Clark County Combined Health District Comments on proposed Remedial Alternative 9a for the Tremont City Barrel Fill Superfund Site, Clark County, Ohio.

Submitted to U.S. EPA Region 5
July 2011

Clark County Combined Health District Board of Health Resolution Number R 70-11:

Reason 1. **"*Alternative 9a potentially leaves all non-containerized liquids on-site (both non-hazardous and hazardous).*"**[1]

In the Feasibility Study Addendum No. 2 (which presents Remedial Alternative 9a) Section 2.1.1, page 2-3 states:

> "**Non-containerized Wastes**
> "The current physical state (that is, solid or liquid) of the estimated 330,000 gallons of non-containerized bulk liquids/sludges added into some of the waste cells is not known. A high-capacity trash pump will used to extract the non-containerized liquids from the waste cells after excavation of the drums. The liquid wastes will be taken to the staging area and disposed offsite with the other liquid wastes. The non-containerized waste, including sludge, that remains behind after pumping will be excavated and staged. The material will be tested in the field using the paint filter test. **The materials that fail the paint filter test will be further characterized and disposed of offsite, <u>or</u> a sufficient volume of stabilizing reagent (such as fly ash or cement) will be added until the material passes the paint filter test. The stabilized material will be put in the consolidation cell along with the other solid wastes."** [2] [emphasis added]

Further description of the field application of the paint filter test at this site is provided in Region 5's undated response memorandum to the National Remedy Review Board (NRRB) Recommendations from March of 2011:

> "Any non-containerized waste, including sludge, that remains behind after pumping that, based on field judgment, might not pass the RCRA paint filter test, will be (1) extracted from the Barrel Fill by other methods and disposed of offsite; or (2) stabilized further to pass the RCRA paint filter test and then reconsolidated on site in the engineered waste cell." [3]

There is no indication in either of these documents that ALL non-containerized materials which can be initially (prior to treatment on site with a stabilizing reagent such as fly ash or cement) be classified as a liquid by the paint filter test will be characterized to determine if they are a hazardous substance or not. There is no decision making criteria spelled out which allows the reviewer to determine when, if ever, a non-containerized 'liquid' material will be further characterized. Treating a liquid with a stabilizing agent to make it viscous

enough to 'pass' as a solid and remain onsite for disposal does not effectively reduce the hazard this waste poses to human health and the environment.

The Clark County Combined Health District believes that leaving ANY hazardous waste or 'thickened liquids' on site poses an unacceptable threat to human health and the environment; and renews its support for Remedial Alternatives which remove ALL liquids and hazardous waste for offsite disposal.

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Reason 2. ***"Cost estimates provided for in Alternative 9a are inconsistent and in error."*** [1]

Despite repeated comments by the Ohio EPA and the Clark County Combined Health District on the uncertainties and inconsistencies in the cost estimates provided for the alternatives, these costs are still heavily and erroneously weighted in the U.S. EPA decision process. The Clark County Combined Health District believes that sufficient errors exist in the cost estimates provided for the alternatives to warrant a reconsideration of the feasibility of Remedial Alternatives 4a and 9a.

In a 2011 letter to U.S. EPA Region 5[4], Ohio EPA reiterated concerns (initially expressed in April 25, 2007) with the costs of Alternatives 4a and 9a, and indicated that the costs for the waste treatment alternatives were "inflated." The Ohio EPA provided a total of "actual costs" for "offsite treatment and disposal of 41,300 drums at the Valleycrest Landfill" under "far worse conditions than exist at the Barrel Fill" at less than $21 million. They further pointed out that, if Applicable Relevant and Appropriate Regulations (ARARs) were factored into the costs of Alternative 9a, "the cost of Alternative 9a would increase substantially as treatment of the waste, in accordance with OAC 3745-57-72, Ohio's Corrective Action Management unit rule, and OAC 3745-57-14, Special requirements for bulk and containerized liquids." [4]

On February 15, 2011, a revision of the cost estimate for Alternative 4a was provided by the Ohio EPA[5], which revised the cost from ~$53 million to ~$45 million, but this revision was not included in the May 2011 Feasibility Study Addendum No.2[2], in which the cost estimate for Alternative 4a was ~$57 million[5].

No cost estimates provided for Alternative 9a include expected costs for facility care beyond thirty (30) years even though extended care is expected.

In the August 11, 2010 Conestoga-Rovers & Associates "Identification and Evaluation of Two Additional Remedial Alternatives,"[6] the "slurry wall" total cost anticipates that it will be calculated in square feet (50 feet deep and 2500 feet in length) and neglects to include its anticipated 3.5 feet in width. This error makes the cost estimate too low by 3.5 times – the cost estimate of $875,000 should be $3,062,500. This increases the slurry wall capital costs for the alternative and also the "design engineering" and "contingencies" costs, since they are percentages of capital costs. [6]

Also in the August 11, 2010 Conestoga-Rovers & Associates "Identification and Evaluation of Two Additional Remedial Alternatives,"[6] Table 2 calculates the "Net Present Worth of O & M Cost" and the "Net Present Worth of Groundwater Monitoring" are anticipated to achieve a 30-year performance at an interest rate of 5% or 7%. This anticipated interest rate is unrealistic and grossly discounts the actual up-front dollars needed to fully fund the alternatives, especially those requiring decades of care. The practice of discounting life-cycle costs are prohibited by Ohio EPA financial assurance regulations for this very reason.

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Reason 3. ***"There is a concern about siting a hazardous waste facility on a site with surrounding geology that was previously deemed inappropriate for a sanitary landfill."*** [1]

Remedial Alternative 9a proposes to rebury **ONSITE** all solid wastes (**HAZARDOUS** and non-hazardous) non-containerized sludges, and non-containerized liquids (which may be hazardous) after they have been treated (ex situ) with a stabilizing agent to allow them to 'pass' as a solid in what is referred to as a "consolidation cell."

In the early 1990's a sanitary landfill "Permit to Install" application was submitted to the Ohio EPA by the Danis Clarkco Landfill Company (a subsidiary of Danis Environmental Management Inc.) for a facility to be named Clarkco Landfill. The proposed landfill was to be located on property immediately to the east of the Tremont City Barrel Fill site.

The proposed Clarkco SANITARY landfill was determined to be inappropriate for the geologic setting found at this site, yet the proposed Remedial Alternative 9a includes on-site land disposal of ***HAZARDOUS*** materials. The major geologic/hydrogeologic impediments to siting the sanitary landfill facility at this location were: 1) "the undisputed presence of fractures in the till overlying the aquifers" [Conclusions of Law pages, 20 - 25 of the Environmental Reviews and Appeals Commission of Ohio 1998 decision[7]] which would lead to contaminant migration into the underlying aquifers at an unacceptably rapid rate; and, 2) the

presence of not one, but TWO, aquifers (the upper sand and gravel and the lower carbonate bedrock aquifers) capable of sustaining a yield of 100 or more gallons per minute for at least 24 hours [for a detailed analysis please see Critical "New" Data, comments from Peter Townsend on the proposed Remedial Alternative 9a submitted to U.S. EPA Region 5 July 2011[8]]. Paragraph (H) (2) (d) of Ohio Administrative Code (OAC) 3745-27-07, "Additional criteria for approval of sanitary landfill facility permit to install applications", states:

> (H) Siting criteria.
>
> (2) Ground water aquifer system protection.
>
> (d) One hundred gallons per minute (gpm) aquifer system.
> The sanitary landfill facility is not located above an unconsolidated aquifer system capable of sustaining a yield of one hundred gpm for a twenty-four-hour period to an existing or future water supply well located within one thousand feet of the limits of solid waste placement of the sanitary landfill facility.

The Clark County Combined Health District believes that OAC 3745-27-07 (H) (2) (d) is, in fact, an Applicable or Relevant and Appropriate Regulation (ARAR) and should apply in the remedial alternative selection process for the Tremont City Barrel Fill. It is inconceivable that a sub-standard hazardous waste land disposal cell will be protective of human health and the environment when a sanitary landfill would be prohibited in this same location because it would NOT be protective of human health and the environment.

The Clark County Combined Health District renews its support for Remedial Alternatives which remove ALL liquids and hazardous waste for offsite disposal with the understanding that they will meet Ohio EPA regulations as deemed appropriate and necessary by that agency.

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Reason 4. ***"The 'Area of Contamination' design in Alternative 9a would circumvent Ohio EPA hazardous waste regulations and is not protective of the environment."*** [1]

Part of the proposed Remedial Alternative 9a approach is to employ an "Area of Contamination" (AOC) policy [2] to avoid complying with Resource Conservation and Recovery Act (RCRA) land disposal restrictions. AOCs are defined in U.S. EPA Directive 9347.3- 05FS as being "delineated by the areal extent (or boundary) of contiguous contamination. Such contamination must be continuous, but may contain varying types and concentrations of hazardous substances." [9] In March of 1996 the U.S. EPA issued a memorandum providing

additional guidance on “Use of the Area of Contamination (AOC) Concept During RCRA Cleanups”. This memo expands upon the concept of ‘placement of waste’ within an Area of Contamination and when that placement would trigger RCRA land disposal restrictions by noting, “placement does not occur when waste is consolidated within an AOC, when it is treated in situ, or when it is left in place. Placement does occur, and additional RCRA requirements may be triggered, when wastes are moved from one AOC to another (e.g., for consolidation) or when waste is actively managed (e.g., treated *ex situ)* within or outside the AOC and returned to the land.” [10] The National Remedy Review Board expressed concern with the application of the Area of Contamination Policy in their recommendations memorandum of March 31, 2011. [3]

The Clark County Combined Health District believes that the AOC guidance documents clearly state that EX SITU treatment of waste will trigger the RCRA Land Disposal Requirements, specifically the minimum technology requirement of a DOUBLE liner and leachate collection system[9 & 10]. The Clark County Combined Health District believes that the proposed *ex situ treatment* of the non-containerized liquid wastes by, 1) pumping them to the surface with a high-capacity trash pump; and, 2) treating them with a stabilizing agent to make them viscous enough to ‘pass’ as a solid and remain onsite for disposal, should trigger the RCRA Land Disposal Restrictions – specifically, the minimum technology requirement of a double liner and leachate collection system. However, the proposed consolidation cell in Remedial Alternative 9a has only a single liner and is described in Section 2.1.2 of the Feasibility Study Addendum No. 2 as:

> ”The engineered consolidation cell will include an FML and recompacted soil liner system, and a leachate collection system in accordance with OAC 3745-27-08 requirements for a sanitary landfill. The cap will be designed and engineered to meet the current performance standards of an RCRA hazardous waste landfill cap in accordance with the USEPA’s *Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments* (EPA 530-SW-89-047). The cross-sectional view of the consolidation cell is presented in Figure 2. “[2]

The Clark County Combined Health District believes it would be more appropriate for a consolidation cell which will contain **hazardous waste,** to conform to sections of the Ohio Administrative Code which pertain to **Hazardous Waste** Landfills, rather than the less stringent sanitary landfill guidelines.

The Clark County Combined Health District would also like to know why Region 5 has moved to a less-protective design for Remedial Alternative 9a than was described in their response to the NRRB recommendations about Remedial Alternative 9a which were:

> "The Region has considered whether some or all of the RCRA land disposal regulations, while not "applicable," are "relevant and appropriate" to the circumstances at the Tremont City Barrel Fill Site. "Relevant and appropriate" requirements are those that, while not applicable to the circumstance at a CERCLA site, are sufficiently similar to those circumstances encountered at the site, that their use is well suited to the particular site. In general, this analysis involves consideration of a number of site-specific factors, including the characteristics of the remedial action, the nature of the hazardous substances the site, and/or the physical circumstances of the site. (See August 1988, EPAl540G-89-006, CERCLA *Compliance with Other Laws Manual, Section 1.2.2 Definitions of Applicable and Relevant and Appropriate*.)
>
> "At the Tremont City Barrel Fill Site, the following site-specific factors were considered to determine the "relevant and appropriate" requirements of RCRA land disposal regulations for the preferred remedial alternative: (1) the very low hydraulic conductivity of the underlying till; (2) the extensive thickness of the underlying till; (3) the lack of any significant releases from the Barrel Fill to the underlying non-potable water-bearing units; (4) the more than thirty years of successful containment of the Barrel Fill wastes; (5) the large volume of liquids believed to be currently in the Barrel Fill which would be removed under the preferred alternative; and (6) the need for long-term management of Site wastes after the liquids are removed. These site-specific factors indicate the suitability of the Barrel Fill AOC for long-term management of the Site wastes, once the liquids are removed. **Considering these site-specific factors, the following RCRA land disposal regulations <u>are considered relevant and appropriate</u> and are incorporated into the preferred remedial alternative: (1) the double-liner and leachate collection provisions of the RCRA minimum technology requirements;** and (2) the application of the paint filter test to identify, and subsequently address, liquid wastes associated with the bulk wastes. The RCRA landfill cap closure and post-closure monitoring requirements are also considered "relevant and appropriate" and are part of the preferred remedial alternative. Given the site-specific circumstances, removing existing liquids and controlling the introduction of future liquids to the consolidated remaining solid wastes (managed in a double-lined cell with leachate and leakage collection, with the landfill cap and

> surrounding slurry wall) will provide long-term protectiveness of human health and the environment, consistent with CERCLA §121." [3] [emphasis added]

Since Region 5 determined that the RCRA land disposal regulation minimum technology requirement of a double liner and leachate collection system is relevant and appropriate, the Clark County Combined Health District believes that the proposed Remedial Alternative 9a is designed to inadequately protect human health and the environment. The Clark County Combined Health District renews its support for Remedial Alternatives which remove ALL liquids and hazardous waste for offsite disposal.

The Region further justifies its selection of Remedial Alternative 9a and its claims of adherence to applicable and relevant RCRA requirements to the NRRB by citing, in part:

- "the very low hydraulic conductivity of the underlying till;" [3]
- "the extensive thickness of the underlying till;" [3] and
- "the more than thirty years of successful containment of the Barrel Fill wastes." [3]

These statements imply that the geology at this site provides natural protections which will augment the engineered controls provided in the consolidation cell design. It is clear to the Clark County Combined Health District that Region 5 has forgotten its February 8, 2008, response letter to Peter Whitehouse of the Ohio EPA[11]. The letter clearly acknowledges the deficiencies in the hydrogeologic characterization of the till at this site in the Remedial Investigation (RI) Report and assures the Ohio EPA that additional Remedial Investigation work, to more precisely define the till permeability in order to effectively and meaningfully evaluate the alternatives presented in the Feasibility Study (FS), is unnecessary because <u>all</u> of the proposed Remedial Alternatives will be evaluated using the conservative assumptions that the tills below the site are not likely as impermeable as the RI Report indicates. The reasons cited to the NRRB by Region 5, defending the selection of Remedial Alternative 9a, are directly contradicted by their own statements in the 2008 letter to Ohio EPA:

> "On June 5, 2007, Ohio EPA requested that U.S. EPA engage a third party to provide an unbiased review of the adequacy of the hydrogeologic characterization in the RI Report. U.S. EPA asked Bob Kay, a hydrogeologist for the U.S. Geological Survey and a part-time grantee employee for U.S. EPA, to perform the review. Ohio EPA was satisfied with this choice. On August 6, 2007, Mr. Kay issued a memo that challenged the highly impermeable hydrogeologic model presented in the RI Report and **concluded, contrary to a conclusion in the RI Report, that vertical contaminant migration from the Barrel Fill to the lower**

> **groundwater units was likely**. In September 20 and November 21, 2007 correspondence to the potential responsible parties (PRPs), U.S. EPA has stated that the **source of any groundwater contamination in the lower groundwater units is likely attributable to the Barrel Fill**. As such, U.S. EPA has directed the PRPs to incorporate this conclusion into the process when developing remedy options for the Site." [11] [emphasis added]
>
> "The Administrative Record contains various interpretations of the permeability of the tills between the upper and lower groundwater units. It is often difficult to precisely determine till permeability. As you note in your letter, the Administrative Record includes information that acknowledges that the **tills beneath the Barrel Fill are likely not as impermeable as the RI Report indicates**, and that **the low-level contamination in the lower groundwater units likely is attributable to the Barrel Fill**. This is emphasized in the post-RI Report correspondence from U.S. EPA to the PRPs described earlier in this letter. **Remedial alternatives will be evaluated using these conservative assumptions**. As such, we do not believe it is necessary to more precisely define the till permeability in order to evaluate the alternatives in the FS." [11] [emphasis added]
>
> "Your concern about RI Modeling is related to the previous topic of till permeability. The **recent additions to the Administrative Record acknowledge that the vertical hydraulic conductivity of the tills beneath the Barrel Fill is likely greater than that presented in the RI Report. Remedial alternatives will be evaluated using this conservative assumption**. Again, we do not believe it is necessary to more precisely define the hydraulic conductivity in order to evaluate the alternatives in the FS." [11] [emphasis added]

It is clear that Remedial Alternative 9a has NOT been evaluated by Region 5 using the above referenced conservative assumptions. Evaluating against the conservative assumptions (the barrel fill as the likely source for contamination currently found in the groundwater and a higher hydraulic conductivity of the underlying till than reported in the RI report) finds Remedial Alternative 9a to be unacceptable because it is not protective of human health and the environment.

The Clark County Combined Health District renews its support for Remedial Alternatives which remove ALL liquids and hazardous waste for offsite disposal.

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Reason 5. ***"There is continued mischaracterization of the perched aquifer (1075 Intertill unit) on the Alternative 9A drawings."*** [1]

In the Feasibility Study Addendum No. 2 [2], Figure 2 is a conceptual cross-section of the consolidation cell proposed in Remedial Alternative 9a. It depicts the 1075 Intertill as if it is a continuous unit found at a uniform depth across the site. If this were a correct representation of the subsurface conditions at this site, the proposed horizontal well would appear to be a novel, cost-saving secondary containment solution. However, the reality of the subsurface is very different at this site. Ohio EPA has meticulously plotted the data from the site boring logs and shows conclusively that what is referred to as the 1075 Intertill is NOT a continuous unit found at a uniform depth across the site.[12] The approach of using a discontinuous, intermittently present unit as the placement for a horizontal well which will serve as a leakage collection system to provide secondary containment for the proposed single-lined hazardous waste consolidation cell is **not** protective of human health and the environment.

The Clark County Combined Health District renews its support for Remedial Alternatives which remove ALL liquids and hazardous waste for offsite disposal.

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Reason 6. ***"There are significant health and safety concerns with stockpiling, treating, and reburial of hazardous wastes in uncovered areas onsite."*** [1]

Remedial Alternative 9a proposes to unearth barrels and non-containerized materials and pile them on the ground, stockpile barrels, crush barrels, and manage barrel contents (both hazardous and non-hazardous) on the ground and exposed to the weather for at least 1-3 years. The Clark County Combined Health District cannot find – in any documents describing Remedial Alternative 9a – any mention of a roofed structure or any temporary or interim containment, covers, or tarps to prevent these materials from being affected by weather or causing contamination via storm water runoff or infiltration into the ground. The "staging area" does not appear adequate to protect human health and the environment from potential spills, leaks, leachate formation, and infiltration of contaminants into the ground.

The Clark County Combined Health District renews its support for Remedial Alternatives which remove ALL liquids and hazardous waste for offsite disposal, in part, because it is anticipated that materials will not be stockpiled on site for extended periods of time.

