EPA Superfund Sites Within the Upper Mystic River Watershed

Olin Chemical Superfund Site Wilmington, MA

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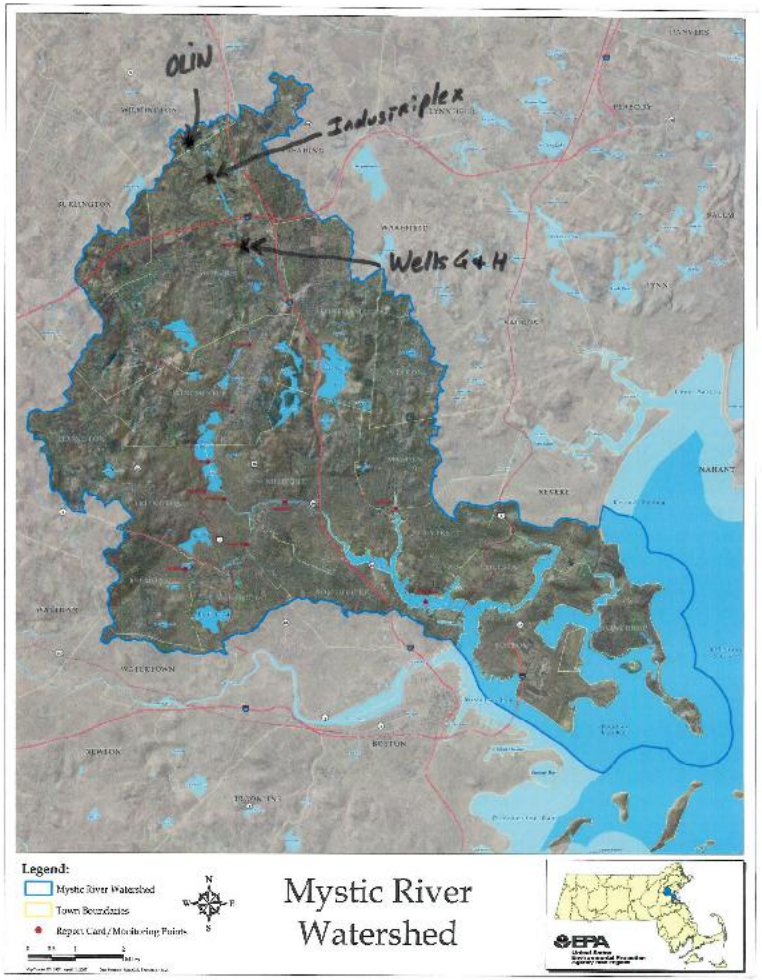
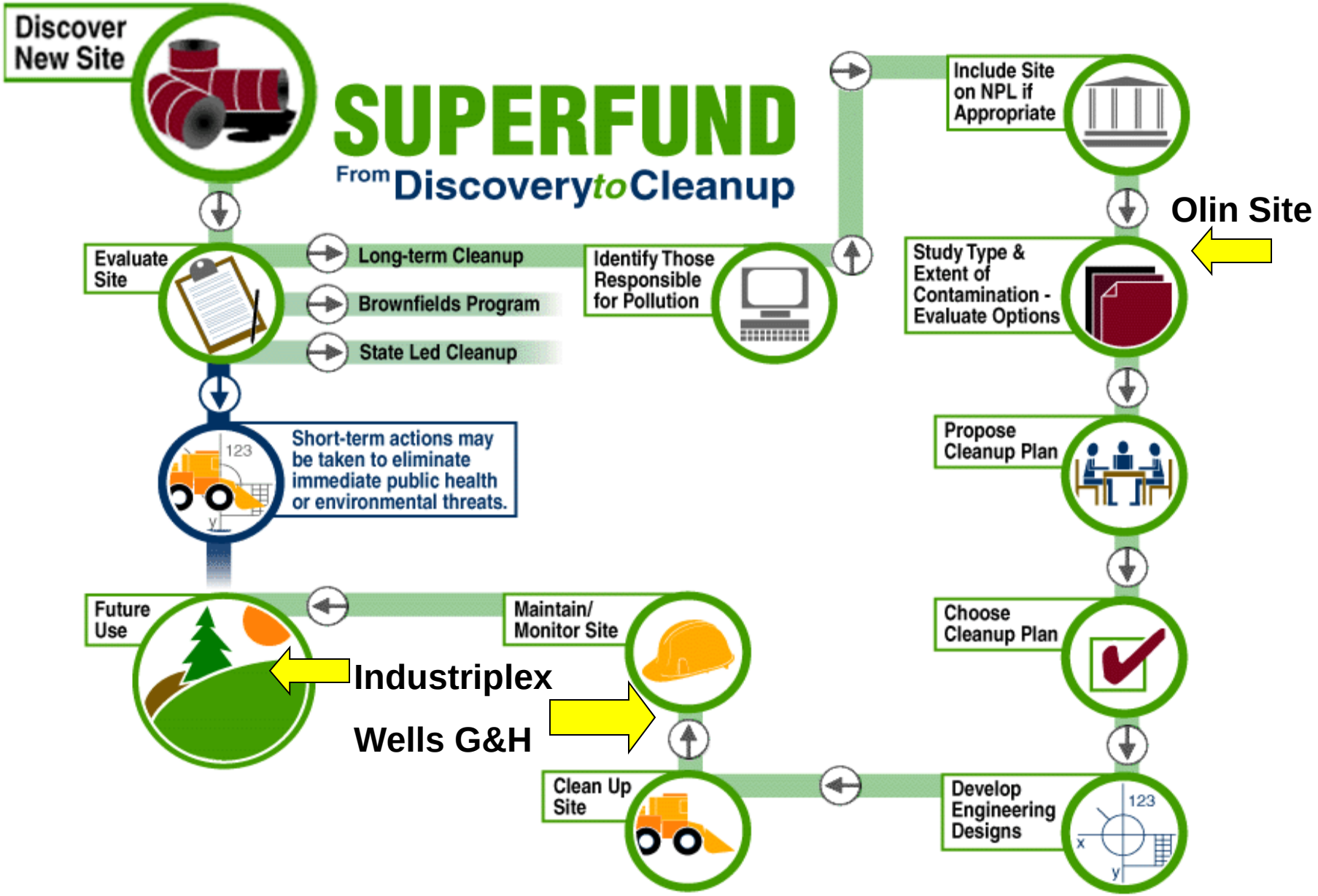
Superfund Primer

