Olin Chemical Superfund Site

Wilmington, Massachusetts

Community Meeting
October 22, 2019

SEMS Doc ID 641683

Agenda

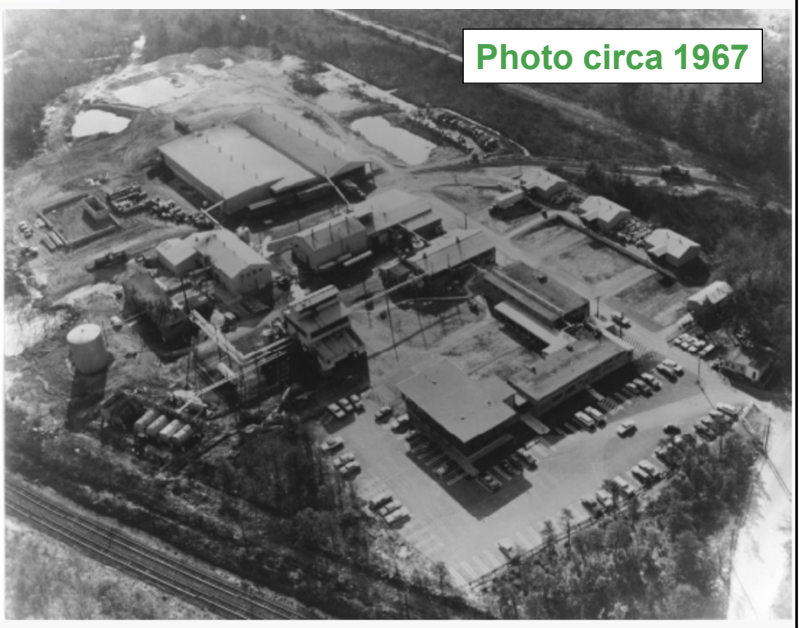
- Background and site overview
- Update on Remedial Investigation findings
- Cleanup options under consideration
- Schedule for issuing EPA's cleanup plan
- Remarks from Olin
- Remarks from Town of Wilmington
- Remarks from Wilmington Environmental Restoration Committee
- Closing
- Question & Answer / Open Panel Discussion
  - EPA, MassDEP, Town of Wilmington, WERC, Olin

Background and Site Overview

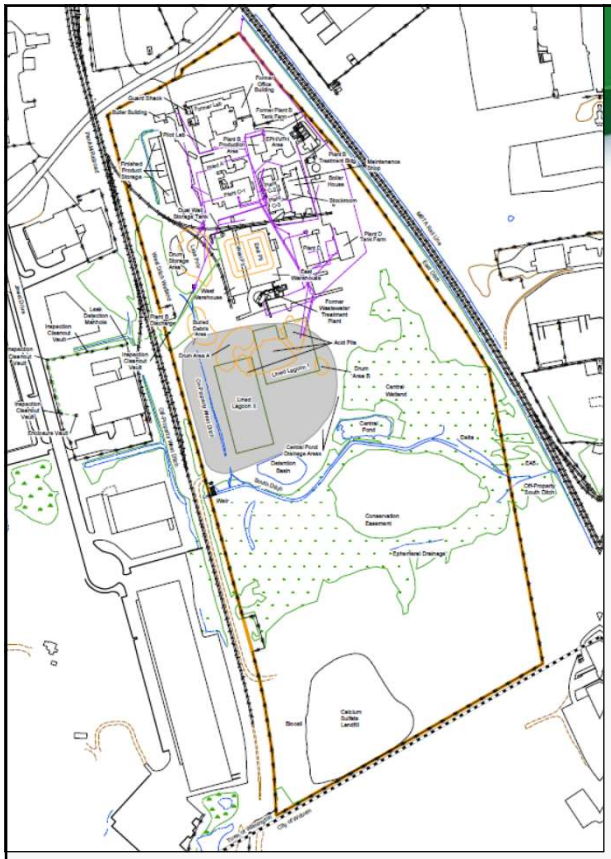
Melanie Morash
Superfund Project Manager
October 22, 2019

Background

- 50 acres in an industrial park
- Operated 1952-1986
- Manufactured specialty chemicals for the rubber and plastics industries



Currently, site is unused.



Site Overview

- 1990s onwards – Olin conducts investigation and cleanup efforts under MassDEP cleanup program
  - Consolidated contaminated soil and material from lagoons in the Containment Area
  - Built a slurry wall around the Containment Area and constructed a temporary cap
  - Piloted extraction and disposal of Dense Aqueous-Phase Liquid (DAPL) from one well

Containment Area Temporary Cap

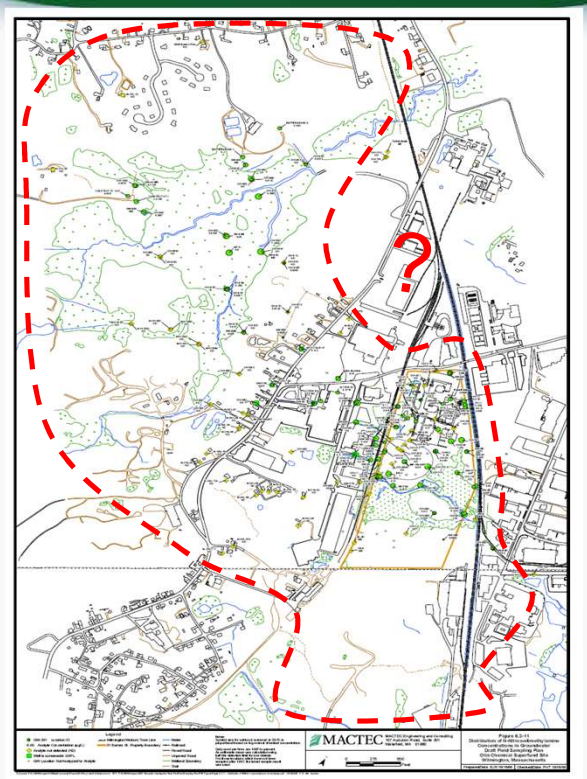
Site Overview

- 2006 – Olin site listed on National Priorities List
- 2007 – Investigations under EPA oversight begin
- Site divided into three areas for study:
  - Soil
  - Sediment and surface water
  - Groundwater

Remedial Investigation Findings

Jim DiLorenzo
Superfund Project Manager
October 22, 2019

Olin Site Study Areas

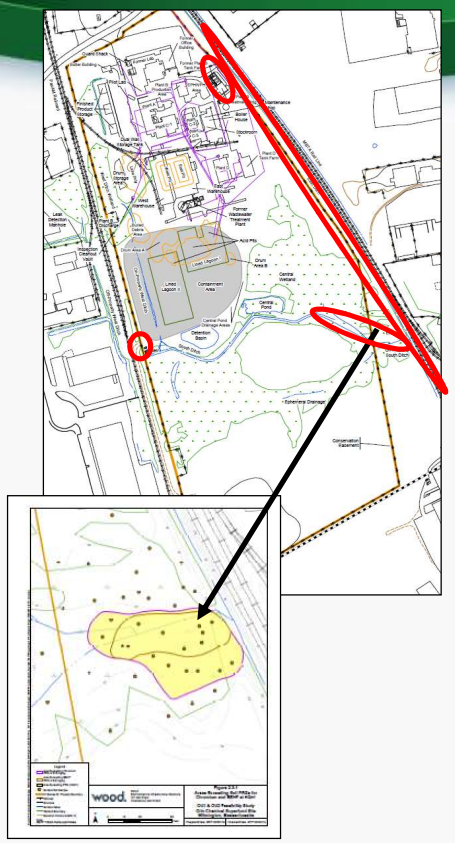


Main Study Areas

1. Soil
   - 50 acre property
   - Containment area
2. Sediment and Surface Water
   - South Ditch Stream
   - East Ditch Stream
   - North Pond
   - Landfill Brook
   - Maple Meadow Brook
   - Sawmill Brook
3. Groundwater
   - DAPL (Dense Aqueous-Phase Liquid)
   - Overburden
   - Bedrock
   - Vapor intrusion

Soil Findings

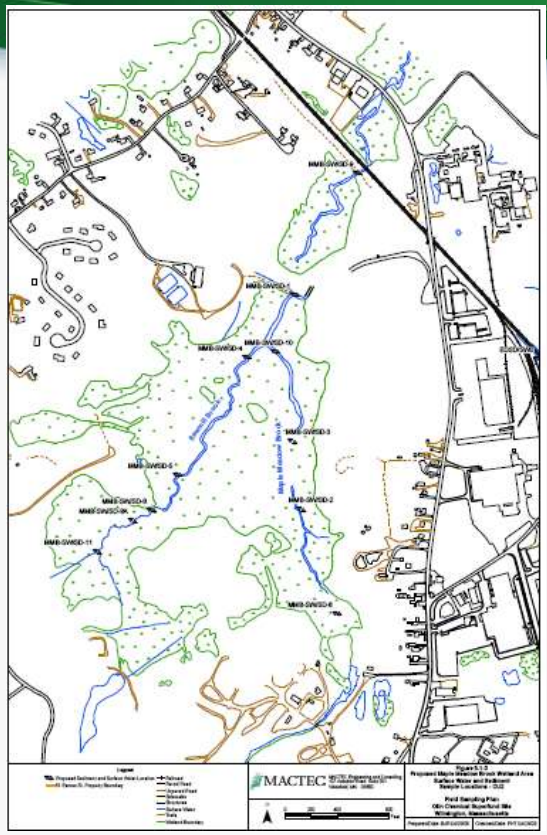
- Residual low-level soil contamination throughout – suitable for industrial use?
- Most frequently detected chemicals in soil:
  - Trimethylpentenes (TMPs)
  - Bis-2-ethylhexylphthalates (BEHP)
  - N-nitrosodiphenylamine (NDPA)
  - Polyaromatic hydrocarbons (PAHs)
  - Formaldehyde
  - Chromium
- LNAPL “smear zone”
- TMPs/ vapor intrusion (VI) issue
- 5-acre Containment Area (former lagoons) – elevated chromium in and out?
- Alternative to address TMPs, smear zone, and Containment Area (and possibly chromium)



