

March 9, 2022

Reference No. 19119232

Ms. Maureen Hatfield

MC-127
 VCP-CA Section, Remediation Division
 Texas Commission on Environmental Quality
 P.O. Box 13087
 Austin, TX 78711-3087

**RE: DNAPL RECOVERY ACTIVITIES QUARTERLY REPORT – 4TH QUARTER 2021
 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 Ms. Hatfield:

Golder Associates USA Inc. (Golder), a member of WSP, on behalf of Union Pacific Railroad Company (UPRR), submits this 4th Quarter 2021 summary report for the dense non-aqueous phase liquid (DNAPL) recovery activities conducted at the UPRR Houston Wood Preserving Works Facility (the Site). As detailed in the Response Action Plan (RAP) dated November 24, 2014, a 24-month DNAPL recovery pilot test, consisting of manual DNAPL recovery from selected wells on a monthly basis, was conducted at the Site. Following the 24-month pilot testing period, the DNAPL recovery activities have continued monthly following the same procedures detailed in the RAP. In response to the Texas Commission on Environmental Quality (TCEQ) Technical Notice of Deficiency dated April 11, 2019, the DNAPL recovery frequency was increased to bi-monthly (twice a month) in June 2019. The following monitoring wells are part of the current DNAPL recovery activities:

Well Name	Zone
MW-57A	A-TZ
MW-78A	A-TZ
MW-12B	B-TZ
MW-32B	B-CZ
MW-41B	B-TZ
MW-49B	B-CZ
MW-57B	B-CZ
MW-68B	B-TZ
MW-70B	B-CZ
MW-74B*	B-TZ
MW-75B	B-CZ
MW-23C	C-TZ
MW-34CR	C-TZ
MW-44C	C-TZ

Well Name	Zone
MW-45C	C-TZ
MW-46C	C-TZ

* Well MW-74B was added to the list of recovery wells beginning in May 2021 after measurable DNAPL was noted during site-wide gauging activities. The locations of the DNAPL recovery wells are shown on Figure 1.

DNAPL recovery activities consist of measuring the depth to groundwater surface, the depth to groundwater/DNAPL interface, and the total depth of the well relative to the top of casing prior to DNAPL recovery. DNAPL recovery from each well is then performed using a peristaltic pump or submersible pump. Beginning in October 2019, the DNAPL encountered in MW-12B and MW-41B was too thick for the submersible pump to efficiently recover. Two stainless steel pneumatic pulse pumps (gas displacement pumps) from QED Environmental Systems (model LP1301) were installed in MW-12B and MW-41B on March 30, 2020. These pumps are designed for recovering the more viscous liquids observed in these wells. DNAPL is pumped from the bottom of each well until groundwater returns in the pump discharge. The volume of recovered DNAPL is estimated from each well based on the volume pumped, and the well is gauged to measure the total depth of the well and depth to DNAPL following pumping. Recovered DNAPL from all the wells is consolidated into a 55-gallon drum and temporarily stored at the Containment Storage Area at the Site pending disposal at the Clean Harbors Deer Park TCEQ-permitted facility in La Porte, Texas or the US Ecology Robstown facility in Robstown, Texas. The most recent waste manifest for the disposal of recovered DNAPL and groundwater is provided in Attachment 1.

A summary of the DNAPL recovery measurements from February 2013 through December 2021 is provided in Table 1. DNAPL thicknesses listed on the table and referenced in this letter are “in-well thicknesses”. A graph of DNAPL thicknesses prior to each recovery effort over time from February 2013 through December 2021 is presented on Figure 2, with individual graphs for each zone and/or portion of the Site (Figures 3 through 7) discussed below. Observations from the 4th Quarter 2021 gauging and recovery activities are provided below for each of the groundwater bearing units (GWBUs):

- **A-TZ Wells:** Two monitoring wells in the A-TZ have had measurable DNAPL detected: MW-57A and MW-78A (graph of DNAPL thickness from July 2018 through December 2021 shown on Figure 3).
 - **MW-57A:** No DNAPL was detected in MW-57A during the 1st, 2nd, 3rd, or 4th Quarters of 2021. DNAPL has not been detected in this well since May 2019 where a trace was measured.
 - **MW-78A:** No DNAPL was detected in MW-78A during the 1st, 2nd, or 3rd Quarters of 2021. During the 4th Quarter of 2021, a trace amount of DNAPL was detected (trace) but not measurable during the December 30, 2021 event. Fluid levels in MW-78A were not measured on October 20, 2021. The well was inaccessible during this DNAPL recovery event due to ongoing container operations in the intermodal yard.
- **B-TZ Wells (West Side):** Recovery wells MW-12B and MW-41B completed in the B-TZ were evaluated for DNAPL recovery during this period (graph of DNAPL thickness from July 2018 through December 2021 shown on Figure 4).

MW-12B: During all of the 1st, 2nd, and 3rd Quarter 2021 recovery events, the groundwater/DNAPL interface was below the top of the pneumatic pulse pump at MW-12B. As a result, the interface probe could not get past the pump assembly and it was not possible to record a DNAPL thickness in the well. On October 8, 2021 the pump was removed in order to verify the total depth of the well and length of the pump. The pump length was measured to be 1.55 feet. While the pump was removed on October 8, 2021, DNAPL thickness measured 0.10 feet. The pneumatic pump was not run during the October 8th event due to the low DNAPL volume. On October 20, 2021 a DNAPL thickness of 1.70 feet was measured. The groundwater/DNAPL interface was below the top of the pump for the remainder of the 4th Quarter 2021. Based on the measured length of the pump assembly, the assumption is there is less than 1.55 feet of DNAPL in the well. Zero gallons of DNAPL were recovered using the pneumatic pump from MW-12B during the 4th Quarter 2021.

- **MW-41B:** Similar to MW-12B, the top of the groundwater/DNAPL interface in MW-41B was below the top of the pneumatic pulse pump, so it was not possible to record a DNAPL thickness during the 1st, 2nd, and 3rd Quarter 2021 recovery events. On October 8, 2021 the pump length was measured to be 1.55 feet. While the pump was removed on October 8, 2021, DNAPL thickness measured 0.68 feet. The pneumatic pump was not run during the October 8th event due to the low DNAPL volume. On October 20, 2021 a DNAPL thickness increased to 1.80 feet. On November 4, 2021 increased to 2.81 ft. The groundwater/DNAPL interface was below the top of the pump for the remainder of the 4th Quarter 2021. Based on measured length of the pump assembly, the assumption is there is less than 1.55 feet of DNAPL in the well. Approximately 0.3 gallons of DNAPL were recovered using the pneumatic pump from MW-41B during the 4th Quarter 2021.
- **B-TZ/B-CZ Wells (North (on-site and off-site)):** Recovery wells MW-32B, MW-57B, MW-68B, and MW-70B completed in either the B-TZ or B-CZ on the north side of the Site or off-site to the north were evaluated for DNAPL recovery during this period (graph of DNAPL thickness from July 2018 through December 2021 shown on Figure 5).
 - **MW-32B:** During the 4th Quarter 2021, DNAPL thicknesses in MW-32B decreased from approximately 3.70 feet in early October to 2.79 feet in mid-November. DNAPL thickness in MW-32B increased to 3.70 feet in early December and decreased again to 2.37 feet by late December. Approximately 8.0 gallons of DNAPL were recovered from MW-32B during the 4th Quarter 2021.
 - **MW-57B:** Since June 2016, no measurable DNAPL has been detected in MW-57B. A trace amount of DNAPL was noted in MW-57B in January 2019 through May 2019. Through December 16, 2021 no DNAPL was detected. A trace amount was noted on December 30, 2021.
 - **MW-68B:** DNAPL was not detected in MW-68B during four of the seven recovery events of the 3rd Quarter 2021. No DNAPL was detected during 4th Quarter 2021.

