Recovery Potential Metrics
Summary Form

Indicator Name: HUMAN HEALTH AND SAFETY

Type: Social Context

Rationale/Relevance to Recovery Potential: Among decision-makers and communities alike, the relevance to human health or safety has always been among the most powerful criteria for determining the importance of an activity. Some environmental restorations are needed in part because of health and safety hazards that accompany environmental degradation – for example, many abandoned mineland settings and hazardous waste remediation activities. When human health and safety risks are involved, the degree of support for a restoration effort is boosted above the support based on environmental factors alone, and the positive social context for recovery potential is increased.

How Measured: This metric generally relies upon site-specific monitoring data that verifies the risk and communicates it to the public. Such data may be available from hazardous waste, mining or other programs, which sometimes explicitly categorize environmental risks that also threaten human health or safety. Flooding or storm risks to property or human health, where involved in a restoration action that will explicitly reduce those risks, may also be attributed to this metric. Scoring may be performed as simple presence/absence of risk or assigned on a high/medium/low scale.

Data Source: In addition to beach closing information (See: http://iaspub.epa.gov/waters10/beacon_national_page.main), the EPA provides searchable data as part of the Toxics Release Inventory (See: http://www.epa.gov/tri/tridata/index.htm) and hazardous waste geographical queries through the Resource Conservation and Recovery Act (See: http://www.epa.gov/enviro/html/rcris/rcris_query_java.html).

Indicator Status (check one or more)

_____ Developmental concept.
___x__ Plausible relationship to recovery.
___ __ Single documentation in literature or practice.
___x__ Multiple documentation in literature or practice.
_____ Quantification.

Supporting Literature (abbrev. citations and points made):

- (Bernhardt and Palmer 2007) Further, investments have been driven by a recognition that since ca. 17% of all urban land in the United States is located in the 100-year flood zone, restoration of riverine floodplains and wetlands in urban areas could reduce deaths and property loss from floods (Palmer, Allan & Meyer, 2007) (739).
- (Schwitzguébel et al. 2009) According to the United Nations Environment Programme, “phytotechnologies are ecotechnologies relating to the use of vegetation, to resolve environmental problems in a watershed management, by prevention of landscape degradation, remediation and restoration of degraded ecosystems, control of environmental processes, monitoring and assessment of the environmental quality”.
- (Schwitzguébel et al. 2009) Phytotechnologies are beginning to offer efficient tools and environmentally friendly solutions for the cleanup of contaminated sites and water, the improvement of food chain safety, and the development of renewable energy sources, contributing to a sustainable use of water and land management (Dominguez *et al*., 2008).

- (Schwitzguébel et al. 2009) This network aims to contribute to the implementation, assessment and integration of appropriate and efficient phytotreatments for sustainable land use management, ecosystem restoration and mitigation strategies applicable to different environmental compartments
- (Schwitzguébel et al. 2009) There is also a real need to develop water cleaning treatments based on the use of green plants (engineered constructed wetlands, hydroponic systems or nutrient film techniques), well integrated in water resource management. Phytotechnologies clearly have a significant role to play in the prevention of pollutants entering the water cycle (Schröder *et al*., 2007). Another issue is the removal of new compounds, micro-pollutants with pharmaceutical effects: constructed wetlands will probably play a major role in this respect and give significant health benefits in the long-term (Matamoros *et al*., 2007). (Roy et al. 2008) By capturing stormwater at or near the source of runoff, water-sensitive urban design should reduce flood frequency, which risks human health and safety and infrastructure damage.
- (Roy et al. 2008) By ‘‘watershed-scale implementation,’’ we mean widespread installation of stormwater management with the explicit objective of protecting stream ecosystems, human health and safety, and private and public property. Because stream ecosystem effects have been linked to the proportion of untreated impervious area in the upstream watershed (Walsh and others 2005), watershed-wide application seems to be a prerequisite for sustaining ecosystem health.
- (Roy et al. 2008) To protect both human health and infrastructure and natural ecosystems in this urbanizing world, we need to make drastic changes in how we manage stormwater, emphasizing source-control stormwater management technologies distributed throughout watersheds.