Sediment and Surface Water Findings

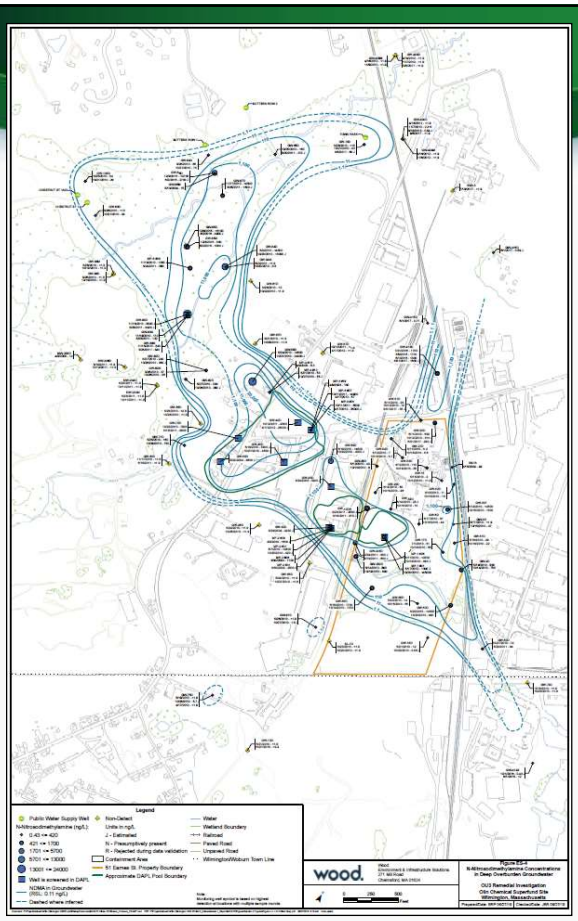
- South Ditch Stream
  - Active groundwater discharge
  - Elevated chromium and BEHP in lower delta sediments, about ¼ acre, ecological risks
  - Elevated chromium and ammonia in the surface water, toxic to aquatic organisms
- East Ditch Stream
  - Former LNAPL breakout
  - Groundwater has elevated BEHP and TMPs
  - Plant B currently containing LNAPL/groundwater
- Alternatives to prevent discharge

12



Sediment and Surface Water Findings

- Other Water Bodies Tested
  - North Pond
  - West Ditch Stream
  - Maple Meadow Brook
  - Sawmill Brook
- No immediate impacts but more studies are needed

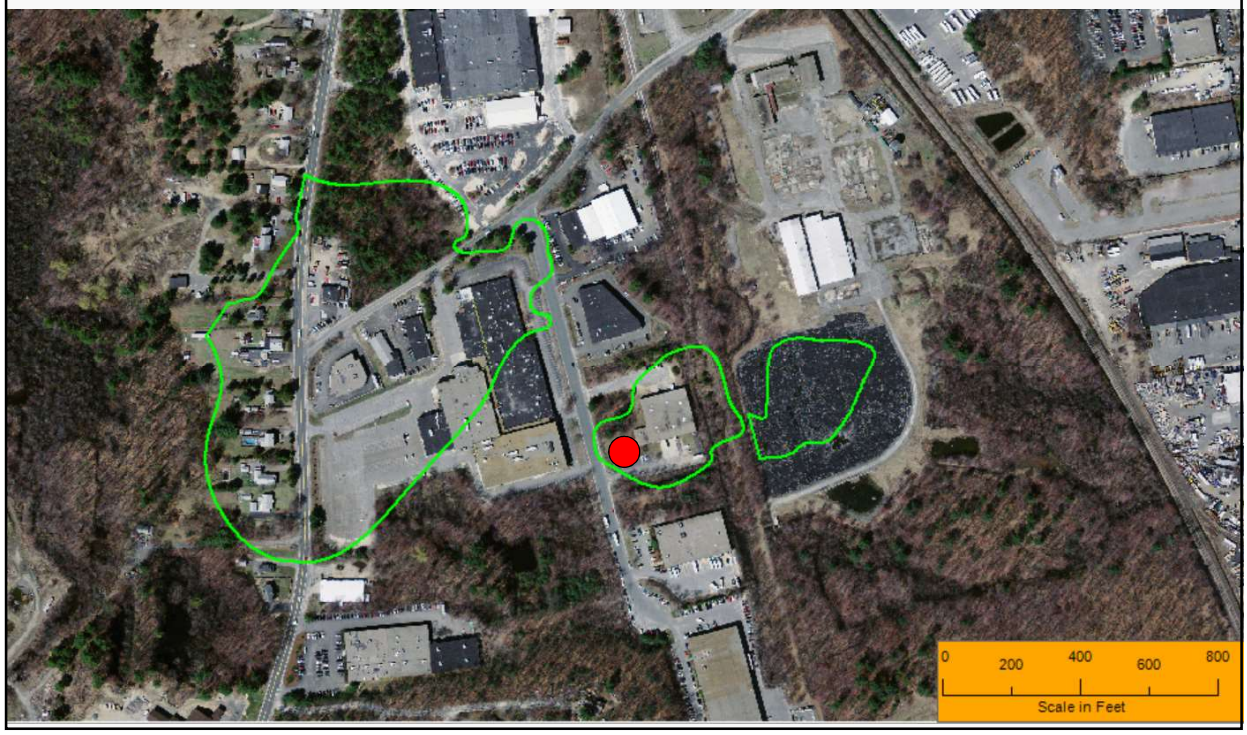


Groundwater Findings

- 3 DAPL pools
- Impacts in overburden and bedrock groundwater
- NDMA is most toxic/mobile chemical
- Other COCs include: arsenic, cobalt, iron, and manganese
- DAPL pools are an ongoing source
- Low-level NDMA in private wells
- Slurry wall effectiveness uncertain
- Data gaps remain, esp. bedrock
- Interim alternatives to address DAPL and "hot spot" groundwater areas

