6 Community and Tribal Stakeholder Considerations

The implementation of in situ remediation techniques can be controversial due to community and tribal stakeholder perspectives based on a varied understanding of site characterization and in situ remediation technologies. Unlike ex situ remediation, stakeholders do not observe truckloads of contaminated soil being removed or *clean* water being discharged after treatment. Progress is not readily apparent and can be difficult to assess, particularly to the nontechnical stakeholder. Conversely, there may be less community resistance given that the remediation is less visible. If trust issues are present, gaining acceptance of the remedial action by the community is challenging, particularly during the optimization process when unforeseen deficiencies in the original design may be identified or changes in site conditions that affected the remediation become apparent.

Stakeholders benefit when they can influence remedy selection and long-term site management. Informed, constructive stakeholder involvement can assist in the decision-making process; reduce the likelihood of costly, time-consuming repeated work; and allow those in affected communities to have input into the long-term use of land, water, and other resources. If involved in the original decision-making process, community and tribal stakeholders will want to be informed on progress and potential optimization strategies throughout the cleanup, especially when progress is not satisfactory.

Various federal government, state, and sovereign tribal nations' environmental statutes, ordinances, and acts require coordination with stakeholders and a reasonable opportunity for meaningful involvement in a project. Early and effective engagement can address concerns and educate stakeholders on the benefits of the site-specific in situ remediation technique. Communications with stakeholders can be used to:

- provide the public the opportunity to give comments and input to technical decisions
- inform the public of the remedial action progress and proposed optimization changes
- identify and resolve conflict

Specific guidance regarding relations with stakeholders is often provided by the project oversight agency, such as USEPA, DOD, or state regulators. These sources should be consulted for applicable procedures for community communication plans and minimum requirements.

6.1 Background

Stakeholders often have valuable information about site characteristics, history, and future site use that can improve the quality of remediation process decisions. It is often said that institutions never remember, but communities never forget. Although the focus is on a primary remedy selection, follow up and optimization are often done by people whom are less familiar with the entirety of the situation than stakeholders who have been involved from the outset. This is particularly applicable in tribal situations where projects often depend on external funding sources and varying political will, and suffer from extremely high rates of staff turnover. The project benefits from the careful explanation of findings and proposals that may be needed and the extra work needed to resolve site issues raised by stakeholders. Informed stakeholders are likely to be more be open-minded about optimizing in situ technologies. This is particularly important during the implementation process, when performance issues of the original in situ remedy design are discussed and a range of suitable adjustments is evaluated.

> *"Institutions never remember, but communities never forget."*

Each project and project site is unique in the appropriate level of stakeholder engagement for optimization of in situ treatment. The engagement of stakeholders depends on many factors. Local regulatory requirements will dictate minimum requirements. Beyond that, judgment should be applied considering:

- degree of community and tribal stakeholder involvement in the original remedial design and implementation
- technical issues that prompted the optimization review, such as:
    - failure of original system to treat contaminants to specified standards
    - mobilization of new contaminants not previously anticipated
    - expansion of the groundwater plume
    - potential impact to natural resources not previously identified
    - revisions to reduce schedule and costs
- permitting and public notification requirements
- impact on local community and economy issues (for example, extended schedule, newly defined areas of concern)

After these and other site-specific factors are identified and evaluated, the appropriate approach to stakeholder involvement can be developed.

6.2 Identifying Stakeholders

ITRC public and tribal stakeholders serve as the voice of the people who are most affected in their daily lives by the problems at hand. Stakeholders add key voices, as well as balance and diversity. They provide written and verbal input on a regular basis and in accordance with the team's project work plan schedule.

The list of the site-specific stakeholders should be continually updated. Tactics for communicating the appropriate information to the audience should be considered. Tracking communications with stakeholders ensures that notifications are issued in a timely manner and that the appropriate parties are contacted. Clear communications are critical in moving the project forward and making adjustments where appropriate.

6.3 Stakeholder Concerns

Typical concerns of stakeholders revolve around how the changes in the remedial approach directly affect them or their constituents.

