



May 20, 2014

SENT VIA ELECTRONIC AND OVERNIGHT MAIL

Mr. Charles Johnson
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118

**Re: Supplement to February 2014 Final Remedy Work Plan
Second ISCO Injection Event
Whirlpool Corporation Facility – Fort Smith, Arkansas
EPA No. ARD042755389
AFIN No. 66-00048
CAO LIS 13-202**

Dear Mr. Johnson:

In accordance with the Remedial Action Decision Document (RADD) issued by the Arkansas Department of Environmental Quality (ADEQ) on December 27, 2013, ENVIRON, on behalf of Whirlpool Corporation, is submitting information related to the second in-situ chemical oxidation (ISCO) injection event scheduled to commence on May 27, 2014, at the former Whirlpool site located in Fort Smith, Arkansas. A part of the adaptive remedy approach, the plan for this second injection event incorporates information obtained during the first ISCO injection event in March of 2014, as well as the bench scale and tracer testing completed earlier this year. This round of ISCO treatment will be completed along with other additional actions to address concentrations of TCE discovered in a specific area of soil on the Whirlpool property, as discussed during recent weeks with ADEQ. Per your request, we will provide more details next week regarding plans for the remediation of that soil. Collectively, these upcoming steps show the strength of the adaptive remedy approach at work, as we are able to utilize the latest scientific data to develop and implement the most effective remedial actions to address current onsite and offsite conditions.

The upcoming ISCO treatment event will involve the injection of previously identified and tested chemical oxidants into the target zones in the amounts and pressures determined to most effective in remediating the TCE. Specifically, the ISCO reagents, including base activated sodium persulfate (BASP) and Modified Fenton's reagent (hydrogen peroxide and chelated iron) activated sodium persulfate (MASP), will be introduced into the shallow water bearing zone via two-inch diameter wells and direct push equipment. The location of the injection points is presented on the attached Figure 1. This oxidant injection event is a component of the final remedy defined by the RADD. This final remedy action is being completed via an adaptive remedy process defined by the February 24, 2014, Final Remedy Work Plan (FRWP). Data collected during and after oxidant injection will be used to refine the implementation of subsequent phases of this adaptive remedy.

As previously discussed in FRWP and ENVIRON's April 3, 2014 Response to ADEQ Comments on the FRWP, during this second ISCO injection event, the injections will occur in four areas;

Areas 1, 2 and 3 and the supplemental neck area. As shown on the attached figure, approximately 8,200 gallons of oxidant will be injected in 11 existing permanent wells and 20 additional temporary points via Geoprobe® technology at Injection Array 1 (the neck area). Approximately 14,000 gallons of oxidant will be injected into ten existing permanent wells and 40 additional temporary points at Injection Array 2 (Areas 2 and 3). Approximately 3,000 gallons of oxidant will be injected into ten temporary points within Area 1. It should be noted that discussions regarding additional remedial effort in Area 1 will be submitted under separate cover to ADEQ by May 27, 2014.

Based on the March 2014 injection event, the oxidant solution will be delivered into the subsurface via the existing permanent injection wells at pressures ranging from zero to 20 pounds per square inch (psi) and flow rates of 0.5 to 4 gallons per minute (gpm). Injection pressures and flow rates may vary over a broader range for oxidant delivered via the direct push equipment for the temporary injection points. The oxidant delivered via temporary direct points will be injected into a specially designed 5 foot injection screen. During direct push injection, the drill string will be advanced to the base of the target treatment zone [within the clayey sand and gravel layer at depths ranging from approximately 20 to 30 feet below ground surface (bgs)], the drill rods pulled back to expose the injection screen then surface connections will be completed to facilitate injection. During injection, the instantaneous flow rate and pressure at the wellhead and injection points will be monitored and recorded at routine intervals.

ADEQ representatives are welcome to participate in the field activities related to this second ISCO injection event.

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: Second 2014 Event Injection Locations

cc: Mostafa Mehran – ADEQ
Robert Karwowski – Whirlpool Corporation

FIGURE

FILE: D:\GIS\PROJECT\WHL\PCOU\DOCS\2014\0506_Inject\SC01\Figure 4 - Workplan - Second 2014 Injection Event Locations - 20140512.mxd

- Proposed Injection Well (IW)
- Temporary Injection Point (IP)
- Existing Monitoring Well (MW)
- Existing Injection Well (IW)
- Existing Injection Well to Sample/Monitor
- Proposed Treatment Areas 1, 2 and 3
- Injection Work Area
- Approximate Property Boundary

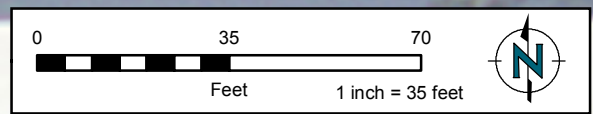
Temporary IP's	40
Existing IW's	10
Volume - Up to 14,000 gal	

Temporary IP's	20
Existing IW's	11
Volume - Up to 8,200 gal	

Temporary IP's	10
Volume - Up to 3,000 gal	

ENVIRON WORK PRODUCT
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Note
The number and location of injection points and final injected volume(s) are approximate and will be adjusted as needed based on field conditions



DRAFTED BY: KTS DATE: 05/13/2014

SECOND 2014 INJECTION EVENT LOCATIONS

Whirlpool Facility - Fort Smith, Arkansas

Figure
1

PROJECT: 3433253A