

FIVE-YEAR REVIEW REPORT FOR
TANSITOR ELECTRONICS INC. SUPERFUND SITE
BENNINGTON COUNTY, VERMONT



Prepared by

U.S. Environmental Protection Agency
Region 1
BOSTON, MASSACHUSETTS


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9/24/14
Date

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**2014 FIVE-YEAR REVIEW
TANSITOR ELECTRONICS INC. SUPERFUND SITE**

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LIST OF ACRONYMS

| | |
|---------|---|
| ARAR | Applicable or Relevant and Appropriate Requirement |
| COC | Contaminant of Concern |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| DCA | 1,1-dichloroethane |
| DCE | 1,1-dichloroethene |
| EPA | U.S. Environmental Protection Agency |
| FYR | Five-Year Review |
| GWPRS | Vermont Ground Water Protection Rule and Strategy |
| MCL | Maximum Contaminant Level |
| NCP | National Contingency Plan |
| NPL | National Priorities List |
| O&M | Operations and Maintenance |
| PCE | Tetrachloroethylene |
| PGWS | Vermont Primary Groundwater Quality Standards |
| ppb | parts per billion |
| PRPs | Potentially Responsible Parties |
| RAO | Remedial Action Objective |
| RI/FS | Remedial Investigation/Feasibility Study |
| ROD | Record of Decision |
| TBC | To be Considered |
| TCA | 1,1,1-trichloroethane |
| TCE | Trichloroethylene |
| TI Zone | Technically Impracticability Zone |
| VOC | volatile organic compound |
| VTANR | Vermont Agency of Natural Resources |
| UU/UE | Unlimited Use/Unlimited Exposure |
| µg/l | micrograms per liter |

EXECUTIVE SUMMARY

This is the third Five-Year Review (FYR) for the Tansitor Electronics Inc. Superfund Site (Site) located in Bennington, Bennington County, Vermont. The purpose of this FYR is to review information to determine if the remedy is and will continue to be protective of human health and the environment. The triggering action for this statutory FYR was the signing of the previous FYR on September 23, 2009.

Since the 1950s, various owners have used the Site as a manufacturing facility for electronic capacitors. Between 1956 and 1979, organic solvents and acids were disposed of in two areas of the property. During the period of 1975-1979, the process waste disposed included 1,1,1-trichloroethane (TCA) which is the predominant volatile organic compound (VOC) present in the groundwater. The Site owner/operator, Vishay-Tansitor Electronics, Inc. (formerly Tansitor Electronics, Inc., hereafter, "Vishay-Tansitor") also reported that some waste detergents and dilute acid solutions may have been discharged into two leach fields or directly into the intermittent stream north of its manufacturing building.

In May 1981, in compliance with Section 103(c) of CERCLA, Vishay-Tansitor notified EPA of the waste disposal. Subsequent to the notification, the Vermont Agency of Natural Resources (VTANR) performed site inspections and requested that Vishay-Tansitor initiate removal activities and implement a soil sampling and analysis program in the "Disposal Area." The Site was listed on the National Priorities List in October 1989. On September 29, 1995, EPA issued a Record of Decision (ROD) which set forth the selected remedy for the Site. The major components of the selected remedy included institutional controls to prevent use of groundwater, long-term monitoring of Site groundwater, contingencies for additional investigation or further action, and five-year reviews.

In addition, as part of the selected remedy, for a ten-acre portion of the Site, EPA waived the attainment of federal drinking water standards which are applicable or relevant and appropriate requirements (ARARs). EPA waived attainment of these ARARs on the basis that it was technically impracticable from an engineering perspective to restore groundwater to drinking water standards for this ten-acre portion of the Site within a reasonable timeframe. This followed the State of Vermont's reclassification of the groundwater beneath the Technical Impracticability Zone (TI Zone) to non-potable use only.

Pursuant to a Consent Decree, Vishay-Tansitor and Siemens Communication Systems, Inc. (the "Settling PRPs") recorded institutional controls and are performing the long-term sampling program established in the ROD. Three of the contingencies for additional monitoring outlined in the ROD have been triggered since 1995 by the groundwater monitoring data. As a result, the sampling frequency was increased and a conceptual model evaluation plan and a phased bedrock monitoring plan were submitted and approved.

In September 1999, EPA deleted the Site from the National Priorities List, and, on December 3, 1999, VTANR formally accepted lead agency responsibilities.

Based on the data reviewed for this FYR, observations from the site inspection, and interviews, the remedy is functioning as intended by the ROD. Groundwater monitoring continues, maintenance of the wells is performed as necessary, and the effective implementation of institutional controls has thus far ensured the integrity of the remedy and prevented exposure to Site groundwater.

The primary ARARs for groundwater beyond the TI Zone are Maximum Contaminant Levels and Vermont Primary Groundwater Quality Standards. These standards continue to be met in the wells outside the TI Zone. Land use at the Site has not changed since the 1995 ROD and is not expected to change in the near future.

No current issues were raised by this five-year review.

Five-Year Review Summary Form

| SITE IDENTIFICATION | | |
|--|--|---|
| Site Name: Tansitor Electronics Inc. Superfund Site | | |
| EPA ID: VTD000509174 | | |
| Region: 1 | State: Vermont | Town/County: Bennington/Bennington County |
| SITE STATUS | | |
| NPL Status: Deleted | | |
| Multiple OUs? No | Has the site achieved construction completion? Yes | |
| REVIEW STATUS | | |
| Lead agency: State | | |
| Author name (Federal or State Project Manager): Terrence Connelly | | |
| Author affiliation: EPA | | |
| Review period: 4/8/2014 – 9/30/2014 | | |
| Date of site inspection: May 7, 2014 | | |
| Type of review: Statutory | | |
| Review number: 3 | | |
| Triggering action date: 9/23/2009 | | |
| Due date (five years after triggering action date): 9/23/2014 | | |
| | | |
| OU(s) without Issues/Recommendations Identified in the Five-Year Review: | | |
| Sitewide | | |
| | | |
| <i>Protectiveness Determination:</i> Protective | | <i>Addendum Due Date (if applicable):</i> Not Applicable |
| <p><i>Protectiveness Statement:</i> The site-wide remedy is protective of human health and the environment. Institutional controls have been recorded. The institutional controls have prevented exposure to Site groundwater, thereby ensuring the Site remains protective of human health. In addition, the State of Vermont reclassified the groundwater beneath the TI Zone to non-potable use only. Ongoing monitoring demonstrates that the plume is stable and not migrating.</p> | | |

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action.

EPA has conducted two FYRs on the remedy implemented at the Tansitor Electronics, Inc. Superfund Site (Site) in Bennington, Bennington County, Vermont. EPA was the lead agency for developing and implementing the remedy for the Site. Vermont Agency of Natural Resources (VTANR), as the support agency representing the State of Vermont during the implementation of the remedy, has been the lead agency since 1999. VTANR reviewed all supporting documentation and provided input to EPA for each FYR.

This is the third FYR for the Site. The triggering action for this statutory review is September 23, 2009, the completion date of the second FYR. This FYR is required since hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. The Site consists of one Operable Unit.

II. PROGRESS SINCE THE LAST REVIEW

The second Five-Year Review Report was signed on September 23, 2009. The 2009 FYR found that the site-wide remedy was protective because the remedial activities have been implemented and are complete including an institutional control for the Site (July 28, 1999 Environmental Protection Easement and Declaration of Restrictive Covenant). In addition, Vermont reclassified the groundwater beneath the TI Zone to non-potable use only. Annual reports certify compliance with the institutional controls and the Vermont Reclassification Order. Groundwater monitoring within the TI zone has shown gradual reductions in concentrations of concern. Tables 1 and 2 below present the protectiveness determination and follow-up actions from the 2009 FYR. The 2009 FYR carried forward four potential issues from the 2004 FYR and follow-up recommendations/actions.

Table 1: Protectiveness Determinations/Statements from the 2009 FYR

| OU # | Protectiveness Determination | Protectiveness Statement |
|------|------------------------------|--|
| 1 | Protective | <p>Because the remedy selected for the Site is protective, the Site is protective of human health and the environment. Institutional controls have been recorded. The institutional controls prevent exposure to site groundwater ensuring the Site remains protective of human health. In addition, Vermont reclassified the groundwater beneath the TI Zone to non-potable use only. Annual reports certify compliance with the institutional controls and the Vermont Reclassification Order. Groundwater monitoring within the TI zone has shown gradual reductions in concentrations of concern. Groundwater monitoring beneath and outside the TI zone has demonstrated that there continues to be no migration beyond the TI zone or the Site. The monitoring program will continue to ensure that no migration beyond the TI zone or the Site occurs.</p> <p>Although EPA does not consider the indoor migration pathway from the historic source release to be complete for the current land use scenario, should future land use change, there would be a need to reevaluate the indoor air pathway at that time. EPA will continue to monitor land use in future reviews.</p> |

Table 2: Status of Follow-up Actions from the 2009 FYR

| OU # | Potential Issue | Follow-up Actions | Party Responsible | Oversight Party | Original Milestone Date | Current Status | Completion Date (if applicable) |
|------|--------------------------------------|--|-------------------|-----------------|-------------------------|----------------|---------------------------------|
| 1 | Reassessment of 1,4-dioxane toxicity | Re-evaluate 1,4-dioxane data when toxicity value reassessed | EPA | N/A | 2013 | Completed | August 2014 |
| 1 | Vapor Intrusion | Monitor land use at the Site relative to the vapor intrusion pathway | State/EPA | N/A | 2013 | Ongoing | |
| 1 | Institutional Controls | Monitor land use at the Site relative to the institutional controls | State/EPA | N/A | 2013 | Ongoing | |
| 1 | Viability of Monitoring Wells | Develop a process to address long-term viability of the monitoring wells | Settling Parties | VTANR/EPA | 2013 | Ongoing | |

Follow-up Action 1

- *EPA updated the toxicity value of 1,4-dioxane in 2010 and 2013. EPA reassessed the Site data using the updated value for this FYR. Changes in the toxicity values for 1,4-dioxane does not affect the protectiveness of the remedy because exposure to the groundwater is prevented by institutional controls and geologic and hydrologic factors prevent the plume from expanding beyond the extent characterized in the 1995 ROD.*

Follow-up Action 2

- *EPA continues to monitor land use at the Site relative to the vapor intrusion pathway. There has been no change in land use since the 1995 ROD. This type of monitoring will continue in future FYRs and at this time no longer needs to be tracked as an issue related to protectiveness.*

Follow-up Action 3

- *EPA continues to monitor land use at the Site relative to the institutional control. There has been no change in land use since the 1995 ROD and the restrictions continue to be*

followed. This type of monitoring will continue in future FYRs and at this time no longer needs to be tracked as an issue related to protectiveness.

