PBW

Consulting Engineers
and Scientists

PASTOR, BEHLING & WHEELER, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, TX 78664

Tel (512) 671-3434
Fax (512) 671-3446

February 5, 2013
PBW Project No. 1358

VIA EMAIL

Mr. Mark Arthur
MC-127
Environmental Cleanup Section I, Team 3, Remediation Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Re: Proposed DNAPL Recovery Pilot Test
Union Pacific Railroad Houston Wood Preserving Works Facility
4910 Liberty Road Facility, Houston, Texas
Post-Closure Care Permit No. HW-50343; Industrial SWR No. 31547

Dear Mr. Arthur:

Pastor, Behling & Wheeler, LLC (PBW), on behalf of Union Pacific Railroad Company, is providing this letter to describe a dense non-aqueous phase liquid (DNAPL) recovery pilot test proposed to be conducted at the Houston Wood Preserving Works Facility (the Site). The pilot test is scheduled to be initiated in February 2013, with a proposed duration of 24 months. This letter outlines the background of the previous DNAPL recovery pilot test, and discusses the procedures and reporting for the proposed DNAPL recovery pilot test.

Background – Preliminary DNAPL Recovery Pilot Test, 2010
PBW conducted a preliminary DNAPL recovery pilot test involving seven monitoring wells (MW-12B, MW-32A, MW-41B, MW-23C, MW-44C, MW-45C and MW-46C) at the Site. The test was conducted between May 2010 and May 2011. From May through October 2010, five monthly recovery events were performed by manually pumping the creosote DNAPL from the selected wells. Approximately 38 cumulative gallons of DNAPL were recovered (Figure 1). Gauging of the DNAPL thickness was performed prior to and after each recovery event.

As shown on Figure 1, DNAPL thicknesses in the wells tested diminished significantly after each recovery event, and did not recover much between each monthly event. The decrease in DNAPL thickness ranged between 14.7 feet (MW-41B) to 1.0 feet (MW-23C). Following the last recovery event in October 2010, DNAPL thicknesses in each of the seven wells increased slightly but remained relatively stable through May 2011 and July 2011, when the wells were gauged during the semi-annual groundwater monitoring event. However, between July 2011 and January/February 2012, DNAPL thicknesses rebounded in three of the seven wells tested to levels similar to pre-pilot test levels measured in May 2010.

The preliminary DNAPL recovery test indicated that the wells that were tested did not produce enough creosote DNAPL to maintain pre-test DNAPL thicknesses when DNAPL was recovered on a monthly basis.

Proposed DNAPL Recovery Pilot, February 2013 through January 2015

As a follow up to the preliminary DNAPL recovery test, PBW proposes to conduct a longer-term DNAPL recovery pilot test to have a longer duration and include more wells relative to the preliminary pilot test. The objective of the recovery test is to evaluate recovery of the creosote DNAPL using the Site wells and assess the recoverability of the DNAPL for development in the Response Action Plan (RAP) for the Site.

PBW proposes to conduct the DNAPL recovery test at 12 monitoring wells located both on and off the Site for a period of 24 months. The following monitoring wells were selected to be included in the proposed DNAPL recovery test based on the amount of DNAPL observed in the wells:

Well Name	Zone	Total Depth (ft. BGS)	Avg. Depth to Water (ft. BTOC)	Min. DPNAL Thickness (ft.)	Max DNAPL Thickness (ft.)
MW-57A	A-TZ	30.0	10.99	4.11	4.25
MW-12B	B-TZ	45.0	7.78	0.41	5.70
MW-41B	B-TZ	40.0	7.36	5.06	24.14
MW-57B	B-CZ	40.0	28.38	0.44	0.50
MW-32B	B-CZ	40.0	3.46	5.77	6.13
MW-33BR	B-CZ	40.0	3.33	0.30	0.30
MW-70B	B-CZ	40.0	6.29	1.44	1.53
MW-75B	B-CZ	40.0	9.20	1.84	1.90
MW-34C	C-TZ	72.0	17.97	7.24	7.60
MW-44C	C-TZ	70.0	17.9	0.75	7.10
MW-45C	C-TZ	70.0	17.9	0.39	1.50
MW-46C	C-TZ	72.0	12.47	0.10	1.25

Notes:
Average depth to water values, minimum and maximum DNAPL thicknesses based on data collected between January, 2011 and December, 2012.