The following issues should be considered prior to communications with stakeholders:

- technical rationale for changes/optimization of an ongoing remediation
- public and tribal perception regarding changes/optimization
- regulatory impact/changes to permit conditions and reporting
- how changes will affect groundwater (for example, negatively—secondary contaminants could be mobilized, expansion of the plume, etc., and positively—treatment/capture of additional contaminants, reduction of chemical injected to the environment, etc.)
- the impact on the schedule (for example, will optimization accelerate the remediation or extend it?)
- appropriateness of public meetings (content and frequency)

> **Understand Stakeholders' Technical Backgrounds**
> At a former chemical plant Superfund site in New Jersey, local residents who attended public meetings included Ph.D. chemists (former employees) as well as nontechnical residents.

Each issue could present different concerns, depending on the perspective of the stakeholder. For example, extending the schedule could be a concern to the public for local issues such as potential exposure or impact to business. For this reason,

it is important to identify and understand the motivation, specific interests, and level of technical comprehension of each stakeholder. In cases involving in situ remediation on tribal lands, usual and accustomed areas, and ceded territories, it is important to realize that the cultural identity of the residents depends on the land. For example, as U.S. citizens, tribal members can assume that identity anywhere in the 50 states and live like a U.S. citizen. As a member of the Sac and Fox Nation, there is only one small place where that community exists. Remediation selection should look beyond standard health-based risk assessments to include factors that define a tribal community's identity.

Topics that stakeholders tend to raise typically relate to individual effects to the local population and environment, including effects on:

- health
- cultural practices and traditional lifeways
- property values
- jobs and tax revenues
- local businesses
- traffic, noise, and odors
- schedule and duration of remedial activities
- natural resources damage

The level of stakeholder participation and the appropriate process for the inclusion of stakeholders must be tailored to each site and situation; however, from the formulation of the problem through the exit strategy, stakeholder issues, needs, and concerns must be taken into account.

Stakeholder concerns that may arise during the implementation of optimization are discussed below.

6.3.1 In Situ Remediation Mechanics

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One benefit of in situ treatment is that it usually destroys contaminants rather than transferring them to another medium (for example, air, activated carbon). Stakeholders may focus on the following elements of in situ remediation techniques and processes.

- The public will question fracturing due to the negative publicity of oil & gas *fracking* and misunderstanding of its use in association with remediation. Explaining why this tool is appropriate and does not have the same consequences as in oil and gas applications is important.

- With ISCO, concerns may include creation of hexavalent chromium Cr^{6+}, creation of volatile vapors or explosion hazard potentials, appearance of daughter products, mobilization of previously bonded contaminants such as arsenic, daylighting of chemicals, odor, discharge to nearby streams/wetlands, and potential hazards to personnel and the environment when mixing.

- Concerns with in situ bioremediation generally include methane production, particularly in densely populated areas.

- The length of time to achieve remediation goals relative to ex situ technologies, and the understanding that MNA may be a component of the final remedy.

Process questions may arise on pilot and treatability studies regarding timing of completion, application to other areas, and full-scale design, construction, and operation.

6.3.2 Benefits and Risk

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The benefits of the proposed optimization process should be clearly stated as well as the potential risks. Transparency in communicating both the benefits and risks assists in establishing and maintaining trust with stakeholders. Ignoring or omitting potential risks can lead to difficulty in securing public concurrence and cooperation and complicate continued public cooperation during the optimization phase.

6.3.3 Changes in Site Conditions

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If the proposed optimization process will potentially result in changes to the site conditions that were not previously considered, these should be noted. Procedures to mitigate negative impacts due to changing conditions should be

developed and presented to the stakeholders.

6.3.4 Potential for Direct Human Exposure

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Stakeholders will be concerned about any potential for increased exposure due to proposed optimization techniques. Nearby environmentally sensitive receptors, such as residences, schools, and childcare facilities, should be clearly identified on a figure. Discussions of the process used to identify the sensitive human receptors and to ensure protection from increased exposure should be included in stakeholder communications. The routes for potential exposure to consider include direct contact with:

- groundwater/supply wells
- soil
- surface water/sediment
- vapor intrusion
- subsistence and cultural hunting and gathering in potentially impacted areas

Each of these potential receptor pathways should be evaluated during the optimization process and results communicated to the stakeholders.

6.3.5 Potential for Indirect Exposure

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Stakeholders are concerned about all environmental pathways and may not accept excluding pathways such as ingesting homegrown vegetables irrigated by potentially contaminated groundwater. For example, if contaminants could be absorbed through the roots of plants, then this pathway should be addressed. The potential impact on local irrigation wells should be included in the evaluation of the local receptors.