- **What is Superfund?**
  - Law enacted by Congress as the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).
  - Formed in response to large toxic sites discovered in the 1970s such as Love Canal and Valley of the Drums.
- **What is the National Priorities List (NPL)?**
  - EPA's list of all federal Superfund sites
  - 1,270 national Superfund sites
  - 118 located in New England
  - 31 located in Massachusetts
  - 3 located in the Mystic River Watershed

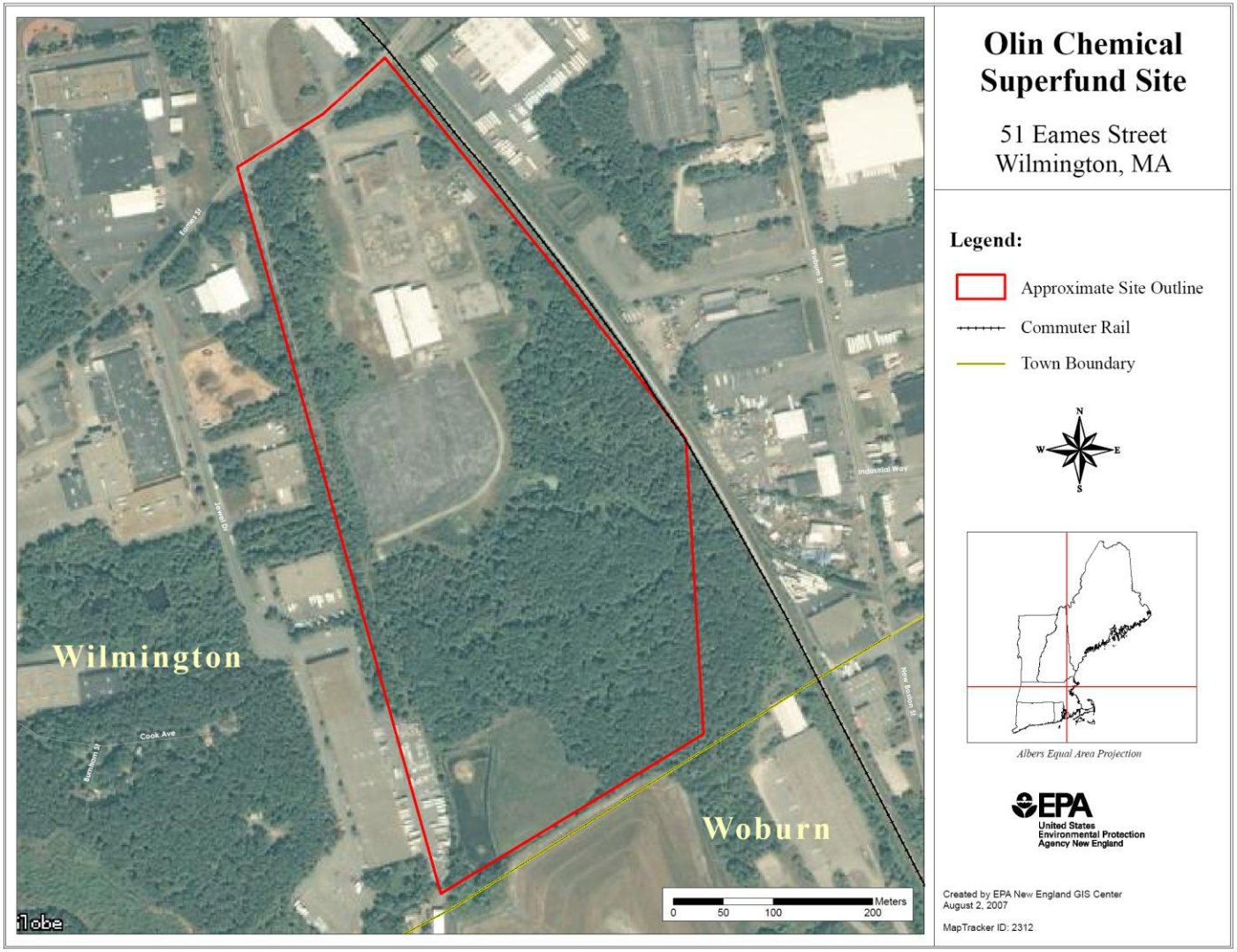
Superfund Sites in Mystic WS



1. Olin Chemical Site
    - South Wilmington
    - Listed in 2006
2. Industriplex Site
    - North Woburn
    - Listed in 1983
3. Wells G&H Site
    - Woburn (Aberjona River Valley)
    - Listed in 1983


Discover New Site
SUPERFUND
From Discovery to Cleanup
Include Site on NPL if Appropriate
Olin Site
Evaluate Site
Long-term Cleanup
Brownfields Program
State Led Cleanup
Identify Those Responsible for Pollution
Study Type & Extent of Contamination - Evaluate Options
Short-term actions may be taken to eliminate immediate public health or environmental threats.
Propose Cleanup Plan
Future Use
Maintain/ Monitor Site
Choose Cleanup Plan
Industriplex
Wells G&H
Clean Up Site
Develop Engineering Designs

