Begin With the End in Mind: Applications to Contaminated Sites

In 2019 a colleague and I wrote the following with respect to the advantages of integrating the NRDA process into oil spill response.

When an oil spill occurs in the United States two processes are typically initiated: emergency response and damage assessment. Emergency response includes first responders, Oil Spill Removal Organizations, advisors, and logistical support teams who ensure safety, control the source, and remove oil from the environment. The goal of emergency response is to minimize, to the extent practical, the adverse effects of the oil spill and response activities on people and the environment. The damage assessment process involves government and tribal agencies, often working in cooperation with Responsible Party representatives, to document the environmental effects of the spill. The goal of the damage assessment team is to gather information to support a Natural Resource Damage Assessment (NRDA)[1] process.

In a spill response setting, it is rarely possible to collect all the data we need or want at the same time. There usually are insufficient resources or time and there are often competing interests.

During any oil spill, emergency response is the first priority. However, this does not mean that the two processes should be kept separate. In many instances, the sharing of information or responsibilities between the two groups will increase the effectiveness of both processes. That is, your Mom was right, you should start with the end in mind.

I recently revisited this idea with respect to the CERCLA process. While the process at contaminated sites is more formal and the information gathering phase may stretch over years rather than weeks, there are striking similarities.

Environmental sampling is intended to evaluate the risks posed by the site, make decisions regarding operational activities and adaptively manage cleanup. Then, as the cleanup nears completion, there is a damage assessment process.

Individuals conducting the damage assessment are often interested in the same data collected under the RI/FS but with some slight expansion or alteration. For example, NRDA practitioners may be interested in more detailed chemical analyses or in gathering information in a manner that supports a specific analysis methodology such as before-after control-impact (BACI) analysis. As a result, elements of the RI/FS data collection efforts are often repeated during the CERCLA NRDA process.

[1]The Oil Pollution Act of 1990 (OPA) allows designated government agencies, acting on behalf of the public, to recover natural resource damages (NRDs), to restore natural resources and compensate the public for discharge-related impacts to the environment. Under these statutes, funds collected from RPs may only be used to (a) pay for actions designed to restore natural resources and compensate for the loss of ecological services caused by the discharge and (b) pay the Trustees for reasonable assessment costs. The process of determining the appropriate amount of compensation is Natural Resource Damage Assessment (NRDA).

Jeffrey R. Wakefield Ph.D.
Director - Economics
SWCA Environmental Consultants

To address this concern, it may be optimal to integrate NRDA considerations into the design and implementation of the RI process. Doing so is likely reduce the total number of samples required across the two processes while improving the reliability of the information available to both processes.

There is a second, perhaps more important advantage to integrating NRDA considerations into the RI/FS process. It has to do with the process of choosing between remedial alternatives. One framework often used to make that choice is Net Environmental Benefit Assessment (NEBA). This process is a formal way to choose from among management alternatives such as: (1) leaving contamination in place; (2) physically, chemically, or biologically remediating the site through traditional means; (3) improving ecological value through onsite and offsite restoration alternatives that do not directly focus on removal of chemical contamination or (4) a combination of those alternatives."[2] An interesting and often overlooked component of the NEBA process is the fact that NRDA liability may increase or decrease depending on management of the alternative ultimately selected. If attention has been paid to the NRDA process during the RI/FS process, information to conduct a more thorough NEBA will be available. That is, considering NRDA during the RI/FS process has the potential to reduce uncertainty related to selection of the remedy.

So, as is the case with an oil spill, there appears to be some distinct advantages to including NRDA considerations early in the CERCLA process.

[2] Efroymson, R.A, J.P. Nicolette, and G. W. Suter. 2003. A Framework for Net Environmental Benefit Analysis for Remediation or Restoration of Petroleum-Contaminated Sites. ORNL/TM-2003/17.

Jeffrey R. Wakefield Ph.D.
Director - Economics
SWCA Environmental Consultants