6.3.6 Ecological Receptors

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Stakeholders may be concerned that the proposed optimization process could affect ecological receptors. Contaminants at levels well below cleanup standards appropriate for human health may present a risk to ecological receptors. For example, altering the composition of the media being injected could mobilize organic or inorganic elements that would not affect humans, but would affect water column species and/or wildlife, directly or through biomagnification (food chain toxicity).

Tribes and local sportspersons may be particularly concerned about addressing ecological receptors due to impact on fish and wild game.

6.3.7 Public Perception of Hazard

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If contaminants are in the news as a national threat to human health (such as lead in drinking water and household paint), the science behind in situ treatment may be outweighed by negative public perception of the hazards. The stakeholder perception of the site contamination should be considered in the decision-making process for optimization. Further education of the public may be necessary to gain stakeholder acceptance.

6.3.8 Remediation Progress

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As noted before, the progress of in situ remedial actions cannot be readily observed by stakeholders as can ex situ remediation (for example, soil removal). Consideration should be given to providing details on the monitoring plan, including sampling locations, frequency, and analytical parameters. Emphasis on sampling and analysis to confirm that the remediation is complete will provide stakeholders with a level of comfort that the project will not be declared complete prematurely.

6.3.9 Specific Tribal Stakeholder Concerns

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Tribes share many concerns with other stakeholders; however, they differ from other stakeholders in several key aspects. The 567 Native American tribes recognized by the Bureau of Indian Affairs are each culturally, governmentally, and socially unique.

Some tribes view any level of contamination of their land and natural and cultural resources as unacceptable. Many tribes have culturally significant or sacred areas, which may include springs, mountains, hunting areas, plant-gathering areas, or burial sites. When culturally significant or sacred areas are at stake, traditional methodologies that nontribal environmental professionals rely on (such as the applicable exposure scenarios, pathways, or factors for a risk assessment) may be superseded. Some plants and animals can also have tremendous cultural or religious importance to a tribe, including birds and feathers, game animals, herbs, grasses, and trees. These areas, items, and living things may be used in ways that are not addressed in standard risk assessment scenarios. There is also the potential for tribes not to disclose the exact location of sacred areas to outsiders, and in these cases there will be a need to work very closely with tribal members to explain to them the nature and extent of the remedy so that they can be assured these sites are not negatively affected. In addition, the exposure scenarios, pathways, and factors used in the risk calculations for tribal activities may differ from the USEPA or state default values. These values should be considered initially and reviewed again in the optimization phase of the project.

Tribes are sovereign entities that have established government-to-government relationships with federal, state, and local governments that must be recognized in the decision-making process. When a site affects a tribe, the project timeline must include tribal approvals in addition to other applicable agency approvals. Sampling, research, and services on tribal lands generally require institutional review board (IRB) or tribal council approval. Each sovereign nation operates differently, ranging from tribes that have no research capacity to tribes that have a full review board with a formal application process. The initial steps in the approval process may include drafting a proposal, preparing a poster or podium presentation, and presenting to the tribal government.

Once tribal approval is granted and the project commences, the practitioner must obey tribal protocol with respect to cultural practices. The tribe may reserve the right to retain the findings in the case of exploratory research and restrict publication. Regulatory findings for water and soil concentration, level of treatment, and monitoring are first reported to the tribe's department of environmental quality or natural resources and then forwarded to USEPA.

6.4 Approach to Stakeholder Engagement

All interested stakeholders must have access to critical information and the opportunity to provide input to technology development decisions during the optimization process. It is particularly important at the site level to involve stakeholders in collaborative decision-making. Effective stakeholder participation can promote a more accurate understanding of the relative risks of various technologies and remediation options. Participants gain a greater understanding of the regulatory requirements and processes, as well as a greater understanding of the technologies and/or remediation techniques, and are thus more likely to accept changes to the original remedial design.

The success of engagement programs depends on effective planning and outreach to build a working relationship between stakeholders and those conducting and overseeing remediation. By reaching out and responding to stakeholders not only when required by law, but throughout the process, regulators and responsible parties can build trust with stakeholders. Finally, including stakeholders in site decisions makes them partners in a process that protects them, their families, their property, and their communities.

Where there is significant community interest, environmental decision makers may find it useful to go beyond a one-time or occasional community meeting and create a project-specific community advisory board with representatives from each segment of the community. Such boards have improved community relations at numerous DOE, DOD, and private sites across the country. Community advisory boards and/or restoration advisory boards often provide remedial project decision makers with "one-stop shopping" for community input. Relying on community advisory boards or restoration advisory boards can help work out differences among various community members, avoiding any guessing or assuming which community interest represents the public.

