MNA as an Alternative to the Existing Remedial Approach at a Complex Historic Industrial Site with Multiple COCs

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Background/Objectives. Historic releases of multiple contaminants of concern (COCs) occurred at a 15-acre site used for various manufacturing operations for nearly the past 180 years. Historical operations included a woolen mill and tannery with coal-fired boilers and a coal gas manufacturing plant, electro-plating operations, boron filament manufacturing, and various associated wastewater treatment operations. For the most part, the extent and degree of impacts to soil, sediment, and groundwater have been identified; COCs include semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), and chromium impacts. Federal and state applicable or relevant and appropriate requirements (ARARs) were developed for the Site and a proposed remedial action plan (RAP) was prepared and approved by regulatory agencies. The current objective, and subject of this abstract, is to present recent evaluations performed at the site, namely inclusion of monitored natural attenuation (MNA), as a way to modify and streamline the approved remedial approach to minimize active remediation and long-term operation, monitoring, and maintenance (OMM).

Approach/Activities. The current approved remedial approach was designed to address sediment, soil, and groundwater impacts through excavation, an engineered soil cap, air sparge/soil vapor extraction (AS/SVE), bioventing/biosparging (BV/BS), and targeted injections of calcium polysulfide (CPS). Historic site data (pre-RAP) and more recent groundwater monitoring data (post-RAP) were reviewed and evaluated against the selected remedial approaches. It was determined that the current remedial approach could be significantly reduced through additional data gap sampling and by leveraging MNA to a greater extent. The data gap sampling effort was conducted during late 2015/early 2016, targeting soil and groundwater with the goal of eliminating the AS/SVE, BV/BS systems, and CPS injections entirely.

Results/Lessons Learned. The subsequent data collected were combined with the historic data set and ongoing groundwater monitoring data to redefine, and significantly reduce, areas requiring active remediation at the site. The outcome of this analysis was a transition to predominately MNA for areas where active remedial systems were previously proposed. When the RAP was prepared, MNA was not considered a viable remedial approach, but over five years of recent groundwater monitoring data indicate it may be very effective for large portions of the site. This abstract will present the results of the data gap sampling in the context of the original remedial approach and will detail how the MNA evaluation was performed. It will discuss the inputs/objectives, the techniques used for the MNA evaluation, and the output and final conclusions. Finally, this abstract will summarize how the data gap sampling and MNA evaluation impacted the active remediation planned for this site from a technical and financial perspective.