8 Stakeholder Considerations

Optimization Life Cycle Navigation Diagram
Source: E. Madden, ITRC. Used with Permission.

8.1 Stakeholders and Risk Communication

For environmental cleanup projects, stakeholders are people and organizations impacted or potentially impacted by the contamination or the project, or who have an interest in the project or its outcome. Community stakeholders at groundwater remediation sites are generally people who live near the sites or whose water supply is affected by the contamination. They may be represented by local governments or community-based organizations. Members of Native American tribes or Alaskan Native Villages may also be considered community stakeholders, but their tribal or village institutions are federally recognized and may also exercise government-to-government relationships with the United States. They may even act as independent regulatory agencies, either supplementing or in lieu of, state oversight. CERCLA 126(a) also states:

The governing body of an Indian tribe shall be afforded substantially the same treatment as a State with respect to the provisions of section 9603(a) of this title (regarding notification of releases), section 9604(c)(2) of this title (regarding consultation on remedial actions), section 9604(e) of this title (regarding access to information), section 9604(i) of this title (regarding health authorities) and section 9605 of this title (regarding roles and responsibilities under the national contingency plan and submittal of priorities for remedial action, but not including the provision regarding the inclusion of at least one facility per State on the National Priorities List) (USEPA 2022 [WLTW29HD] USEPA. 2022. “Superfund: CERCLA Overview.” U.S. Environmental Protection Agency, February. https://www.epa.gov/superfund/superfund-cercla-overview.).

Depending upon the magnitude of a cleanup project, engaging community and tribal stakeholders may be a significant component of the project, from its inception to completion. Stakeholders have a right to participate in decisions that may impact their health and safety, as well as their use of land and other natural resources. Furthermore, in many cases, community members have site-specific knowledge or experience that can help regulators and responsible parties make sound decisions about investigation, remediation, and long-term management. They may provide an institutional memory at sites where there is turnover among officials and private-party representation, and local stakeholders are often familiar with site areas that may otherwise be undiscovered. In particular, tribes and other native communities may have valuable traditional ecological knowledge that can improve the decision-making process as it relates to site assessment, characterization, and cleanup activities as stated in USEPA guidance on “Considering Traditional Ecological Knowledge (TEK) During the Cleanup Process” (USEPA 2017 [KPJDH4F8] USEPA. 2017. “Considering Traditional Ecological Knowledge (TEK) During the Cleanup Process.” United States Environmental Protection Agency, Office of Land and Emergency Management. https://www.epa.gov/sites/default/files/2018-02/documents/considering_traditional_ecological_knowledge_tek_during_the_cleanup_process.pdf.).

Engaging stakeholders—listening to them as well as informing them—can build support for remediation activities, including soundly framed optimization projects. In turn, that support can help such projects obtain timely funding.

ITRC recognizes the importance of stakeholders and created a generic Risk Communications Toolkit. This web-based document “includes a brief overview of risk communication, walks through the steps in developing a communication plan, presents an overview of risk communication concepts, applies these principles in case studies, and includes various tools (as appendices) to facilitate risk communication plan development” (ITRC 2020 [NQ3U96YR] ITRC. 2020. “Risk Communication Toolkit.” Washington, D.C.: Interstate Technology & Regulatory Council, Risk Communication Toolkit Team, June. https://rct-1.itrcweb.org.). In addition, the ITRC document, *Optimizing Injection Strategies and In situ Remediation Performance*, recommends a useful approach to stakeholder engagement that is appropriate for P&T optimization (ITRC 2020 [GBQ47HVL] ITRC. 2020. “Community and Tribal Stakeholder Considerations.” In Optimizing Injection Strategies and In Site Remediation Performance. Interstate Technology & Regulatory Council. https://ois-isrp-1.itrcweb.org/6-community-and-tribal-stakeholder-considerations/#6.).

8.2 Stakeholders and Optimization

Since optimization planning at sites that are in a P&T regimen often takes place long after initial remedies are designed and implemented, the level of stakeholder engagement may have declined. Regulators and responsible parties may need to renew or, if optimization may meaningfully impact the community, initiate new community engagement activities to identify

and involve community and tribal stakeholders.

