



SDMS DocID 494738

Superfund Records Center
SITE: Nyanza
BREAK: 8-3
OTHER: 494738



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND – REGION 1
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**ADDENDUM TO FOURTH FIVE-YEAR REVIEW. NYANZA CHEMICAL WASTE DUMP
SUPERFUND SITE, DATED MAY 13, 2009**

The fourth Five-Year Review Report for the Nyanza Chemical Waste Dump Superfund Site (“Report”) located in Ashland, MA was signed by Richard Cavagnero, Deputy Director of the United States Environmental Protection Agency (“EPA”), New England’s Office of Site Remediation and Restoration on May 13, 2009. The protectiveness statements concluded in the Report were as follows;

Protectiveness of Source Control and Soil (OU #1)

The remedy for OU #1 is protective of human health and the environment, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.

Protectiveness of Off-Site Groundwater (OU #2)

A protectiveness statement of the remedy at OU #2 cannot be made at this time until further information is obtained. Further information will be obtained by:

- Completing inspections of the 41 vapor mitigation system (“VMS”) units, and
- Implementing modifications and repairs as required to achieve the minimum pressure-based performance standard at all monitoring locations.

Protectiveness of Wetlands and Drainageways (OU #3)

The remedy for OU #3 is protective of human health and the environment, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.

Protectiveness of the Sudbury River (OU #4)

A Record of Decision for the Sudbury River (OU #4) was issued in September 2010. The remedy calls for installation of a sub-aqueous cap and monitoring. The remedial design is underway.

Progress since the May 14, 2009 Five-year Review:

This addendum provides a protectiveness statement for OU #2. At the time the Report was issued, the Massachusetts Department of Environmental Protection (“MassDEP”) was actively performing baseline maintenance and monitoring of the 43 VMS units installed in 41 residential properties consistent with a Maintenance and Monitoring (“M&M”) Plan issued by MassDEP in August 2008. MassDEP had inspected 32 of the 43 VMS units. Nine of the 32 inspected systems did not meet the minimum pressure-based performance standard of 1 Pascal (0.004 inches water column) at one or more pressure monitoring locations. Slight positive pressures were measured at one or more locations.

The Report concluded that a protectiveness statement for OU #2 would be made upon:

1. Completing inspections of the 41 VMS units¹, and
2. Implementing modifications and repairs as required to achieve the minimum pressure-based performance standard at all pressure monitoring locations.

MassDEP has since completed inspections (referred to by MassDEP as baseline maintenance and monitoring activities) for all forty-three (43) VMS units. The attached Figure 1 shows VMS property locations. Thirty-three (33) of the VMS units had no significant performance issues. A total of ten (10) VMS units did not achieve the minimum pressure-based performance standard at one of more pressure monitoring points. In an effort to achieve compliance, MassDEP performed numerous diagnostic and maintenance activities at these ten properties. These efforts generally included activities such as:

- Comprehensive inspection of basements to identify cracks or openings in slabs or basement walls which could be impacting performance. All observed cracks and openings were filled with caulk or concrete patch.
- Installing a more powerful fan in an effort to increase vacuum pressure.
- Smoke pen tests in an effort to provide visual confirmation of a negative pressure field.
- Enlarging an existing suction pit.
- Installing a second suction pit.
- Performing diagnostic testing by drilling multiple 3/8" diameter holes in a slab. These holes served as temporary pressure monitoring points used to more accurately assess the pressure fields.

The following table summarizes the details of additional maintenance and monitoring activities performed at each of the ten properties where there was difficulty achieving the minimum performance-based pressure standard at one or more monitoring points.

VMS Prop. No.	Street Address	No. of Permanent Monitoring Points		Number Points With Positive Pressure	Maintenance Performed	0.004" Perform. Standard Achieved All Points	0.001" Negative Pressure Achieved All Points
		Total	Not Meeting Standard				
5	45 Cherry	2	1	0	Several temporary diagnostic points were installed. A second suction pit was installed.	Yes	Yes
6	48(50) Cherry St.	4	2	0	3 temporary diagnostic points were installed. A second suction pit was installed.	No	Yes ²
8	63 cherry	3	2	1	A new larger fan was installed. A second suction pit was installed.	Yes	Yes
15	77-83 Main	4	2	0	Significant floor cracks were repaired. 3 temporary diagnostic points were installed. A second suction pit was installed.	No	Yes
16	98-100 Main	6	3	2	A new larger fan was installed. A condensate drain line was sealed. A large crack between the chimney and floor was repaired. A second suction pit was installed.	No	Yes

¹ There are in fact 43 VMS units installed at 41 properties. One property is a triplex with basements joined by a common wall and footer. Three separate VMS units are installed at this property.

