

# Sustainability Regulatory Integration and Reform for Superfund Sediment Remediation Projects

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**Background/Objectives.** Superfund sediment remediation projects have been challenged by protracted studies and long timelines that have led to prohibitive costs of clean-ups and a lack of comprehensive and holistic benefits to affected communities. This process has been particularly onerous where there is a confluence of ecological and industrial services. In recent years, the application of green metrics, such as Life Cycle, Multi Criteria Decision Analysis and SiteWise™, in the remedy implementation phase has shown promise in driving balanced, sustainable and resilient outcomes. In parallel, applying sustainability principles to Superfund sediment sites during the remedy implementation phases of the remediation project also has merit. Site-specific employment of processes, technologies, and procedures that mitigate contaminant risk to receptors while making decisions that are cognizant of balancing community – societal goals, economic impacts, and net environmental/ecological effects (pillars of sustainability) can yet provide a more balanced and holistic approach in Superfund clean-ups as opposed to a silo or sectoral remedy (ITRC, 2014). Sustainability principles are compatible with the US Environmental Protection Agency Superfund National Contingency Plan (NCP; 40 CFR 300 et. seq.) nine criteria but there has been a lack of focus on sustainability despite that it is an integrated element across most of the 9 criteria. This study demonstrates the critical need to formalize the principles of sustainability into the remedy evaluation and selection for Superfund sediment projects. For sediment management to be sustainable, a paradigm shifting evaluation metric that takes into account the confluence of all services within an operational framework should be considered.

**Approach/Activities.** The current NCP nine remedy selection criteria will be evaluated for the applicability and usefulness of the incorporation of sustainability metrics. From this we will develop a position to employ a sediment remediation evaluation metric(s) that will incorporate sustainability into the Superfund remedy evaluation and selection process. This will take into consideration a balanced and holistic approach distinguishing current remedial practices and “green” remediation, and how it is to be applied in a sustainability framework (societal, ecological and economic benefits). An “Eco-industrial” approach that will take into account stakeholders (both environmental and business communities) and how sustainability is compatible and synergistically fits within the existing Superfund 9 NCP Criteria linking existing regulations and guidance to support the inclusion.

**Results/Lessons Learned.** Recommendations to improve the existing remedial selection process and the potential value-added application of the proposed Eco-industrial approach that assesses impacts to the whole community will be addressed. Ecosystem and industrial services can co-exist within environments that have a confluence of ecological and industrial services. Metrics for remedy selection and evaluation that are congruous with sustainability principles and the nine NCP criteria can be applied.