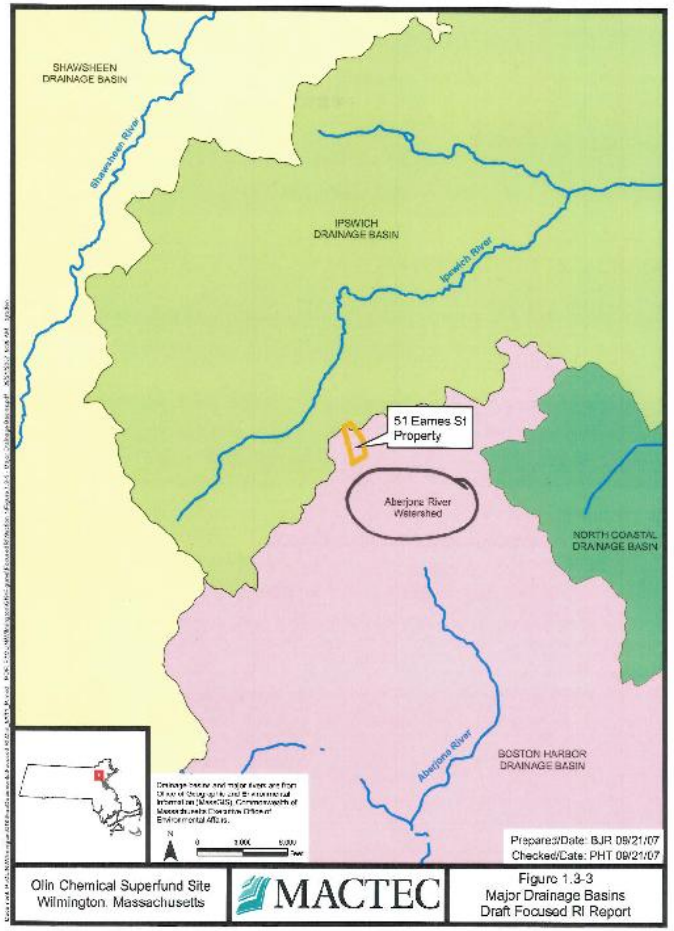
Olin Chemical Superfund Site



Brief Overview/History of Olin

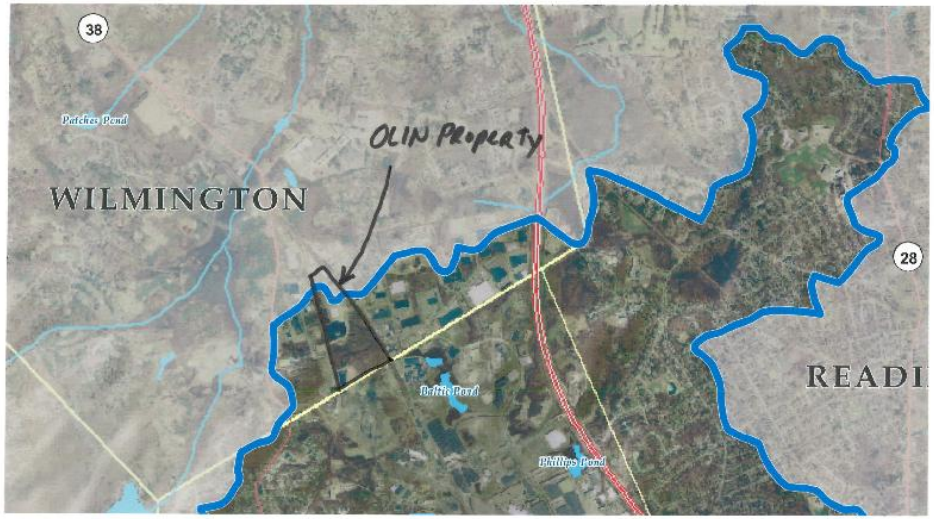
- 53-acre property on the Wilmington/Woburn border.
- Operated from 1953 to 1986. Manufactured specialty chemicals for the rubber/plastics industry.
- Liquid wastes were discharged to unlined pits and lagoons, which were hydraulically connected to the East Ditch.
- One of EPA Region 1’s newest Superfund Sites listed in April 2006.

