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**ADDENDUM TO THE SECOND FIVE-YEAR REVIEW**  
**LINEMASTER SWITCH SUPERFUND SITE, AUGUST 2012**

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The second Five-Year Review Report ("Report") for the Linemaster Switch Superfund Site located in Woodstock, Connecticut ("Site") was issued on September 29, 2009. The Report deferred its determination on protectiveness and stated:

Based on the review and evaluation of data and information to date, EPA is deferring its determination of whether the remedy is currently protective of human health and the environment until the updated vapor intrusion study is completed and there is an investigation of 1,4-dioxane and manganese in the groundwater and residential supply wells. This determination will be made by September 2012. There are currently institutional controls in place to prohibit use of currently known contaminated soil and groundwater.

This addendum now provides the protectiveness statement for the Site.

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**Specific items to address following the September 29, 2009 Five Year Review Report:**

At the time the Report was issued, the Potentially Responsible Parties (PRP's) were actively performing the remedy (pump & treat) at the Site. Long-term monitoring and basic operation and maintenance activities were on-going. On April 8, 2009, a Site inspection was performed by EPA representatives and the representatives of the PRP's at the Site. The Report concluded that a protectiveness statement for the Site would be made upon:

1. Completion of a vapor intrusion study on-Site to determine whether there is a pathway which presents an unacceptable human health risk.
2. Initiation of mitigation measures if it is determined that there is an unacceptable human health risk, as determined by the vapor intrusion study.
3. Development of a work plan to assess the nature and extent of 1,4-dioxane and manganese contamination in groundwater and in residential wells. 1,4-dioxane and manganese had not been fully tested for and their extent and potential impact on the remedy was unknown.

4. Evaluation of deep bedrock groundwater in the vicinity of increasing contaminant concentrations in well MW-28DB, and in consideration of proposed modifications to the long-term monitoring program, if needed.

Institutional controls are in place at the Site. These are in the form of deed restrictions that prohibit excavation in certain areas of the Site. The Report recommended that there be a review to determine whether the deed restrictions should also require that the existing cover over contaminated soils remain in place until soil and groundwater cleanup levels have been attained.

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### **Measures taken since the September 29, 2009 Five-Year Review Report:**

#### Vapor Intrusion Investigation and Potential Mitigation Measure

A vapor intrusion investigation was completed on March 30, 2011 for two residential dwellings located at the Linemaster Facility at 29 Plaine Hill Road shown in **Figure 1**. A site plan of the two dwellings, referred to as #105 and #111 Bald Hill Road is included as **Figure 2**.

An initial evaluation of the potential for vapor intrusion at the Site was conducted by the PRPs in 2004. This investigation not only included the two dwellings noted above, but included the Linemaster Switch Corporation facility as well. The results of this sampling event indicated that only one VOC had been detected (trichloroethylene) underneath the facility building at a concentration well below the applicable EPA screening level. There were no detections under the two residential dwellings. Although sub-slab soil vapor samples were collected during this investigation, indoor air samples were not concurrently collected and analyzed to determine the existence of a completed soil vapor pathway.

The overall objectives of the most recent vapor intrusion investigation were to (1) determine if there is a complete migration pathway present between Site-related VOCs in groundwater, subsurface soil vapor, and indoor air in overlying structures, (2) to quantify the specific VOCs and their concentrations in indoor air, and (3) to evaluate whether the concentrations are elevated above background concentrations and/or may pose a health risk to building occupants. Specifically, the investigation activities included:

- Pre-sampling activities (e.g., building surveys, product inventories);
- Collection of sub-slab vapor samples, indoor air samples and an outdoor (i.e., ambient) air sample;
- Laboratory analysis of samples for constituents of concern (COCs); and

□ Comparison of analytical results to applicable (risk-based) regulatory criteria.

Vapor sampling activities were conducted between March 29 and 30, 2011. A total of six sub-slab vapor samples, three indoor air samples, and one outdoor (ambient) air sample were collected during the sampling activities. The sampling activities are summarized in **Table 1** and are provided in more detail in the Vapor Intrusion Report by Woodard & Curran, dated July 11, 2012.

Soil vapor and indoor air sampling results are summarized in **Tables 2 and 3**, respectively, and include a presentation of applicable EPA and CT DEEP criteria used to evaluate the data. The applicable evaluation criteria included:

□ Target Indoor Air Concentrations and Soil Vapor Volatilization Criteria from the *Connecticut Remediation Standard Regulations (RSRs)* (CTDEP, 1996);

□ Proposed Target Indoor Air Concentrations and Soil Vapor Volatilization Criteria from the *Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria* (CTDEP, 2003);

□ Target Indoor Air and Shallow Gas Concentrations from *USEPA's Vapor Intrusion Screening Level (VISL) calculator* (USEPA, November 2011/March 2012); and

□ Residential Air Screening Levels from the *USEPA Region 9 Regional Screening Levels (RSL) Summary Table* (USEPA, April 2012).

Of these criteria, the 2012 EPA Region 9 Screening Levels for Residential (indoor) Air and the 2011/2012 Target Indoor Air and Soil Gas Concentrations from the VISL calculator are based on the most up-to-date toxicity information and were therefore used to evaluate indoor air sampling results. These EPA Region 9 Screening Levels were also used to evaluate soil vapor results by applying a conservative attenuation factor of 10 (EPA, 2008). EPA Region 9 Screening Levels and VISL concentrations were available for all target VOCs analyzed, with the exception of cis-1,2-dichloroethene which was non-detect in all samples with reporting limits below all potential evaluation criteria.

All six sub-slab vapor samples collected at the two residences were collected concurrently with the three indoor air samples and one outdoor air sample. Only one target VOC (TCE) was detected in the sub-slab vapor samples analyzed (see **Table 2**). Detections of TCE were reported in four of the six sub-slab soil vapor samples collected at concentrations ranging from 0.537 to 10.6  $\mu\text{g}/\text{m}^3$ . All reported detections of TCE were below the estimated soil vapor screening value of 4.3  $\mu\text{g}/\text{m}^3$ , except for one sample in Residence #105 (based on 10 times the 2012 USEPA Region 9 Screening Level for Residential (indoor) Air for TCE of 0.43  $\mu\text{g}/\text{m}^3$  and the Target Shallow Soil Gas Concentration from the VISL calculator). This one detection does not, however, exceed EPA's acceptable risk range of  $10^{-4}$  to  $10^{-6}$  for Superfund sites, at a risk calculation of  $2.7 \times 10^{-6}$ .

