

Natural Resource Damage Assessments: Is Cooperation a Good Thing?

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Abstract

It has been nearly 55 years since the United States enacted the Clean Water Act (CWA) in which natural resource damages (NRD) were codified.¹ The NRD cause of action, originally derived from the public trust doctrine and common law, was later integrated into the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1980 and into the Oil Pollution Act (OPA) in 1990. In response to the establishment of CERCLA and OPA, the U.S. Department of the Interior (DOI) was charged with developing and promulgating NRD regulations under CERCLA while the National Oceanic and Atmospheric Administration (NOAA) was charged to do so under OPA.

Originally, DOI's approach to assessing NRD under CERCLA emphasized monetary compensation, as this was a simple common denominator. Later, under OPA, NOAA's regulations allowed NRD to be determined by, and compensated with, an ecological currency, e.g., using a Habitat or Resource Equivalency Approach (HEA², REA³). This focus on putting

¹ 33 USC § 1321(f)(5)

² See <https://casedocuments.darrp.noaa.gov/northwest/cbay/pdf/cbhy-a.pdf>. (Accessed 12/17/2016).

³ See https://www.fws.gov/ecological-services/es-library/pdfs/Technical_Note_on_Avoided_Loss.pdf. (Accessed 12/17/2016).

restoration front and center in NRD assessments (NRDAs)⁴ was ultimately integrated into the DOI regulations in 2008.

A critical and evolving aspect of NRDA has been the concept of cooperation between the responsible party (RP) and the trustees in undertaking the NRDA (e.g., Israel 2006a; Connor and Gougnet 2005; Reinharz et al. 2005). This approach, supported by NOAA and others, is an effective means to identify and resolve legal uncertainties through stipulations and create working relationships that effectively focus on assessment resolution and restoration implementation; the ultimate outcome being a more rapid path to restoration and a significant decrease in litigation and other transactional costs.

Over the past decade, the benefits of cooperative assessments have been questioned. It has been suggested that cooperative NRDA do little to move the process forward in a timely manner. It has been further implied that cooperation equates to RPs paying up front for the cost of the assessment while the trustees conduct the assessment. In truth, both perspectives are correct, the reality being that cooperation means different things to different people.

In this paper, we examine the historical underpinnings of the NRDA regulations, how this led to the development of the cooperative, restoration-based NRDA process, and the pros and cons of the cooperative NRDA process. We identify some of the inherent political, technical, cultural, and legal challenges with the cooperative NRDA paradigm as well as some of the benefits. Finally, we discuss the advantages and disadvantages of cooperation in the context of

⁴ NRD will be used to describe the damages (i.e., dollars) associated with restoring, replacing, rehabilitating, or acquiring the equivalent of the injured natural resources and services. NRDA will be used to describe the process by which these damages are assessed.

future NRDA cases, with an eye towards identification of specific processes that may help better understand or predict if cooperation is the best path forward for resolution of NRD liability.

Introduction

A quick review of the NRDA case dockets for the two main federal agencies involved in conducting NRDA cases under the CERCLA and/or OPA (DOI and NOAA) reveals that of the nearly 480 cases listed, about 85 (18%) have been closed, approximately 105 (22%) are in an active injury assessment phase (i.e., undergoing injury assessment/restoration planning under the DOI CERCLA regulations or the NOAA OPA regulations, respectively), and nearly 290 (60%) are in active restoration.⁵ These cases can be qualitatively characterized based on the chemicals of concern that are the basis for the NRDA. For the purposes of this discussion, we consider cases related to either oil spills or to waste sites. The former usually deals with the relatively acute release of oil from a ship, a pipeline, a well, etc., and the NRDA is brought under the authority of OPA. The latter generally refers to sites where chemicals were released into the environment due to decades of manufacturing, mining, etc., and the NRDA is brought under the authority of the CWA and/or CERCLA.