Olin Drainage Basins

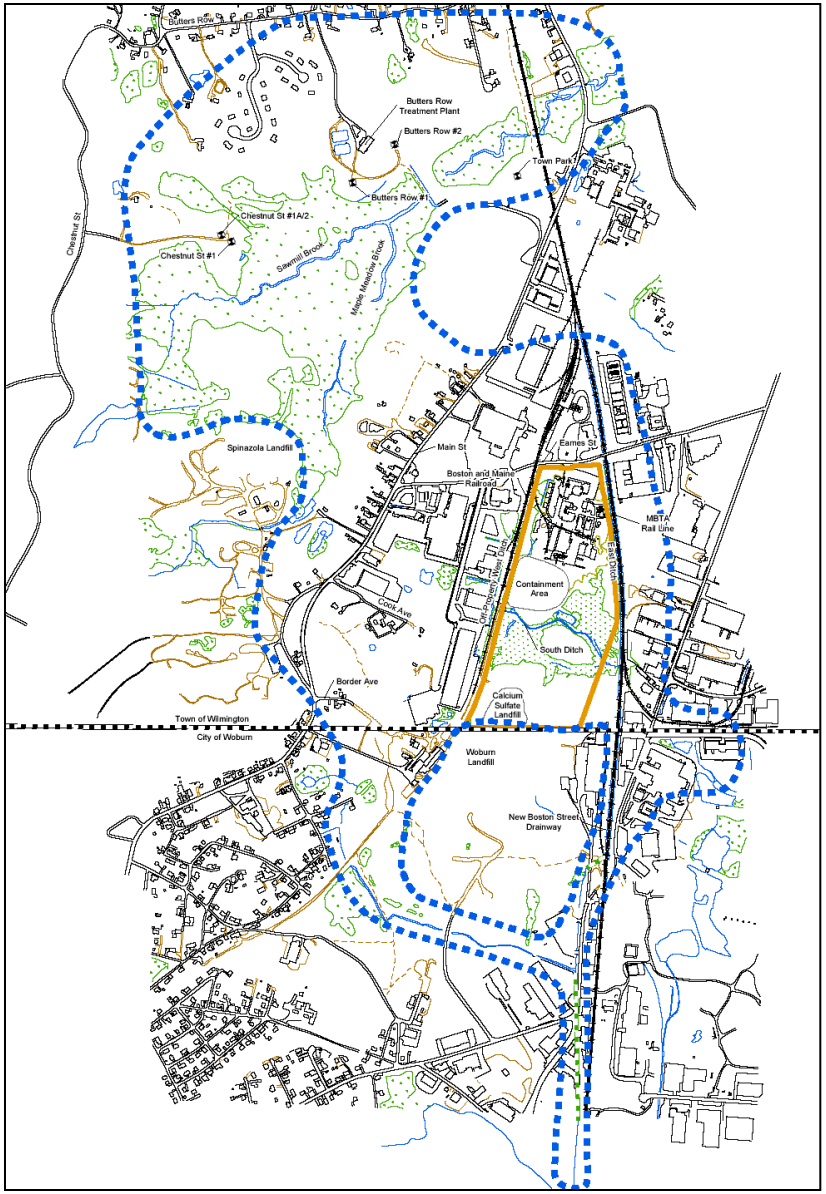


A groundwater flow divide exists on the Olin property which splits flow between the Ipswich River and Mystic/Aberjona River watersheds.

Impacts to both watersheds.



Olin Site Current Study Area



Potential Mystic River WS Impacts

Contaminants identified to date with the most frequency by media include;

- Soil: chromium, trimethylpentenes, Opex, Kempore, BEHP, NDPA, calcium, sulfate, sodium and ammonia
- Sediment: chromium and BEHP
- Surface Water: chromium, aluminum, sulfate, ammonia and NDMA
- Groundwater: chromium, aluminum, sulfate, trimethylpentenes, BEHP, NDPA and NDMA

Target Analyte List

242 chemicals

Analyte
Volatile Organic Compounds
1,1,1,2-Tetrachloroethane*
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloro-1,2,2-Trifluoroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,1-Dichloropropene*
1,2,3-Trichlorobenzene
1,2,3-Trichloropropane
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene*
1,2-Dibromoethane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene*
1,3-Dichlorobenzene
1,3-Dichloropropane*
1,4-Dichlorobenzene
1,4-Dioxane*
2,4,4-Trimethyl-1-pentene
2,4,4-Trimethyl-2-pentene
2,2-Dichloropropane*
2-Butanone (MEK)
2-Chlorotoluene*
2-Hexanone
4-Chlorotoluene*
4-Methyl-2-pentanone (MIBK)
Acetone
Benzene
Bromobenzene*
Bromochloromethane
Bromodichloromethane
Bromoform
Bromomethane
Butylbenzene*
Carbon Disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Cyclohexane
Dibromo-3-chloropropane*
Dibromochloromethane
Dibromomethane*
Dichlorodifluoromethane
Diethyl ether*
Diisopropyl Ether*
Ethyl Tertiary Butyl Ether*
Ethylbenzene
Hexachlorobutadiene*

