



GeoInsight®

Environmental Strategy & Engineering

# MELONE PROPERTY NORTH ROAD, SUDBURY, MA





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## BACKGROUND

The Melone Property is located adjacent to the former Sperry Research Center/Unisys facility that is a Massachusetts Department of Environmental Protection (MADEP) hazardous materials release site (the “Former Sperry/Unisys Site”).

The degreasing solvent trichloroethene (TCE) was historically released at the Former Sperry/Unisys Site and created two plumes of volatile organic compounds in groundwater that have migrated onto adjacent properties to the south and east.

The Town is considering reuse and/or redevelopment of the Melone Property, and wishes to evaluate potential environmental conditions and remedial status associated with the Former Sperry Rand/Unisys Site.



# OBJECTIVES

Review existing environmental documentation regarding the Former Sperry/Unisys Site (MADEP Release Tracking Number [RTN] 3-0435) and assist the Town in understanding, documenting, and communicating to its citizenry the following:

- the current regulatory status of the Former Sperry/Unisys Site;
- the constituents of concern (COCs) associated with the Former Sperry/Unisys Site;
- the potential presence of Former Sperry/Unisys Site COCs on the Melone Property, in either soil or groundwater;



## OBJECTIVES

- likely risk-based constraints to future development of the Melone Property that may result from Former Sperry/Unisys Site COCs;
- evaluate whether sufficient soil and groundwater characterization has been completed on the Melone Property to identify risks to potential future users of the Property (e.g., residential, open space/recreational, industrial/commercial); and
- identify data gaps that would be beneficial for the Town to address in assessing the Melone Property for reuse and/or development.



## PROJECT TASKS

- Review of historical documents associated with the Former Sperry/Unisys Site;
- Environmental Database Review;
- Site Visit;
- Review of Sudbury Well No. 5 Information;
- Review of Concord White Pond Well Information; and
- Summary Report

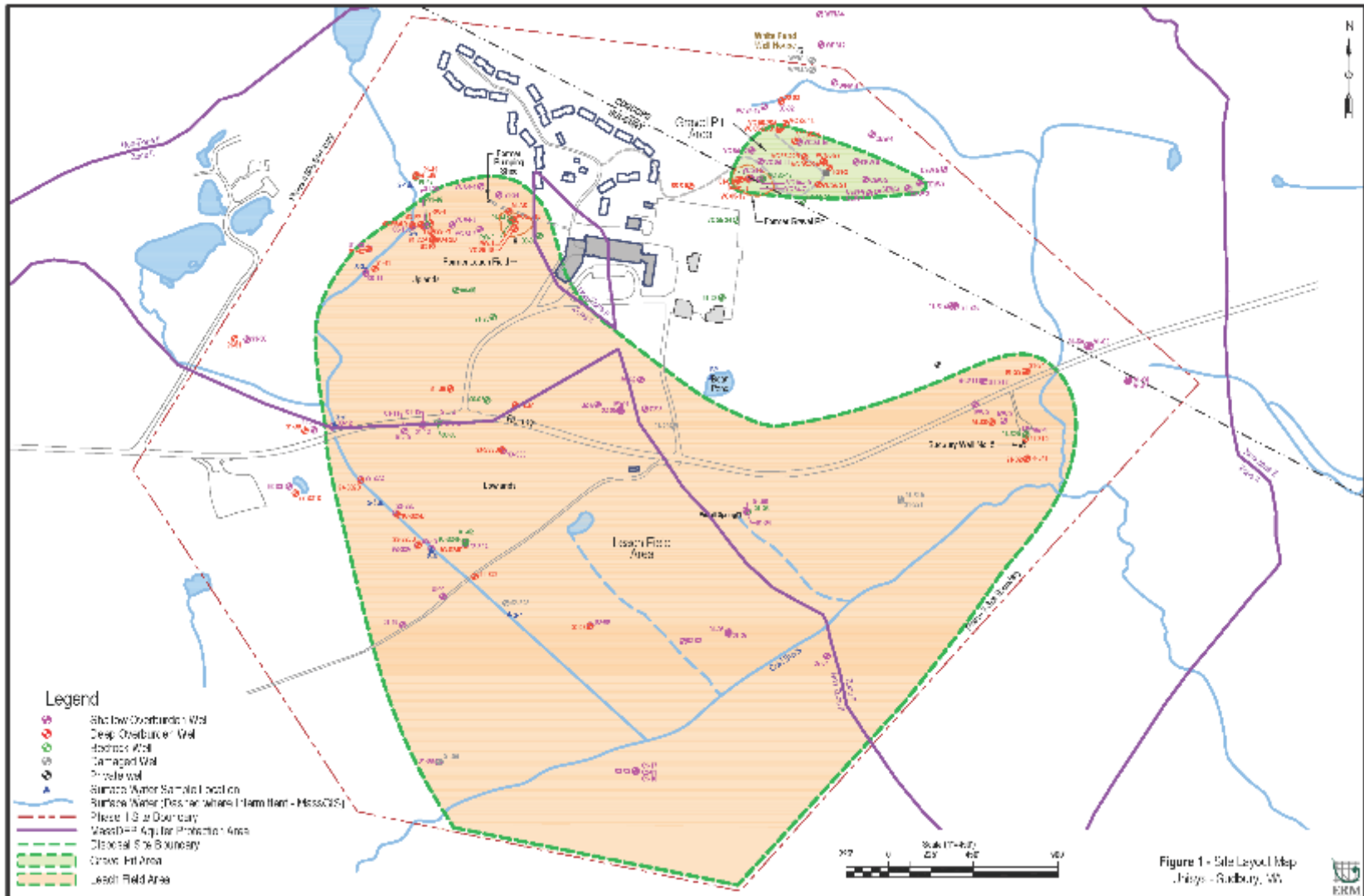


### FORMER SPERRY/UNISYS SITE OVERVIEW

- 140-acre property that was a horse farm prior to 1959.
- From early 1960s to 1983, was occupied by Sperry Research Center, and was used for research and development of electronic systems.
- In 1984, solvents (primarily TCE) were detected in groundwater.
- Two release areas: Leach Field and Gravel Pit.
- Remedial systems installed in 1986 for both areas; operated until 1999 (Gravel Pit) and 2002 (Leach Field).
- Current - Temporary Solutions under the MCP; long-term monitoring.



