cost will produce.[364] In the corrective justice context, a cost-benefit analysis at the restoration selection stage would amount to a nonsensical attempt to align "qualitatively distinct goods along a single metric."[365] It would be futile to equate the benefits of an improved environment and the monetary figure demanded from the responsible party The corrective justice theory explains the movement of cost-benefit considerations from the restoration selection phase to the procedure selection phase.[366] By ensuring that trustees use damage assessment proce-

360. *See id.* (explaining that literal compliance with statutory mandate to spend damages on environment is difficult because of ambiguous guidance and lack of constraints in NRDA regulation).

361. *See supra* notes 230-314 and accompanying text (discussing subordination of economic efficiency concerns and avoidance of nonuse values and contingent valuation in NOAA's Final Rule).

362. *See* Williams, *supra* note 42, at 467-74 (explaining that, in pricing rhetoric, economists concentrate on injury to individuals rather than on injury to environment, but supply-side approach that focuses on redressing injury to environment is appropriate under corrective justice theory).

363. *See id.* at 472 (arguing that it is nonsensical to rely on uninformed public to place dollar value on damaged resources). Williams makes the following descriptive analogy: "It makes no sense to rely directly on the ill-informed members of the public to evaluate the dollar value of such environmental damage than it would be to rely on an ill-informed public to choose between alternative designs for airplanes or alternative designs for nuclear power plants." *Id.*

364. Final Rule, *supra* note 10, at 503 (to be codified at 15 C.F.R. § 990.27(a)(2)).

365. Sunstein, *supra* note 315, at 860.

366. *See supra* notes 240-52 and accompanying text (explaining that only cost-benefit consideration in Final Rule occurs at procedure selection as opposed to preferred restoration plan selection as in previous rules).

dures that are cost effective and produce information relative to their cost, one eye is kept on economic efficiency considerations.

V Observations and Conclusions

It is easy to view the evolution of natural resource damage assessment regulations as a haphazard trial and error process. DOI and NOAA gradually encountered problems in accounting for the true value of natural resources and arriving at economically efficient damage amounts while still making the public whole. In that regard, the Final Rule is another attempt to solve those problems. NOAA has recognized the pitfalls in "valuing" natural resources and has promulgated regulations that shun monetization of the public's loss. The Final Rule accepts the view that the public can only be compensated in the form of natural resources. Part of this latest attempt to solve valuation problems is to marginalize the controversial valuation techniques that reduce the value of resources to a unitary metric. The consequence of this solution is that the Final Rule elevates concerns about effectively making the environment whole over traditional concerns about economic efficiency

On the other hand, it may be more appropriate to view the series of proposed and final rules as a progression from an economic pricing theory of damages toward a theory recognizing a plurality of irreducible values of natural resources. Three fundamental "rethinkings" of natural resource damage theory represent the major events in this regulatory progression. All three rethinkings gradually move away from reducing natural resource values to economic terms and toward recognizing the variety of ways that the public values the environment. The result is an emerging social responsibility ideal. First, the *Ohio* court recognized that the polluters should compensate the public for the injury to natural resources, as nonfungible goods, by restoring the resource to its pre-injury condition. *Ohio* legitimized the idea that nonuse values are real and that the public cannot be made whole unless trustees account for them. Thus, the court tried to find a true measure of the value of natural resources and pronounced that the best way to compensate the public for that value is in kind.[367] The second rethinking of natural resource damage theory was the enactment of OPA in 1990. OPA codified the popular opinion that natural resource trustees should measure damages as the public's interim loss of value in addition to

367 The true "rethinking" of theory revealed in *Ohio* occurred in the drafting of CERCLA. The *Ohio* court was only effectuating the dormant congressional intent behind CERCLA and that case is actually a delayed recognition of the true rethinking that occurred in Congress.

the cost of restoring the environment. In addition, OPA furthers the theme of social responsibility by directing that trustees actually implement the restoration plans on which damages were based. Until recently, however, the *Ohio* court and NOAA thought of interim diminution in value as a monetized component of damages.

Finally, perhaps the most fundamental rethinking of damage assessment theory is NOAA's 1996 Final Rule. The Final Rule recognizes that, in addition to restoration costs, polluters must compensate the public for interim diminution in value in the form of actual resources. NOAA further enhanced the social responsibility theme by offering responsible parties early involvement, the opportunity to request assessment procedures, and the ability to actually implement the two-pronged restoration. In the short run, NOAA may sacrifice traditional notions of economic efficiency in order to further a long-term social responsibility norm.

As concerned citizens, we care about how our government values injuries to natural resources because we want Moonstone Beach to exist in its naturally pristine condition and, at the same time, we want household heating oil to be delivered to New England in January [368] We accept the fact that the demand for certain commodities, oil being the most obvious, may threaten the condition of our environment. Although efforts to redirect demand and safeguard against environmental accidents are on the rise, few expect that we can completely eliminate all injuries to natural resources. Thus, we search for an equilibrium between our conflicting and competing desires. NOAA has recognized that this equilibrium cannot be a purely economic one. While our desire for commercial activity may be reducible to economic terms, our desire to avoid environmental degradation is not. We must account for moral and social values, as well as economic prices, to create a true equilibrium. Often, effective environmental public policy is not about collecting money

368. *See supra* notes 1-11 and accompanying text (discussing oil spill in Block Island Sound in January of 1996).