Follow-up Action 4

- *VTANR and EPA have discussed with the Settling Parties the eventuality of replacing of the monitoring wells to maintain the long-term viability of the monitoring program. The Settling Parties have made repairs to the well footings as needed. This type of monitoring will continue in future FYRs and at this time no longer needs to be tracked as an issue related to protectiveness.*

Remedy Implementation Activities

No remedial implementation activities have been performed since the previous FYR, except for the continued implementation of the institutional controls.

Table 3: Summary of Planned and/or Implemented ICs

| Media, engineered controls, and areas that do not support UU/UE based on current conditions | ICs Needed | ICs Called for in the Decision Document | Impacted Parcel(s) | IC Objective | Title of IC Instrument Implemented and Date (or planned) |
|---|------------|---|--|---|---|
| Groundwater, soil | Yes | Yes | Parcel # 1, Book 0-221 and Parcel #2, Book 0-234 | Use restriction or notice provided by the IC (e.g. restrict installation of ground water wells and groundwater use and no excavation or construction within TI Zone). | Environmental Protection Easement and Declaration of Restrictive Covenants, July 1999 |

System Operation/Operation and Maintenance Activities

Neither the ROD nor Consent Decree specified any Operation and Maintenance tasks. With the recording of the Environmental Easement and Declaration of Restrictive Covenants in July 1999, the remedial action was determined to be complete per EPA’s guidance. The monitoring wells are maintained as part of regular grounds maintenance for the facility.

III. FIVE-YEAR REVIEW PROCESS

Administrative Components

VTANR was notified of the initiation of the five-year review on April 8, 2014. The FYR was led by Terrence Connelly, EPA's Remedial Project Manager for the Site. Michael Smith of VTANR assisted in the review as the State Project Manager.

The review consisted of the following components:

- Community Notification and Involvement;
- Document Review;
- Data Review;
- Site Inspection; and
- Interviews.
-

Community Notification and Involvement

Activities to involve the community in the five-year review process were initiated by the Remedial Project Manager in April 2014 with a summary of the Site sent to the regional team. Per Region 1 policy, a region-wide press release announcing all upcoming five-year reviews in New England was sent to all regional newspapers including the Bennington Banner. The press release was sent on February 13, 2014 and is attached in Appendix B. The results of the review and this FYR will be made available at the Site information repository located at:

Bennington Free Library
101 Silver Street
Bennington, Vermont 05201

and at

Superfund Records Center
US Environmental Protection Agency
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Document Review

This five-year review consisted of a review of relevant documents including decision documents, monitoring reports, institutional controls, and trust fund annual financial reports. Groundwater cleanup standards, as listed in the September 1995 ROD, were also reviewed.

Data Review - Groundwater

The 2009 FYR provided a comprehensive review of data over the entire sampling program through 2009 at each monitoring well on the Site and that review is included in Appendix A. The current monitoring program consists of quarterly sampling of MW-105M and another fourteen wells annually. Eight wells are within the TI Zone and plume, five within the TI Zone but beyond the plume, and two are outside the TI Zone.

Overall, the monitoring data collected from April 2010 through May 2014 showed that the groundwater flow conditions remain consistent with an upward flow into the Fire Pond, concentrations are consistent with past data, the decreasing concentration trends noted in 2009 are continuing, and variation of seasonal precipitation appear to influence the fluctuations of concentrations observed within the overall decreasing trends.

Flow Conditions

Figure 1, showing the groundwater potentiometric-level contours, monitoring well locations, and the TI Zone, was generated from water level measurements taken on May 7, 2014. The groundwater flow pattern shown on Figure 1 is consistent with that shown and described in the ROD and in previous monitoring reports. Flow from the Disposal Area is toward and into the Fire Pond and flow from the Concrete Pad Area is toward the Vishay-Tansitor manufacturing building.

Figure 2, showing groundwater flow in cross-section (groundwater flow net) from the Disposal Area to well MW-109, was generated from measurements taken in multi-level wells in May 2014. These figures demonstrate that the extent of contamination remains constrained by geologic and hydrologic factors.

Water Quality Data

The 1995 ROD set MCLs as the groundwater performance standards for the groundwater Contaminants of Concern (COCs) and identified five major COCs: 1,1,1-trichloroethane (TCA), 1,1-dichloroethylene (DCE), trichloroethylene (TCE), tetrachloroethylene (PCE), and vinyl chloride. The ROD stated that the increased carcinogenic risk from ingestion of groundwater was exclusively due to DCE and the increased non-carcinogenic risk was mostly due to TCA and DCE.

Monitoring continues to detect TCA and DCE at concentrations above their respective MCL north of the Fire Pond whereas TCE and PCE (historically detected only in the Concrete Pad Plume) concentrations have decreased such that they met their respective MCL during this review period. Vinyl chloride was only detected in MW-ELF prior to the 1995 ROD. With modification to the facility's floor drain system, vinyl chloride has no longer been detected at the Site. In addition to the five major COCs, 1,1-dichloroethane (DCA) has been detected in the shallow overburden wells located in the Disposal Area Plume. There is no MCL or VT Primary Groundwater Quality Standard for DCA (the 1995 ROD identified the Ground Water Protection

Rule Strategy or GWPRS as the ARAR. The State of Vermont replaced it in 2005 with the PGQS). The ROD did not indicate that DCA contributed to either the carcinogenic or non-carcinogenic risk associated with ingestion of drinking the groundwater; and DCA concentrations have decreased by an order of magnitude or more in four of the five wells where it has been detected.

Table 4 below presents the maximum and current concentrations of TCA, DCE, TCE, PCE, and DCA in the two plumes. As stated previously, none of the COCs has ever been detected downgradient of the Fire Pond or in the facility's bedrock production well.

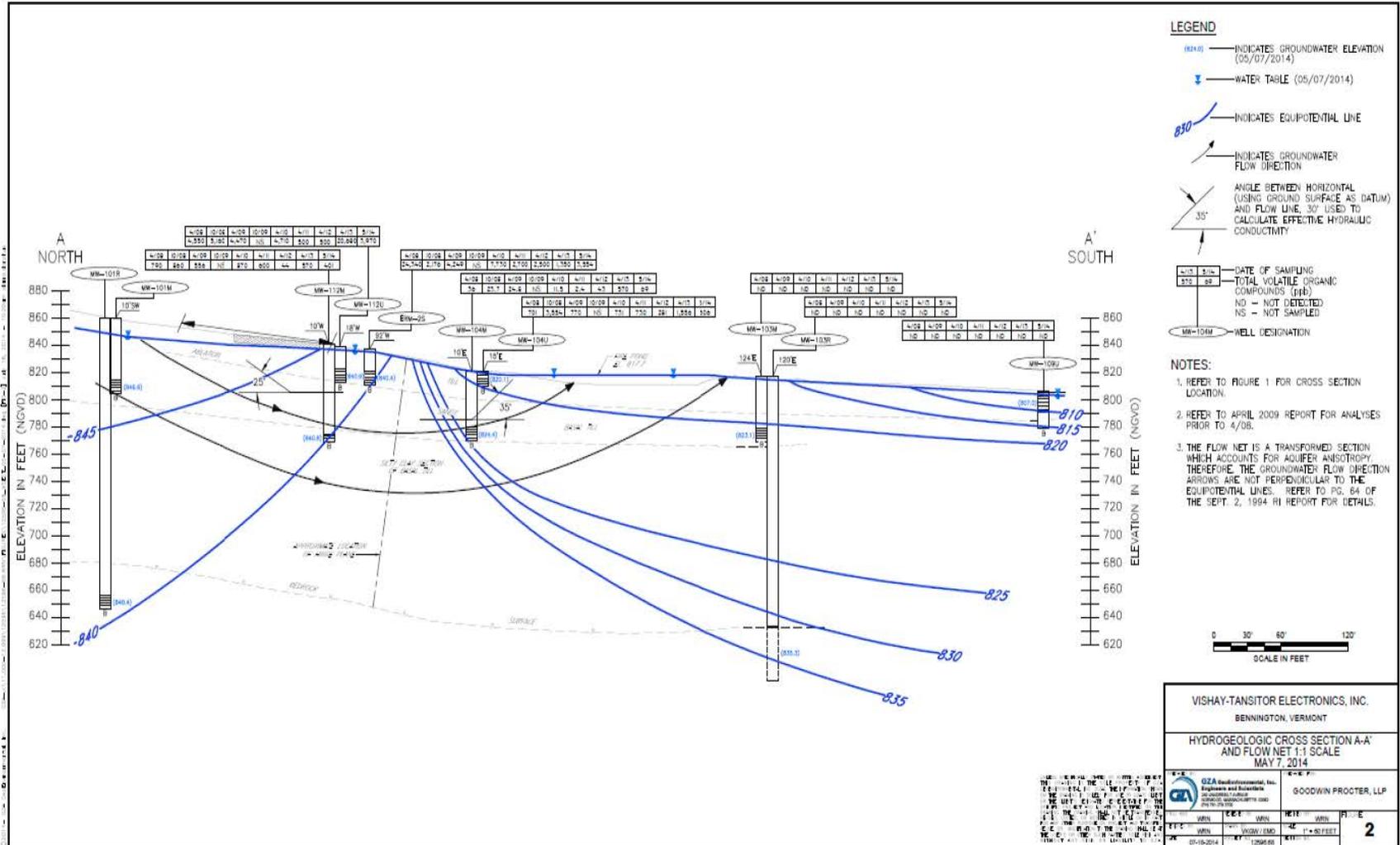
Table 4: COCs (in ppb)