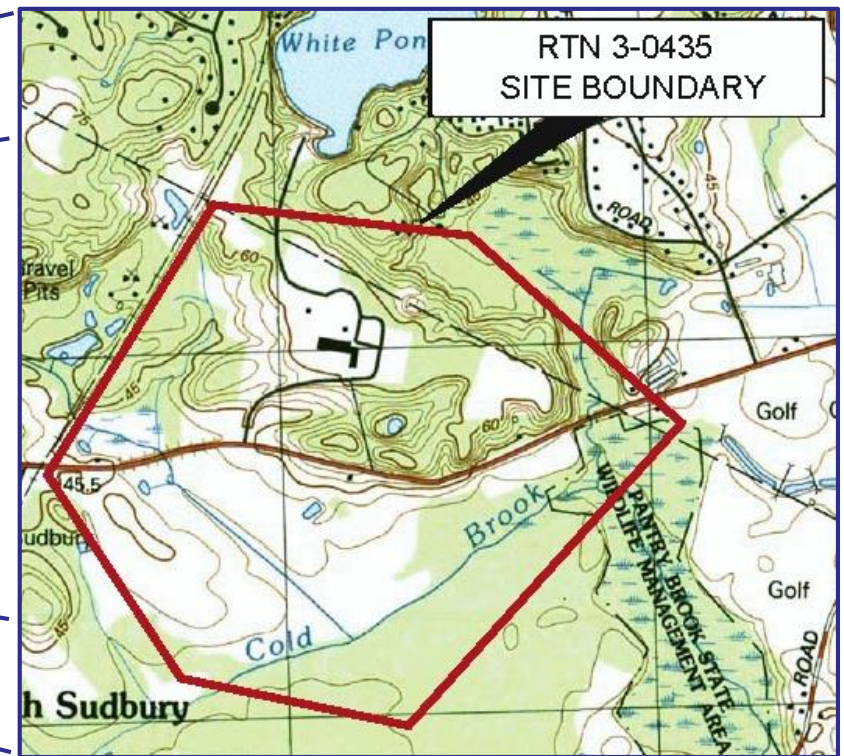
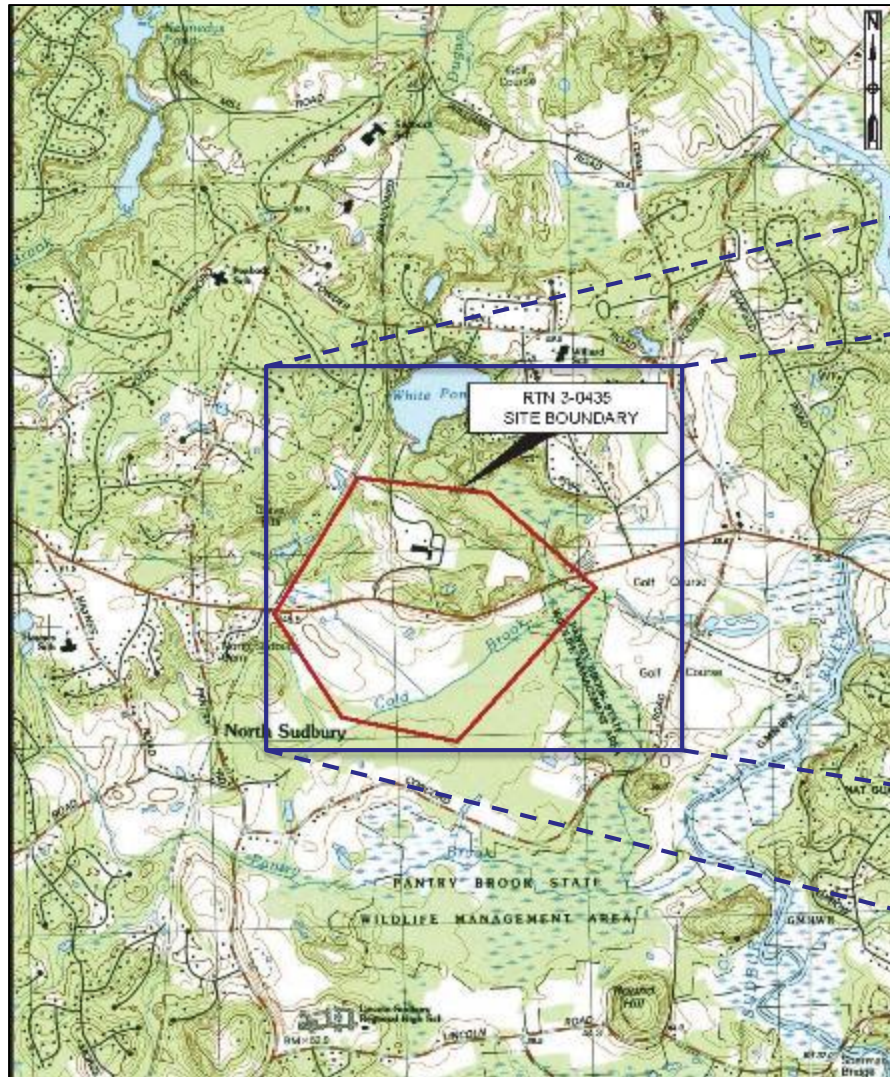
# Site Layout Map