Stakeholders are unlikely to distinguish between the optimization of existing remedies, such as P&T, and the consideration of alternate remedies. At many sites, both processes may be occurring at the same time. For example, at Site 28 at the former Moffett Naval Air Station in California, USEPA Region 9 and California's Bay Area Regional Water Quality Control Board required additional groundwater cleanup. Despite a successful 2015–2016 biotic/abiotic treatability study, the DON proposed excavation with P&T optimization. In a 2020 memo, the technical consultant for the Center for Public Environmental Oversight—USEPA's local Technical Assistance Grantee—questioned the breadth of the DON's optimization strategy but accepted the preferred remedial technologies. Ultimately, once the DON found that subsurface infrastructure would interfere with excavation, in situ bioremediation was added to the installation of new extraction wells, with community and regulatory approval (NAVFAC 2021 [B8U6XVX4] NAVFAC. 2021. "Site 28 Traffic Island Field Work Update, Former Naval Air Station Moffett Field." Preprint, Naval Facilities Engineering Command, October 14. https://media.defense.gov/2022/Mar/31/2002966996/-1/-1/0/MF_20211014_RAB_PRESENTATION.PDF. Strauss 2020 [LL93VNAJ] Strauss, P. 2020. "Review of Site 28 Five-Year Review, Moffett Field, California." Center for Public Environmental Oversight, October. http://www.cpeo.org/pubs/Site28FYR2020.pdf. USEPA 2019 [VEEES26J] USEPA. 2019. "Fourth Five-Year Review Report for Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View and Moffett Field." Preprint, U.S. Environmental Protection Agency, Region 9, September. https://semspub.epa.gov/work/09/100018492.pdf.).

Stakeholders are sometimes well placed to strengthen the CSM for an optimization review. At the Leviathan Mine Superfund Site near the California–Nevada border, the Washoe Tribe of Nevada and California actively participated in the optimization review, reported on in January 2020. Individual tribal members had the opportunity to interact with the rest of the USEPA-led optimization team at a lunch, prepared by tribal members, at the tribe's community center. The Washoe supported continuous treatment of mining-influenced water because of their concern over contamination pathways associated with traditional hunting, fishing, and gathering in the area (USEPA 2022 [4FHXKCMG] USEPA. 2022. "Leviathan Mine Site Profile." Superfund. https://cumulis.epa.gov/supercpad/CurSites/csitinfo.cfm?id=0901943&msspp=med.). USEPA became involved at the site in 1997 and added it to the NPL in 2000. USEPA worked closely with the tribe to further the cleanup: "[Tribal Chairman Brian] Wallace says the tribe is working with the EPA on several fields. One of the Washoe's primary responsibilities is to identify flora and fauna used for tribal pharmacology and food that may be affected by poisonous runoff from the mine" (May 2018 [SAB2VFP9] May, J. 2018. "Washoe Tribe Successful in EPA Superfund Listing." In Indian Country Today. https://indiancountrytoday.com/archive/washoe-tribe-successful-in-epa-superfund-listing.).

8.3 Ongoing Stakeholder Engagement

At sites such as Moffett Field and the Leviathan Mine, where there are engaged community members and tribal representatives, bringing stakeholders to the table is relatively easy. They are already there, with extensive knowledge of site contamination and the history of remediation. Regulators and responsible parties are in a position to share optimization plans and results with stakeholders, even when not specifically required.

Similarly, at the Lipari Landfill in Pitman, New Jersey, there has been continuous community interest and involvement throughout the remediation process since it began in 1982 (USEPA 2022 [HACYIC2A] USEPA. 2022. "Lipari Landfill Site Profile." Overviews and Factsheets. Superfund. https://cumulis.epa.gov/supercpad/CurSites/csitinfo.cfm?id=0200557&msspp=med.). Of particular concern to the community today is the tracking of emerging contaminants that may threaten drinking water supplies and may impact natural resources. Community concern is enhanced by planned residential, educational, and medical development projects in the area, including proposals to build on the landfill itself. For more information on the Lipari site see the Lipari Landfill case study in Appendix B (USEPA 2022 [HACYIC2A] USEPA. 2022. "Lipari Landfill Site Profile." Overviews and Factsheets. Superfund. https://cumulis.epa.gov/supercpad/CurSites/csitinfo.cfm?id=0200557&msspp=med.).