- **MW-70B:** During the 4th Quarter 2021, DNAPL was detected during two of the seven recovery events. DNAPL thickness was approximately 0.38 feet on October 20, 2021 and a trace of DNAPL was noted on December 30, 2021. No DNAPL was recovered from MW-70B during the 4th Quarter 2021.
- **B-TZ/B-CZ Wells (Englewood Intermodal Yard):** Recovery wells MW-49B, MW-74B, and MW-75B in the Englewood Intermodal Yard completed in the B-CZ and B-TZ were evaluated for DNAPL recovery during this period (graph of DNAPL thickness from July 2018 through December 2021 shown on Figure 6).
 - **MW-49B:** DNAPL was detected in MW-49B during only one of the seven recovery events of the 4th Quarter 2021. A DNAPL thickness of 1.82 feet was detected on October 20, 2021. Approximately 0.1 gallons of DNAPL were recovered from MW-49B (October 20th) during the 4th Quarter 2021.
 - **MW-74B:** During the January 2021 site-wide gauging event, DNAPL was first detected in MW-74B with an in-well thickness of 1.30 feet. DNAPL recovery events for MW-74B began during the 2nd Quarter 2021. In early July 2021, DNAPL thickness was approximately 0.92 feet and increased to 1.78 feet by late August. DNAPL thickness decreased to 0.59 feet by late September then fluctuated between 0.19 feet and 1.42 feet through the first week of November. From November 18th through December 30th, no DNAPL was detected except for a trace on December 30th. Approximately 0.3 gallons of DNAPL were recovered from MW-74B in the 4th Quarter 2021.
 - **MW-75B:** No DNAPL was detected during the 4th quarter of 2021. MW-75B was not measured on December 30, 2021. The well was inaccessible during this DNAPL recovery event due to ongoing container operations in the intermodal yard.
- **C-TZ Wells:** Wells MW-23C, MW-34CR, MW-44C, MW-45C, and MW-46C completed in the C-TZ were evaluated for DNAPL recovery (graph of DNAPL thickness from July 2018 through December 2021 shown on Figure 7).
 - **MW-23C:** Measurable DNAPL was detected in MW-23C during three of the seven recovery events during 4th Quarter 2021. DNAPL thickness fluctuated during the 4th Quarter with measurements of 2.20 feet on October 8, 2021, 1.71 feet on November 18, 2021, and 0.51 feet on December 16, 2021. Trace DNAPL was noted on December 30, 2021. DNAPL recovery was attempted during the three events where measurable DNAPL was detected, however no DNAPL was recovered from MW-23C during the 4th Quarter 2021. Further investigation into the DNAPL recovery efficiency at MW-23C will be conducted during the 1st Quarter of 2022.
 - **MW-34CR:** In May 2014, replacement well MW-34CR was installed and gauged as part of the recovery program. However, no DNAPL has been detected in this well. The well pad

was damaged in April 2019. In March 2020, MW-34CR well pad was repaired and no DNAPL has been observed since the 2nd Quarter of 2020. Given the absence of DNAPL in this well, a graph for MW-34CR is not included in Figure 7.

- **MW-44C:** No measurable DNAPL had been detected in MW-44C from June 2019 (trace DNAPL noted in mid-June 2019) through May 2020. DNAPL was noted (0.39 feet thick) in MW-44C at the end of May 2020. However, it was discovered that the total depth measurement at MW-44C was approximately 10 feet higher than the well construction depth, suggesting that the well had appeared to have silted up. MW-44C was re-developed on July 24, 2020 during the site-wide monitoring activities. Over 10 feet of silt was removed, and the final measured depth of the well was within a foot of the original total depth. During the next recovery event in early August, the well appeared to have silted up again. Redevelopment was attempted a second time on October 1, 2020, but it was unsuccessful. The well will be plugged, abandoned, and replaced with a proposed recovery well as detailed in the Revised Response Action Plan (RAP) dated August 31, 2020.
- **MW-45C:** DNAPL was not detected in MW-45C during five of the seven recovery events during the 4th Quarter 2021. DNAPL thickness of 1.99 feet was measured on November 4, 2021 and trace amount of DNAPL was noted on December 30, 2021. No DNAPL was recovered from MW-45C the 4th Quarter 2021.
- **MW-46C:** No measurable DNAPL has been observed in MW-46C since June 2019 (trace DNAPL noted in mid-June 2019). Trace DNAPL was noted on December 30, 2021.

DNAPL Recovery: From February 2013 to December 2021, an estimated cumulative total of 945 gallons of creosote DNAPL have been recovered from the wells. Monthly DNAPL recovery volumes increased after the January 2015 event due to a change in pumping techniques. DNAPL recovery volumes ranged from approximately 0.3 to 2.0 gallons per bi-weekly event, and a total of approximately 8.7 gallons were recovered during the 4th Quarter 2021 (Table 1). UPRR will continue to monitor the DNAPL thicknesses twice per month as discussed in the response to the TCEQ 4th Technical Notice of Deficiency (TNOD) letter (April 11, 2019).

If you have any questions or need additional information, please feel free to call us at (512) 671-3434 or Mr. Kevin Peterburs of UPRR at (414) 267-4164.

Sincerely,

Golder Associates USA Inc.



Sarah Balke, G.I.T.
Staff Environmental Scientist



Eric Matzner, P.G.
Principal / Practice Leader



Texas Geoscience Firm No. 50369

CC: Waste Program Manager, TCEQ Region 12, Houston
Mr. Kevin Peterburs, UPRR – Milwaukee, WI

Attachments: Table 1 - Summary of DNAPL Recovery Measurements
Figure 1 – In-Well DNAPL Thickness – December 2021
Figure 2 - DNAPL Recovery Activities February 2013 – December 2021
Figure 3 – A-TZ Wells – DNAPL Recovery Activities July 2018 – December 2021
Figure 4 – B-TZ Wells (West Side) – DNAPL Recovery Activities July 2018 – December 2021
Figure 5 – B-CZ/B-TZ Wells (North (On-Site and Off-Site) – DNAPL Recovery Activities July 2018 – December 2021
Figure 6 – B-CZ/B-TZ Wells (Englewood Intermodal Yard) – DNAPL Recovery Activities July 2018 – December 2021
Figure 7 – C-TZ Wells – DNAPL Recovery Activities July 2018 – December 2021
Attachment 1 – Recovered DNAPL Waste Manifest