# Topographic Map





## LEACH FIELD AREA



View west of leach field and shed



View south of leach field

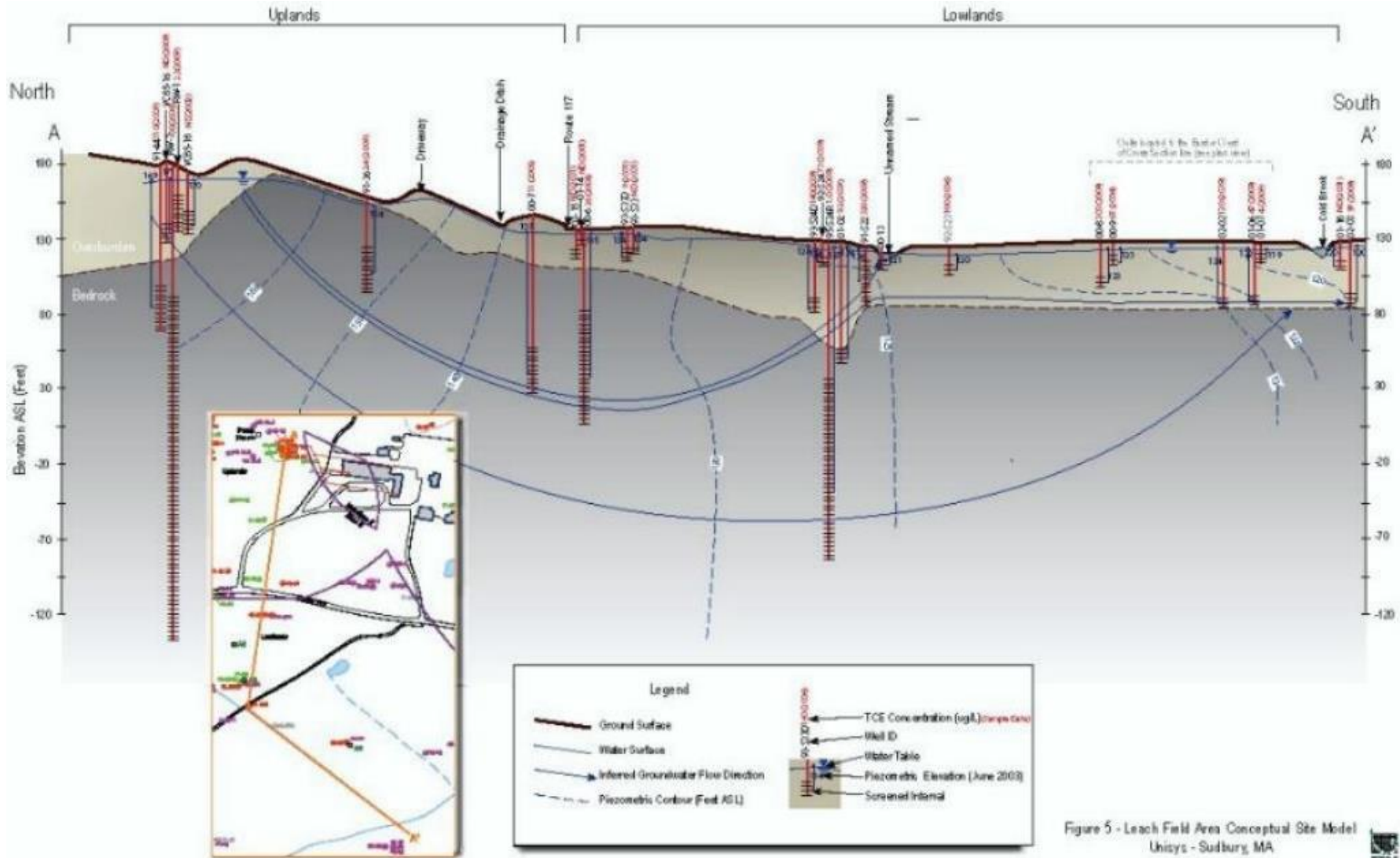


## Overview of Remedial Activities Leach Field Area

- Initial remediation system installed/operated from 1986 through 1994. System consisted of a single overburden groundwater recovery well.
- Upgraded in 1993/1994: 2 additional recovery wells, one overburden and one bedrock. Groundwater treated using an air stripper. Treated water was discharged to a nearby wetland that ultimately discharged to unnamed tributary of Cold Brook.
- System operated until 2002, when the system was shut off; historical monitoring identified that source area was cleaned and central portion of the plume had migrated beyond the influence of the remedial system.



# Cross Section of the Leach Field Area





## GRAVEL PIT AREA



View east into Gravel Pit Area



View west – bottom of Gravel Pit Area



## GRAVEL PIT AREA



View northeast toward White Pond Well



View southwest toward Gravel Pit Area



## Overview of Remedial Activities Gravel Pit Area

- Initial remediation system installed/operated from 1986 through 1994. One recovery well was installed downslope from the gravel pit.
- Groundwater treated using an air stripper. Treated water discharged to local wetland that ultimately discharged to Cold Brook.
- System was modified in 1993: groundwater interceptor trench was installed (130 feet long, 4 feet wide, and 30 feet deep) near downgradient end of gravel pit area.



## Overview of Remedial Activities Gravel Pit Area

- System operated until 1999, when the system was shutdown. Residual groundwater impacts suspected.
- May 2001 – additional remedial measures: injection of oxidant into suspected source area.
- March 2004 – additional remedial measures: excavation of approximately 100 tons of PCE- and TCE-impacted soil from suspected source area.
- Subsequent monitoring documented decreasing concentrations.





