



R. DUFF COLLINS,
PG, LSP



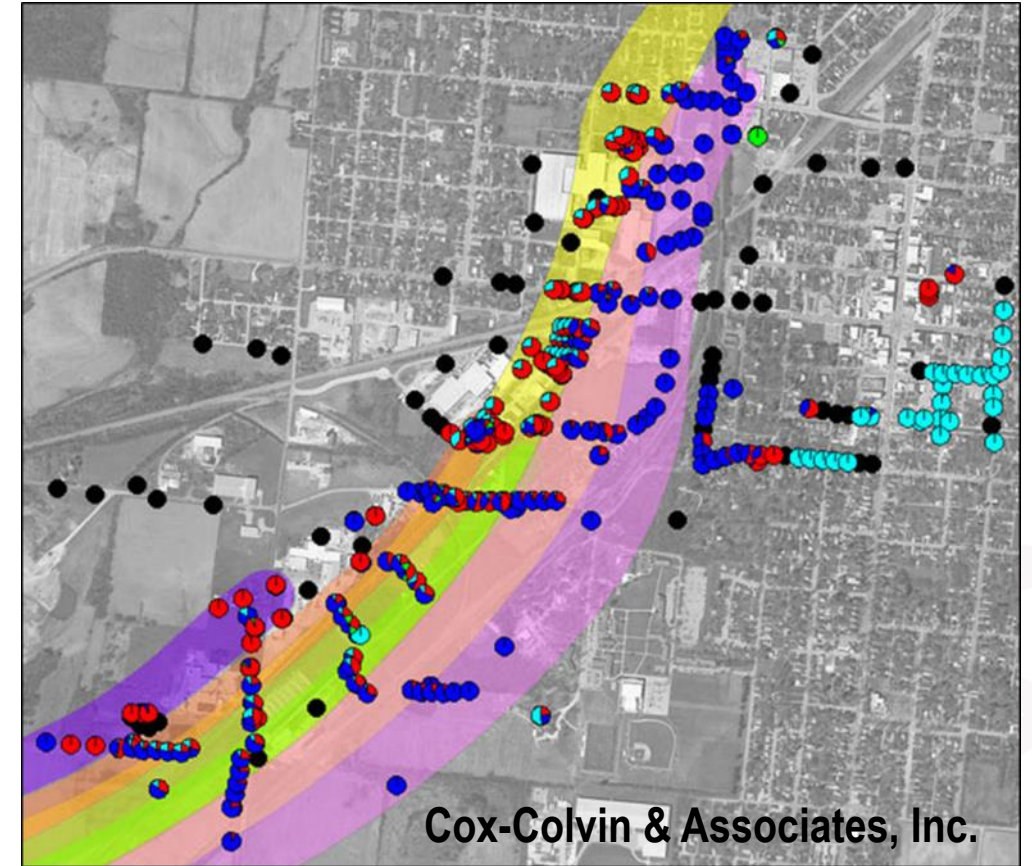
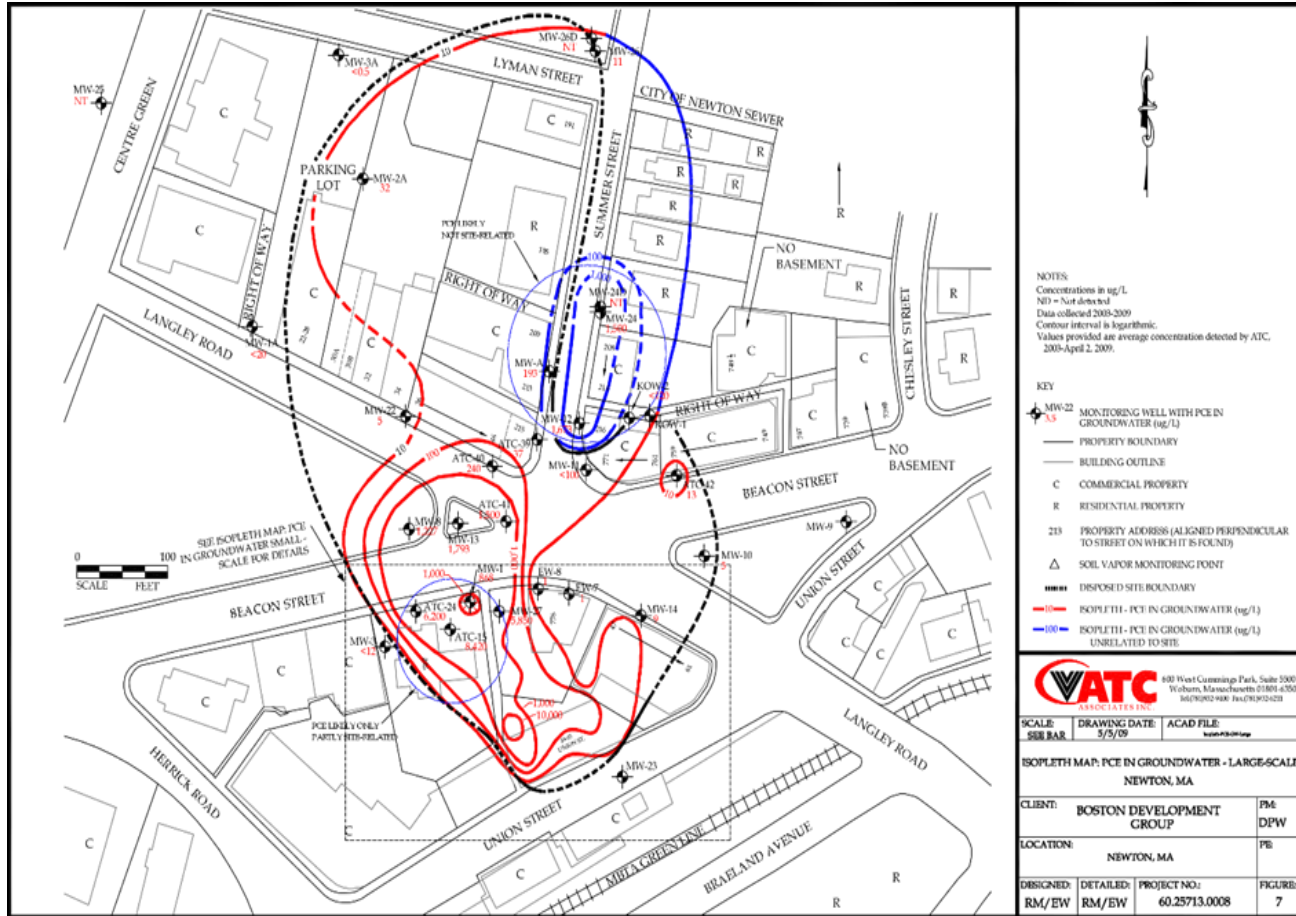
Commingled Plumes, Downgradient Property Status and Privatized Cleanup Programs: Lessons Learned from Two Decades of Practice