TABLES

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-12B				MW-23C				MW-32B			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013	9.06	39.87	5.93	2.5	NM	NM	NM	0	6.01	30.06	6.23	2
4/3/2013	9.41	39.95	5.85	1.0	NM	NM	NM	0	4.86	33.61	2.68	1
4/22/2013	8.61	31.64	14.16	0.5*	NM	NM	NM	0	5.62	36.08	0.21	0.3
5/30/2013	8.47	37.62	8.18	1.5*	NM	NM	NM	0	5.86	32.21	4.08	2
6/29/2013	9.62	38.22	7.58	1.5	NM	NM	NM	0	6.79	33.59	2.7	1.5
7/22/2013	11.16	39.04	6.76	1.0	NM	NM	NM	0	7.14	33.91	2.38	1.5
8/26/2013	11.31	39.61	6.19	1.0	NM	NM	NM	0	7.48	33.83	2.46	1
9/27/2013	11.17	40.63	5.17	1.0	NM	NM	NM	0	7.23	34.39	1.9	1
10/31/2013	11.09	43.71	2.09	1.0	NM	NM	NM	0	7.16	34.96	1.33	0.5
11/27/2013	11.17	44.06	1.74	1.0	NM	NM	NM	0	7.29	35.03	1.26	0.5
12/31/2013	11.02	44.62	1.18	1.0	NM	NM	NM	0	7.16	35.16	1.13	0.5
1/30/2014	11.34	45.12	0.68	1.0	NM	NM	NM	0	6.72	34.82	1.47	0.5
3/3/2014	11.17	44.32	1.48	1.0	NM	NM	NM	0	6.53	34.52	1.77	0.5
3/31/2014	11.03	44.53	1.27	1.0	NM	NM	NM	0	6.29	34.21	2.08	0.5
4/30/2014	10.92	44.26	1.54	1.0	NM	NM	NM	0	6.42	34.67	1.62	0.5
5/27/2014	10.81	44.34	1.46	1.0	NM	NM	NM	0	6.36	34.72	1.57	0.5
6/26/2014	10.72	44.61	1.19	1.0	NM	NM	NM	0	6.21	34.61	1.68	0.5
7/31/2014	10.13	44.96	0.84	1.0	NM	NM	NM	0	6.06	34.33	1.96	0.3
8/27/2014	10.26	45.12	0.68	1.0	NM	NM	NM	0	6.18	34.98	1.31	0.3
10/3/2014	10.17	44.91	0.89	1.0	NM	NM	NM	0	6.06	34.72	1.57	0.3
11/3/2014	10.29	44.97	0.83	1.0	22.51	70.71	2.09	0.3	6.18	34.91	1.38	0.3
11/24/2014	10.27	44.99	0.81	1.0	22.56	70.92	1.88	0.5	6.21	35.16	1.13	0.5
12/22/2014	10.23	44.71	1.09	1.0	22.47	70.81	1.99	0.5	6.14	35.02	1.27	0.8
1/29/2015	10.16	44.96	0.84	1.0	22.26	71.04	1.76	0.5	5.71	35.29	1	0.8
2/26/2015	10.12	44.96	0.84	1.5	22.06	71.09	1.71	0.5	6.02	35.29	1	1
3/26/2015	9.96	45.21	0.59	1.5	22.17	71.12	1.68	0.3	5.46	35.36	0.93	1
4/27/2015	9.89	45.37	0.43	1.5	22.23	71.06	1.74	0.5	5.21	35.29	1	1
5/26/2015	9.72	45.61	0.19	2.0	22.17	71.14	1.66	0.5	5.07	35.46	0.83	1
7/6/2015	7.12	45.96	0.24	2.0	19.01	71.39	1.41	0.5	4.06	35.66	0.63	1
8/3/2015	7.26	46.09	0.11	2.0	19.16	71.46	1.34	0.8	4.29	35.71	0.58	1
8/27/2015	8.09	46.01	0.19	1.0	20.34	71.51	1.29	0.8	5.05	35.77	0.52	1
10/5/2015	7.12	45.86	0.34	1.0	19.02	71.57	1.23	0.5	4.31	35.96	0.33	1
11/5/2015	6.86	45.81	0.39	1.0	18.59	71.59	1.21	0.5	4.02	35.91	0.38	1
12/3/2015	6.46	45.79	0.41	1.0	18.33	71.67	1.13	0.5	3.92	35.96	0.33	1
12/28/2015	6.23	45.62	0.58	1.3	23.21	71.61	1.19	0.8	3.73	35.91	0.38	1
2/3/2016	6.04	45.55	0.65	1.5	17.96	71.64	1.16	0.5	3.61	35.87	0.42	1
3/3/2016	5.96	45.61	0.59	1.5	17.92	71.71	1.09	0.5	3.51	35.91	0.38	1
3/31/2016	6.06	45.72	0.48	1.5	17.86	71.79	1.01	0.5	3.56	35.92	0.37	1
5/3/2016	6.13	45.66	0.54	1.0	NM	NM	NM	0.0	3.67	35.87	0.53	0.5
6/2/2016	6.21	45.61	0.59	1.0	22.9	71.51	1.29	0.5	3.74	35.92	0.48	0.5
7/8/2016	6.29	45.72	0.48	1.0	23.09	71.52	1.28	0.3	3.91	35.96	0.44	0.5
8/3/2016	6.34	45.77	0.43	1.0	23.16	71.66	1.14	0.3	4.03	35.49	0.91	0.5
8/30/2016	6.47	45.69	0.51	1.0	23.31	71.61	1.19	0.5	4.22	36.09	0.31	0.5
9/30/2016	6.59	45.81	0.39	1.0	23.39	71.81	0.99	0.5	4.33	35.91	0.49	0.5
11/3/2016	6.64	45.92	0.28	1.0	23.41	71.98	0.82	0.5	4.47	35.99	0.41	0.5
11/30/2016	6.86	45.86	0.34	0.5	23.59	71.91	0.89	0.8	4.62	35.91	0.49	0.5
1/4/2017	7.02	45.81	0.39	0.5	23.74	71.82	0.98	0.8	4.83	36.02	0.38	0.3
2/7/2017	6.97	45.69	0.51	0.5	23.67	71.74	1.06	0.8	4.81	35.91	0.49	0.3
3/2/2017	6.91	45.64	0.56	0.5	23.54	76.82	0.98	0.8	4.66	35.97	0.43	0.3
4/3/2017	6.82	45.71	0.49	0.5	23.46	76.96	0.84	0.8	4.57	36.01	0.39	0.3
4/27/2017	6.74	45.64	0.56	0.5	23.21	77.04	0.76	0.5	4.51	36.06	0.34	0.3
5/29/2017	6.89	45.77	0.43	0.5	23.49	77.21	0.59	0.3	4.74	36.03	0.37	0.3
7/5/2017	7.01	45.71	0.49	0.5	23.61	77.27	0.53	0.3	4.86	36.13	0.27	0.3
8/1/2017	7.14	45.63	0.57	0.8	23.79	77.17	0.63	0.3	4.99	36.24	0.16	0.3
9/5/2017	7.03	45.6	0.6	1.0	23.67	77.29	0.51	0.3	4.78	36.24	0.16	0.3
10/4/2017	7.07	45.69	0.51	1.0	23.61	77.36	0.44	0.3	4.89	36.29	0.11	0.3
11/2/2017	7.11	45.76	0.44	1.0	23.74	77.42	0.38	0.3	4.96	36.26	0.14	0.3
11/29/2017	7.16	45.71	0.49									

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-12B				MW-23C				MW-32B			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
1/2/2019	7.96	45.87	0.33	0.5	24.29	77.31	0.49	0.5	6.09	36.29	0.11	0.3
2/2/2019	7.82	45.89	0.31	0.5	24.21	77.44	0.36	0.5	5.97	36.24	0.16	0.5
2/28/2019	7.69	45.81	0.39	0.5	24.16	77.36	0.44	0.5	5.86	36.21	0.19	0.3
4/2/2019	7.61	45.8	0.4	0.5	24.08	77.32	0.48	0.5	5.79	36.24	0.16	0.3
4/25/2019	7.49	45.76	0.44	1.0	24.01	77.16	0.64	0.5	5.86	36.29	0.11	0.3
5/29/2019	7.51	45.71	0.49	1.0	24.11	77.11	0.69	0.5	5.91	36.21	0.19	0.3
6/12/2019	6.81	45.52	0.68	1.5	24.39	76.71	1.09	1.0	5.46	35.91	0.49	0.5
6/30/2019	6.67	45.06	1.14	2.0	24.32	76.67	1.13	0.8	5.39	35.42	0.98	1
7/16/2019	6.62	45.11	1.09	2.0	24.26	76.61	1.19	1.0	5.32	35.36	1.04	1
8/2/2019	6.69	45.01	1.19	1.5	24.31	76.49	1.31	1.5	5.41	35.26	1.14	1.5
8/15/2019	6.79	44.76	1.44	2.0	24.22	76.36	1.44	1.5	5.61	35.19	1.21	1.5
8/28/2019	6.88	44.71	1.49	2.0	24.29	76.41	1.39	1.5	5.72	35.22	1.18	1.5
9/17/2019	6.93	43.96	2.24	3.0	24.36	76.29	1.51	1.5	5.81	35.17	1.23	1.5
10/2/2019	6.86	43.17	3.03	0.0	24.32	76.09	1.71	1.5	5.77	35.02	1.38	1.5
10/16/2019	6.71	30.29	15.91	0.0	25.75	75.89	1.91	1.5	4.36	33.42	2.98	1.5
10/31/2019	6.53	21.63	24.57	0.0	26.33	75.29	2.51	1.5	3.43	31.86	4.54	1.5
11/15/2019	7.21	19.12	27.08	0.5	25.69	ND	0	0.0	3.47	35.7	0.7	1
12/3/2019	7.55	27.37	18.83	0.0	26.11	75.12	2.68	1.5	4.33	35.51	0.89	0
12/18/2019	12.68	35.9	10.3	0.0	26.13	77.4	0.4	0.3	4.71	35.61	0.79	1.5
12/30/2019	8.08	28.12	18.08	0.0	26.48	76.1	1.7	0.1	5.04	34.28	2.12	1.5
1/7/2020	--	--	--	--	--	--	--	--	--	--	--	--
1/15/2020	7.47	27.12	19.08	0.0	26.49	77.1	0.7	0.0	4.1	35.4	1	1
1/27/2020	6.28	21.06	25.14	0.0	25.99	76.58	1.22	0.0	3.01	31.15	5.25	1
2/13/2020	6.91	20.42	25.78	0.0	25.51	76.42	1.38	0.0	3.88	31.39	5.01	1
2/25/2020	6.4	23.6	22.6	0.0	25.6	75.5	2.3	0.1	3.9	31.05	5.35	0.8
3/13/2020	7.61	22.01	24.19	0.0	25.66	77.08	0.72	0.0	4.32	32.46	3.94	1.3
3/31/2020	7.88	22.01**	24.19	2.5	25.9	77.12	0.68	0.0	4.63	33.3	3.1	0.3
4/9/2020	7.37	18.21	27.99	3.0	25.91	77.22	0.58	0.0	4.65	30.14	6.26	1.0
4/27/2020	8.64	19.12	27.08	3.5	26.31	76.45	1.35	0.0	5.39	34.52	1.88	0.5
5/14/2020	9.39	33.16	13.04	2.5	26.7	75.89	1.91	0.1	6.02	34.73	1.67	0.5
5/28/2020	8.79	40.29	5.91	1.5	26.75	75.71	2.09	0.1	5.84	34.35	2.05	1.0
6/11/2020	9.29	40.69	5.51	2.5	26.93	ND	0	0.0	5.89	35.01	1.39	0.3
6/25/2020	9.01	BP	NM	2.0	25.89	77.94	0	0.0	5.6	35.12	1.28	0.3
7/9/2020	8.04	BP	NM	1.0	26.64	76	1.8	0.3	4.83	35.18	1.22	0.3
7/23/2020	8.17	BP	NM	2.5	26.81	75.61	2.19	0.3	5.63	34.7	1.7	1.0
8/6/2020	5.43	BP	NM	1.0	26.41	75.52	2.28	0.3	3.88	33.94	2.46	1.3
8/20/2020	8.03	BP	NM	1.0	26.38	75.4	2.4	0.3	4.87	33.87	2.53	0.5
9/2/2020	8.89	BP	NM	1.0	26.71	76.24	1.56	0.5	5.54	35.21	1.19	0.3
9/17/2020	9.84	BP	NM	0.0	26.99	75.9	1.9	0.5	6.01	34.4	2	0.5
10/1/2020	6.9	BP	NM	0.5	26.59	75.08	2.72	0.3	4.88	35.18	1.22	0.3
10/14/2020	8.42	BP	NM	2.5	26.71	75.08	2.72	0.3	4.95	34.26	2.14	0.5
10/28/2020	8.31	BP	NM	2.0	26.84	75.81	1.99	0.3	5.31	33.94	2.46	0.8
11/12/2020	9.19	BP	NM	1.0	27.12	76.12	1.68	TR	5.79	33.71	2.69	2.5
11/23/2020	9.55	BP	NM	0.8	27.41	76.28	1.52	0.3	6.24	34.19	2.21	1.0
12/10/2020	6.67	BP	NM	1.5	26.72	76.2	1.6	0.3	3.68	32.9	3.5	1.0
12/21/2020	5.46	BP	NM	0.8	26.21	NM	NM	0.0	3.89	32.82	3.58	1.0
1/7/2021	5.01	BP	NM	1.0	25.85	ND	0	0.0	3.02	35.4	1	1.0
1/21/2021	5.72	BP	NM	2.0	25.49	75.29	2.51	0.3	3.48	35.01	1.39	1.0
2/4/2021	6.87	BP	NM	1.5	25.48	75.36	2.44	1.3	4.09	34.48	1.92	1.0
2/23/2021	5.47	BP	NM	1.0	25.25	75.61	2.19	1.0	3.19	33.59	2.81	1.0
3/11/2021	5.95	BP	NM	0.8	25.31	75.84	1.96	1.0	3.47	34.05	2.35	1.0
3/25/2021	9.28	BP	NM	1.0	25.2	75.62	2.18	1.0	3.85	34.83	1.57	1.0
4/8/2021	7.52	BP	NM	1.0	25.38	75.4	2.4	1.0	4.92	33.7	2.7	1.0
4/22/2021	8.42	BP	NM	1.0	25.94	76.35	1.45	0.1	5.03	34.2	2.2	1.0
5/4/2021	6.82	BP	NM	1.0	25.95	75.25	2.55	1.0	4.26	34.6	1.8	1.0
5/20/2021	5.52	BP	NM	1.0	25.84	75.66	2.14	1.0	3.55	34.2	2.2	1.0
6/3/2021	5.46	BP	NM	1.0	25.19	75.74	2.06	0.5	2.54	34.6	1.8	1.0
6/17/2021	6.67	BP	NM	1.0	25.06							

