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## **Measuring Justice For Nature: Issues In Evaluating And Litigating Natural Resource Damages**

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### **I. INTRODUCTION**

Shortly after midnight on a chilly March 24, 1989, the oil tanker Exxon Valdez ran aground on Bligh Reef in Prince William Sound, Alaska. The damaged vessel immediately began gushing crude oil into the Sound, and over the next two days an estimated 11,000,000 gallons of crude oil were discharged into the sensitive marine environment before emergency crews could stop the release.

The oil spill spread over 600 miles across Prince William Sound and the Gulf of Alaska, contaminating approximately 1,100 miles of shoreline along Prince William Sound, the Denai Peninsula, the lower Cook Inlet, the Kodiak Archipelago, and the Alaska Peninsula. Damaged areas included several coastal communities, the Chugash National Forest, four national wildlife refuges, three national parks, five Alaskan State parks, four Alaskan Critical Habitat Areas, and an Alaskan Game Sanctuary. The oil slick killed over 350,000 shore nesting birds and several thousand marine mammals, mostly sea otters, and posed a threat to salmon and herring fisheries in the area.

Over the next few years, Exxon spent approximately \$2.1 billion in remediation costs, \$5 billion in civil litigation punitive damages, \$287 million to commercial fishermen as compensatory damages, \$20 million to Alaska natives in an out-of-court settlement, and \$125 million in criminal fines and restitution payments to state and federal agencies. But simply cleaning up the spill and compensating injured parties was not a sufficient remedy to account for the extent of the harm to the environment. During the cleanup, an extensive study program was conducted to assess the damage to natural resources resulting from the disaster above and beyond the damage addressed by remedial actions. These assessments focussed on the immediate injury to the environment, the long-term alteration of species populations, the sublethal or latent effects of the spill, the ecosystem-wide effects, and degradation of habitat.

Based on these assessments, Exxon entered into a settlement agreement with federal and state governments to pay \$900 million for the costs of restoring and replacing damaged natural resources. The agreement provided for up to \$100 million in additional funding for restoration needs that had not been accounted for at the time of the agreement.

Three federal and three state trustees were designated for administering the restoration funds in a trust. All funds were designated for use in restoring, replacing, enhancing, or acquiring the equivalent of natural resources injured as a result of the spill and reduced or lost services provided by these resources. As of the winter of 1997, the trustees had implemented several general restoration projects in damaged areas and acquired approximately 485,000 acres as replacement for damaged resources, mostly for enhancing the recovery of injured wildlife populations through additions to existing wildlife refuges. The natural resources of Prince William Sound have yet to fully recover, and the trust continues to monitor and research the implementation of the restoration program.

The Exxon Valdez disaster highlights many of the issues that arise when including natural resource damages in an assessment of environmental harm. Compared to the costs of investigation or remediation, natural resource damages are not readily measured and accounted for. Determining what methods are suitable for measuring the value of natural resources and the extent of recoverable damages are controversial subjects.

It is the purpose of this paper to discuss what are natural resources for the purpose of defining their value, the methods for valuing damages to natural resources and the services they provide, and to review the legal framework for litigation over damages to natural resources with a discussion of causes of action under the common law and under federal natural resource protection statutes. The paper concludes with a summary of short comings in the current legal framework, and provides the author's suggestions for improving the existing system.

## **II. CHARACTERIZATION OF NATURAL RESOURCES**

In any discussion on natural resource damages, it is important to define what is meant by "natural resources." Natural resources can generally be thought of as the individual elements of the natural environment that provide economic and social services to human society. Traditional definitions of natural resources were limited to resources providing quantifiable economic products such as industrial minerals, energy sources, timber, and agricultural land. However in recent decades there has been a growing recognition that natural resources as ecosystems provide a larger array of services to society than merely as a source of industrial raw materials. As these services have come to be recognized, the definition of natural resources has expanded to include ecological elements and the services derived from ecosystem processes.

Ecosystem services provided by natural resources that have been investigated since the mid 1960s include the function of wetlands and the effect of watersheds on water quality, the cycling of chemicals and nutrients through ecosystems, and the interaction of natural resources with the atmosphere and the oceans to regulate climate. A modern list of services provided by natural resources include the purification of air and water, flood control, detoxification and decomposition of wastes, the formation and maintenance of fertile soils, pollination of crops, control of agricultural pests, and recycling of matter in addition to providing material benefits such as food supplies, industrial products, construction materials, energy sources, and medicines.

Additionally, natural resources can be considered part of the cultural fabric of society. Throughout American history, the arts, literature, and philosophy have been influenced by the character of the natural landscape. From the diaries of the Lewis and Clark expedition to the writings of Henry David Thoreau, Mark Twain, and the poetry of Walt Whitman, American culture is pervaded by a sense of place in its natural environment, which is reflected in society's value of natural resources. This value is uniquely expressed in the land ethic of Aldo Leopold, which challenged the perspective of natural resources as simply a commodity, instead emphasizing the moral value of the natural environment of which humanity is a part. Based on such cultural premises, the definition of natural resources has been extended to include an aesthetic element recognizing the value to people in simply knowing the resources exist.

Such an expansive list of services associated with natural resources creates complexity in defining the extent of these resources in the particular circumstances of natural resource damage litigation. It is one thing to measure the direct loss of economic value of natural resources such as fish or timber, but quite another to measure the resulting negative externalities such as the loss of ecological services or the value of the knowledge of their existence to individuals or to society as a whole. The following section addresses the difficult issues in valuing natural resources for the purposes of litigation damage assessment.

## **III. VALUATION OF NATURAL RESOURCES**

One of the most significant aspects of natural resource damage litigation is the assignment of value to the damaged natural resources. Due to the expansive nature of the definition of natural resources and the difficulty in measuring resource values, the litigated value of damages can vary significantly depending on the philosophical basis of assigning value and the method used to determine value. This section characterizes the different philosophical bases for valuing natural resources and the methods used in measuring the value of damages to natural resources.

### **A. Approaches to the Valuation of Natural Resources**

It is generally recognized that there are essentially two different philosophical bases of assigning value for natural resources, anthropocentric (or utilitarian) approaches and biocentric (or intrinsic value) approaches. These two approaches are not mutually exclusive, but do assign different values to the same resource under similar circumstances.

Anthropocentric approaches can be characterized as utilitarian in that they assign value to natural resources insofar as they provide satisfaction to humans, either individually or as a society. Anthropocentric values can be divided into use values, or the worth of natural resources derived from direct or indirect use, and existence values, or the worth of natural resources to people beyond their use value.

Use values are the least controversial of natural resource values, as they are the easiest to identify and measure as consistent with existing markets. Use value is not limited to consumptive uses, such as timber production, but also includes nonconsumptive uses such as recreation in a resource area, and the indirect use values of ecosystem services, such as flood control or water purification.