The data reported above indicate that since DOI first published its NRDA regulations under CERCLA in 1986, over approximately 85% of the NRD cases brought by the federal trustees have either been completely resolved (i.e., case is closed) or have been settled and active restoration is occurring. While there may be concerns with the pace of restoration at some of these sites, these numbers illustrate that the policy-level goal of the NRD statutes, namely to

⁵ See <https://www.doi.gov/restoration>, <https://darrp.noaa.gov/>. (Accessed 12/17/2016). Note that these values are approximate due to the amounts and differing quality of information provided by the agencies regarding specifics of each case and due to the fact, that, in some cases, the same cases are presented on both websites.

compensate the public for injuries to their natural resources through on-the-ground restoration actions, is proceeding apace.

A closer look at the 22% of current cases still undergoing active injury assessment provides a slightly more nuanced perspective of the programmatic success. Many of these cases are associated with CERCLA or CERCLA-like sites (i.e., sites where sediments contain hazardous substances⁶); DOI indicates that 80% of their active assessment cases are driven by various hazardous substances. Some of these NRDA cases have been active for years. For example, the Memoranda of Agreement between the various Natural Resource Trustees in the General Electric Hudson River (New York) and the LCP Chemical (Georgia) cases, which created those cases' Trustee Councils (initiating the NRDA process), were signed in 1997 and 2002, respectively. At the Portland Harbor Superfund (Oregon) site, the Natural Resource Trustee Council was formed in 2002, 15 years before the CERCLA Record of Decision (ROD) was released in 2017. At all three of these sites, the NRDA cases have not yet been resolved and are seemingly on their way to becoming generational activities.

These observations point out some of the real challenges in resolving NRD issues and, more importantly, in compensating the public by getting to on-the-ground restoration. They are not simple challenges, nor are the challenges similar in their nature. In Portland Harbor, there are over 50 potentially responsible parties (PRPs), whereas the Hudson and LCP cases each have only one responsible party (RP). Consequently, while multiple PRPs can lead to more complex NRDA's, it is clearly not the critical indicator of case complexity and length. Other challenges to successfully pursuing a cause of action exist, including scientific uncertainties regarding the significance of exposure and quantification of injury, political complexities associated with

⁶ See 40 C.F.R. § 302.

societal interests inherent in some cases (e.g., large trustee councils and/or injuries highly visible to an engaged public), and procedural issues related to the confusing interpretation of CERCLA's 113g rule,⁷ especially in regards to timing of a potential NRDA settlement relative to the CERCLA ROD.

Once engaged in an NRDA, many of the issues that drive case complexity and challenge are beyond the control of either the trustees or the PRPs/RPs, and this may well account for the extended time frames for some of these cases. However, for over 20 years, trustee and industry NRDA practitioners have raised the flag of cooperation as a means to help deal more effectively (in terms of time, money, and restoration) with NRD resolution (Warner Finely et al. 1995; Mauseth and Kane 1995; Helm and Ammann 1997; Latham et al. 2003; Connor and Gouguet 2005; Reinharz et al. 2005; Israel 2006a; Cramer et al. 2008; Gouguet et al. 2009; Runnels and Giampetro-Meyer 2010). The idea of cooperation is directly incorporated into OPA NOAA and indirectly incorporated into CERCLA DOI regulations through various agency policy.⁸

Before evaluating the efficacy of cooperation in NRDA's, it is necessary to understand the history behind the development of the DOI CERCLA NRDA and the NOAA OPA NRDA regulations. The perspective provided by this review will inform the reader of the continuing evolution of the approach to conducting NRDA's and provide a foundation which allows for a critical review of cooperation in achieving the various parties' NRD goals.

History and Regulatory Authorization of Cooperation in NRDA

⁷ See 42 U.S.C. § 9613(g)(1)(B).

⁸ For example, <https://www.directives.doe.gov/directives-documents/100-series/0140.1-A-Policy>, https://www.doi.gov/sites/doi.gov/files/migrated/restoration/library/upload/BLM_Handbook.pdf, and <https://darrp.noaa.gov/getting-restoration/assessment>. (Accessed 12/17/2016).

