Superfund Records Center
SITE: Hocomonco Pond
BREAK: 5.4
OTHER: 548335

EXPLANATION OF SIGNIFICANT DIFFERENCES (ESD)

THE HOCOMONCO POND SUPERFUND SITE

WESTBOROUGH, MASSACHUSETTS

SEPTEMBER 2013

U.S. ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 POST OFFICE SQUARE
BOSTON, MA 02109-3912

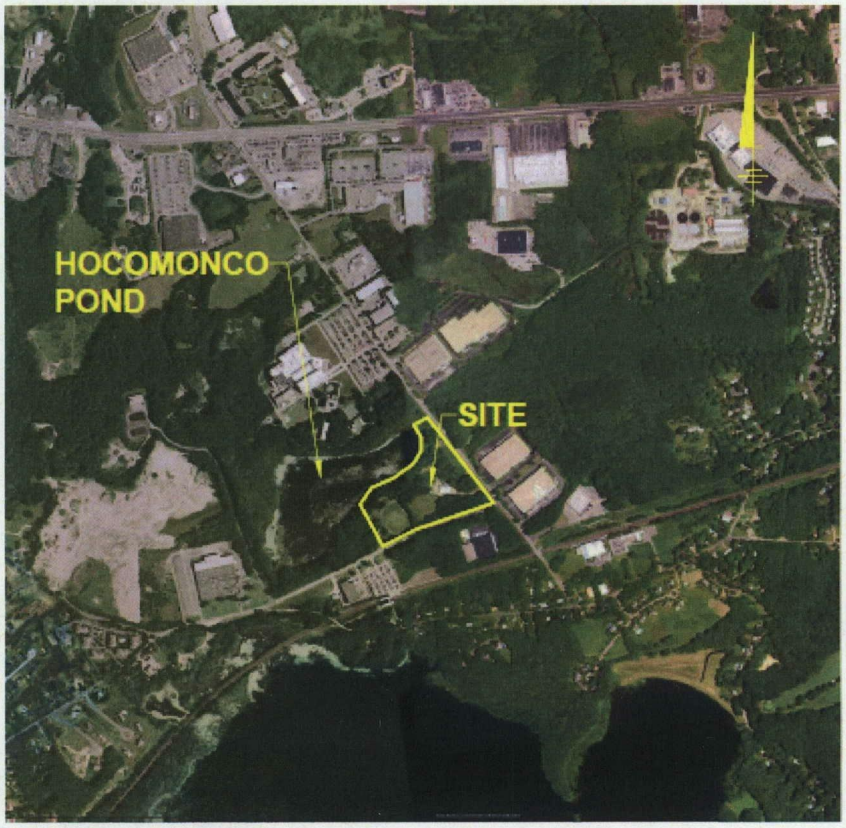
SDMS DocID 548335

I. INTRODUCTION

A. SITE NAME & LOCATION

Site Name: Hocomonco Pond Superfund Site

Site Location: Westborough, Worcester County, Massachusetts



Hocomonco Pond Superfund Site

B. LEAD & SUPPORT AGENCIES

Lead Agency: United States Environmental Protection Agency ("EPA")

- *Contact: Jim DiLorenzo, EPA Remedial Project Manager, (617) 918-1247*

Support Agency: Massachusetts Department of Environmental Protection ("MassDEP")

- *Contact: Jay Naparstek, MassDEP Deputy Division Director, (617) 292 -5697*

C. LEGAL AUTHORITY FOR ESD

This Explanation of Significant Differences ("ESD") is being issued for the Hocomonco Pond Superfund Site ("Site") to document changes in certain components

of the remedy as originally set forth in the September 30, 1985 Record of Decision ("ROD"), and subsequently changed in an ESD issued on July 22, 1992, and a second ESD issued on September 21, 1999.

The United States Environmental Protection Agency ("EPA") is required to publish this ESD by Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9617(c), and the rule at 40 C.F.R. § 300.435(c)(2)(i).

Under Section 117(c) of CERCLA, 42 U.S.C. § 9617(c), the rule at 40 C.F.R. 300.435(c)(2)(i), and EPA guidance (Office of Solid Waste and Emergency Response [OSWER] Directive 9200.1-23P), if the EPA determines that differences in the remedial action significantly change but do not fundamentally alter the remedy selected in the ROD, with respect to scope, performance, or cost, the EPA shall publish an ESD between the remedial action being undertaken and the remedial action set forth in the ROD, and the reasons such changes are being made. EPA has determined that the adjustments to the ROD provided in this ESD are significant, but do not fundamentally alter the overall remedy for the Hocomonco Pond Superfund Site with respect to scope, performance, or cost. Therefore, this ESD is properly issued.

D. SUMMARY OF CIRCUMSTANCES NECESSITATING THIS ESD

The **1985 Record of Decision (ROD)** for the Hocomonco Pond Superfund Site specified a comprehensive remedy to address sediment, soil and groundwater. The ROD specified the following actions:

1. Former Lagoon Area. Grading and capping of the former lagoon in place, and relocation of a storm drain which was the primary mechanism for the transport of contamination from the lagoon area to Hocomonco Pond.

2. Hocomonco Pond and Discharge Area. Mechanical dredging of contaminated sediments from Hocomonco Pond and its discharge stream, with disposal in an on-Site landfill.

3. Kettle Pond Area. Construction of a groundwater extraction, treatment and recharge system to dewater sediments in the Kettle Pond area to allow for dry excavation with disposal in an on-Site landfill. Groundwater extraction and treatment was to continue to eliminate groundwater contamination to the extent feasible.

4. Other Actions. These activities included the removal of isolated areas of soil and sediment with disposal in an on-Site landfill; sealing of a storm drain on adjacent Otis Street; and various maintenance and monitoring activities.

5. On-Site Landfill. Construction of a fully lined and capped landfill to manage soil and sediment from on-Site excavations.

The ROD also required deed restrictions to prevent development in the area of the former lagoon and landfill caps.

The **1992 Explanation of Significant Differences ("ESD")** specified changes to the original remedy in the Kettle Pond Area. The changes involved eliminating the requirement for dry excavation and required wet excavation of the shallow contaminated soil and sediment. This eliminated the requirements for dewatering and landfilling the deeper soil, and required the use of in-situ technologies such as bioremediation or soil flushing for deeper soil. The ESD also required that DNAPL be removed through pumping prior to or during bioremediation and shipped offsite for treatment or disposal.

The **1992 Supplemental Decision Document ("SDD")** established interim cleanup levels for groundwater. It was intended that the groundwater extraction system in the Kettle Pond Area treat groundwater to achieve the interim cleanup levels.

The **1999 Explanation of Significant Differences ("ESD")** specified that treatment of groundwater to the interim cleanup levels established in the SDD may not be achievable due to the presence of dense non aqueous phased liquids ("DNAPL"). A technical impracticability waiver ("TI") was issued for groundwater in the former lagoon, landfill and Kettle Pond areas. The ESD stated that "DNAPL recovery shall continue until such time that it can be demonstrated that it is no longer technically practicable" or "until the EPA and MADEP give a written approval stating otherwise." The ESD required that deed restrictions be established at the Site property to prohibit the extraction of groundwater for purposes other than remedial action.

The remedy for the Site as selected in the 1985 ROD included both Source Control and Management of Migration ("MOM") components.