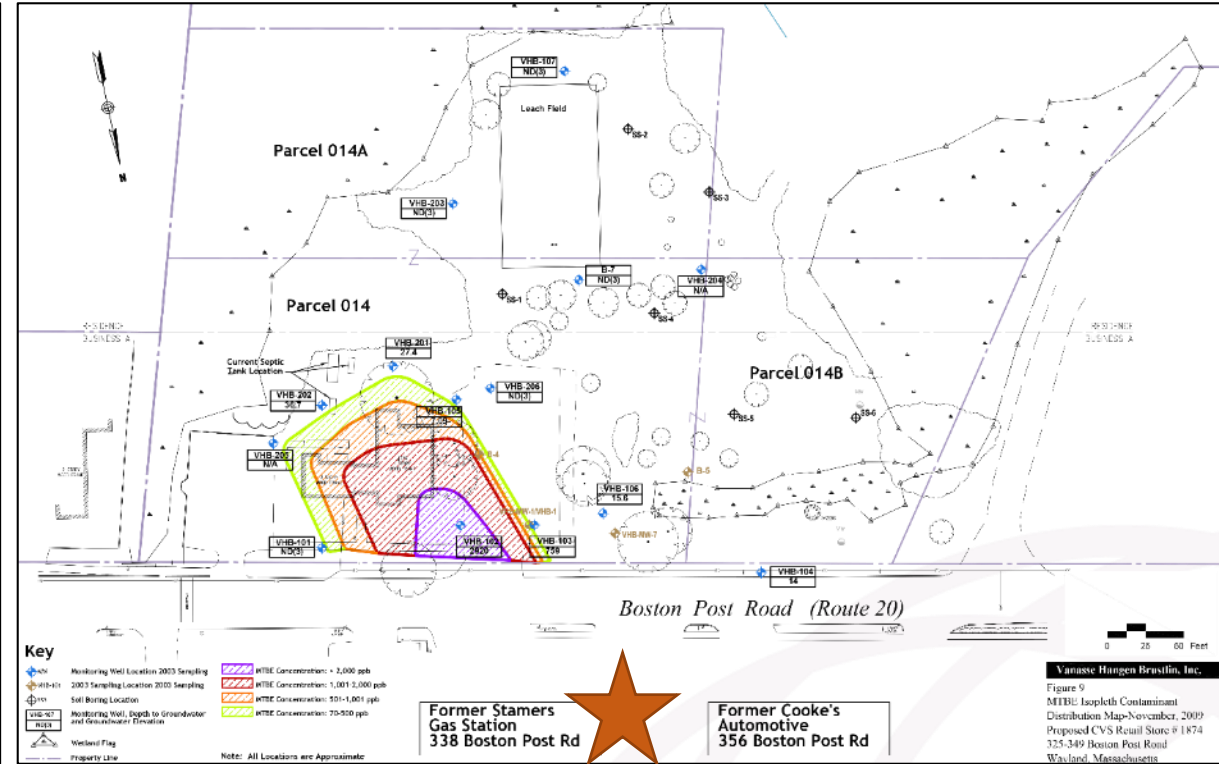
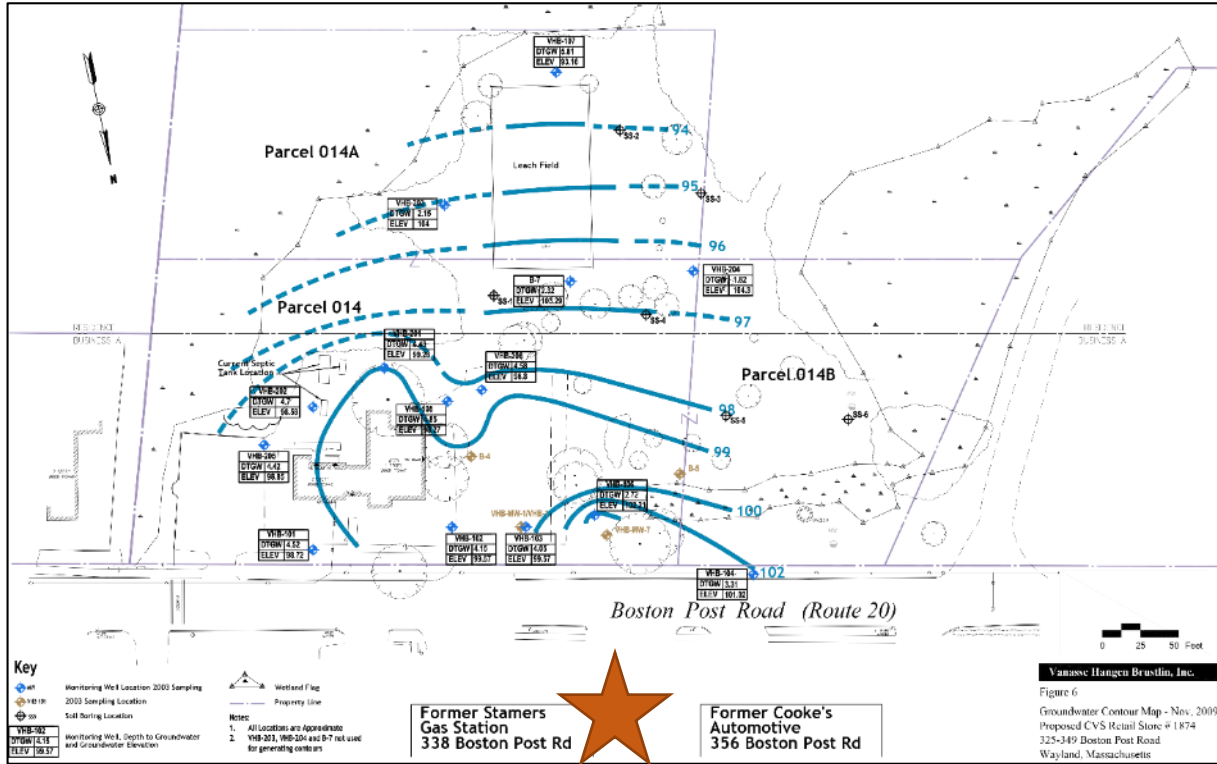
Objectives

- Background of Study
 - Overview of Regulatory Framework
 - Overview of Cases & MassDEP Audits of Cases
 - Case Studies – Issues & Tools
 - Present Lessons Learned
 - Disclaimer (MassDEP publicly available files...)
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Commingled Plumes

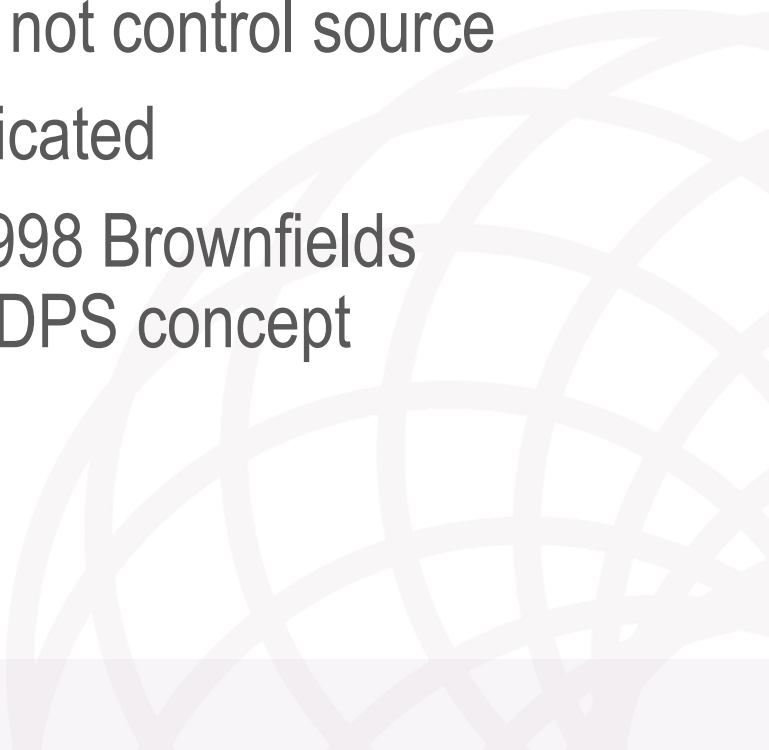


Simple Model – Gas Station Across the Street

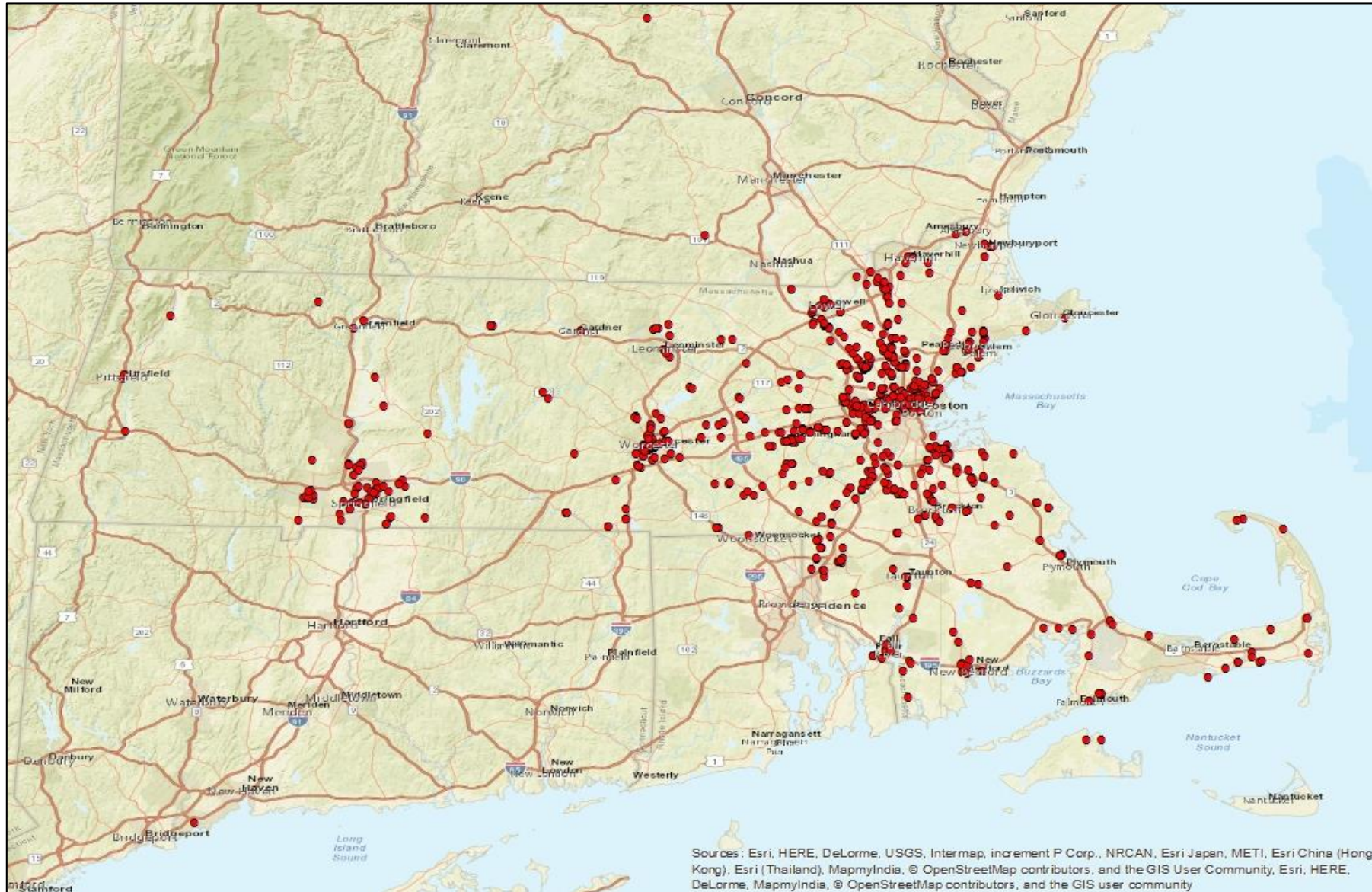




Why DPS?