USEPA conducted periodic optimization of remediation systems through 2019. In that year, the NJDEP, as it assumed the role of lead regulator and funder, arranged meetings and site tours with local officials.

The site is currently in long-term monitoring and operations with slurry walls as well as leachate and groundwater collection systems. NJDEP practices continuous remediation process optimization and is actively evaluating LTMO. NJDEP is committed to keeping the community aware of any upcoming changes in monitoring or operations and provides periodic data reports as they are finalized. NJDEP provides information to the public through various means; the primary source is the DataMiner, and published reports can be found on the website. The Site Remediation Program Office of Community Relations can also

provide updates. The project manager for the site, whether it is publicly funded or a private-party licensed site remediation professional (LSRP), can be contacted directly as well. Site-specific project managers may be found through the DataMiner.

Emerging contaminants are also a community issue at Moffett Field. Following the release of a draft National Aeronautics and Space Administration report on PFAS at the former Naval Air Station in October 2022, members of the Restoration Advisory Board requested that groundwater treatment systems be optimized, and in one case, replaced, to remove PFAS compounds from a long-operating groundwater extraction and treatment system designed to remove trichloroethylene and other CVOCs from the large commingled groundwater plume there (Tetra Tech, Inc. 2022 [74NKXFZU] Tetra Tech, Inc. 2022. “Per- and Polyfluoroalkyl Substances Site Inspection Report for Ames Research Center.” National Aeronautics and Space Administration, August. https://semspub.epa.gov/work/09/100029643.pdf.).

At the DOE Hanford Site, the largest environmental cleanup program in the United States, a P&T remedy at Operable Unit 200-ZP-1, in the Central Plateau, has been in operation since 2012. In response to monitoring data, USEPA and DOE, in consultation with the Washington State Department of Ecology, undertook a formal remedy optimization study in 2019. They considered increasing the treatment capacity for carbon tetrachloride and suspending the treatment of nitrate, as well as optimizing locations and rates of additional extraction and injection wells. The agencies presented the work plan for the study to the DOE site-specific Hanford Advisory Board (HAB) in September 2019, before it was finalized in October (Hamel 2019 [7PU3747E] Hamel, W. F. 2019. “200-ZP-1 Operable Unit Optimization Study Plan, DOE/RL-2019-38.” U.S. Department of Energy, Richland Operations Office 31. https://pdw.hanford.gov/document/AR-03236.). In response to HAB questions, the agencies clarified that any change to the remedy or RAOs would still have to go through the CERCLA ROD process, which includes public involvement. Several stakeholders expressed support for the optimization effort. The optimization study is in a data and monitoring phase that is expected to take five to seven years. Once this phase is complete, DOE, USEPA, and the Washington State Department of Ecology will review the final data evaluation and recommendation to determine whether a remedy modification and changes to the controlling decision documents should be implemented.

8.4 Initiating or Renewing Stakeholder Engagement

Even where there is no regulatory requirement to engage stakeholders in the consideration of remedy optimization, it is generally worth the effort, both to optimize the remedy and to generate or continue public support for the remedial project.

The USEPA encourages involving all stakeholders during the optimization process (USEPA 2013 [4DYZQGUT] USEPA. 2013. “Remediation Optimization: Definition, Scope and Approach.” U.S. Environmental Protection Agency, June. https://clu-in.org/Optimization/pdfs/OptimizationPrimer_final_June2013.pdf.). Where there is no ongoing forum for community or tribal engagement, regulatory agencies and responsible parties may be able to engage the public by highlighting new factors that may impact or interest the community, such as the following: Have emerging contaminants, such as PFAS or 1,4 dioxane, or new pathways, such as vapor intrusion, been discovered? Are there people or groups in the community who may see optimization as a way to minimize energy consumption, reduce GHG emissions, or conserve water? Is the project associated with a development proposal that is generating support or opposition in the community? Are there schools where students are interested in learning about environmental decision-making?

In areas where community interest has diminished over time, it may be possible to engage local institutions with continuing responsibilities, such as health departments, environmental commissions, or groundwater management agencies.

