The Sustainable Remediation Forum (SURF) has issued three key guidance documents that set the stage for the future of environmental cleanup. The documents, published in the Summer 2011 issue of Remediation, comprise a comprehensive road map for sustainable remediation – a movement to encourage cleanup projects that remove potentially dangerous contaminants from the environment while limiting external impacts and minimizing the use of energy, water, and other natural resources.

SURF's goal was to assist remediation practitioners by developing practical guidance on this rapidly evolving and often misunderstood subject. The trio of documents consists of:

- Framework for Integrating Sustainability into Remediation Projects;
- Metrics for Integrating Sustainability Evaluations into Remediation Projects; and
- Guidance for Performing Footprint Analyses and Life Cycle Assessments for the Remediation Industry.

Sustainable remediation is not only about using "green" technologies – such as solar and wind-powered equipment, in-situ bioremediation, renewable energy credits, and biofuels – as much as it applies holistic and life-cycle thinking to a cleanup project. Sustainable remediation is the process of considering environmental, economic, and social impacts from as early as the investigation and remedy selection phase, identifying the appropriate technologies to meet regulatory criteria, and implementing sustainable practices from remedy design to project closure. Technological advances and the systems-based thinking embraced by sustainable remediation helps practitioners reduce or eliminate the unwanted by-products of remediation, as well as identify and enhance the positive ripple effects.

The **Framework** document describes how to integrate sustainability concepts into remediation projects and outlines a process that can be integrated with traditional, goal-based regulatory criteria. The Framework is a tiered process that:

1. Enables either qualitative or quantitative assessments, or both;
2. Describes how a conceptual site model can be updated to incorporate the results of a sustainability evaluation;
3. Identifies and helps implement sustainability impact measures; and
4. Links sustainability with other considerations when making decisions during the remediation project.

The **Metrics** document provides an extensive menu of quantitative and qualitative parameters that can be selected to match the size and scope of any given project. Metrics consist of key impacts, outcomes, or burdens that will be assessed or balanced to determine the influences and impacts of a remedial action. Examples include mass of waste disposed or diverted, quantity of recycled/reused material, fuel or energy use and cost, greenhouse gas or other air emissions, local jobs generated or saved, functional acreage restored, and regulatory and stakeholder satisfaction. A companion "toolbox" – a series of tables organized by project phases, including remedial investigation, remedy selection, remedial design, remedial construction, operation and maintenance, and closure – has been published simultaneously with the Metrics document on the SURF website, and will be updated on an ongoing basis as understanding of the metrics involved with sustainable remediation evolves.

The mission of SURF is to maximize the overall environmental, societal, and economic benefits of the site cleanup process by:

- *Advancing the science and application of sustainable remediation*
- *Developing best practices*
- *Exchanging professional knowledge*
- *Providing education and outreach*

The **Footprint Analysis and Life Cycle Assessment** (LCA) document lays out a nine-step process for conducting either an environmental footprint analysis or LCA. A LCA considers the full life-cycle of a remediation project phase. Depending on the LCA boundaries, the consequences of the various products used and activities proposed are quantified for fuel depletion, water depleted, ecosystem damage and improvement, waste generated, and other impact categories. The various impacts are summed and different remedies or variations of a single remedy can be compared. A footprint analysis is more streamlined and less rigorous than a LCA and may only focus on certain elements of a remedy, such as water use, energy use, climate change potential, air emissions, or material use. Thus, a footprint analysis can be conducted with less time and effort.

State and federal agencies recognize the environmental, economic, and social benefits of more sustainable approaches to cleanup projects, and are also assessing and applying sustainability concepts in their regulatory programs. At a recent SURF meeting, Jennifer Borski of the Wisconsin Department of Natural Resources remarked on the collective rallying cry for better and greener cleanups, adding that ***"PRPs, environmental professionals, academics, attorneys and regulators have come together to develop better ways to address environmental contamination. These efforts ultimately benefit everyone and are commendable."***

Visit www.sustainableremediation.org to learn more.