- Leveraged semi-privatized program approach (but...)
 - Relief for “innocent” parties
 - Discharges difficult to remedy if party can not control source
 - Groundwater cleanup is costly and complicated
 - MCP Regulations (1995) and 21e Law (1998 Brownfields Amendments) evolved to reflect need for DPS concept
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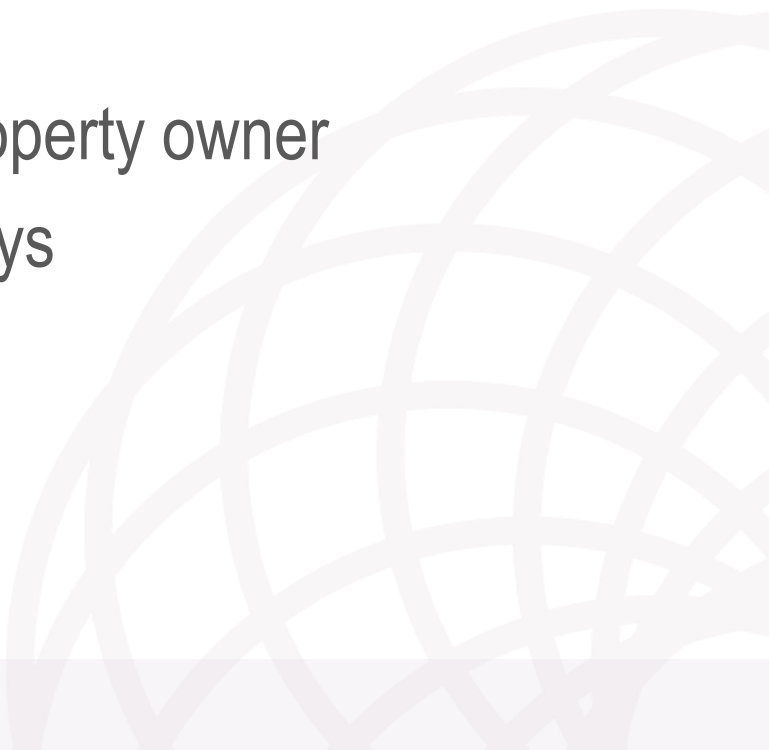
Widely Accepted Element of Program





Basic Components of DPS

Groundwater Impacted Sites

- Site conceptual model
 - Notify DEP of reportable levels
 - Various requirements of downgradient property owner
 - Monitor/Address critical exposure pathways
 - LSP opinion
- 

Requirements for Asserting DPS

Practical Actions

- “Disposal Site” boundary well defined
- No onsite sources of contaminant(s) of concern
- Groundwater flow direction well defined (with gradient)
- Site characterization adequate to demonstrate source not from downgradient property
- LSP Opinion stating source upgradient/upstream and come to be located on subject property through groundwater or surface water migration

310 CMR 40.0183(4)

DPS Performance Standards – Regulatory “*Fine Print*”

- 4) Performance Standard for a Downgradient Property Status Opinion. A Downgradient Property Status Opinion shall be based on investigative and assessment actions of sufficient scope and level of effort to conclude that the criteria in 310 CMR 40.0183(2)(b) have been met. The Opinion shall include an explanation and documentation of the technical basis for the conclusions stated therein, and be based on the following:
 - a) an evaluation of the boundaries of the property which is the subject of the Opinion;
 - b) an evaluation of the disposal site boundaries, to the extent they have been defined by assessments conducted to date;
 - c) an evaluation of the releases of oil and/or hazardous material at the disposal site, to the extent that such releases have been identified;
 - d) an evaluation of the relevant hydrogeologic conditions, including, at a minimum, groundwater flow direction and local transport characteristics based on field data, when migration of oil and/or hazardous material has occurred via groundwater;
 - e) a plan showing the downgradient or downstream property and the disposal site boundaries (to the extent known), the locations of any known or suspected source(s) of oil and/or hazardous material(s) release(s) that have come to be located at the downgradient or downstream property, the direction of groundwater flow and/or surface water flow (as appropriate), the locations where samples were collected for analysis, and the results of the analyses; and
 - f) an evaluation of the need to conduct an Immediate Response Action, as defined in 310 CMR 40.0412.

What RP Must Do to be Eligible for DPS

- Be in compliance with MGL c. 21E and MCP
 - Prior discharges/remediation activities
 - Vigilant for need for Immediate Response Actions (to abate IH/IECs)
- Cooperate with source property RP
 - Provide reasonable access
 - Don't make matters worse or cleanup more complicated
- Have no affiliation with source property
- Provide notice to abutting properties and Municipality

What does DPS get for RP?

- Suspends time clock for mandatory deadlines
- Provides liability relief for property owners
- Transferrable – however, need new LSP Opinion and new owner certifications

Results: DPS by the Numbers

- Over 1,220 DPS filings made since 1995
- Presently 902 active DPS filings
- ~2.5% of approximately 47,000 reported sites
- 133 DPS have been “Terminated”
 - 61 by MassDEP
 - 72 voluntarily
- 168 DPS filings have been permanently closed (via permanent solution/RAO)

MassDEP Audits of DPS

- DEP reviews **EVERY** filed DPS
- Varying action taken if:
 - Upgradient property in system (further audit)
 - Or not (may issue new Notice of Responsibility)
- Quality of the DPS supporting information
- Potential for short term exposures/harm (VI...)

Results: MassDEP DPS Audits Over Last 5 Years

- 30 comprehensive audit findings (NOAF)
- 7 “OK”
- 4 terminate DPS immediately
- 18 N&E or other DPS criteria not demonstrated
- MassDEP points of concern
 - VI imminent hazards (PCE & TCE)

Findings: DPS Challenges

- Property lines & property access
- Client expectations & limitations on scope (“It’s not my problem”)
- Skill at CSM

Findings: Role of Licensed Professional – DPS Best Practices

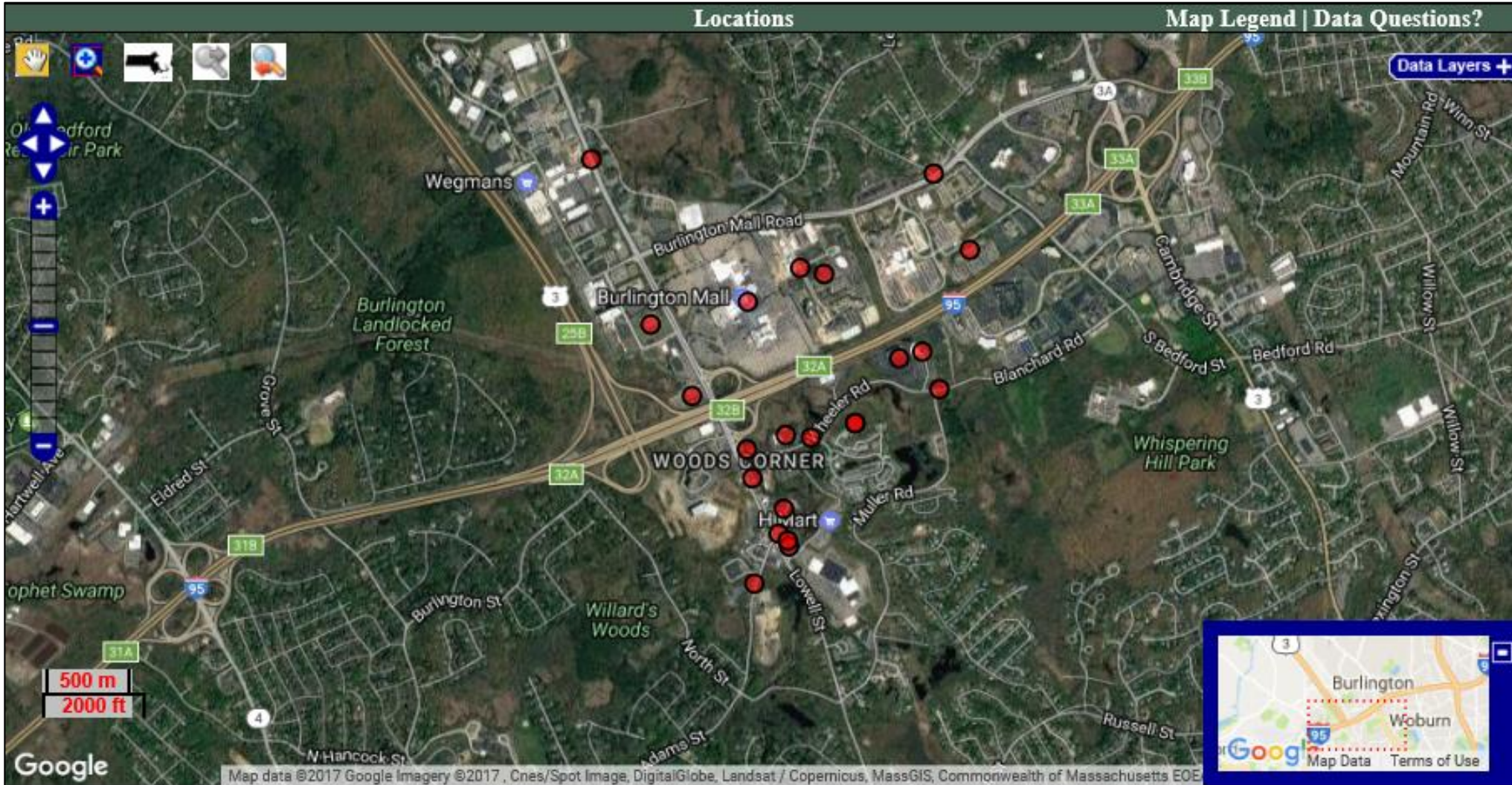
- Manage client expectations on LOE required
- Robust site history
- Fully developed CSM
- Clearly delineated groundwater flow
- Multiple rounds of testing
- Forensic tests where mixtures/commingled

