

Stakeholder Value-Linked Assessment of Remedial Options: Portland Harbor Superfund Site Sustainability Project (PHSP)

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Introduction: The Portland Harbor Superfund Site (PHSS), contaminated by more than 100 years of agricultural, urban, wartime, industrial, combined sewer overflow, and storm water inputs, encompasses about 10 miles of the Willamette River in downtown Portland, Oregon. This site affects residents, businesses, tribes, recreation and wildlife; there is considerable contention over remedial options. The Environmental Protection Agency (EPA) released a proposed plan for the Site on June 8, 2016. Although the plan addresses trade-offs in option selection, inviting public comment, this analysis is qualitative, and sustainability is only invoked as the application of best management practices after option selection. However, regulatory decisions should consider affected communities' needs, and how these might be impacted; this requires that diverse stakeholders are able to engage in a transparent consideration of value trade-offs and of the distribution of risks and benefits of remedial actions and outcomes. The PHSP assessed the sustainability of a range of remedial options, including the EPA's preferred option. The Sustainable Values Assessment (SVA) tool was developed to link environmental quality, economic viability and social equity metrics to a range of stakeholder values; metrics were scored and aggregated and options were ranked in terms of stakeholder group (SG) priorities.

Methods: A framework was developed under which the social aspects of sustainability (which are often less well developed than are other pillars) drive how evaluations for all pillars are integrated and communicated. Stakeholder values were linked to the pillars of sustainability and also to a range of metrics of these values. Remedial options were scored for each metric, using data provided in the EPA FS and a range of standard and innovative approaches such as CERCLA-linked Net Environmental Benefit; Regional Economic Impact, footprint, GIS and stakeholder analyses; metric scores were aggregated to generate value and pillar scores. This provided a values-linked integration of option sustainability. In parallel, the views (in terms of regional remediation,

restoration, planning and development) of >280 SGs were evaluated via reviews, surveys, discussions, interviews and meetings, documenting a diversity of priorities. The sensitivity and robustness of values-based sustainability assessments to diverse SG priorities was assessed by weighing value scores in terms of SG priorities. To address environmental justice, a qualitative social effect distribution assessment was also carried out, evaluating who bears the costs, and who reaps the benefits of remedial options, in terms of demographics, space and time.

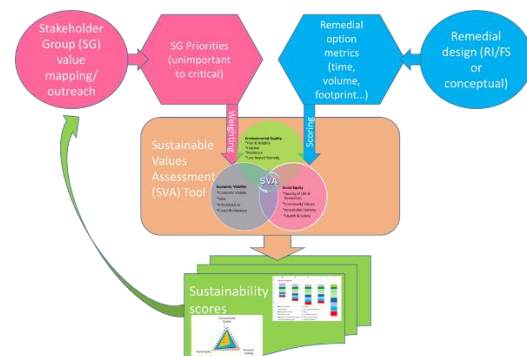


Fig. 1: Sustainable Values Assessment approach.

Results: The study found that the net sustainability scores show a clear pattern, with progressively lower net scores for the larger alternatives. The small incremental decrease in risk for more aggressive alternatives is outweighed by the increased environmental, economic, and social costs and impacts.

Discussion: This approach goes well beyond the US Superfund/CERCLA 9 criteria for evaluating remedial options and allows for the communication not only of traditional sustainability “scores” for remedial options, but also how options might be ranked or optimized given the values and priorities, as well as exposure or access to various risks and benefits, of different stakeholder and demographic groups. This approach identified trade-offs and points of contention, providing a systematic, transparent valuation tool for community engagement.