As presented in **Table 3**, target VOCs were detected in only one indoor air sample at residence #105, which included 1,2-dichloroethane (1,2-DCA) at  $0.210 \mu\text{g}/\text{m}^3$  and TCE at  $1.16 \mu\text{g}/\text{m}^3$ . Both of these detected concentrations exceeded their respective 2012 USEPA Region 9 and VISL Target Indoor Air Concentrations of  $0.094 \mu\text{g}/\text{m}^3$  (1,2-DCA) and  $0.43 \mu\text{g}/\text{m}^3$  (TCE). While 1,2-DCA was not detected in the sub-slab soil vapor samples, it is a groundwater COC detected in the underlying contaminated plume on-site. As a result of this factor and potential limitations and unknowns related to the sampling program it is reasonable to conclude that this detection may be attributable to Site related contamination.

The outdoor air sample collected indicated that no target VOCs were detected above lab reporting limits.

In summary, there were two detections of VOCs that exceeded the screening criteria in a sample collected at Building #105. TCE was detected in both the sub-slab soil vapor and in the indoor air. Both TCE and 1,2-DCA are COCs in the groundwater plume which underlies the sampled buildings. Therefore it has been determined that there is a vapor intrusion exposure pathway at the Site. Although the Site is protective in the short term because current risk to human health is within EPA's acceptable risk range, additional measures are necessary to determine long-term protection at the Site. Either periodic vapor intrusion sampling of Building #105 or a preventative ventilation system is required to ensure long-term protection at the Site.

#### Assessment of the Nature and Extent of 1,4-Dioxane Contamination in Groundwater

It was determined in the Report that 1,4-dioxane and manganese needed to be added to the Long Term Monitoring Plan ("LTMP"). 1,4-dioxane had not been tested for either in the on-Site groundwater or in residential tap water. Its extent and potential impact on the remedy was unknown. The lab utilized by the PRPs reviewed the VOC analytical backup data and chromatograms from sampling events in 2009, and determined that 1,4-dioxane may have been detected in groundwater at the Site (although it was limited to the immediate vicinity of the facility building). 1,4-dioxane was added to the reporting list for VOC analyses for the annual monitoring events beginning in May 2010. The reporting limit for 1,4-dioxane by US EPA Methods 8260B and 524.2 is  $20 \mu\text{g}/\text{L}$ , which was then consistent with the original CT DEP proposed Groundwater Protection Criteria (GWPC) of  $21 \mu\text{g}/\text{L}$ .

**Table 3B** presents the only detections of 1,4-dioxane above the  $20 \mu\text{g}/\text{L}$  detection limit. 1,4-dioxane was only detected in monitoring wells MW-17SB and MW-17D at levels ranging from  $21.1 \mu\text{g}/\text{L}$  to  $115 \mu\text{g}/\text{L}$ . This well location is in the center of the Site, adjacent to the Linemaster facility and the groundwater treatment system. There were no detections in any of the residential wells.

In February 2012, the Connecticut Department of Public Health set a new drinking water Action Level of  $3 \mu\text{g}/\text{L}$  for 1,4-dioxane; significantly lower than the  $20 \mu\text{g}/\text{L}$  detection limit

utilized for this sampling. As a result of this new standard, all of the residential wells were re-sampled in April 2012 using a method with a detection limit of 3 µg/L. The results of this sampling indicated no detections above the action limit of 3 µg/L (Spectrum Analytical, Inc., Laboratory Report, May 8, 2012) in the residential wells.

Sampling and analysis of 1,4-dioxane in on-Site groundwater and residential wells will continue as part of the LTMP. Detections in on-Site monitoring wells will be evaluated annually to determine whether changes to the sampling plan should be considered or whether additional measures are needed. Sampling for 1,4-dioxane at the residential wells will be performed during all future sampling rounds, until determined otherwise.

### Manganese

Manganese had been sampled for in on-Site monitoring wells during the RI between 1988 and 1993. The results indicated detections in 32 wells, with concentrations ranging from 0.009 mg/L to 23.7 mg/L (**Table 1B**). It was determined that manganese did not pose an unacceptable human health or environmental risk at the Site and it was not included as a COC in the ROD. Accordingly, sampling for manganese was discontinued after 1993. Based on a 2004 health advisory which conservatively changed the toxicity value for manganese to 0.3mg/L, EPA determined that, as a precaution, this constituent should be re-sampled for in residential tap water to determine whether there is any risk of adverse health impacts.

Manganese was included in the November 2010 sampling event and was detected in 33 monitoring wells, with concentrations ranging from 0.002 mg/L to 2.2 mg/L (**Table 2B**). There were no detections in residential wells at a detection level of 0.0020 mg/L. The most recent EPA Regional Screening Level (RSL) for manganese in residential tap water is 0.320 mg/L. This concentration represents a Hazard Quotient equal to 1 for residential children. With few exceptions over the entire period of investigation at the Site, manganese concentrations have been detected at similar levels that don't pose a risk to human health or the environment using the toxicity factors that were valid at that time. Since manganese was not detected in the residential wells above 0.0020 mg/L, the Site is currently protective.. Based on a review of the most recent data it has been determined that no additional sampling for manganese is required at this time. Through annual groundwater data evaluation, if it is determined that groundwater conditions have changed at the Site, additional sampling and modifications to the LTMP may be necessary. Manganese will be included in the sampling and analysis plan during the Completion Monitoring phase of the remedy.

### Evaluation of Deep Bedrock

Data from groundwater monitoring wells are being used to monitor three portions of the interconnected overburden-bedrock aquifer beneath the Site: 32 completed in overburden, 16 completed in shallow bedrock, and 18 completed in deep bedrock. The 66 various monitoring wells are monitored on a monthly, semi-annual, or annual basis for both groundwater elevation and chemical analysis for VOCs via EPA Method 8260B.

