

## PROJECT SNAPSHOT

## ISS to Sixty Feet Below Ground Surface at Former Industrial Manufacturing Site

Location: Mid-Atlantic

Service: In-situ Stabilization

Client: Industrial Client

Project Duration: 1 year

Contamination: dioxin

Project Value: \$8,100,000

### Project Approach:

Prior to the in-situ stabilization (ISS), the remediation areas required extensive preparation involving the removal of subsurface piping, utilities, deep piling, monitoring wells, surficial and underground reinforced concrete structures as part of the previous manufacturing facility at the site. ISS of 3,000 CY soils by excavator bucket was completed at a depth of 10 feet below ground surface (bgs) at one location. At a second location, a retention pond onsite was dewatered by pumping 2 feet of pond water 700 feet to another retention pond located on site, followed by ISS of 2,000 CY of pond sediments by bucket excavator to a depth of 6 feet. ISS of 58,000 CY of soils by deep soil mixing (DSM) using large diameter augers was completed over two additional areas, distributed amongst 700 cells (8-foot diameter by 60-feet deep.)

## WHAT MAKES THIS PROJECT UNIQUE?

The contaminants were extremely odorous and required careful management as the site was bordered by residential properties. In addition, asbestos containing materials (ACM) were known to be present, thus Cascade provided full time asbestos monitoring oversight with requisite ambient air sampling collected daily during the intrusive work. Engineering controls were also implemented to mitigate the ACM exposure hazard. Workers in close proximity to the areas with suspected ACM were fitted with personal air sampling pumps with samples analyzed for asbestos fibers.

### Project Results

ISS of 63,000 CY of soils to depths of up to 60 feet. 20,000 man-hours of safe work, without an OSHA incident or recordable injury. On multiple occasions, the crew achieved up to 1,200 CY of DSM daily. The team developed and employed unique tooling to complete the deep soil mixing in dense, highly cemented lithologies (ferric sands), which maximized mixing energy, as well as, reagent distribution and completed the DSM program ahead of schedule. Quality Control Performance Sampling was conducted at a frequency of 1/500 CY and tested for Unconfined Compressive Strength (ASTM D1633) and Permeability (ASTM D5084) at 7-, 14-, and 28-day intervals with all results exceeding performance criteria.



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