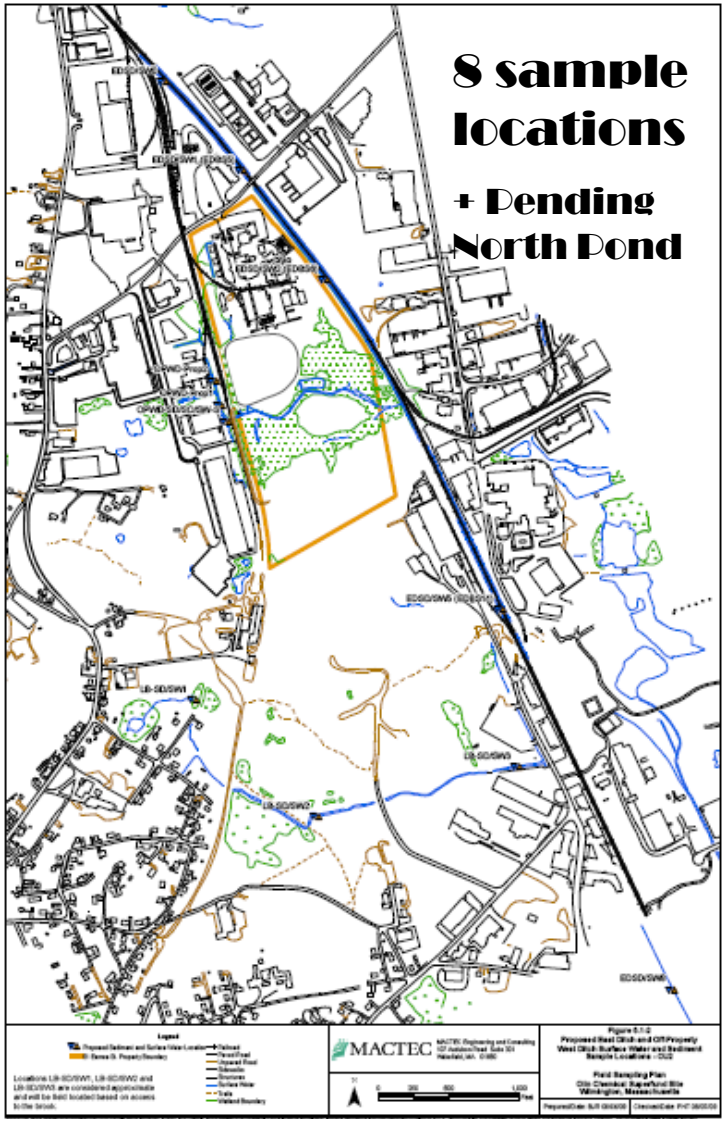
Analyte
Isopropylbenzene
Methyl acetate
Methyl tert-butylether
Methylcyclohexane
Methylene Chloride
m-Xylene*
Naphthalene*
n-propylbenzene*
o-Xylene*
p-Isopropyltoluene*
p-Xylene*
Sec-butylbenzene*
Styrene
Tert-amyl Methyl Ether*
Tert-butylbenzene*
Tetrachloroethene
Tetrahydrofuran*
Toluene
Trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Trichlorofluoromethane
Vinyl Chloride
Xylenes (total)
Semivolatile Organic Compounds
1,1-Biphenyl
1,2,4,5-Tetrachlorobenzene
1,2,4-Trichlorobenzene*
1,2-Dichlorobenzene*
1,3-Dichlorobenzene*
1,4-Dichlorobenzene*
2,3,4,6-Tetrachlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-2'-oxybis(1-Chloropropane)
2-Chloronaphthalene
2-Chlorophenol
2-Methylnaphthalene
2-Methylphenol
2-Nitroaniline
2-Nitrophenol
3,3'-Dichlorobenzidine
3-Methylphenol*
3-Nitroaniline
4,6-Dinitro-2-Methylphenol
4-Bromophenyl-phenylether
4-Chloro-3-Methylphenol
4-Chloroaniline
4-Chlorophenyl-phenylether
4-Methylphenol
4-Nitroaniline