To demonstrate that the groundwater recovery system is controlling groundwater migration off-Site from the source area, groundwater elevations are plotted semi-annually in the three portions of the interconnected overburden-bedrock aquifer.

Groundwater data collected between 2004 and 2011 generally indicate that the migration of groundwater from the source area has been controlled, primarily by the extraction of groundwater from deep bedrock wells MW-01DB, MW-06DB, MW-15DB, and MW17-DB. However, southwest of the source area, in the vicinity of monitoring well MW-28DB, TCE has been detected at a concentration of 107 µg/L and there are no deep bedrock potentiometric data southwest of this well to confirm TCE concentrations beyond this location. Although groundwater potentiometric elevation data in the vicinity of MW-28DB suggest that contaminated groundwater may be captured by the extraction wells, the concentrations were sufficiently high to warrant a recommendation in the Report for continued evaluation of potentially changing conditions that may warrant changes to the LTMP.

EPA's current evaluation of the data indicates no significant change in bedrock conditions. MW-28DB is currently being sampled on a quarterly basis. All potential receptors (i.e., residential drinking water wells) downgradient of MW-28DB are being annually monitored, with no detections reported. Therefore, it has been determined that no additional sampling requirements or measures need to be taken at this time to address this concern. If conditions change at the Site then additional monitoring and/or well installations may be warranted.

#### Adequacy of the Institutional Controls

Easements restricting areas of the Site to commercial and industrial uses, and to prohibit excavation and construction activities without prior approval from EPA were recorded in the Town of Woodstock land records on January 3, 2005. The Report recommended that EPA should also determine whether the ICs should also require that the cover currently in place over the affected soils on the Site be kept in place until soil and groundwater cleanup levels are attained.

To address this concern, EPA completed a human health risk assessment in 2011 to determine whether there is any direct contact threat to contaminated soils, should the cover be removed (see attached **Memorandum**). It was concluded that the risks due to direct exposure to soil under the cover would be no higher than background risks, and that any such exposure would be further minimized through the current restrictions provided in the easements as recorded. Therefore, no changes to the current deed restrictions are deemed necessary.

**Section 8.0 of the Report - Amended 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 8-1  
Issues  
Linemaster Switch Superfund Site  
Woodstock, Connecticut**

| <b>Issues from September 2009 Five-Year Review</b>  | <b>Affects Current Protectiveness (Y/N)</b> | <b>Affects Future Protectiveness (Y/N)</b> | <b>Current Status</b>  |
|---|---|--|--|
| Increasing VOC concentration trends in downgradient groundwater well, MW-28DB.  | N   | Y  | ONGOING  |
| The vapor intrusion exposure pathway at the Site has not been fully evaluated.  | N   | Y  | ONGOING  |
| The interim soil and groundwater cleanup goals do not account for CTRSRs promulgated following the ROD. These standards should be considered throughout the LTMP.   | N   | N  | ONGOING  |
| 1,4-dioxane is a contaminant that has not been sampled for. In addition to 1,4-dioxane, groundwater and drinking water samples will be analyzed for manganese.  | N   | Y  | RESOLVED<br>Both 1,4-dioxane and manganese were sampled for.   |
| Institutional Controls should be reviewed to determine whether the deed restrictions should also require that the cover over the contaminated soils remain in place until soil and groundwater cleanup levels are attained. | N   | N  | RESOLVED<br>A risk analysis was performed by EPA and it was determined that there are no unacceptable dermal contact risks to soils under the cover. |

## Section 9.0 Addendum - RECOMMENDATIONS AND FOLLOW-UP ACTIONS

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

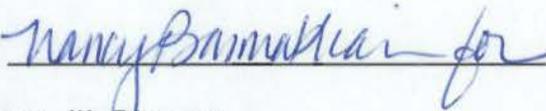
**Table 9-1  
Recommendations and Follow-Up Actions  
Linemaster Switch Superfund Site  
Woodstock, Connecticut**

| Issue  | Recommendations/<br>Follow-up Actions  | Party Responsible | Oversight Agency | Milestone Date                 |
|--|--|-------------------|------------------|--------------------------------|
| Increasing VOC concentration trends in the vicinity of downgradient groundwater well, MW-28DB.   | Continue to evaluate groundwater monitoring data in this area for trends. Additional monitoring wells may be necessary if warranted based on the data. | PRP               | EPA & CT DEEP    | Semi-annually                  |
| A vapor intrusion pathway has been identified in Building #105 Bald Hill Road.   | Continued periodic indoor air/soil vapor sampling or installation of a preventative ventilation system at this location.                               | PRP               | EPA & CT DEEP    | June 2013                      |
| The need for evaluation of 1,4-dioxane in groundwater and residential wells is necessary.  | Continue to evaluate the annual data.  | PRP               | EPA & CT DEEP    | Semi-annually                  |
| Interim soil and groundwater cleanup goals do not account for CTRSRs and revised MCLs.   | Prior to Compliance Monitoring EPA will determine whether CTRSRs and revised MCLs should be ARARs for the Site.  | EPA               | EPA & CT DEEP    | Prior to Compliance Monitoring |
| Institutional controls have been established at the Site. The State of Connecticut has agreed to be the grantee and accept the transfer of these restrictions. | Transfer restrictions from the EPA to the State of Connecticut in accordance with CERCLA Section 104(j).   | EPA & CT DEEP     | EPA & CT DEEP    | September 2014                 |

## Section 10.0 Addendum – PROTECTIVENESS STATEMENT

The remedy at the Linemaster Switch Site currently protects human health and the environment because there is currently no exposure to unacceptable concentrations of contaminated Site groundwater, soil and indoor air. However, in order for the remedy to be protective in the long-term, groundwater cleanup goals must be achieved and the vapor intrusion pathway in one on-Site home must be periodically monitored to ensure that there are no unacceptable risks from this pathway in the future. In lieu of periodic vapor intrusion monitoring, a vapor mitigation system could be installed in the home.