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-33BR				MW-34C/MW-34CR (July 2014)				MW-41B			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013	3.72	ND	0	0	NM	NM	NM	0	8.91	41.1	3.71	3
4/3/2013	4.02	PoP	0	0	NM	NM	NM	0	9.37	41.6	3.21	1.5
4/22/2013	3.63	ND	0	0	NM	NM	NM	0	8.62	41.6	3.21	0.5*
5/30/2013	3.59	ND	0	0	NM	NM	NM	0	8.73	34.16	10.65	2
6/29/2013	6.07	ND	0	0	NM	NM	NM	0	9.72	37.12	7.69	2
7/22/2013	9.68	ND	0	0	NM	NM	NM	0	10.31	39.29	5.52	1.5
8/26/2013	9.86	ND	0	0	NM	NM	NM	0	10.09	34.55	10.26	2.5
9/27/2013	9.57	ND	0	0	NM	NM	NM	0	9.63	37.29	7.52	2
10/31/2013	9.32	ND	0	0	21.63	NM	NM	0	9.52	38.16	6.65	2
11/27/2013	9.16	ND	0	0	NM	NM	NM	0	9.57	38.39	6.42	2
12/31/2013	8.97	ND	0	0	NM	NM	NM	0	9.42	39.36	5.45	2
1/30/2014	7.41	ND	0	0	NM	NM	NM	0	9.06	39.17	5.64	2
3/3/2014	7.16	ND	0	0	NM	NM	NM	0	8.62	38.06	6.75	2
3/31/2014	7.04	ND	0	0	NM	NM	NM	0	8.52	37.74	7.07	2
4/30/2014	6.88	ND	0	0	NM	NM	NM	0	8.36	37.21	7.6	2
5/27/2014	6.72	ND	0	0	NM	NM	NM	0	8.26	37.29	7.52	2
6/26/2014	6.52	ND	0	0	NM	NM	NM	0	8.02	37.47	7.34	2
7/31/2014	6.29	ND	0	0	19.06	ND	0	0	8.21	37.92	6.89	2
8/27/2014	6.47	ND	0	0	18.96	ND	0	0	8.07	38.29	6.52	1.5
10/3/2014	6.32	ND	0	0	18.81	ND	0	0	8.02	38.13	6.68	2
11/3/2014	NM	NM	NM	0	19.06	ND	0	0	8.22	38.29	6.52	2
11/24/2014	NM	NM	NM	0	19.11	ND	0	0	8.27	38.47	6.34	2
12/22/2014	NM	NM	NM	0	19.06	ND	0	0	8.16	38.39	6.42	2
1/29/2015	NM	NM	NM	0	18.79	ND	0	0	8.02	39.16	5.65	1.5
2/26/2015	NM	NM	NM	0	18.71	ND	0	0	7.92	39.06	5.75	2.5
3/26/2015	NM	NM	NM	0	18.67	ND	0	0	7.83	38.74	6.07	2.5
4/27/2015	NM	NM	NM	0	18.79	ND	0	0	8.02	38.61	6.2	3
5/26/2015	NM	NM	NM	0	18.63	ND	0	0	7.91	38.72	6.09	3
7/6/2015	NM	NM	NM	0	17.29	ND	0	0	6.03	38.96	5.85	2.5
8/3/2015	NM	NM	NM	0	17.21	ND	0	0	6.09	39.01	5.8	2.5
8/27/2015	NM	NM	NM	0	18.46	ND	0	0	7.39	39.14	5.67	2
10/5/2015	NM	NM	NM	0	17.29	ND	0	0	6.32	39.34	5.47	2
11/5/2015	NM	NM	NM	0	16.78	ND	0	0	6.01	39.51	5.3	2
12/3/2015	NM	NM	NM	0	16.44	ND	0	0	5.76	39.56	5.25	2
12/28/2015	NM	NM	NM	0	16.16	ND	0	0	5.62	39.63	5.18	2.3
2/3/2016	NM	NM	NM	0	15.98	ND	0	0	5.32	39.72	5.09	3
3/3/2016	NM	NM	NM	0	15.98	ND	0	0	5.17	39.81	5	3
3/31/2016	NM	NM	NM	0	15.98	ND	0	0	5.26	39.77	5.04	3
5/3/2016	NM	NM	NM	0	15.79	ND	0	0	5.52	39.96	4.85	3
6/2/2016	NM	NM	NM	0	15.97	ND	0	0	5.67	40.07	4.74	3
7/8/2016	NM	NM	NM	0	16.06	ND	0	0	5.72	40.01	4.8	3
8/3/2016	NM	NM	NM	0	16.17	ND	0	0	5.79	40.09	4.72	3
8/30/2016	NM	NM	NM	0	16.31	ND	0	0	5.91	40.26	4.55	3
9/30/2016	NM	NM	NM	0	16.42	ND	0	0	6.06	40.13	4.68	3
11/3/2016	NM	NM	NM	0	16.51	ND	0	0	6.11	40.29	4.52	3
11/30/2016	NM	NM	NM	0	16.72	ND	0	0	6.26	40.42	4.39	3
1/4/2017	NM	NM	NM	0	16.94	ND	0	0	6.39	40.56	4.25	3
2/7/2017	NM	NM	NM	0	16.91	ND	0	0	6.44	40.51	4.3	3
3/2/2017	NM	NM	NM	0	16.78	ND	0	0	6.29	40.76	4.05	3
4/3/2017	NM	NM	NM	0	16.71	ND	0	0	6.21	40.67	4.14	2.5
4/27/2017	NM	NM	NM	0	16.61	ND	0	0	6.19	40.87	3.94	3
5/29/2017	NM	NM	NM	0	16.84	ND	0	0	6.14	40.29	4.52	3
7/5/2017	NM	NM	NM	0	17.01	ND	0	0	6.34	40.57	4.24	2.5
8/1/2017	NM	NM	NM	0	17.17	ND	0	0	6.42	40.79	4.02	3
9/5/2017	NM	NM	NM	0	17.11	ND	0	0	6.36	40.68	4.13	3
10/4/2017	NM	NM	NM	0	17.06	ND	0	0	6.29	40.69	4.12	2.5
11/2/2017	NM	NM	NM	0	17.17	ND	0	0	6.41	40.73	4.08	3
11/29/2017	NM	NM	NM	0	17.29	ND	0	0	6.52	40.82	3.99	2.5
1/2/2018	NM	NM	NM	0	17.52	ND	0	0	6.72	40.72	4.09	2.5
2/7/2018	NM	NM	NM	0	18.11	ND	0	0	6.97	40.79	4.02	2.5
3/1/2018	NM	NM	NM	0	18.38	ND	0	0	7.16	40.63	4.18	2
4/2/2018	NM	NM	NM	0	18.29	ND	0	0	7.13	40.71	4.1	2
5/1/2018	NM	NM	NM	0	18.33	ND	0	0	8.26	40.76	4.05	2
6/1/2018	NM	NM	NM	0	18.62	ND	0	0	8.71	40.81	4	2.3
6/29/2018	NM	NM	NM	0	18.91	ND	0	0	9.02	40.71	4.1	2.5
8/3/2018	NM	NM	NM	0	19.06	ND	0	0	9.13	40.76	4.05	2.5
8/31/2018	NM	NM	NM	0	18.77	ND	0	0				

