

Estimating the Costs of and Performing the Remedy at the SRSNE Superfund Site

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Background/Objectives. The Solvents Recovery Service of New England, Inc. (SRSNE) Site is located in Southington, Connecticut. SRSNE processed 60 to 100 million gallons of solvents between 1955 and 1991, and was placed on the National Priorities List in September 1983. Still bottom discharge to lagoons and other releases produced non-aqueous phase liquid (NAPL) source zones in overburden and fractured bedrock and associated groundwater plumes. The PRP Group formed in 1993, performed non-time-critical removal actions (NTCRAs) to hydraulically contain groundwater with ex-situ treatment, and completed the RI/FS. In 2005, EPA selected a remedy that included: in situ thermal remediation (ISTR) of the overburden NAPL area, “hot spot” soil and wetland soil excavation, installation of a RCRA Subtitle C cap, further delineation of NAPL and dissolved VOCs in bedrock, continued hydraulic containment of and MNA for overburden and bedrock groundwater, and institutional controls. The ROD cost estimate was \$29,240,000 (using a 7% discount rate to estimate the net present value [NPV] of O&M, with an estimated duration of greater than 225 years [for bedrock cleanup, based on matrix diffusion modeling]).

Approach/Activities. Consistent with EPA’s cost estimating guidance, which states that “FS cost estimates are developed for the purpose of remedy selection, not for establishing budgets or negotiating enforcement settlements”, the ROD cost estimate was updated during RD/RA consent decree discussions. The update incorporated the additional tasks and scope requirements of the 2008 RD/RA Statement of Work (SOW) and used the then recommended Office of Management and Budget (OMB) discount rate for 30-year projects (3% in 2008) for O&M NPV projection. Updates included estimating scopes and costs for upgrading to a RCRA C cap, delineation and remediation of dioxin in soil, a vapor intrusion evaluation, groundwater monitoring network changes (to complete delineation), long-term groundwater monitoring (~150 well network), and contingencies associated with ISTR. ISTR was competitively procured, using a mix of lump-sum and unit rates. A clean up level was established for dioxin in parallel with delineation, with excavation and disposal under the RCRA cap.

Results/Lessons Learned. The capital phase of the remedy was completed in 2017, within the 2008 settlement budget. The largest remedy cost component, \$17.3 million for ISTR, was completed in 2015 for ~\$305/yd³, removing 496,000 pounds of VOCs. ISTR was completed “on budget”, although expended the entire 40% contingency applied in the FS (drivers were 20% increase in treated volume, \$750K in unanticipated infrastructure costs, and a very robust ex situ vapor treatment approach). ISTR achieved 99.7% removal of VOCs from soil, and a 97% reduction in average TVOCs in groundwater. Further reduction occurred through post-ISTR MNA. Review of operating costs and monitoring results provides incurred unit costs of \$7/kg VOCs removed through MNA, \$77/kg VOCs removed with ISTR, and \$2,600/kg VOCs with pump and treat (hydraulic containment required by SOW). Cost estimates need to be conservative, as otherwise the contingencies on known elements may be insufficient to incorporate new contaminants (e.g., PFOA/PFOS) and new clean up levels (dioxin and 1,4-dioxane), in addition to the variations in work scope and actual rates of return on invested funds.