| COC | MCL | Location ¹ | Historical Maximum Concentration and Date | Current Concentration (May 2014) |
|---------------------|-----|-----------------------|---|----------------------------------|
| Disposal Area Plume | | | | |
| TCA | 200 | ERM-2S | 420,000 Oct 1994 | 3,400 |
| | | MW-112U | 22,000 Apr 2002 | 3,500 |
| | | MW-112M | 810 Oct 2002 | 260 |
| | | MW-104U | 2,100 Oct 2008 | 170 |
| | | MW-104M | 330 Jan 2002 | 50 |
| DCE | 7 | ERM-2S | 5,200 Oct 1994 | 140 |
| | | MW-112U | 1,200 Apr 2002 | 270 |
| | | MW-112M | 200 April 2010 | 140 |
| | | MW-104U | 54 Oct 2008 | 5.8 |
| | | MW-104M | 150 April 2013 | 18 |
| DCA | NS | ERM-2S | 3,200 Oct 2000 | 14 |
| | | MW-112U | 18,000 April 2002 | 200 |
| | | MW-112M | 1.2 April 2005 | ND |
| | | MW-104U | 1,400 Oct 2008 | 130 |
| | | MW-104M | 6.4 Oct 1999 | 0.61 |
| Concrete Pad Plume | | | | |
| TCA | 200 | MW-108U | 3,200 Oct 1995 | 1.8 |
| DCE | 7 | | 850 Oct 1995 | ND |
| TCE | 5 | | 94 May 1997 | 1.3 |
| PCE | 5 | | 130 May 1997 | 2.1 |
| DCA | NS | | 570 April 2002 | ND |

¹ Monitoring locations are listed by distance from the Disposal Area

NS: No Standard

ND: Not Detected



Trends

Figures 3-5 present updated exponential decay curves for wells ERM-2S, MW-104U, and MW-112U. The decay curves plot the TCA concentrations detected in the well samples and from which R^2 values are calculated. The R^2 value is the statistical measurement of how well the data fit the projection, and ranges from 0.0 to 1.0 with the closer the value to 1.0, the greater the confidence in the “goodness-to-fit” of the projection. The 2014 R^2 value for ERM-2S has improved from the 2009 value, 0.79 up from 0.67. If this rate of decrease continues then extrapolation of TCA concentrations indicates they would decrease below the MCL in approximately another 12-15 years, or 2026-2029 (the 2009 FYR indicated 2029-2029).

The 2014 R^2 values for MW-104U and MW-112U remain close to zero, 0.003 and 0.073, respectively, (0.003 and 0.055 in 2009), indicating that no statistically significant trend has developed for TCA concentrations in these wells.