8.5 Explaining the Optimization Process to Stakeholders

To generate constructive public and tribal input and satisfy community concerns, it is important for community members to understand both the regulatory decision-making process and the data necessary to make a decision. Most community members are unfamiliar with the series of investigative, feasibility, and decision documents built into the remediation process, and those steps vary with the regulatory authority and agency. When optimization is proposed, parties to the cleanup should explain those steps with an emphasis on the windows of opportunity for the engaged public to affect the outcome. Without that information, valid community input might come too early or too late, undermining the trust between the public and decision-makers (ITRC 2004 [JKA62F2T] ITRC. 2004. “Remediation Process Optimization: Identifying Opportunities for Enhanced and More Efficient Site Remediation.” Washington, D.C.: Interstate Technology & Regulatory Council, Remediation Process Optimization Team. https://itrcweb.org/teams/projects/remediation-process-optimization.). Stakeholders, particularly those who are directly affected by contamination, may ask to see incomplete information, such as sampling data that has not undergone full quality assurance/quality control. When such information is provided, it should be made clear that it is preliminary. Similarly, when stakeholders are given access to workplans that are still under

development, they should understand the status of the documents. Since different agencies use the term “draft” in different ways, the status of draft documents should be made clear.

8.6 Explaining the Technical Basis of Optimization Decision-Making

In general, stakeholders who become active in the oversight of remedial projects want to maximize the reduction of risks from hazardous substance exposure. Many tend not to care about the costs of remediation, particularly when a polluter is paying.

Yet even stakeholders who are uncomfortable with any change in implemented remedies are likely to support optimization or the selection of an alternate remedy when it can be shown that P&T is costing a substantial amount of money and/or depleting water or other resources for a minimal reduction in risk. One way to illustrate this is with a simple graph with risk or contamination concentration on the Y axis and time or money on the X axis. The asymptote represents the level of diminishing returns expected if the original remedy is not optimized.

A relatively small investment in optimization is likely to lower the asymptote concentration, in many cases making it possible to reach RAOs. Furthermore, by shortening the lifetime of the remedy, it may actually lower life cycle costs. Figure 8-1 is a notional version of such an illustration.

