August 7, 2013

Via E-Mail

Ms. Tammie J. Hynum
Chief, Hazardous Waste Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Re: Whirlpool Corporation, Fort Smith, Arkansas
Final Remedy Work Plan Soil Gas Sampling Program
EPA No. ARD042755389 AFIN No. 66-00048

Dear Ms. Hynum:

As we discussed during our phone conversation August 1, 2013, the July 16, 2013 Final Remedy Work Plan (Work Plan) submitted by ENVIRON on behalf of Whirlpool presented activities to collect additional soil gas data in the offsite residential area north of Ingersoll Avenue to further substantiate there is no unacceptable risk from vapor intrusion at the site. As agreed to during the call, ENVIRON is submitting the relevant section from the Work Plan for ADEQ to review. Upon ADEQ's approval, this work will commence independent of the Revised Risk Management Plan (RRMP) and Work Plan currently being reviewed by ADEQ. As requested, below is the text from Section 3.4 of the Work Plan.

3.4 Soil Vapor Monitoring

Whirlpool installed soil gas monitoring points in May 2012 to collect soil gas data to provide an additional line of evidence to compliment the vapor intrusion modeling analysis completed to date. These soil gas data and the vapor intrusion modeling results have been presented in the RRMP. The soil gas data collected over the off-site plume to date[1] show that TCE volatilizes from the groundwater and the TCE vapor reaches levels that are not indicative of a public health concern by the time it is within seven feet of the ground surface, if not sooner, at the locations monitored to date. These data show the vapor intrusion pathway from groundwater through the overlying soil terminates at a soil depth well below the ground surface and therefore well below any residential structure. These findings corroborate the modeling results which indicate vapor intrusion is not occurring at levels that would present a public health concern.

Although the existing soil gas monitoring results already provide data that corroborates the conclusion that there is no unacceptable vapor intrusion risk from the Site, Whirlpool concluded that additional soil gas monitoring points should be installed in order to enhance coverage of the off-site plume. As discussed in the RRMP submitted to ADEQ, the performance monitoring activities for the site will include a soil gas monitoring plan. The

[1] Included in Table 4 of Appendix A in the May 21, 2013 Revised Risk Management Plan (ENVIRON 2013).

objective of this soil gas monitoring component is to provide the community with additional assurance that the off-site groundwater plume north of the Site does not present a concern for vapor intrusion into the indoor air of buildings overlying the plume. Whirlpool will evaluate the additional soil gas data following the approach used in the RRMP and as part of the overall evaluation of remedy performance.

Whirlpool will work with the ADEQ to select appropriate locations for additional soil gas monitoring points to augment the existing soil gas monitoring points. The new soil gas monitoring points will provide additional lateral coverage over the off-site groundwater plume area. The locations of the additional soil gas monitoring points will be selected based on proximity to: (1) existing off-site groundwater monitoring wells with higher concentrations of TCE, and (2) an occupied residential building. The idea is to install additional soil gas monitoring points at locations that have higher potential for vapor intrusion to occur compared with other locations in the area. Proposed additional soil gas monitoring locations are shown on Figure 6.

At each of these locations, monitoring points will be installed at two depths between the ground surface and the groundwater (as shown on Figure 7). The first will be installed just above the groundwater surface to characterize the soil gas due to volatilization of TCE from the groundwater. The second monitoring point will be installed at a depth approximately midway between the groundwater surface and the ground surface, or at least five feet below ground surface, to characterize the degree to which TCE in vapor from the groundwater is or is not migrating to the shallower depth. Soil gas samples will be collected using USEPA and industry standard methods and analyzed for TCE and breakdown components by an accredited analytical laboratory. Soil cuttings generated during the installation of these monitoring points will be containerized, characterized, and disposed of at a licensed disposal facility.

In the event these additional soil gas monitoring data are inconsistent with the current findings; Whirlpool will propose additional investigation that is appropriate for addressing the findings. Such additional investigation may include the collection of sub-slab soil gas samples from under existing residences with concrete slabs. The sub-slab soil gas data would be used to determine if the vapor intrusion pathway from groundwater actually extends to a particular building foundation and presents a potential for significant soil gas entry through the slab. If the targeted sub slab sampling indicates potential for vapor intrusion into the residence, indoor air data will then be collected. These data would be used to determine whether vapor intrusion into indoor air is actually occurring, and if so, the degree of significance.

Whirlpool's plan to assess sub-slab soil before indoor air has the advantage of reducing the impact of potential indoor and/or outdoor sources of TCE[2,3]. The need to avoid having assessment results affected by background levels of TCE from indoor and outdoor sources, or "false positives", is particularly important because TCE is or has been an ingredient in many common household products, including lubricants, adhesives, adhesive removers,

[2] Interstate Technology Regulatory Council (ITRC). 2007. Technical and Regulatory Guidance. Vapor Intrusion Pathway: A Practical Guideline. January.

[3] United States Environmental Protection Agency (USEPA). 2011. Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences (1990 – 2005): A Compilation of Statistics for Assessing Vapor Intrusion. EPA 530-R-10-001. Office of Solid Waste and Emergency Response, Washington DC. June.

automotive and household cleaners, aerosol and liquid spot removers, oven cleaners, silicone lubricants, and aerosol gun cleaners. Because of such indoor sources, it is not unusual to find measureable levels of TCE in residential indoor air even when no vapor intrusion is occurring. In fact, a recent EPA report showed that it is not unusual for background indoor air levels of TCE in residences to exceed EPA indoor air screening levels[6] in locations in which no TCE is known to be present from any source other than products found in the home. For these reasons, Whirlpool is following the industry recommended practice of gathering sub-slab soil gas data in order to distinguish vapor intrusion from impacts on indoor air due to other sources of TCE.[4]

ENVIRON and Whirlpool appreciate ADEQ's willingness to consider moving forward with the additional soil vapor data collection activities. If you have any questions or comments please contact me at your earliest convenience.

Sincerely,

Gregory R. Gillespie
Principal Consultant

Cc: Robert Karwowski – Whirlpool Corporation
Ray Gosack – City of Fort Smith Arkansas

[4] Final Remedy Work Plan, June 2013, Section 3.4

FILE: D:\GIS\PROJECT\WHIRLPOOL\DOCS\20130707_PreDesignWorkplan\Figure 6 - Proposed Additional Soil Gas Locations.mxd

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PROPOSED ADDITIONAL SOIL GAS LOCATIONS

Whirlpool Facility - Fort Sm ith, Ark an sas

Figure 6

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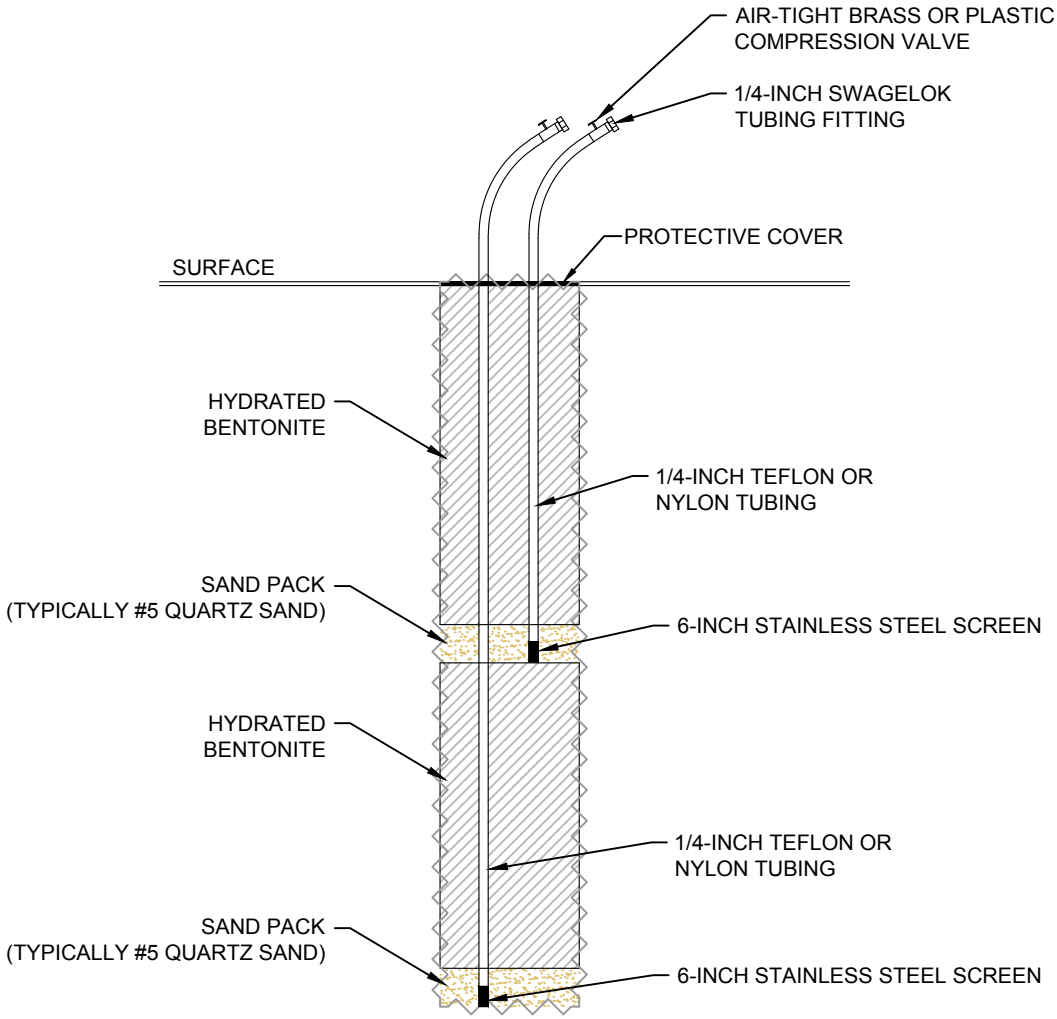

DRAFT

ENVIRON

TYPICAL NESTED SOIL GAS MONITORING POINT CONSTRUCTION DETAILS
WHIRLPOOL CORPORATION
6400 JENNY LIND ROAD
FORT SMITH, ARKANSAS

FIGURE
7

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