



Rapid Revitalization of a Dye Manufacturing Facility by Implementing Simultaneous Remediation/Redevelopment Activities



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PROJECT GOAL

Prepare the Site for redevelopment within 5 years, while proactively managing long-term risk, public relations, and regulatory issues.

ABSTRACT

There are many obstacles to property reuse prior to the completion of remedial activities. However, given increased market opportunities and flexibility of site developers, contaminated industrial sites are more commonly being evaluated for reuse.

Benefits of redevelopment of these contaminated sites include:

- Positive public relations with the local and state agencies;
- Rapid movement towards revision of long-term community plans;
- Return of the property to positive capital return; and,
- Renewed generation of tax revenues to the local municipality.

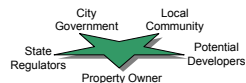
CH2M HILL developed a programmatic approach to address remedial closure at a brownfield in Paterson, New Jersey that allowed for redevelopment construction to begin within an 18-month target. The main goal of this rapid revitalization plan was to meet site remedial objectives, while simultaneously allowing for property reuse by a third-party developer.

BACKGROUND

- Manufacturing operations at the 6.5 acre facility in Paterson, New Jersey date back to 1945 and were discontinued in 2001.
- The site was used to produce industrial azo dyes primarily for the petroleum, plastic, and writing instrument industries.
- Site contaminants of concern (COCs) include BTEX, chlorobenzene, and aromatic amines (degradation byproducts of azo dyes) in soil and groundwater.

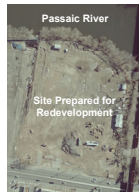
RELATIONSHIP BUILDING

Identifying stakeholders for remedial closure:



Remedial Strategy Aligns with Stakeholder Goals:

- Update the land usage and urban design in Paterson
- Revitalize economic development in Paterson



Site Preparation for Redevelopment in 2006: Plant Demolished and Below-grade AS/SVE system completed.

RAPID REVITALIZATION STRATEGY

The primary issues that form the foundation of the rapid revitalization strategy include the following:

- Relationship building and consensus decision-making between divergent stakeholders.
- Identifying regulatory drivers for remediation and closure.
- Implementing a remedial approach that is aggressive and accommodating to redevelopment.
- Integrating commercial property reuse requirements within the fabric of remediation.
- Designing modifications to accommodate both site remediation and retail construction.

IDENTIFYING REGULATORY DRIVERS

- Five criteria were selected against which each remedial alternative was assessed:
- Ability to Protect Public Health and Safety and the Environment
 - Implementability
 - Consistency with Federal, State, and Local Regulations
 - Potential Impacts to the Local Community
 - Potential to Cause Natural Resource Injury

AGGRESSIVE REMEDIAL APPROACH

- Excavation, Offsite Treatment, and Reuse of Select Visibly-Impacted Vadose Soils
- Air Sparge /Soil Vapor Extraction for Shallow and Deep Overburden Soils, Shallow and Deep Overburden Groundwater, and Light Non-Aqueous Phase Liquid (LNAPL)
- Monitored Natural Attenuation for Bedrock Groundwater



Thermal Oxidizer for vapor treatment of VOCs.



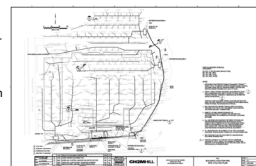
AS System Manifold

RISK MANAGEMENT

- Removal of primary vadose soils source through excavation.
- Sub-slab vapor barrier underneath redevelopment retail building.
- Enhanced SVE operations in LNAPL zones and beneath retail building.
- Sub-slab (retail building) vapor monitoring program
- Contingency plan to respond to detrimental field measurements
- LEL monitoring within process building and distribution buildings containing manifolds.

AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM DESIGN: A CLOSER LOOK

- System consists of 144 SVE wells, 391 AS wells screened in overburden groundwater, and 93 AS wells screened in weathered bedrock groundwater zone.
- Each SVE and AS well is individually piped to one of 4 distribution buildings housing manifolds, totaling in over 177,000 linear feet of HDPE pipe.
- Header lines run from each distribution building to a process building housing equipment. SVE vapor stream is treated by thermal oxidation for VOC removal.
- Wells and piping are completed below grade to accommodate retail building footer and utilities.

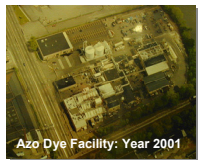


AS/SVE well and piping layout including location of retail building.

To meet aggressive project goals, a programmatic approach was developed by CH2M HILL to execute in parallel: investigation, remedial strategy, negotiation support with stakeholders, demolition of the former dye manufacturing plant, operations and maintenance of interim remedial measures, design/build/operate final remedial measures, and redevelopment support activities.

Year 2001

Azo Dye Facility Closed



Azo Dye Facility: Year 2001

Characterization of shallow overburden, deep overburden, and bedrock geology and hydrogeology.



Treatability Testing and Design/Build/Operate upgrades to Interim Groundwater Vacuum Extraction Systems and LNAPL Recovery.



Conduct AS/SVE Pilot Study to Determine Feasibility for Full-Scale Implementation



Excavation, Thermal Treatment and Re-Use of 18,500 tons of VOC-impacted soils.

Characterization of aromatic amines in soil and groundwater.

Negotiation with stakeholders for approval of aggressive remedial approach.



Characterization of offsite extent of contamination.

Evaluation of LNAPL mobility and treatability using AS/SVE.

Design of full-scale AS/SVE system.



Demolition of Dye Manufacturing Plant and Removal of Abandoned USTs

Redevelopment Support Activities including design of vapor barrier and retrofit of monitoring wells beneath retail building.



Construction of AS/SVE System (see above for detail)

Year 2006

Active In-Situ Remediation System Beneath Retail Commercial Building

