

Table 6-6. Remediation Technology Screening Matrix for Fractured Bedrock Environments

Representative Rock Types/Origin			Hydrogeology			Physical					Containment		Chemical/Biological						MNA	
			Transmissivity (Flow)		Matrix Storage	Removal	Thermal	Air Sparge	Vapor & Multiphase Extraction	Surfactant Flushing ¹	Pump & Treat	Permeable Reactive Barrier	In Situ Chemical Oxidation		In Situ Chemical Reduction		In Situ Bioremediation			
			Matrix	Fracture									Short-Lived Oxidant	Long-Lived Oxidant	Short-Lived Reductant	Long-Lived Reductant	Short-Lived Carbon Substrate	Long-Lived Carbon Substrate		
Igneous & Metamorphic Rocks	Extrusives	Tuff/Scoria/Pumice	H	L	H	U	U	U	Y	N	Y	N	N	Y	N	N	N	Y	Y	
		Basalt/Rhyolite	L	H	L	U	U	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	Intrusives	Granites & Other Crystalline Intrusives	L	H	L	U	U	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
		Foliated Metamorphics (such as Gneiss & Schist)	L	H	L	U	U	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Metamorphics	Unfoliated Metamorphics (such as Quartzite, Amphibolite)		L	L	L	U	U	U	Y	N	Y	N	N	Y	N	N	N	Y	Y	
Treatment Zone and Phase Considerations		Vadose Zone	NAPL			Y	Y	N	Y	Y	N	N	Y	Y	N	N	N	N	N	
			Matrix Storage (sorbed mass)			Y	Y	N	Y	N	N	N	N	N	Y	N	N	N	N	Y
			Vapor phase			Y	Y	N	Y	N	N	N	N	N	Y	N	N	N	N	Y
		Saturated Zone	NAPL			U	Y	N	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	N
			Matrix Storage (sorbed mass)			U	Y	N	N	N	N	N	N	N	Y	N	Y	N	Y	Y
			Dissolved phase			U	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Vapor phase (dissolved gas)			U	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		

* This table is for general technology screening only. Technology selection must be based upon careful review of site-specific conditions.

1. Surfactant use in bedrock presents a high degree of uncertainty and was not recommended as a fractured bedrock remediation technology in previous ITRC guidance (ITRC 2003). However, some case studies have demonstrated success with fractured bedrock sites in some scenarios.

H = High
L = Low
Y = Yes, generally applicable remediation technology
U = Unlikely to be applicable remediation technology
N = No, generally not applicable remediation technology