



August 8, 2014

Mr. Mostafa Mehran  
Arkansas Department of Environmental Quality  
5301 Northshore Drive  
North Little Rock, AR 72118

**Re: Property Boundary Supplemental Work Plan and Response to  
July 8, 2014 ADEQ Correspondence  
Whirlpool Corporation  
Fort Smith, Arkansas  
EPA No. ARD042755389  
AFIN No. 66-00048  
CAO LIS 13-202**

Dear Mr. Mehran:

ENVIRON International Corporation (ENVIRON), on behalf of Whirlpool Corporation, is submitting this Property Boundary Supplemental Work Plan to perform additional on-site supplemental investigation generally near the boundaries of the Whirlpool facility in Ft. Smith, Arkansas. In addition, this Property Boundary Supplemental Work Plan includes performance of interior shallow borings in response to the July 8, 2014 ADEQ letter requesting investigation of shallow soil near interior MIP locations M-86, M-87 and M-100. Supplemental investigation is needed under the Adaptive Remedy Process to assess the potential migration of trichloroethene (TCE) impact in soil or groundwater beyond the Whirlpool facility property boundaries at select locations where previous investigation has not been performed and hydrogeologic conditions suggest confirmation data should be collected. This supplemental investigation will also assess soil and groundwater conditions at the approximate boundary separating the manufacturing building and warehouse building as part of a cooperative due diligence effort for this pending property transaction.

## **SUPPLEMENTAL INVESTIGATION WORK PLAN**

MIP screening probes will be employed to screen select onsite locations as depicted on the attached figure (Figure 1). The actual locations for the probes will be determined in the field based upon access, utility locations, as well as consideration of MIP screening results as this screening effort progresses. Soil probes for collection of discrete soil and groundwater samples will be employed to collect data generated at select locations where TCE impact may exist based upon the MIP screening results.

Membrane Interface Probe (MIP) probes will be performed with direct push technology with continuous profiling to generate screening data to refine and focus further probe efforts. MIP is a direct push tool used to log the relative concentration of VOCs with depth in soil and groundwater. MIP provides a semi-quantitative, continuous vertical profile to screen for the presence of VOCs. Results are provided real-time; therefore, allowing adaptive and efficient

screening characterization for multiple locations. MIP locations exhibiting relatively high responses [i.e. based upon previous MIP investigations, relative high responses generally consist of electron capture device (ECD) responses of  $1 \times 10^7$   $\mu\text{V}$  or greater] will be further investigated by performance of soil probes as appropriate to further characterize the screening results.

Soil probes to further investigate select MIP locations will be performed with direct push technology. We currently anticipate performing five to six soil probes to further investigate MIP locations exhibiting relatively high responses; although, the exact number of soil probes will be dependent upon the MIP results. The soil probes will be continuously sampled to probe refusal at or near the surface of shale bedrock expected to be encountered between approximately 24 feet and 30 feet below ground surface (bgs). Soil samples will be field screened with a photoionization detector (PID) for the presence of volatile organic vapors. Two soil samples will be selected from each probe consisting of one soil sample from the Vadose Zone soil selected from the depth exhibiting the highest field screening measurement in the respective boring, and one saturated soil sample from the Basal Transmissive Zone also selected from the depth exhibiting the highest field screening measurement. If PID field screening fails to identify an impacted soil interval in the Vadose or Basal Transmissive Zone, the sample will be collected from the most transmissive zone observed by the logging geologist. Soil samples will be collected utilizing the 5035 kits for analyses of volatile organic compounds (VOCs) using EPA Method 8260.

Groundwater samples will be collected from each soil probe through temporary polyvinyl chloride (PVC) screen or temporary stainless steel direct push screen installed in the saturated zone. Samples will be collected using dedicated low density polyethylene tubing equipped with a check ball on the bottom by manually surging the tubing, or samples will be collected with a peristaltic pump. The water samples will be analyzed for VOC's using EPA Method 8260.

Shallow soil probes at MIP locations M-86, M-87 and M-100 will be performed to characterize the impact identified by relatively high ECD responses identified in shallow soil at these locations during the previous MIP screening efforts. Soil probes at these interior locations will be advanced to a depth of 15 feet or to the surface of groundwater, whichever occurs first, to characterize the shallow soil. The previous MIP screening results for the respective MIP locations indicated that the maximum ECD responses in shallow soil were encountered at the depths summarized below:

- M-86: 2 to 4 feet below the floor surface (the maximum total ECD response at these depths is less than  $1 \times 10^7$   $\mu\text{V}$ ; ECD responses of  $0.2 \times 10^7$   $\mu\text{V}$  or less are noted at depths greater than 15 feet below the floor surface);
- M-87: 2 to 5 feet and 13 to 14 feet below the floor surface (these depths correspond to depths of the maximum total ECD responses greater than  $1 \times 10^7$   $\mu\text{V}$ ; ECD responses

of  $0.6 \times 10^7 \mu\text{V}$  or less are noted at depths greater than 15 feet below the floor surface);  
and

- M-100: 2 to 3 feet below the floor surface (depth where the maximum total ECD response was greater than  $1 \times 10^7 \mu\text{V}$ ; ECD response of  $0.1 \times 10^7 \mu\text{V}$  or less are noted at depths greater than 15 feet below the floor surface);

The interior shallow soil probes will be continuously sampled to 15 feet (or to surface of groundwater, if encountered at depths less than 15 feet). Soil samples will be field screened with a photoionization detector (PID) for the presence of volatile organic vapors. Two soil samples will be selected from each probe consisting of one soil sample from the depth exhibiting the highest ECD response as noted above and one soil sample from the total depth of the soil boring to assess whether potential shallow soil impact is migrating vertically (the deeper soil sample will be collected from Vadose Zone soil). Soil samples will be collected utilizing the 5035 kits for analyses of volatile organic compounds (VOCs) using EPA Method 8260.

Soil probes will be properly abandoned after completion of MIP screening and/or collection of discrete soil and groundwater samples.

## **SCHEDULE**

The investigational field work described above is scheduled to initially commence during the week of August 4, 2014. Field activities consisting of performance of MIP screening probes and soil probes for collection of discrete soil and groundwater samples is anticipated to require three weeks to complete. If necessary, installation of permanent groundwater monitoring wells is anticipated to occur in September after receipt of all data from soil probe activities. Installation and sampling of permanent groundwater wells is anticipated to require one week to complete. A letter report documenting the results of the investigation will be submitted to ADEQ after the investigation is complete (this letter report will also be attached to the Third Quarter Progress Report).

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If you have any questions or comments please contact me at your earliest convenience.

Sincerely,

**ENVIRON International Corporation**



Michael F. Ellis, PE  
Principal

**LIST OF ATTACHMENTS**

Figure 1: Proposed Boring Locations