The Source Control components of the remedy including all excavation and dredging activities were completed from 1994 to 1996 as follows:

- Kettle Pond Area: A cleanup level of 4 mg/kg total carcinogenic PAHs ("cPAHs") was established. The top 4 feet of soil totaling about 4,200 cubic yards was removed.

- Hocomonco Pond: A cleanup level of 4 mg/kg total cPAHs was established. The top 0.5 to 1.5 feet of sediment totaling about 1,840 cubic yards was removed by mechanic dredging. Clean material was placed.

- Discharge Stream from Hocomonco Pond: A cleanup level of 7 mg/kg total cPAHs was established. Approximately 550 cubic yards of sediment was removed from the first 440 linear feet of the discharge stream and replaced with clean material.

- Other Areas: A cleanup level of 4 mg/kg total cPAHs was established. The top 2 feet of soil totaling about 1,670 cubic yards was removed from the former tank farm area and an isolated area around MW-1.

Wet material was placed on drying beds. Excess water was fed through the groundwater treatment system. Once sufficiently dried, excavated soil and sediment exceeding cleanup levels were placed in a newly constructed on-Site double-lined landfill. In total, approximately 8,500 cubic yards were placed in the on-Site landfill. It is about 25,000 square feet. Approximately 4,860 cubic yards of soil and sediment, which did not exceed cleanup levels, were placed in the former lagoon area and capped. It is about 1 acre. The source control components of the remedy are complete.

The MOM components of the remedy were implemented in 1993 with the construction of the groundwater extraction and treatment plant. The plant began operation in August 1994. Treated groundwater was discharged to Hocomonco Pond.

DNAPL recovery began in 1995 from groundwater extraction wells DRW-1, DRW-2, DRW-3 and A-10. DNAPL was separated and collected through the groundwater treatment system for offsite disposal. In 2002, the PRPs completed an evaluation of the DNAPL recovery efforts and concluded that the groundwater extraction system (referred to as the "enhanced" system) had "reached a point of diminishing returns" and that the monitoring data indicated that the DNAPL area appeared to be stable. The PRPs requested that EPA and MADEP agree to cease active pumping and recovery of DNAPL. EPA and MADEP agreed to allow the PRPs to assess the efficacy of passive DNAPL recovery efforts. In May 2003, operation of the groundwater extraction system ceased and passive DNAPL recovery efforts were initiated. This method involves using submersible pumps to evacuate accumulated DNAPL from individual wells. Recovered DNAPL was initially transferred to a storage tank behind the groundwater treatment system prior to off-Site disposal. More recently, it is transferred directly from the recovery wells to drums for off-Site disposal. Passive DNAPL recovery efforts have continued and expanded to include additional wells. DNAPL is currently removed on a regular basis from nine wells; DRW-1, DRW-2, DRW-3, DRW-4, A-2, A-4, A-10, BMW-6 and BRW-5 (see Figure 2).

The in-situ bioremediation system required by the 1992 ESD for the Kettle Pond Area was constructed and began operation in March 1996, but was not successful due to immediate and significant iron fouling. The system was terminated two weeks after start-up. Consistent with the 1992 ESD, other treatment alternatives were evaluated but it was concluded that they would have limited effectiveness due to the residual and free phase DNAPL present in the Kettle Pond area.

Pursuant to the 1999 ESD, a technical impracticability waiver was issued for groundwater in the Kettle Pond, Landfill and former Lagoon areas.

This ESD is being issued to require the continued removal of DNAPL by passive recovery methods rather than by active pumping and use of the on-Site groundwater treatment plant. This ESD also establishes a new TI zone compliance boundary in the area just down gradient of the former lagoon.

E. AVAILABILITY OF DOCUMENTS

This ESD and all supporting documentation shall become part of the Administrative Record for the Site. The ESD, supporting documentation for the ESD, and the Administrative Record are available to the public at the following locations and may be reviewed at the times listed:

U.S. Environmental Protection Agency
Records Center
5 Post Office Square, Suite 100
Boston, MA 02109
617-918-1440
Monday-Friday: 9:00 am - 5:00 pm
Saturday and Sunday - Closed

Westborough Public Library
West Main Street
Westborough, MA 01581
508-366-3050
Monday-Thursday: 10:00 am – 9:00 pm
Friday: 10:00 am – 6:00 pm
Saturday: 10:00 am – 5:00 pm
Sunday: closed except October – May, 1:00 pm – 5:00 pm

II. SUMMARY OF SITE HISTORY, CONTAMINATION AND SELECTED REMEDY

A. SITE HISTORY, CONTAMINATION AND SITE RISKS

History

The 23-acre Hocomonco Pond Site is located in Worcester County, in the town of Westborough, Massachusetts. The Site is located in a light industrial area and is bordered to the northwest by Hocomonco Pond (a 27-acre shallow freshwater pond), to the east by Otis Street, and to the south by Smith Valve Parkway.

The natural topography of the property is relatively flat, with the exception of a steep downward grade which slopes to the shore of Hocomonco Pond, and a more gradual slope which dips into Kettle Pond. Gradual slopes also form the perimeters of the former lagoon and landfill areas. The property is largely wooded with the exception of

the former lagoon and landfill capped areas which are flat and vegetated with grass.

The Site lies within a Zone II aquifer. Groundwater flows northward towards Hocomonco Pond and discharges into the pond. In the extreme north of the Site, data suggest that groundwater may be flowing northward following a general drainage pattern from Hocomonco Pond to more low-lying swamps northeast of Otis Street. The hydrogeologic conditions present at the Site indicate that Hocomonco Pond provides a constant head boundary, thus preventing Site contaminants from migrating toward the Otis Street municipal well, northwest of the pond, or toward the Smith Valve process well located west of the pond. Site contaminants were not found in either of these wells during the remedial investigation or during subsequent routine testing of the Otis Street well.

The Kettle Pond wetland, located between Kettle Pond and Hocomonco Pond, is a wooded swampy area that is occasionally inundated during major storm events. Hocomonco Pond discharges from its northeast end and flows under Otis Street into wetlands.

Wood treating operations were conducted on-site between 1928 and 1946. These activities consisted of saturating wood products with creosote to preserve them. Waste produced during these operations was discharged into the 1.7 acre unlined (former) lagoon. When the lagoon was filled with waste creosote, sludge, and water, its contents were pumped into two depressed areas, approximately 1.0 acre in size, referred to as the Kettle Pond area.

After 1946, the facility was converted to an asphalt mixing plant. Aggregate and asphalt wastes associated with this operation were discarded on-Site. The facility was later converted into a cement plant where dry cement was sold in bulk.

Contamination

An open-jointed storm water drainage system was installed in 1976 to collect runoff from Smith Valve Parkway and direct the flow into Hocomonco Pond. Unknowingly, the storm drain was constructed immediately adjacent to the east side of the former lagoon. Rainwater passing through the drainage system transported contaminants from the former lagoon into Hocomonco Pond and a portion of its discharge stream. Between 1979 and the mid-1980s an oil boom was placed in Hocomonco Pond at the storm drain discharge point during heavy rains to collect creosote that discharged to the pond. The Massachusetts Division of Fish and Wildlife investigated two fish kills, in 1979 and 1982. The fish kills were attributed to creosote leaching.

Road reconstruction on Otis Street in 1983 adjacent to Kettle Pond unknowingly unearthed contaminated soil, which was then redistributed along the roadway embankments. Given the historical operations in the area, EPA collected water, soil, and sludge samples along the Otis Street construction area for risk assessment purposes. Contaminants detected in the sludge samples were consistent with creosote

and its by-products. Please see Figure 1 for Site contamination areas.

