A 63-Acre Distressed Property Makeover

Jeffrey Levesque, PE (OBG)
Gary Angyal, PE, LSRP (OBG)
Steven Pernick, PE, LSRP (OBG)

Agenda

- Site Background/ Remedial Program Overview
- RI Completion/Chlorinated Source Area
- Remedial Action
- Lessons Learned
Site Background/Remedial Program Overview
55-acre property in northern New Jersey

Industrial operations supporting the aerospace industry (avionics manufacturing) from 1938-2008.

Operations included machining of metal parts, degreasing/cleaning, plating, painting, and final assembly.
Historical Operations...
Program Overview


Cleanup Required under NJDEP’s Industrial Site Recovery Act (ISRA) Program using a Licensed Site Remediation Professional (LSRP)

Multiple Areas of Concern, Including Chlorinated Solvent Source Zone (Soils and Groundwater Impacts), PCB Soils, and a 3,600 LF Drainage Ditch

Client goal: Remediate all Site Soils within 4-5 Year Period (Longer-Term Groundwater Mgmt.)
Redevelopment Aspects

- Industrial Buildings Demolition – roughly 1M square feet
- Import of over 400,000 CY of fill (floodplain mgmt.) across the site
- Site grading/drainage work and new subsurface utilities
- All orchestrated/sequenced with site remediation work
RI Completion/Chlorinated Source Area
MH-08 Area

Monitoring well near former waste solvent UST (elevated gw concentrations)

Initial RI soil data indicated 7,000 SF area of soil impacts (depths up to 20-25 ft bgs)

RA contemplated as 6,000 CY excavation/off-site disposal

MH-08 Area located in alley between buildings - additional RI was to be completed in 2009, concurrent with site demolition
Remedial Investigation

Additional “step-out” soil borings completed in 2009 – soil delineation goal of 1 mg/kg total VOCs

Additional VOC impacts encountered through several “step out” rounds

In early 2010, membrane interface probe (MIP) investigations were implemented in conjunction with traditional soil borings to expedite RI completion
MH-08 Area Results

Delineation completed in 3 months

10-acre area of soil impacts

“Primary” source area: 3.2 acres, 50,000 lb VOC mass (5-40 ft bgs)

“Secondary” source area: 1.2 acres, 1,000 lb VOCs (25-40 ft bgs)
IN-SITU CHEMICAL OXIDATION AREA
(1.2 ACRES)

IN-SITU THERMAL AREA
(3.2 ACRES)

SOIL AREA DELINEATED TO 1 PPM CVOC

Legend
- MIP Locations
- Former Bldgs
- Proposed Bldgs

XSD Response (uV)
- > 1e6
- 5e5 - 1e6
- 3e5 - 4e5
- 2e5 - 3e5
- 1e5 - 2e5
- 5e4 - 1e5

2016 Design and Construction Issues at Hazardous Waste Sites
Primary Source Area

Secondary Area

Legend

XSD Response (uV)

- Red: > 1e6
- Orange: 5e5 - 1e6
- Brown: 4e5 - 5e5
- Green: 3e5 - 4e5
- Purple: 2e5 - 3e5
- Blue: 1e5 - 2e5
- Dark Blue: 6e4 - 1e5

S_2C_2 inc.

2016 Design and Construction Issues at Hazardous Waste Sites
MH-08 Area – Remedial Alternatives

**Primary source area** – In-situ thermal remediation (ISTR) chosen, based on:

- Large VOC mass (50,000 lbs.)
- Tight clay matrix
- Implementation speed (2 years)

**Secondary source area** – In-situ chemical oxidation (ISCO) chosen, based on:

- Smaller VOC mass (1,000 lbs.)
- Deeper location
- Implementation speed (12-18 months)
In-Situ Thermal Remediation

- 100,000 CY treatment zone (Approx. 3.5-acre Light-Weight Concrete Thermal Insulating Cap)
- 907 Heater Wells Ranging from 20-40 Feet in Depth
- 80 Temperature Monitoring Points, 25 Pressure Monitoring Points, 35 Multi-Phase Extraction Wells
- Innovative Direct-Push Method Used to Expedite Drilling, Well-Field Installation Schedule
In-Situ Chemical Oxidation

25,000-30,000 CY treatment zone (Approx. 1.1-1.2 acres)

653 Injection Points to Cover the Entire Treatment Area – Injection Points Installed at 10-foot Grid Spacing based on Low-Permeability Lithology

Direct-Push Methods used for Injection Points Installation for Ease of Installation and Location Flexibility

Up to 8 Injection Rounds in Some Portions of the Treatment Zone – Groundwater Data used to Guide/Optimize Injection Work Schedule
Concurrent Site Redevelopment

Imported fill (400,000 CY) operations sequenced with ISTR/ISCO RA work

Some fill materials required removal/relocation

Demolition of structures and foundations removed subsurface obstacles for ISTR and ISCO
Remedial Action - Schedule


ISCO – Mobilization May 2013, Demobilization May 2014

Dredging of an adjacent drainage ditch was also completed from March – September 2014

Remediation Areas were handed over for commercial/retail pad build-out in June 2014
ISTR/ISCQ Implementation in Progress
Drainage Ditch Remediation

3,600 LF Drainage Ditch – Metals and PCB Impacts

Dredging Work Commenced in March 2014 - Commercial Re-development Already Underway

Sediment Stockpile/Dewatering Areas had to be Relocated During the Work in Concert with Re-development Site Activities
Drainage Ditch Remediation and Ongoing Retail Development
Lessons Learned
Lessons Learned

Communication is Key – Regular Status Mtgs. with Remediation/Retail Personnel

LSRP Oversight Provided Expedited, Client-Focused Remedial Decision Making

Use of Innovative RI/RA Approaches Reduced Schedule/Costs

Community Relations an Important Program Component in this Urban Site Location
Some Parting Shots…

- Landscaping Between New Retail Lots
- Drainage Ditch Post-Remediation

2016 Design and Construction Issues at Hazardous Waste Sites