# Cross Section of the Gravel Pit Area

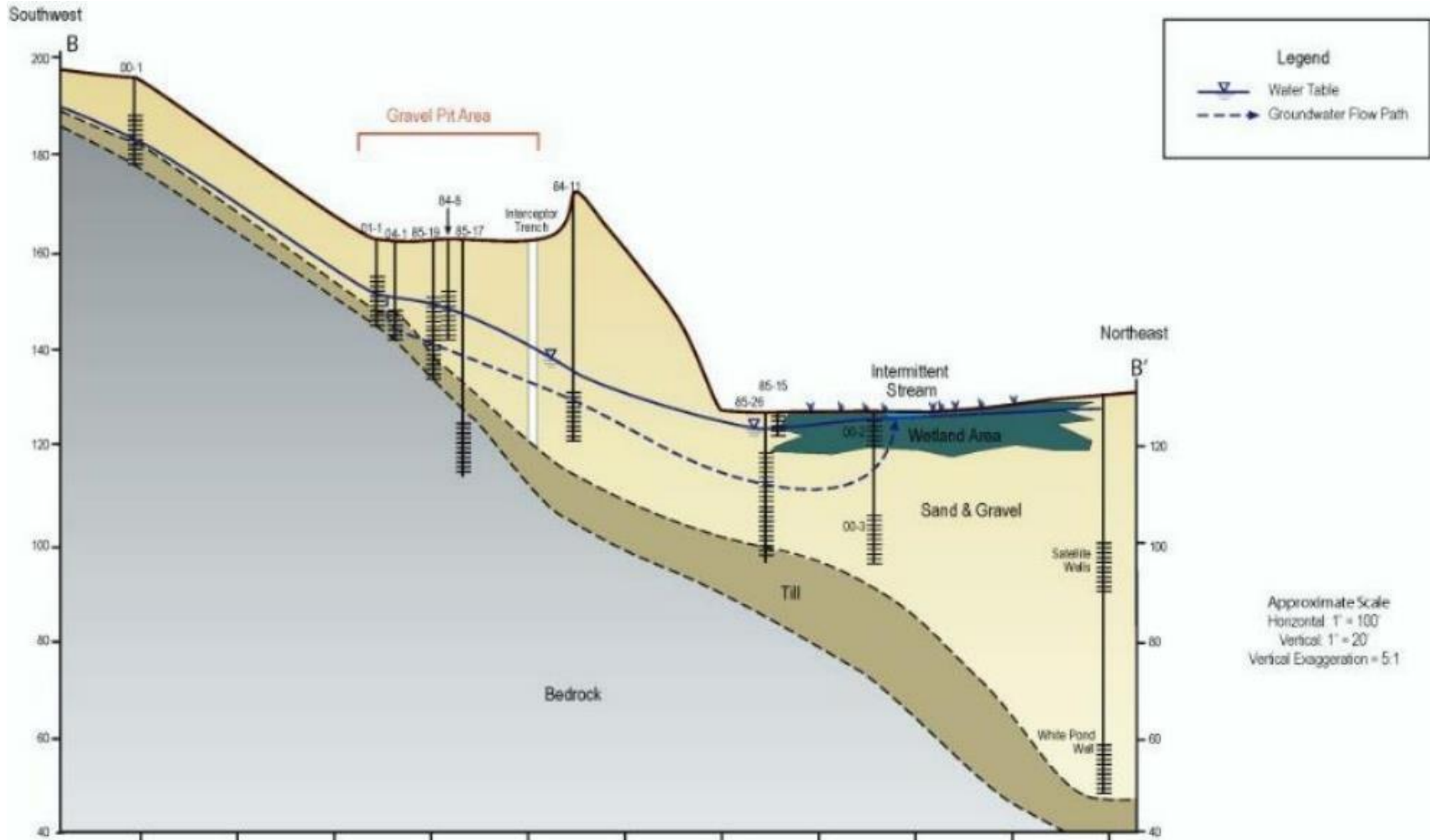


Figure 4 - Cross-Section with Suspected Flow Path  
Unisys - Sudbury, MA





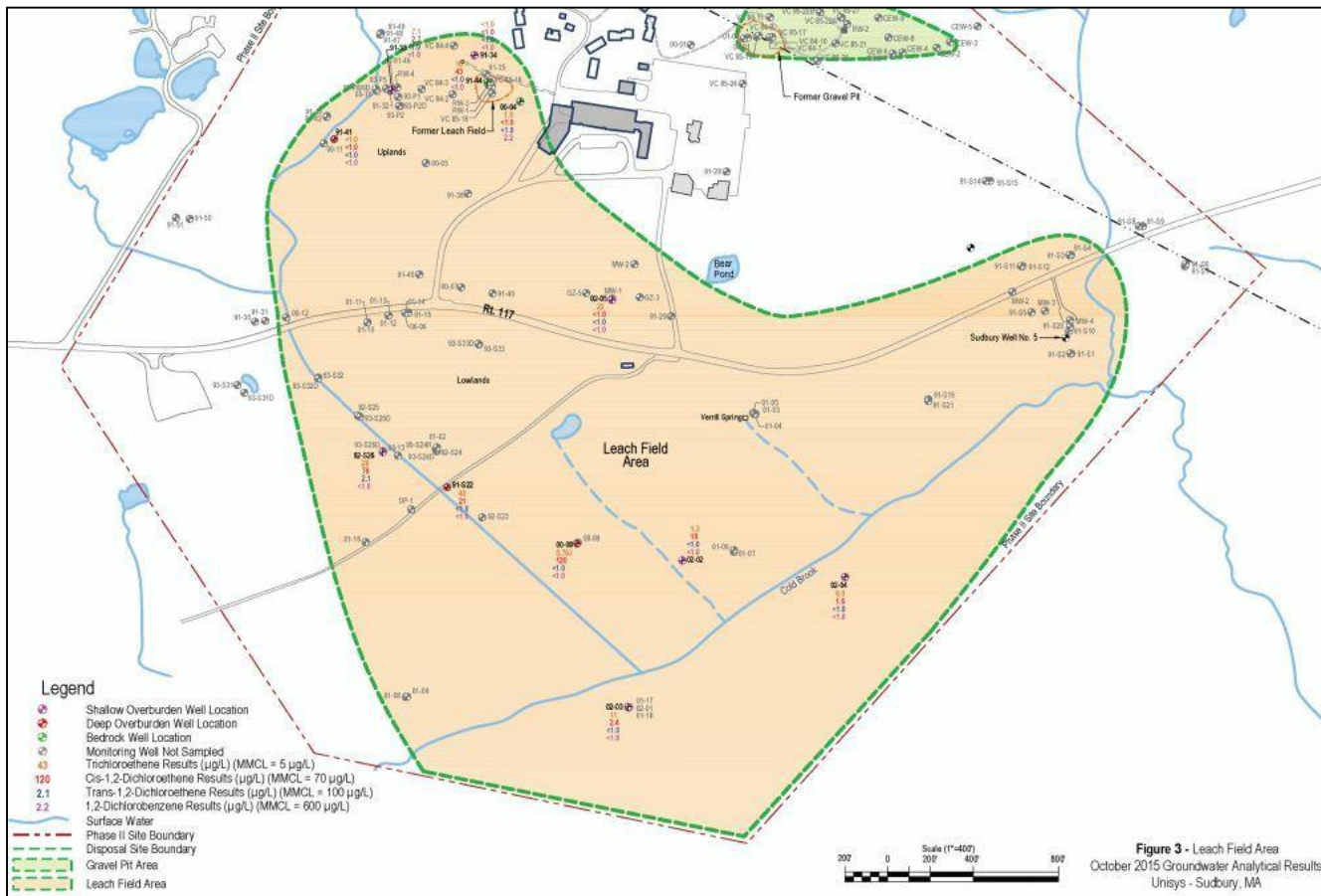
## Regulatory Status

- December 10, 2014, Revised Summary Temporary Solution Statement was filed.
- A Permanent Solution (regulatory closure) is not currently attainable because the concentrations of COCs in groundwater exceed drinking water standards, and both source areas are located within mapped Zone II areas for municipal water supplies.
- Post-Temporary Solution Status Reports are filed every six (6) months.
- Groundwater monitoring every 2 years.