Hocomonco Pond was closed for recreational uses, and signs were posted by the board of health and the Massachusetts Division of Fish and Wildlife prohibiting fishing, boating, and swimming. Access to the Site was restricted by placement of large boulders across the access road. A perimeter fence was then constructed. Based on the extent of creosote contamination detected in the Hocomonco Pond area and the potential threat of contamination to the Otis Street municipal well, EPA evaluated the Site and proposed it for inclusion on the National Priority List (NPL) in 1982. The Site was officially placed on the NPL on September 8, 1983.

Site Risks

Poly Aromatic Hydrocarbons (PAHs) were found in high concentrations in soil and sediment in the former lagoon area, Kettle Pond area, and Hocomonco Pond and its discharge stream. Lower concentrations were found in groundwater in the Kettle Pond and Otis Street areas, and in surface water within the oil boom at the storm drain discharge to Hocomonco Pond. Inhalation, ingestion, and dermal contact were identified as potential routes of exposure assuming future recreational use. Risks were calculated based on exposures to the identified critical contaminants (see table below) via ingestion and dermal contact.

Estimated risks from exposure to the carcinogenic PAHs (benzene and benzo(a)pyrene) were more significant than from non-carcinogenic effects. Inhalation risks were negligible. Summed incremental lifetime cancer risks were estimated for ingestion and dermal contact as follows:

Hocomonco Pond and Discharge Area:

- sediment = 2.43×10^{-05}
- soil = 2.22×10^{-05}
- groundwater (hypothetic well) = 2.55×10^{-05}
- groundwater (swimming) = 3.61×10^{-06}

Kettle Pond Area: soil = 1.66×10^{-03}

CRITICAL CONTAMINANTS
HOCOMONCO POND SITE

ORGANICS	
Carcinogens	Benzo(a)pyrene
	Benzene
Non-carcinogens	Naphthalene
	Fluoranthene
Unknowns	Phenanthrene

	Anthracene
	2-methylnaphthalene
	Pyrene
	Fluorene
	Acenaphthene
	Benzo(a)anthracene
	Chrysene
	Dibenzofuran
	2-chlorophenol
	4-methylphenol
	2,4-dimethylphenol
	2-methylphenol
	Benzo(g,h,i)pyrene
INORGANICS	
Carcinogens	*Arsenic
	Chromium

* Arsenic appears to be naturally occurring.

Interim groundwater cleanup levels were established based on federal and state drinking water standards, referred to as Maximum Concentration Limits (MCLs). Risk-based concentrations were used to calculate cleanup levels for PAHs that do not have drinking water standards. Cleanup levels could not be set for PAHs that did not have published toxicity information available (see the table below). These cleanup levels for groundwater were established as "interim" concentrations in recognition of the fact that they may need to be modified during the cleanup. Cleanup levels are waived within the established TI zone compliance boundary.

INTERIM GROUNDWATER CLEANUP LEVELS
FIVE-YEAR REVIEW
HOCOMONCO POND SITE
WESTBOROUGH, MASSACHUSETTS

Constituent	Interim Cleanup Level (µg/l)	Reference (criteria)
PAH – carcinogenic		
Benzo(a)anthracene	None	-
Benzo(a)pyrene	0.2	final MCL
Benzo(b)fluoranthene	None	-
Benzo(k)fluoranthene	None	-
Chrysene	None	-
Dibenzo(a,h)anthracene	None	-
Indeno(1,2,3-cd)pyrene	None	-
PAH – noncarcinogenic		
Acenaphthene	2,200	risk-based
Acenaphthylene	None	-
Anthracene	11,000	risk-based
Benzo(g,h,i)perylene	None	-
Fluoranthene	1,500	risk-based
Fluorene	1,500	risk-based
Naphthalene	1,500	risk-based
Phenanthrene	None	-
Pyrene	1,100	risk-based
VOCs		
Benzene	5	final MCL
Ethylbenzene	700	final MCLG
Toluene	1,000	final MCLG
Xylenes (total)	10,000	final MCLG
Inorganics		
Arsenic	50	final MCL
Chromium (total)	100	final MCLG

None = no interim cleanup level established
Source: EPA, 1992

B. SUMMARY OF THE MOM REMEDY

The groundwater treatment plant was constructed between November 1993 and July 1994 to treat water containing dissolved and suspended oil, and/or solids pumped from several recovery wells located on-Site, as well as the water collected in the drying beds during dewatering of excavations and saturated sediments. The plant was designed to operate at a total flow of about 150 gallons per minute (gpm); approximately 135 gpm would be from groundwater, and 15 gpm from solids and DNAPL. The main unit processes in the treatment plant include pH adjustment, polymer addition, dissolved air flotation, multimedia filtration, and carbon adsorption. Treated effluent was

discharged to Hocomonco Pond. Startup of the plant began on August 9, 1994.

The primary objectives of the groundwater pump and treat system were to remove DNAPL from a series of recovery wells and treat the associated contaminated groundwater; and to recover and treat contaminated groundwater from Kettle Pond, add nutrients to enhance bioremediation, and then reinject the treated water through a series of reinjection wells.

The in-situ bioremediation portion of the treatment system began operation on March 4, 1996. Operation of the system was suspended on March 18, 1996 due to problems with dissolved, naturally-occurring iron in the groundwater. The 1992 ESD stated that if the combination of DNAPL recovery and in-situ bioremediation could not remediate the creosote contamination, then other technologies, such as in-situ soil flushing, will be implemented. Two other treatment alternatives, air sparging and natural attenuation, were evaluated. The evaluation concluded that the effectiveness of both technologies was limited due to the presence of residual and free phase DNAPL. Based on experience with other sites contaminated with creosote at DNAPL concentrations, EPA then recommended that a technical impracticability demonstration be completed for certain areas of the Site.

Following shutdown of the bioremediation system in 1996, the DNAPL recovery wells continued to operate at a rate of 5 to 10 gpm. The DNAPL was collected in a storage tank located behind the water treatment plant for off-Site disposal; associated groundwater continued to be processed through the treatment plant and discharged to Hocomonco Pond. Overall DNAPL recovery rates averaged 500 gallons per month (range from 150 to 1,500 gallons per month).

In 1997, the PRP conducted investigations to establish Site-wide groundwater quality conditions and determine whether it would be practical to restore groundwater at the Site to the interim groundwater cleanup standards. The investigations involved performing groundwater and pore water sampling and analysis at 55 locations on-Site. Groundwater and pore water samples were analyzed for PAHs, BTEX, and filtered and unfiltered (total) arsenic and chromium.

Benzene and naphthalene were the most frequently detected contaminants exceeding the interim groundwater cleanup levels. Since benzene and naphthalene had historically exceeded the cleanup levels, the technical impracticability ("TI") evaluation focused on these compounds as the primary constituents of concern. The results and conclusions of this investigation were presented in a "Report Demonstrating the Technical Impracticability of Restoring Groundwater at the Hocomonco Pond Site," dated April 1998.

The TI report concluded that there were two primary DNAPL entry locations on the Site, the Kettle Pond area and the former lagoon area. Soil samples collected from borings in the Kettle Pond area confirmed that DNAPL was present in both shallow and deep soil samples; test pits in the former lagoon area encountered DNAPL in the unsaturated soils only.

Due to the lack of DNAPL at depth around the former lagoon area, recovery efforts were focused to the area west of Kettle Pond. By September 1999, approximately 31,000 gallons of DNAPL had been recovered. Given the extent of DNAPL

contamination present at the Site, the TI report concluded that: "The presence of residual phase DNAPL represents a long-term source for impacts to groundwater since this phase of DNAPL is difficult to remove. Locating all free phase DNAPL sources and the inability to remediate residual phase DNAPL makes groundwater restoration technically impracticable."

The report also stated that there was no significant risk to human health or the environment posed by the presence of free phase or residual phase DNAPL at the Site, and suggested implementing institutional controls to mitigate potential future risk. Based on these conclusions, the EPA "Guidance for Evaluating the Technical Impracticability of Groundwater Restoration," and other relevant documents, the PRP requested a waiver of interim groundwater cleanup levels for the areas within the defined TI zone. The horizontal extent of the TI zone is shown in Figure 2. The vertical extent of the TI zone is approximately 80 to 120 feet below ground surface in the Kettle Pond area and 30 feet below ground surface in the former lagoon area.

On September 21, 1999, EPA issued the second ESD which waived the groundwater ARARs and interim cleanup levels in the two TI zones identified in the PRP's TI report. The ESD required a groundwater monitoring program be established to ensure compliance with interim groundwater cleanup levels outside the TI zones. The 1999 ESD also required that DNAPL recovery continue until it is determined to be "no longer technically practicable."

In May 2003, the PRP began operating the DNAPL recovery system in passive mode. This process involves using submersible pumps already installed in wells DRW-1, DRW-2, DRW-3, BRW-4 and BRW-5 to evacuate accumulated DNAPL on a weekly basis. In wells A-2, A-4, A-10 and BMW-6, submersible pumps are not present and DNAPL is removed by bailers. The DNAPL product is then transferred to drums for off-Site disposal. Monthly recovery rates have averaged approximately 60 gallons per month (range from 30 to 100 gallons per month). About 65,000 gallons of total DNAPL have been recovered from combined efforts to date. The passive recovery method is independent of the groundwater extraction and treatment system, therefore operation of the treatment system was discontinued.

The PRPs have drafted deed restrictions as required by the ROD and 1999 ESD. The proposed restrictions prohibit any future development on the landfill and former lagoon area caps, and prohibit the extraction of the groundwater for purposes other than the remedial action unless the extracted groundwater meets or is treated to appropriate water use or disposal standards. EPA and MADEP are working to finalize the institutional controls and record them on the property deed.

Between November 5, 2012 and January 3, 2013, the PRPs completed several activities with a goal to enhance the passive DNAPL recovery effort. Enhancement activities included:

- Cleaning and video inspection of 6 existing recovery wells: DRW-1, DRW-2, DRW-3, A-4, A-10 and BRW-5. The goal of this effort was to clean the well screens and remove excess sludge from the well sumps to enhance product recovery, and then inspect the condition of the well screens.

- Video inspection of 5 additional area monitoring wells: C-3, MW-11S, MW-11D, MW-12S and MW-12D. The goal of this effort was to ensure the well screens were not blocked since these wells are located in suspected areas of DNAPL.

- Installation and operation of a new passive recovery well: DRW-4. The goal of this effort was to place a new well in a suspected area of DNAPL between 2 existing higher production recovery wells to increase recovery rates. So far this well has produced an average recovery rate of about 15 gallons of DNAPL per month.

The PRP continues to maintain the treatment system and associated building pending a final agency decision on DNAPL recovery, which is being addressed per this ESD.

In 2000, concentrations of benzene and naphthalene in monitoring well MLC-2 climbed above their respective interim groundwater cleanup levels. In 2006, the concentrations of benzene and naphthalene also climbed above the interim groundwater cleanup levels in MLC-3. MLC-2 and 3 are sentinel wells located down gradient and just outside the TI zone established in the former lagoon area (see Figure 4). Through 2011, concentrations in both wells continued to fluctuate above and below the interim cleanup levels, but were more often above (see Tables 1 and 2). There were no additional monitoring wells down gradient of MLC-2 and 3.

Between November 5, 2012 and January 3, 2013, the PRPs completed a TI zone assessment in the area down gradient of the former lagoon and monitoring wells MLC-2 and 3. A vertical profile boring was completed to assess groundwater quality in the area. The groundwater table was encountered and sampled at 35 feet below ground surface. Subsequent samples were collected every 20 feet of depth to the top of bedrock at 130 feet below ground surface. The samples were analyzed for benzene and PAHs. The interim groundwater cleanup levels were not exceeded in any samples.

The PRP installed two nested well pairs in the area of the boring: MLC-5S/D and MLC-6S/D. The new wells were sampled on January 3, 2013. Detected benzene concentrations ranged from 0.66 to 0.82 ppb; well below the cleanup level of 5.0 ppb. Detected naphthalene concentrations ranged from 0.34 to 2.0 ppb; well below the cleanup level of 1,500 ppb.

III. Basis for the document

This ESD is being issued to require the continued removal of DNAPL by passive recovery methods. The 1992 ESD had required that DNAPL be "removed through pumping prior to or during bioremediation." The 1999 ESD stated that "DNAPL recovery shall continue until such time that it can be demonstrated that it is no longer technically practicable." While the 1999 ESD established a TI waiver ending active pumping efforts to achieve cleanup levels, the above statement implied that active pumping to remove DNAPL was required to continue. Passive recovery efforts performed since 2003 have demonstrated that active pumping is not required to achieve meaningful DNAPL recovery. Extensive groundwater monitoring concludes that the DNAPL is not migrating, and no potential down gradient receptors have been identified.

The ESD also establishes a new TI zone boundary in the area just down gradient of the

former lagoon. Since 2002, concentrations of naphthalene and benzene have frequently exceeded groundwater cleanup levels in monitoring well MLC-2. Since 2007, concentrations of benzene have also frequently exceeded its cleanup level in MLC-3. Both of these wells are located down gradient and just outside of the existing TI zone associated with the former lagoon area. The shore of Hocomonco Pond is about 200 feet down gradient from the former lagoon area. Previous studies have indicated that the pond provides a natural hydraulic barrier. In 2012, the PRP completed a vertical profile boring and two new well pairs: MLC-5S/D and MLC-6S/D, approximately 100 feet down gradient of MLC-2 and MLC-3. Groundwater samples collected from the profile boring in November 2012 and from the new well pairs in January 2013 show no exceedences of cleanup levels. Where detected, concentrations of naphthalene and benzene were near the laboratory detection limits. The northwest boundary of the TI zone around the former lagoon area will be extended by approximately 100 feet and remain south of the new sentinel monitoring wells MLC-5S/D and MLC-6S/D. This represents a minor expansion of the established TI zone. MLC-5S/D and MLC-6S/D shall become the new sentinel wells and will be incorporated into the monitoring program to ensure compliance with the expanded TI boundary. The use of monitoring wells to ensure compliance with the TI boundary is consistent with the 1999 ESD. There are no known receptors located down gradient of these new sentinel wells. Hocomonco Pond is located approximately 100 feet down gradient of these new sentinel wells and is a natural hydraulic barrier to further groundwater migration. There is an active surface water and sediment monitoring program established in the pond. Detected concentrations of PAHs in sediment and surface water have remained low and stable.