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-33BR				MW-34C/MW-34CR (July 2014)				MW-41B			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
1/2/2019	NM	NM	NM	0	18.26	ND	0	0	8.22	40.83	3.98	2
2/2/2019	NM	NM	NM	0	18.19	ND	0	0	8.16	40.89	3.92	2
2/28/2019	NM	NM	NM	0	18.02	ND	0	0	8.03	40.76	4.05	3
4/2/2019	NM	NM	NM	0	17.96	ND	0	0	7.93	40.69	4.12	3
4/25/2019	NM	NM	NM	0	Well Damaged				7.76	40.28	4.53	3
5/29/2019	NM	NM	NM	0	Well Damaged				7.71	40.07	4.74	3
6/12/2019	NM	NM	NM	0	Well Damaged				7.52	39.63	5.18	3
6/30/2019	NM	NM	NM	0	Well Damaged				7.46	39.52	5.29	3
7/16/2019	NM	NM	NM	0	Well Damaged				7.39	39.46	5.35	3
8/2/2019	NM	NM	NM	0	Well Damaged				7.46	39.42	5.39	0
8/15/2019	NM	NM	NM	0	Well Damaged				7.51	39.31	5.5	3
8/28/2019	NM	NM	NM	0	Well Damaged				7.57	39.21	5.6	3
9/17/2019	NM	NM	NM	0	Well Damaged				7.66	39.02	5.79	3
10/2/2019	NM	NM	NM	0	Well Damaged				7.61	38.76	6.05	3
10/16/2019	NM	NM	NM	0	Well Damaged				5.21	38.67	6.14	3
10/31/2019	NM	NM	NM	0	Well Damaged				5.21	38.67	6.14	3
11/15/2019	NM	NM	NM	0	Well Damaged				4.81	38.12	6.69	2
12/3/2019	NM	NM	NM	0	Well Damaged				6.46	39.27	5.54	3
12/18/2019	NM	NM	NM	0	Well Damaged				6.51	41.7	3.11	0
12/30/2019	NM	NM	NM	0	Well Damaged				6.99	43.5	1.31	0
1/7/2020	--	--	--	--	--	--	--	--	--	--	--	--
1/15/2020	NM	NM	NM	0	Well Damaged				5.12	38.99	5.82	0
1/27/2020	NM	NM	NM	0	Well Damaged				3.41	40.7	4.11	0
2/13/2020	NM	NM	NM	0	Well Damaged				5.1	40.12	4.69	0
2/25/2020	NM	NM	NM	0	Well Damaged				4.5	41.12	3.69	0
3/13/2020	NM	NM	NM	0	Well Damaged				6.06	42.12	2.69	0
3/31/2020	NM	NM	NM	0	17.49	ND	0	0	6.82	42.12**	2.69	2
4/9/2020	NM	NM	NM	0	17.63	ND	0	0	6.47	BP	NM	2
4/27/2020	NM	NM	NM	0	17.89	ND	0	0	8.01	BP	NM	2
5/14/2020	NM	NM	NM	0	18.29	ND	0	0	8.71	42.1	2.71	3.5
5/28/2020	NM	NM	NM	0	18.31	ND	0	0	8.08	BP	NM	3.5
6/11/2020	NM	NM	NM	0	18.51	ND	0	0	8.01	41.59	3.22	2
6/25/2020	NM	NM	NM	0	17.66	ND	0	0	7.52	BP	NM	2
7/9/2020	NM	NM	NM	0	18.22	ND	0	0	7.29	BP	NM	2
7/23/2020	NM	NM	NM	0	18.36	ND	0	0	7.49	BP	NM	2.5
8/6/2020	NM	NM	NM	0	17.66	ND	0	0	5.64	BP	NM	1.3
8/20/2020	NM	NM	NM	0	18.02	ND	0	0	7.38	BP	NM	0.5
9/2/2020	NM	NM	NM	0	18.2	ND	0	0	8.11	BP	NM	0.8
9/17/2020	NM	NM	NM	0	18.56	ND	0	0	8.81	BP	NM	1
10/1/2020	NM	NM	NM	0	18.29	ND	0	0	6.39	BP	NM	0.8
10/14/2020	NM	NM	NM	0	18.31	ND	0	0	8.71	BP	NM	2
10/28/2020	NM	NM	NM	0	18.61	ND	0	0	8.51	BP	NM	1.5
11/12/2020	NM	NM	NM	0	18.71	ND	0	0	8.49	BP	NM	0.5
11/23/2020	NM	NM	NM	0	18.97	ND	0	0	8.84	BP	NM	0
12/10/2020	NM	NM	NM	0	18.62	ND	0	0	5.31	BP	NM	1.5
12/21/2020	NM	NM	NM	0	18.01	ND	0	0	4.42	BP	NM	1
1/7/2021	NM	NM	NM	0	17.52	ND	0	0	4.48	BP	NM	1.5
1/21/2021	NM	NM	NM	0	17.39	ND	0	0	4.59	BP	NM	2
2/4/2021	NM	NM	NM	0	17.22	ND	0	0	5.62	BP	NM	1.5
2/23/2021	NM	NM	NM	0	17.04	ND	0	0	4.58	BP	NM	1
3/11/2021	NM	NM	NM	0	16.98	ND	0	0	4.22	BP	NM	1.5
3/25/2021	NM	NM	NM	0	17.01	ND	0	0	5.13	BP	NM	1.0
4/8/2021	NM	NM	NM	0	17.22	ND	0	0	6.63	BP	NM	1.0
4/22/2021	NM	NM	NM	0	17.41	ND	0	0	7.64	BP	NM	1.0
5/4/2021	NM	NM	NM	0	17.57	ND	0	0	5.96	BP	NM	1.0
5/20/2021	NM	NM	NM	0	16.51	ND	0	0	5.62	BP	NM	1.0
6/3/2021	NM	NM	NM	0	15.81	ND	0	0	4.41	BP	NM	1.0
6/17/2021	NM	NM	NM	0	16.74	ND	0	0	5.81	BP	NM	1.0
7/1/2021	NM	NM	NM	0	15.71	ND	0	0	4.36	BP	NM	1.0
7/19/2021	NM	NM	NM	0	15.49	ND	0	0	4.11	BP	NM	1.0
7/29/2021	NM	NM	NM	0	15.98	ND	0	0	6.51	BP	NM	1.0
8/12/2021	NM	NM	NM	0	16.58	ND	0	0	8.01	BP	NM	1.0
8/26/2021	NM	NM	NM	0	17.11	ND	0	0	8.04	BP	NM	1.0
9/10/2021	NM	NM	NM	0	17.56	ND	0	0	8.25	BP	NM	0.3
9/22/2021	5.32	ND	0	0	17.32	ND	0	0	5.66	BP	NM	0
10/8/2021	1.53	ND	0	0	NM	ND	NM	0	1.34	43.68	1.13	0.0
10/20/2021												