Figure 2 shows the location of the wells that will be included in the proposed pilot study. For the purposes of this proposed pilot study, we have assumed that recovery efforts will be conducted approximately on a monthly basis. However, if DNAPL recovery rates in the wells indicate slow recovery, a reduced recovery frequency (i.e., quarterly) will be evaluated for those wells.

Procedures

The following describes the methods to be carried out for the DNAPL recovery pilot tests. Before any product is removed from the wells, the depth to groundwater surface, the depth to the groundwater/DNAPL interface, and the total depth of the well will be measured relative to the top of the well casing. Using an inertial-style pump, peristaltic pump, or other similar pumping device, DNAPL will be slowly pumped from the bottom of the well until groundwater is encountered in the pump discharge. The volume of recovered DNAPL will be estimated from each well using either a graduated bucket or based on the recovered flow rate. Once groundwater is encountered, pumping will cease and the well will be gauged to measure the total depth of the well and depth to DNAPL following pumping. Recovered DNAPL and all PPE will be temporarily stored, properly labeled and dated in separate drums at the 90-Day Containment Storage Area, to be properly disposed of by a UPRR-approved contractor.

Reporting – DNAPL Recovery Pilot Test Semi-Annual Status Reports
PBW proposes to submit semi-annual status reports to the TCEQ detailing the progress of DNAPL recovery. The report will include a brief discussion on the recovery efforts and waste disposition of the recovered DNAPL. Data collected from the recovery test will be incorporated into the RAP to be submitted to the TCEQ.

If you have any questions or need additional information, please feel free to call me at (512) 671-3434 or Mr. Geoffrey Reeder of UPRR at (281) 350-7197.