For the purposes of this work, we provide a brief overview of the historical development of NRDA both in terms of statutes and guiding regulations, focusing on those aspects of the developments that have had a significant effect on the efficacy of cooperative NRDA. For a detailed discussion regarding the historical development and evolution of key federal NRDA regulations and a reference guide to NRD programs at the state level, the reader is encouraged to read Israel (2006b).

Briefly, the 1977 CWA authorized the federal government to regulate both the direct and indirect discharge of pollutants into the nation's waters. It further authorized the government to recover the costs of restoring natural resources harmed by unlawful discharges.⁹ In 1980, Congress passed the Superfund Law (CERCLA) in response partly to the Love Canal site, authorizing the government to clean up hazardous waste sites and spills.¹⁰ With the passage of CERCLA, Congress charged the President with developing procedures to assess damages to natural resources.¹¹ In doing so, Congress directed that the regulations: (1) take into account direct and indirect injury, destruction, and/or loss of natural resources; (2) consider factors including, but not limited to, replacement value, use value, and the ability of the ecosystem/resource to recover; and (3) be in place by December 1982. As detailed by Israel (2006b), DOI issued a final rule in 1986 containing general NRDA regulations as well as regulations for individual cases; i.e., Type B rules, with the final Type A rules issued in 1987. These regulations were revised by DOI in 1988 to conform to the Superfund Amendments and Reauthorization Act (SARA) which amended CERCLA in 1986.

⁹ 33 U.S.C. § 1321 *et seq.*

¹⁰ 42 U.S.C. § 9607 *et seq.*, 43 CFR §11 *et seq.*

¹¹ In 1981, through Executive Order 12316, President Reagan delegated the responsibility for promulgation of the NRD assessment rules to DOI.

The Type B rules were immediately challenged, primarily by states and non-governmental organizations.¹² While these cases resulted in useful clarifications of the rules by the courts, in fact, they upheld much of DOI's regulations. However, the Ohio court rejected DOI's adoption of the "lesser of" rule, the regulation providing that damages for destruction to natural resources shall be the "lesser of: restoration or replacement costs; or diminution of use values."¹³ As explained by Israel (2006b),

"The court found that the equal presumptive legitimacy the regulation accorded to use value and restoration cost (and the resultant likelihood that use value would end up being the measure of damages as it would more often be less than restoration cost) contravened Congresses stated preference for restoration costs to be the minimum measure of damages in natural resource cases. In reaching this conclusion, the court exhaustively examined the text and structure of CERCLA, as well as the statute's legislative history and the legislative history of amendments to the statute enacted in SARA."

In other words, the courts also rejected that the contingent valuation method of calculating non-use values was arbitrary and capricious.

DOI responded by proposing new regulations, issuing final Type B and Type A regulations in 1994 and 1996, respectively. Once again, these regulations were immediately challenged, although this time primarily by industry. In the 1996 *Kennecott Utah Copper Corp. v. U.S. Department of the Interior* case, the court found in favor of DOI and thus upheld the Type B rules.¹⁴ In the 1998 *National Ass'n of Manufacturers v. U.S. Department of the Interior* case, the court upheld the Type A rules.¹⁵ Finally, 18 years after Congress first charged the President with the development of NRDA regulations, the US government finally had defensible regulations.

¹² See *Ohio v. US DOI*, 880 F.2d 432, 440 (DC Cir. 1989), *Colorado v. US DOI*, 880 F.2d 481, 488 (D.C. Cir 1989).

¹³ *Ohio*, 880 F.2D at 441 (quoting 43 C.F.R. § 11.35(b)(2) (1987)) as presented by Israel (2006b).

¹⁴ *Kennecott Utah Copper v. United States*, 88 F.3rd 1191 (D.C. Cir. 1996).

¹⁵ *National Association of Manufacturers v. US DOI*, 134 F.3rd 1095 (D.C. Cir. 1998).