# Leach Field Current Conditions

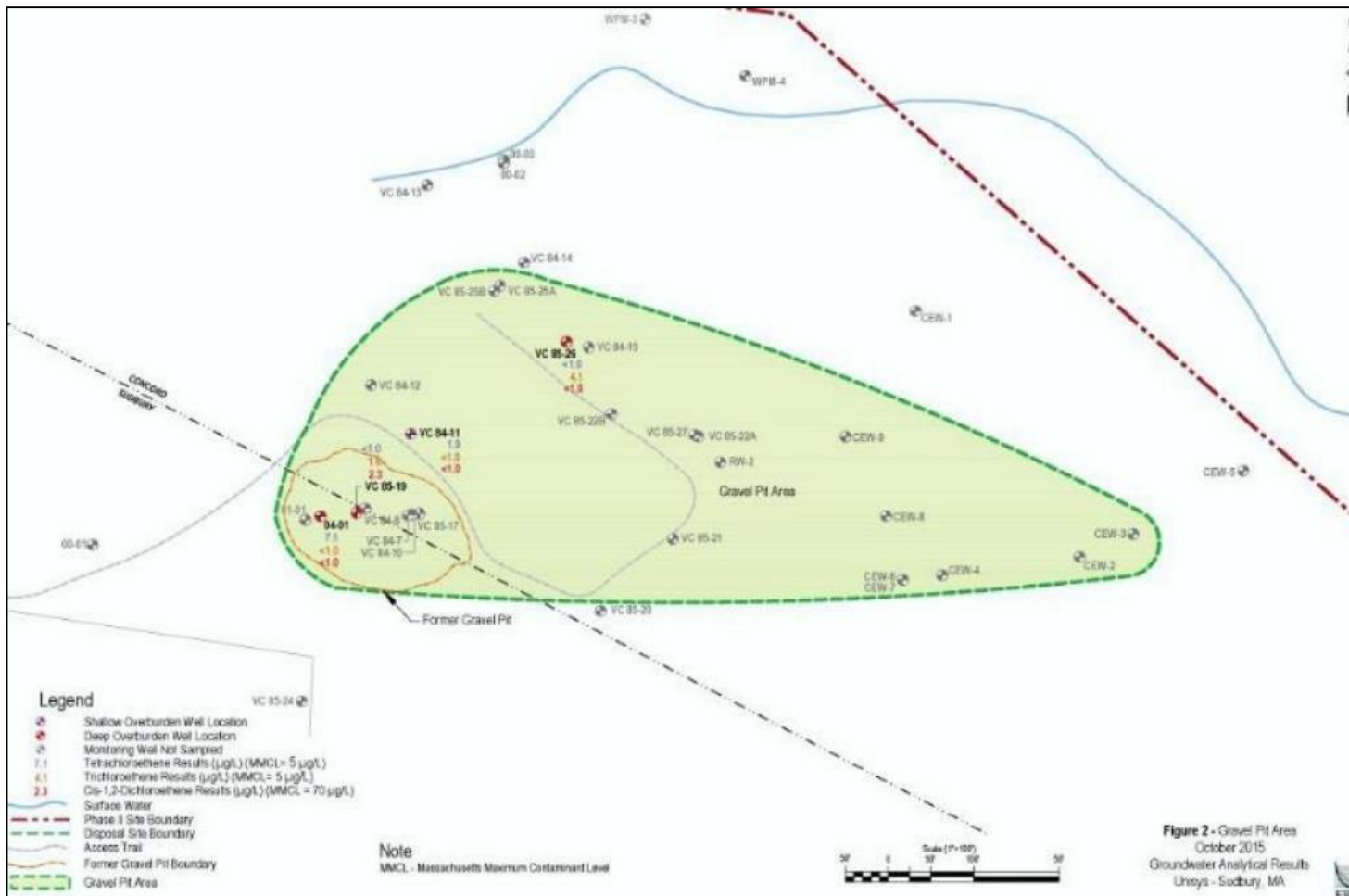
October 2015 data: Leach Field Area plume results are consistent with previous sampling and generally show decreasing concentrations. Multiple locations are one to two orders of magnitude greater than applicable drinking water standards.





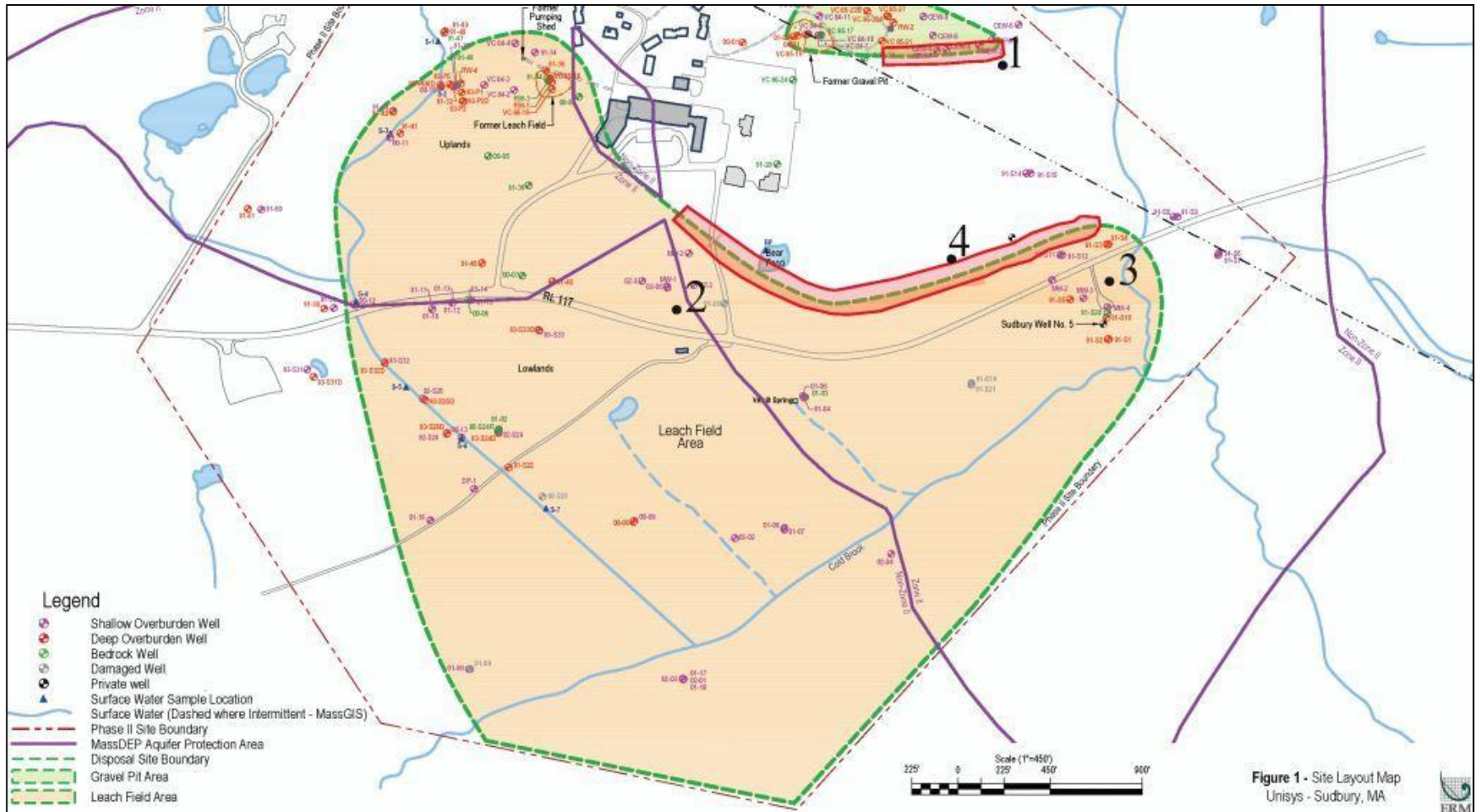
# Gravel Pit Area Current Conditions

After 2004 soil excavation activities, monitoring has documented the attenuation and shrinking of the Gravel Pit Area plume. As of October 2015, only one well was above drinking water standard.