IV. DESCRIPTION OF SIGNIFICANT DIFFERENCES

The proposed modifications to the remedy are summarized below.

Original Remedy for the Management of Migration Operable Unit

The original remedy for the MOM portion of the cleanup is described in detail in Section II.B.1 of this ESD.

Modified Remedy

The purpose of this ESD is to modify only the MOM portion of the remedy by changing from active pumping to a passive method of DNAPL recovery, and to extend the existing TI zone compliance boundary in the area of the former lagoon by approximately 100 feet to the northwest (see Figure 4).

With regard to DNAPL recovery efforts, active pumping occurred from 1993 to 2003. During that period of time recovery rates averaged 250 to 500 gallons per month. However, the primary objective of the groundwater extraction and treatment plant as specified in the 1985 ROD was to dewater the Kettle Pond area and eliminate groundwater contamination to the extent feasible. The 1992 ESD required pumping to recovery DNAPL but the primary objective of the groundwater extraction system and treatment system remained to eliminate groundwater contamination. The 1999 ESD established a TI waiver to acknowledge the technical impracticability for achieving groundwater cleanup levels due to the presence of DNAPL. The 1999 ESD further stated that "DNAPL recovery shall continue until such time that it can be demonstrated that it is

no longer technically practicable or until the EPA and MADEP give a written approval stating otherwise." In order to demonstrate that passive recovery methods would provide continued and sufficient removal of DNAPL, EPA allowed the PRPs to switch from active pumping to passive recovery of DNAPL in 2003. Recovery rates ranged from 30 to 120 gallons per month with an average of about 60 gallons per month. In November of 2012, the PRPs installed an additional passive recovery well in a known area of DNAPL. This additional well is expected to increase average monthly recovery rates to 85 gallons per month. While this rate is lower than what was previously recovered using active pumping, 85 gallons per month represents a substantial volume of mass removal. In total, approximately 65,000 gallons of DNAPL have been removed from the Site. The DNAPL and associated areas of groundwater contamination appear to be stable and no nearby receptors have been identified. Upon the signature of this ESD, the existing on-Site groundwater treatment plant, which has not operated since 2003, can be permanently decommissioned. The final disposition of the building will be discussed with the PRPs and the Town of Westborough in order to best support reuse of the Site. The Town of Westborough is the property owner.

The 1999 ESD determined that a TI waiver was supported by Site conditions and a TI zone was established to identify areas of groundwater where it was determined to be not practical to achieve groundwater cleanup standards. The compliance boundary for the TI zone was established in the Kettle Pond and former lagoon areas based on the delineation of groundwater by existing monitoring wells (see Figure 2). In 2002, concentrations of benzene and naphthalene in monitoring well MLC-2 climbed above their respective groundwater cleanup levels. In 2007, the concentration of benzene also climbed above its interim groundwater cleanup level in MLC-3. MLC-2 and 3 are sentinel wells located down gradient and just outside the TI zone established in the former lagoon area. Through 2012, concentrations in both wells continued to fluctuate above and below the interim cleanup levels, but were more often above. There were no additional monitoring wells down gradient of MLC-2 and 3.

In 2012, the PRP completed a vertical profile boring and installed two new well pairs: MLC-5S/D and MLC-6S/D, approximately 100 feet down gradient of MLC-2 and MLC-3. Groundwater samples collected from the profile boring in November 2012 and from the new well pairs in January 2013 show no exceedence of cleanup levels. Where detected, concentrations of naphthalene and benzene were near the laboratory detection limits. The northwest boundary of the TI zone around the former lagoon area will be extended approximately 100 feet to the edge of monitoring wells MLC-5S/D and MLC-6S/D as shown in Figure 3. This represents a minor expansion of the established TI zone. MLC-5S/D and MLC-6S/D shall become the new sentinel wells which have been incorporated into the monitoring program to ensure compliance with the expanded TI boundary. The use of monitoring wells to ensure compliance with the TI boundary is consistent with the 1999 ESD. There are no known receptors located down gradient of these new sentinel wells. Hocomonco Pond is located approximately 100 feet down gradient of the new sentinel wells and is a natural hydraulic barrier to further groundwater migration.

This ESD also reaffirms the need to complete the pending deed restrictions as described above.

Summary of Costs

There are no additional costs associated with this 2013 ESD.

V. SUPPORTING AGENCY COMMENTS

The State of Massachusetts has participated with the EPA in reviewing the DNAPL recovery enhancement and TI zone delineations efforts described herein and concurs with this ESD. See Attachment 1 for the letter of support from the Massachusetts Department of Environmental Protection.

VI. STATUTORY DETERMINATIONS

EPA believes that the modified remedy as stated in this ESD remains protective of human health and the environment, complies with all Federal and State requirements that are applicable or relevant and appropriate to this remedial action, meets the remedial action objectives specified in the 1985 ROD, the 1992 ESD and the 1999 ESD, and is cost-effective.

VII. PUBLIC PARTICIPATION COMPLIANCE

In accordance with Section 117(d) of CERCLA and Section 300.825(a) of the NCP, the ESD and supporting documentation shall become part of the Administrative Record for the Site. This ESD and the Administrative Record are available for public review at the locations and times listed in Section I(E) above. A public notice, which summarizes the modification to the remedy as set forth in the ESD shall be published in a local newspaper of general circulation following the signing of this ESD.

Nancy Barmakian for

James T. Owens III, Director
Office of Site Remediation and Restoration

09/30/13
date

Tables

Figures

Attachment 1 – MassDEP ESD Letter of Support

TABLE 1
MLC-2 Concentrations 2000 to 2011 (Exceedences in yellow highlight)

Compound/Analyte	Units	MLC-2														
		11/3/00	10/31/01	10/31/01	10/30/02	10/30/02	12/18/02	10/30/03	10/28/04	11/14/06	11/13/07	11/11/08	11/17/09	11/2/10	9/7/11	12/29/11
VOCs																
BENZENE	ug/L	5.6	21	19.2	NA	NA	12.3	22.6	13.2	11.3	4.4	7.9	5.2	13.4	1.1	10.4
TOLUENE	ug/L	5.0 U	40.7	38.4	NA	NA	21.5	35.3	33.4	36.4	18.3	22.7	21.9	50.7	1.5	21.1
ETHYLBENZENE	ug/L	5.0 U	15.3	13.3	NA	NA	11.8	14.3	12	14.5	7.2	10	9.3	15.8	1.2	12.2
XYLENE (TOTAL)	ug/L	8.4	66.6	65.4	NA	NA	51.1	84.9	51.2	59.7	28.3	37.4	38.6	62.9	3.9	56.8
SVOCs																
2-METHYLNAPHTHALENE	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	39.4	23.6	24.1	24.0	21.5	8.4	23.9
ACENAPHTHENE	ug/L	200 U	16.7	19	51 U	51 U	NA	7.9	12.7	17.8	17.5	23.8	19.5	59.7	7.7	1.1
ACENAPHTHYLENE	ug/L	200 U	5.3 U	2.8 J	51 U	51 U	NA	1.3 J	1.8 J	5.1 U	1.0 J	1.9 J	5.0 U	4.0	0.43	0.11 U
ANTHRACENE	ug/L	28 J	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	30.8	0.11 U	0.053 U
BENZO(A)ANTHRACENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	5.4 U	0.055 U	0.11 U
BENZO(A)PYRENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	11 U	0.11 U	0.092
BENZO(B)FLUORANTHENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	5.4 U	0.055 U	0.11
BENZO(G,H,I)PERYLENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	11 U	0.11 U	0.11 U
BENZO(K)FLOURANTHENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	11 U	0.11 U	0.11 U
CHRYSENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	11 U	0.11 U	0.11 U
DIBENZO(A,H)ANTHRACENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	11 U	0.11 U	0.11 U
FLUORANTHENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	11 U	0.11 U	34.4
FLUORENE	ug/L	200 U	9.9	11.6	51 U	51 U	NA	3.1 J	7.2	8.6	15.3	13.3	13.4	69.5	10.1	0.11 U
INDENO(1,2,3-CD)PYRENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	11 U	0.11 U	26.8
NAPHTHALENE	ug/L	2000	4140	4190	5350	4110	NA	1630	1240 D	2230	1680	2110	701 D	6720	423	2140
PHENANTHRENE	ug/L	29 J	39.7	46.1	51 U	51 U	NA	12.4	18.5	9.8	13.3	9.9	12.5	30.4	2.6	14.5
PYRENE	ug/L	200 U	5.3 U	5.2 U	51 U	51 U	NA	5.6 U	5.0 U	5.1 U	5.3 U	5.3 U	5.0 U	11 U	0.11 U	0.11 U