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On March 24, 1989, the *T/V Exxon Valdez* grounded on Bligh Reef in Prince William Sound, Alaska, resulting in the release of approximately 257,000 bbls (11 million gallons) of Prudhoe Bay crude oil into the waters of the Sound.¹⁶ As a direct result of this spill, Congress passed the Oil Pollution Act of 1990 and, in doing so, provided the authority to address impacts to natural resources caused by oil spills and actions taken to respond to or prevent oil spills.¹⁷ OPA closed a loophole in CERCLA, making the parties responsible for the spill liable for the damages derived from injury to natural resources resulting from the spills. Congress directed the President, acting through NOAA, to promulgate damage assessment regulations for OPA. In 1996, NOAA issued final rules which were immediately challenged by industry.¹⁸ In this case, the court upheld contingent valuation following its earlier ruling in *Kennecott* and found that costs associated with monitoring restoration projects could be considered reasonable costs of an assessment. The court did vacate a section of the regulation that would have provided NOAA with oil removal authority.

As of 2000, the primary differences between OPA and CERCLA NRDA regulations was in their focus on a restoration-based approach. Under the NOAA OPA rules, the focus was on restoration, with the trustees using tools such as habitat equivalency analysis to move quickly towards identifying restoration that appropriately offsets the injury. The measure of NRD is the cost of restoration. Conversely, the DOI CERCLA rules required the quantification of lost resources as the measure of NRD, with restoration coming into play only after the damages were quantified and monetized.

¹⁶ See <http://www.evostc.state.ak.us/%3FFA=facts.QA>. (Accessed 1/7/2017).

¹⁷ 33 U.S.C. § 2701 *et seq.*, 15 C.F.R. § 990 *et seq.*

¹⁸ *Gen. Elec. Co. v. U.S. Dep't of Commerce*, 128 F.3d 767 (D.C. Cir. 1997).

The development of the NOAA OPA rules changed the approach to conducting NRDAs. NOAA recognized the challenges and arguments created by the requirement of the DOI CERCLA rules to monetize injury. These challenges led to longer case times, increased transaction costs, and elevated levels of animosity between RPs and trustees.

In the mid-1990s, NOAA began to develop the idea of an approach that scaled injured resources directly to restored resources instead of scaling injury to dollars. NRD claims have three basic components: (1) the cost of restoring¹⁹ the injured resources to baseline, or “primary restoration,” (2) compensation for the interim loss of resources from the time of injury until the resources recover to baseline, and (3) the reasonable costs of performing the damage assessment.²⁰ Following statutory requirements, all recovered damages are used to restore, replace, rehabilitate, or acquire the equivalent of the injured resources (and to cover the reasonable costs of assessments). Consequently, recoveries for interim losses are spent on “compensatory restoration” actions providing resources and services equivalent to those lost. To ensure full compensation for interim losses, the trustees determine the scale of the proposed compensatory restoration actions to provide gains equal the losses due to the injury. The damage claim then is the cost of implementing the selected primary and compensatory restoration actions (plus the costs of the assessment), or, alternatively, the RPs may be allowed to implement the projects themselves subject to performance criteria established by the trustees. To develop the restoration plan, trustees must determine and quantify injury, develop restoration alternatives that

¹⁹ Restoration refers to human actions taken after the removal of the cause of injury (e.g., after remediation of a hazardous waste site, removal of the vessel in the event of a grounding) to return an injured resource to its pre-injury conditions. We use the term in its broad sense to encompass the statutory concepts of “restoration, rehabilitation, replacement, or acquisition of the equivalent” of the injured resources.

²⁰ At any point in time, baseline refers to the condition of the natural resources and services that would have existed had the incident not occurred. If the resources are not expected to recover fully, interim losses will be calculated in perpetuity.

consist of primary and compensatory actions, scale restoration alternatives, and select a preferred restoration alternative.

