



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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BOSTON, MA 02114-2023

July 16, 2009

Steve Morrow  
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3855 North Ocoee Street  
Suite 200  
Cleveland, TN 37312

Subject: Conditional Approval  
DRAFT FINAL Remedial Investigation/Feasibility Study Work Plan  
Olin Chemical Superfund Site, Wilmington, Massachusetts

Dear Mr. Morrow:

In accordance with Paragraph 40 of the Administrative Settlement Agreement and Order on Consent ("AOC"), Region I of the United States Environmental Protection Agency ("EPA") has reviewed the above-referenced document prepared by MACTEC and dated April 30, 2009. This letter serves as a Notice of Approval, subject to the specified conditions. This letter also provides additional questions and comments to be addressed in the Final Work Plan.

Pursuant to Section 1.III.D of the Remedial Investigation/Feasibility Study Statement of Work ("RI/FS SOW"), EPA solicited comments from external state and local stakeholders, and has consolidated certain of these written comments received within the context of this letter. Original comment letters are enclosed.

Although several conditions and comments remain, this Draft Final Remedial Investigation/Feasibility Study Work Plan satisfies a majority of the concerns previously raised by EPA and provides a satisfactory cure to the deficiencies outlined in EPA's letter of March 12, 2009.

**CONDITIONS**

1. Financial Assurance: Pursuant to Paragraphs 94 to 98 of the AOC, within 30 days from the date of this approval letter, Olin shall submit a cost estimate for completion of the full activities described in the Final RI/FS Work Plan. Based on the amount of this cost estimate, Olin (and the other Respondents) shall establish and maintain financial security for the benefit of EPA using one or more of the forms outlined in the AOC.
2. Well Construction Details: The Draft RI/FS Work Plan states that Olin is currently reviewing several well construction options and will provide an addendum with these details prior to field mobilization. Olin shall submit an addendum to the RI/FS Work Plan that provides well installation and construction details, as well as the criteria to be used to field-identify exact well locations, and well screen intervals, at least two weeks prior to field mobilization for the installation of new monitoring wells.
3. Slurry Wall Testing: Section 6.5 of the Draft RI/FS Work Plan discusses the implementation of Hydraulic Pulse Interference Testing as a non-destructive method

for assessing the structural integrity of the slurry wall. Olin shall submit an addendum to the RI/FS Work Plan that provides the necessary details regarding the implementation and evaluation of this test. This addendum should also include a proposal to effectively monitor the slurry wall/bedrock interface (i.e., additional wells, pump tests, etc.) This addendum should be submitted within 60 days from the date of this approval letter and no later than 30 days prior to field mobilization for this test.

4. North Pond Area: Despite continuous requests by EPA to adequately characterize the North Pond area, the draft Work Plan does not propose any site characterization or analysis. Ariel photographs confirm that North Pond was hydraulically connected to the East Ditch, south of the confluence with the South Ditch, as an upon channel, and remains connected through a culvert. The one sediment sample collected to date from the existing North Pond basin confirms the presence of several site-related compounds. The Final Work Plan must include a reasonable proposal to characterize the current and former extent of the North Pond area (see OU2 comment below), and a proposal to incorporate the results into the BHHRA and ERA for OU2.
5. Right to Request Additional Samples/Analysis: Although the current version of the RI/FS Work Plan provides a significant increase in the overall number of samples and compounds to be analyzed across all media, there are several areas where the proposed approach may not provide sufficient data to characterize the nature and extent of contamination, or quantify the potential human health or ecological exposures. Examples include but are not limited to the approach for characterizing soils deeper than 10 feet bgs; limited analysis for PCBs and pesticides/herbicides; the inability to analyze for several compounds of historic Site use due to a lack of analytical methods; no proposal to characterize subsurface soil within the containment area; no proposal to characterize soil within the Calcium Sulfate Landfill, no proposal to install a bedrock well within the central area of the MMB aquifer; and the collection of limited data from surface water bodies located south of Site property. Although EPA agrees and accepts these limitations based on the current understanding of this Site, EPA reserves the right to request the collection of additional samples and/or analysis based on the results of the approved RI sampling effort.

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## COMMENTS

### Volume I

1. General: There are numerous statements made within the body of this work plan and in various summary tables, and in particular in Volume I, which EPA believes are either premature or unsupported by the current data set. Examples of such statements include: The DAPL pools *are not currently moving* along the bedrock surface in response to gravity; The slurry and temporary cap was constructed to contain residual on-Property DAPL and *overlying contaminated groundwater*, and Currently the DAPL material remains in *isolated* bedrock depressions. Rather than call out and dispute the basis for each and every example, EPA requests that Olin acknowledge in response to this comment that such findings as stated within the work plan will be re-evaluated based on data collected during the RI field work.

2. General: The current terms of the AOC (Appendix A SOW) require that electronic access to data be extended only to EPA and EPA's consultant. As a result, Olin has established an FTP link which allows EPA to download digital data. EPA continues to receive concerns from stakeholders over the lack of external data access. Although all existing data has been provided in Adobe format, the effort and expertise necessary to effectively access and review such an expansive data-set is beyond most party's capabilities. While Olin has chosen to restrict non-EPA access to data, it has been our experience that allowing for broader access to data results in fewer questions during the RI/FS process and supports effective consensus-building for the Proposed Plan. For example, at the Nuclear Metals Superfund Site in Concord, Massachusetts (see [www.nmisite.org](http://www.nmisite.org)), the PRPs have developed an on-line tool that allows broad community and stakeholder access to data-validation level results. The Nuclear Metals website includes an interactive web-based Geographic Information System (GIS) utility that will graphically display sample locations and results on a map of the site, allowing easy interpretation of the data. Another example is the ARCGIS database. Such tools would aid all interested parties in evaluating the data and should greatly improve consensus-building for the pending Proposed Plan(s) and Record(s) of Decision. EPA strongly recommends that Olin give serious consideration to developing such tools, or at a minimum, expanding access to the existing digital data base. If upon consideration, Olin remains concerned about providing broad access to the overall data set, then EPA would urge Olin to consider providing such access to at least the RI data set.
3. General: Numerous figures and tables in the draft Work Plan are under-scaled for the intended information. Although EPA is not requesting that the scale of the Final Work Plan figures and tables be modified, this is a significant issue that should be addressed in any work plan addendums and the RI Reports. EPA respectfully requests that figures and tables in the work plan addendums and RI reports be scaled appropriately such that oversized drawings and tables (i.e., 11" x 17" or plan-sized) are provided as necessary to effectively convey the intended information. Also, RI figures should include identification of major features appropriate to support the intended information (e.g. Fig. 4.3-1 should identify surface water features and wetland areas, Fig. 4.5-2 should identify all relevant street names and buildings, and so on).
4. P. 7 of 50, Response to EPA Comment No. 2d: Olin's response states that soil samples collected from deeper than 10 feet bgs will be analyzed based on results of 1-10 foot samples, with a minimum of six deep soil samples to be analyzed from areas with the greatest potential for impacts regardless of 0-10 foot soil results. This information is repeated in Volume III-A, Section 4.2.3. However, the details associated with this deep soil sampling program need to be provided in Section 8.1 of Volume III-A. Please incorporate. Note also that EPA is concerned that holding times may be exceeded for some contaminants in the deeper soils while awaiting results from the 1-10 foot samples, and this concern should be addressed in the FSP.
5. P. 9 of 50, Response to EPA Comment No. 7d: Olin's response states that benzonitrile, 2-ethyl hexoic acid, trimethylamine, hexamethylene tetramine, and dinonyl phenol will not be analyzed during the RI because "analytical methods are not available". EPA concurs that standard analytical methods do not currently exist for these compounds. However labs can be instructed to report "tentatively identified compounds (TICs)" which could identify these compounds if present at relatively elevated concentrations. Olin should instruct their labs to include these compounds as

TICs and to continue to include these compounds in the uncertainties section of the appropriate risk assessments.

6. P. 9 of 50, Response to EPA Comment No. 8b: In this comment, EPA noted concern regarding the unusually high background concentration for ammonia. Olin's response is, "Background data sets for surface water and sediment will be recollected." However, according to the proposal for background data as contained in the bullets on p. 3-5 of Volume III-A, it appears that Olin plans to use the existing background data from locations BS021REF and BS012REF in the RI? Historical background soil location BS021REF and sediment location BS012REF cannot be included as background locations in the RI.
7. P. 10 of 50, Response to Comment No. 8f: EPA agrees with the response that Table 2c values will be used, with the condition that the concentrations be adjusted for current toxicity values, as planned by Olin in Section 4.5 of the FSP.
8. P. 12 of 50, Response to EPA Comment No. 9e: In this comment, EPA requests that Olin perform a 42-day sediment toxicity test. Olin's written response is, "Comment noted." Subsequent statements in the work plan appear to be contradictory with regard to Olin's willingness to perform the requested toxicity test. It is EPA's understanding that Olin has agreed to perform the 42-day sediment toxicity test. Please verify in response to this comment, and modify the work plan to eliminate the inconsistent statements and provide the necessary details regarding the scope and methods for this toxicity test in Volume III-A. (EPA observed conflicting statements on pp. 4-1 of Volume I and pp. 15 of 19 of Table 3.2-1 of Volume I.) A complete citation for the test method to be used needs to be provided in addition to the criteria for selecting the sediment location for the toxicity test. Chemical analytical results should be used to identify the sample location for sediment toxicity test.
9. P. 24 of 50, Response to EPA Comment #12: This scenario discusses various hypothetical human exposure pathways. In that context, Olin's response states, "There are no plans to evaluate the use of DAPL material as a drinking water source in the BHHRA." EPA disagrees with this statement. DAPL is groundwater and as such concentrations of site-related constituents, representative of monitoring wells screened within the DAPL zone, should be used in the BHHRA. In support of this position, attached please find a copy of the Groundwater Use and Value Determination for the Olin Site recently prepared by the MassDEP consistent with EPA's 1996 Final Groundwater Use and Value Determination Guidance.
10. P. 4-1, Data Gaps/Needs: For OU1, the last bullet identifies the need to "characterize background conditions in all environmental media for all three OUs"; however, there is very little discussion of specific background sampling after this statement. The brief discussion on pages 3-4 and 3-5 in the FSP is inadequate. EPA notes that in Olin's response letter (dated April 29, 2009), Olin twice mentioned (pages 10 and 12) that they would resample previous background surface water and sediment locations. All proposed sampling activities (and analyses) should be presented in the FSP.
11. P. 4-2, OU2 Data Gaps/Needs: The text on this page includes only one bullet for OU2, when in reality Olin has proposed to collect additional data from the East Ditch and MMB areas. Please add additional bullets to reflect the full proposed scope. In addition, EPA has reviewed the collective information provided by Olin with regard to

the surface water bodies located south and southeast of the Olin property. EPA concludes that data gaps remain which must be evaluated to determine the full nature and extent of contamination in this area. Such activities include the following;