DPS Case Studies

- Crowded Neighborhood – Burlington, MA
- Sensitive Receptors – Watertown, MA
- Everyone Join the Party – Newton, MA
- Advanced Tools, Multiple Sources – Wayland, MA



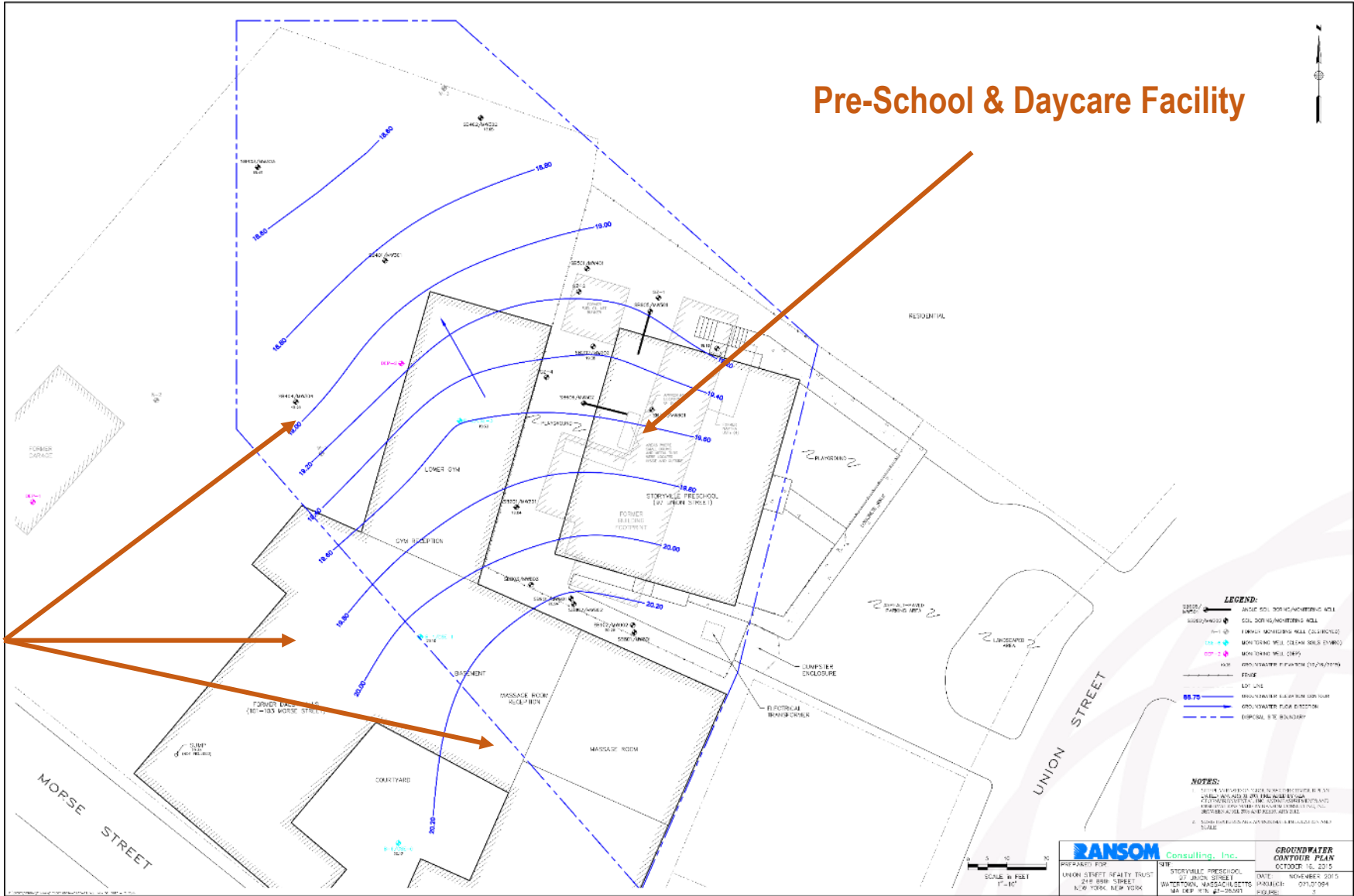
Crowded Neighborhood – Burlington, MA



Sensitive Receptors – Watertown, MA

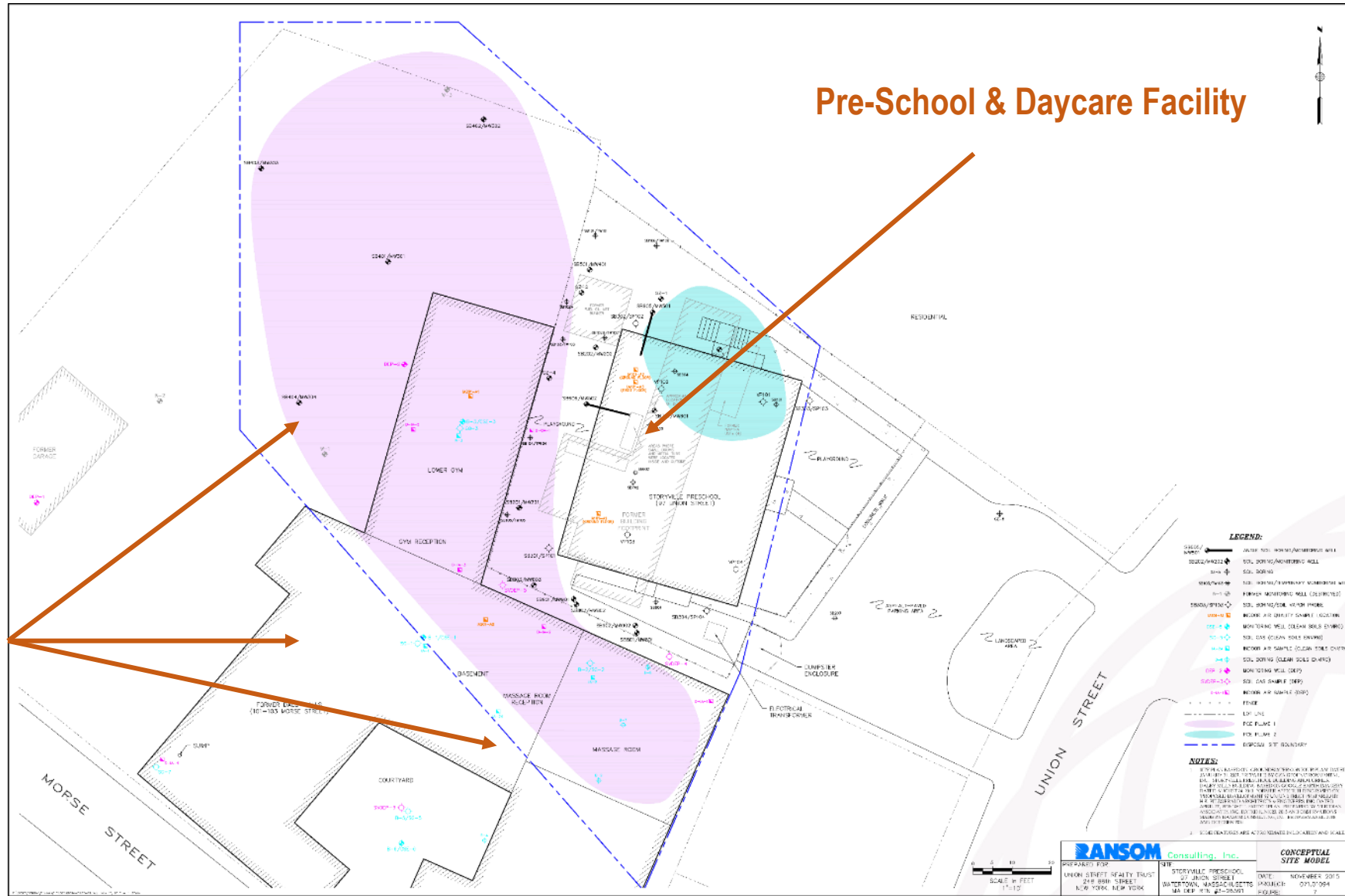
Former Industrial Mill Complex

Pre-School & Daycare Facility

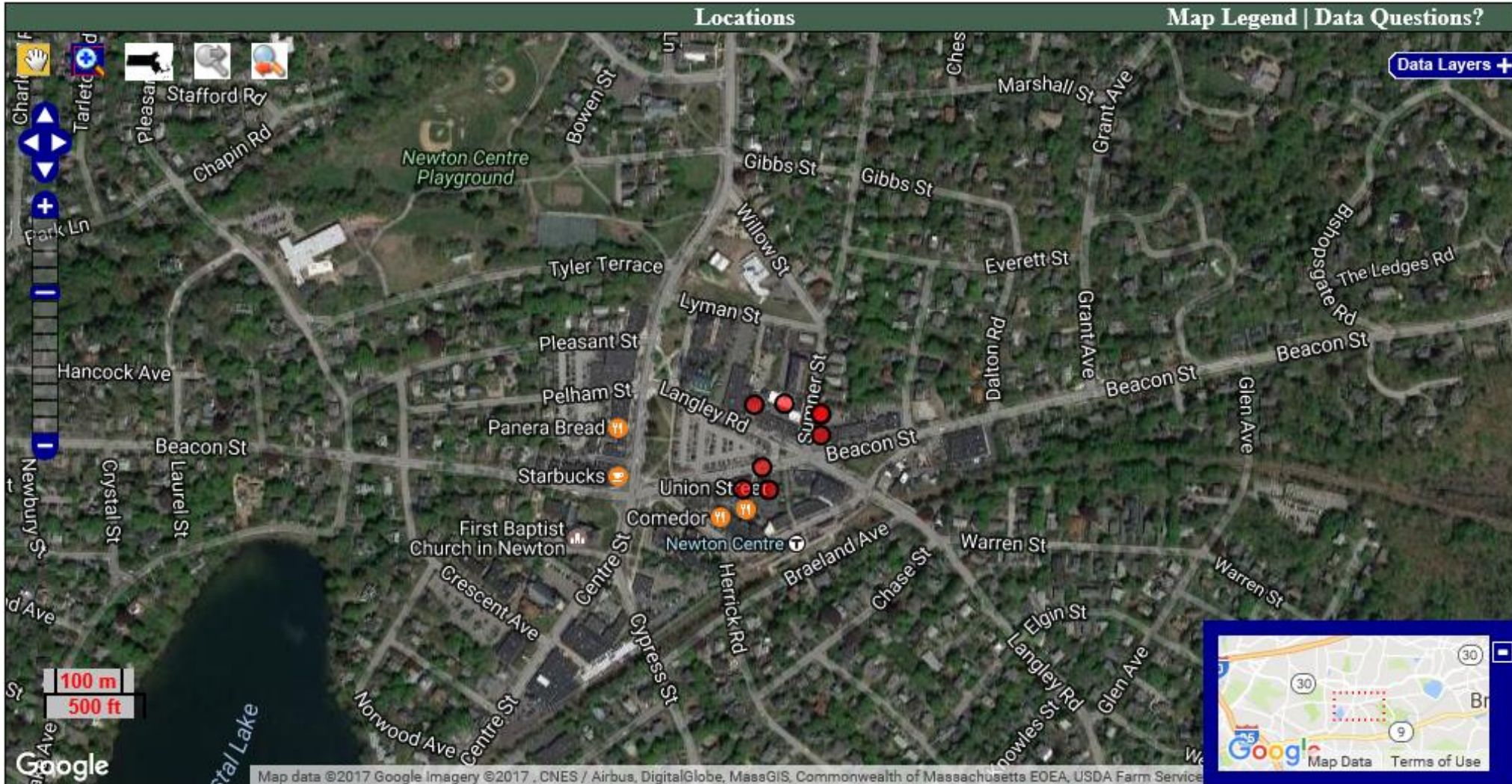


RANSOM Consulting, Inc.		GROUNDWATER CONTOUR PLAN	
PREPARED FOR: UNION STREET REALTY TRUST 240 BOND STREET NEW YORK, NEW YORK	FOR: STONYVILLE PRESCHOOL 577 BRON STREET WATERTOWN, MASSACHUSETTS	DATE: NOVEMBER 2015	PROJECT NO: 01/07084