NOTES:

ug/L - Micrograms per liter.

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

U - The compound was analyzed for but not detected. The associated numerical value is the practical quantitation limit.

D - The compound concentration was determined after sample dilution.

TABLE 2
MLC-3 Concentrations 2004 to 2011 (Exceedences in yellow highlight)

Compound/Analyte	Units	MLC-3								MLC-4							
		10/28/04	11/14/06	11/13/07	11/11/08	11/17/09	11/2/10	9/7/11	12/29/11	10/28/04	11/14/06	11/13/07	11/11/08	11/17/09	11/2/10	9/7/11	12/29/11
VOCs																	
BENZENE	ug/L	NA	67.1	84.3	36.2	50.6	7.0	4.4	1.4	NA	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
TOLUENE	ug/L	NA	35.5	39.3	18.2	41.7	1.7	1.7	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.00 U	1.00 U	1.0 U	1.0 U
ETHYLBENZENE	ug/L	NA	25.2	21.6	11.2	16.2	1.3	1.4	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.00 U	1.00 U	1.0 U	1.0 U
XYLENE (TOTAL)	ug/L	NA	63.3	51.6	23.8	48.1	1.1	2.3	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.00 U	1.00 U	1.0 U	1.0 U
SVOCs																	
2-METHYLNAPHTHALENE	ug/L	NA	122	31.7	48.1	45.2	10.9	1.8	0.55	NA	5.5 U	5.3 U	5.4 U	5.4 U	0.22 U	1.9	0.10 U
ACENAPHTHENE	ug/L	21.4	37.8	20.8	24.5	17.8	10.8	3.3	0.10 U	2.5 J	5.5	5.3 U	5.4 U	5.4 U	0.11 U	0.95	0.10 U
ACENAPHTHYLENE	ug/L	2.6 J	5.3 U	2.0 J	2.4 J	2.3	0.88	0.25	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.39	0.10 U
ANTHRACENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.1 U	0.11 U	0.050 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.11 U	0.050 U
BENZO(A)ANTHRACENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.051 U	0.054 U	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.054 U	0.054 U	0.10 U
BENZO(A)PYRENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.1 U	0.11 U	0.076	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.11 U	0.062
BENZO(B)FLUORANTHENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.051 U	0.054 U	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.054 U	0.054 U	0.10 U
BENZO(G,H,I)PERYLENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.3	0.11 U	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.32	0.11 U	0.10 U
BENZO(K)FLOURANTHENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0..1 U	0.11 U	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.11 U	0.10 U
CHRYSENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.1 U	0.11 U	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.11 U	0.10 U
DIBENZO(A,H)ANTHRACENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.1 U	0.11 U	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.11 U	0.10 U
FLUORANTHENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.1 U	0.11 U	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.11 U	0.10 U
FLUORENE	ug/L	2.3 J	5.3 U	1.3 J	5.3 U	1.1	0.68	0.18	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.15	0.10 U
INDENO(1,2,3-CD)PYRENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.1 U	0.11 U	0.41	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.11 U	0.20 U
NAPHTHALENE	ug/L	691 D	1630	861	924	820	292 D	54.3	12.3	75.1	188	10.3	5.4	1.7	0.11 U	33.1	0.10 U
PHENANTHRENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.078	0.054 U	0.050 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.054 U	0.054 U	0.050 U
PYRENE	ug/L	5.0 U	5.3 U	5.0 U	5.3 U	5.3 U	0.1 U	0.11 U	0.10 U	5.0 U	5.5 U	5.3 U	5.4 U	5.4 U	0.11 U	0.11 U	0.10 U

NOTES:

ug/L - Micrograms per liter.

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

U - The compound was analyzed for but not detected. The associated numerical value is the practical quantitation limit.

D - The compound concentration was determined after sample dilution.