DAPL Pools

(Geomega 2019)



Pilot Test Results

DAPL Sample

- Pumping sustained at 1/4 gpm
- Shipped by truck
- About 1 million gallons removed

Private Well Testing

- Quarterly testing since 2009
- 25 wells tested (all known wells)
- NDMA detected at least once in 18 wells
- No drinking water standard for NDMA
- Max NDMA is 56 ng/l
- Risk-based level is 37 ng/l
- NDMA Persistent in 2 wells

What's a nanogram?
10^{-9} grams or 1 trillionth of a gram
or 0.000000001 gram

17

Cleanup Alternatives

Lynne Jennings
Section Chief, Mass. Superfund Section
October 22, 2019

Cleanup Alternatives Under Consideration

- Trimethylpentenes (TMPs) in Soil
- Containment Area
- Light Non-Aqueous Phase Liquid (LNAPL) near Plant B
- East and South Ditch Stream
  - Surface Water, Soils, Sediments
- Dense Aqueous-Phase Liquid (DAPL) Removal
- Groundwater Hot Spots

Cleanup Alternatives Under Consideration

Trimethylpentenes (TMPs) in Soil:

TMP Remedial Areas

Cleanup Alternatives Under Consideration

Trimethylpentenes (TMPs) in Soil:

- TMP 1: No Action
- TMP 2: Limited Action, Vapor Barrier/Sub Slab Depressurization System, and Institutional Controls
- TMP 3: Air Sparging/Soil Vapor Extraction System
- TMP 4: In-Situ Thermal Treatment
- TMP 5: Excavation and Off-Site Disposal

Cleanup Alternatives Under Consideration

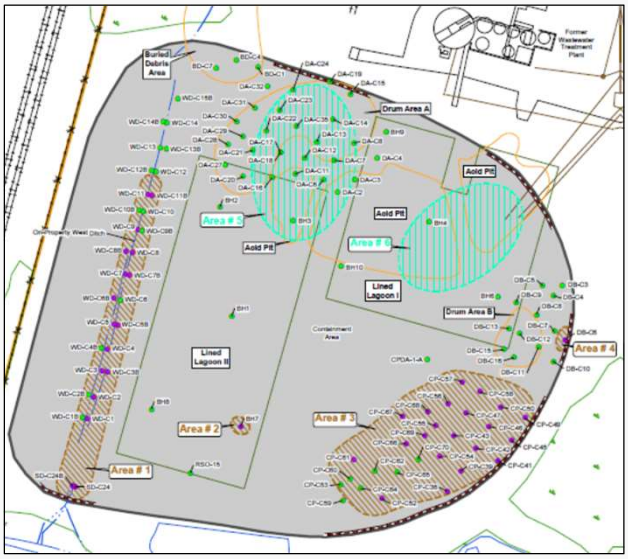
Containment Area

- CA 1: No Action
- CA 2: Upgraded Cap, Closing Equalization Window, and Institutional Controls
- CA 3: Targeted Soil Removal

Containment Area

Cleanup Alternatives Under Consideration

Containment Area:



Conceptual Layouts of Soil Excavation in Containment Area Under Option #3

Cleanup Alternatives Under Consideration

Light Non-Aqueous Phase Liquid (LNAPL) near Plant B:

LNAPL near Plant B

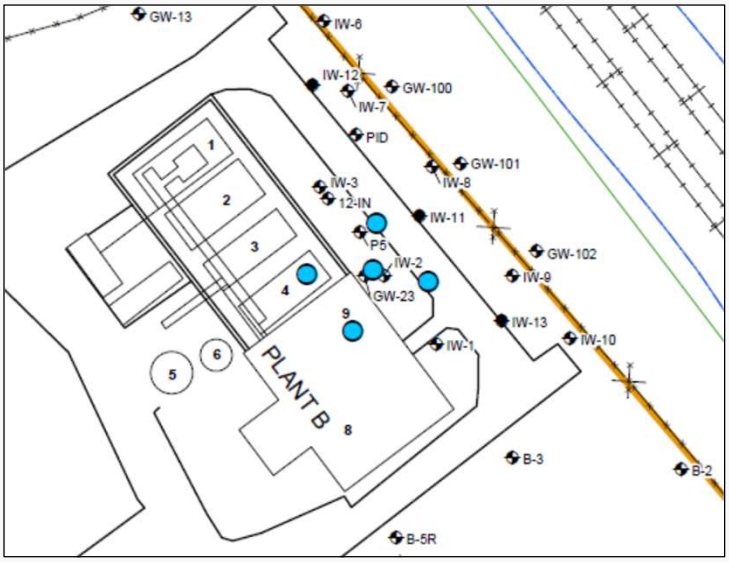
Cleanup Alternatives Under Consideration