Approved by:

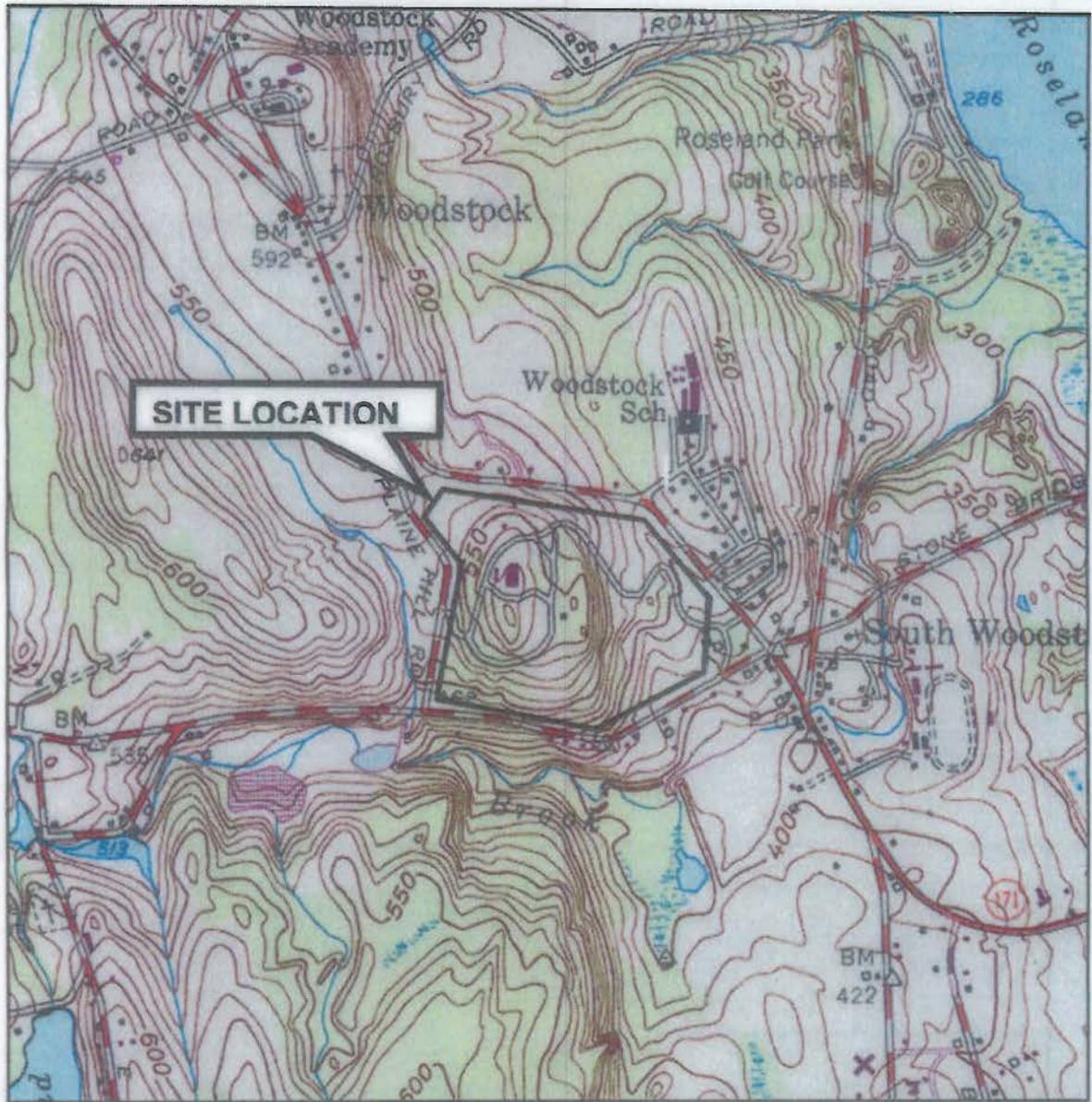
for

Date:

08/29/12

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

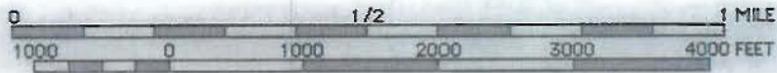
Attachments



Source: TOPO! Interactive Maps on CD, U.S.G.S.  
 7.5 Minute Series Topographic Quadrangle Map  
 Putnam, Conn. 1955, Photorevised 1970



**QUADRANGLE  
 LOCATION**



DATE: June 2011  
 DWN: L. Warner  
 APP: J. Markey  
 REV.: 0

**FIGURE 1**  
**LINEMASTER SWITCH CORPORATION**  
**PLAINE HILL ROAD**  
**WOODSTOCK, CONNECTICUT**  
**SITE LOCATION MAP**



MEMORANDUM

To: Leslie McVickar  
 From: Richard Sugatt  
 Date: August 11, 2009  
 Subject: Draft language concerning pre-remedial soil risk for the Five Year Report for Linemaster Switch.

I drafted language concerning pre-remedial risk of soils. If you do not want to include the table, please remove the initial phrase (in italics).

*As shown in the table below*, the risks associated with the chemicals detected in soil 0 to 2 feet below ground surface prior to remediation were higher than EPA risk management criteria (Hazard Quotient  $\geq 1$ , Cancer Risk  $\geq 1 \times 10^{-4}$ ) due primarily to arsenic, which was measured at an average concentration of 7.1 mg/kg and a maximum concentration of 17 mg/kg. If arsenic risk is subtracted from the total risk, the total risk of all of the other detected chemicals in soil would be a hazard index of 0.01 and a cancer risk of  $6.3 \times 10^{-7}$ . The arsenic concentrations likely represent background because there is no evidence of an arsenic release at the site. Soil more than 2 feet below ground surface was not sampled, presumably due to the presence of shallow groundwater; however, institutional controls prohibit excavation of soils above or below the water table or in bedrock without EPA and state approval. Therefore, it is concluded that the risks due to direct exposure to soil under the cover would be no higher than background risks and that any such exposure would be prevented due to institutional controls.