- Install borings to map the previous lateral and vertical extent of the North Pond drainage area. Historic photographs should be used to guide boring locations.
  - Collect soil/sediment samples from strata which appear most representative of the bottom layer of the former North Pond, and preferably from the area which appears nearest to the former inlet.
  - Collect sediment samples from the existing North Pond.
  - Collect sediment and surface water data from Landfill Brook to determine if groundwater recharge has transported site-related constituents.
12. P. 4-2, OU3 Data Gaps/Needs: The bullet currently listed under OU2 for “cessation of pumping” should also be listed as a data gap for OU3.
  13. P. 5-1, Final RI Work Plan: The text states that nine electronic copies of the final work plan will be submitted to USEPA, along with signed cover pages of the document volumes. EPA requests that seven hard copies of the Final RI/FS Work Plan also be submitted.
  14. P. 5-2, Spatial Analysis: The Procedures for evaluating surface and subsurface soil data to be collected during the RI should include a discussion on spatial analysis and its use in determining if contaminants are evenly or unevenly distributed across the former facility property. Such analysis will aid in the decision on exposure areas for the HHRA.
  15. P. 5-4, Analytical Data Results: In addition to the procedures described on this page for the release and evaluation of RI data, validated results should be reported in Semi-Annual Status Reports on a rolling basis.
  16. P. 6-5, Ecological Risk Assessment (ERA) Deliverables: Olin states that the ERA, “shall be completed in accordance with current guidance, procedures, assumptions, methods and formats...”, and then lists 4 references. The following reports should also be considered, in addition to the 4 references presented, during the ERA process:
    - a. EPA (U.S. Environmental Protection Agency). 1993a. *Wildlife Exposure Factors Handbook*. Volumes I and II. Office of Research and Development. EPA/600/R-93/187a, EPA/600/R-93/187b.
    - b. EPA (U.S. Environmental Protection Agency). 1998. *Guidelines for Ecological Risk Assessment*. Risk Assessment Forum. U.S. EPA, Washington DC. EPA/630/R-95/002F.
    - c. EPA (U.S. Environmental Protection Agency). 2007. *Framework for Metals Risk Assessment*. Risk Assessment Forum. U.S. EPA, Washington DC. EPA 120/R-07/001.

- d. EPA (U.S. Environmental Protection Agency). 2003. *Generic Ecological Assessment Endpoints for Ecological Risk Assessment*. Risk Assessment Forum. U.S. EPA, Washington DC. EPA/630/P-02/004F.
  - e. EPA (U.S. Environmental Protection Agency). 2000. *Guidance for Data Quality Assessment: Practical Methods for Data Analysis*. Office of Information. EPA/600/R-96/084.
17. P. 6-6, BERAs: The text states that a Draft BERA for each OU will be submitted to USEPA. To clarify, a baseline ecological risk assessment is not required for OU3. Any impacts resulting from groundwater to surface water discharge should be evaluated in the BERA for OU2.
18. Table 2.0-1, Human Health Conceptual Site Model: EPA is in general agreement with the receptors and exposure pathways in this table; however, EPA is not familiar with several of the receptor types listed in this table. It is also unclear which receptors are included for current exposures, future exposures or both? The exposure parameters associated with the listed receptors will need to be discussed in the first interim deliverable for the BHHRA (e.g. Visitor verses Area C Visitor. Community Resident verses Resident). The final work plan should also clarify that deed restrictions will be placed on the property to ensure that future property use remains commercial/industrial. EPA reiterates that there may be multiple exposure point concentrations for the on-Site, non Area C receptors, depending on the results of the proposed soil sampling and other analysis of historical data. EPA agrees that some of the exposure routes can remain "TBD" until future discussions can occur. Depending on the results of the RI field work, additional surface water exposure areas for OU2 may need to be considered (e.g. Maple Meadow Brook, Sawmill Brook, North Pond, and/or Landfill Brook).
19. Table 2.0-2, Ecological Conceptual Site Model: Depending on the results of the RI field work, additional Ecological Exposure Areas for OU2 may need to be considered (e.g. Maple Meadow Brook, Sawmill Brook, North Pond, and/or Landfill Brook).
20. Table 4.2-1, RAOs: The Potential Remedial Action Objectives listed in column 2 should also include the risk management criteria of the Massachusetts Contingency Plan (MCP).
21. Table 7.0-1, 2 and 3, ARARs: For the purpose of the RI/FS Work Plan, the "Actions to be Taken to Attain Requirement" are sufficient. However, for the Feasibility Study Report, the actions provided are too generic and will need to be written specific to the site conditions. For now, please insert the following ARARs:

Table 7.01 – Action-specific ARARs:

- 1. State surface water discharge permit program, 314 CMR 3, and NPDES, which may be applicable in the event the remedy requires discharges to surface waters.
- 2. State groundwater discharge permit program, 314 CMR 5, which may be applicable in the event the remedy requires discharges of pollutants to groundwater.