# Sperry/Unisys Site – Relevant Data Gaps





## SUDBURY WATER DISTRICT WELL NO. 5



Well No. 5



View to west from Well No. 5



## Sudbury Water District Well No. 5

### Summary Well Information:

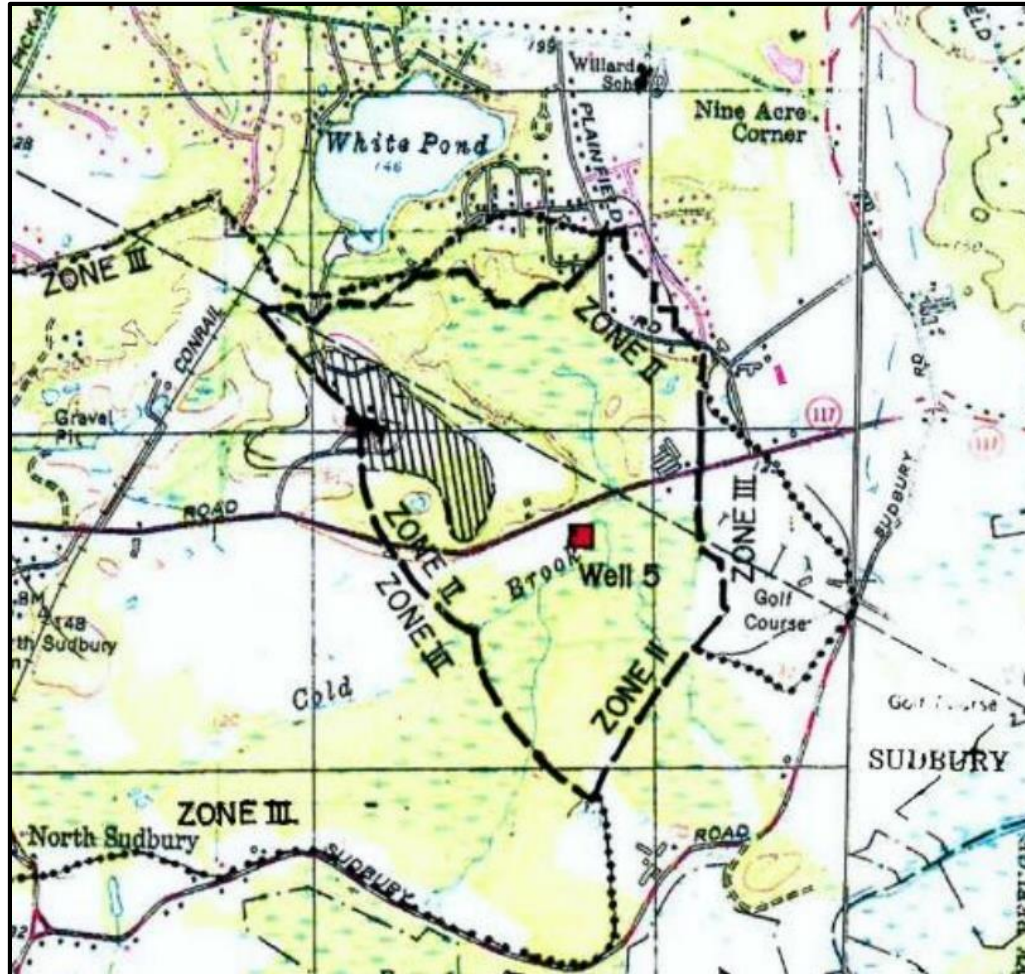
- Well No. 5 was installed in 1964.
- Well No. 5 is 65 feet deep and located in the lower portion of the regional sand/gravel.
- Well No. 5 is about 600 feet southeast of Melone Property.
- In late 1980s, solvent TCE detected and Well No. 5 was shut down.
- 1991 - treatment system installed to remove TCE.
- During early 2000s, the well operated seasonally during peak summer demands.
- Operated at 350-460 gpm; total withdrawal = 50 million gallons per year (gpy).
- Well No. 5 was shut down in 2009 because of iron/manganese issues.
- Sudbury Water District maintains “active” status for Well No. 5.



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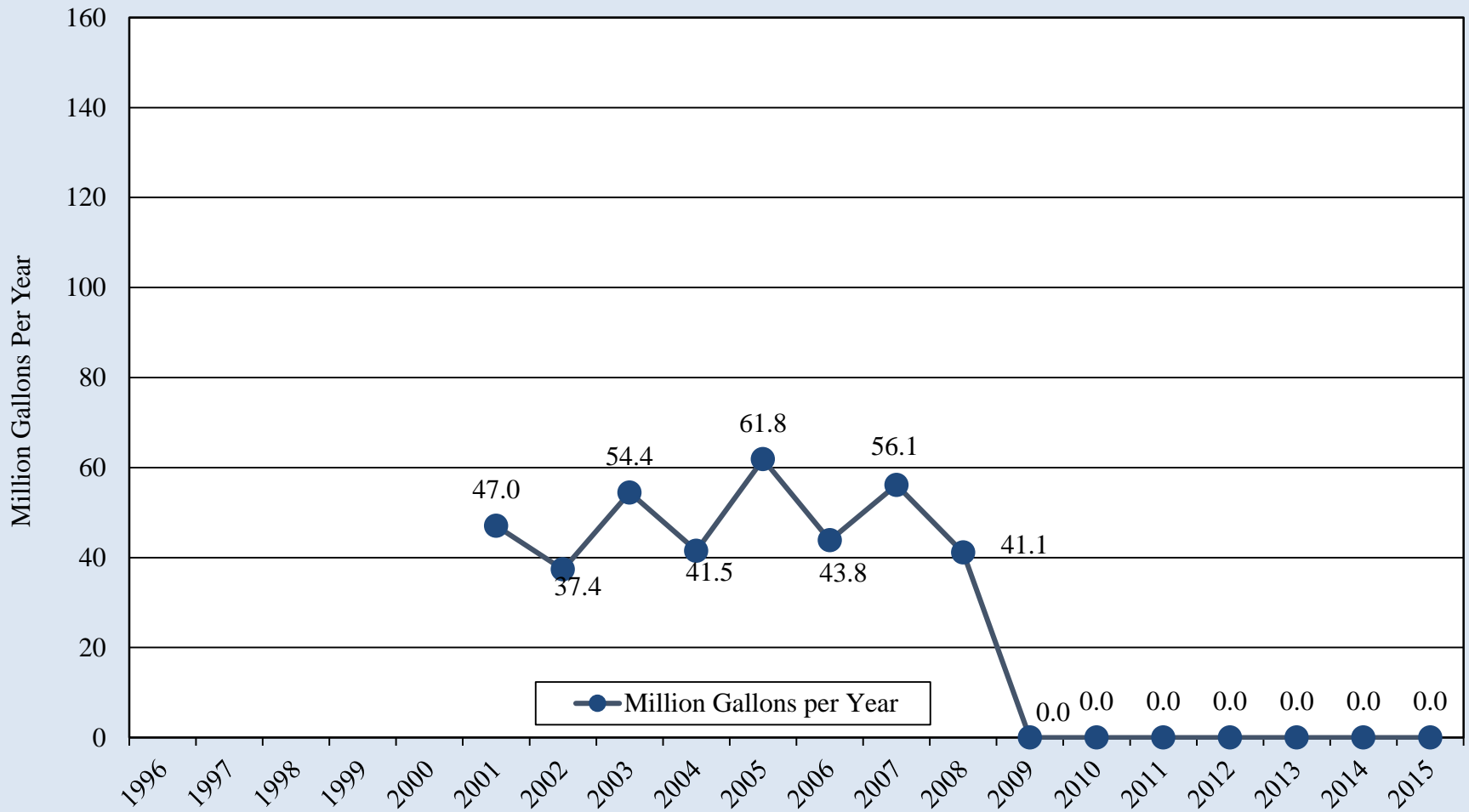
## Zone II Map - Sudbury Well No. 5