Table 1. Pre-Remedial Soil Risks-Linemaster Switch

| Concentration<br>in Soil | Exposure<br>Routes | Hazard Quotient  |                 |                                       | Cancer Risk      |                 |                                       |
|--------------------------|--------------------|------------------|-----------------|---------------------------------------|------------------|-----------------|---------------------------------------|
|                          |                    | All<br>Chemicals | Arsenic<br>Only | Chemicals<br>Other<br>Than<br>Arsenic | All<br>Chemicals | Arsenic<br>Only | Chemicals<br>Other<br>Than<br>Arsenic |
| Average                  | Dermal             | 3.607            | 3.600           | 0.007                                 | 1.3E-04          | 1.3E-04         | 2.5E-07                               |
|                          | Ingestion          | 0.150            | 0.150           | 0.000                                 | 5.5E-06          | 5.5E-06         | 1.0E-08                               |
|                          | Combined           | 3.757            | 3.750           | 0.007                                 | 1.4E-04          | 1.4E-04         | 2.6E-07                               |
| Maximum                  | Dermal             | 8.409            | 8.400           | 0.009                                 | 3.1E-04          | 3.1E-04         | 6.0E-07                               |
|                          | Ingestion          | 0.340            | 0.340           | 0.000                                 | 1.3E-05          | 1.3E-05         | 2.4E-08                               |
|                          | Combined           | 8.750            | 8.740           | 0.010                                 | 3.2E-04          | 3.2E-04         | 6.3E-07                               |

MEMORANDUM

To: Leslie McVickar  
 From: Richard Sugatt  
 Date: August 23, 2012  
 Subject: Cumulative cancer risk in indoor air

As shown in table 3 of the supplemental vapor intrusion report (Woodard and Curran, 2012), the only detected chemicals in indoor air of two residences were 1, 2-Dichloroethane at 0.094 ug/m<sup>3</sup> and Trichloroethene at 1.16 ug/m<sup>3</sup>, both in Residence # 105. All other target VOCs were not detected in either of the two residences that were studied. The cancer risk of each chemical was calculated by dividing the indoor air concentration of a chemical by the EPA Regional Screening Level (RSL) for that chemical and then multiplying by 1 x 10<sup>-6</sup>, which is the cancer risk associated with the RSL. As shown below the cancer risk was 2.2 x 10<sup>-6</sup> for 1, 2-Dichloroethane and 2.7 x 10<sup>-6</sup> for Trichloroethene. The cumulative cancer risk of both detected chemicals was calculated by adding the individual cancer risks for the individual chemicals. The cumulative cancer risk was 4.9 x 10<sup>-6</sup>, which is lower than EPA's maximum acceptable cancer risk of 1 x 10<sup>-4</sup>. Therefore, the cumulative cancer risk due to VOCs detected in indoor air of Residence # 105 is lower than EPA's maximum risk limit.

Table 1. Cumulative cancer risk-indoor air Linemaster Switch Superfund Site

| Target VOC               | Indoor Air<br>Residence #<br>105<br>(ug/m <sup>3</sup> ) | RSL<br>Residential<br>Air<br>(ug/m <sup>3</sup> ) | Cancer<br>Risk |
|--------------------------|--|---|----------------|
| 1,1-Dichloroethane       | ND   |   |                |
| 1,1-Dichloroethene       | ND   |   |                |
| 1,2-Dichloroethane       | 0.210  | 9.40E-02  | 2.2E-06        |
| cis-1,2-Dichloroethene   | ND   |   |                |
| trans-1,2-Dichloroethene | ND   |   |                |
| Tetrachloroethene        | ND   |   |                |
| Trichloroethene          | 1.16   | 4.30E-01  | 2.7E-06        |
| Vinyl Chloride           | ND   |   |                |
|                          |  | Total Cancer<br>Risk:                             | 4.9E-06        |

ND = Not Detected

RSL= EPA Regional Screening Level

Cancer risk = (Concentration in air/RSL)\*1x 10<sup>-6</sup>

Indoor air data are from Table 3 Linemaster VI Report

Reference

Woodard and Curran. 2012. Linemaster Vapor Intrusion Report. August, 2012.

**Table 1  
Summary of Vapor Intrusion Investigation Activities  
Linemaster Switch Corporation  
Woodstock, Connecticut**

| Property Identification <sup>(1)</sup>         | Investigation Activity  | Sample Location(s)                             | Number of Samples | Sample Identifiers   | Approximate Sample Depth/Height | Media Sampled | Laboratory Analysis <sup>(2)</sup> | Rationale/Objective   |
|--|-------------------------|--|-------------------|--|---------------------------------|---------------|------------------------------------|---|
| Residence #105                                 | Sub-Slab Vapor Sampling | First Floor Living Space, Unfinished Basement  | 3                 | 105-SG-01 through 105-SG-03                                  | <2 inches below slab            | Vapor         | Target cVOCs (TO-15 SIM)           | Determine the presence/absence of target cVOCs in sub-slab vapor.   |
|  | Indoor Air Sampling     | First Floor Living Space                       | 1                 | 105-IA-FF-01   | 3 feet above floor              | Air           | Target cVOCs (TO-15 SIM)           | Determine the presence/absence of target cVOCs in indoor air on first floor (structure is slab-on-grade). |
| Residence #111                                 | Outdoor Air Sampling    | Upwind (~150 feet northeast of Residence #111) | 1                 | 111-AA-01  | 3 feet above ground             | Air           | Target cVOCs (TO-15 SIM)           | Determine the presence/absence of target cVOCs in outdoor (i.e., ambient) air adjacent to structure.      |
|  | Sub-Slab Vapor Sampling | Finished Basement                              | 3                 | 111-SG-01 through 111-SG-03                                  | <2 inches below slab            | Vapor         | Target cVOCs (TO-15 SIM)           | Determine the presence/absence of target cVOCs in sub-slab vapor.   |
|  | Indoor Air Sampling     | Finished Basement, First Floor Living Space    | 2                 | 111-IA-BAS-01 <sup>(3)</sup> and 111-IA-FF-01                | 3 feet above floor              | Air           | Target cVOCs (TO-15 SIM)           | Determine the presence/absence of target cVOCs in indoor air on multiple floors.                          |
| Total Number of Primary Samples* =             |                         |  | 10                | *(6 sub-slab vapor, 3 indoor air, and 1 outdoor air samples) |                                 |               |                                    |   |
| Total Number of Duplicate Indoor Air Samples = |                         |  | 1                 |  |                                 |               |                                    |   |
| Total Number of Samples =                      |                         |  | 11                |  |                                 |               |                                    |   |

**Notes:**

cVOCs = Chlorinated Volatile Organic Compounds analysis to be conducted by Alpha Analytical, Westborough, Massachusetts using CT RCP and USEPA Method TO-15.