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-44C				MW-45C				MW-46C			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013	18.96	62.95	7.85	1	21.26	69.9	0.7	0.3	21.07	71.3	1.6	0.3
4/3/2013	19.34	70.47	0.33	0.3*	21.39	70.39	0.21	0.3*	20.61	72.36	0.54	0.3*
4/22/2013	18.62	70.64	0.16	0.3*	21.03	70.47	0.13	0.3*	20.61	72.61	0.29	0.3*
5/30/2013	18.43	70.01	0.79	0.3*	21.16	70.25	0.35	0.3*	20.59	71.61	1.29	0.3*
6/29/2013	19.34	70.32	0.48	0.3	21.93	70.32	0.28	0.3*	21.09	72.34	0.56	0.3*
7/22/2013	20.36	70.26	0.54	0.3	22.72	70.39	0.21	0.3*	21.96	72.16	0.74	0.3*
8/26/2013	20.62	70.39	0.41	0.3	22.86	70.31	0.29	0.3	22.23	72.32	0.58	0.3
9/27/2013	20.39	70.61	0.19	0.3	22.66	70.17	0.43	0.3	22.09	72.09	0.81	0.3
10/31/2013	20.17	70.75	0.05	0.1	22.59	70.42	0.18	0.1	22.41	72.34	0.56	0.2
11/27/2013	20.09	70.78	0.02	0.0	22.52	70.49	0.11	0	22.31	72.47	0.43	0.1
12/31/2013	20.01	70.8	PoP	0.0	22.39	70.46	0.14	0	22.03	72.53	0.37	0.1
1/30/2014	19.67	70.42	0.38	0.3	22.13	70.35	0.25	0	21.81	72.55	0.35	0.1
3/3/2014	19.29	70.17	0.63	0.3	21.86	70.09	0.51	0	21.57	72.05	0.85	0.3
3/31/2014	19.17	70.02	0.78	0.3	21.71	69.63	0.97	0.3	21.43	72.12	0.78	0.1
4/30/2014	19.02	69.81	0.99	0.3	21.59	69.74	0.86	0.3	21.27	71.81	1.09	0.3
5/27/2014	18.92	69.71	1.09	0.0	21.52	69.67	0.93	0.3	21.34	71.71	1.19	0.3
6/26/2014	18.81	69.52	1.28	0.3	21.59	69.77	0.83	0.3	21.17	71.6	1.3	0.3
7/31/2014	18.66	69.37	1.43	0.3	21.21	69.96	0.64	0.3	20.39	71.43	1.47	0.3
8/27/2014	18.53	69.47	1.33	0.3	21.13	70.12	0.48	0.3	20.22	71.61	1.29	0.3
10/3/2014	18.41	69.23	1.57	0.3	20.13	70.41	0.19	0.3	20.14	71.39	1.51	0.3
11/3/2014	18.52	69.37	1.43	0.3	20.29	70.36	0.24	0.3	20.27	71.47	1.43	0.3
11/24/2014	18.57	69.49	1.31	0.5	20.34	70.48	0.12	0.3	20.38	71.53	1.37	0.5
12/22/2014	18.51	69.31	1.49	0.5	20.31	70.41	0.19	0.3	20.37	71.42	1.48	0.5
1/29/2015	18.39	69.39	1.41	0.5	20.17	70.51	0.09	0.3	20.13	71.48	1.42	0.5
2/26/2015	18.42	69.51	1.29	0.5	20.11	70.59	0.01	0	20.09	71.38	1.52	0.5
3/26/2015	18.39	69.42	1.38	0.3	19.26	70.52	0.08	0	20.17	71.02	1.88	0.3
4/27/2015	18.29	69.52	1.28	0.5	20.17	70.48	0.12	0.3	20.22	71.56	1.34	1.0
5/26/2015	18.17	69.57	1.23	0.8	20.12	70.41	0.19	0.3	20.12	71.61	1.29	1.0
7/6/2015	16.29	69.86	0.94	0.5	18.07	70.49	0.11	0.3	18.17	71.93	0.97	0.8
8/3/2015	16.18	69.82	0.98	0.5	18.16	70.56	0.04	TR*	18.24	71.98	0.92	0.8
8/27/2015	17.46	69.74	1.06	0.3	19.03	70.54	0.06	TR*	19.39	72.03	0.87	0.5
10/5/2015	16.83	69.86	0.94	0.3	18.39	ND	0	0	18.72	72.34	0.56	0.5
11/5/2015	16.62	69.79	1.01	0.3	17.96	ND	0	0	18.51	72.26	0.64	0.5
12/3/2015	16.46	69.73	1.07	0.3	17.72	ND	0	0	18.62	72.36	0.54	0.5
12/28/2015	16.32	69.77	1.03	0.3	17.62	ND	0	0	18.42	72.31	0.59	0.5
2/3/2016	16.17	69.74	1.06	0.3	17.42	ND	0	0	18.29	72.46	0.44	0.3
3/3/2016	16.12	69.79	1.01	0.3	17.39	ND	0	0	18.23	72.49	0.41	0.3
3/31/2016	16.06	69.71	1.09	0.3	17.33	ND	0	0	18.24	72.54	0.36	0.3
5/3/2016	16.27	69.59	1.21	0.3	17.47	ND	0	0	18.39	72.39	0.51	0.3
6/2/2016	16.38	69.63	1.17	0.3	17.52	ND	0	0	18.43	72.43	0.47	0.3
7/8/2016	16.47	69.71	1.09	0.3	17.62	ND	0	0	18.54	72.49	0.41	0.3
8/3/2016	16.59	69.7	1.1	0.3	17.69	ND	0	0	18.51	72.53	0.37	0.3
8/30/2016	16.67	69.58	1.22	0.3	17.76	ND	0	0	18.72	72.57	0.33	0.3
9/30/2016	16.79	69.49	1.31	0.5	17.86	ND	0	0	18.83	72.46	0.44	0.3
11/3/2016	16.86	69.71	1.09	0.5	17.92	ND	0	0	18.89	72.41	0.49	0.3
11/30/2016	17.03	69.94	0.86	0.8	18.09	ND	0	0	19.12	72.32	0.58	0.3
1/4/2017	17.22	70.11	0.69	0.8	18.22	ND	0	0	19.27	72.46	0.44	0.3
2/7/2017	17.29	70.01	0.79	0.5	18.17	ND	0	0	19.19	72.39	0.51	0.3
3/2/2017	17.17	70.16	0.64	0.5	17.96	ND	0	0	19.03	72.31	0.59	0.3
4/3/2017	17.06	70.21	0.59	0	17.89	ND	0	0	18.97	72.39	0.51	0.3
4/27/2017	17.01	70.29	0.51	0	17.67	ND	0	0	18.84	72.31	0.59	0.5
5/29/2017	17.23	70.24	0.56	0.3	17.84	ND	0	0	18.94	72.47	0.43	0.3
7/5/2017	17.33	70.34	0.46	0.3	17.96	ND	0	0	19.12	72.34	0.56	0.5
8/1/2017	17.39	70.39	0.41	0.3	18.09	ND	0	0	19.23	72.27	0.63	0.5
9/5/2017	17.36	70.43	0.37	0.3	18.16	ND	0	0	19.29	72.34	0.56	0.5
10/4/2017	17.31	70.41	0.39	0.3	18.21	ND	0	0	19.36	72.3	0.6	0.5
11/2/201												