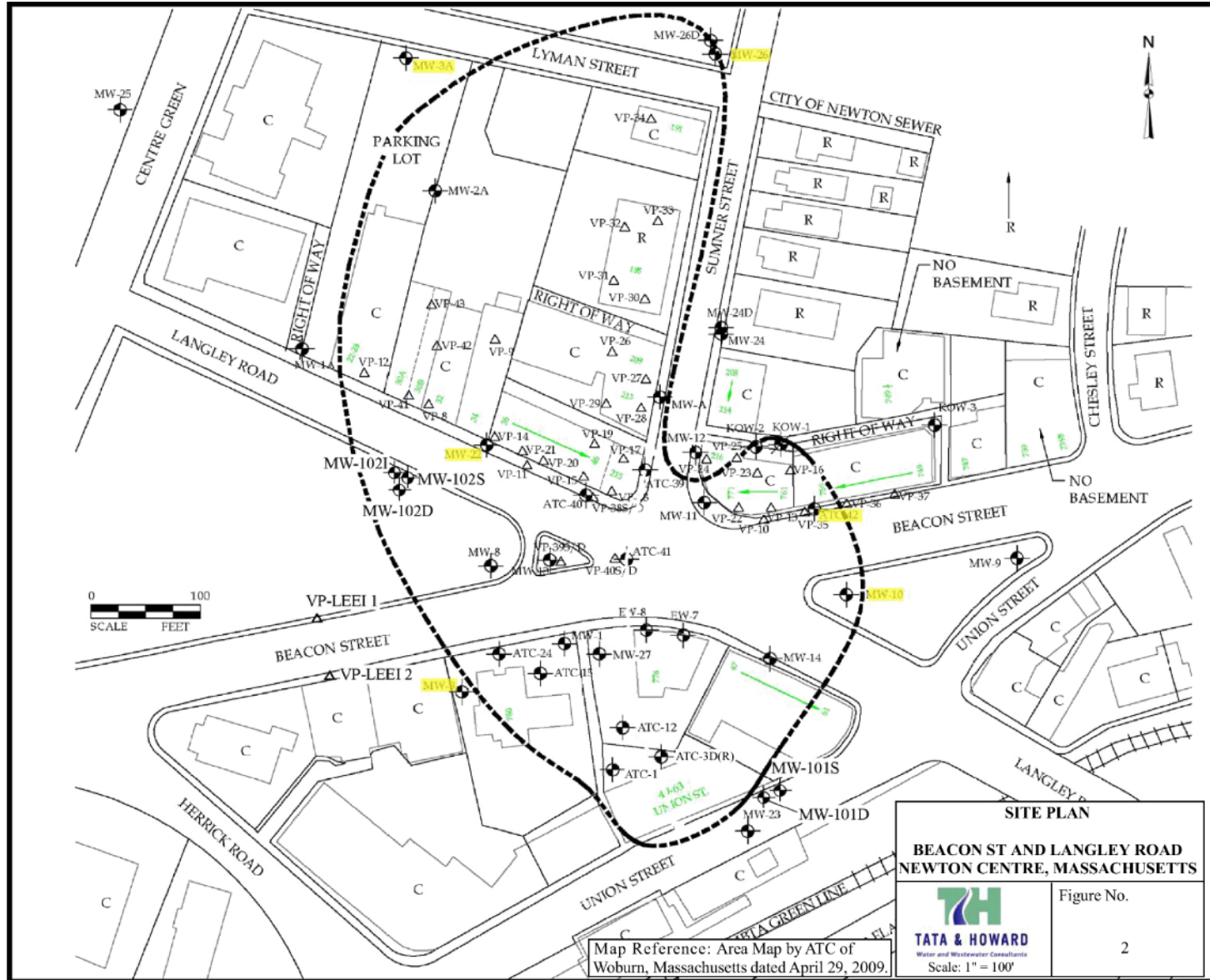
Sensitive Receptors – Watertown, MA



Everyone Join the Party – Newton, MA



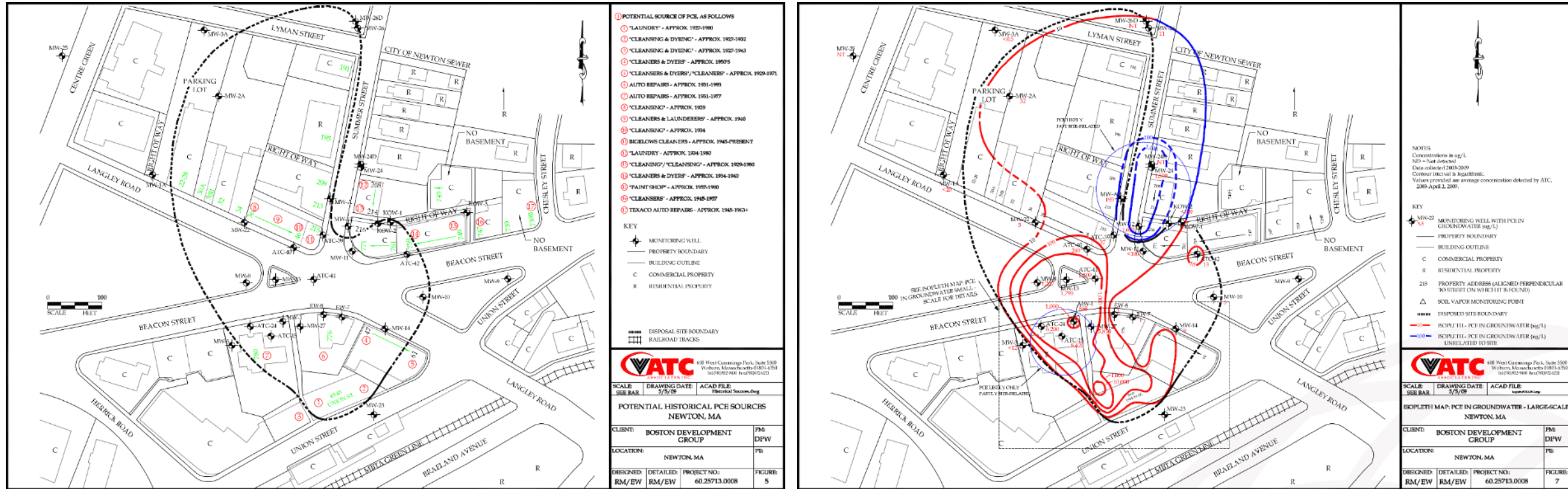
Everyone Join the Party – Newton, MA



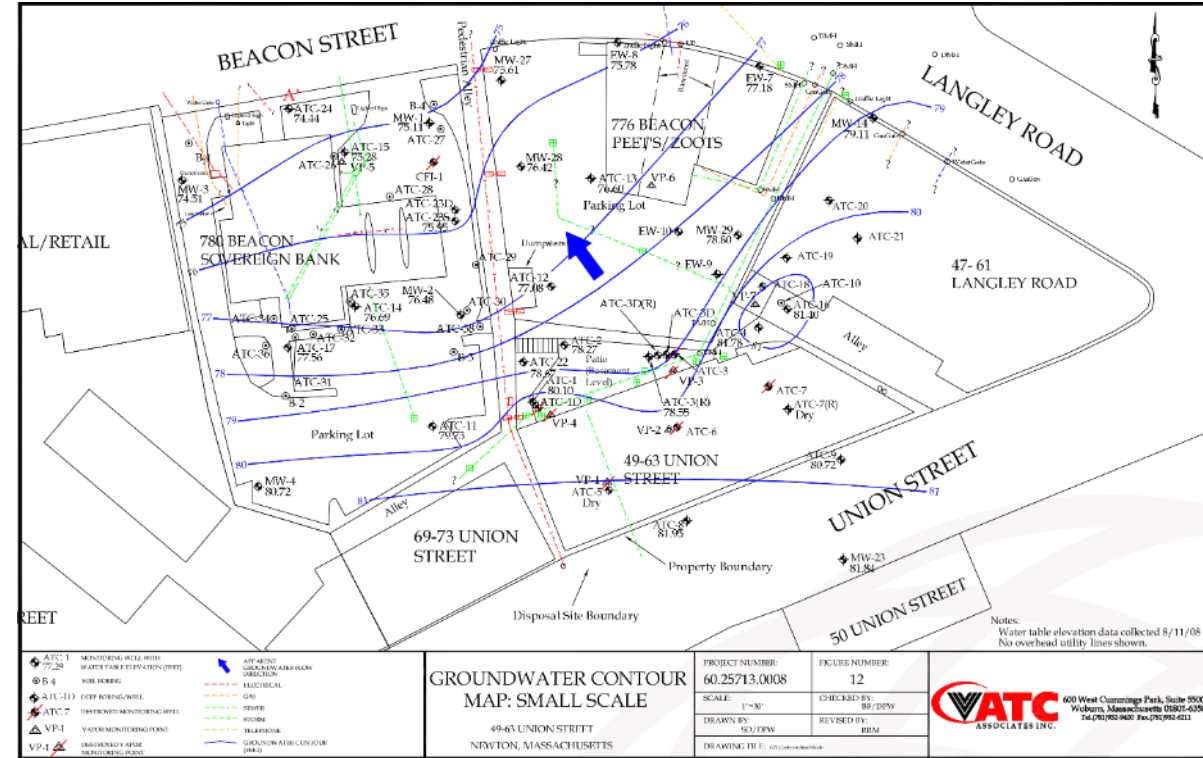
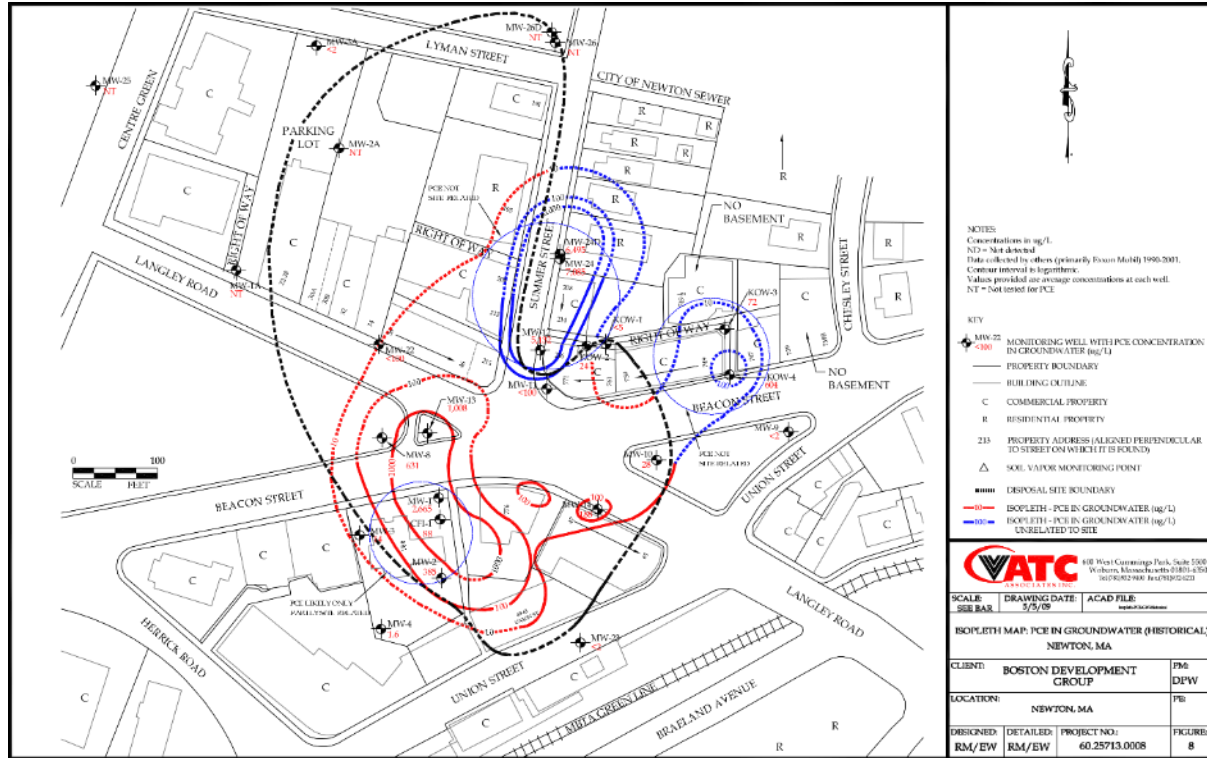
Environmental Consultants Involved