Figure 1: Hocomonco Pond Site Contamination Areas

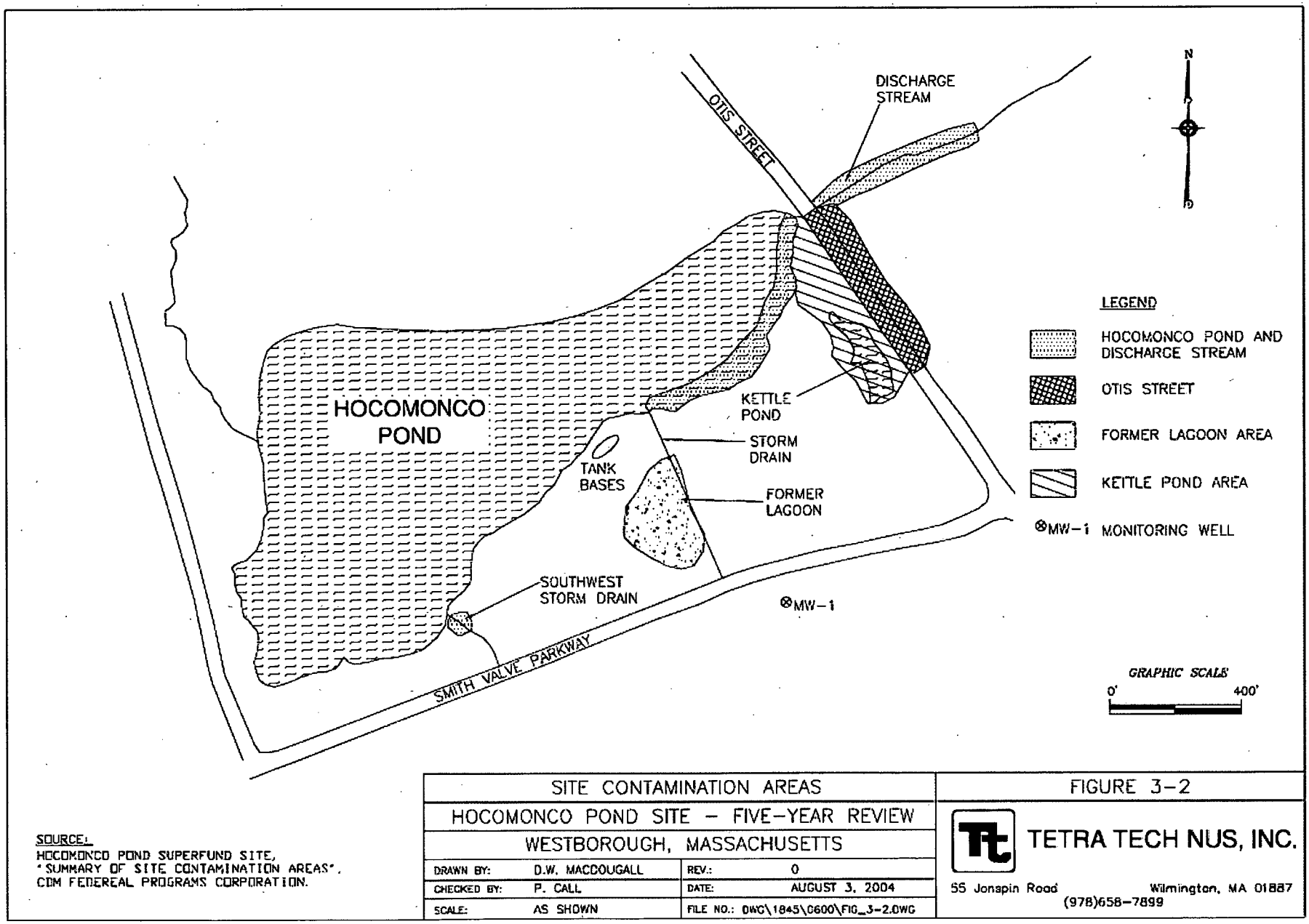


Figure 2: Hocomonco Pond Site DNAPL Recovery Wells (shown in yellow highlight)

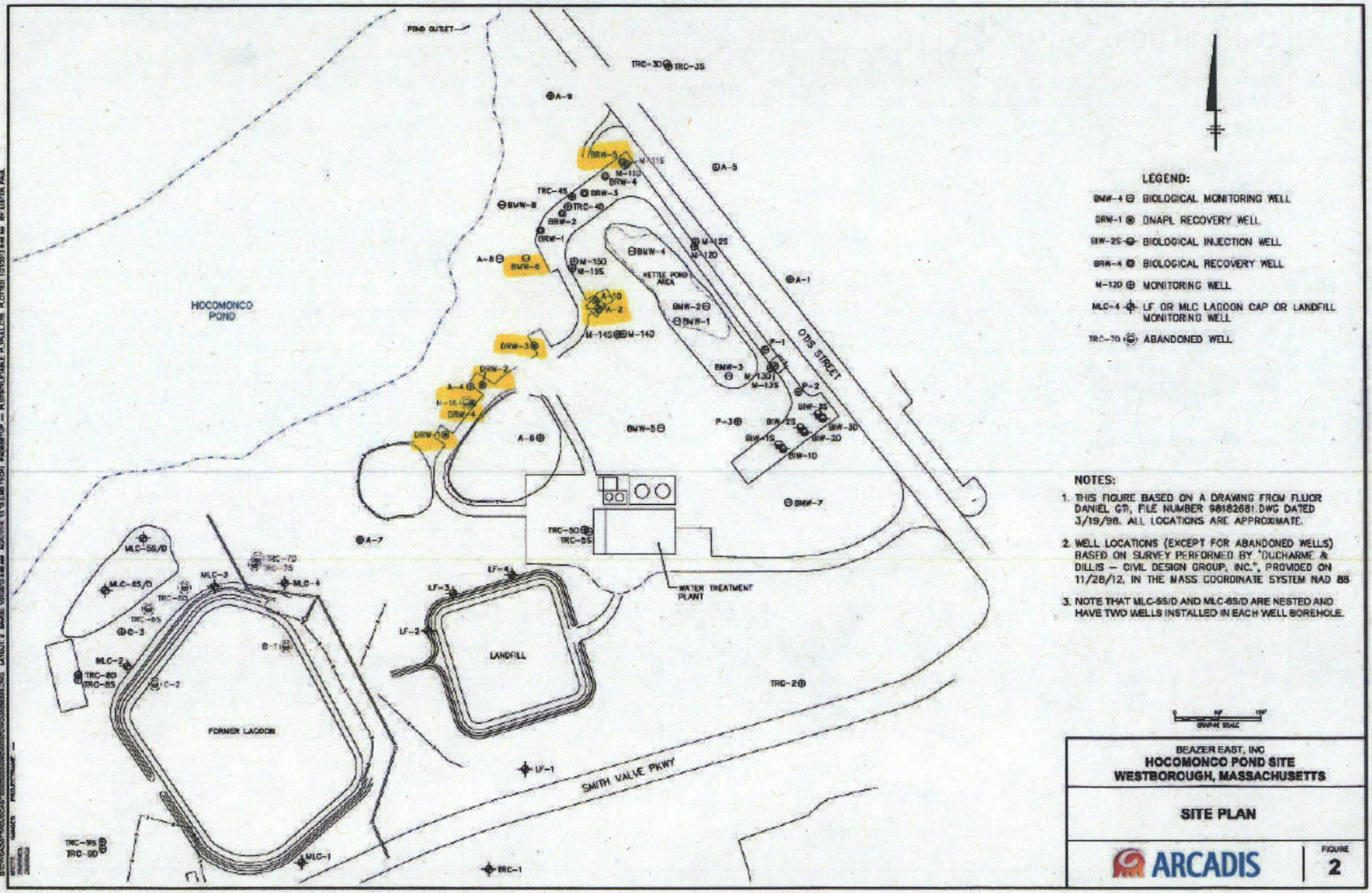


Figure 3: Extent of Technical Impracticability Zone as Established by the 1999 ESD