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-44C				MW-45C				MW-46C			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
1/2/2019	18.42	70.41	0.39	0.5	19.02	ND	0	0	20.49	72.46	0.44	0.5
2/2/2019	18.29	70.41	0.39	0.5	18.93	ND	0	0	20.43	72.49	0.41	0.5
2/28/2019	18.16	70.42	0.38	0.5	18.77	ND	0	0	20.34	72.37	0.53	0.5
4/2/2019	18.09	70.39	0.41	0.5	18.71	ND	0	0	20.18	72.32	0.58	0.5
4/25/2019	18.02	70.16	0.64	0.5	18.63	ND	0	0	20.14	72.36	0.54	0.5
5/29/2019	18.61	70.23	0.57	0.5	18.47	ND	0	0	20.06	72.39	0.51	0.5
6/12/2019	18.29	ND	Trace	0	18.81	ND	0	0	18.02	ND	Trace	0
6/30/2019	18.16	ND	0	0	18.71	ND	0	0	18.09	ND	0	0
7/16/2019	18.09	ND	0	0	18.66	ND	0	0	18.12	ND	0	0
8/2/2019	18.17	ND	0	0	18.72	ND	0	0	18.17	ND	0	0
8/15/2019	18.22	ND	0	0	18.79	ND	0	0	18.09	ND	0	0
8/28/2019	18.29	ND	0	0	18.86	ND	0	0	18.17	ND	0	0
9/17/2019	18.39	ND	0	0	18.97	ND	0	0	18.23	ND	0	0
10/2/2019	18.32	ND	0	0	18.89	ND	0	0	18.17	ND	0	0
10/16/2019	15.06	ND**	0	0	16.23	ND	0	0	16.34	ND	0	0
10/31/2019	14.89	ND**	0	0	15.94	ND	0	0	16.06	ND	0	0
11/15/2019	14.21	ND**	0	0	15.69	ND	0	0	15.81	ND	0	0
12/3/2019	16.11	ND**	0	0	15.71	ND	0	0	15.91	ND	0	0
12/18/2019	16.51	ND**	0	0	15.91	ND	0	0	16.11	ND	0	0
12/30/2019	16.65	ND**	0	0	16.11	ND	0	0	16.22	ND	0	0
1/7/2020	--	--	--	--	--	--	--	--	--	--	--	--
1/15/2020	16.61	ND**	0	0	16.11	ND	0	0	16.29	ND	0	0
1/27/2020	16.24	ND**	0	0	15.71	ND	0	0	16.15	ND	0	0
2/13/2020	15.81	ND**	0	0	15.29	ND	0	0	14.4	ND	0	0
2/25/2020	15.81	ND**	0	0	15.28	ND	0	0	15.42	ND	0	0
3/13/2020	15.84	ND**	0	0	15.31	ND	0	0	15.57	ND	0	0
3/31/2020	14.82	ND**	0	0	15.59	ND	0	0	15.72	ND	0	0
4/9/2020	22.76	ND**	0	0	15.67	ND	0	0	15.89	ND	0	0
4/27/2020	14.67	ND**	0	0	15.94	ND	0	0	16.12	ND	0	0
5/14/2020	14.21	ND**	0	0	16.38	69.3	1.30	0.1	16.51	ND	0	0
5/28/2020	12.06	57.61	0.39**	0	16.46	70	0.6	0	16.71	ND	0	0
6/11/2020	11.61	ND**	0	0	16.68	ND	0	0	16.83	ND	0	0
6/25/2020	10.37	ND**	0	0	14.99	ND	0	0	15.12	ND	0	0
7/9/2020	11.51	ND**	0	0	16.28	ND	0	0	16.51	ND	0	0
7/23/2020	16.92	ND**	0	0	16.49	69.7	0.90	TR	16.49	ND	0	0
8/6/2020	16.75	ND**	0	0	16.19	ND	0	0	16.47	ND	0	0
8/20/2020	16.71	ND**	0	0	16.18	ND	0	0	16.35	ND	0	0
9/2/2020	16.84	ND**	0	0	16.21	ND	0	0	16.51	ND	0	0
9/17/2020	17.29	ND**	0	0	16.71	ND	0	0	16.85	ND	0	0
10/1/2020	16.84	ND**	0	0	16.61	ND	0	0	16.64	ND	0	0
10/14/2020	16.92	ND**	0	0	16.39	ND	0	0	16.58	ND	0	0
10/28/2020	17.11	ND**	0	0	16.58	70.6	Trace	TR	16.74	ND	0	0
11/12/2020	17.42	ND**	0	0	16.83	ND	0	0	17.04	ND	0	0
11/23/2020	1769	ND**	0	0	17.12	ND	0	0	17.33	ND	0	0
12/10/2020	17.01	ND**	0	0	16.50	ND	0	0	16.71	ND	0	0
12/21/2020	16.69	ND**	0	0	16.02	69.04	1.56	0.3	16.22	ND	0	0
1/7/2021	15.91	ND**	0	0	15.59	ND	0	0	15.81	ND	0	0
1/21/2021	15.77	ND**	0	0	15.2	70.5	0.1	TR	15.44	ND	0	0
2/4/2021	15.69	ND**	0	0	15.19	70.55	0.05	TR	15.39	ND	0	0
2/23/2021	14.55	ND**	0	0	14.99	70.21	0.39	TR	15.24	ND	0	0
3/11/2021	15.49	ND**	0	0	14.98	ND	0	0	15.21	ND	0	0
3/25/2021	15.5	ND**	0	0	14.99	ND	0	0	15.18	ND	0	0
4/8/2021	15.59	ND**	0	0	15.19	ND	0	0	15.41	ND	0	0
4/22/2021	16.09	ND**	0	0	15.52	ND	0	0	15.77	ND	0	0
5/4/2021	Well Damaged				14.58	ND	0	0	14.74	ND	0	0
5/20/2021	Well Damaged				15.58	ND	0	0	15.75	ND	0	0
6/3/2021	Well Damaged				14.96	ND	0	0	15.21	ND	0	0
6/17/2021	Well Damaged				15.76	ND	0	0	15.08	ND	0	0
7/1/2021	Well Damaged				14.59	69.79	0.81	0.3	14.81	ND	0	0
7/19/2021	Well Damaged				14.05	69.42	1.18	0.3	14.26	ND	0	0
7/29/2021	Well Damaged				14.05	69.71	0.89	0.1	14.29	ND	0	0
8/12/2021	Well Damaged				14.68	70.36	0.24	TR	14.84	ND	0	0
8/26/2021	Well Damaged				15.21	ND	0	0	15.43	ND	0	0
9/10/2021	Well Damaged				15.63	ND	0	0	15.82	ND	0	0
9/22/2021	Well Damaged				15.71	ND	0	0	15.89	ND	0	0
10/8/2021	Well Damaged				15.47	ND	0	0	15.83	ND	0	0
10/20/2021	Well Damaged				15.88	ND	0	0	15.98	ND	0	0
11/4/2021	Well Damaged			</								

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-49B				MW-57A				MW-57B			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013					10.56	22.12	4.78	0.5	28.56	41.41	1.54	0.3
4/3/2013					10.32	24.79	2.11	0.5	28.09	42.36	0.59	0.3*
4/22/2013					10.71	25.85	1.05	0.5	27.06	42.17	0.78	0.3
5/30/2013					10.63	24.16	2.74	0.5	27.13	41.63	1.32	0.3
6/29/2013					12.16	23.82	3.08	2	18.26	42.07	0.88	0.3
7/22/2013	11.83	33.91	0.84	--	13.21	23.05	3.85	2	16.34	41.67	1.28	0.8
8/26/2013					12.91	25.32	1.58	1	18.01	42.31	0.64	0.3
9/27/2013					12.72	25.71	1.19	0.8	17.74	42.51	0.39	0.3
10/31/2013					12.72	25.92	0.98	1	17.61	42.61	0.29	0.1
11/27/2013					12.61	25.98	0.92	1	17.54	42.67	0.23	0.1
12/31/2013					12.46	26.09	0.81	1	17.36	42.74	0.16	0.1
1/30/2014					11.79	26.15	0.75	0.3	17.04	ND	Trace	0
3/3/2014					11.02	26.25	0.65	0.3	16.51	ND	Trace	0
3/31/2014					10.83	26.41	0.49	0.3	16.41	ND	Trace	0
4/30/2014					10.71	26.31	0.59	0.3	16.29	ND	Trace	0
5/27/2014					10.74	26.16	0.74	0.3	16.13	ND	Trace	0
6/26/2014					10.61	26.29	0.61	0.3	16.02	ND	Trace	0
7/31/2014					10.35	26.18	0.72	0.3	15.84	ND	Trace	0
8/27/2014					10.22	26.26	0.64	0.3	15.71	ND	Trace	0
10/3/2014					10.09	26.04	0.86	0.3	15.61	ND	Trace	0
11/3/2014					10.17	26.16	0.74	0.3	NM	NM	NM	0
11/24/2014					10.13	26.29	0.61	0.3	NM	NM	NM	0
12/22/2014					10.06	26.34	0.56	0.3	NM	NM	NM	0
1/29/2015					9.73	26.51	0.39	0.3	NM	NM	NM	0
2/26/2015					9.87	26.42	0.48	0.3	NM	NM	NM	0
3/26/2015					9.81	26.32	0.58	0.3	NM	NM	NM	0
4/27/2015					9.82	26.47	0.43	0.5	NM	NM	NM	0
5/26/2015					9.71	26.56	0.34	0.5	NM	NM	NM	0
7/6/2015					7.41	26.82	0.08	TR*	NM	NM	NM	0
8/3/2015					7.29	26.86	0.04	TR*	12.32	ND	PoP	0
8/27/2015					8.11	ND	0	TR*	13.04	ND	0	0
10/5/2015					7.72	ND	0	0	12.62	ND	0	0
11/5/2015					7.39	ND	0	0	12.27	ND	0	0
12/3/2015					7.13	ND	0	0	12.02	ND	0	0
12/28/2015					NM	NM	NM	0	NM	NM	NM	0
2/3/2016					NM	NM	NM	0	NM	NM	NM	0
3/3/2016					NM	NM	NM	0	NM	NM	NM	0
3/31/2016					NM	NM	NM	0	NM	NM	NM	0
5/3/2016					NM	NM	NM	0	NM	NM	NM	0
6/2/2016					7.26	ND	0	0	12.32	ND	0	0
7/8/2016					7.39	ND	0	0	12.44	ND	0	0
8/3/2016					7.46	ND	0	0	12.52	ND	0	0
8/30/2016					7.58	ND	0	0	12.67	ND	0	0
9/30/2016					7.69	ND	0	0	12.81	ND	0	0
11/3/2016					7.77	ND	0	0	12.92	ND	0	0
11/30/2016					7.92	ND	0	0	13.16	ND	0	0
1/4/2017					8.07	ND	0	0	13.24	ND	0	0
2/7/2017					8.18	ND	0	0	13.29	ND	0	0
3/2/2017					8.02	ND	0	0	13.17	ND	0	0
4/3/2017					8.06	ND	0	0	13.04	ND	0	0
4/27/2017					8.01	ND	0	0	13.14	ND	0	0
5/29/2017					8.34	ND	0	0	13.41	ND	0	0
7/5/2017					8.41	ND	0	0	13.57	ND	0	0
8/1/2017					8.52	ND	0	0	13.69	ND	0	0
9/5/2017					8.46	ND	0	0	13.79	ND	0	0
10/4/2017					8.41	ND	0	0	13.71	ND	0	0
11/2/2017					8.52	ND	0	0	13.91	ND	0	0
11/29/2017					8.67	ND	0	0	14.02	ND	0	0
1/2/2018					8.91	ND	0	0	13.06	ND	0	0
2/7/2018					8.98	ND	0	0	12.42	ND	0	0
3/1/2018					9.22	ND	0	0	12.58	ND	0	0
4/2/2018					9.16	ND	0	0	12.46	ND	0	0
5/1/2018					9.34	ND	0	0	13.04	ND	0	0
6/1/2018					9.67	ND	0	0	13.29	ND	0	0
6/29/2018					9.87	ND	0	0	13.47	ND	0	0
8/3/2018					10.02	ND	0	0	13.61	ND	0	0
8/31/2018					9.91	ND	0	0	13.47	ND	0	0
9/28/2018					9.86	ND	0	0	13.36	ND	0	0
11/2/2018					9.77	ND	0	0	13.21	ND	0	0
11/29/2018					9.56	ND	0	0	13.01	ND	0	0

