

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**

Jeremiah W. (Jay) Nixon, Governor • Scott Holste, Interim Director

dnr.mo.gov

January 6, 2017

Mr. Joseph W. Smetanka, Managing Director  
Westinghouse Electric Company  
Hematite Decommissioning Project  
3300 State Road P  
Festus, MO 63028

Subject: Hematite Decommissioning Project – Work Plan for Vapor Intrusion Assessment,  
Revision 1, October 2016, HEM-16-67

Dear Mr. Smetanka:

The Missouri Department of Natural Resources (MDNR) has completed review of the subject Vapor Intrusion Work Plan Revision 1 (VIWP). The department also requested a review of the VIWP by the Missouri Department of Health and Senior Services (DHSS). The following comments are a compilation of MDNR and DHSS comments. Please revise the work plan to reflect the comments.

If Westinghouse is in general agreement with the comments we do not see need for additional MDNR review of the revised VIWP. Please confirm your intentions in writing including a description of any anticipated departure from activities recommended in the comments. If there is significant disagreement perhaps this could be resolved in a meeting or conference call before the plan is implemented.

Residential Samples, p. 2

1) Residences Northeast of the Central Tract Area: Information derived from the Conceptual Site Model (CSM), overburden groundwater PCE contours shown in Figure 1, PW-03 data, and the distance from the Central Tract Area (CTA) support a determination that VI sampling is not needed at this time. However, we note that there is no discussion or graphic presentation of overburden groundwater TCE concentrations or groundwater elevation contours in the VIWP. Information from pre-remediation Interim Groundwater Monitoring Plan (IGMP) reports relative to TCE concentration gradients and groundwater elevations also support a decision to forego sampling at the northeast residences. However, remediation in the northeast part of the CTA including open excavation in known TCE source areas may have impacted



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groundwater flow direction and concentrations. Information available from post-backfill monitoring events, which include data from newly installed monitoring wells, should be evaluated to determine if current conditions are consistent with earlier IGMP data.

The potential need for VI evaluation of the northeast residences should be reconsidered if the more recent data indicates a significant change.

2) Residence Southeast of the Central Tract Area: The VIWP references historic indoor VI sampling at this residence; no sub-slab samples were obtained. Details are not provided on sampling methods followed or the duration of sample collection. Weather conditions are not reported, however, the July and September dates indicate that relatively warmer outdoor conditions would be expected.

It is important that sampling reflect winter conditions, which typically present reduced ventilation and increased interior heating expected in that season. It is possible that a more detailed report of the two events could possibly address a part of the missing information, however, the lack of sub-slab and winter-season sampling cannot be resolved with information from the reported events.

We recommend that samples be collected from within the residence and corresponding sub-slab locations during the first monitoring event, which is expected to occur in a winter month. A determination of the need for additional sampling can be discussed after that data becomes available and more information on the historic sampling events has been provided. The need or lack of need for additional sampling could also be supported by conducting a preliminary risk assessment of the potential for vapor intrusion based on contaminant concentrations in groundwater, distance from the residence to the groundwater surface, and intervening soil or bedrock. Existing data from the more recent Interim Groundwater Monitoring Plan reports and Remedial Investigation boring logs should be sufficient for this purpose.

Investigative Approach, p. 4:

Sub-slab sample locations should be selected which are not directly adjacent to exterior walls or next to cracks or openings in the concrete slab. These areas are more likely to result in the escape of sub-slab soil gas.

Air Sampling Methods, p. 8:

VI sampling events must be scheduled during winter months to capture possible increases in vapor intrusion that can occur with use of the heating system and a possible increased pressure

gradient. We recommend that events are also conducted in the spring, when rain may affect groundwater levels. Four seasonal sampling events are typically required to capture the variability of temperature, barometric pressure, groundwater elevation, and structure venting that can affect vapor intrusion measurements. That being said, MDNR will consider a request from Westinghouse to change the number of sampling events after results of the first two events have been evaluated.

Data Evaluation, p. 10.

In addition to comparing indoor air concentrations to EPA's RSLs, the sub-slab VOC concentrations should be compared to appropriate sub-slab screening levels available from EPA's Vapor Intrusion Screening Level (VISL) calculator v. 3.5.1. In the VISL calculator, sub-slab screening levels are calculated from indoor air screening levels using an attenuation factor of 0.03. Decisions should then be based on both indoor air and sub-slab soil gas sampling results, rather than indoor air results alone.

For example, if TCE in indoor air doesn't exceed  $8.8 \text{ ug/m}^3$ , but at the same location TCE in sub-slab soil gas exceeds  $290 \text{ ug/m}^3$ , vapor intrusion may pose potential future health risks indicating a need to consider possible preemptive action.

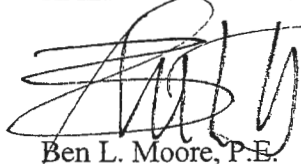
Figures:

Figures should be provided that depict post-remediation groundwater elevation contours and TCE concentration contours to assist in evaluation of the need for residential sampling. The figures should more clearly delineate the Central Tract Area and contaminant plumes in relation to site boundaries, important site features, and nearby residential properties.

If you have any questions, please contact me at (314) 877-3250 or (314) 810-3300, extension 330. Written inquiries can be directed to the Missouri Department of Natural Resources, 917 N. Highway 67 Suite 104 Florissant, Missouri 63031.

Sincerely,

HAZARDOUS WASTE PROGRAM



Ben L. Moore, P.E.

Federal Facilities Section

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BM:rl

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