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9 Stakeholder Perspectives

9.1 Economy and Long-Term Resource Protection Concerns

Improved characterization of fractured rock leads to more appropriate remedial decisions and reduces the damage to precious groundwater resources if these decisions are properly applied. The same concern for indoor air, surface water and direct contact hazards should be addressed through appropriate remedial decisions. Restoring as much of the resource as possible as a stakeholder priority is important. Minimizing the loss will help to guarantee groundwater resources and other resources will continue to be available for future generations.

Protecting drinking water, surface water, sediments, and air quality fall under regulatory programs that require permits to access these resources in an environmentally safe and sustainable way. The practice of obtaining a permit to access a resource implies that the resource will be sustainable and usable for economic development, drinking water, agriculture, fisheries and wildlife, and in some cases air quality. Minimizing loss of any of these resources as a result of contamination needs to be a component of every remedial design. Stakeholders must identify this as a concern when dealing with remedial options at sites in their communities or tribal lands.

Poor remedial decisions, based upon limited data, can place tremendous long-term economic burdens on communities due to loss of property values, development potential, institutional restrictions on aquifers, and the undesirable reality that the community must face with respect to long-term contamination under their city or individual properties. Often, the aesthetic quality of the aquifer is diminished on a long-term basis downgradient of these contaminated sites, which essentially makes the aquifer useless for domestic water supplies and much more expensive to treat for municipal water supplies. These treatment costs are often passed on to the individual property owner and the community. Use of monitored natural attenuation, if not applied properly at these fractured rock sites, can lead to some of the undesirable conditions.

This fractured rock characterization approach promotes a better conceptual model of the site allowing a more focused and potentially a less costly feasibility study and remedial design process. Better definition of the source area and extent of contamination trapped in the fractures and diffused into the rock will save time and cost when designing effective remedial options. If these processes are applied properly, they should immediately reduce risk and long-term remediation costs normally incurred with remedies that often proceed with little or no source control. Stakeholders often support this approach to minimize the loss of groundwater through failed remedies and institutional controls, which also reduces the economic loss of development potential of large tracts of land in communities.

9.2 Stakeholder Views Regarding Remedial Decisions

This guidance outlines an approach that can provide enough information to determine if an existing remedy is protective of human health and the environment. This approach can also determine whether long-term monetary resources are being wasted on a remedy that would operate better if source control were implemented, for instance, or for a multitude of other cost saving issues identified during investigation. Stakeholders support this approach when objectively presented and tied to remedial actions objectives that restore aquifers, protect future groundwater resources, and reduce risk to human health and the environment.

Public and private sector funds should be focused on returning resources to a useful and economically productive status. The current regulatory model of restricting resource use and access to resources (institutional controls) can be a long-term stigma to the community and may prevent the return of community prosperity. Protecting human health and the environment goes hand-in-hand with economic viability and community prosperity. There is no need to sacrifice either of these goals to achieve a cost-effective and successful remedy. Reduction and hydraulic control of the plume to a small area that cannot be quickly cleaned up due to fractures and diffusion into the rock may also be an outcome where return to drinking water criterion appears not to be possible. Long-term control and minimizing the foot print of the restricted access to groundwater is a key consideration when implementing a successful and acceptable remedy.

9.3 Stakeholder and Tribal Acceptance

Remedies that were crafted without the understanding and characterization of fractures and the bedrock system have removed groundwater resources from current and future generations un-necessarily in many instances. Stakeholders have been skeptical at many sites because of inadequate characterization and extensive use of risk-based decision making to justify large-scale, long-term natural attenuation remedies for aquifers. The characterization and decision making at complex fractured rock sites has been viewed as expensive and difficult for remedial design. Better identifying where the contamination resides in the aquifers fractures and how much is diffused into the rock matrix should lead to better designs that can address these difficult problems.