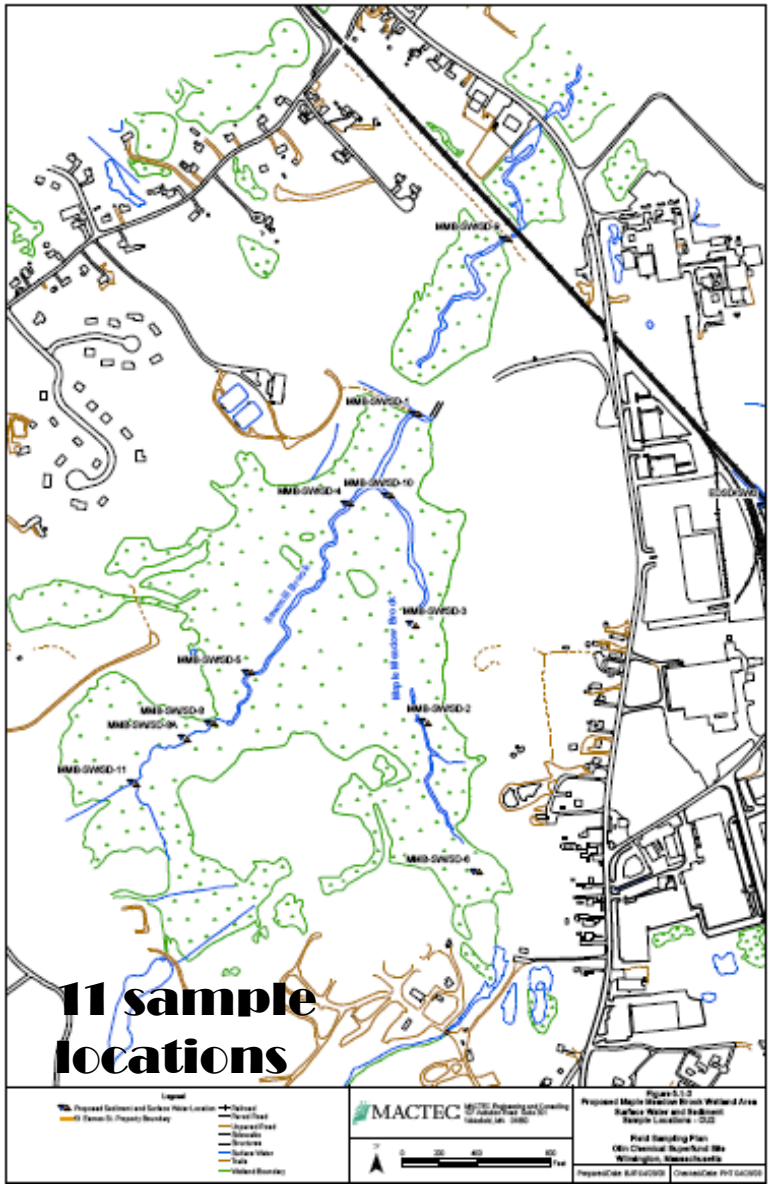
Analyte
4-Nitrophenol
Acenaphthene
Acenaphthylene
Acetophenone
Aniline*
Anthracene
Atrazine
Azobenzene*
Benzaldehyde
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Benzoic acid
Benzophenone
Benzyl alcohol
bis(2-Chloroethoxy)methane
bis(2-Chloroethyl) ether
Bis(2-Ethylhexyl) phthalate
Butylbenzylphthalate
Caprolactam
Carbazole
Chrysene
Dibenz(a,h)anthracene
Dibenzofuran
Diethylphthalate
Dimethylphthalate
Di-n-butylphthalate
Di-n-octylphthalate
Diphenyl oxide
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno(1,2,3-cd)pyrene
Isophorone
Naphthalene
Nitrobenzene
N-nitrosodimethylamine
N-Nitroso-di-n-propylamine
N-nitrosodiphenylamine
Pentachlorophenol
Phenanthrene
Phenol
Pyrene

Analyte
Polycyclic Aromatic Hydrocarbons
1-Methylnaphthalene
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Phenanthrene
Pyrene
Polychlorinated Biphenyls (PCB)
Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260
Aroclor 1262
Aroclor 1268
Total PCBs
Metals
Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Hexavalent Chromium
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Potassium
Selenium
Silver
Sodium
Tin
Thallium
Vanadium
Zinc