The following steps outline an approach for effective stakeholder engagement.

6.4.1 Plan for Stakeholder Engagement

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Stakeholder engagement should not be an afterthought, but rather integrated into project staffing, budgets, and timetables from the beginning of the project. Project managers and their technical and legal teams should communicate with the public early on, and community involvement specialists—for organizations that have them—should be included in internal technical

meetings so they are able to provide timely, accurate information to the public.

Project budgets should also include funding for stakeholder engagement. Effective programs recognize that funding for community relations, advisory boards, and independent technical assistance is an investment that pays off in better decisions and smoother progress, as well as public recognition of the work of those responsible for cleanup. Experience has shown that when regulators and responsible parties listen to communities near contaminated sites, the communities are empowered and are more likely to offer constructive guidance.

At large sites, some agencies routinely develop community involvement plans by interviewing community leaders to find out who is concerned about the site and why. This approach is also useful at sites with little history of stakeholder engagement, and is a good way to identify segments of the community that, for cultural or geographic reasons, have not participated in public events. For example, a community involvement plan might identify areas where residents have limited English-language capability and include translation needs in the project plan.

State and federal officials, as well as private responsible parties, should familiarize themselves with the multiple local governments, authorities, and relevant organizations that may have jurisdiction or control over a site. Many sites are bounded by multiple cities and may be served by counties and special districts. One good practice is to plan to attend city council meetings dealing with the reuse of contaminated sites to answer questions about the suitability of sites for reuse. Few local governments have the technical expertise to answer such questions on their own.

Plans for outreach and community involvement should also identify environmental justice communities potentially affected by the site. Underserved communities often feel excluded from or mistrustful of government programs, and may lack the technical background to feel comfortable taking part in discussions of technical issues. These communities should be brought into discussions of the fundamental issues facing cleanup programs, and planning should include efforts such as outreach, explanatory materials, and fact sheets in the communities' primary languages.

6.4.2 Engage the Stakeholder Community Through Outreach

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Agencies sometimes prematurely conclude that there is minimal stakeholder interest at a site because of low attendance at official public meetings or open houses. Often, however, community outreach is needed to raise awareness about site issues. If people do not attend regulator-sponsored events, then regulators can arrange to present at neighborhood association or parents' association meetings. In fact, outreach may prove helpful even if regulator meetings are well attended. Another approach is to partner with trusted community organizations to set up meetings.

In New Jersey and other states, regulations require public notice at various stages of a project and may include signage, letters, and newspaper notifications to property owners and tenants within specified distances of a site or plume, as well as notifications to the local town clerk, planning board, and health department. The responsible party is required to respond to media and public requests and to conduct public meetings, if appropriate.

6.4.3 Build Trust Through Communication

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Community acceptance of proposed remedies and cleanup standards often depends on whether the stakeholders trust the other parties involved. The first step in trust building is for regulators and responsible parties to inform the public that the site contamination affects their community, early and often. Usually one press release is not enough; people may miss a story and new arrivals often have no easy way to catch up on old news. Furthermore, regulators or responsible parties build trust when they announce how they are addressing a problem, rather than having news media expose the problem.

Project personnel should familiarize themselves with the various communication media, including bloggers, Facebook, Twitter, and Instagram, that can communicate with community and tribal stakeholders interested in their sites. Most people get their information about contaminated sites and cleanup from these media, not directly from the programs. In some cases, experienced reporters have, over time, developed a wealth of site knowledge, but usually reporters and broadcast news producers spend less than a day on each story. Some reporters embellish the negative aspects of a remediation project to attract headlines. Many reporters may miss the technical nuances, but are more likely to report accurately and constructively if regulators, responsible parties, and the stakeholders' technical consultants take the time to explain site activities.

6.4.4 Build Trust by Clearly Explaining Technical Concepts

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For public meetings, regulators and responsible parties should understand the general level of technical background in the host communities. Some communities include engineers and scientists who understand scientific notation, are used to reading technical reports, and know how to address quantitative uncertainty, but most do not. Even those communities with strong general technical knowledge may not know much about hydrogeology, geochemistry, and the other fields that contribute to in situ remediation projects.