- GZA
- ATC
- Haley & Aldrich
- ENSR
- Tata & Howard
- TetraTech
- FSL

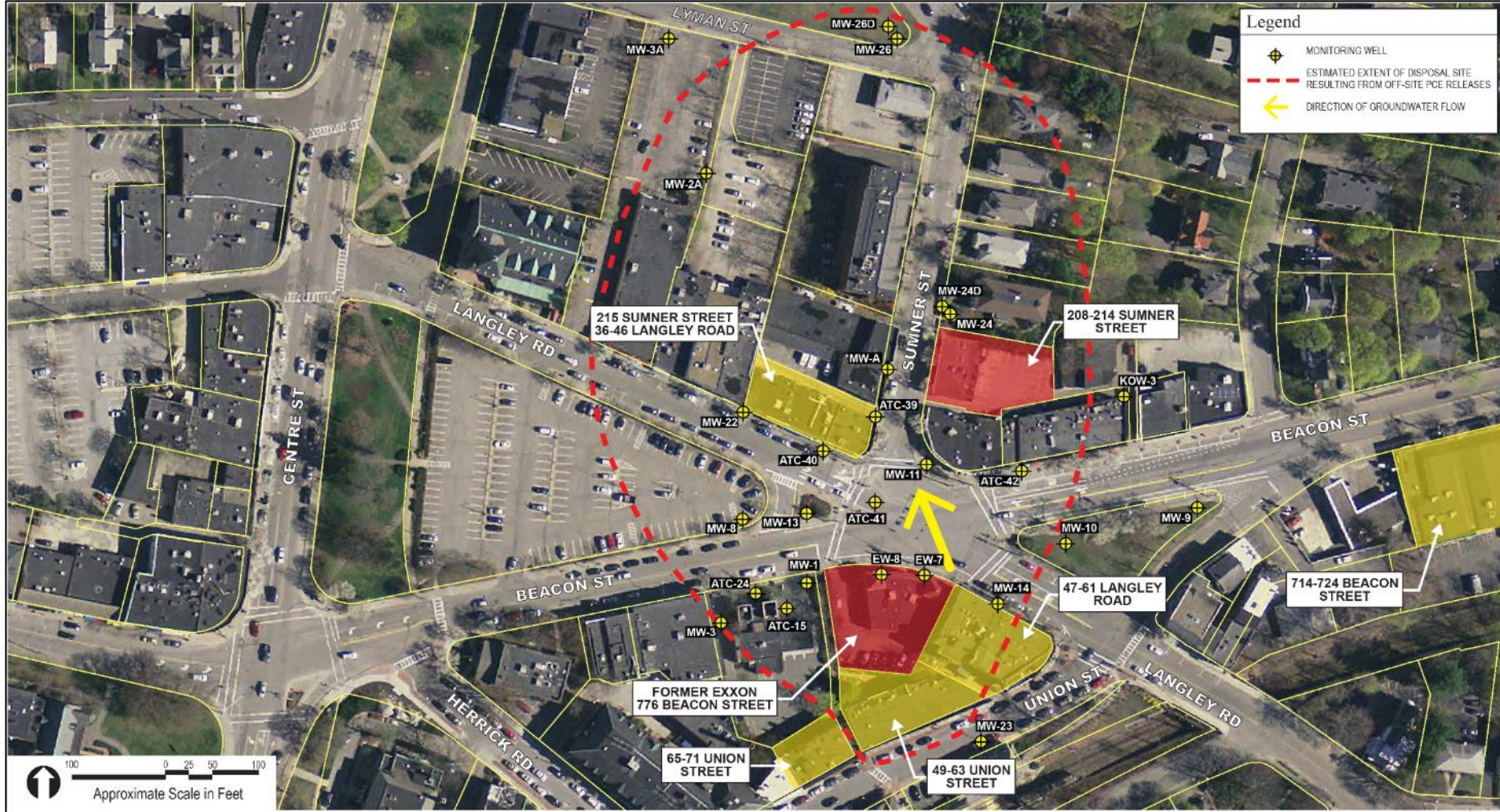
Everyone Join the Party – Newton, MA



Everyone Join the Party – Newton, MA

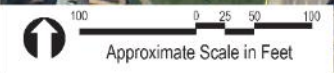


Everyone Join the Party – Newton, MA



Legend

- MONITORING WELL
- ESTIMATED EXTENT OF DISPOSAL SITE RESULTING FROM OFF-SITE PCE RELEASES
- DIRECTION OF GROUNDWATER FLOW



TETRATECH
 100 Nickerson Road
 Marlborough, MA 01752
 508.786.2200
 www.tetratech.com

Downgradient Property Status Option
 208-214 Summer Street, Newton, MA - RTN 3-30433