Light Non-Aqueous Phase Liquid (LNAPL) near Plant B:

- LNAPL 1: No Action
- LNAPL 2: Manual Recovery (using absorbent socks)
- LNAPL 3: Continual Mechanical Recovery (using automatic skimmers in three new recovery wells)
- LNAPL 4: Multi-Phase Extraction (from three new wells outside Plant B)

Cleanup Alternatives Under Consideration

Light Non-Aqueous Phase Liquid (LNAPL) near Plant B:

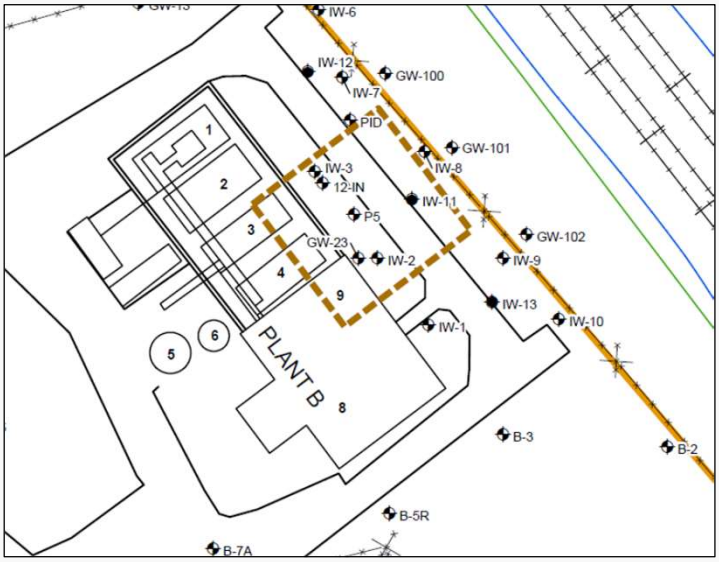


- LNAPL 5: New Groundwater Treatment System and Expanded Multi-Phase Extraction (MPE)
- *Plant B demolished*

Location of New Extraction Wells Under Option #5

Cleanup Alternatives Under Consideration

Light Non-Aqueous Phase Liquid (LNAPL) near Plant B:



- LNAPL 6: Demolition, Excavation, Dewatering, Treatment, and Disposal

Location of Excavation Area Under Option #6

Cleanup Alternatives Under Consideration

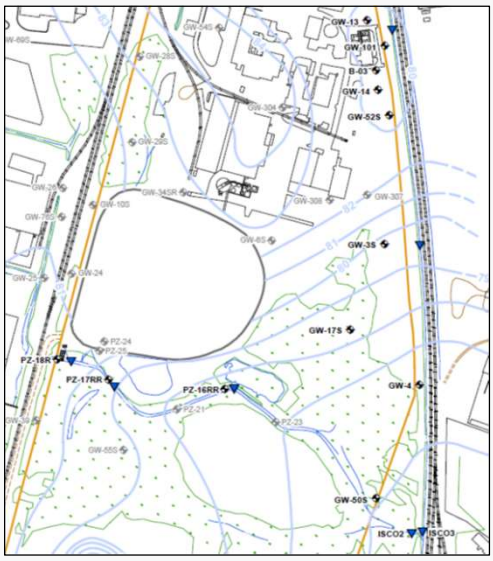
East and South Ditch Stream Surface Water:

East Ditch Stream

South Ditch Stream

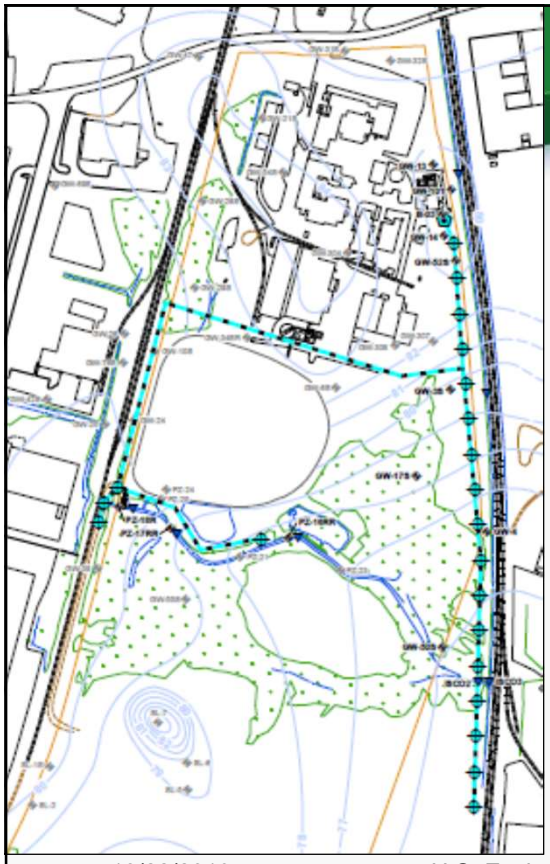
Cleanup Alternatives Under Consideration

East and South Ditch Stream Surface Water:



- SW 1: No Action
- SW 2: Limited Action – Surface Water and Groundwater Monitoring