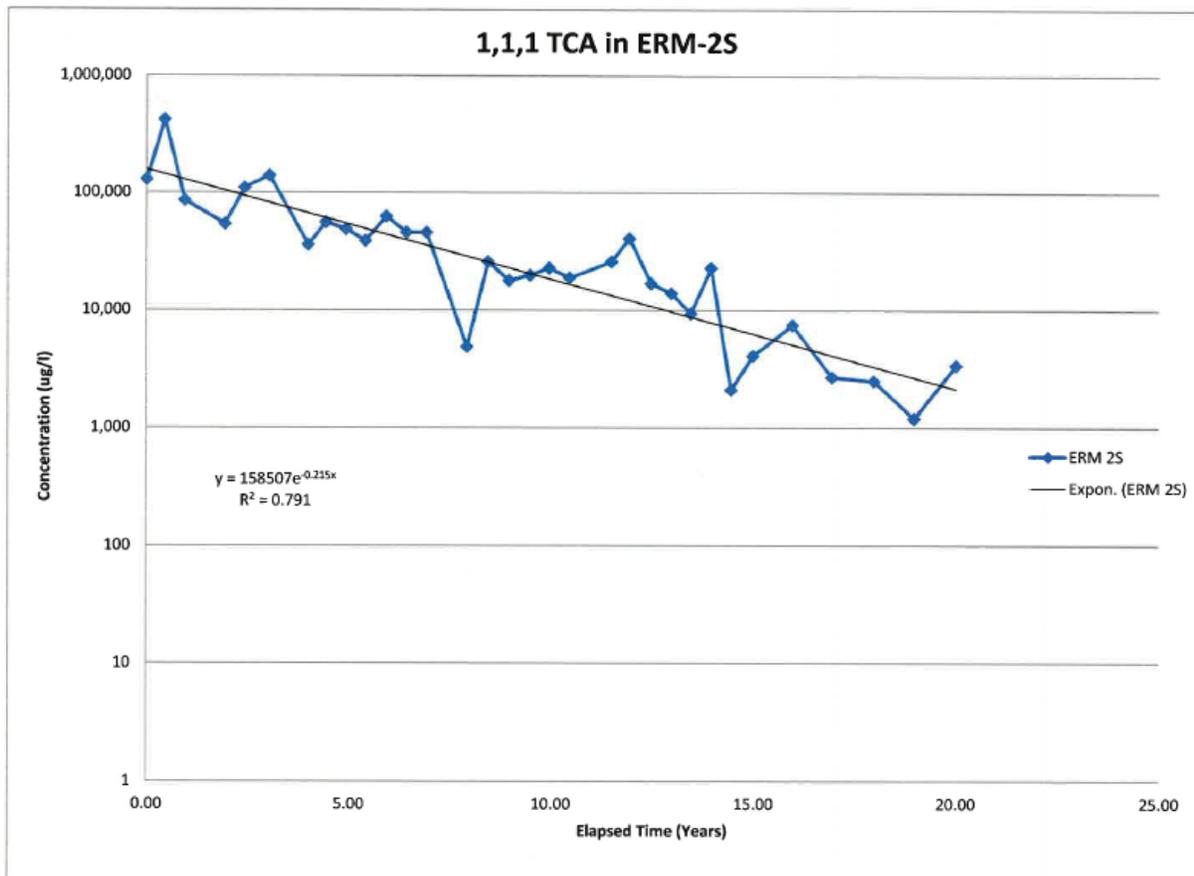


Figure 3: Exponential Decay Curve for monitoring well ERM-2S

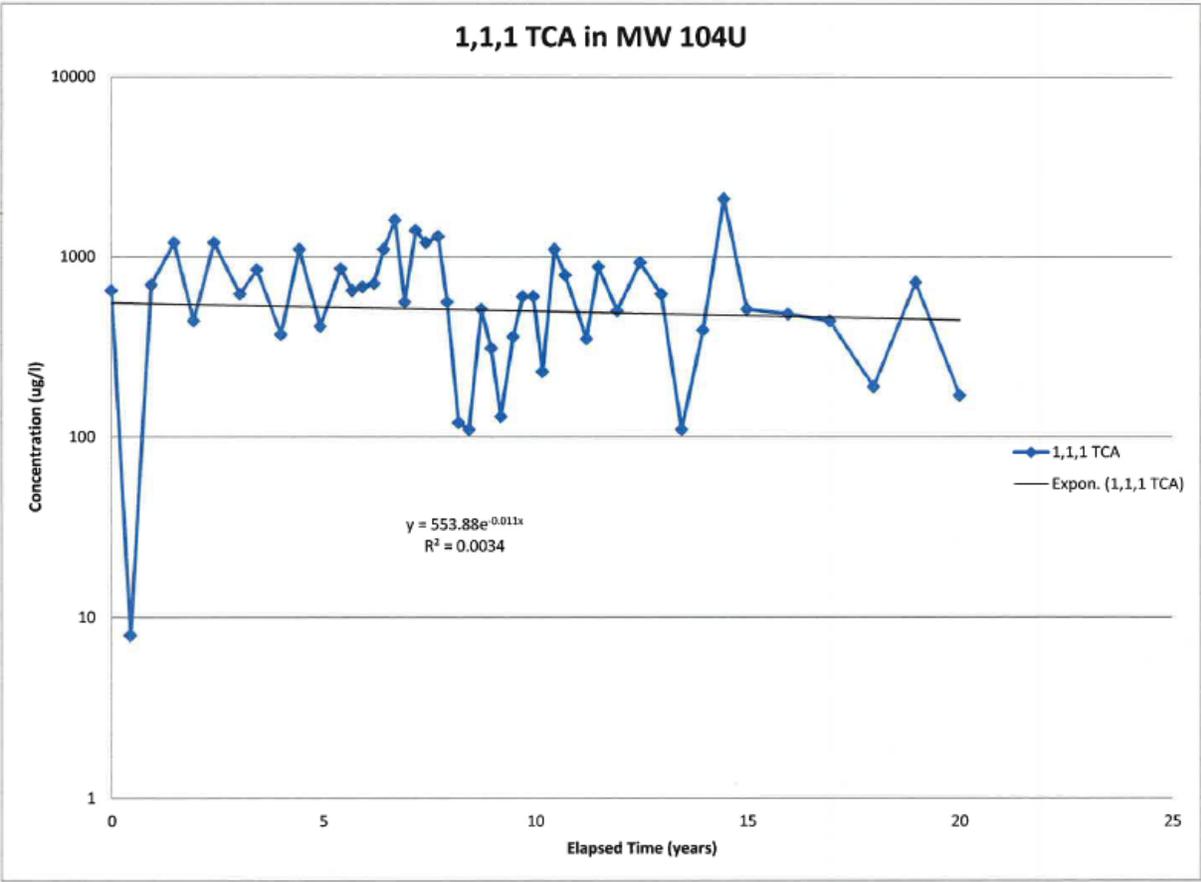


Figure 4: Exponential Decay Curve for monitoring well MW-112U

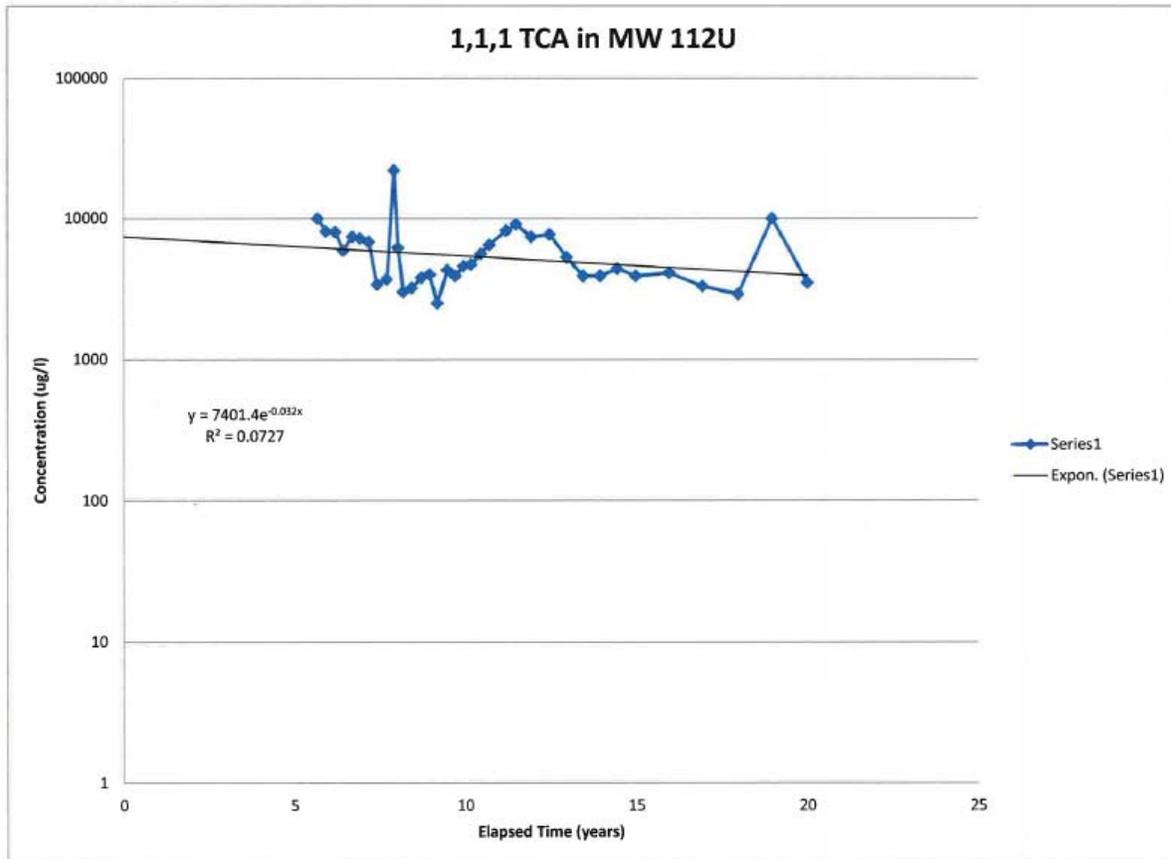


Figure 5: Exponential Decay Curve for monitoring well MW-112U

Seasonal Precipitation

Annual precipitation was above average between 2006 and 2008, slightly below average in 2009 and 2010, and above average in 2011 and 2013. However, the annual rate in 2012 was the third lowest since 1994 and the lowest since 2002. In addition, the monthly precipitation for March 2013, 0.77 inches, was the lowest value for that month since monitoring of precipitation began in 1994. The increase in TCA in MW-104U and MW-112U during the April 2013 sampling round may be in response to the low annual precipitation in 2012 and the low precipitation for March 2013. Similarly, the decrease in TCA concentrations in MW-104U and MW-112U in April 2014 may be in response to the increase in precipitation in the past year.

Site Inspection

EPA conducted a five-year review inspection on May 7, 2014, with representatives from Vishay-Tansitor, Siemens Communications Systems, GZA GeoEnvironmental Inc. (GZA, the consultant for Vishay-Tansitor and Siemens) and VTANR.

The inspection began with a meeting where the outlook of the facility was presented and then the monitoring data and the long-term responsibilities were discussed. Following the meeting, the

parties conducted a Site walkover, and located and inspected the monitoring wells. After the Site inspection, the EPA representative drove around the neighborhoods contiguous to the Site to check for new homes and developments.

The Vishay-Tansitor property, as noted above, is an operating manufacturing facility and has been since 1956. The property is accessed through two entrances from Route 7. The property is not fenced along Route 7 or along the property boundary. There remains a fence around the former Disposal Area and another one around the Fire Pond. Beyond the buildings and parking areas, the grounds are maintained as mowed lawns. Farther to the back, near the base of Whipstock Hill, the property is wooded. The property on the south side of Route 7 is a wetland. On the day of the Site inspection for this five-year review, there was no indication of any disturbance of the grounds or any excavation within the TI Zone. The monitoring wells appeared to be in acceptable condition with no indication of frost displacement and all riser caps were secured.

The roads in the vicinity of the Site were driven to check for new development/new use. The area remains predominantly rural residential interspersed with agricultural properties. There did not appear to be any changes on Pleasant Valley Road to the southeast. During the 2004 and 2009 Site inspections of this 1.2 mile road there were sixteen houses, three Christmas tree farms, one small corn field, and one motel with a few separate cottages. The same number of homes, tree farms, fields and motel were observed on the 2014 inspection. On Route 7 itself, a motorcycle shop and a farm produce store are located east of the Site, and a motel with a few units and a farm are west of the Site. All of these have been present for many years; the motel and farm dating back at least to the beginning of the RI negotiations in 1990. These properties appeared to remain unchanged in 2014 other than the produce store which may be out of business.

Houran Road leads off from Route 7, east of the Site and winds past the Site to the north. It also is predominantly rural residential interspersed with agricultural properties. No new homes were noted.

The New York state line is approximately a half mile west of the Site. No land use changes in this area were noted during the 2014 inspection.

Interviews

During the FYR process, interviews were conducted with parties impacted by the Site, including the current landowners, and regulatory agencies involved in Site activities or aware of the Site. The purpose of the interviews was to document any perceived problems or successes with the remedy that has been implemented to date. Interviews were conducted during the Site inspection and on visits to Bennington Town Hall. The interviews are summarized below.

Representatives of the Settling Defendants noted the orders of magnitude decrease in concentrations at ERM-2S, the overall decreasing concentrations within the plume, and the consistency of the groundwater flow conditions with discharge of the plume into the Fire Pond. Accordingly, they proposed changes in the groundwater monitoring program and VTANR and

EPA were receptive to these changes. There was acknowledgement of the indefinite requirement for five-year reviews while hopeful that someday that requirement would be lifted.

Michael Smith has been VTANR's project manager since 1993 and the lead agency representative since December 1999 when VTANR assumed that responsibility. He was pleased with the cooperation of the parties involved and the adjustments made to the long-term monitoring program. He noted the overall decrease in concentrations which affirmed the Site Conceptual Model.

Reviews of town services and records were done on September 11, 2014. According to staff in the Town Of Bennington Tax Assessor's office, there has been no additional homes or businesses built in the area surrounding Vishay-Tansitor in the past five years.

The Rural Conservation District zoning for the Site and surrounding area remains unchanged since the 2009 FYR. The Town of Bennington Land Use & Development Regulations, adopted February 23, 2004, and last amended June 12, 2006, defines the purpose of the Rural Conservation District as "to preserve the rural character, scenic landscape and natural resources of the area while accommodating low density residential development in a manner that avoids the need for public water supply and public sewer systems." Vishay-Tansitor's industrial use of the Site represents a grandfathered non-conforming use under the zoning regulations.

Similarly, staff in the Water Resources and Waste Management Department affirmed that there has been no extension of either water or sewerage services in the area in the past five years. Properties in the vicinity of the Site have individual water wells and septic systems.

The Bennington Free Library serves as the repository for the Site's 1995 Administrative Record. It and subsequent records (the 2004 and 2009 FYRs) were located in the reference section of the library. According to the reference librarian who began working there four years ago, there have only been a couple requests in that time to review the Site records.

IV. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

Yes.

Remedial action performance. Two of the three Remedial Action Objectives (RAOs) specified in the 1995 ROD have been achieved (EPA determined the third to be technically impracticable). The threat posed to human health through exposure to groundwater is being prevented by institutional controls. An Environmental Easement and Declaration of Restrictive Covenants are recorded on the property deed. The Settling Defendants certify annually that there has been compliance with the institutional controls. No excavation or disturbance of the soils within the TI Zone has occurred. The use of the Site has not changed since the 1995 ROD.

Operations and Maintenance. Neither the ROD nor Consent Decree specified any Operation and Maintenance tasks. With the recording of the Environmental Easement and Declaration of Restrictive Covenants in July 1999, the remedial action was determined to be complete per EPA's guidance. The monitoring wells are maintained as part of regular grounds maintenance for the facility.

Opportunities for Optimization. Based on the extensive data collected since 1994 and trends in water quality, the number and frequency of monitoring locations have been reduced three times and further modifications proposed in June 2014 have been approved by VTANR and EPA. Given the stability of the groundwater monitoring data, the submittal of monitoring reports can also be reduced to annual.

Indicators of Remedy Problems. There are no indicators of remedy problems. Vishay-Tansitor makes repairs to the monitoring wells as needed.

Implementation of Institutional Controls and Other Measures. The environmental easement to the State of Vermont and the restrictive covenants were recorded on the property deed on July 30, 1999. Vishay-Tansitor continues to certify annually that the restrictions have been maintained and not violated, including the restraints on the facility's production well and a prohibition on excavation within the TI Zone without agency approval.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

No. Changes have occurred since the remedy was selected but the changes do not affect the protectiveness of the remedy.

Changes in Standards and TBCs. There have been no changes in the chemical-specific ARARs (MCLs or VT PGQSs) nor any location or action-specific ARARs. ARARs identified in the 1995 ROD were included in the 2009 FYR.

Changes in Exposure Pathways. No new exposure pathways were identified as part of this FYR.

Changes in Toxicity and Other Contaminant Characteristics. In 2010 and 2013, EPA updated toxicity values for 1,4-dioxane and in 2011 and 2012, EPA updated the toxicity values of TCE and PCE, respectively. Except for PCE which is found to be less toxic for cancer health effects, the new toxicity assessments for 1,4-dioxane, TCE and PCE find these contaminants more toxic for both cancer and non-cancer health effects (non-cancer only for PCE). Although an MCL has not been established for 1,4-dioxane, MCLs for TCE and PCE have not been changed.

A review of EPA's Integrated Risk Information System did not indicate changes in toxicity values since the 2009 FYR for TCA and DCE, the primary COCs identified in the 1995 ROD. TCA was updated in 2007 and DCE in 2002. Additionally, vinyl chloride was last updated in 2000 and DCA in 1990. MCLs for TCA, DCE, and vinyl chloride have also not been changed since the 2009 FYR.

Changes in Risk Assessment Methods. In 2014, EPA finalized a Directive to update standard default exposure factors and frequently asked questions associated with these updates. http://www.epa.gov/oswer/riskassessment/superfund_hh_exposure.htm (items # 22 and #23 of this web link). Many of these exposure factors differ from those used in the risk assessment for the 1995 ROD. These changes in general would result in a slight decrease of the risk estimates for most chemicals.

Although calculated risks from potential exposure pathways at the Site may differ from those previously estimated in the ROD, higher for some contaminants and lower for a few others, the revised methodologies themselves (EPA, 2005, 2009, 2011, 2013, 2014a, 2014b) are not expected to affect the protectiveness of the remedy because exposure has been prevented by implementation of the institutional controls.

Expected Progress Towards Meeting RAOs. The 1995 ROD set three RAOs. Two have been met: prevent exposure to contaminated groundwater, and monitor to ensure that groundwater contamination does not migrate beyond its 1995 extent. The third RAO, to restore the groundwater if technically practicable, has not been achieved. EPA determined in the 1995 ROD that it was technically impracticable to restore the groundwater.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No.

No other information has been discovered that would call into question the protectiveness of the remedy.

Technical Assessment Summary

Based on the data reviewed, observations from the site inspection, and interviews, the remedy is functioning as intended by the ROD. The institutional controls have been implemented and are certified annually to be in compliance. The groundwater monitoring has demonstrated that contaminants are not migrating to areas beyond the TI Zone or offsite. Therefore, the remedy is functioning as designed and remains protective of human health and the environment. Groundwater monitoring continues and maintenance of the monitoring wells is performed as necessary.

The primary ARARs for groundwater at the TI Zone boundary are the MCLs and the VT PGQSs. These continue to be met not only at the TI Zone boundary but also on the downgradient side of the Fire Pond, consistent with the Site Conceptual Model. Groundwater contamination levels within the TI Zone upgradient of the Fire Pond are generally decreasing. Changes in the toxicity values for 1,4-dioxane, TCE, and PCE do not affect the protectiveness of the remedy because exposure to the groundwater is prevented by institutional controls and geologic and hydrologic factors prevent the plume from expanding beyond the extent characterized in the 1995 ROD.

Land use at the Site and surrounding properties have not changed and are not expected to change, and there are no additional routes of exposure.

V. ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS

This five-year review did not identify any current issues and no recommendations or follow-up actions are made.

VI. PROTECTIVENESS STATEMENT

| Site-wide Protectiveness Statement | |
|--|--|
| <i>Protectiveness Determination:</i> Protective | <i>Addendum Due Date (if applicable):</i> Not Applicable Click here to enter a date. |
| <i>Protectiveness Statement:</i> The site-wide remedy is protective of human health and the environment. Institutional controls have been recorded. The institutional controls have prevented exposure to Site groundwater, thereby ensuring the Site remains protective of human health. In addition, the State of Vermont reclassified the groundwater beneath the TI Zone to non-potable use only. Ongoing monitoring demonstrates that the plume is stable and not migrating. | |

VII. NEXT REVIEW

The next five-year review report for the Tansitor Electronics Inc. Superfund Site is required five years from the signature date of this review.

APPENDIX A – EXISTING SITE INFORMATION

A. SITE CHRONOLOGY

| EVENT | DATE |
|--|------------------------|
| Property occupied by a farm, then a trucking company that had a two-bay garage building. | Pre-1956 |
| Beginning in 1956, various owners have used the Site as a manufacturing facility for electronic capacitors. | 1956 - current |
| Vishay-Tansitor Electronics, Inc. (formerly Tansitor Electronics, Inc., hereafter “Vishay-Tansitor”) notifies EPA that organic solvents and acids had been disposed of onsite between 1956 and 1979. | May 1981 |
| Subsequent to the notification, VTANR performed site inspections and requested that Vishay-Tansitor initiate removal activities and implement a soil sampling and analysis program in the Disposal Area. | 1983 - 1987 |
| VOCs were detected in overburden groundwater between the Disposal Area and the Fire Pond. VOCs also were detected in surface water samples from the on-site intermittent stream and the perennial stream south of Route 9. | 1988 |
| EPA placed the Site on the National Priorities List. | October 4, 1989 |
| EPA notified seven parties, the current and former owners of the Site, of their potential liability with respect to the Site. | March 1989 to May 1990 |
| Two PRPs (Vishay-Tansitor and Siemens Communication Systems, Inc.) (hereafter, the “Settling PRPs”) enter into Administrative Order by Consent (AOC) with EPA and under EPA oversight commenced an RI/FS for the Site. | September 12, 1990 |
| VTANR issued a Groundwater Reclassification Order in response to a Vishay-Tansitor petition. This Order changed the classification from Class III to Class IV for the groundwater beneath the TI Zone. | November 23, 1993 |
| EPA issued a ROD with State concurrence describing the remedial action to be implemented at the Site. The ROD included a technical impracticability waiver for MCLs for a ten acre area of the Site | September 29, 1995 |
| ROD Contingencies #1 and #4 triggered for MW-104M and MW-112M | October 1998 |
| U.S. District Court enters Consent Decree, under which Settling PRPs agree to perform the remedy | March 24, 1999 |
| Restrictive Covenant recorded on Vishay-Tansitor deed at the Bennington County Registry of Deeds | July 30, 1999 |
| Deletion of the Site from NPL recorded in the Federal Register | September 29, 1999 |
| VTANR accepts lead agency responsibility from EPA | December 3, 1999 |
| ROD Contingency #5 triggered for MW-112M | January 2002 |
| First Five-Year Review | September 2004 |
| Long-term monitoring continues | 2004 – current |
| Second Five-Year Review | September 2009 |

B. BACKGROUND

Physical Characteristics

The Site consists of approximately 44 acres of land on West Road (Route 9) in the Town of Bennington, Vermont, and is approximately 3.5 miles west of Bennington Center (see Figure 1, top). Most of the Site (37.6 acres) is located to the north of Route 9, with the remainder of the Site (6.6 acres) located to the south of Route 9. The portion of the Site located to the south of Route 9 consists of forested wetlands and there are also wetlands on the property north of Route 9.

The general topography surrounding the Site consists of rolling hills oriented north-south between the Green and Taconic Mountains. The Site lies at the southeastern portion of the base of Whipstock Hill. Elevations at the Site and close vicinity generally decrease to the south. Groundwater flow direction at the Site generally mimics surface contours.

Surficial runoff from the Site (storm water, snow melt and from groundwater seeps) drains into the Fire Pond, an intermittent stream located onsite, and the facility storm drain system, and ultimately into the wetland area south of Route 9. An unnamed east-west flowing perennial stream, located south of Route 9, enters the Site from the east and flows through these wetlands into Browns Brook, a Class B surface water body located about one-half mile offsite. Brown Brook flows into the Hoosic River another three to four miles downstream.

Glacial activity has greatly influenced the geology and hydrogeology in the vicinity of the Site. To the north is the Whipstock Hill drumlin, which controls the surface water and groundwater flow directions across and beneath the Site. Underlying the Site is approximately 180 feet of glacial till, a mixture of dense deposits of silty clay, clayey silt, silt, and fine to coarse sand and gravel.

The till can be further divided into three units: ablation till, present from the ground surface to about 35 feet; a silty sand basal till about 15 feet thick; and a silty clay basal till approximately 130 feet thick. The till overlies bedrock which is comprised of variably fractured limestone under the southern portion of the Site and phyllite under the northern portion.

Land and Resource Use

The Site is located in an area zoned Rural Conservation with a commercial corridor overlay along Route 9. As a manufacturing facility, Vishay-Tansitor's industrial use of the Site represents a grandfathered non-conforming use under the zoning regulations. The Site is bounded to the north by privately owned woodland; to the east by Houran Road and a commercial property; to the south by wetlands; and to the west by agricultural/residential areas. Pleasant Valley School is located approximately 1,200 feet east and topographically upgradient of the Site.

Since issuance of the ROD and through the date of this five-year review, Vishay-Tansitor has continued to manufacture electronic capacitors at the Site. Major site features include Vishay-

Tansitor's operating manufacturing/office building, an Etch House, a man-made pond (known as the Fire Pond), parking areas, a Solid Waste Disposal Area, a Disposal Area, a Concrete Pad Area, and a Borrow Area (see Figure 1, bottom). As discussed below, there have been no changes in land use at the Site or the surrounding community since issuance of the ROD.

Potable water supplies for the surrounding properties, as well as the water supply on the Site, are provided by private bedrock wells. Prior to 1993, the aquifer beneath and in the vicinity of the Site was classified by VTANR as Class III, which is defined as suitable as a source of water for individual domestic drinking water supply, irrigation, agricultural use, and general industrial and commercial use. However, in response to a petition from Vishay-Tansitor that was based on the data obtained during the RI, on November 23, 1993, VTANR issued a Groundwater Reclassification Order that reclassified groundwater beneath a 9.6 acre area of the Site, where groundwater contamination was detected, from Class III to Class IV. Class IV groundwater is defined as not suitable as a source of potable water but suitable for some agricultural, industrial and commercial use. This Reclassification Order was modified on March 10, 1994 to allow for a trained Vishay-Tansitor employee, approved by VTANR, to conduct and report the monitoring.

Subsequent to the issuance of the ROD and through the date of this five-year review, sanitary waste water from the Vishay-Tansitor facility has been disposed of into the Town of Bennington public sewer system.

Also subsequent to the issuance of the ROD, the facility on its own discontinued use of its production well as its drinking water source. The facility relies on bottled water for drinking water, but continues to use its production well for process water in its manufacturing of electrical components.

History of Contamination

The record indicates that prior to 1956 a trucking company occupied the property and had a two-bay garage building. Prior to the trucking company operation, the property was farmland.

Since 1956, various owners have used the Site as a manufacturing facility for electronic capacitors. In May 1981, in compliance with Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9603(c), Vishay-Tansitor notified EPA that organic solvents and acids had been disposed of on-site between 1956 and 1979. Over that period, the estimated equivalent of 117 drums of process waste were disposed of in a 900-square foot area to the north of the Vishay-Tansitor manufacturing building (referred to throughout this five-year review as the "Disposal Area"). During the period of 1975-1979, the process waste disposed in the Disposal Area included 1,1,1-TCA which is the predominant VOC present in the groundwater. Vishay-Tansitor also reported that some waste detergents and dilute acid solutions may have been discharged into the two leach fields (now out of service with the extension and connection to the public sanitary sewer system in 2001) or directly into the intermittent stream north of its manufacturing building. Finally, Vishay-Tansitor reported that waste methanol had been burned periodically on the Concrete Pad.

Initial Response

Following the 1981 notification to EPA of hazardous waste disposal activities, VTANR instructed Vishay-Tansitor to restrict access to the Fire Pond and disposal areas; define the areal and vertical extent of contaminated soil at the Disposal Area; remove the contaminated soil for proper disposal at a certified hazardous waste facility; design and implement an evaluation and monitoring program to determine the magnitude and extent of contamination resulting from the Site; and determine potential remedial actions.

In 1988, Vishay-Tansitor hired a contractor to perform the site investigation requested by VTANR. During this investigation, VOCs were detected in overburden groundwater samples from three monitoring wells located between the Disposal Area and the Fire Pond. No VOCs were detected in one monitoring well upgradient of the Disposal Area or in two monitoring wells south of the Fire Pond. However, surface water samples from the on-site intermittent stream and the perennial stream south of Route 9 did reveal VOC contamination.

Basis for Taking Action

Pursuant to an Administrative Order by Consent effective September 12, 1990, the Settling PRPs commenced a Remedial Investigation and Feasibility Study (RI/FS) for the Site under EPA oversight. The Settling PRPs completed and EPA issued an RI Report on June 10, 1994, and the Settling PRPs completed and EPA issued an FS Report on February 13, 1995.

The RI found that there were two distinct source areas of VOCs detected at the Site, the Disposal Area and Concrete Pad Area. Areal extent of the Disposal Area is approximately 900 square feet; areal extent of the Concrete Pad Area is approximately 400 square feet.

Disposal Area soils contained low levels of VOCs, and elevated levels of silver and nickel. The highest concentrations of VOCs were found in soils at a depth of seven to eight feet below the ground surface. No dense non-aqueous phase liquids (DNAPLs) were found in the soils in this area, and the VOC concentrations found in the unsaturated soils did not suggest the presence of DNAPLs.

Concrete Pad Area soils also contained low levels of VOCs. The highest concentrations of VOCs were detected in soils at a depth of 10 to 15 feet below the ground surface. No evidence of DNAPLs was observed in these soils.

Semi-volatile organics were sporadically detected in samples from the Site. The occurrence of these compounds was attributed to the combustion by-products of fossil fuels and runoff from road surfaces. These compounds did not appear to be related to past or current production or wastewater disposal processes at the facility.

The RI identified two significant plumes or zones of VOC contamination in shallow groundwater. The first plume originates from the Disposal Area and extends to the Fire Pond, impacting an area approximately 170 feet by 260 feet, or slightly more than an acre. Based on

soil gas analyses and groundwater analytical data, it appeared that the plume did not exceed the width of the Fire Pond.

Contaminants detected throughout the Disposal Area plume above federal drinking water standards, Maximum Contaminant Levels (MCLs), included 1,1,1-TCA and 1,1-dichloroethylene (1,1-DCE). The highest concentration of 1,1,1-TCA detected was 470,000 parts per billion (ppb) (MCL of 200 ppb); the highest concentration of 1,1-DCE detected was 3,800 ppb (MCL of 7 ppb). Unlike the soils, with the 1,1,1-TCA concentration well above the solubility limit associated with DNAPL, this suggested that groundwater contamination may be present in DNAPL form. These concentrations were both detected in well ERM-2S.

The other significant plume originated from under the Concrete Pad Area, impacting an area approximately 60 feet by 240 feet, or about one-third of an acre. VOCs were detected above their MCLs at sampling location MW-108U. The highest concentrations detected were as follows: 1,1,1-TCA, 2000 ppb; 1,1-DCE, 180 ppb; trichloroethylene, 19 ppb (MCL of 5 ppb); and tetrachloroethylene, 20 ppb (MCL of 5 ppb).

On February 27, 1995, EPA published notice of the completion of the FS and the proposed plan for remedial action on February 27, 1995, in the Bennington Banner, the major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action.

On September 29, 1995, with concurrence from VTANR, the ROD was signed. The ROD set forth a limited remedy for the Site that combined institutional controls, groundwater (and surface water if necessary) monitoring with contingencies for further investigation or further action, and five-year reviews. The primary contaminants of concern (COCs) affecting on-site soil, groundwater, surface water and/or sediment were determined to be VOCs.

C. REMEDIAL ACTIONS

Remedy Selection

The September 29, 1995 ROD for the Site specified a multi-component remedy to address groundwater contamination. Based on the RI, remedial action objectives were identified for the Site:

- Eliminate or minimize the threat posed to human health and the environment by preventing exposure to groundwater contaminants by any individual who may use the groundwater within the area of the shallow plumes or within an area where groundwater could become contaminated as a result of pumping activities;
- Prevent the migration of groundwater contamination beyond its current extent, or to monitor the groundwater to ensure that contamination is not migrating beyond its current extent; and

- If technically practicable, to restore contaminated groundwater to drinking water standards, and to a level that is protective of human health and the environment.

The remedy selected in the ROD specified:

- Institutional controls to prevent the use of contaminated groundwater and to inform future purchasers of property of the groundwater restrictions associated with the property;
- Long-term monitoring of site groundwater on a regular basis to evaluate changes in site conditions over time;
- Contingencies for future additional investigation or further action should the long-term monitoring reveal that contaminants have migrated beyond their vertical or horizontal extent at the time of the ROD; and
- Review of the Site every five years to ensure that the remedy remains protective of human health and the environment.

In addition to these components of the remedy, EPA waived chemical-specific ARARs for a 9.6-acre portion of the Site. This area, designated as the Technical Impracticability Zone (TI Zone), has the same surficial dimensions as the Class IV zone established in the November 1993 Vermont Groundwater Reclassification Order (and modified in February 1994). Unlike the Class IV area, the TI Zone also has a vertical dimension and that extends to the bedrock surface. As more fully explained in the ROD, the site geology and hydrology that limited the spreading of the contamination also made restoration through an engineering approach impracticable, and thus EPA determined that it would be technically impracticable to attain groundwater standards within a reasonable period of time. (See Figure 1 in the 2014 FYR text for the TI Zone/Class IV boundary)

Institutional controls were to be established to prevent the use of groundwater impacted by the Site and to inform future purchasers of the property of the groundwater restrictions associated with the property. These institutional controls were to consist of deed restrictions to provide permanent, enforceable restrictions on the use of groundwater at the Site. The Vermont Groundwater Reclassification Order would also serve to restrict use of the Site groundwater.

The deed restrictions were to provide the following:

- (1) No water supply well was to be installed in either the overburden soils or bedrock within the area designated as a Class IV Groundwater Area by the State of Vermont (marked generally by MW-107U in the northeast, the Eastern Leach Field in the southeast, MW109U in the southwest, and the Water Reservoir in the northwest).
- (2) No water supply well was to be installed in either the overburden soils or bedrock within the Class III Area on the Vishay-Tansitor property without prior EPA approval. At the time of the

ROD (and continuing to this day), Vishay-Tansitor's operating facility was drawing its process water from a bedrock well located west of the Class IV area. EPA acknowledged that either the current owner or potential future owners of the property may need or desire another source of water outside the Class IV Area at some time in the future because of possible failure of the existing well or development on other parts of the property. Because the addition of a new well, however, could cause contaminants to migrate or otherwise affect the contaminant plumes, EPA would require for any proposal for a new well a demonstration that such an action would not induce movement of the contaminants into uncontaminated areas. This demonstration would include, at a minimum, pump tests and laboratory analysis for VOCs. Should the demonstration indicate the proposed well would have an adverse effect on the plume, as determined by EPA, it would not be installed. It was (and is) not the intent of EPA to preclude the use of other areas of the Site with this requirement, rather it was (and is) to ensure that the institutional controls and monitoring remain protective and that further migration is prevented.

In the event that new water supply wells are installed with EPA approval in the future, additional monitoring positions located between the contaminant plume and the new water supply well may be required. These positions would be used to monitor for possible changes in on-site groundwater flow patterns (as it affects contaminant distribution). The water level monitoring program would be accomplished through the periodic use of continuous recorders on selected monitoring wells during seasonal low water periods.

(3) The existing production well located at the Tansitor Site would not be used to extract more than 20,000 gallons of water per day, without prior EPA approval, as increased use of groundwater at and in the vicinity of the plumes could adversely affect the plumes. Therefore, if use and pumping of the current well were to be proposed beyond the level of the RI pump test, which was approximately 20,000 gallons per day, a determination would be made by EPA as to the potential impact on the plumes.

(4) The TI Zone would be used solely for industrial and commercial purposes, unless other uses of the TI Zone were approved by EPA.

(5) No excavation or construction activities that would disturb the soil within the TI Zone would be undertaken without EPA approval.

(6) All of the above-listed restrictions were to remain in effect as long as contaminated groundwater is present at the Site at levels in excess of federal drinking water standards, and at levels that are not protective of human health and the environment.

With respect to the State or local requirements, as noted above, the State of Vermont reclassified the groundwater in the area of the contaminated plumes from Class III to Class IV groundwater. Class IV groundwater under the state classification system is considered not suitable as a source of potable water but suitable for some agricultural, industrial, or commercial use. In addition, the Reclassification Order stated that a review of the monitoring data be performed by VTANR after five years of monitoring, and possibly thereafter for successive five-year intervals. While VTANR took this action independently of EPA, EPA believed that the reclassification, together

with institutional controls described above, would effectively prevent future exposure to contaminated groundwater at the Tansitor Site.

The ROD-specified monitoring program was to be implemented to demonstrate that the conceptual model presented was correct, i.e., that the contaminants are not migrating horizontally beyond the Fire Pond or vertically toward the bedrock. The monitoring was also to be used to evaluate the overall protectiveness of the remedy. The groundwater monitoring program was to include sampling and analytical methods that were appropriate for groundwater sampling and that accurately measure hazardous constituents in the samples. Monitoring was to be performed in wells located at and around the property boundary and within the interior of the Site to monitor the levels, distribution, and migration of VOCs, silver, and lead. Monitoring was also to include water level measurements.

Remedy Implementation

Following the entry of the Consent Decree in March 1999, the Settling PRPs submitted a draft Environmental Protection Easement and Declaration of Restrictive Covenants to EPA and VTANR. This document was approved by EPA and then recorded July 30, 1999 on the property deed at the Town Clerk's Office for the Town of Bennington, Bennington County.

Groundwater Monitoring

The ROD required the implementation of a semi-annual groundwater monitoring program for at least five years. If the action levels established by the ROD were exceeded, the ROD required further evaluation of the remedial action via contingencies described in the ROD. The ROD established a three-dimensional Technical Impracticability Zone where drinking water standards were waived. Outside the TI Zone, drinking water standards were set as the action levels, or standards, for all groundwater contaminants.

The following detailed summary of the monitoring wells has been entirely copied from the 2009 FYR to provide background for the data review discussion in Section 3 of the text above. (See Figure 1 in the 2014 FYR text for monitoring well locations)

MW-101M/R wells were installed during the 1991 Phase 1A RI to the northeast of the Disposal Area. These wells are screened in the sandy basal till and bedrock respectively. They are outside the TI Zone that was established in the September 1995 ROD. Vertical gradient is typically downward. Because no contaminants had ever been detected in either of these wells, as part of the monitoring adjustment made after the 2004 Five-Year Review, VTANR as the lead agency for the Site approved the removal of these wells from the sampling program.

ERM-2S was installed prior to the RI in response to the request from VTANR for an investigation of site conditions and is located just off the southwest corner of the Disposal Area. It is screened in the shallow ablation till. From the beginning this has been the most contaminated monitoring well, with 1,1,1-TCA concentrations initially as high as 470,000 µg/L. The 2004 FYR reported that concentrations of all contaminants at ERM-2S had been decreasing since 1998 and were the rates to remain constant, the 1,1,1-TCA MCL could be approached in

the next 20-30 years. An update of the exponential decay curve (see Figure 3A) projects a similar extrapolation where 1,1,1-TCA concentrations at ERM-2S would decrease below the MCL in approximately another 20 to 25 years. However, this extrapolation should be viewed as a rough estimate for the following reasons. The decreasing trend appears to continue in the fall data, yet the spring data reveals little change in the past five years. Second, the R^2 value, the statistical measurement of how well the data fit the projection, is 0.67 (the range for R^2 is from 0.0 to 1.0 and the closer to 1.0, the greater the confidence in the “goodness-to-fit”) suggesting this extrapolation should be viewed with caution. And further, this extrapolation assumes a continuous rate of decline whereas historically these rates slow down as concentrations decrease and become asymptotic with little decline (see Figure 3B). Nonetheless, while the precision regarding the rate of decrease is not certain, overall the concentrations have been consistently decreasing and thus in 2009 VT ANTR approved the change in sampling frequency from semi-annual (spring and fall) to annual (spring).

MW-112U/M wells were installed during the 1992 Phase 1B RI downgradient of MW-101 and the southeastern corner of the Disposal Area. MW-112U is screened in the shallow ablation till and MW-112M is screened at the top of the silty clay section of the basal till. Vertical gradient is typically downward toward MW-112M. MW-112U was not originally part of the long-term monitoring, but was added to the program in January 2000. MW-112M triggered Contingency #4 and thus its sampling frequency was increased to quarterly in 1999. The sampling frequency for both wells was reduced to semi-annual in 2005 as there was no significant difference in concentrations from one sampling event to the next. The sampling frequency for both wells was further modified to annual (spring) by VTANR in 2009.

The 2004 FYR reported that 1,1,1-TCA concentrations in MW-112U were decreasing at a similar rate as ERM-2S and projected approaching the MCL in 15-20 years. The 1,1,1-TCA concentrations have continued to decrease since the 2004 FYR but at a slower rate than at ERM-2S. This is not unreasonable as MW-112U is farther from the original source area. The updated exponential decay curve suggests 1,1,1-TCA might attain the MCL in the next 75 to 80 years. That the projection has changed is not surprising given the relative location of MW-112U in the plume; further it is noted that the R^2 value for this extrapolation is 0.05, indicating that no definitive trend has developed.

The 2004 FYR indicated that 1,1,1-TCA and 1,1-DCE concentrations at MW-112M had been increasing from 1994 through 2004. Since then, concentrations for both compounds appear to have stabilized with 1,1,1-TCA and 1,1-DCE concentrations about 600 and 150 $\mu\text{g/L}$, respectively.

MW-104U/M wells were installed during the 1991 Phase 1A RI downgradient of the Disposal Area and just upgradient of the Fire Pond. These wells are screened in the shallow ablation till and sandy basal till, respectively. Vertical gradient is typically upward toward MW-104U as the groundwater discharges to the Fire Pond and the ground surface at this location is often saturated with MW-104M showing flowing artesian conditions. MW-104M triggered Contingency #4 and thus its sampling frequency was increased to quarterly in 1999. The sampling frequency for both wells was reduced to semi-annual in 2005 as there was no significant difference in

concentrations from one sampling event to the next. The sampling frequency for both wells was further modified to annual (spring) by VTANR in 2009.

The 2004 FYR reported that 1,1,1-TCA, 1,1-DCE and 1,1-DCA concentrations at MW-104U had fluctuated since sampling began, generally between 500 - 1200 µg/L, 5 – 25 µg/L, and 100 – 450 µg/L, respectively. Data collected from October 2004 through spring 2008 are consistent with the previous data, continuing to fluctuate. This is expected since it is the farthest away from the original source area. As the plume migrates from the source area, concentrations at this well will likely remain consistent for several years and it is likely that concentrations at this well have not yet peaked. The updated exponential decay curve reflects this with an R² value of 0.003, statistically indicating there is no trend in the data.

Concentrations in MW-104M had shown a similar pattern during the period covered in the 2004 FYR, but in the years following that review, concentrations of 1,1,-TCA and 1,1-DCE have decreased such that both compounds are now meeting their respective MCL.

ERM-4S was installed prior to the RI in response to the request from VTANR for an investigation of site conditions and is located between the manufacturing building and the Fire Pond. It is screened in the shallow ablation till. It had been sampled semi-annually and no contaminants above 2 µg/L have ever been detected in this well. Consequently, in 2009 VTANR agreed to the remove this well from the Long-Term Monitoring program.

MW-105M was installed during the Phase 1A RI adjacent to ERM-4S to determine whether the Disposal Area plume was moving past the Fire Pond to the west. It is screened at the bottom of the sandy basal till. Since 2001, 1,1,1-TCA has been detected at very low concentrations, 1J to 5 µg/L. Since the 2004 FYR, concentrations of 1,1,1-TCA and 1,1-DCE have continued to marginally increase, up to 11 and 4 µg/L, respectively. The sampling frequency continues to be quarterly.

MW-103M/R wells were installed during the Phase 1A RI downgradient of the Fire Pond. These were screened in the sandy basal till and bedrock, respectively. These wells exhibit an upward gradient, such that the groundwater flow is upward toward the ground surface and MW-103R typically is under flowing artesian conditions where groundwater flows out of the well onto the land surface. No contaminants have ever been detected in these wells above the method detection levels. The sampling frequency of these wells has been annual (spring) since September 2005.

ERM-5S/D wells were installed prior to the RI in response to the request from VTANR for an investigation of site conditions and are located near the southeastern corner of the Fire Pond. These wells exhibit an upward gradient, with ERM-5D often under flowing artesian conditions. No contaminants have ever been detected in these wells above the method detection levels. The sampling frequency of these wells has been annual (spring) since September 2005.

MW-108U was installed during the Phase 1A RI to assess the potential plume emanating from the Concrete Pad Area. It is located adjacent to the northeast corner of the manufacturing building and is screened in the shallow ablation till. In addition to 1,1,1-TCA and 1,1-DCE,

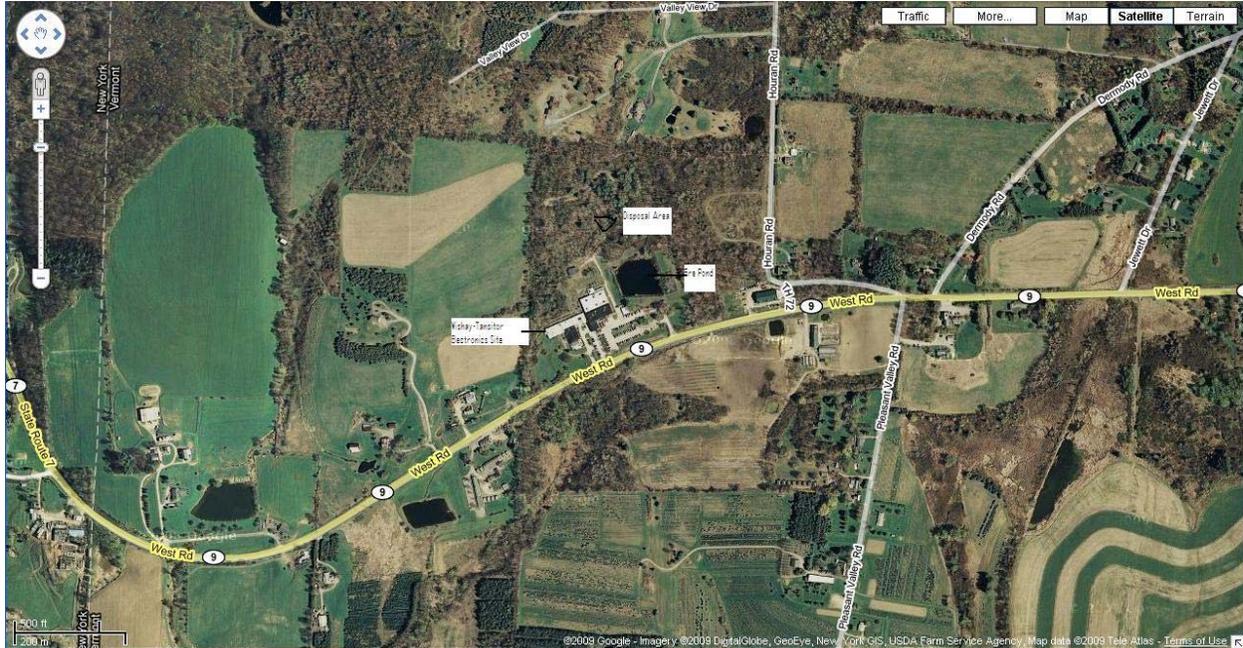
tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-DCA, and 1,2-DCE are also present in the Concrete Pad Area plume. The 2004 FYR reported that with the exception of 1,1-DCA, all of the other compounds had similar decreasing trends, apparently peaking in the 1997 to 1999 time interval. Data collected from October 2004 through spring 2008 exhibit continuing decreasing trends with a five-fold decrease in 1,1,1-TCA and approximately two-fold decrease in the other compounds, including 1,1-DCA. The sampling frequency for both wells was reduced to semi-annual in 2009 as there has been no significant difference in concentrations from one sampling event to the next.

MW-109U and MW-110U were installed during the Phase 1A RI in 1991 and are located in the facility parking areas adjacent to Route 7. MW-109U is the most downgradient well within the TI Zone and MW-110U is located 150' west of the southwestern corner of the TI Zone. Both are screened in the ablation till. No contaminants have ever been detected in these wells above the method detection levels, and their sampling frequency was decreased from semi-annual to annual in September 2005. In 2009, VTANR modified the sampling frequency of MW-110U to once every two years; MW-109U continues to be sampled annually.

MW-114U was installed in response to the October 1993 Groundwater Reclassification Order. It is located on the south side of Route 7 (the southern boundary of the TI Zone is the north side of Route 7) and it is screened in the shallow ablation till. No contaminants have ever been detected in this well above the method detection levels and its sampling frequency was decreased from semi-annual to annual in September 2005. In 2009, VTANR modified the sampling frequency of MW-114U to once every two years.

APPENDIX B – Additional Figures for Reference

FIGURE 1: SITE LOCUS VIEWS



Vishay-Tansitor Electronics Inc., Site, Bennington, Vermont. New York-Vermont boundary is a half-mile to the west



Vishay-Tansitor Electronics Inc. Site, Bennington Vermont. Disposal Area was located at top of photograph in wooded area north of dirt road. Concrete Pad Area was located between the dirt road and the stand-alone building in the top center of the photograph.

APPENDIX C

PRESS RELEASE ANNOUNCING FIVE-YEAR REVIEW



Newsroom

EPA Will Review 27 Superfund Site Clean Ups This Year

Release Date: 02/13/2014

Contact Information: Emily Zimmerman, 617-918-1037

Boston, Mass. – (February 13, 2014) – EPA will review site clean ups and remedies at 27 Superfund Sites across New England this year by doing routine Five-Year Reviews at each site. EPA conducts evaluations every five years on previously-completed clean up and remediation work performed at Superfund sites and Federal Facilities listed on the “National Priorities List” (aka Superfund sites) to determine whether the implemented remedies at the sites continue to be protective of human health and the environment. Further, five year review evaluations identify any deficiencies to the previous work and, if called for, recommend action(s) necessary to address them.

In addition to a careful evaluation of technical work at the sites, during the Five Year Review process EPA also provides the public with an opportunity to evaluate preliminary findings and to provide input on potential follow up activity that may be required following the review process. The Superfund Sites at which EPA is performing Five Year Reviews over the following several months include the following sites. Please note, the Web link provided after each site provides detailed information on site status and past assessment and cleanup activity.

Connecticut

Linemaster, Woodstock, CT

<http://www.epa.gov/region1/superfund/sites/linemaster>

Nutmeg Valley, Wolcott, CT

<http://www.epa.gov/region1/superfund/sites/nutmeg>

Maine

Saco Tannery Waste Pits, Saco

<http://www.epa.gov/region1/superfund/sites/sacotannery>

Massachusetts

Nyanza Chemical Waste Dump, Ashland

<http://www.epa.gov/region1/superfund/sites/nyanza>

Baird & McGuire, Holbrook

<http://www.epa.gov/region1/superfund/sites/baird>

Hatheway & Patterson, Mansfield

<http://www.epa.gov/region1/superfund/sites/hatheway>

Hocomonco Pond, Westborough

<http://www.epa.gov/region1/superfund/sites/hocomonco>

Rose Disposal, Lanesborough

<http://www.epa.gov/region1/superfund/sites/ftrose>

Silresim, Lowell

<http://www.epa.gov/region1/superfund/sites/silresim>

W.R. Grace, Acton

<http://www.epa.gov/region1/superfund/sites/graceacton>

Wells G&H, Woburn

<http://www.epa.gov/region1/superfund/sites/wellsggh>

Norwood PCBs, Norwood

<http://www.epa.gov/region1/superfund/sites/norwood>

South Weymouth Naval, Weymouth, MA

<http://www.epa.gov/region1/superfund/sites/sweymouth>

New Hampshire

Ottati & Goss, Kingston

<http://www.epa.gov/region1/superfund/sites/og>

Tinkham Garage, Londonderry

<http://www.epa.gov/region1/superfund/sites/tinkham>

Sylvester, Hillsborough County

<http://www.epa.gov/region1/superfund/sites/sylvester>

Town Garage/Radio Beacon, Rockingham

<http://www.epa.gov/region1/superfund/sites/towngarage>

New Hampshire Plating, Hillsborough County

<http://www.epa.gov/region1/superfund/sites/nhplating>

Pease Air Force Base, Portsmouth, Newington and Greenland, NH

<http://www.epa.gov/region1/superfund/sites/pease>

Rhode Island

Landfill Resource & Recovery, North Smithfield

<http://www.epa.gov/region1/superfund/sites/lrr>

Vermont

Elizabeth Mine, Strafford

<http://www.epa.gov/region1/superfund/sites/elizmine>

Parker Sanitary Landfill, Lyndonville

<http://www.epa.gov/region1/superfund/sites/parker>

Pownal, North Pownal

<http://www.epa.gov/region1/superfund/sites/pownal>

Bennington Municipal Landfill, Bennington

<http://www.epa.gov/region1/superfund/sites/bennington>

BFI Sanitary Landfill, Rockingham

<http://www.epa.gov/region1/superfund/sites/bfi>

Tansitor Electronics, Inc, Bennington County

<http://www.epa.gov/region1/superfund/sites/tansitor>

Pine Street Canal, Burlington

<http://www.epa.gov/region1/superfund/sites/pinestreet>