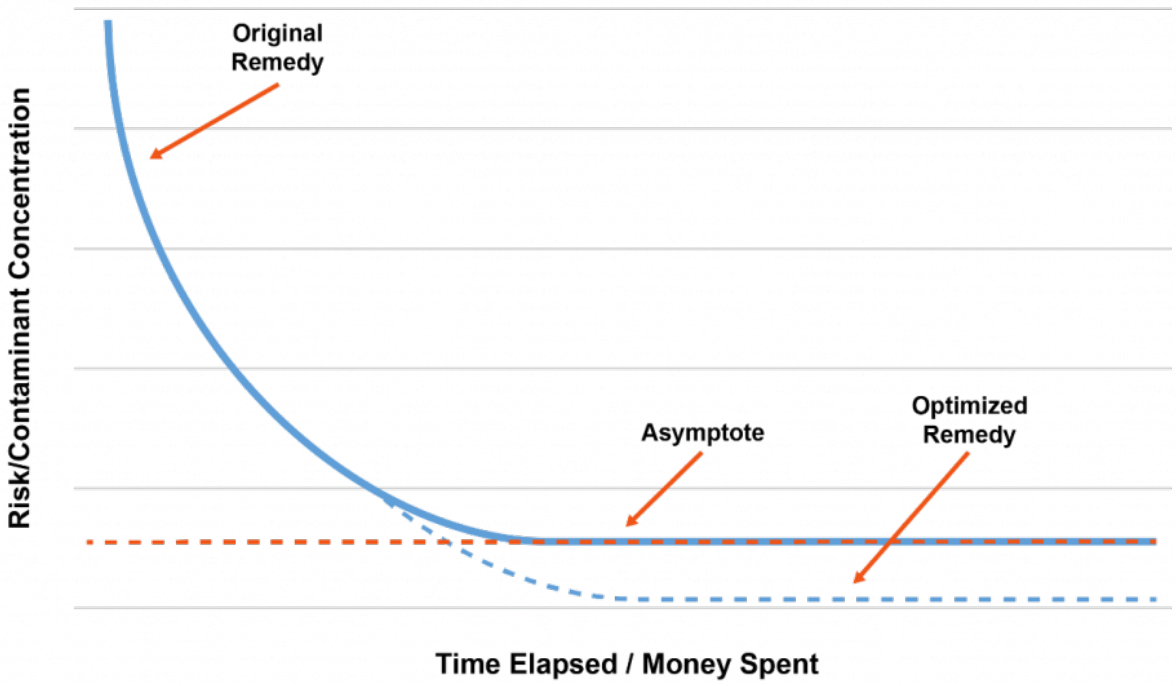


Figure 8-1. Illustration of the benefits of optimization.
Source: General Dynamics. Used with permission.

It may also be helpful to explain that optimization does not mean that the original remedy was wrong. Modifications to the remedy are often expected as the contamination is reduced. New data and new technologies may support the modification of remedies even where they have been operating properly and successfully for years. Furthermore, development or redevelopment plans may drive the acceleration of cleanup and/or require the relocation of remedial infrastructure, such as extraction wells, treatment systems, and monitoring wells.

Some stakeholders may be skeptical of proposals to rely upon MNA as a substitute for active remediation. When MNA is proposed as part of an optimization review, it is important to explain to stakeholders that MNA, which often includes permanent contaminant degradation, is more than a do-nothing remedy. Monitoring would be necessary to show that the plume is stable or shrinking and no unacceptable human or ecological exposures are occurring.

Where land-use controls are proposed as part of an optimization review, it is important to consider whether those controls undermine or prevent activities or uses desired by the community, in both the short and long term.

To successfully engage stakeholders, it is essential to provide easy, early access to plans and reports. Ideally, documents would be searchable and available online. Particularly where stakeholders have limited trust in project decision-makers, it may prove helpful to provide an independent technical consultant—such as that provided by USEPA's Technical Assistance Grant (TAG) program (USEPA 2023 [GYYK3JYK] USEPA. 2023. "Technical Assistance Grant (TAG) Program." United States Environmental Protection Agency. https://www.epa.gov/superfund/technical-assistance-grant-tag-program.)—to interpret the complexities of the optimization project and organize stakeholder questions or comments. This is particularly true in some environmental justice communities where community-based expertise is limited and trust of governmental institutions is tenuous for historical reasons. In such communities, extra effort should be made to ensure that there is access to expertise that is trusted by the community.

8.7 Stakeholders and Sustainable/Resilient Remediation

In most communities, local stakeholders are likely to support the conservation of energy, water, and other resources, as well as the utilization of renewable energy, as part of P&T optimization because of the local and global environmental benefits. Still, it is important to elicit stakeholder input on the environmental impact of P&T optimization.

At some large-scale renewable energy installations—such as solar and wind farms—affected communities have expressed concern about their visual impact, as well as the noise and threat to birds and bats from large wind turbines. At the scale required to power most P&T installations, such negative impacts are unlikely, but community concerns should be taken into account. Furthermore, communities tend to support phytoremediation—using trees to clean groundwater—as a component of groundwater remediation.

Communities are also likely to support efforts to make P&T treatment systems more resilient, not only because resilient systems better protect public health and the environment, but also because they can be integrated with community-wide efforts to protect against the negative impacts of climate change and natural catastrophes, such as flooding, wildfires, drought, and damaging winds. Local communities, including local officials, usually have site-specific knowledge that can be useful when designing resiliency into systems.

8.8 Stakeholders as a Force for Optimization

Properly informed, most stakeholders are likely to support projects that accelerate or broaden cleanup or that make the environmental response more efficient or resilient. Fully engaged stakeholders may ask questions or offer suggestions. Regulators and responsible parties should view that as a good thing, because it can improve the results and build support.

Key Takeaways

• In many cases, community members have site-specific knowledge or experience that helps to regulators and responsible parties make sound decisions about investigation, remediation, and long-term management.

• Even where there is no regulatory requirement to engage stakeholders in the consideration of remedy optimization, it is generally worth the effort, both to optimize the optimization and to generate or continue public support for the remediation project.

• Stakeholder support can smooth approval and help win funding for soundly framed optimization projects, benefiting the communities that have been subject to the contamination for decades.