Presenters should limit the use of acronyms and be prepared to explain references to regulatory programs and responsibilities. Stakeholders often do not distinguish among government agencies, and few understand how agencies are organized. Consequently, the public may not understand lines of decision-making authority, particularly where the parties themselves do not agree.

Technical documents should be easily accessible and offered in printed form and, if possible, searchable standard electronic formats. Many sites have dedicated websites, which stakeholders can visit to download current documents, as well as earlier site documents referenced in current ones. These websites should contain links to documents for nearby sites and agency guidance documents as well. Some states maintain statewide databases where outside experts can easily find pertinent documents on behalf of local stakeholders. Because regulatory agency staff can fall behind in posting documents, sometimes stakeholders may need to request website updates. To build trust, new information should be posted in a timely manner.

6.4.5 Include Stakeholders in Decision-Making

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Stakeholders are partners in the decision-making process. As such, most stakeholders seek the opportunity to review draft documents while there is still time to change them. They object to the "decide-announce-defend" approach, in which regulators and the regulated negotiate for months to produce a draft document, and then feel obligated to defend the document against changes. It is harder for stakeholders to participate effectively when the other parties have already reached agreement. A better course of action is to engage stakeholders while work plans and reports are still being developed. Some project managers find it helpful to broach remedial concepts informally, giving stakeholders a chance to weigh in on an idea before it is included in a draft document.

6.4.6 Keep Stakeholders Informed of Progress and Results

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After optimization recommendation implementation, the stakeholders should be advised of the results of the process. The process should produce measurable results. The minimum measurable results that should be recorded are changes in protectiveness and changes in the remediation project's time line and projected costs.

6.5 Communications

Effective communications with stakeholders can be achieved through knowledge and use of communication principles and skills. Stakeholder communication should not be considered public speaking, "spinning," or embellishing messages. It requires being open, honest, genuine, and sincere and applying verbal and nonverbal skills in a variety of situations. It also requires an ongoing commitment to practice and preparation. Multiple benefits can be achieved using risk communication principles:

- improved relationships with stakeholders, which can result in increased/maintained trust
- efficient implementation of processes because of buy-in by stakeholders
- improved public perception
- fewer legal challenges when public involvement requirements have been satisfied
- less antagonistic experience with the media

6.5.1 Stakeholder Impacts

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Identify stakeholders who could impact the project favorably, neutrally, or unfavorably. Some stakeholders will oppose the project, regardless of efforts to include them in the process. Some stakeholders provide support from the start, recognizing the advantages of the remediation and the benefits of optimization. Most stakeholders are generally open to more information and finding common ground.

Develop a communication strategy that addresses all stakeholder motivations so that the relationship with supporters is maintained and the open-minded supporters receive the information they need to understand the process. An effective communication strategy should also show good faith to the stakeholders who have negatively prejudged the situation. Provide information, listen to their concerns, and invite them to the meetings. Demonstrate willingness for discussion.

6.5.2 Third-Party Supporters

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A third-party supporter is a stakeholder whom the majority of stakeholders see as trusted and knowledgeable. In tribal communities these can be elders and in many cases students. Third-party supporters can provide formal or informal support, including background or suggestions on approaches.

Local government officials, health departments, academia, and regulators can also be effective third-party supporters as respected figures with extensive experience with the community. Third-party supporters often are good sources for identifying additional supporters.

6.5.3 Proactive Approach

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Do not wait for stakeholders to learn about problems through other sources. Be proactive:

- Provide all the relevant information.
- Discuss the unknown factors.
- Update stakeholders as information becomes available.
- Communicate with stakeholders early and on a regular basis.

Being proactive is critical for successful communications with stakeholders. The longer an organization takes to provide information, the more difficult it is to overcome the perceptions associated with less than ideal results, the need for significant optimization, or remedy failures.

6.5.4 Training

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Ensure that all communicators are properly trained. Representatives should understand the technical and political aspects of a project and be prepared to address stakeholder concerns. Representative should not provide answers to questions unless they are sure of the facts. Most stakeholders will respect the representative who follows up to answer a question after the facts have been gathered.

6.5.5 Media

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Be prepared for your message to be totally misconstrued. Designate one official point of contact. This makes fixing errors so much easier. Build professional relationships with the media, if possible. Be aware that in these days of social media, any stakeholder could post information that may or may not be correct.

Issue fact sheets, statements, and notifications that are clear, concise, and understandable. Avoid technical jargon that could be misinterpreted as attempts to mask or cover up problems.

Click here to download the entire document.