Disposal Site Boundary
 & Known/Suspected
 PCE Release Locations

Figure 5



Advanced Tools, Multiple Sources – Wayland, MA

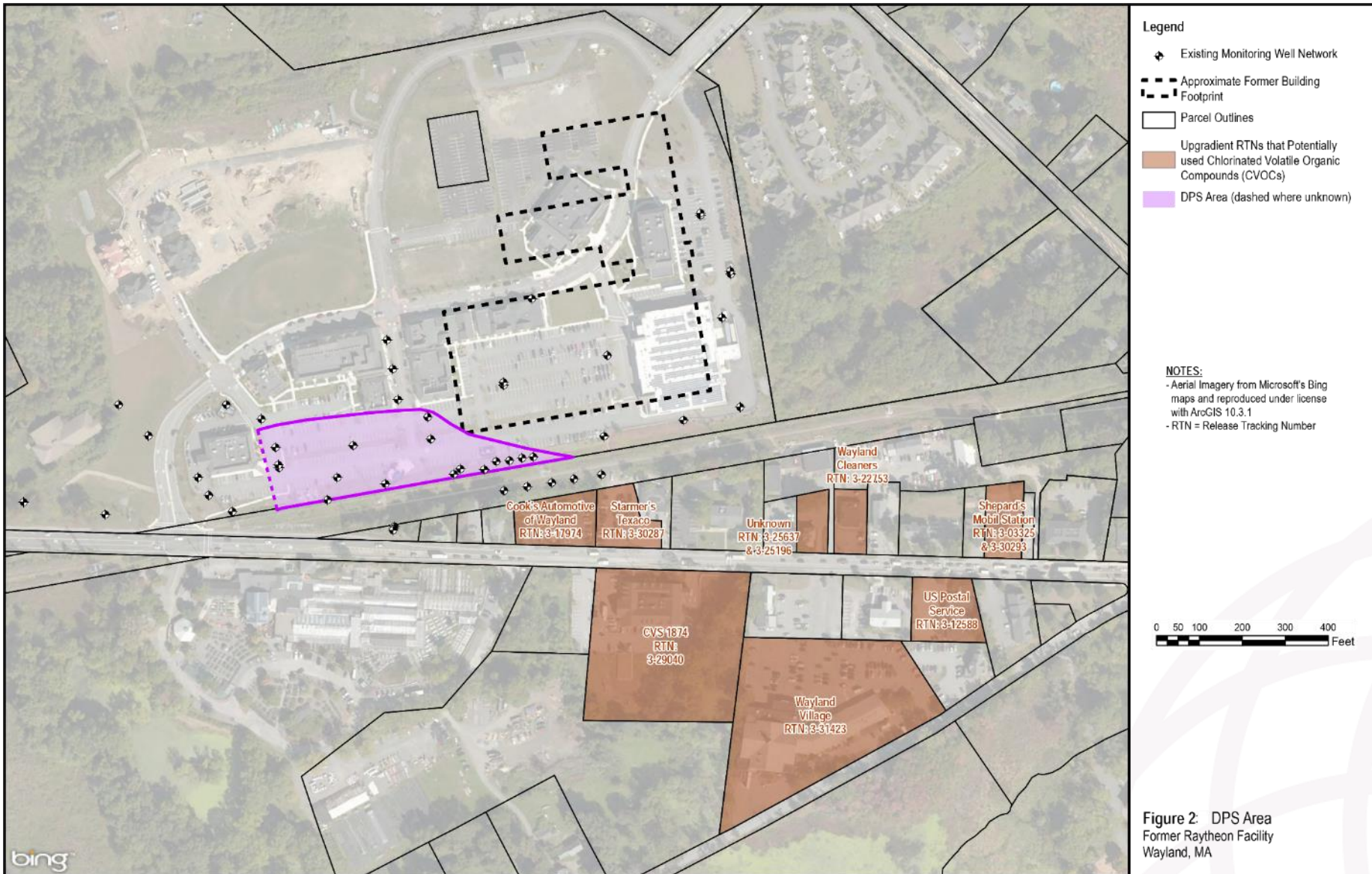
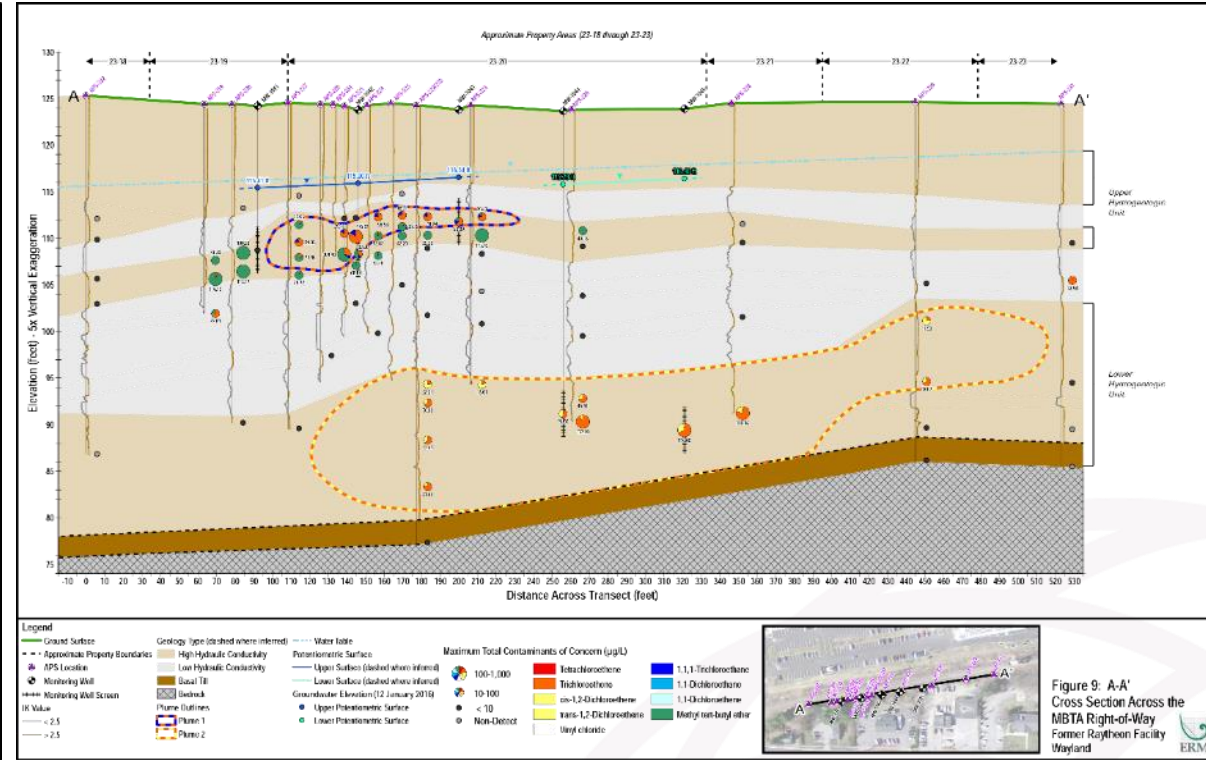
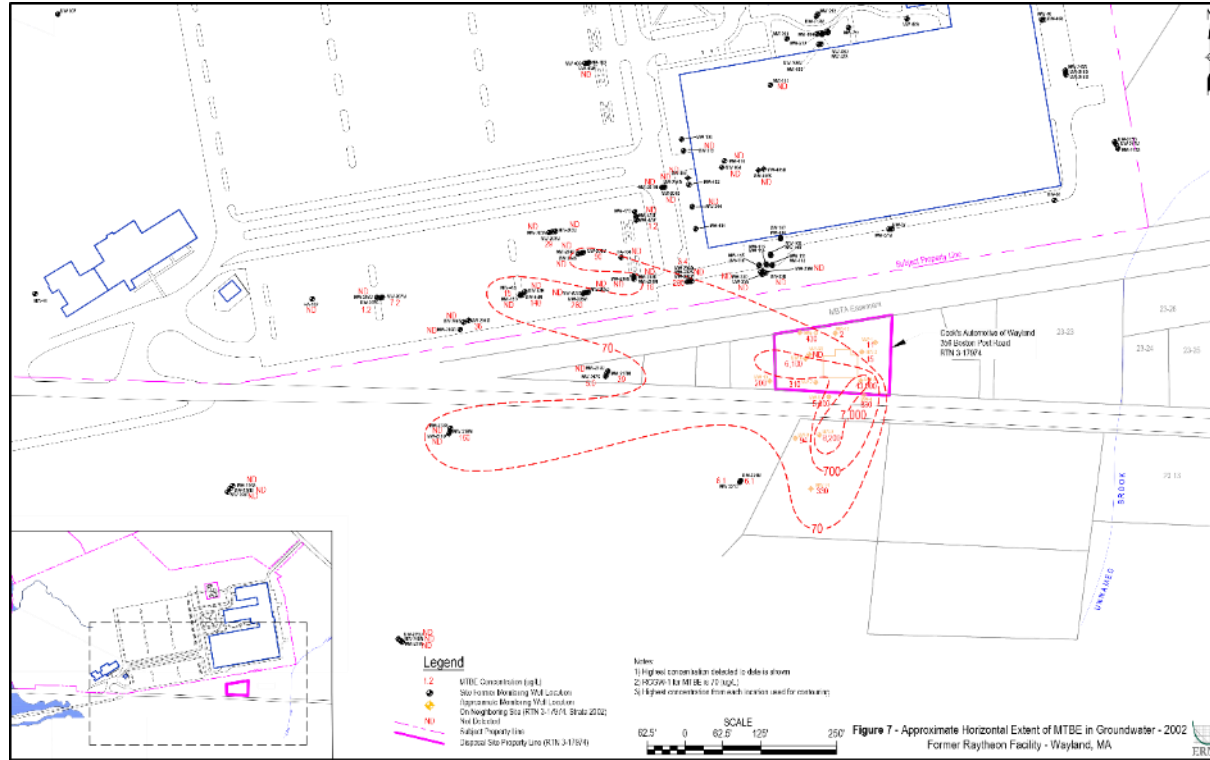
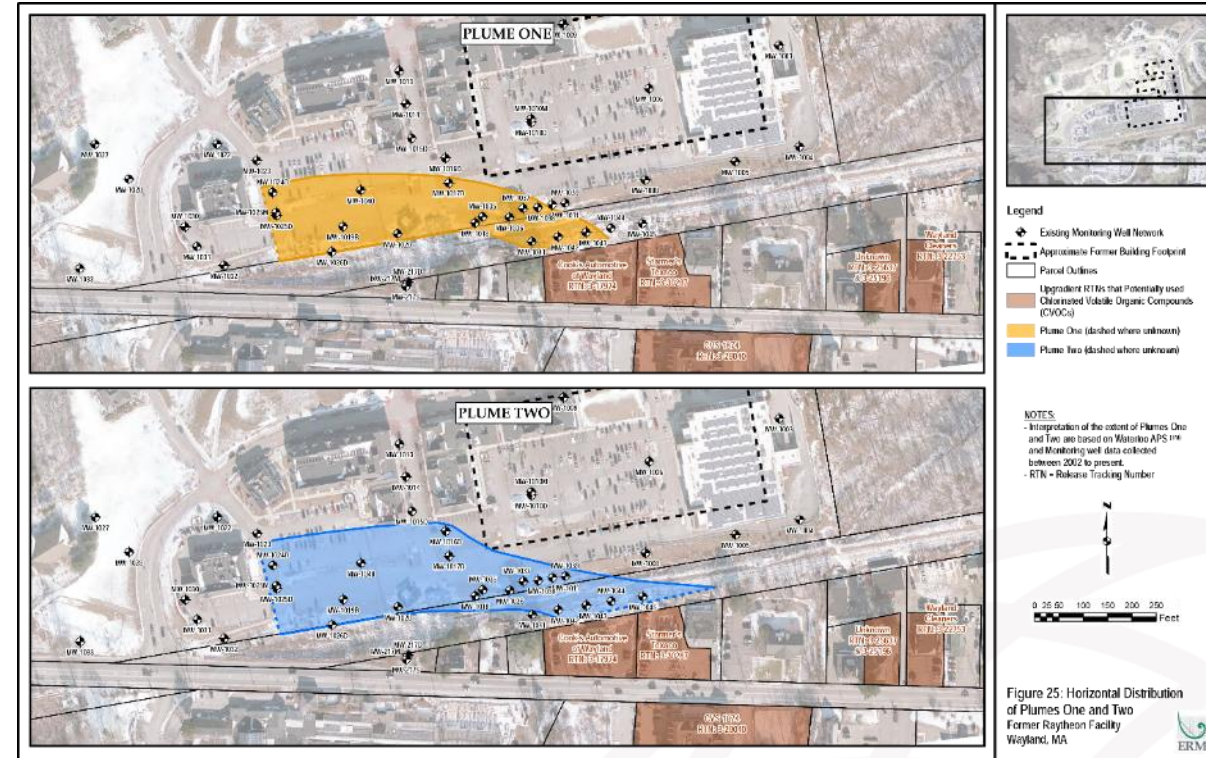
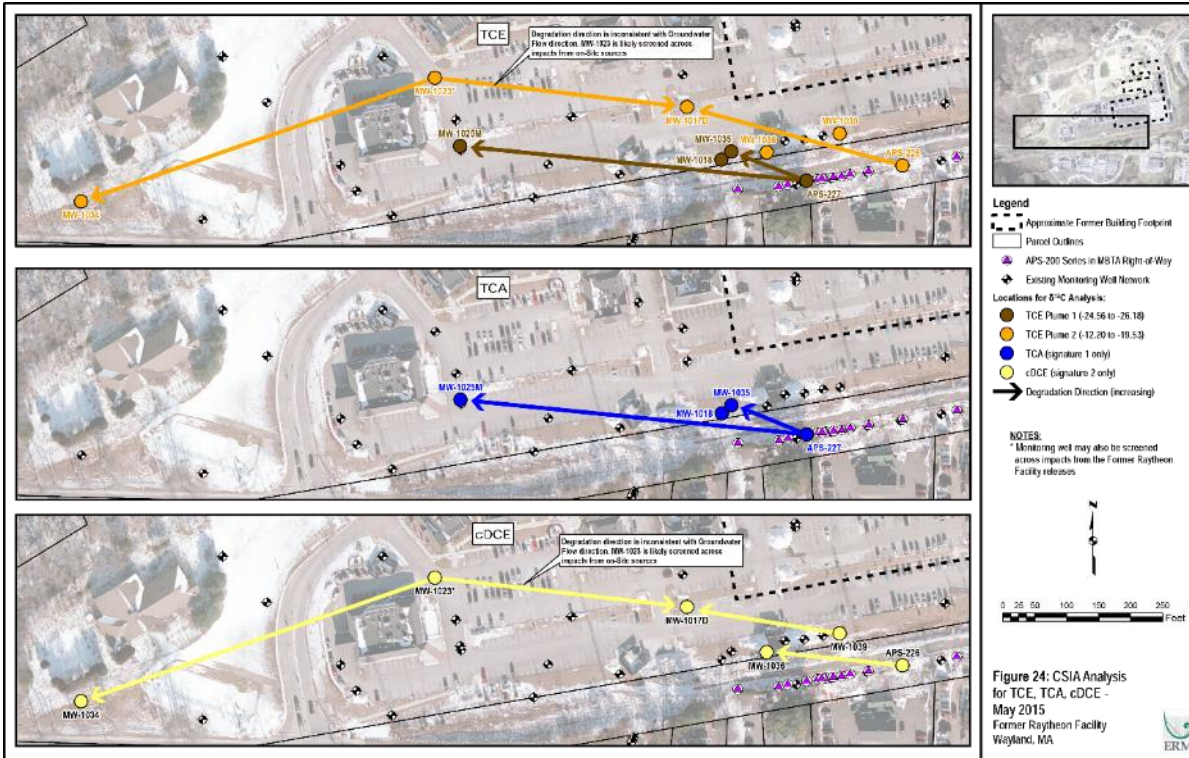


Figure 2: DPS Area
Former Raytheon Facility
Wayland, MA

Advanced Tools, Multiple Sources – Wayland, MA



Advanced Tools, Multiple Sources – Wayland, MA





Summary of Lessons Learned

1. Carefully evaluate and **rule out** potential **on-site sources**.
 - Typically, on-site testing is needed to rule out potential on-site sources.
2. Review area historical records and determine the groundwater flow direction at the property to **establish up gradient** potential contribution areas and **candidates for sources**.
3. Accurately **demonstrate** the migration of oil or hazardous materials **in or on groundwater onto** the property.
4. Clearly explain CSM and use **multiple lines-of-evidence** to support DPS.



Questions?