NOAA realized the focus on restoration as the measure of damages removed the need to first monetize the injury. Because monetary valuation of natural resources is a complex and challenging issue unto itself, removing this as a required step in the process allowed less contentious approaches for identifying and quantifying injury in terms of impacted ecological systems and for directly offsetting those losses with in-kind restoration. Furthermore, scaling of in-kind services effectively diminished arguments regarding the quantification of non-use or passive use values. Even before the NOAA OPA rules were finalized (1996), NOAA was experimenting with the use of alternative service-to-service type of scaling, successfully using this approach in resolving NRD liability and moving quickly to on-the-ground restoration (Hartman et al. 1994; Warner Finley et al. 1995). These alternative scaling approaches were incorporated into the final NOAA OPA rules and presented in their guidance documents.²¹

Perhaps most significantly, the movement to a restoration-based focus coupled with a use of service-to-service scaling for both injury and restoration provides both the government and industry NRDA practitioners a means of coping with the scientific uncertainties associated with the challenges of quantification of ecological injury. While dealing with specific resource impacts, such as marine mammals or birds, can be accomplished using a series of resource equivalency approaches,²² quantification of injury on a habitat basis involves greater uncertainty. Despite the advancements made in our understanding of ecology and, more importantly, ecosystems, we are still learning about how ecosystems and the services they provide are linked

²¹ See <https://darrp.noaa.gov/legal-context> for online NOAA documents.

²² See https://www.fws.gov/ecological-services/es-library/pdfs/Technical_Note_on_Avoided_Loss.pdf. (Accessed 12/17/2016).

and integrated. Understanding all of the feedback systems, and how they work and combine to create a functioning and healthy ecosystem, is still a major goal of basic research. Yet, we know that if we can determine the degree to which a habitat has been injured—and by that, we mean identify appropriate proxy parameters or metrics that can be quantified and scaled to provide an assessment of the habitat’s state of health—we can begin to use the same proxy metrics to scale the amount of restored habitat required to appropriately compensate for the injury. In doing so, we begin to create a ledger with debits being offset by credits. There clearly is still uncertainty on both sides of the ledger—but uncertainty that tends to cancel one another out.

During the late 1990s and 2000s, NOAA’s approach to the natural resource injury assessment, its paradigm shift towards a restoration focus, became the preferred way to conduct NRDA’s (Warner Finely et al. 1995; Mauseth and Kane 1995; Helm and Ammann 1997; Latham et al. 2003; Connor and Gouguet 2005; Reinharz et al. 2005; Israel 2006a; Cramer et al. 2008; Runnels and Giampetro-Meyer 2010). In 2005, nearly a decade after they were last promulgated, DOI undertook a review of its regulations. Through the Federal Advisory Committee Act (FACA) process, DOI essentially changed the nature of their regulations to more closely reflect the restoration-based focus of the NOAA OPA regulations. The 2008 DOI revisions expanded the option for injury determination to include the cost of restoration; specifically, 43 CFR §11.83(c) was modified to provide trustees the option of estimating compensable values for losses pending restoration utilizing the cost of implementing projects that restore those natural

resource services.²³ These changes brought the CERCLA DOI and OPA NOAA regulations in line with one another with a focus on restoration.

Current State of Play

A review of NRDA cases listed on NOAA's or DOI's NRDA websites provides little direct information regarding case durations.²⁴ However, a substantial number of those NRDA cases where beginning dates are presented or can be determined based on reviewing the specific case-related documents presented on the agencies' websites appear to have been on the agency dockets for more than 10 years. Many of these cases are waste site or mining cases, and, as noted above, other challenges exist, including scientific uncertainties regarding the significance of exposure and quantification of injury, political complexities associated with business and/or societal interests inherent in some cases (e.g., large PRP groups, large trustee councils, and/or cases with effects highly visible to an engaged public), and procedural issues related to the confusing interpretation of CERCLA's 113g rule,²⁵ -especially in regards to the timing of a potential NRDA settlement relative to the CERCLA ROD. Regardless, despite the suggestion by Reinharz et al. (2005) that a damage assessment at a complex hazardous waste site may take five years, the data suggest that these cases are taking much longer.