² One of the permanent monitoring points was installed in a crawl space that has remained inaccessible to MassDEP (owner has lost key to door). It has not been possible to measure the vacuum pressure at this monitoring point.

VMS Prop. No.	Street Address	No. of Permanent Monitoring Points		Number Points With Positive Pressure	Maintenance Performed	0.004" Perform. Standard Achieved All Points	0.001" Negative Pressure Achieved All Points
		Total	Not Meeting Standard				
18	19 Pleasant	3	3	3	3 Temporary diagnostic points were installed. Two additional suction pits were installed.	No	Yes
26	47(49) Pleasant	4	2	2	Several temporary diagnostic points were installed. A second suction pit was installed.	Yes	Yes
34	3 Water	2	2	0	VOC plume not present. Mitigation no longer required.	No	No
37	13 Water	4	3	0	VOC plume not present. Mitigation no longer required.	No	No
40	21 Water Street	3	2	0	VOC plume not present. Mitigation no longer required.	No	No

As a result of the additional maintenance and monitoring program, the minimum pressure-based performance standard set forth in the M&M Plan (.004" water column or 1 Pascal) was achieved at all monitoring points at three of these ten properties (VMS Property nos. 5, 8 and 26). The performance standard could not be achieved at all monitoring points at the remaining six properties despite best efforts. However, at four of the six remaining properties (VMS Property nos. 8, 15, 16, and 18), negative pressure (e.g., pressure greater than 0.001" water column) was confirmed at all monitoring points. This has been deemed acceptable to EPA and MassDEP since the pressure-based performance standard is not a risk-based standard but was adopted from MassDEP guidance. Negative pressure readings less than 1 Pascal do not mean there is unacceptable risk, or that vapors are entering the structure. Any reading greater than 0.000" water column confirms that a negative pressure field does exist.

Through the additional efforts performed by MassDEP, EPA observed established pressure fields to be highly heterogeneous and readings were subject to significant fluctuation due to numerous factors such as the cycling of heating and ventilation systems, open windows or doors, high water table, and atmospheric conditions at the time of testing. Random obstructions such as utilities or larger rocks present beneath the floor slabs were also observed to impede pressure flow. Consequently, equalized pressure readings should not be expected throughout the pressure field and pockets of neutral or even positive pressure can develop.

Efforts to adequately monitor the pressure fields were further hampered by the fact that the micro-manometer previously used by EPA's consultant to measure pressure fields at the time of VMS installations, Testo Model #506, had been discontinued by the manufacturer. The micro-manometer selected by MassDEP's consultant, TSI Model #9555, reported consistently lower pressure readings than the micro-manometer which had been used by EPA's consultant at the time of system start-up. MassDEP was able to borrow the Testo meter to perform real-time side by side comparison tests at Property nos. 5, 6, 12, 16 and 31. The Testo meter continued to display higher pressure readings than the TSI meter. For example, at Property 5 the TSI model displayed a pressure reading of 0.001 compared to a Testo reading of 0.013.

The three remaining properties are all located on Water Street and directly abut Mill Pond (VMS Property nos. 34, 37 and 40). Standing water was observed in the pressure monitoring points on numerous occasions. This confirms that an elevated water table condition exists underneath these homes as a result of influence from the pond. The water table rises to the bottom of the slab, circumventing the pressure field. There is no obvious method to lower the regional water table. Locally, sump pumps are present at

each of these properties. To better evaluate groundwater conditions in this area, MassDEP installed two piezometers screened across the shallow water table to measure VOC concentrations in the immediate vicinity of these properties (See attached Figure 2). Both wells were non-detect for VOCs. All the VMS units along Water Street had been installed as a pre-emptive mitigation measure based on groundwater VOC results available in 2006. The recent groundwater data from the new piezometers concludes that the shallow VOC plume does not extend under the Water Street properties and therefore mitigation of these three Water Street properties is no longer required. Notwithstanding, MassDEP will continue to monitor and maintain the VMS units along Water Street, and EPA will continue to sample the piezometers and area monitoring wells.

This addendum documents that MassDEP has inspected all the VMS units and has implemented modifications and repairs as necessary. Based upon the preceding information, EPA Region 1 has concluded that the vapor mitigation remedy is protective for the OU2 remedy. Consistent with these findings, this Addendum updates and replaces Sections 8.0, 9.0 and 10.0 of the Five-Year Review Report.

Section 8.0 Addendum - ISSUES

This section replaces Section 8.0 of the Five-Year Review Report. It updates the original listed issues, and provides a listing of current issues consistent with this Addendum.

**Table 8-1a
Issues
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts**

Issues from May 2009 Five-Year Review	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)	Current Status
Two rusted and bulged drums were observed outside the storage shed.	N	Y	RESOLVED Drums removed.
Minor damage to the perimeter fence was noted near the South Gate.	N	Y	RESOLVED Fence repaired.
A groundwater monitoring program for OU #2 as mandated by the ESD has not yet been implemented.	N	Y	RESOLVED A groundwater monitoring program has been implemented. Monitoring was completed in December 2010.
Eight of the vapor mitigation systems installed as part of OU #2 did not achieve the minimum negative pressure when inspected.	Y	Y	RESOLVED Once access was obtained, two more systems were identified. Modifications were made to 7 of the systems to improve performance. 3 of the systems were determined to be impacted by a persistent elevated water table, however recent groundwater monitoring data concludes that these 3 properties are not above elevated source concentrations.
The DNAPL extraction portion of the remedy has yet to be implemented.	N	Y	ONGOING Current groundwater data is being considered to determine

Issues from May 2009 Five-Year Review	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)	Current Status
			the appropriate scope of the DNAPL remedy.
Institutional controls mandated by the ESD for OU #2 have not yet been implemented.	N	Y	ONGOING EPA met with Town officials in Aug 2010 to discuss establishing a zoning ordinance to prevent consumption of contaminated groundwater and intrusion of vapors.
Current Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)	
The DNAPL extraction portion of the remedy has yet to be implemented.	N	Y	
Institutional controls mandated by the ESD for OU #2 have not yet been implemented.	N	Y	

Section 9.0 Addendum - RECOMMENDATIONS AND FOLLOW-UP ACTIONS

This section replaces Section 9.0 of the Five-Year Review Report. It deletes original listed recommendations and follow-up actions that have been completed, and provides a listing of recommendation and follow-up issues consistent with this Addendum.

**Table 9-1a
Recommendations and Follow-Up Actions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts**

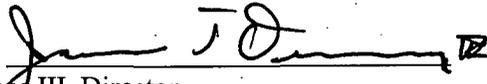
Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date
DNAPL remedy not yet implemented.	Evaluate the most recent soil boring and groundwater data to determine the appropriate scope for the DNAPL remedy.	EPA	MassDEP	March 2012
Institutional controls mandated by the ESD for OU #2 not yet implemented.	EPA will draft institutional control language for the Town of Ashland to consider as a zoning ordinance for areas of impacted groundwater.	EPA	MassDEP	September 2012

Section 10.0 Addendum – PROTECTIVENESS STATEMENT

The protectiveness statements for OU #1 and OU #3 are not changed. This Addendum provides a protectiveness statement for OU #2.

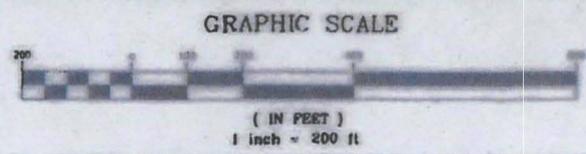
Protectiveness of Off-Site Groundwater (OU #2)

The remedy for OU #2 is protective of human health and the environment, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.

Approved by: 
James T. Owens III, Director
Office of Site Remediation and Restoration
USEPA Region I

Date: 9/29/11

Attachment



KEY:

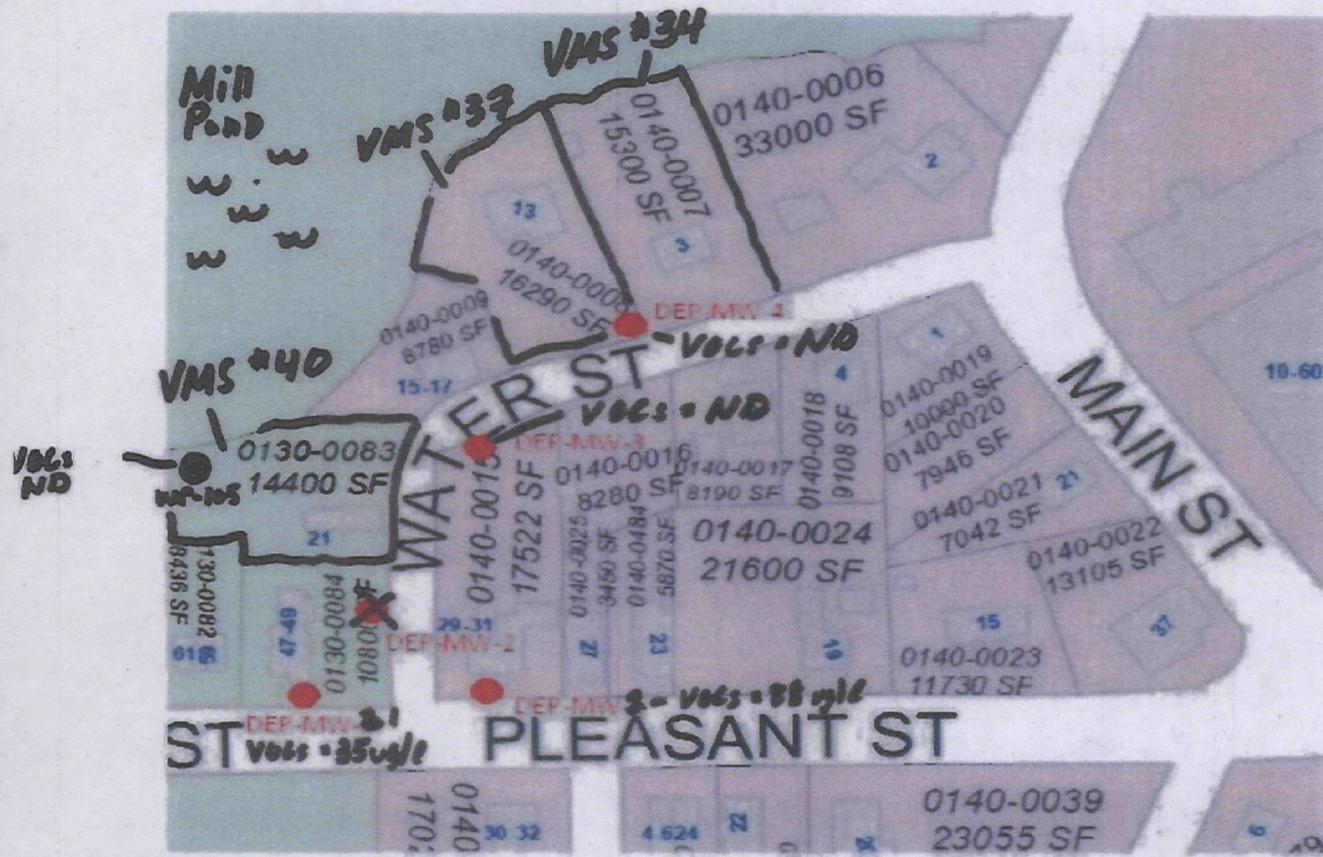
- 840 PROPERTY #
- FINAL VAPOR MITIGATION BOUNDARY
- NO SYSTEM INSTALLED

NOTES:
1. BASEPLAN REPLICATED FROM TOWN OF ASHLAND TAX ASSESSORS MAP #8.

 NOBIS ENGINEERING 18 Avenue Park Concord, MA 01742	DATE: 7/23/07 PROJECT NO: 74050 FILE NAME: BDNK PLNS SUPERFUND SITE: NYANZA DRAWN BY: AMY ADAMS CHECKED BY: KURT JELINEK
 US Army Corps of Engineers New England District	
NYANZA CHEMICAL WASTE DUMP SUPERFUND SITE ASHLAND, MASSACHUSETTS PROPERTY LOCATIONS	
FIGURE 	

FIGURE 1

FIGURE 2



GW FLOW →

- Proposed Microwell Installation - **installed**
- X **NOT installed**
- ⊙ MW-WP105 - **ND**

DATA FROM FALL 2010

- WP 105 - TCE = ND
- DEP MW 3 - TCE = ND
- DEP MW 4 - TCE = ND
- DEP MW 1 - TCE = 35 ugle
- DEP MW 2 - TCE = 88 ugle