## Sudbury Well No. 5 Pumping Data





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## TOWN OF CONCORD - WHITE POND WELL



Concord White Pond Well – view south



Concord White Pond Well – view west



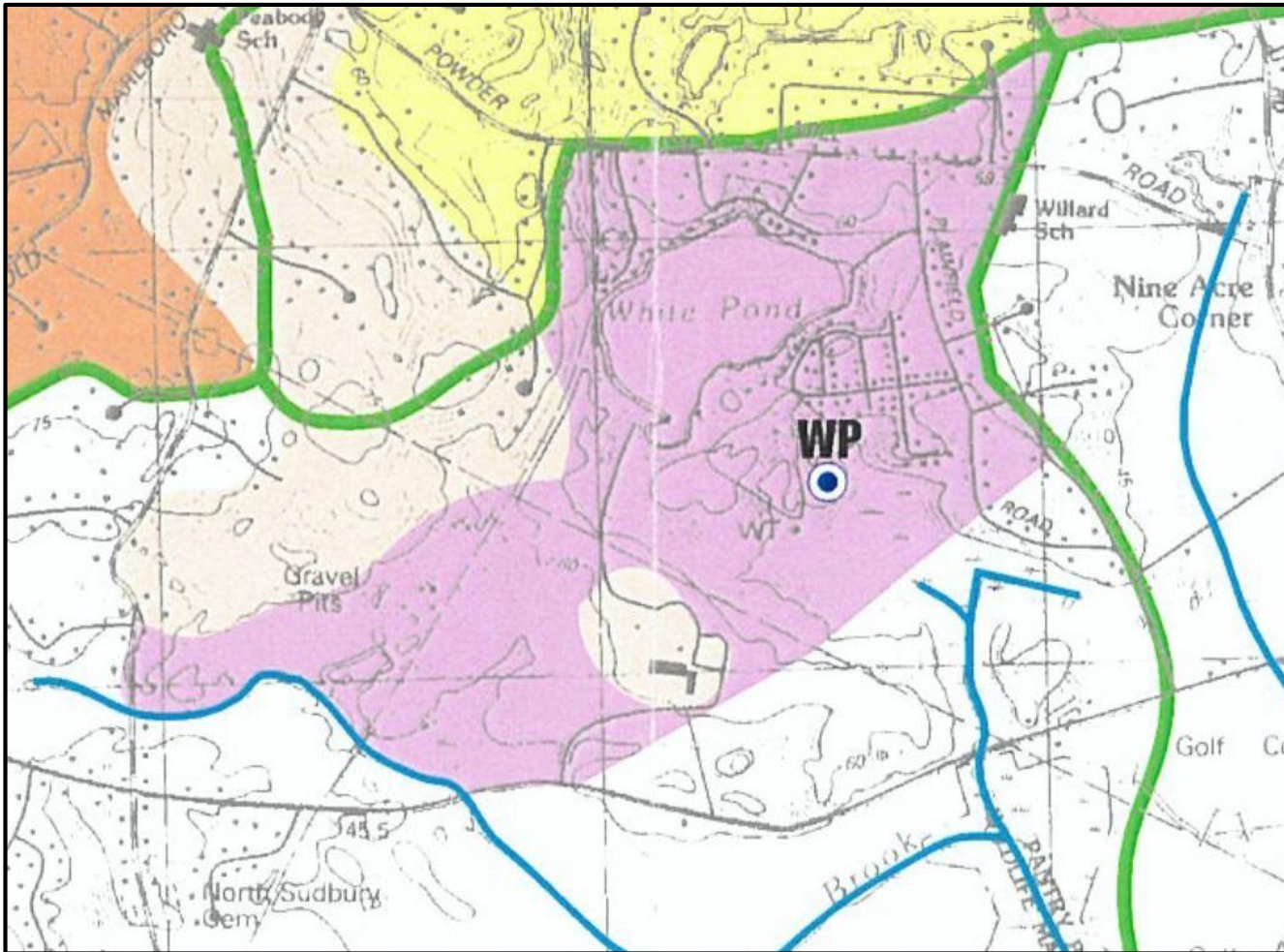
## Town of Concord – White Pond Wellfield

### Summary Well Information:

- Main well was installed in 1970.
- Well is 64 feet deep and located in the lower portion of the regional sand/gravel.
- Well is located about 900 feet north of Melone Property.
- During 1990s/early 2000s, operated seasonally during peak summer demand.
- Operated at 330-450 gpm; total annual withdrawal of 60 million gpy.
- 1999 - two 40-foot satellite wells installed to improve water quality (Fe/Mn).
- 1999/2000 pump test - wellfield did not pull water from Unisys Gravel Pit area.
- In 2008 - connected to new water treatment facility.
- Since 2008, wellfield operated year round (150-280 gpm; total withdrawal of 120 million gpy).