Sincerely,

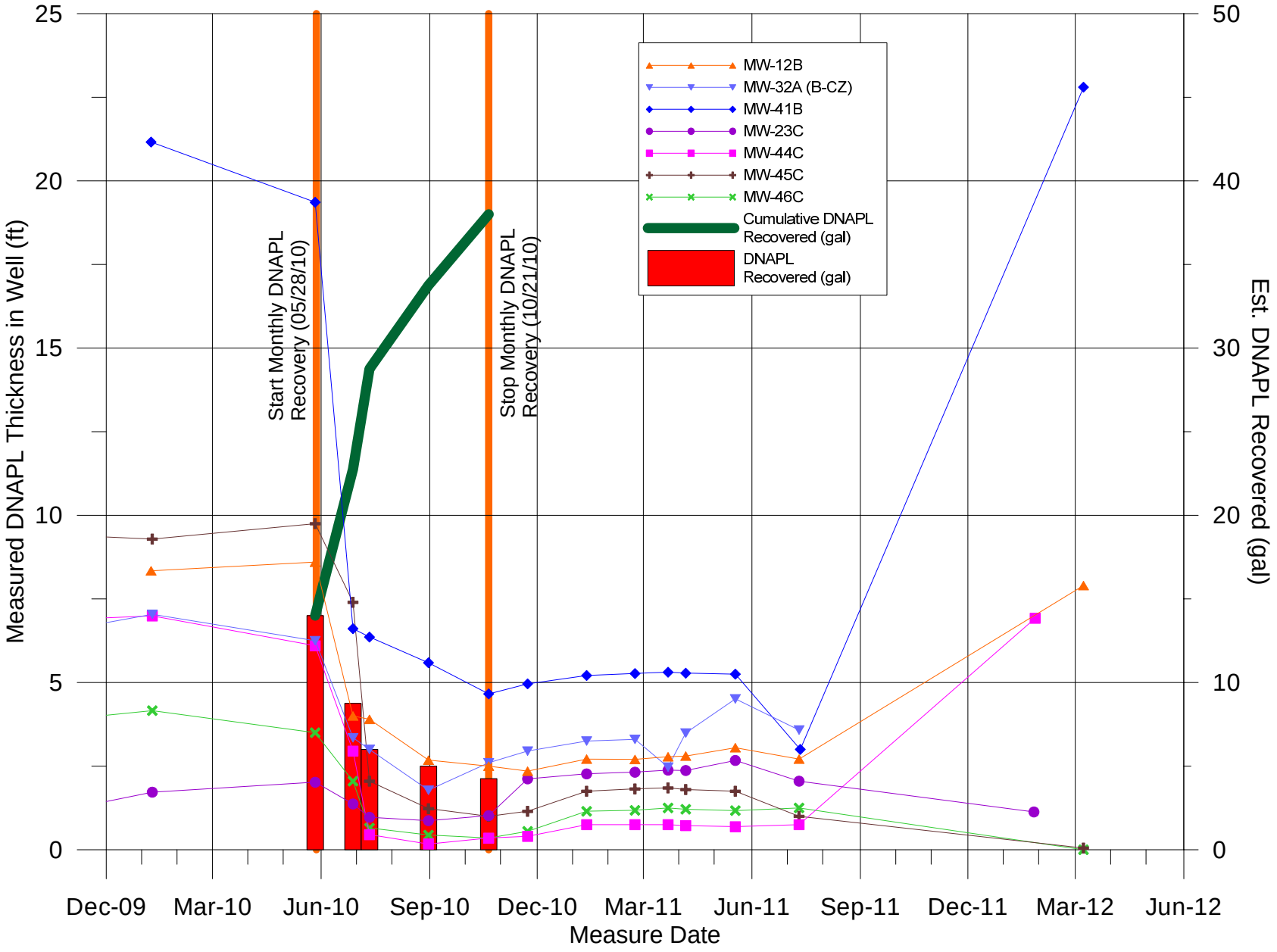
PASTOR, BEHLING & WHEELER, LLC

Eric C. Matzner, P.G.
Senior Hydrogeologist

cc: Waste Program Manager, TCEQ Region 12, Houston
Mr. Geoffrey Reeder, P.G., UPRR – Spring, TX

FIGURES

Figure 1
DNAPL Recovery Pilot Test 2010-2011
UPRR Houston Wood Preserving Works



EXPLANATION

- UPRR Property Boundary
- Road, Parking Lot, Sidewalk
- Fence
- Railroad
- A-TZ Monitoring Well Location
- B-TZ/B-CZ Monitoring Well Location
- C-TZ Monitoring Well Location
- D-TZ Monitoring Well Location
- (0.5) DNAPL Thickness (Ft)

MW-27A
MW-27C
MW-67B
MW-53C
MW-65D
MW-28C
MW-28A
MW-63B
MW-54C
MW-68C
MW-68B
MW-26A
MW-33BR
(0.3)
MW-36B
MW-36D
MW-45C
(0.39)
MW-46C
(0.1)
MW-66D
MW-36A
MW-44A
MW-25C
MW-25A
MW-44C
(7.1)
MW-33A
MW-35B
MW-35A
MW-32AR
MW-32B
(6.31)
MW-70B
(1.53)
MW-71B
MW-34C
(7.24)
MW-57B
(0.5)
MW-57A
(4.25)
MW-18C
MW-58A
MW-18A
MW-60A
MW-47C
MW-13
MW-15C
MW-17
MW-17C
MW-30A
MW-23C
MW-72B
MW-52A
TW-56A
MW-14
MW-15A
MW-15B
MW-20A
MW-31A
MW-19C
MW-55B
MW-55A
MW-73B
MW-74B
MW-49B
MW-48C
MW-49A
MW-61A
MW-39B
MW-38A
MW-12C
MW-40B
MW-12A
MW-38B
MW-12B
(5.7)
MW-42B
MW-16
TW-41B
MW-62B
MW-41B
(24.14)
MW-69A
MW-59A
MW-59B
MW-59D
MW-75B
(1.9)
P-11
MW-02
MW-01A
MW-03
MW-10A
MW-08
P-12
MW-22A
MW-10B
MW-09
MW-22B
MW-11B
MW-11A
P-10
MW-04
MW-07
MW-21C
MW-05
MW-24C
MW-24B
MW-24AR
MW-64A
MW-50A
MW-51A

N

Approx. Scale in Feet
0 200 400

SOURCE:
Base map from ERM-Southwest, Inc APAR Addendum, Fig 3-1, dated June 2004.

UNION PACIFIC RAILROAD CO.

HOUSTON WOOD PRESERVING WORKS

Figure 2

DNAPL THICKNESS MAP
JAN. - JULY, 2012

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: JAN., 2013	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS