



**MEMORANDUM**

**Subject: Explanation of Minor Differences from the Selected Remedy for**

**Environmental Contamination Described in the Final Decision, Dated April 2015**

**From: Bhooma Sundar**

**Project Manager, LCRD, RRB, CAS 2**

**To: Project Site File**

**Date: 8/13/2019**

**C&D Technologies, Attica, Indiana**

**IND 000 810 754**

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ATTACHMENT I      FIGURES and Table

**U.S. ENVIRONMENTAL PROTECTION AGENCY**

**EXPLANATION OF MINOR DIFFERENCES**

**From the Selected Remedy for Environmental Contamination Described in**

**April 2015 Final Decision,**

**C&D Technologies, Attica, Indiana**

**IND 000 810 754**

**I. Purpose**

This Explanation of Minor Differences (EMD) documents the U.S. Environmental Protection Agency (EPA), Region 5's decision to change part of the remedy selected in the Final Decision issued April 1, 2015, (Final Decision) for the C&D Technologies, Attica, Indiana (the C&D facility, or Facility, Figure 1). EPA is issuing this EMD as part of its public participation responsibility under the Resource Conservation and Recovery Act, as amended, 42 U.S.C. § 6901 *et seq.* In this respect, while RCRA does not specifically require public notice of changes to corrective measures selection decisions, the EPA provides such notice consistent with its policy of ensuring consistency in public outreach between RCRA corrective measures decisions and remedy selection decisions under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9604 *et seq.*<sup>1</sup> Here, a minor change to the remedy involves enhancement to the selected remedy in the area of contamination to protect human health and environment. The suggested change to the Final Decision cleanup approach complies with RCRA and does not fundamentally alter the overall cleanup goals, and accordingly, an EMD is the appropriate instrument to document the changes.

The Final Decision requires, among other things, that C&D address contamination related to volatile organic compounds in soil, soil gas and indoor air through a combination of engineering controls. The 2019 Revised Corrective Action Completion report shows significant reduction in TCE and PCE soil gas in treated areas (Area 9 and Area 4) with in deep soil. However, residual TCE contamination was still found in few soil locations in Area 9. As the remediation effort to remove the contaminated soil vapor through SVE system has reached asymptotic levels and the soil gas concentration of TCE in the influent samples

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<sup>1</sup> See RCRA Public Participation Manual, Chapter 4, "Public Participation in RCRA Corrective Action Under Permits and § 3008(h) Orders," U.S. Environmental Protection Agency, Office of Solid Waste, Permits Branch (1996 ed.)

were below clean up goals, EPA approved the termination of the operation of the SVE system. TCE in Area 4 and (Tetrachloroethylene or Perchloroethylene (PCE) in Area 4 and 9 did not exceed the remedial goals for soil after SVE treatment. To account for residual TCE contamination in surface soil in Area 9,

EPA has determined that localized removal of contaminated soil is necessary to reduce the potential for industrial worker exposure and potential migration to groundwater.

This EMD and supporting documentation of a minor change in soil remediation will become part of the Administrative Record for C&D and will be included in the Public Information Repository. The Administrative Record contains background information that was used in determining the selected remedy, as documented in the FD, and in preparing this EMD. The Information Repository for C&D is available for public review at the following location:

Attica Public Library  
305 S. Perry Street  
Attica, IN 47918

U.S. EPA Region 5 Records Center  
77 West Jackson Boulevard, 7<sup>th</sup> Floor  
Chicago, Illinois 60604

## **II. Facility Description, History, Investigation, and Selected Corrective Measures**

### ***Facility Description and History***

C&D owns and operates a battery manufacturing plant at 200 West Main Street in the City of Attica, Fountain County, Indiana. The Facility is located on approximately 12.5 acres in the north-northwestern portion of the city. The Wabash River borders the Facility on the west and northwest. Residential and commercial properties surround the remaining sides of the Facility (Figure 1 in Attachment 1). The Facility contains an active battery manufacturing area, a former landfill, and riverbank property along the Wabash River.

The Attica plant manufactures lead acid batteries for commercial, industrial and military applications. Manufacturing processes include casting or curing lead battery parts, pasting battery grids, plate processing, battery assembling, charging and finishing. Supporting operations at the Facility include material receiving, product shipment, quality control laboratory analysis, equipment maintenance, wastewater pretreatment and waste management. In January 2007, EPA Region 5 and C&D entered into a RCRA Section 3008(h) Corrective Action Order (Corrective Action Order) that required C&D to investigate and address all historic releases of hazardous waste and constituents at or from the site.

**Area 9 and Area 4:** C&D identified Area 9 using a 1948 fire insurance map. Area 9 was a former waste and dust storage area. This area is now an interior room centered over an abandoned rail spur between a compressor room and an adjacent manufacturing and assembly area. Varying segments of storm water sewers constitute Area 4 since releases from various areas may have impacted sewers. Area 4 Soil borings (CD-SB16 through 21) were co-located near Area 9. The locations of Area 9 and storm drainage lines are provided in Figure 2 in attachment 1. C&D combined Area 9 and Area 4 storm water sewer soil locations (CD-SB16 through 21) for a vapor intrusion investigation to evaluate the potential for preferential pathways. These areas are covered with 6 to 12 inches of concrete. Volatile Organic Chemicals (VOCs) such as TCE and PCE were found in subsurface soils in many locations of Area 9 and

one location in Area 4 (CD-SB-21, 0-1 ft) during the investigation in 2008. The results are provided in Figure 3 in attachment 1. The VOC levels exceeded the Indiana Department of Environmental Management (IDEM) for migration to groundwater of 640 µg/kg and 350 µg/kg, respectively. The VOC impacts near the storm water seemed to be associated only with shallow soil. The deep soil borings closer to storm sewers did not exceed the screening criteria.

Analytical results of a September 2009 sub-slab soil gas investigation also indicated the potential for indoor vapor intrusion of TCE based on concentrations detected in sub-slab soil gas vapor samples. TCE and PCE were not detected in indoor ambient air and outdoor ambient air samples collected from locations adjacent to sub-slab soil gas sample locations.

U.S. EPA identified SVE as the Final Remedy for Area 9 and Area 4. The objective of the SVE operation was to treat shallow subsurface soils to reduce TCE soil gas vapors below the IDEM industrial sub slab soil gas criterion of 880 µg/m<sup>3</sup> for TCE and possibly reduce VOC soil concentrations to IDEM screening levels for migration to groundwater. PCE concentrations in soil gas vapor were already shown to be below the IDEM industrial direct contact criterion of 17,500 µg/m<sup>3</sup> during the previous sub-slab soil gas investigation (URS, 2009b). During SVE implementation, routine inspection of the existing concrete slab in Area 9 was required to ensure the continued effectiveness as an exposure barrier. To address residual soil gas contamination and soil contamination, EPA’s 2013 Statement of Basis proposed remedial alternatives considered and corresponding estimated costs. These cleanup alternatives and estimated costs are summarized below in the following table:

**Table 1. Alternatives of Remedy Selection at Area 9/Area 4**

Alternative	Estimated Capitol Cost
1. No Action	\$0
2. Excavation and off- site disposal of contaminated soil Excavate accessible soil to a depth of five feet below ground surface and dispose an estimated volume of 231 cubic yards. Leave the contamination under the manufacturing area in place.	\$91,500
3. Soil Vapor Extraction and Capping Collect soil gas vapor from three extraction wells screened across shallow contaminated zone (alleyway and manufacturing areas) and release in to the atmosphere with no treatment. Maintain the integrity of the existing concrete cap.	\$95,000
4. Soil Vapor extraction with Off-gas treatment Collect soil gas vapor from three extraction wells screened across shallow contaminated zone (alleyway and manufacturing areas) and release in to the atmosphere after treatment. Maintain the integrity of the existing concrete cap.	\$105,000
5. Excavation and off-site disposal and SVE Excave contaminated soil from the outdoor alleyway and dispose of the soil off-site. Remove contaminated soil gas beneath the manufacturing areas with a modified SVE system.	\$165,000

**Soil Contaminants of Concern**

The Contaminants of Concern (COC) identified at Area 9 and Area 4 are PCE and TCE.

### III. Corrective Measures Implementation

#### ***Summary of Area 9 and Area 4 Soil Selected Remedy***

The selected remedy (Alternative 4) for Area 9 and Area 4 was documented in the April 2015 Final Decision and is summarized below:

- Use in-situ remedial technology to reduce concentration of VOCs adsorbed into soils in the unsaturated (vadose) zone.
- Use three extraction wells screened across the vadose zone to maximize vapor collection and following activated carbon treatment, release the collected vapors to the atmosphere.
- C&D will pave areas where surface soil contamination exceeds the IDEM groundwater protection criteria.
- The selected remedy also required an enforceable institutional control with a health and safety plan, routine inspection and maintenance to ensure the integrity of the concrete slab foundation and pavement in Area 9 and Area 4 that is acting as an exposure barrier for remaining subsurface contamination.

#### ***The Remedial Active Objectives of the selected Remedy are to:***

- Meet the cleanup goals for soil gas to protect workers from indoor air vapor intrusion
- Minimize the potential for worker exposure to hazardous materials in surface soil
- Control the potential for releases of hazardous substance to groundwater

The SVE system that operated from September 2016 to November 2017 with intermittent shut down met the remedial active goal of reducing the TCE levels in soil gas from 89,000 ug/m<sup>3</sup> to less than 880 Ug/m<sup>3</sup> for TCE. However, the residual concentration of TCE in shallow soil in few locations remained above the IDEM industrial direct contact criteria and IDEM soil to groundwater migration protection criteria.

- In addition to the remediation of VOC contamination in Areas 9 and 4, C&D implemented corrective measures in other areas of facility to address human health and ecological risk. To account for metal contamination (i.e. lead and zinc) in Riverbank area, C&D placed a revetment grade riprap placed over geotextile fabric to protect the ecological receptors. As part of the final remedy, C&D capped areas 5 and submitted a maintenance report for routine inspection of existing concrete caps in areas 3,7 and 11. The concrete caps prevent potential worker exposure to residual metal contamination in these areas. Lead exceedance in groundwater required monitoring until lead level in groundwater did not exceed the IDEM Residential Direct Contact Levels (residential direct contact criteria) for two consecutive rounds six months apart. The total lead concentration in groundwater in MW-4s during May 2017 and November 2017 sampling event was found to be lower than IDEM residential direct contact criterion of 15 ug/L.

### ***Basis for this documenting highlighting minor difference in implementing final remedy***

C&D submitted a Corrective action completion determination request on November 12, 2018 with the documentation on implementation of EPA selected remedies. The implemented remedies addressed soil and potential groundwater contamination in the following areas:

- Areas 4 and 9 - SVE
- Riverbank Area Revetment grade riprap placed over geotextile fabric (Completed in December 2016)
- Area 5 – Concrete cap (completed in August 2017)
- Areas 3, 7 and 11 –
  - -Monthly inspections of concrete pads for continued effectiveness as an exposure barrier (beginning in August 2017); and
  - Monitoring well sampling MW-4S groundwater sampling – Two semiannual groundwater sampling events in May and November 2017 demonstrated lead levels below IDEM residential direct contact criteria.

The Area 9 and Area 4 SVE system operated from September 15, 2016 through April 26, 2018 (except for February 19, 2017 through April 7, 2017 and November 29, 2017 through March 30, 2018). Analytical results of soil gas vapor samples collected from each extraction well and the combined SVE influent sample port during routine monthly inspections indicated that TCE concentrations were consistently detected at concentrations below the applicable IDEM Industrial Direct Contact Criterion of 880 µg/m<sup>3</sup> for TCE. In 2018, C&D sent a letter to EPA requesting acknowledgement of the completion of corrective action. The completion report identified exceedance of TCE in selected locations in shallow soil area with in soil vapor extraction zone. After a review of historical field screening data and analytical results, EPA determined that soil gas vapor concentrations had reached asymptotic conditions and that continued operation of the SVE system would not likely achieve further reduction in constituent concentrations.

Based on the soil gas vapor sample results, confirmation soil samples were subsequently collected to evaluate if shallow sub-slab soils had been remediated to acceptable levels identified in Final Decision document (IDEM industrial direct contact criteria for industrial worker direct contact and groundwater protection criteria). Confirmation soil samples were collected from soil boring locations installed adjacent to the original soil boring locations where elevated TCE and PCE concentrations were previously detected at concentrations exceeding 2009 IDEM industrial direct contact criteria (CD-SB-21B, CD-SB-105, CD-SB-111, CD-SB-113B, CD-SB-118, and CD-SB-122). Historical and confirmation soil sample analytical data for Area 9 and Area 4 is summarized in Table 2 in attachment 1. The results indicate that Area 4 soil VOC contamination (CD-SB-21) is reduced to levels below IDEM industrial direct contact and groundwater leaching criteria.

#### **IV. Description of Minor Differences**

The soil confirmation sampling determined that TCE in three locations in Area 9 not covered by buildings exceeded IDEM industrial worker direct contact criteria. Further many locations (SB-107, SB-110, SB-115, SB-116, SB-119, SB-121, SB-125 and SB-134) in Area 9 exceeded IDEM soil to groundwater migration protection criteria. The selected SVE remedy minimized soil gas contamination and protected workers from indoor vapor intrusion but did not treat areas in shallow soil where the contamination still remains in soil. Although, the contamination presently is covered by concrete pavement, cracks are

visible in many areas. The excavation of residual TCE and PCE contaminated soil in selected locations, will eliminate a potential source area in soil and eliminate risk associated with worker contact. Recapping this area with concrete would prevent the residual VOCs leaching into groundwater.

As Area 4 locations met soil clean up goal, excavation is limited only to Area 9. Excavation areas will be limited to those confirmation soil borings where detected TCE concentrations exceeded the IDEM Industrial direct contact level which includes CS-CD-SB-105, CS-CD-SB-111, and CS-CD-SB-113B (see Figure1-2, attached). To address each of the soil boring locations, there will be two excavation areas; a single area for CS-CD-SB-113B (Excavation 1), and a combined area for CSCD- SB-105 and CS-CD-SB-111 (Excavation 2) due to the close proximity of these soil boring locations. Soil in these areas will be removed to a total depth equal to one foot below the last soil sample depth interval where analytical data indicated PCE and/or TCE concentrations exceeded the applicable industrial direct contact criteria. Based on current analytical data, excavation depths will not exceed three feet below the top of soil as encountered below the concrete slab.

## **V. Statutory Determinations**

Administrative Procedures Act, 5 U.S.C. § 500

A significant portion of the RCRA corrective action process is similar to the Superfund process. EPA encourages permitting agencies and facilities to make public participation activities under the RCRA system consistent with the activities required under Superfund, whenever appropriate. Of course, it also is important to recognize the significant differences between the RCRA and Superfund programs, and the difficulty of directly applying Superfund public participation requirements at each stage of the RCRA corrective action process.

According to the National Contingency Plan, 40 CFR part 300 *et seq.* developed for Superfund sites, any changes to a remedy selection are required to be evaluated to determine whether the modification is minor, significant, or fundamental. Factors that are to be evaluated include:

- Does the change alter the scope of the selected remedy (i.e., physical area of the response, remediation goal, type and volume of the wastes)?
- Does the change alter the performance and resulting protectiveness of the selected remedy?
- Does the change alter the costs as compared to the selected remedy?

This EMD presents the modified remedy which was included as a remedial alternative in the 2013 Statement of Basis, Alternative 5, and is presented in the table above. The estimated area of excavation is depicted in Figure 4 in attachment 1. The modified remedy will consist of the following:

- Removal of the existing engineered cap in areas of soil with an exceedance of IDEM industrial direct contact criterion of 20 mg/Kg.
- Excavation of approximately 20 cubic yards of TCE contaminated soil.
- Collection of soil confirmation samples;
- Characterization and segregation of excavated soil.
- Offsite disposal of the TCE contaminated soil as a landfill facility that is permitted to take the contaminated soils.
- Backfill of the excavated area with certified clean fill.
- Recapping the filled area with concrete pad to match the rest of the areas that exceed the IDEM



- soil to groundwater migration protection criteria.
- Ensure the integrity of capping in Area 9 where TCE in soil exceeds IDEM groundwater migration criteria.
- *Does the change alter the scope of the selected remedy (i.e., physical area of the response, remediation goal, type and volume of the wastes)?*  
The modified remedy will not substantially alter the scope of the selected remedy as the area of concern remains with the Area 9 and TCE remains the COC for the site. The volume of TCE contaminated soil is relatively less when compared to the estimated volume presented in the Corrective Measure Proposal for the site.
- *Does the change alter the performance and resulting protectiveness of the selected remedy?*  
The change does alter the performance and resulting protection in considering that any contamination in the surface soil is addressed and no residual contamination above IDEM industrial direct contact criterion of 20 mg/Kg will remain. However, alternative 5 was not selected as the remedy as the SVE system with a radius of influence of up to 20 ft was expected to remove significant contamination from soil.
- *Does the change alter the costs as compared to the selected remedy?*  
The cost of this modified remedy is comparable to the cost presented in 2013 Statement of Basis for Alternative 5.

In considering these factors, the modified remedy does not present significant changes to the selected remedy largely based on performance and protectiveness. The selected remedy resulted in residual TCE contaminated soils that exceeded the leaching criteria by three orders of magnitude and exceeded IDEM industrial direct contact criteria by an order of magnitude in selected locations. The modified remedy will eliminate risk to workers if the existing cap is removed. The modified remedy with the removal of highly contaminated soil, would also prevent groundwater contamination if a crack develops in the surface cap.

## **VI. Performance**

The Area 9 soil remedial action, with additional excavation specified in this EMD, will meet RAOs identified in the final decision. Specifically, the removal of the TCE-contaminated soil above 20 mg/Kg will eliminate the potential contact or disturbance of contaminated soil that present an unacceptable risk to human health.

## **VII. Cost**

Additional costs are required to perform the excavation and offsite disposal, alternative 5 of the Statement of Basis. The cost for the soil removal and offsite disposal, plus recapping is \$52,200.

## **VIII. Public participation Compliance**

No public participation activities are statutorily *required* under §3008(h), but EPA policy urges that public participation activities under RCRA corrective action orders be generally like RCRA permit participation requirements and Superfund post-ROD additional response actions. Consistent with EPA's RCRA corrective action public participation policy statements, this documentation will be added to the Administrative Record for the facility's FD at the local repository because the FD requires pavement and

other barriers preventing release of the contaminated soils to remain intact, a copy of EMD this documentation will be posted at the C&D, Attica facility so that workers understand that EPA has approved this intrusive subsurface work, it will be performed consistent with the EPA-required HASP, and that removal will result in a more protective workplace.

**Index to the Administrative Record**  
**Explanation of Minor Differences for**  
**C&D Technologies, Inc. Located in Attica, IN**  
**IND 000810754**

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4. URS Corporation (URS) 2007 a. RCRA Facility Investigation Work Plan, C&D Technologies, Attica, IN. September 2007
5. URS 2007b. RCRA Facility Investigation Work Plan Addendum, C&D Technologies, Attica, IN. December 2007
6. URS 2008. RCRA Facility Investigation, Part 1 Report, C&D Technologies, Attica, IN. October 30, 2008
7. URS 2009 a. RCRA Facility Investigation Part 2A Report: Additional Sampling and Analysis, C&D Technologies, Attica, IN. June 5, 2009
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12. EPA 2009. Migration of Contaminated Groundwater Under Control. June 2009
13. URS 2010. Corrective Measures Proposal. C&D Technologies, Attica, IN. February 22, 2010
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21. AECOM. 2017a. Construction Completion Report Area 5 Concrete Cap. C&D Technologies, Attica, Indiana. September 13, 2017.
22. AECOM. 2017b. Construction Completion Report Riverbank Area Exposure Barrier. C&D Technologies, Attica, Indiana, February 17, 2017.
23. AECOM. 2017c. Final Design Area 5 Concrete Cap. C&D Technologies, Attica, Indiana February 10, 2017.
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25. AECOM. 2017e. Final Design Operations and Maintenance Plan Groundwater – MW-4S. C&D Technologies, Attica, Indiana. April 21, 2017.
26. United States Environmental Protection Agency (U.S. EPA). 2013. Environmental Cleanup at C&D Technologies, EPA RCRA Corrective Action, Attica Indiana. Statement of Basis. April 2013.
27. U.S. EPA. 2015. Final Decision for Soil and Groundwater Remedy at C&D Technologies, Inc., 200 W. Main Street, Attica, Indiana. January 2015.
28. U.S. EPA. 2017. Approval of Remedy Construction Reports. Remedy Constructed (CA 550 RC) and Engineering Controls Established (CA 770 GW). C&D Technologies, Attica, Indiana. U.S. EPA ID No. IND0008810754. October 2, 2017.
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