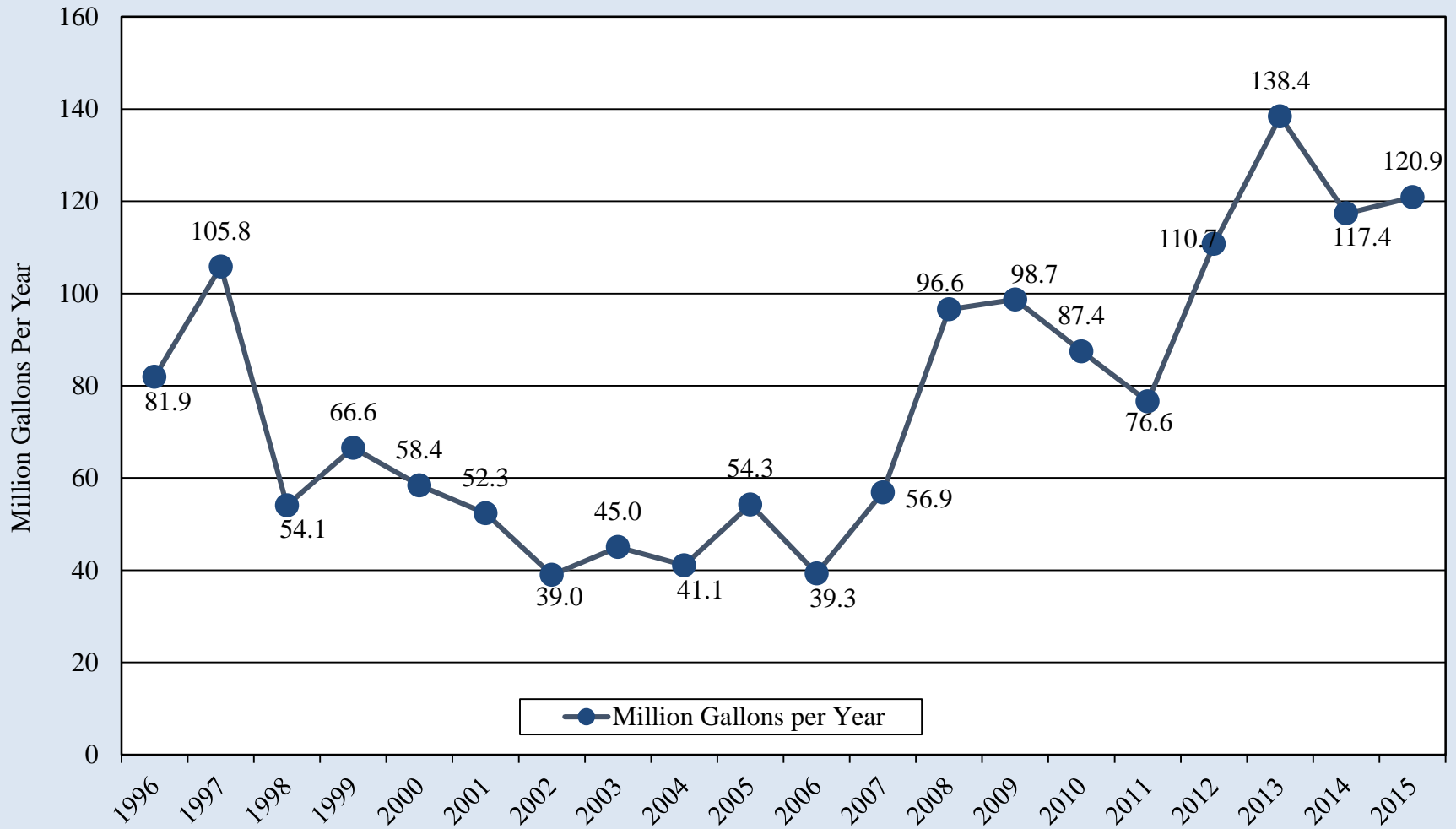


## Zone II Map – White Pond Well





## Concord White Pond Well Pumping Data





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## Melone Property Information

- Historically, the Property appears to have been used for agricultural and then gravel mining purposes. Aerial photographs indicate that an orchard covered the western portion of the Property from at least 1938 to approximately 1957.
- Gravel mining operations appear to have commenced in the central portion of the Property between 1952 and 1957. Larger scale gravel mining began in the eastern portion of the Property in approximately 1969.
- Aerial photographs indicated that from the late 1970s to the early 1990s, the portion of the Property directly northwest of the Wagner property was occupied by miscellaneous vehicles. The vehicles were removed sometime after May 1991. The area where the vehicles were located was subsequently mined for gravel.
- A review of an Environmental Data Resources, Inc. (EDR) Radius Map Report identified the Sperry Research Center as a State-listed hazardous waste site. No other release sites in the general vicinity of the Property.



## Potential Impacts From Off-Property Sources

- Groundwater conditions, both physical (depth to groundwater and direction of flow) and chemical, have not been evaluated on the Property.
- Limited groundwater characterization data are available on adjacent properties.
- Portions of the Gravel Pit Area plume were present along the north boundary of the Property, and historically extended to the east onto a limited area of the Concord/wetland portion of the Property.
- Groundwater impacts associated with the Leach Field Lowland Area plume were present along the south portion of the Property along North Road.
- Historically, pumping of Sudbury Well No.5 may have pulled portions of the Leach Field Area Lowland plume onto the south portion of the Property.





## Redevelopment Considerations

### Soil Related:

- Much of the soil over the central and east portion of the Property was mined for gravel. Soil that is currently located at the ground surface is comprised of deeper native soil that is not expected to have been impacted by historical uses of the Property.
- The non-gravel-mined west portion of the Property was historically occupied by an orchard. Shallow soil located in this portion of the property may contain residues from historical application of pesticides/herbicides.





## Redevelopment Considerations

### Groundwater Related:

- Depth to groundwater on the Property likely ranges from several feet in the mined portions of the Property and up to 30 or more feet in the un-mined western portion of the Property.
- There are no historical or current data for groundwater at the Property.
- Impacts associated with the Sperry/Unisys Site Gravel Pit Area plume likely extended onto the north portion of the Property (i.e., the portion containing wetlands located in Concord). These areas are not likely to be considered for redevelopment.
- Impacts associated with the Sperry/Unisys Leach Field Area plume may extend onto the southwest and southern portions of the Property.



## Redevelopment Considerations

### Use Related:

- It is assumed that commercial or residential development of the Property would rely on municipal water.
- The primary issue associated with possible impacts from the Sperry/Unisys Site groundwater plumes would be the potential for vapor intrusion into buildings.
- The Property is located within Zone II groundwater protection areas associated with both Sudbury Well No. 5 and Concord White Pond wellfield. The design, location, and use of potential on-site private wastewater systems would have to be evaluated with regard to possible impacts to groundwater quality within the Zone II areas.



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# COMMENTS AND QUESTIONS

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