In an attempt to better understand these challenges and why they seem to disagree with the conventional wisdom that cooperative NRDA provide an effective way to resolve NRDA

²³ 43 C.F.R. § 11.83(c)(1) ("compensable value can be determined utilizing a restoration cost approach, which measures the cost of implementing a project or projects that restore, replace, or acquire the equivalent of natural resource services lost pending restoration to baseline."). (Accessed on Dec 17, 2017).

²⁴ See <https://www.doi.gov/restoration>, <https://darrp.noaa.gov/>. (Accessed on Dec 17, 2017).

²⁵ See 42 U.S.C. § 9613(g)(1)(B).

liability (for the RPs) and move more quickly to restoration (for RPs and Trustees), it is useful to set forth the cases for and against the cooperative approach.

The Case in Support of Cooperative NRDA's

As noted earlier, authors have been commenting on the benefits of cooperation in NRDA's for over 20 years (Mauseth and Kane 1995; Conner and Gouguet 2004). Reinharz et al. (2005) and Cramer et al. (2008) have provided recommendations for using cooperative approaches to streamline NRDA's while setting forth the benefits of such streamlining. In their 2005 paper, Reinharz et al. proposed an approach they called the "reasonably protective approach" (RPA). This approach promoted a conservative (i.e., more protective) rapid evaluation of resource injuries, often taking advantage of the considerable amount of existing data and information generated during cleanup or remediation. As stated by the authors, "[w]here credible scientific information exists that provides a sound technical foundation for conservative but reasoned judgments about resource injuries attributable to the site, such an approach allows the assessment process to proceed without pursuing additional specific injury studies by the Trustees." This theme was expanded on in a Society of Environmental Toxicology and Chemistry (SETAC) Technical Workshop held in 2008 (see Stahl et al. 2009) in support of incorporating NRDA data collection into the CERCLA remedial investigation.

In general, the following can be said to be among the benefits of conducting NRDA's cooperatively:

- Cooperation can minimize uncertainty associated with litigation;
- Cooperation can engender trust among the parties;
- Cooperation provides for open discussion at various levels and maintains good science through the crucible of scientific debate;

- Trust allows scientists to agree to levels of uncertainty;
- Cooperation can decrease transaction costs; and
- Cooperation can lead to more effective and expedient settlements.

Since 1972, when the CWA was passed codifying NRD liability, relatively few NRDA claims have been litigated. In fact, John Cruden, formerly the Assistant Attorney General for the Environment and Natural Resources Division at the Department of Justice, has often noted that the body of NRD case law, in its entirety, can be read over a long weekend. The paucity of court review and adjudication on various elements of the NRD statutes and regulations creates substantial uncertainty when considering litigation as a means of resolving these liabilities. Furthermore, several key features of these laws, including (1) joint and several liability, (2) the definition of trustees to include any and all responsible federal government agencies, state and (potentially) local governments, and federally recognized Tribes, and (3) a rebuttable presumption, increase the complexity and add to the uncertainty of litigation as well. The level of primary science and economics required to fully quantify impacts to ecological systems for litigation purposes (where levels of variability may be inherent in the nature of the ecosystem, itself) can be greatly reduced through agreement to use less rigorous approaches (e.g., literature reviews and benefits transfer).

Cooperative approaches generally involve development of technical working groups consisting of scientists or economists from each party. These groups meet to discuss appropriate scientific approaches to gather data required to assess if natural resources have been injured and, if so, to what degree. In general, these meetings foster a degree of trust among the technical representatives that is critical to moving the NRDA process forward. This trust allows the parties

to work through adversarial issues, negotiate various levels of uncertainty presented by the data or by the system itself, and find solutions that are agreeable to all parties.

