

Use of Adaptive Management at the Ashland Lakefront Superfund Site, Ashland, Wisconsin

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Background/Objectives. Manufactured Gas Plants (MGP) were common in the production of fuels in the late nineteenth and early twentieth centuries. One such MGP legacy site, located on the southern shore of Lake Superior, required remediation of the sediments, soils, and groundwater. This is a complex site with uniquely challenging characteristics which demands a complex remedy. Some of the challenges included the following. Land-based excavation and marine dredging was required to achieve stringent sediment clean-up targets for NAPL and other PAHs. The dredge footprint was also impacted by historic fill activities (docks, garbage dumping, lumber mill waste, demolition debris, concrete rubble, rebar). The project site was surrounded by a marina, school, residences, hotel, and city RV park, so minimization of off-site impacts was a priority. Finally, the climate severely limited the available construction season (typically May-October) and schedule. Adaptive Management principles enhanced by the design-build approach helped the project team to manage each challenge which arose over time while meeting the project objectives.

Approach/Activities. Understanding this was a multiple year project with varied technical scope applications, Adaptive Management/Design-Build was used to address a wide variety of challenges both identified in advance as well as those that were less anticipated. The multi-year project consisted of upland area remediation in 2013-2014; breakwater construction in 2015; long-term WWTP construction and startup in 2015-2016; sediment pilot project in 2016; and full-scale sediment remediation in 2017-2018. The first approach for the breakwater wall attempted by another contractor was unsuccessful; a concurrent design/permit/build approach for the breakwater wall was subsequently performed and completed in five months. During the sediment dredging phase, the processing of dredged materials had to be modified due to changing material types. The process changes created dust issues within the process structure requiring changes to the air collection and treatment system, including additional air handling and treatment capacity, administrative controls, and monitoring. Additional turbidity controls in the bay were required, which included added turbidity curtains and application of alum to reduce turbidity. In all, the Adaptive Management principles implemented by the project team allowed the work to be completed safely and meet compliance requirements while navigating the challenging setting and schedule.

Results/Lessons Learned. A joint venture was formed consisting of an engineering firm and remedial construction contractor (Foth/Envirocon) for a design/build approach under CERCLA, with USEPA Region V and WDNR as oversight agencies. All parties recognized that the work scope contemplated was complex, issues would arise, and the usual process for plan change review and approval was too slow and provided seasonal construction-schedule constraints. The parties agreed to joint-decision making in the field to adapt to conditions (while agencies retained final authority). This was made possible because trust was established and all parties involved were committed to a safe and effective project completion. Having the engineer and constructor in the design/build relationship provided additional efficiency in resolving issues.