SIM = Selective Ion Monitoring (low level analysis)

(1) See Figure 2 for property locations.

(2) Target chlorinated VOCs (i.e., primary chemicals of potential concern) are those cVOCs that have been detected in groundwater at the Site, including 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, trichloroethylene, tetrachloroethylene and vinyl chloride.

(3) A duplicate sample was collected from this location

**Table 2  
Summary of Soil Vapor Analytical Results  
Linemaster Switch Corporation  
Woodstock, Connecticut**

| Target cVOCs               | 1996                  | 2003                  | 2012 USEPA                   | 2012 USEPA Region 9             | Soil Vapor     |             |             | Soil Vapor     |              |              |
|----------------------------|-----------------------|-----------------------|------------------------------|---------------------------------|----------------|-------------|-------------|----------------|--------------|--------------|
|                            | CTDEP RSR             | Proposed CTDEP        | Target Shallow               | Residential Air                 | Residence #105 |             |             | Residence #111 |              |              |
|                            | R-SVVC <sup>(1)</sup> | R-SVVC <sup>(2)</sup> | Soil Gas                     | Screening Levels <sup>(5)</sup> | 105-SG-01      | 105-SG-02   | 105-SG-03   | 111-SG-01      | 111-SG-02    | 111-SG-03    |
|                            | µg/m <sup>3</sup>     | µg/m <sup>3</sup>     | Concentration <sup>(3)</sup> | x10 <sup>(4)</sup>              | Basement       | First Floor | First Floor | Basement       | Basement     | Basement     |
|                            |                       |                       | µg/m <sup>3</sup>            | µg/m <sup>3</sup>               | 3/29/11        | 3/29/11     | 3/29/11     | 3/29/11        | 3/29/11      | 3/29/11      |
| 1,1-Dichloroethane         | 3,440,330             | 56,660                | 15                           | 15                              | < 0.404        | < 0.404     | < 0.404     | < 0.404        | < 0.404      | < 0.404      |
| 1,1-Dichloroethylene       | 3,960                 | 7,530                 | 2,100                        | 2,100                           | < 0.396        | < 0.396     | < 0.396     | < 0.396        | < 0.396      | < 0.396      |
| 1,2-Dichloroethane         | 4,050                 | 52.6                  | 0.94                         | 0.94                            | < 0.404        | < 0.404     | < 0.404     | < 0.404        | < 0.404      | < 0.404      |
| cis-1,2-Dichloroethylene   | NA                    | 13,480                | NA                           | NA                              | < 0.396        | < 0.396     | < 0.396     | < 0.396        | < 0.396      | < 0.396      |
| trans-1,2-Dichloroethylene | NA                    | 28,150                | 630                          | 630                             | < 0.396        | < 0.396     | < 0.396     | < 0.396        | < 0.396      | < 0.396      |
| Tetrachloroethylene        | 74,610                | 3,800                 | 4.1                          | 94                              | < 0.678        | < 0.678     | < 0.678     | < 0.678        | < 0.678      | < 0.678      |
| Trichloroethylene          | 37,620                | 750                   | 4.3                          | 4.3                             | < 0.537        | <b>10.6</b> | < 0.537     | <b>0.832</b>   | <b>0.537</b> | <b>0.537</b> |
| Vinyl Chloride             | 2,560                 | 100                   | 1.6                          | 1.6                             | < 0.255        | < 0.255     | < 0.255     | < 0.255        | < 0.255      | < 0.255      |

**Notes:**

All results reported in µg/m<sup>3</sup>

cVOCs = Chlorinated Volatile Organic Compounds

CTDEP = Connecticut Department of Environmental Protection

RSRs = Remediation Standard Regulations

R-SVVC = Residential Soil Vapor Volatilization Criteria

USEPA = United States Environmental Protection Agency

NA = Not available

µg/m<sup>3</sup> = Micrograms per cubic meter

(1) These values are from Appendix F (Volatilization Criteria for Soil Vapor) of the Connecticut Remediation Standard Regulations (1996).

(2) These values are from Table 3 (Proposed Soil Vapor Volatilization Criteria) of the Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria (March 2003).

(3) Target soil gas concentrations from the USEPA Vapor Intrusion Screening Level (VISL) calculator (November 2011/March 2012) at <http://www.epa.gov/oswer/vaporinvasion/guidance.html#item6>.

(4) These values are from the USEPA Region 9 Regional Screening Level (RSL) Table dated April 2012 (<http://www.epa.gov/region9/superfund/prg/>).

(5) 2011 USEPA Region 9 Residential Air Screening Levels multiplied by an attenuation factor of 10 for evaluation of soil vapor concentrations

Bold values indicate that the constituent was detected above the laboratory minimum detection limit

Shaded values indicate that the constituent was detected above the 2012 USEPA Region 9 Residential Air Screening Levels and/or 2011/2012 VISL target concentrations.

