Constructing a Groundwater Remedy in a Highly Populated Area

DCHWS 2019
April 8-10
Philadelphia, PA
Project Basics

• Superfund Site
  - Military aircraft manufacturing - 1940’s
  - ROD - 2003
  - NTCRA on groundwater - 2002
  - Consent Order – August 2004

• Four remedial elements: Soils, Features, Groundwater, Pond

• Liberty Industrial Finishing Site Trust
  - Fourteen PRPs, including DoD
Groundwater Plumes

- Multiple plumes in multiple aquifers
- Upper Glacial Aquifer metals and organics
- Magothy Aquifer higher organics, lower metals
- Concentrations higher on site
- Commingled with Plume B
- Conductivity 180 - 270 ft/day
Liberty Plume

UGA
- Cd – 200 ug/l
- Cr+6 – 500 ug/l
- TCE – 200 ug/l
- PCE – 50 ug/l
- Full thickness (90 ft)

MA
- PCE – 500 ug/l
- TCE – 1,300 ug/l
- Low metals
- To 200 ft bgs
Design Considerations

• Pump and treat vs options
  - Depth of plume
  - Confining layer
  - Property access

• Treatment System Location
  - Treatment area size based on flow rate (300+ gpm)

• Discharge
  - Massapequa Creek (trout stream)
  - Groundwater Injection (capacity)
  - Sanitary Sewer (cost prohibitive)
Treatment System Final Design

• Treatment on-site
• Existing 40’x60’ building
• 335 gpm Upper Glacial Aquifer
  - 8 wells on and off-site
  - Sanitary sewer
  - Sewer fees
• 85 gpm Magothy Aquifer
  - 3 wells off-site
  - Infiltration gallery
• Infiltration gallery captured on-site
Piping Design Issues

- Design Considerations
  - Avoid existing utilities
  - Minimize restoration
  - Minimize impacts to neighborhood

- Woodward Parkway
  - High visibility
  - 100+ neighbors
  - Existing utilities both sides of street

- Massapequa Preserve
  - Longer route
  - Access issues
  - Floodplain/wetland/cultural resource issues
  - Disturbance Issues
Piping Final Design

• HDD to limit visibility and impacts
• Along path/creek in Massapequa Preserve
  - Easement and access agreements needed
  - HDD to limit impacts and restoration
• Avoid Woodward Parkway
  - 66 neighbors
  - Chose side streets with fewer utility conflicts
• Discharge to sewer on Motor Ave
Pumping Well Installation

- Mid-field pumps installed on school property
- Easement obtained for installation and O&M
- Minimal above grade equipment
- Scheduled around school calendar
Pumping Well Installation

- Far-field well installed in Preserve
- Tree trimming by permit
- Power from adjacent 9th Ave
- Visibility/curiosity issues
Piping Installation

• 66 Residential Properties
• No lay-down areas
• Limited lane closures
• Work timed around school schedule
• Door-to-Door information campaign
• Full-time oversight
• Preconstruction photo/video
Design Issues in the Preserve

- Owned by NYS Parks
- Operated by NCDPW
- HDD aligned under path
- Easement for pipe installation and maintenance
- No tree cutting or trimming allowed
Installation Issues in the Preserve

- Most pipe installed by HDD
- Well points for trench work to combat groundwater issues
- Path in use
- Soft soils issues
- Flooding concerns for installation
  - Contingency plans for daily work and workers
Operation and Maintenance

- Repairs and Maintenance
  - Access agreements
  - Iron fouling
- Monitoring
  - Well sampling
  - GW contours
- System Optimization
  - CoC trending
  - Adjust discharges
Summary of Construction

• Four resident complaints of restoration/damage
• Three trees cut in Massapequa Preserve (one without permission)
• System startup ahead of regulatory schedule
• 88% up-time right after startup
Impacts to Design and Construction

Design issues
- Access
- Routing/location of facilities
- Restoration needs

Construction Issues
- Scheduling of work
- Oversight and public outreach
- Hardening of targets
- Material handling
Key Team Members

John Fazzolari, P.E. – Ecology and Environment

Ralph Golia, P.G. – AMO Environmental Decisions

Lorenzo Thantu, RPM – EPA Region 2