Anthropocentric values that are not use values are considered existence values. These are the values to individuals and society in simply knowing the natural resources exist. Existence value can be characterized as a vicarious value, which is the value to a particular individual in the knowledge that the natural resource exists, or as an intertemporal value, which is the value of conserving the resource for future generations. Additionally, existence value contains an element of value related to the option that conservation of the natural resource provides for future use. For example, an endangered plant species may have undiscovered medical uses for which the preservation of the species provides an option value.

As a separate category of valuation, the biocentric approach can be generally characterized as a rights based approach, recognizing an intrinsic value of natural resources to exist independent of human satisfactions. Characteristic of this approach is the philosophy of deep ecology, the animal rights movement, and the land ethic of Aldo Leopold. Intrinsic value is not readily measurable in monetary worth, as intrinsic value is a matter of right. The measure of damages to natural resources under an intrinsic valuation system would necessarily be punitive to serve as a deterrent from violating an intrinsic right.

From an economic perspective, the preferred method of valuing natural resources is to quantify anthropocentric values of use and existence through some form of utilitarian cost-benefit analysis. Anthropocentric values are favored as they are theoretically measurable, and that the process of measuring damages in a litigation context is by definition anthropocentric. Additionally, intrinsic values are not universally recognized, and the process of monetizing the intrinsic value of an injury to natural resources is speculative. The use of a valuation approach is consistent with current law, which does not recognize legal rights for natural resources apart from the interests that persons or recognized parties have in the resources.

The value of a natural resource is the sum of the legally recognized elements of value, insofar as they can be separated and independently measured. However use, existence, and intrinsic value are not necessarily exclusive, and elements of intrinsic value may be included in measurements of use and existence values of natural resources. To understand which values are included in a measure of natural resource value, it is important to have a basic understanding of the various economical methods used for measuring natural resource value.

## **B. Methods of Quantifying the Value of Natural Resources**

Several methods have been developed over time for measuring the value of natural resource damages. The traditional approach at common law was to measure damages as the market value of the injured natural resources, or where market value was inappropriate or unavailable, the cost to restore or replace the resources. As the concept of natural resources has broadened to include services and nonuse values, natural resource valuation methods have been developed that account for nonmarket values. These methods are generally classified as either direct methods such as contingent valuation (measuring the stated value), and indirect methods such as behavioral use valuation (measuring revealed value). Each of these methods has advantages and shortcomings, as discussed infra.

## **1. Market Valuation**

Market valuation of natural resources provides a relatively certain measure of resource value, as market value is reflected in the price for resources as traded in a definable market. Under a market valuation approach, the compensable natural resource damages would be the total loss of market value for each of the individual damaged elements and the value of lost services of the natural resource. Use of market valuation is commonly held to be the most economically efficient measure of damages. In theory, market value is the level of compensation litigating parties would agree to out of court if no transaction costs were incurred.

However market valuation is limited in its use in a natural resource damages context. Natural resources often have unique and peculiar values, and in many circumstances are not openly traded on a free market. Market valuation does not account for the loss of nonmarketed use values such as indirect ecosystem services or for existence or intrinsic nonuse values. It is generally accepted today that market valuation is not reflective of the true value of damages to natural resources, and in general will tend to underestimate their true value.

## **2. Restoration and Replacement Cost**

Restoration of a damaged natural resource is appealing as a remedy in that it directly addresses the harm. Restoration cost is the only valuation method that accounts for the uniqueness of each particular resource and the finite supply of natural resources in general. Additionally, restoration cost incorporates to some degree all measures of natural resource value (use, existence, and intrinsic) to provide a full measure of damages .

However restoration cost does not directly measure the value of the damaged resource, and can result in costs greatly exceeding the value of the damaged natural resources as measured by other methods. It is generally accepted that a measure of damages that is disproportionate to value is contrary to the policy of promoting economic efficiency. Restoration cost presents technical problems as well, as the issue of what should be considered baseline conditions, what restoration procedures are appropriate, and what degree of restoration is considered adequate. For injuries where there is extensive habitat destruction or loss of biodiversity, it may not be possible to restore various ecosystem functions from the injury.

Where restoration is not feasible, a similar alternative is to replace the damaged natural resources by acquiring comparable resources for conservation. Replacement has the advantage of being relatively easy to measure comparable value, and can provide an effective remedy for the loss of many use and existence values. However replacement does not address the value of loss for unique resources, and does not account for the loss of the combined value that the injured natural resource and its replacement had prior to the injury.

## **3. Contingent Valuation**

Contingent valuation is a recently developed method of economic valuation where the value of a natural resource and its services are measured by surveying a sample of the population to provide the price they would be willing to pay to preserve or restore a resource. A variation of contingent valuation is the contingent behavior method, which asks the survey respondents how much they would be willing to modify their behavior patterns to protect or restore a natural resource.

Contingent valuation provides a direct method of measuring natural resource values without resorting to the market valuation method. The technique is relatively simple and easy to implement, and provides a direct means of including existence value in a measure of natural resource damages. The survey techniques used in contingent valuation studies also provide a good data base of information for other indirect methods of valuing natural resources.

The use of contingent valuation in natural resource damage estimates has been highly controversial. Critics of the method argue that the method is hypothetical and generates unreliable damage estimates,

produces results that cannot be independently validated, determines value from persons lacking sufficient information to be estimating value, and is not consistent with principles of valuation that are basic to the economics profession. These deficiencies in contingent valuation arguably inhibit the method from accurately measuring use and existence values.

Most of the concerns regarding contingent valuation are related to the manner in which the survey is designed and implemented. Proponents of contingent valuation have argued that these criticisms are derived from improper design and execution of surveys, and that recent developments in the practice of contingent valuation has improved its accuracy in measuring natural resource damages. Suggested characteristics for obtaining accuracy in contingent valuation surveys include clearly identifying and describing the resource and the impact to be valued, providing a means of establishing that the respondent is familiar with the resource, framing the survey questions so as to avoid implicating political controversies, using yes-no or multiple-choice question format, and to the extent possible avoiding open-ended questions.

#### **4. Behavioral Use Valuation**

Behavioral use valuation is a broad category of economic methods that can be used to indirectly measure the use value of natural resources by observing differences in behavioral patterns. The change in the behavior of resource users as the result of an injury to natural resources reflects a corresponding reduction in welfare, which is measured under different tests as a proxy to the loss in resource value. One advantage to using behavioral use valuation is that it is less prone to error resulting from the individual bias and hypothetical nature of the contingent valuation method.

A commonly used behavior use valuation method is the hedonic model, which models the change in value of marketed goods with characteristic attributes that are influenced by an injury to natural resources. The hedonic model typically uses pricing in the housing market as the measured variable to evaluate natural resource damage value, as several studies have indicated that proximity to environmental risks are capitalized in the housing market. However hedonic modeling has been criticized for being unable to separate the impact to value resulting from natural resource damage to high transaction costs and other characteristics of the location that factor into housing prices. Hedonic modeling is prone to underestimate the value of marginal damage to natural resources, and for many natural resources, there is a limited housing market in the area from which hedonic modeling could evaluate.