**Table 3  
Summary of Indoor Air Analytical Results  
Linemaster Switch Corporation  
Woodstock, Connecticut**

| Target cVOCs               | 1996                 | 2003                 | 2012 USEPA                   | 2012 USEPA                      | Indoor Air     | Indoor Air     |               |              | Outdoor     |
|----------------------------|----------------------|----------------------|------------------------------|---------------------------------|----------------|----------------|---------------|--------------|-------------|
|                            | CTDEP RSR            | Proposed CTDEP       | Target Indoor Air            | Region 9                        | Residence #105 | Residence #111 |               |              | Ambient Air |
|                            | R-TAC <sup>(1)</sup> | R-TAC <sup>(2)</sup> | Concentration <sup>(3)</sup> | Residential Air                 | 105-IA-FF-01   | 111-IA-BAS-01  | 111-IA-BAS-50 | 111-IA-FF-01 | 111-AA-01   |
|                            | µg/m <sup>3</sup>    | µg/m <sup>3</sup>    | µg/m <sup>3</sup>            | Screening Levels <sup>(4)</sup> | First Floor    | Basement       | Basement      | First Floor  | Upwind      |
|                            |                      |                      |                              |                                 | 3/29-30/11     | 3/29-30/11     | 3/29-30/11    | 3/29-30/11   | 3/29-30/11  |
| 1,1-Dichloroethane         | 521                  | 77                   | 1.5                          | 1.5                             | < 0.081        | < 0.081        | < 0.081       | < 0.081      | < 0.081     |
| 1,1-Dichloroethylene       | 0.0487               | 10                   | 210                          | 210                             | < 0.079        | < 0.079        | < 0.079       | < 0.079      | < 0.079     |
| 1,2-Dichloroethane         | 0.0936               | 0.07                 | 0.094                        | 0.094                           | 0.210          | < 0.081        | < 0.081       | < 0.081      | < 0.081     |
| cis-1,2-Dichloroethylene   | NA                   | 18                   | NA                           | NA                              | < 0.079        | < 0.079        | < 0.079       | < 0.079      | < 0.079     |
| trans-1,2-Dichloroethylene | NA                   | 37                   | 63                           | 63                              | < 0.079        | < 0.079        | < 0.079       | < 0.079      | < 0.079     |
| Tetrachloroethylene        | 11                   | 5                    | 0.41                         | 9.4                             | < 0.136        | < 0.136        | < 0.136       | < 0.136      | < 0.136     |
| Trichloroethylene          | 5                    | 1                    | 0.43                         | 0.43                            | 1.16           | < 0.107        | < 0.107       | < 0.107      | < 0.107     |
| Vinyl Chloride             | 0.029                | 0.14                 | 0.16                         | 0.16                            | < 0.051        | < 0.051        | < 0.051       | < 0.051      | < 0.051     |

**Notes:**

All results reported in µg/m<sup>3</sup>

cVOCs = Chlorinated Volatile Organic Compounds

CTDEP = Connecticut Department of Environmental Protection

RSRs = Remediation Standard Regulations

R-TAC = Residential Target Air Concentration

USEPA = United States Environmental Protection Agency

NA = Not available

µg/m<sup>3</sup> = Micrograms per cubic meter

SIM = Selective Ion Monitoring (low level analysis)

(1) These values are from Appendix G (Table of Target Indoor Air Concentrations) of the Connecticut Remediation Standard Regulations (1996).

(2) These values are from Table 1 (Proposed Target Indoor Air Concentrations) of the Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria (March 2003).

(3) Target indoor air concentrations from the USEPA Vapor Intrusion Screening Level (VISL) calculator (November 2011/March 2012) at <http://www.epa.gov/oswer/vaporintrusion/guidance.htm#item6>.

(4) These values are from the USEPA Region 9 Regional Screening Level (RSL) Table dated April 2012 (<http://www.epa.gov/region9/superfund/prgf>).

Bold values indicate that the constituent was detected above the laboratory minimum detection limit.

Shaded values indicate that the constituent was detected above the 2012 USEPA Region 9 Residential Air Screening Levels and/or 2011/2012 VISL target concentrations.

TABLE 1B

**Summary of Historical Manganese Results from  
On-Site and Off-Site Drinking Water Wells  
Linemaster Switch Corporation  
Woodstock, Connecticut**

| Well ID | Date     | Total Mn<br>(mg/L) | Dissolved Mn<br>(mg/L) |
|---------|----------|--------------------|------------------------|
| GW27OB  | 8/15/88  | --                 | <0.02                  |
|         | 12/16/88 | --                 | <0.02                  |
|         | 2/22/89  | --                 | <0.02                  |
|         | 6/6/89   | --                 | <0.02                  |
|         | 9/11/89  | --                 | <0.02                  |
| GW28    | 8/15/88  | --                 | <0.02                  |
|         | 12/16/88 | --                 | <0.02                  |
|         | 2/22/89  | --                 | <0.02                  |
|         | 6/6/89   | --                 | <0.02                  |
|         | 9/11/89  | --                 | <0.02                  |
| GW29    | 4/27/92  | 0.036              | --                     |
| GW34DB  | 8/15/88  | --                 | <0.02                  |
|         | 12/16/88 | --                 | <0.02                  |
|         | 2/22/89  | --                 | <0.02                  |
|         | 6/6/89   | --                 | <0.02                  |
|         | 9/11/89  | --                 | <0.02                  |
|         | 4/27/92  | 0.016              | --                     |
| GW35    | 8/15/88  | --                 | <0.02                  |
|         | 12/16/88 | --                 | <0.02                  |
|         | 2/22/89  | --                 | <0.02                  |
| GW36DB  | 8/15/88  | --                 | <0.02                  |
|         | 6/6/89   | --                 | <10                    |
|         | 12/21/89 | --                 | 0.06                   |
|         | 1/8/90   | --                 | 0.05                   |
|         | 1/16/90  | --                 | 0.06                   |
|         | 2/15/90  | --                 | 0.04                   |
| GW36T   | 12/21/89 | --                 | 0.09                   |
|         | 1/8/90   | --                 | 0.02                   |
|         | 1/16/90  | --                 | <0.02                  |
|         | 2/15/90  | --                 | 0.06                   |
| GW37    | 6/6/89   | --                 | <0.02                  |
| GW40DB  | 9/11/89  | --                 | <0.02                  |
|         | 10/23/90 | 0.05               | --                     |
| GW41    | 9/11/89  | --                 | <0.02                  |
| GW48DB  | 7/31/92  | 0.06               | --                     |
|         | 7/24/97  | 0.05               | --                     |
| GW48T   | 7/31/92  | 0.07               | --                     |
|         | 7/24/97  | 0.05               | --                     |
| GW69DB  | 3/25/93  | 0.01               | --                     |
| GW69S   | 3/25/93  | <0.01              | --                     |