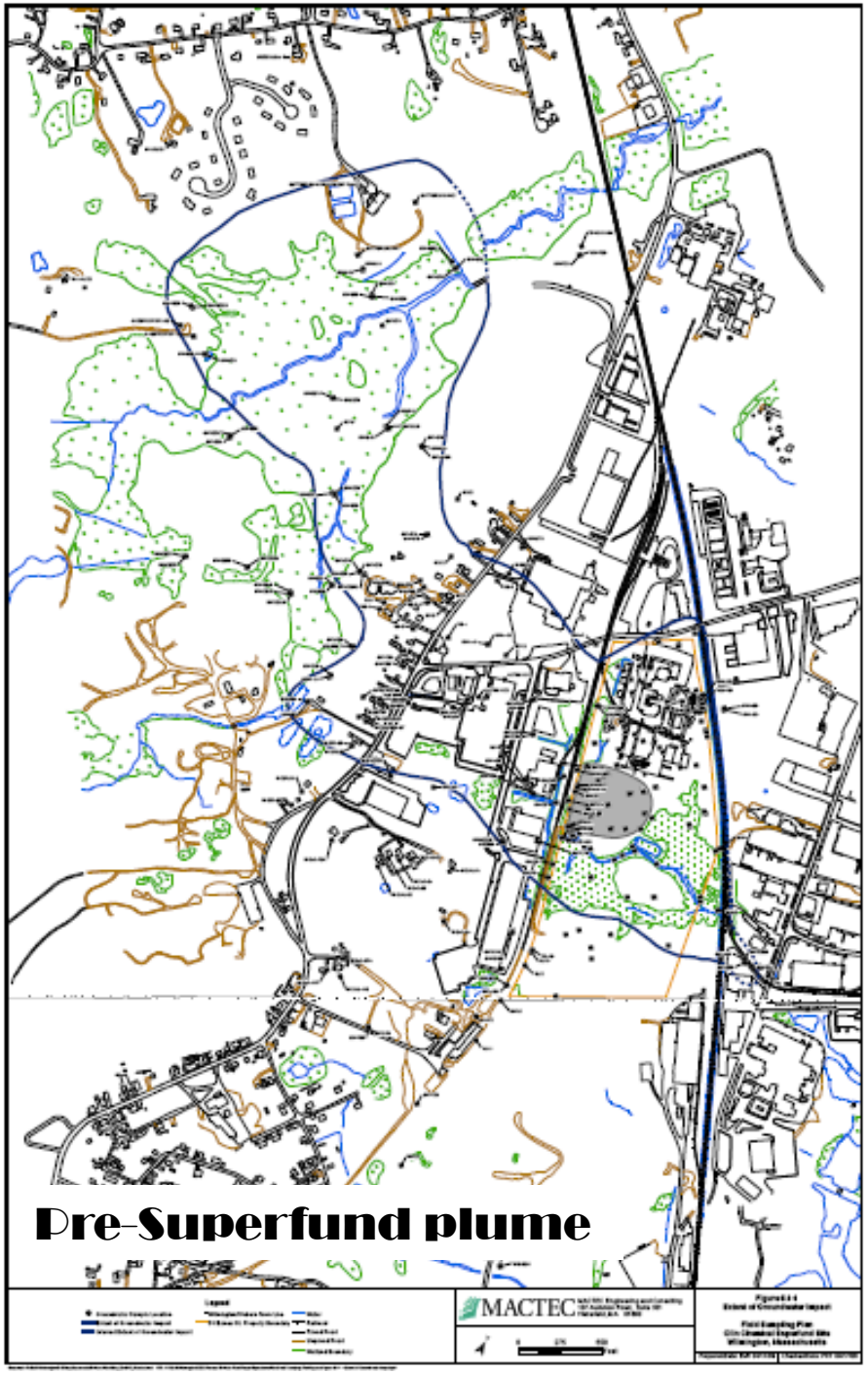
Analyte
Inorganics
Alkalinity
Ammonia
Bromide
Chemical Oxygen Demand
Chloride
Hardness
Nitrate
Nitrite
Perchlorate
pH
Specific Conductance
Sulfate
Total Dissolved Solids (TDS)
Total Organic Carbon
Total Suspended Solids (TSS)
EPH
C11-C22 Aromatics
C19-C36 Aliphatics
C9-C18 Aliphatics
VPH
C5-C8 Aliphatics
C9-C12 Aliphatics
C9-C10 Aromatics
Specialty Analytes
Diphenylamine
Acetaldehyde
Formaldehyde
Hydrazine
Kempore ®
N,N-Dimethylformamide (DMF)
N-nitrosodimethylamine
Nonylphenol
Opex ®
Phthalic anhydride

East and West Ditch Drainage Areas





Maple Meadow Brook Drainage Area



Groundwater Samples

- Private wells
- Gaps – Plume edges and analytical
- 207 existing monitoring wells
- 15 – 20 new wells to be installed
- Two sampling events planned
- 189 samples in the 1st event
- Up to 242 analysis/sample

Resources

- Questions on the Olin Chemical Site:
  - Contact Jim DiLorenzo
  - (617) 918-1247
  - Dilorenzo.jim@epa.gov
- General Superfund Questions:
  - www.epa.gov/region1/superfund