The benefits of cooperation have not only been extensively written about; they have also been effectively demonstrated in many cases over the past 20 years. These benefits are no less significant in 2017 than they were in 1995 and 2005. When committed to by all parties, approaching NRDA's using a cooperative, restoration-based approach can effectively move the NRDA process forward more quickly, resulting in earlier restoration actions and decreased transaction costs.

The Case Against Cooperative NRDA's

Despite the many virtues of cooperation, the fact still remains that there are over 100 active NRDA cases on the federal agency dockets, with many of these having been active for over a decade. In evaluating why these cases, many of which were initiated as cooperative efforts, have languished, one finds many different reasons. These include (but are not limited to):

- The trustees or RPs not actively participating in the cooperative process (e.g., due to lack of available resources), prolonging the assessment;
- The trustees or RPs not agreeing on acceptable levels of uncertainty, prolonging the assessment;
- Historical animosity among the parties that hinders trust building within the cooperative working groups;
- Appearance that RP/trustee consultants and/or outside counsel may not be on the same page as their clients;
- Logistics and interpersonal dynamics of cases with 'large' personalities and/or multiple RPs;
- Dealing with inexperienced trustees or RPs;

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- NRDA process beginning prematurely and/or dealing with sites where the type and/or amount of remedial activity was a contentious issue; and
- Politics.

In addition, there are some cases that just take on a complexity that requires time to work through. This can occur in cases where the technical issues associated with injury assessment are complex and challenging. It can also occur in cases where high numbers of PRPs and/or trustees create group dynamics that are challenging to work with.

Each of the bulleted reasons presented above can create tensions that slow down or even stall the cooperative NRDA process, resulting in delayed restoration and increased transaction costs, and in some cases moving one side or the other to consider litigation. Understanding the root cause of these issues can help mitigate any unintended consequences and, hopefully, move the process more quickly to liability resolution and restoration. The initial bullet describes a problem frequently encountered. The trustee agencies have relatively small groups of staff who lead NRDA's (at NOAA, this number is about 20; at the U.S. Fish and Wildlife Service (USFWS), NRDA is not centralized and consequently, NRDA specialists are also involved in other USFWS work). Expansion of these technical staff has been limited by Congress through the agencies' appropriated budgets. Consequently, staff across agencies have more cases than they have time for, which translates to delays in moving these cases forward. Alternatively, in some cases, the RPs are "missing." This may be because of a strategic decision by the RP or because the site is simply a low priority site from the RPs perspective. In either case, the result is a drawn-out assessment and longer timelines to restoration.

Sometimes the parties cannot agree on a level of uncertainty. This often occurs when a trustee is uncertain about the level of resource injury based upon the existing available data and

decides that additional studies are required to resolve the uncertainty. It may be that the parties cannot agree on the uncertainties and the RP is reticent to fund additional work. In either case, the result is the same—a drawn-out assessment and longer timelines to restoration. A particular challenge with waste site cases can be legacy levels of animosity that developed during the Remedial Investigation (RI)/Feasibility Study (FS) stage of the case between agency personnel and the RP. These legacy issues can carry over into the NRDA, making the process of forging the types of relationships conducive to a cooperative NRDA challenging.

Complex waste site cases that require long timelines to move the CERCLA process to an ROD are another area where cooperative NRDA have suffered. This issue has arisen significantly over the past decade, as PRPs and trustees, desiring to heed the recommendations of past NRDA practitioners (e.g., Stahl et al. 2009), have entered into agreements to fund trustee councils as the RI study plans are being developed. As pointed out by the authors, there are very good reasons to have the NRDA trustees engaged at this early stage of the RI/FS process. These primarily involve having trustee input (via review and comment process) on the specific NRDA needs that could be incorporated/integrated into the RI study plan. This approach should relieve PRPs from significant additional field mobilization costs following the RI. It should also allow the RPs and trustees to begin cooperatively evaluating these data as the RI work is underway. The result can be a shortened timeline for the NRDA once the ROD has been signed.