Conceptual Location of Surface Water & Groundwater Sampling Locations Under Option #2

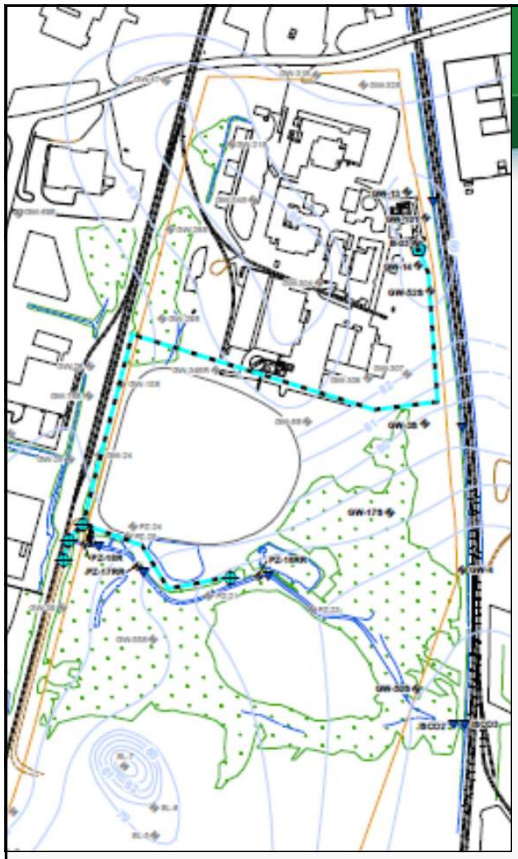


Cleanup Alternatives Under Consideration

<u>East and South Ditch Stream Surface Water</u>

- SW 3: Groundwater Extraction and Treatment

Conceptual Location of New Extraction Wells Under Option #3



Cleanup Alternatives Under Consideration

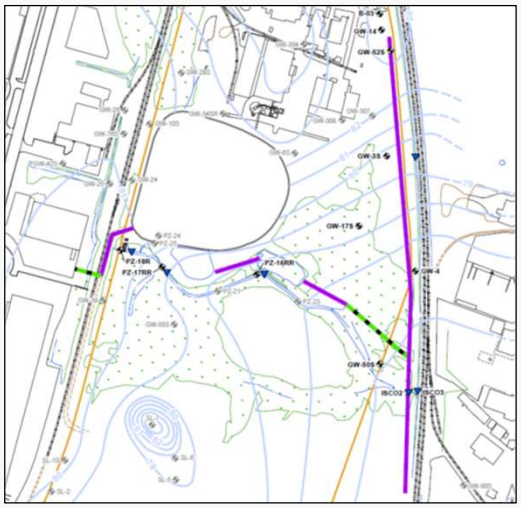
East and South Ditch Stream Surface Water

- SW 4: Targeted Approach for Groundwater Extraction and Treatment

Conceptual Location of New Extraction Wells Under Targeted Approach of Option #4

Cleanup Alternatives Under Consideration

East and South Ditch Stream Surface Water:



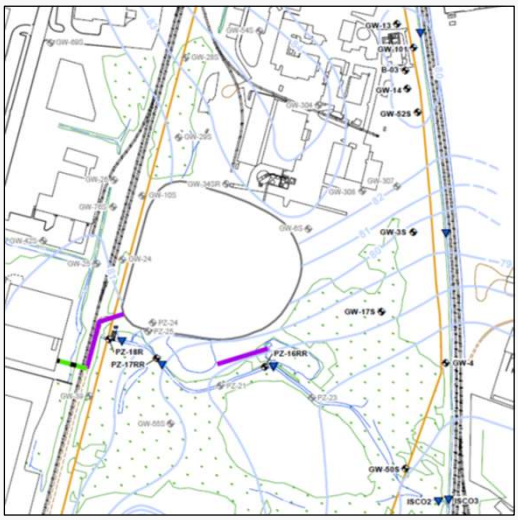
- SW 5: Permeable Reactive Barrier (PRB)

Location of Permeable Reactive Barrier (in Purple) Under Option #5

(Grouted Sheet Pile Wall in Green/Black)

Cleanup Alternatives Under Consideration

East and South Ditch Stream Surface Water:



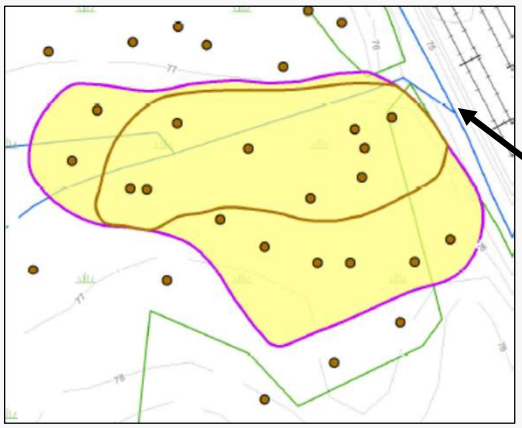
- SW 6: Targeted Approach for PRB Installation

Location of Permeable Reactive Barrier (in Purple) Under Targeted Approach of Option #6

(Grouted Sheet Pile Wall in Green/Black)

