“Urban Creek Impacted Sediment Removal and Isolation Utilizing a Geosynthetic Clay Liner”

Trevor Litwiller – Project Manager
Background

• Manufactured Gas Plant located in Indianapolis, Indiana
  • 1908 to 2007
  • 87 acres
• Produced manufactured gas and metallurgical coke
• Urban waterway:
  • Pleasant Run Creek (PRC)
    • 3,000 linear ft of channel bisects the property
    • Section of on-Site channel relocated in the 1940’s
Background
Site Investigation

- Indiana Voluntary Remediation Program (VRP) (2005)
- Investigation activities (2009-2016)
  - 120 monitoring wells;
    - 800 groundwater samples
  - 350 soil borings;
    - 600 soil samples
  - 500 surface soil samples; and,
  - 20 test pits.
Site Investigation
Pleasant Run Creek (PRC)

- Combined Sewer Overflow (CSO) discharge
- Highly incised channel
- Flow range from <10 MGD to >500 MGD
- Multiple investigations:
  - Visual inspections
  - Poling
  - Habitat Assessment
  - Bulk Sediment/Soil Sampling
  - Pore Water Sampling
- Human Health and Ecological Assessment
- TarGOST
2016 PRC Investigation
TarGOST Investigation
TarGOST Investigation
PRC IM Design Objectives

• Two (2) areas tied to gross contamination (2,000 linear ft)

• Objectives:
  • Mitigate direct contact potential with impacted soil/sediment
  • Mitigate potential for ecological risk from groundwater discharge
  • Protect PRC from being re-contaminated
  • Hydraulic Control + Surficial Excavation/ Capping
Design Considerations

• Hydraulic Control System
  • Upland Groundwater Control
  • Minimal upwelling (approx. 0.8 cm/day)
• Creek Diversion “Pump Around”
  • “Dry” application
• Isolation Barrier
• Restoration
  • Armoring
  • Overburden
PRC Interim Measure Design

Isolation Barrier:

• Geosynthetic Clay Liner (GCL)
  • Components
  • Advantages
  • Site-Specific Application

https://www.geosyntheticssociety.org/corporate/cpany_details/6507/
http://www.gseworld.com/content/documents/product-sheets/BentoLiner_Installation_QA_.pdf
Project Implementation

• “Phased” Work Approach (April-December 2017)
  • Phase I – Hydraulic Control Installation
  • Phase II – Mass Excavation
  • Phase III – Pump-Around & GCL Installation
Project Implementation

• Creek Pump-Around
Project Implementation

- Low Permeability Barrier
Project Implementation

• GCL and Material Placement
2019 Design and Construction Issues at Hazardous Waste Sites
Project Implementation

• Restoration
Project Success

✓ Design-build process allowed for implementation challenges to be quickly addressed
✓ Consistent application of the low permeability layer
✓ Uniform hydraulic conductivity and transmissivity
✓ Site characteristics made use of GCL viable.

➢ Future Obligations:
  ➢ Ongoing visual inspections (5-10 years).
  ➢ Institutional Controls
  ➢ Site Redevelopment
Thank You!

• Questions