While this sounds good in theory, in practice it has been a challenge to effectively assess the cost-benefit of this integration process when timelines to RODs take over a decade. In these cases, it may be more effective to initially fund the trustees and agree to a cooperative process to ensure that the RI study plan has been reviewed and commented on by the trustees and that any NRDA study needs are integrated into the RI study plan. Once these studies are conducted, it

may be beneficial to consider having the trustee group move in to an inactive state until the process gets closer to the ROD. At that point, the trustee group can be re-activated, the cooperative process re-started, and the parties can move forward with their injury assessment and restoration planning. This may not be ideal, but transaction costs for a trustee council for over decade may also be undesirable.

Finally, recent experience with highly visible cases has demonstrated that the NRDA process can be heavily influenced by socio-political issues. In these cases, there may be substantial external forces that impact the operation of the NRDA cooperative process and, in doing so, negatively affect those benefits that are usually associated with the cooperative process. It is important to recognize this position early in the process so as to not waste time, effort, and political or financial capital in pursuing an approach that will not work.

The Meaning and Future of Cooperative NRDA

It should be no surprise that cooperation means different things to different people. In fact, there is likely a continuum of expectations for what a cooperative process should look like. At one extreme is the position that the RP's role is to pay the trustees to conduct the NRDA and, once finished, the trustees provide the RPs with the damage value. And while the trustees could not avoid their trust responsibility and turn the NRDA over the RP, the RP may find that engaging with the trustees allows them some level of control, if not through discussions within the technical working groups, then through their financial support of the process. Conversely, there are legitimate reasons and circumstance where cooperation is not appropriate (Israel 2006). For parties desiring to undertake a cooperative NRDA, a strawman process that seemingly provides input to both parties might look something like this.

The goal of this cooperative process is to achieve cost-effective restoration based upon sound science and transparent communication, while minimizing transaction costs. The parties agree to utilize existing data whenever feasible. Where necessary, the parties further agree to cooperatively develop and conduct exposure and injury studies. They further agree to appropriate quality assurance/quality control on data to be used in the NRDA and to share these data. The parties can also agree on issues such as using the same models, the same modeling parameters, etc., to minimize differences in data and approaches used to quantify injury. Once these data are obtained, the parties should independently use these data and agreements to quantify injury. Following the parties' independent assessment of injury, the parties should come back together and discuss their respective analyses. While it is unlikely that the RPs and the trustees will agree on the injury quantification, this process will allow for a technical discussion regarding the differences.

The parties agree that cost-effective restoration is the goal of the cooperative NRDA process. Accordingly, the parties agree to investigate and identify restoration options at the outset of the process, concurrent with the injury assessment. Good restoration options will often help bridge differences in the assessment of injury. In addition, where appropriate, the parties agree to explore full or partial early resolution including through the use of stipulations and early restoration projects.

This approach requires a level of trust between the parties as evidenced by the agreements regarding assessment studies, agreements regarding models, and agreements not to collect additional data outside the process. Throughout this process, the attorneys' job will be to provide assurance that one's position will not be compromised if the negotiations fail. If there is no or little trust among the attorneys, this may also negatively affect the process. Still, as pointed out over a decade ago (2004) by Mike Ammann (formerly of Chevron) "Good restoration projects settle tough cases."

Paths Forward for NRDA

In reviewing the information presented in this paper, it is important to understand that cooperative NRDA's can be and have been very effective at moving the process forward and achieving the ultimate objectives of decreased transaction costs for the RPs and more timely

public compensation for natural resource injury through on-the-ground restoration. However, it is equally important to understand that there are structural and personality-driven challenges that can impede the cooperative process. Overcoming these challenges requires the parties to focus on understanding the underlying issues and how these issues can impact their case. Such an analysis allows the parties to make up-front decisions that will either allow them to avoid involvement in a process that may not be useful or identify options, such as a dispute resolution process, that could effectively remove the negative influence on the process of individual dynamics.

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