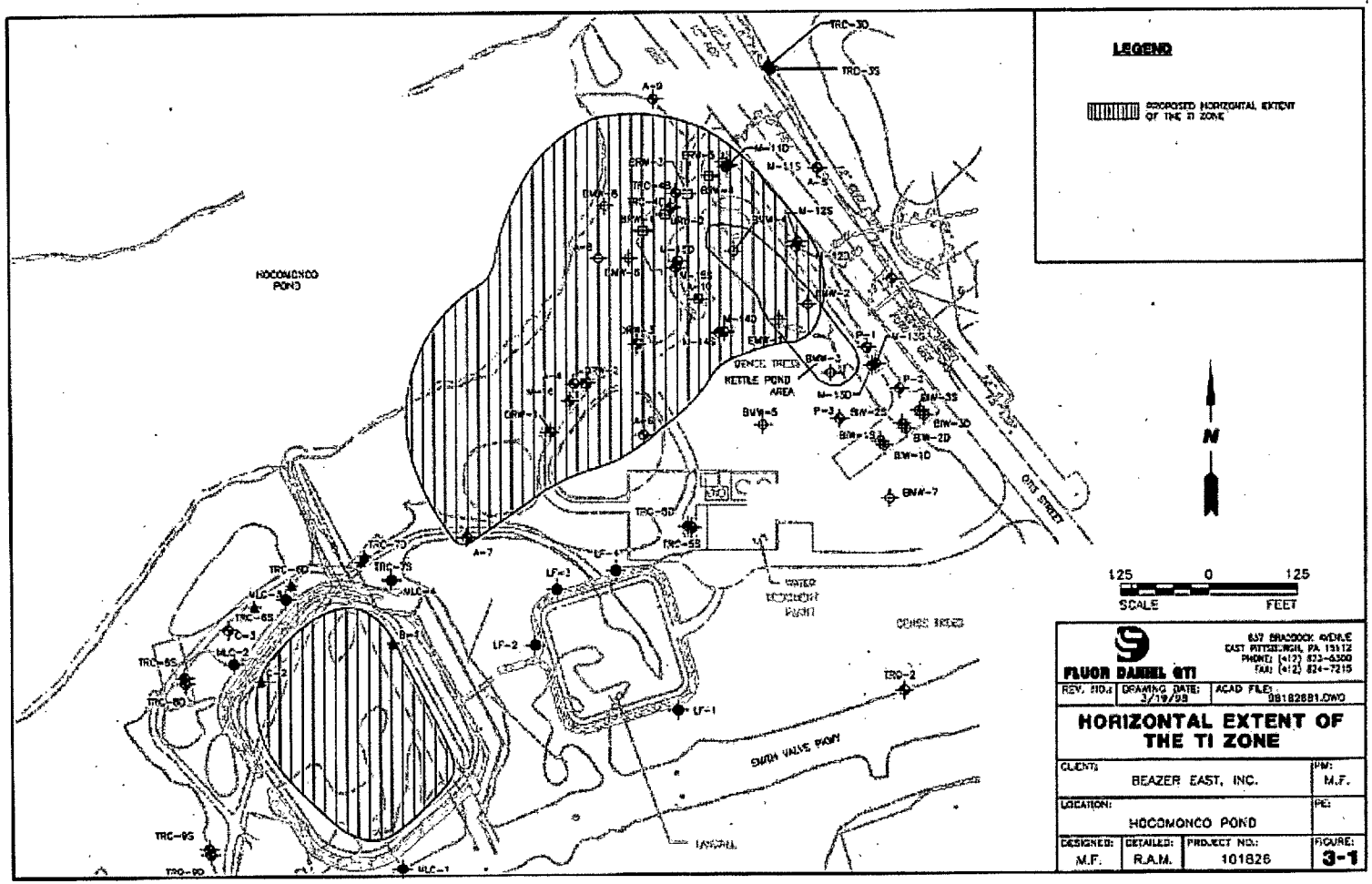
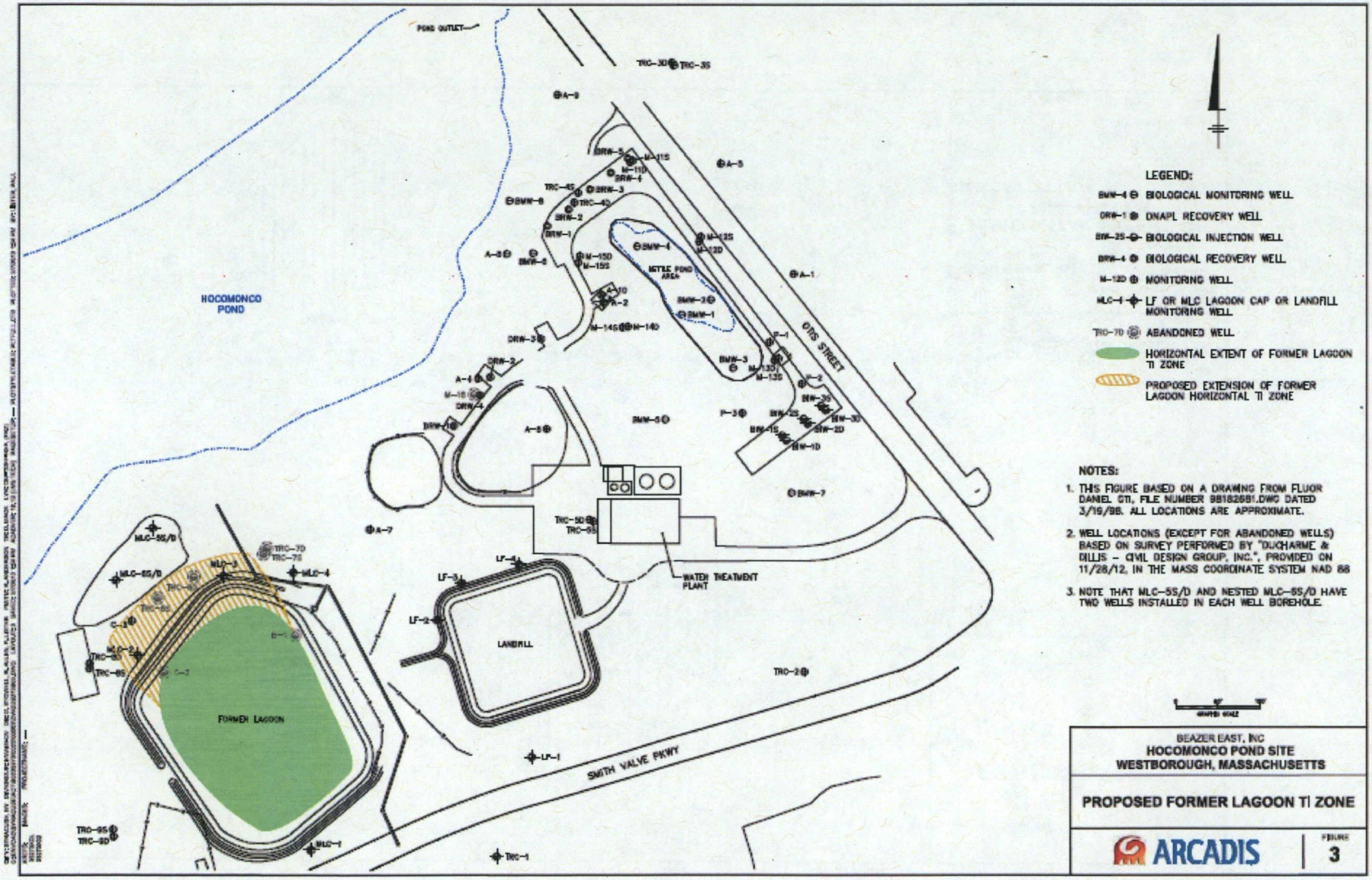


Figure 4: Expanded TI Zone Compliance Boundary for the Former Lagoon



ATTACHMENT 1

MassDEP
Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

September 30, 2013

James T. Owens, Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code: OSRR07-03
Boston, MA 02114-2023

Re: Explanation of Significant Differences
Hocomonco Pond Superfund Site
MassDEP RTN 3-0002611

Dear Mr. Owens:

The Massachusetts Department of Environmental Protection (MassDEP) reviewed the *Explanation of Significant Difference (ESD)* dated September 2013 for the Hocomonco Superfund Site in located Westborough, Massachusetts. The ESD documents the change from active to passive recovery of DNAPL and the expansion of the Technical Impracticability Zone that was established in the 1999 ESD for the site. MassDEP agrees with the changes proposed by EPA in this ESD.

Thank you for the opportunity to provide input into this decision. If you have any questions or comments, please feel free to contact me at 617-556-1121 or Jay Naparstek of my staff at 617-292-5697.

Sincerely,

Benjamin Ericson
Assistant Commissioner
Bureau of Waste Site Cleanup

cc: M. Montegross, USN-Norfolk
M. Audet, USEPA

This information is available in alternate format. Call Michelle Waters-Ekanem, Diversity Director, at 617-292-5751. TDD# 1-866-539-7622 or 1-617-574-6868
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper