

In Situ Solidification as a Multi-Purpose Component of Shoreline and Sediment Remediation

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Background/Objectives. Since 2010, GEI has designed and implemented sediment ISS where the outcome needed to address environmental and geotechnical/geo-structural project and end use goals. To date, this multi-purpose ISS approach has only been applied on a select number of sites. In these sediment and shoreline applications, the EPA performance guidelines for unconfined compressive strength (UCS), leaching, and hydraulic conductivity (K) were used, as applicable, as the benchmark QA/QC standards. The objective of this presentation is to review the results from previous and recent sediment ISS projects, discuss application of the EPA performance guidelines, and provide recommendations for selecting appropriate project specific performance guidelines that accommodate the end use of the property.

Approach/Activities. By designing the ISS strategy with the end use in mind, GEI was able to select performance metrics that satisfy the environmental and geotechnical requirements and achieve the goal of utilizing the ISS improved sediments for multi-purpose project benefits. For example, recent GEI projects have included the design and implementation of ISS solutions that serve as a remedial approach for impacted soil/sediment, a contaminant barrier or cutoff wall, a structural component supporting shoreline bulkheads and as temporary work platforms for coastal infrastructure. The process of designing and implementing ISS with multiple end use purposes requires early coordination with the owner, as well as the various elements of the project team. Specifically, the owner along with the environmental, geotechnical, and, in some cases, structural engineers need to agree on the intent that they want the ISS to serve and the performance metrics that will allow them to collectively achieve the shared project goals and, ultimately, the proposed end use of the property. Understanding the end use of the project is critical for creating an effective shared design process.

Results/Lessons Learned. Lessons learned from previous project results that were driven solely on the EPA performance criteria has allowed for a better understanding of how to design projects and select appropriate project specific performance criteria. We will look at how the results of these past projects has influenced current project designs resulting in unified remedies that are cost effective and meet the requirements for the ultimate project end use goals.