## Notes:

\*--\* = Not analyzed

mg/L = Milligrams per liter

Mn = Manganese

**Summary of Historical Manganese Results from  
On-Site Groundwater Monitoring Wells  
Linemaster Switch Corporation  
Woodstock, Connecticut**

| Well ID | Date     | Total Mn<br>(mg/L) | Dissolved Mn<br>(mg/L) |
|---------|----------|--------------------|------------------------|
| MW01DB  | 6/20/91  | 1.87               | 0.046                  |
|         | 6/20/91  | 1.21               | --                     |
|         | 6/21/91  | 0.795              | --                     |
|         | 9/14/92  | 0.061              | --                     |
|         | 12/22/92 | 0.056              | --                     |
|         | 1/18/93  | 0.066              | --                     |
| MW01SB  | 6/13/91  | 0.353              | 0.083                  |
| MW03T   | 4/24/92  | 4.16               | 0.018                  |
| MW04T   | 7/26/90  | 0.268              | --                     |
| MW06DB  | 7/8/91   | 3.251              | 0.065                  |
|         | 7/8/91   | 3.016              | 0.057                  |
|         | 9/14/92  | 0.044              | --                     |
| MW06SB  | 7/25/90  | 1.74               | 0.235                  |
| MW06T   | 7/25/90  | 0.647              | 0.102                  |
| MW07SB  | 7/24/90  | 1.2                | --                     |
| MW10TS  | 4/24/92  | 0.92               | --                     |
| MW12SB  | 4/21/92  | --                 | 0.059                  |
|         | 4/28/92  | 1.63               | --                     |
| MW12T   | 4/21/92  | --                 | 4.37                   |
| MW14DB  | 9/14/92  | 0.066              | --                     |
| MW15DB  | 6/21/91  | 8.2                | <0.0090                |
|         | 6/24/91  | 1.26               | 0.095                  |
| MW16T   | 6/13/91  | 1.431              | 0.612                  |
|         | 1/9/92   | 23.7               | 2.44                   |
| MW17DB  | 6/27/91  | 0.25               | 0.116                  |
|         | 6/27/91  | 0.268              | 0.124                  |
|         | 9/14/92  | 0.039              | --                     |
| MW17TD  | 6/12/91  | 0.373              | 0.027                  |
| MW18SB  | 6/12/91  | 0.38               | 0.009                  |
| MW23T   | 1/9/92   | 22.5               | 0.455                  |
| MW25T   | 1/8/92   | 11.4               | 1.6                    |
| MW26T   | 1/9/92   | 8.07               | 0.039                  |
| MW28DB  | 4/28/92  | 0.148              | 0.057                  |
| MW28SB  | 4/21/92  | --                 | 0.029                  |
| MW28T   | 4/21/92  | --                 | 0.025                  |

Notes:

"--" = Not analyzed

mg/L = Milligrams per liter

Mn = Manganese

**TABLE 2B**  
**Summary of Manganese Results**  
**Linemaster Switch Corporation**  
**July to December 2010 Semi-Annual Monitoring Report**

| Well Location  | Date                   | Manganese (ug/l) |
|--|------------------------|------------------|
| <b>IRTS - System</b>                                   |                        |                  |
| IRTS-INF   | 11/22/10               | 0.0548           |
| IRTS-EFF   | 11/22/10               | 0.0279           |
| IRTS-Final Discharge                                   | 11/22/10               | 0.0208           |
| <b>Reconfigured Phase 1A System - Extraction Wells</b> |                        |                  |
| FW-F35   | 11/24/10               | 0.0868           |
| MW10SB   | 11/24/10               | 1.01             |
| FW-E   | 11/24/10               | 0.0118           |
| FW-H   | 11/24/10               | 0.421            |
| FW-I   | 11/24/10               | 0.418            |
| FW-J   | 11/24/10               | 0.0134           |
| <b>Deep Bedrock Extraction Wells</b>                   |                        |                  |
| GW10DB   | 11/22/10               | 1.18             |
| MW01DB   | 11/22/10               | 0.0846           |
| MW06DB   | 11/22/10               | 0.0907           |
| MW14DB   | 11/22/10               | 0.0421           |
| MW15DB   | 11/22/10               | 0.324            |
| MW17DB   | 11/22/10               | 0.1              |
|  | 11/22/10 <sup>11</sup> | 3.41             |
| <b>Deep Bedrock Monitoring Wells</b>                   |                        |                  |
| GW12DB   | 11/22/10               | 2.2              |
| GW36DB   | 11/23/10               | 0.081            |
| MW08DB   | 11/22/10               | 0.166            |
| MW11DB   | 11/22/10               | 0.201            |
| MW12DB   | 11/23/10               | 0.0517           |
| MW13DB   | 11/24/10               | 0.0796           |
| MW18DB   | 11/23/10               | 0.168            |
| MW21DB   | 11/24/10               | 0.0768           |
| MW22DB   | 11/22/10               | 0.0089           |
| MW27DB   | 11/23/10               | 0.107            |
| MW28DB   | 11/22/10               | 0.0038           |
| MW29DB   | 11/22/10               | 0.0564           |
| <b>Shallow Bedrock Monitoring Wells</b>                |                        |                  |
| MW17SB   | 11/24/10               | 0.049            |
| <b>Overburden Monitoring Wells</b>                     |                        |                  |
| MW04T  | 11/24/10               | 0.0028           |
| MW06T  | 11/29/10               | 0.0059           |
| MW11T  | 11/29/10               | 0.0051           |
| MW17TD   | 11/24/10               | 0.0448           |
| MW17TS   | 11/24/10               | 0.0186           |
| MW23T  | 11/30/10               | 0.151            |
| MW26T  | 11/30/10               | 0.0772           |
| MW33T  | 11/29/10               | 0.218            |
| MWEPAATS   | 11/30/10               | 0.0327           |
|  | 11/30/10 <sup>11</sup> | 0.0322           |