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Reason 7. ***"The "Staging Area" design in Alternative 9a appears too small, inadequately described, and underfunded."*** [1]

In the Feasibility Study Addendum No. 2 [2], Section 2.2 describes the anticipated overall construction sequence of Remedial Alternative 9a. There are many activities described to be occurring in overlapping time frames which are expected to require separate and distinct physical spaces. The Clark County Combined Health District has concerns about the ability of anyone to physically perform all of the activities described in Remedial Alternative 9a within the confines of the Area of Contamination (AOC) boundary. In order to avoid triggering RCRA land disposal requirements, these activities MUST occur within the footprint of the AOC. [9 & 10] The planned removal, treatment, and stockpiling activities in Remedial Alternative 9a will require large amounts of space and will occur at the same time as the construction of the consolidation cell within the AOC boundary. We cannot effectively evaluate Remedial Alternative 9a's safety and protectiveness of human health and the environment during the removal activities and construction of the consolidation cell without a clear understanding of the proposed AOC's boundary, as well as the layout and proposed costs of the associated support structures, surfaces and areas.

The Clark County Combined Health District is of the opinion that proposed Remedial Alternative 9a is being given undue consideration as a valid remedial alternative when it does not provide sufficient detail for its evaluation.

The Clark County Combined Health District renews its support for Remedial Alternatives which remove ALL liquids and hazardous waste for offsite disposal.

References Cited

1. Resolution Number R 70-11. Clark County Combined Health District Board of Health Meeting. July 21, 2011.
2. Feasibility Study Addendum No.2, Tremont City Barrel Site, Clark County, Ohio, WA No. 115-RSBD-B5B1 / Contract No. EP-S5-06-01. Prepared by CH2M HILL, Ecology and Environment, Inc., Environmental Design International, Inc., Critigen, LLC. May 2011.
3. U.S. EPA Region 5 undated memorandum with the subject: U.S. EPA Region 5 Superfund Division Response to the March 31, 2011 National Remedy Review Board Recommendations for the Tremont City Barrel Fill Superfund Site; Clark County, Ohio.
4. Ohio EPA letter from Mark V. Allen, Division of Emergency and Remedial Response to Ronald Murawski, Remedial Project Manager, Superfund Division, U.S. Environmental Protection Agency – Region V. Re: Cost Issues with Alternatives 4a and 9a, Feasibility Study Addendum 2 Tremont City Barrel Fill, Clark County, Ohio. February 16, 2011.
5. Table A – 18a from the Tremont City Barrel Fill Site Feasibility Study RA-4a, 4b, Capital Cost Estimate Waste Removal and Disposal (Alternative RA-4a and RA-4b) as revised by Ohio EPA and titled “Follow-up to Cost Issues Raised in Ohio EPA NRRB Position Paper/Presentation. February 15, 2011.
6. Identification and Evaluation of Two Additional Remedial Alternatives Tremont City Barrel Fill Site Clark County Ohio. Conestoga-Rovers and Associates. August 11, 2010.
7. Findings of Fact, Conclusions of Law and Final Order for cases Numbered ERB 113521, ERB 113568, ERB 123520, and EBR 123567. Environmental Review Appeals Commission State of Ohio. October 22, 1998.
8. Critical “New” Data* Data Significance Discussion and Comments In Response to Cleanup Alternative 9a For Tremont City Barrel Fill Site. Peter Townsend. July 2011.
9. U.S. EPA Directive: 9347.3 – 05FS. Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions. U.S. EPA. July 1989.
10. U.S. EPA Memorandum subject: Use of THE Area of Contamination (AOC) Concept During RCRA Cleanups. U.S. EPA. March 13, 1996.
11. Response letter from Wendy L. Carney, Chief, Remedial Response Branch #1, Superfund Division, U.S. EPA Region 5 to Peter Whitehouse, Assistant Chief, Division of Emergency and Remedial Response, Ohio EPA. February 8, 2008.

12. Unpublished Ohio EPA Excel spreadsheet and associated files. Please contact Mark Allen or Kelly Kaletsky at Ohio EPA Southwest District Office, (937) 285-6357, for further details.