Cleanup Alternatives Under Consideration

East and South Ditch Stream Soils:



- SS 1: No Action
- SS2: Soil excavation, stabilization and offsite disposal (chromium and phthalates)

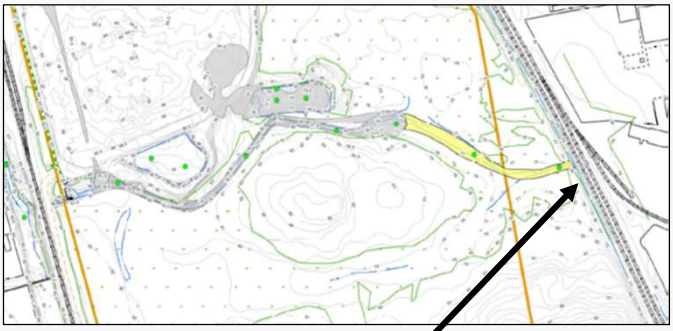
Confluence of East and South Ditch Streams

Purple line encloses area where chromium higher than cleanup guideline of 310 mg/kg

Brown line encloses area where phthalates higher than cleanup guideline of 9.6 mg/kg

Cleanup Alternatives Under Consideration

East and South Ditch Stream Sediments



Confluence of East and South Ditch Streams

- SD 1: No Action
- SD 2: Sediment excavation, stabilization and off site disposal (chromium and phthalates)

The yellow area is the approximate extent of sediment excavation, corresponding to a Hazard Quotient of 1

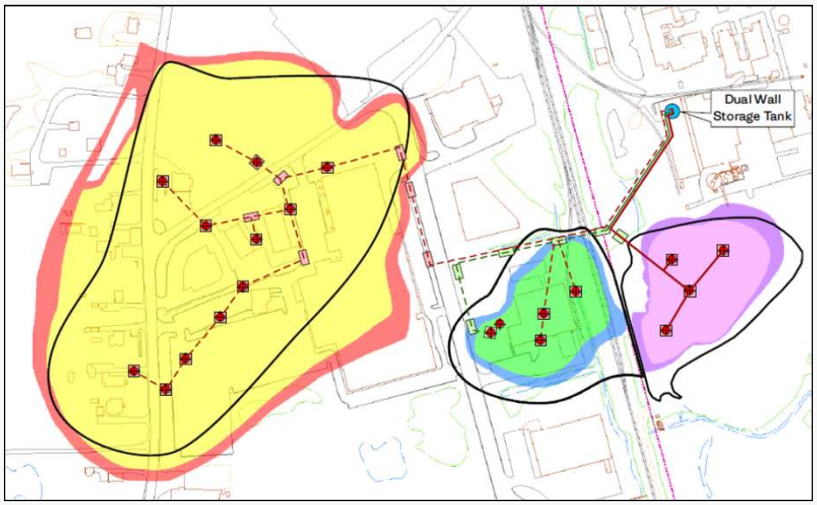
Cleanup Alternatives Under Consideration

DAPL Removal:

- DAPL 1: No Action
- DAPL 2A: Extraction from Containment Area DAPL Pool
  - Options range from 2-4 new wells
- DAPL 2B: Extraction from Jewel Drive DAPL Pool
  - Options range from 2-4 new wells
- DAPL 2C: Extraction from Main Street DAPL Pool
  - Options range from 6-12 new wells

Cleanup Alternatives Under Consideration

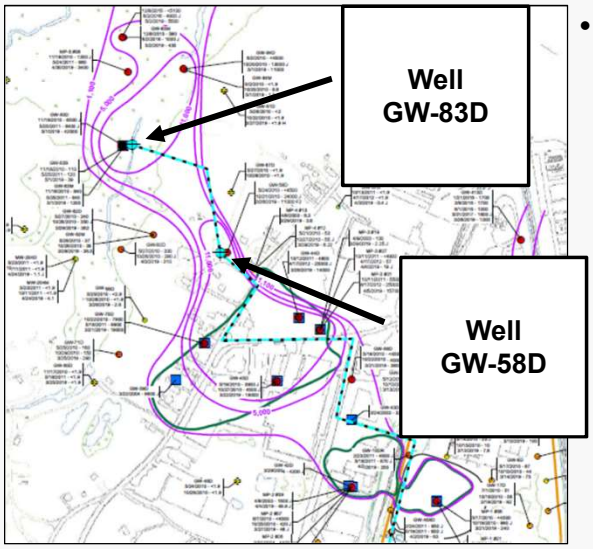
DAPL Removal:



Conceptual Location of Extraction Wells for Three DAPL Pools

Cleanup Alternatives Under Consideration

Groundwater Hot Spots:

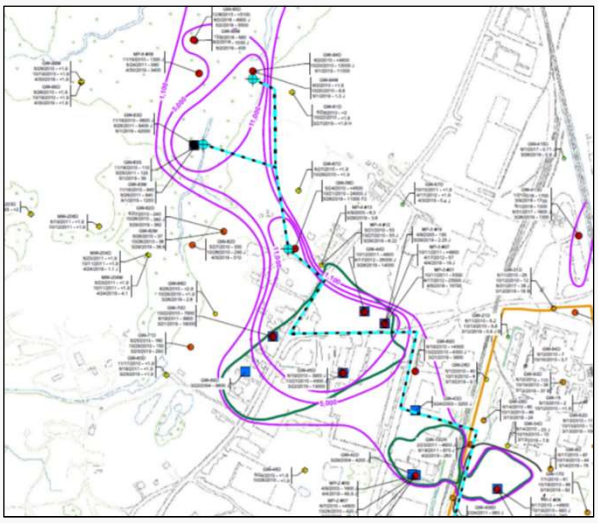


- GW 1: No Action
- GW 2: Groundwater Extraction using Wells Adjacent to Existing Groundwater Monitoring Wells GW-83D and GW-58D and Treatment at New Water Treatment Plant

Conceptual Location of Two New Wells Near Wells GW-83D and GW-58D Inside 11,000 ng/L NDMA Contour Under Option #2

Cleanup Alternatives Under Consideration

Groundwater Hot Spots:

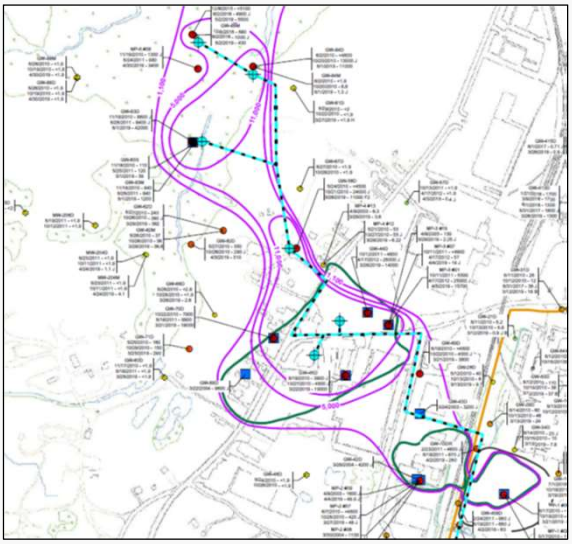


- GW 3: Groundwater Extraction from Within the 11,000 ng/L NDMA Contour and Treatment at New Water Treatment Plant

Conceptual Location of Three New Extraction Wells Inside 11,000 ng/L NDMA Contour Under Option #3

Cleanup Alternatives Under Consideration

Groundwater Hot Spots:

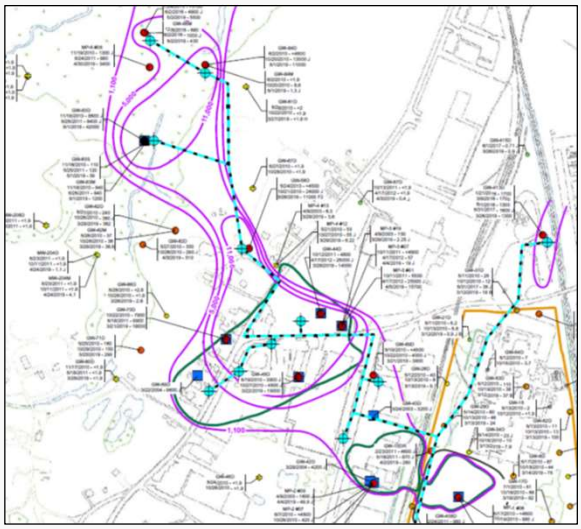


- GW 4: Groundwater Extraction from Within the 5,000 ng/L NDMA Contour and Treatment at New Water Treatment Plant

Conceptual Location of Six New Extraction Wells Inside 5,000 ng/L NDMA Contour Under Option #4

Cleanup Alternatives Under Consideration

Groundwater Hot Spots:



- GW 5: Groundwater Extraction from within the 1,100 ng/L NDMA Contour and Treatment at New Water Treatment Plant

Conceptual Location of 12 New Extraction Wells Inside 1,100 ng/L NDMA Contour Under Option #5

Schedule & Next Steps

Melanie Morash
Superfund Project Manager
October 22, 2019

Timeline of Next Steps

October/November:

- EPA working with Olin to evaluate cleanup alternatives and complete the current set of draft Feasibility Study documents

December:

- EPA plans to issue a Proposed Plan for public comment covering an interim cleanup action for the following:
  - Portions of groundwater
    - Removal of DAPL
    - Removal of groundwater hot spots (containing highest levels of NDMA)
  - On- and off-property soil, surface water, and sediment contamination

Timeline of Next Steps

January/February:

- EPA plans to issue an Interim Action Record of Decision (Interim Action ROD)

Next steps after ROD:

- Negotiate with Responsible Parties to conduct cleanup
- Continue to study groundwater and fill data gaps:
  - Improved characterization of bedrock topography
  - Horizontal/vertical delineation of plume & DAPL pools
- Evaluate long-term groundwater cleanup options
- Issue a final cleanup plan (Final ROD)

Remarks from Olin

Community Meeting
October 22, 2019

Remarks from Town of Wilmington

Community Meeting
October 22, 2019

Remarks from Wilmington Environmental Restoration Committee (WERC)

Community Meeting

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Closing

Lynne Jennings
Section Chief, Mass. Superfund Section
October 22, 2019

Question & Answer

Open Panel Discussion

Community Meeting
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