Travel cost valuation offers a more appropriate behavioral use valuation method for measuring the value of natural resource damages. Users of natural resources incur travel costs to access the resources, and theoretically the value to the users is reflected in the amount of travel costs they are willing to incur. Travel cost valuation has the advantage of being relatively easy to obtain reliable data, which may already be available for some natural resource locations. However similar to hedonic modeling, travel cost valuation is limited to measuring only use values, as nonuse values are not captured in travel expenditures. Additionally, it may not be adequate for measuring the value of small changes in the quality of the natural resource or the amount of knowledge that users have regarding the extent of damage to the resource. It is also difficult to accurately account for opportunity costs resulting from lost wages on the part of the resource users. However in spite of these shortcomings, travel cost valuation is generally regarded as the best available tool for measuring use value where market valuation is inapplicable.

This summary of methods to value natural resource damages highlights the complexity and controversial nature of natural resource damage valuation. The selection of a valuation method is dependent on the values sought to be included, and the particular circumstance in which the damages are to be evaluated. Table 1 summarizes the type of values and their inclusion in different methods of measuring natural resource values.

#### **IV. LITIGATION OVER NATURAL RESOURCE DAMAGES**

Natural resource damage litigation can be divided between common law based actions and federal

statutory actions. Although there are many similarities between the two types of cases, there are important procedural differences in terms of jurisdiction and standing requirements, as well as differences in the remedies available to plaintiffs. After examining common law legal rights and circumstances under which claims can be made for natural resource damages, this section will explore the federal statutory framework for litigating natural resource damages and the impact these statutes have had on common law actions.

## **A. Common Law Legal Rights over Natural Resources Damages**

The common law, including statutes enacted under the sovereign powers of the states, are the traditional legal methods for addressing damages to natural resources. The common law provides a framework for addressing interests in natural resources as either public interests or private interests. Public interests are those interests common to the general public, and are vindicated by states acting as sovereign. Private interests are generally private property interests vindicated under principles of tort law.

### **1. Common Law Public Rights**

States are recognized as having authority to protect natural resources, insofar as the resources are within the interests of the general public. The most common legal basis for states to have standing to sue for natural resource damages is through an exercise of the police power. In addition to the police power, states can rely on other common law theories recognizing state interests in natural resources. Three additional common-law theories for state based actions are 1.) states have a proprietary interest in natural resources, 2.) states are guardians of natural resources under the doctrine of *parens patriae*, and that 3.) states are trustees of certain natural resources under the public trust doctrine.

#### **a. Police Power**

The police power provides states the authority to create laws to protect the health, safety, and welfare of the general public. The majority of states have enacted statutes authorizing the state fish and wildlife agency or state attorney general to recover damages for environmental harm. State statutes often provide standing to local governments and private parties to recover for natural resource damages as well. Common damages under such statutes are for the full measure of the value of harm, either as the cost of restoration or by a statutorily prescribed unit pricing system. Many states allow for civil and criminal penalties related to the extent of damage.

#### **b. Proprietary Interest of States**

State ownership of wildlife was recognized by the U.S. Supreme Court in *Geer v. Connecticut*, which held that a state could prohibit the taking of wildlife and transportation for sale outside of state boundaries by virtue of its ownership of wild game. For several decades, *Geer* provided a framework for states to regulate wildlife based on the states' proprietary interest. However the Court subsequently overruled *Geer* in *Hughes v. Oklahoma*, holding that state wildlife protection laws were subject to dormant commerce clause limitations in the manner of other forms of state regulation. The Court in *Hughes* characterized state ownership of wildlife as a "legal fiction" merely expressing the importance to a state in preservation and regulation of the exploitation of important resources.

This language in *Hughes* can be interpreted as invalidating the common law doctrine of state ownership of wildlife resources as expressed in *Geer*. Alternatively, the *Hughes* decision can be interpreted as applying narrowly to restrictions on interstate commerce. However subsequent to the *Hughes* decision, states have justified protection of natural resources on common law doctrines other than the proprietary interest of state.

#### **c. Parens Patriae and Public Nuisance**

The common law doctrine of *parens patriae* regards the state as guardian of its citizens who are unable to adequately represent themselves. The doctrine has expanded to allow states to sue to protect articulated quasi-sovereign interests distinct from the interests of particular private parties on behalf of the general

public, such as the abatement of public nuisances or the protection of its economy. The right of the State to sue for pollution and natural resource damages on parens patriae grounds is well recognized in case law. Traditionally parens patriae was used only as a basis for states seeking injunctive relief, but recent court decisions have allowed states to recover money damages in their capacity as parens patriae.

The most common cause of state action to protect natural resource damages under the parens patriae is the law of public nuisance. A public nuisance exists where there is an interference with a right common to the general public. Public nuisance originated as a common law group of crimes that have since been replaced by statutory crimes in most jurisdictions. The modern common-law action of public nuisance is based on conduct that is more tortious than criminal, and it is no longer necessary that an action be criminal to be a public nuisance.

For public nuisance to apply, the nuisance must affect a public interest rather than private individual. It is not the ownership of the resource that is at issue, but the nature of the injury. The nuisance does not need to affect the entire community, but must substantially interfere with the public right of those who encounter it. Market valuation is typically the standard of measuring money damages in common law nuisance actions for injury to natural resources.

#### **d. Public Trust Doctrine**

Although in general states are no longer held to own natural resources, the public trust doctrine presents a property basis for the legal right of states to natural resource damages. Under the public trust doctrine, states hold title to lands under tidewaters and navigable water courses in trust for the benefit of the public. The public benefit the state is to protect includes fishing, navigation, commerce, and more recently water quality, wildlife, aesthetic values, public access, and recreational uses. The lands held in trust cannot be alienated by the state except to promote the public interest. In evaluating uses and disposition of the public trust, the states use a balancing test to evaluate the costs and benefits to the trust, protecting the trust interests to the extent possible.

As the public trust doctrine is limited to navigable river and lake beds, coastal areas, estuaries, and other marine areas, the doctrine will generally not sustain a state action for natural resource damages in dryland areas. However even with this limitation, the doctrine does serve as an important basis for states' interests in natural resources, as many injuries to natural resources are associated with pollution in water courses and wetland areas.

## **2. Common Law Private Rights**

At common law, private parties and municipal governments are able to sue for natural resource damages under tort doctrines of negligence, nuisance, trespass, or strict liability for abnormally dangerous activities. Each of these causes of action require the private party to have incurred a personal injury distinct from the general public as a result of the tortfeasor's actions and separate from public rights. Recoverable damages typically include lost property interests, economic loss, and potentially punitive damages. Injunctive relief is often available as well as money damages.

### **a. Negligence**

Negligence actions are available to private parties and municipalities where the party responsible for an injury to natural resources has failed to exercise an objective standard of due care. A negligence action must show that the responsible party was subject to a duty of care, and that the defendant's conduct fell short of the duty resulting in an injury.

To establish the responsible party was under a duty of care, a plaintiff must show that the burden to the responsible party in avoiding the injury was outweighed by the probability of an injury and the degree of harm. For natural resource damages, a duty of care will commonly be found as the degree of potential harm to the environment will outweigh the burden in avoiding the harm.

Establishing that the cause of natural resource damages are the result of the defendant's failure to

exercise due care can present a substantial barrier to a negligence action. To recover damages, the plaintiff must show by preponderance of the evidence that the defendant's conduct caused the injury and that it was not the result of an independent cause. Sophisticated sampling and modeling techniques are often necessary to demonstrate injury and causation. However in many negligence actions for natural resource damages, *res ipsa loquitur* will apply shifting the burden of proof to the defendant to show that by preponderance of the evidence the cause of injury is not the defendant's negligence.

#### **b. Nuisance**

Nuisance actions by private parties can be either private nuisance or public nuisance causes of action. The two actions are distinguished by the nature of the injury. Private nuisances are where there is a substantial interference with the use and enjoyment of lawfully possessed property. To maintain a private nuisance action, the plaintiff must have a property interest at stake such as a property right in the damaged natural resource.

Remedies available under private nuisance include money damages for lost market value, injunctive relief, and abatement by self-help. Injunctive relief is available under private nuisance if the necessary measures to abate the harm fall short of a complete ban on the activity causing the nuisance. For activities that are highly probable to lead to a nuisance, the activity might be enjoined prior to any resulting damages through a private nuisance action.

Public nuisances are nuisances where there is an interference with a right common to the general public. In addition to the right of the state to sue for public nuisances, private parties can sue for public nuisances where they have damages different in kind from the damages to the general public. For example, damages to commercial fishermen resulting from an oil spill are different in kind from damages to the general public, whereas damages to local business are not. Remedies for private actions under public nuisance law are the same as under private nuisance law, except that the magnitude of the damages are not normally a factor in private actions for public nuisance.

#### **c. Trespass**

Private parties have a right of action in trespass where there is a physical invasion of property. Whereas nuisance actions are based on interference with the right to use and enjoyment of property, trespass actions are based on interference with the right to possession. Trespass actions require that the responsible party be more than negligent; the defendant must have intended the action that resulted in the trespass. Once trespass is established, the trespassing party is liable for all consequences.

#### **d. Strict Liability**

Under certain circumstances the tort doctrine of strict liability for abnormally dangerous activities might apply to cases of natural resource damages. To establish a strict liability action, the plaintiff must show that the defendant engaged in an activity that posed a high degree of risk of some harm, that the threatened harm could be serious, and that reasonable care could not have eliminated the risk of harm. Other considerations include the extent to which the activity is not a matter of common usage, the inappropriateness of the activity to the location, and the value of the activity to the community.

The use of strict liability is not accepted in all jurisdictions, and its application has been limited to activities which are out of place or unnatural for the location in which they are carried out. Examples where the doctrine has been applied include storage and diversions of large quantities of water, storage of explosives or large quantities of flammable liquids, crop dusting, fumigating with cyanide gas, drilling or refining oil in populated areas, and the emission of noxious gasses in populated areas. The doctrine has not been applied to such activities where the uses are natural to the land, such as utility mains or gas stations. Accidental releases of hazardous substances during storage or transportation are generally not subject to strict liability as an abnormally dangerous activity.

### **B. Federal Natural Resource Protection Statutes**

Federal environmental legislation over the past 25 years has restructured the law of natural resource damages. Two environmental statutes provide the principle sources of federal authority over natural resource damages; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) , and the Oil Pollution Act (OPA). Although other examples of federal legislation addressing natural resource damages exist, these two statutes are the most generally applicable and provide a consistent framework in which to discuss natural resource damage litigation.

## **1. Creation of Liability for Natural Resource Damages**

CERCLA and OPA each designate injury to, destruction of, or loss of natural resources as an element of liability to which each statute is addressed. CERCLA creates liability under circumstances where response costs are incurred to address a release or threatened release of a hazardous substance into the environment. However for natural resource damage claims, the liability provisions of CERCLA require a proven injury to the resource, and do not allow an action where there is only a threatened release. Parties liable under CERCLA include the current owners and operators of a facility, owners and operators of a facility at the time the hazardous substances were disposed of, persons arranging for transport and disposal of hazardous substances, and transporters of hazardous substances.

OPA creates liability for discharges of oil into navigable waters or adjoining shorelines or the exclusive economic zone of deep ocean waters. Parties liable under OPA include owners, operators, or charterers of transport vessels, onshore facilities, pipelines, or lessees of offshore facilities or deepwater ports. Public vessels and permitted discharges are excluded from OPA liability.

Both CERCLA and OPA establish a strict and joint and several liability scheme for acts that result in damages to natural resources. Liability is limited to injuries to those resources prescribed by statute. The two statutes define natural resources identically to include "land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belong to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States..., any State or local government or Indian tribe, or any foreign government." Resources under private ownership are interpreted as being "otherwise controlled by" the United States where there is a substantial degree of government regulation.

For purposes of liability, an injury means an observable adverse change in a natural resource that is either directly or indirectly the result of a discharge. Regulations under CERCLA qualify adverse change as changes in the chemical or physical quality or viability of the natural resource, and under OPA include the impairment of natural resource services as a component of injury. The statutory liability is only to the designated trustees, including the U.S. Government, states, Indian tribes, and foreign governments for natural resources under their respective control.

CERCLA authorizes injunctive relief where a release or threatened release of a hazardous substance poses an imminent and substantial threat to public health and welfare or the environment. The U.S. Attorney General is authorized to secure the injunction, which may include whatever actions are necessary to abate the threat, as determined by the public interest and circumstances of the threat. Authority to determine when such a threat exists has been delegated to the U.S. Coast Guard for releases or threatened releases involving the coastal zone, Great Lakes waters, ports, and harbors. Authority for all other releases or threatened releases has been delegated to the U.S. Environmental Protection Agency.

It is significant that unlike recovery for response costs, there must be an established causal link between the responsible party and the injury to the natural resources. Simply satisfying the requirements for a liable party is sufficient to find liability for recovery and response costs. Natural resource damage liability requires that a regulatory definition of causation is satisfied, provided in CERCLA implementing regulations, which can create a burden of proof that presents a substantial technical barrier to recovery.

## **2. Defenses to Liability for Natural Resource Damages**

Defenses to OPA and CERCLA are limited to the defenses specified in statute. Both statutes provide defenses if it can be established that the resulting damages were the result of an act of God, an act of war, or an act or omission of a third party other than an employee/agent or a party under a contractual relationship with the defendant, as these terms are defined in the statute. Both OPA and CERCLA prohibit double recovery for an injury to natural resources. CERCLA proscribes retroactive liability for damages wholly occurring before December 11, 1980. CERCLA also precludes liability where resources have been irretrievably committed in an environmental impact statement where the discharge of hazardous substances is in compliance with an authorized permit. Damages for such a release are still available under existing law, including the common law. Both OPA and CERCLA specify a 3 year statute of limitations from the date of discovery of the loss of natural resources or the date of promulgation of natural resource damage regulations until an action is brought to recover damages.

Total liability under CERCLA is limited to \$50,000,000 for natural resource damages. Total liability under OPA is dependent on the type of facility discharging oil. Tank vessels liable for the greater of \$1,200 per gross ton or either \$10,000,000 for vessels greater than 3,000 gross tons or \$2,000,000 for vessels less than or equal to 3,000 gross tons. Offshore facilities are liable for up to \$75,000,000, and onshore facilities with deepwater ports are liable for up to \$350,000,000.

### **3. Natural Resource Trustees**

A significant factor in both OPA and CERCLA provisions is the designation of public trustees to act on behalf of the public interest to recover for natural resource damages. Both OPA and CERCLA designate the President or an authorized representative of any State, Indian tribe, or foreign government to as trustee for natural resources. The President has delegated to the Secretaries of Defense, Interior, Agriculture, Commerce, and Energy to serve as federal trustees, with one of the trustees serving as the Lead Administrative Trustee for each spill resulting in natural resource damages. States are to notify the Environmental Protection Agency of the designated state trustees for natural resources.

Under the law of trusts, the trustee is under an affirmative duty to enforce claims in order to preserve the trust. The scope of a trustee's authority is limited to the specific terms creating the trust and to any actions necessary or appropriate to carry out the terms of the trust. The terms of natural resource trusts under OPA and CERCLA explicitly limit the statutorily available damages for defined injuries. OPA limits natural resource damages to restoration and replacement costs plus the diminution in value pending restoration or replacement and the associated assessment costs. CERCLA does not limit damages to restoration and replacement costs, but requires regulations for assessing the value for natural resources for direct and indirect injuries that consider at a minimum replacement value, use value, and the ability of the damaged resource to naturally recover. The assessed value is provided a rebuttable presumption of validity by statute.

### **4. Natural Resource Damage Assessments**

The key elements in a statutory based action for natural resource damages are the determination of injury, finding of causation, and measure of compensable damages, all of which are provided in an assessment process authorized under OPA and CERCLA. The regulations for natural resource damage assessments under CERCLA and OPA have developed along separate paths, and have some important differences.

#### **a. CERCLA Procedures**

Natural resource damage assessment procedures under CERCLA provide a natural resource trustee broad discretion in assessing the value of natural resource damages. CERCLA requires designated federal officials to promulgate regulations for the assessment of natural resource damages with two separate procedures; a standard procedure for simple assessments based on the discharge and the affected area, and alternative protocols for more extensive measurements to evaluate the type and extent of short and long term damages, including both direct and indirect damages. The procedure for simple assessments has limiting circumstances under which it can be utilized, and is rarely used in CERCLA natural resource damage assessments.

The Department of the Interior (Interior) promulgated the first version of damage assessment rules for the more extensive assessments in 1986. The rule required trustees to choose the lesser of restoration or replacement costs or the diminution of use values as the measure of natural resource damages. In calculating diminution of use values, trustees were to first consider market valuation. If it was determined that market valuation was inappropriate, trustees were to appraise a loss of market value using uniform appraisal standards. If neither market valuation or appraisal were appropriate measures of value, trustees could use contingent valuation methods, travel cost valuation, or hedonic modeling. Contingent valuation was to be used in estimating nonuse values only when use values could not be measured.

Upon being made final, the rule was challenged by states and environmental organizations claiming the assessment process undervalued natural resource damages, as well as industry interests, claiming that the rule overvalued natural resource damages. The D.C. Circuit consolidated all actions against the new rule in one suit. The rule was evaluated under the Chevron test to first determine whether there was a discernable congressional intent from legislative history, and if not whether the rule was reasonably construed within the Interior's delegated discretion.

The most substantial holding of Ohio was that the "lesser of rule," requiring trustees to choose between the lesser of replacement or restoration costs or diminution of use values, violated the intent of congress to prefer restoration cost as the measure of damages. However the court did allow for the use of other valuation methods where restoration was infeasible or grossly disproportionate to use value. Additionally, the hierarchy of methods was held to be unreasonable in not accounting for nonuse values such as existence and option value, and the rule was remanded to Interior for clarification of the authority of trustees for natural resource damages on lands not owned by the government.

Interior did not appeal the Ohio court's decision and revised the rule accordingly. Under the new rule, natural resource damage assessments occur in three stages; injury determination, quantification, and damage determination. The method for injury determination includes defining the injury, determining the pathway connecting the cause to the injury, and testing and evaluating the natural resource to statistically determine the cause of the injury. During the quantification step, the trustee characterizes the injury in terms of a reduction in natural resource services from a baseline state as well as the time needed for the resources to recover.

The damage determination stage was the most significant revision of the rule. The measure of damages in the new rule is established as the cost of restoration or replacement of the damaged resource. Additionally, compensable value (the value of the lost services of the resource during the time period from the injury until baseline conditions have been reattained) is available for recovery at the discretion of the trustee. The trustee can choose between several valuation methods for estimating compensable value, including market valuation, appraisal, factor income, travel cost, hedonic pricing, unit value, contingent valuation, or other suitable valuation methods. The use of contingent valuation for measuring option and existence value is available only when the trustee determines that there are no relevant use values.

#### **b. OPA Procedures**

OPA is more explicit in natural resource damage assessment procedures, but does provide trustees some discretion in assessing value. Congress passed OPA with the Ohio decision in hindsight, and used the Ohio case to clarify the natural resource damages provisions of the new statute. OPA expressly mandates the measure of damages is to be the cost of restoration or replacement, the diminution in value pending restoration, and assessment costs. The rule divides the trustee's responsibility into a preassessment phase, a restoration planning phase, and a restoration implementation phase.

During the preassessment phase, the trustee determines whether there has been release of oil to which OPA applies. In the restoration planning phase, the trustee assesses potential injuries to natural resources, quantifies the degree of injury relative to a baseline, and evaluates alternatives for restoration. At a minimum, the trustee must consider a natural recovery alternative and an active restoration alternative.

A unique feature of the restoration planning phase requires trustees to consider compensatory restoration for each alternative. Similar to compensatory value in the CERCLA damage assessment rule, compensatory restoration is intended to compensate the public with resource services of similar type and of comparable value to the damaged resources until restoration is complete. The trustee is to evaluate all alternatives based on cost, extent of restoration to be achieved, likelihood of success, extent of preventing future injury, benefits to multiple resources, and the effects on public health and safety. Finally, the trustee is to select and implement the preferred restoration alternative.

### **C. Common Law Actions and Natural Resource Trustees**

The designation of federal and state agencies as natural resource trustees has radically altered the common law regime for litigation over natural resource damages. Both CERCLA and OPA limit natural resource damage claims to designated trustees, denying standing to local governments and private parties to recover for natural resource damages. CERCLA and OPA do not limit states from imposing additional liability requirements or creating additional rights of action, and the provisions of CERCLA do not modify obligations or liabilities under any other law, including the common law. Local governments and private parties have full authority provided to them under state statutes or common law, but do not have a cause of action under OPA and CERCLA natural resource damage provisions.

The prohibition on double recovery for natural resource damages raises the issue of when a designated trustee has preempted the right of action of local governments and private parties. This is a minor issue for parties seeking injunctive relief where the trustee is seeking restoration damages, as the citizen suit provisions of CERCLA provide a right of action against the trustee for restoring the resource. However where replacement is the selected remedy, the preclusion of a claim for injunction is a substantial loss to the local government or private party as the replacement resources are unlikely to be the property of the party seeking injunction.

For compensatory value or other use values claimed as damages under CERCLA, the rights of trustees may overlap with the justiciable interests of other parties. Recovery of natural resource damages by the trustees for these uses will preclude recovery by other parties. Where damaged natural resources are located on private property that is under substantial government control, the private property owners may be precluded from recovery for property damage. This is not an issue for cases where restoration is the selected alternative once the resources have been restored, but is a factor for compensatory value under CERCLA or compensatory restoration under OPA, where damages for use value during restoration are accounted for.

Very few natural resource damages claims are fully assessed according to regulatory guidelines. In most cases, the responsible party negotiates a settlement for natural resource damages concurrently with a settlement for cleanup costs. For the purposes of settlement, resource trustees typically use readily available literature and other information to estimate the value of natural resource damages without necessarily following the full assessment procedure in the regulation. The terms of the negotiated settlement typically commit the government to releasing the responsible party from any and all claims for natural resource damages, with preclusive effects for other parties seeking natural resource damages.

## **V. CONCLUSIONS**

The law of natural resource damages is a complex mix of common law doctrines and statutory rights in an area of law that reflects many different values among parties with different rights in a common cause of action. The law that exists today has developed over years of research and litigation, and presents a reasonable framework for addressing natural resource damages.

The advent of federal statutes designating trustees on behalf of the public interest is one of the most significant developments in the law of natural resource damages. By constructing a trust to protect natural resources, federal statutes demonstrate the importance of natural resources to the nation by obligating trustees to recover for damages in the interest of the trust. The recent development of preference for restoration or replacement costs as the presumptive remedy improves the adequacy of the law by including existence values as well as use values in the measure of damages.

However the federal statutory framework does present some problems with the law of natural resource damages. The most significant issue that remains to be resolved is the preclusion of claims of private parties and local governments under common law when natural resource damages have been collected by resource trustees. This is particularly important in situations where damages to private property are precluded on the basis of a natural resource damages judgement or settlement to resource trustees.

Affirmatively avoiding preclusion of other parties claims should be developed as a policy of natural resource trustees. The OPA and CERCLA damage assessment rules should be modified to include a prescriptive procedure for trustees to determine the potential for precluding other party claims. Such a procedure would best be incorporated into the OPA procedures for compensatory restoration or the CERCLA procedures for compensatory value, where the possibility of including preclusive damages exists.

Another modification that would improve the natural resource damage assessment procedure is to give preference to restoration over replacement. Restoration should be the presumed standard, as it is the only valuation method that is fully inclusive of all measures of value, including intrinsic value. Restoration avoids the net loss of resources that is characteristic in replacement value. Additionally, as a technology-forcing method, restoration encourages the development of technologies for implementing restoration that reduce restoration costs over time.

CERCLA regulations provides no preference between restoration and replacement. OPA regulations offer some improvement by including as one of six factors the extent to which the injured natural resources are returned to their natural condition in alternative selection. Both regulations should be modified to require a hierarchy of alternatives with restoration as the preferred alternative unless it is shown to be impracticable. Only in such cases the trustee should the trustee consider replacement or other valuation methods in the natural resource damage assessment.

By making these subtle changes in existing regulations, broad improvements will be made in the law of natural resource damages. Parties with actionable rights in natural resources will have assurance that their rights will not be precluded by resource trustees without a credible evaluation of their interests. A more inclusive and comprehensive value of natural resources will be accounted for as trustees would be committed to the restoration of damaged resources, recognizing all values inherent in the resources. With these changes, the coalition of private interests and public trustees will together form a more comprehensive stewardship of the land, and provide a more true measure of justice for nature.

## **V. ENDNOTES**

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2. Microsoft Encarta '95, Exxon Valdez (1994).
3. Oil Spill Public Information Center, What happened on March 24, 1989, (last modified October 23, 1997)
4. See Note 2.
5. See Note 3.
6. Oil Spills: Seabird Death Rate from Exxon Valdez Spill Higher than Originally Thought, GAO Reports, Environmental Reporter, 22 ER 1948, December 6, 1991.
7. See Note 2.
8. John Duffield, Nonmarket valuation and the courts: The case of the Exxon Valdez, Contemporary Economic Policy, Vol. 15, No. 4, 98-110 (October 1997). See also In re the EXXON VALDEZ, 1995 U.S. Dist. LEXIS 12952, 31 (D. of Alaska, 1995).

9. Exxon Valdez Oil Spill Trustee Council, Exxon Valdez Oil Spill Restoration, What is the Trustee Council? (January 12, 1998) . The damage assessment was the most extensive in U.S. history, with 164 separate studies at a cost of over \$100 million.
10. Judge Accepts Exxon Pact, Ending Suits on Valdez Spill, N.Y. Times, October 9, 1991, at A14.
11. See Note 9.
12. See Raymond J. Kopp and V. Kerry Smith, Understanding Damages to Natural Assets, in Valuing Natural Assets, the Economics of Natural Resource Damage Assessment 6, 10-11 (Raymond J. Kopp and V. Kerry Smith, ed., 1993). Common definitions of natural resources include "those actual and potential forms of wealth supplied by nature, such as coal, oil, water power, arable land, etc.," (Webster's New World Dictionary, Second College Edition, 1983), and "[a]ny material in its native state which when extracted has economic value... The term includes not only timber, gas, oil, coal, minerals, lakes, and submerged lands, but also, features which supply a human need and contribute to the health, welfare, and benefit of a community, and are essential to the well-being thereof." (Black's Law Dictionary, Abridged 6th Edition, 1996).
13. See Study of Critical Environmental Problems (SCEP), Man's Impact on the Global Environment, pp. 122-125, (1970). The definition of natural resources in modern federal environmental statutes include "land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources...", 33 U.S.C. §2701(20) (Oil Pollution Act), 42 U.S.C. §9601(16) (Comprehensive Environmental Response, Compensation, and Liability Act).
14. Harold A. Mooney and Paul R. Ehrlich, Ecosystem Services: A Fragmentary History, in Nature's Services 11, 13-14 (G. Daily, ed., 1997).
15. Gretchen C. Daily, Introduction: What Are Ecosystem Services?, in Nature's Services 1, 3-4 (G. Daily, ed., 1997). Seventeen ecosystem services were recently identified and economically evaluated, with an estimated worldwide valuation of US\$33 trillion per year, considerably in excess of total global gross domestic product of US\$18 trillion per year. See Robert Costanza et. al., The value of the world's ecosystem services and natural capital, 387 Nature 253 (1997).
16. Eric Freyfogle, The Land Ethic and Pilgrim Leopold, 61 Colo L Rev 217, 227-241 (1990).
17. Frank B. Cross, Natural Resource Damage Valuation, 42 Vanderbilt Law Review, 269, 285-297 (1989).
18. Lawrence H. Goulder and Donald Kennedy, Valuing Ecosystem Services: Philosophical Bases and Empirical Methods, in Nature's Services 23, 24-27 (G. Daily, ed., 1997).
19. Id at 24.
20. See Cross, Note 17 at 281-284. See also Jeffrey C. Dobbins, The Pain and Suffering of Environmental Loss: Using Contingent Valuation to Estimate Nonuse Damages, 43 Duke L.J., 879, 888-910 (1994).
21. See Goulder and Kennedy, Note 18 at 28.
22. Cross, Note 17 at 285-287. Cross distinguishes option values from other existence values in that there is often an existing market value for option values, such as commodity future markets. Some authors would consider option value a use value, or somewhere between use and existence values. See Dobbins, Note 20 at 900.
23. Deep ecology rejects anthropocentrism and asserts the equal moral worth of all living things. See A. Don Tarlock, Earth and Other Ethics: The Institutional Issues, 56 Tenn. L. Rev. 43, 60 (1988).

24. The animal rights movement asserts that it is morally wrong to inflict pain, and animal species other than humans have intrinsic rights insofar as they are sentient of pleasure and pain. See Goulder and Kennedy, Note 18 at 26.
25. Aldo Leopold, *A Sand County Almanac*, 224-225 (1974) ("A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.")
26. See Cross, Note 17 at 285-297. Criminal and civil sanctions for violations of environmental laws may be justified on an intrinsic value basis, e.g. 42 U.S.C. §3008 (Resource Conservation and Recovery Act penalties for illegal disposal of hazardous wastes), 16 U.S.C. §1540 (penalties for violations of the Endangered Species Act). However as noted by Dobbins, even the Endangered species Act is utilitarian in the creation of the endangered species committee to balance economic cost-benefits with the loss of a species. 16 U.S.C. §1536 (e). See Dobbins, Note 20, footnote 3.
27. See Goulder and Kennedy, Note 18 at 28-29.
28. For an argument that natural resources should have recognized legal rights, see Christopher D. Stone, *Should Trees Have Standing? Toward Legal Rights for Natural Objects*, 45 S. Cal. L. Rev. 450 (1972). See also *Sierra Club v. Morton*, 405 U.S. 727, 741-742 (1972) (Justice Douglas, dissenting, arguing for conferring standing upon environmental objects).
29. See Cross, Note 17 at 297.
30. See Cross, Note 17 at 298, 302-303. Cross notes that diminution of property value is the common law measure of damages as stated in Restatement (Second) of Torts § 929(1)(a) (1977).
31. *Valuing Natural Assets, The Economics of Natural Resource Damage Assessment*, 149 (Raymond J. Kopp and V. Kerry Smith, eds., 1993).
32. See Cross, Note 17 at 302-304.
33. Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & Econ. 1, 1 (1960).
34. See Cross, Note 17 at 305-309. See also *Ohio v. Dep't of the Interior*, 880 F.2d 432, 438 (1989) (holding that market values for lost natural resources were not a reasonable interpretation of CERCLA natural resource damages provisions).
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36. See Cross, Note 17 at 298.
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41. William D. Schulze, Use of Direct Methods for Valuing Natural Resource Damages, in Valuing Natural Assets, The Economics of Natural Resource Damage Assessment, 204, 204-207 (Raymond J. Kopp and V. Kerry Smith, eds., 1993).
42. The Price of Imagining Arden, Putting a Value on the Environment, in The Economist, 80 (December 3, 1994).
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44. William H. Desvousges, The Role of Contingent Valuation in Natural Resource Damage Assessment, TER General Working Paper No. G-9502 (June 1995).
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47. Richard T. Carson and Robert Cameron Mitchell, Contingent Valuation and the Legal Arena, in Valuing Natural Assets, The Economics of Natural Resource Damage Assessment, 231, 231 (Raymond J. Kopp and V. Kerry Smith, eds. 1993).
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53. Id. at 172.
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57. See Cross, Note 17 at 277-278.
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59. Hughes v. Oklahoma, 441 U.S. 322, 337 (1979) (holding that states' interests in conservation of wildlife was a legitimate statutory purpose similar to a states' interest in protecting health and safety of its citizens.)
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89. See Keeton, Note 74, §87 at 619-622.
90. *Id.* §89 at 637-643. Stating that injunctions will only be available in cases where money damages are not an adequate remedy. For nuisances that cannot be abated at reasonable cost, including many natural resource injuries, courts will not likely enjoin the nuisance but will provide damages equal to the lost market value. See also *Boomer v. Atlantic Cement Co.*, 26 N.Y.2d 219 (1970).
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92. See Keeton Note 74, §89 at 637-643.
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94. *Burgess v. M/V Tamano*, 370 F.Supp 247 (D.Me. 1973).
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98. See Keeton, Note 74, §78 at 549-551.
99. *Indiana Harbor Belt R.R. v. American Cyanamid Co.*, 916 F.2d 1174, 1179-1183 (7th Cir. 1990) (holding that the accidental spill of toxic substances in the middle of a city is adequately addressed under negligence liability.)
100. Federal statutes must be based on constitutionally enumerated powers. Common powers used to justify federal protection of natural resources include the commerce power (U.S. Const. Art. I, § 8, cl.3), the property clause (U.S. Const. Art. IV, § 3, cl.2), and the treaty power (U.S. CONST. Art. VI, cl.2).
101. 42 U.S.C. §9607(f) (1994).
102. 33 U.S.C. §2706 (1994).
103. The Clean Water Act (CWA) contains provisions for natural resource damages. 33 U.S.C. §1321(f)(5) (1994).. As the CWA provisions address releases of oil and hazardous substances to navigable waters, most CWA natural resource damage claims are adequately addressed under OPA and CERCLA, respectfully. See also the National Marine Sanctuaries Act, 16 U.S.C. §§1431-1445 (1994). and the Trans-Alaska Pipeline Authorization Act, 43 U.S.C. §§1651-1656 (1994)..
104. 42 U.S.C. §9607(a)(4)(C)(1994), 33 U.S.C. §2706(b)(2)(A)(1994).
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108. 33 U.S.C. §2701(32)(1994).
109. 33 U.S.C. §2702(c) (1994).
110. *United States v. Monsanto Co.*, 858 F.2d 160, 171 (4th Cir. 1988) (upholding strict and joint and several liability under CERCLA unless defendant can prove contribution,) cert denied, 490 U.S. 1106 (1989). See also Craig R. O'Connor, *Natural Resource Damage Actions under the Oil Pollution Act of 1990: A Litigation Perspective*, 45 *Baylor L.Rev* 441, 442 (1993)(Discussing legislative intent for strict, joint and several liability under OPA).
111. 42 U.S.C. §9601(16) (1996) (Effective date), 33 U.S.C. §2701(20) (1990) (Effective date)
112. *Ohio v. Department of the Interior*, 880 F.2d 432, 461 (1989).
113. 43 C.F.R. §11.14(v) (1996), 15 C.F.R. §990.30 (1997).
114. 33 U.S.C. §2706(a), 42 U.S.C. §9607 (f)(1).
115. 42 U.S.C. §9606 (a).
116. Exec. Order No. 12,580, sec. 4(c)(1) and 4(d)(1), 52 *Fed. Reg.* 2923 (1987).
117. 42 U.S.C. §9607 (a)(4)(C) (requiring natural resource damages result from a release of hazardous substances to establish liability.)
118. 43 C.F.R. §11.62 (1996) (provides a procedure for establishing causation for water resources, geological resources, and biological resources injury). This regulation was upheld in *Ohio v. Department of the Interior*, 880 F.2d 432, 468-473 (D.C. Cir. 1989).
119. To demonstrate injury and causation, the resource must be characterized, samples collected and statistically compared to measure injury, and the discharge modeled through various possible pathways. 43 C.F.R. §11.61.
120. 42 U.S.C. §9607(b) (1994), 33 U.S.C. §2703(a)(1994).
121. 33 U.S.C. §2706 (d)(3) (1994), 42 U.S.C. §9707 (f)(1) (1994).
122. 42 U.S.C. §9607 (f)(1) (1994). See *In re Acushnet River and New Bedford Harbor*, 716 F.Supp 676, 685-686 (D.Mass 1989) (holding that damages are distinct from injury, and damages apply at the time money is spent for remedial action.)
123. 42 U.S.C. §9607 (j) (1994).
124. 33 U.S.C. §2717 (f)(1) (1994), 42 U.S.C. 9613 (g)(1) (1994). OPA replaces the date of promulgation of natural resource damage regulations with the date of completion of a natural resource damage assessment.
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127. Exec. Order No. 12,580, § 1(c), 52 *Fed. Reg.* 2923 (1987)
128. 33 U.S.C. §2706(b)(3) (1994), 42 U.S.C.. §9607(f)(2)(B) (1994), Exec. Order No. 12,580, § 5(e), 52

Fed. Reg. 2923 (1987). However it has been held that states have authority to bring actions for natural resource damages under CERCLA even if they have not registered with the EPA. See *Idaho v. Southern Refrigerated Transport Inc.*, 1991 U.S. Dist LEXIS 1869, 12 (1991).

129. Restatement (Second) of Trusts, §177 (1959).

130. *Id.* at §186.

131. 33 U.S.C. §2706(d)(1) (1994).

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133. 42 U.S.C. §9651(c) (1994).

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135. President Reagan delegated rule development to the Department of the Interior. Exec. Order No. 12,580, § 11(d), 52 Fed. Reg. 2923 (1987)

136. 42 U.S.C. §9651(c) (1994).

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145. *Ohio v. Dep't of the Interior*, 880 F.2d 432, 441 (1987).

146. *Id.* at 459.

147. *Id.* at 464.

148. *Id.* at 461.

149. 59 Fed. Reg. 14,262 (March 24, 1994), codified at 43 C.F.R. § 11(1996).

150. 43 C.F.R. §11.60(b) (1994).

151. *Id.* at §11.61-11.64.

152. *Id.* at §11.70(a)(2).

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159. Id. at §990.40.
160. Id. at §990.50-990.56.
161. Id. at §990.60-990.66.
162. Borough of Rockaway v. Klockner & Klockner, 811 F.Supp 1039, 1049 (D.N.J. 1993) (holding that municipality lacked standing for natural resource damage claims under CERCLA), Artesian Water Company v. New Castle County, 851 F.2d 643, 644 (3rd Cir. 1988), Lutz v. Chromatex Inc., 718 F.Supp. 413, 419 (Mid. D.Pa 1989) (holding that CERCLA natural resource damage provisions are not available to private parties)
163. 33 U.S.C. §2718(a) (1994), 42 U.S.C. §9614(a) (1994).
164. 42 U.S.C. §9652(d) (1994). See Leo v. General Electric Co., 538 N.Y.S.2d 844, 847 (N.Y.App.Div. 1989) (holding that CERCLA does not preempt state rights of action).
165. Michael J. Wittke, Comment: Municipal Recovery of Natural Resource Damages Under CERCLA, 23 B.C. Env'tl.Aff.L.Rev. 921, 921 (1996),
166. 33 U.S.C. §1006(d) (1994), 42 U.S.C.. §9607(f)(1) (1994).
167. 42 U.S.C. §9659 (1994).
168. Alaska Sport Fishing Association v. Exxon Corp., 34 F.3d 769, 774 (9th. Cir. 1994) (holding that action by sport fishermen for damages was precluded by government recovery of the same damages under consent decree).
169. Satsky v. Paramount Communications, Inc., 7 F.3d 1464, 1468 (10th Cir. 1993) (holding that property owners were precluded from recovering under common law for natural resource damages that had been recovered by CERCLA trustee).
170. 15 C.F.R. §990.53(c), 43 C.F.R. §11.83(c).
171. See GAO Report, Note 138 at 4-5, 11-12.
172. Alaska Sport Fishing Association v. Exxon Corp., 34 F.3d 769, 774 (9th. Cir. 1994), Satsky v. Paramount Communications, Inc., 7 F.3d 1464, 1468 (10th Cir. 1993).
173. 43 C.F.R. §11.80(b)(1994), 15 C.F.R. §990.54 (a)(2) (1994).