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-49B				MW-57A				MW-57B			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
1/2/2019					9.52	ND	Trace	0	13.03	ND	Trace	0
2/2/2019					9.41	ND	Trace	0	12.91	ND	Trace	0
2/28/2019					9.32	ND	Trace	0	12.83	ND	Trace	0
4/2/2019					9.27	ND	Trace	0	12.76	ND	Trace	0
4/25/2019					9.16	ND	Trace	0	12.71	ND	Trace	0
5/29/2019					9.06	ND	Trace	0	12.70	ND	Trace	0
6/12/2019					9.39	ND	0	0	12.93	ND	0	0
6/30/2019					9.21	ND	0	0	12.86	ND	0	0
7/16/2019	12.02	34.62	0.24	--	9.17	ND	0	0	12.79	ND	0	0
8/2/2019					9.22	ND	0	0	12.84	ND	0	0
8/15/2019					9.29	ND	0	0	12.92	ND	0	0
8/28/2019					9.33	ND	0	0	12.96	ND	0	0
9/17/2019					9.46	ND	0	0	12.86	ND	0	0
10/2/2019					9.74	ND	0	0	12.83	ND	0	0
10/16/2019					10.39	ND	0	0	13.67	ND	0	0
10/31/2019					11.92	ND	0	0	14.21	ND	0	0
11/15/2019					11.14	ND	0	0	6.21	ND	0	0
12/3/2019					13.75	ND	0	0	13.51	ND	0	0
12/18/2019					14.09	ND	0	0	13.51	ND	0	0
12/30/2019					14.42	ND	0	0	13.51	ND	0	0
1/7/2020	11.51	20.09	14.77	--	--	--	--	--	--	--	--	--
1/15/2020	15.48	20.89	13.97	2.5	12.79	ND	0	0	21.93	ND	0	0
1/27/2020	14.2	22.4	12.46	2	11.61	ND	0	0	19.96	ND	0	0
2/13/2020	13.31	28.9	5.96	1.5	13.22	ND	0	0	17.91	ND	0	0
2/25/2020	11.51	26.8	8.06	1.0	12.31	ND	0	0	16.86	ND	0	0
3/13/2020	11.73	26.1	8.76	0.5	13.71	ND	0	0	15.91	ND	0	0
3/31/2020	13.72	29.39	5.47	0.5	13.85	ND	0	0	15.37	ND	0	0
4/9/2020	14.13	31.04	3.82	0.5	13.36	ND	0	0	15.19	ND	0	0
4/27/2020	15.31	32.05	2.81	0.1	14.45	ND	0	0	14.99	ND	0	0
5/14/2020	14.95	31.89	2.97	0.1	14.84	ND	0	0	14.95	ND	0	0
5/28/2020	13.66	31.07	3.79	0.5	13.91	ND	0	0	14.92	ND	0	0
6/11/2020	14.56	31.22	3.64	0.3	14.41	ND	0	0	14.89	ND	0	0
6/25/2020	10.65	31.64	3.22	0.3	14.08	ND	0	0	14.28	ND	0	0
7/9/2020	10.51	32.41	2.45	0.5	13.51	ND	0	0	14.67	ND	0	0
7/23/2020	13.51	31.13	3.73	0.5	13.26	ND	0	0	17.09	ND	0	0
8/6/2020	13.23	32.48	2.38	0.3	11.53	ND	0	0	16.20	ND	0	0
8/20/2020	12.11	32.08	2.78	0.1	13.11	ND	0	0	15.47	ND	0	0
9/2/2020	13.58	31.04	3.82	0.8	13.91	ND	0	0	15.01	ND	0	0
9/17/2020	15.91	30.24	4.62	0.5	14.43	ND	0	0	14.71	ND	0	0
10/1/2020	13.63	31.11	3.75	0.8	12.41	ND	0	0	14.44	ND	0	0
10/14/2020	12.18	29.6	5.26	2.0	13.74	ND	0	0	14.08	ND	0	0
10/28/2020	13.71	31.93	2.93	1.0	13.91	ND	0	0	13.87	ND	0	0
11/12/2020	12.74	32.03	2.83	0.5	14.64	ND	0	0	13.81	ND	0	0
11/23/2020	12.08	32.30	2.56	0.3	14.99	ND	0	0	13.21	ND	0	0
12/10/2020	8.66	31.21	3.65	0.3	12.31	ND	0	0	13.76	ND	0	0
12/21/2020	6.6	30.72	4.14	0.5	10.92	ND	0	0	13.56	ND	0	0
1/7/2021	6.41	32.25	2.61	0.5	12.51	ND	0	0	13.25	ND	0	0
1/21/2021	15.44	31.25	3.61	0.5	12.54	ND	0	0	20.69	ND	0	0
2/4/2021	15.81	31.54	3.32	0.5	13.15	ND	0	0	18.46	ND	0	0
2/23/2021	13.44	31.2	3.66	0.5	12.32	ND	0	0	16.49	ND	0	0
3/11/2021	11.91	31.96	2.9	0.5	13.13	ND	0	0	15.55	ND	0	0
3/25/2021	10.28	32.41	2.45	0.5	13.01	ND	0	0	15.06	ND	0	0
4/8/2021	10.79	31.79	3.07	0.5	13.71	ND	0	0	14.84	ND	0	0
4/22/2021	11.29	32.08	2.78	0.5	14.31	ND	0	0	14.65	ND	0	0
5/4/2021	7.94	32.4	2.46	0.3	13.03	ND	0	0	14.59	ND	0	0
5/20/2021	7.04	32.69	2.17	0.5	10.45	ND	0	0	14.61	ND	0	0
6/3/2021	4.81	32.6	2.26	0.5	11.15	ND	0	0	14.12	ND	0	0
6/17/2021	6.39	32.8	2.06	TR	12.21	ND	0	0	13.84	ND	0	0
7/1/2021	4.51	ND	0	0	10.38	ND	0	0	13.61	ND	0	0
7/19/2021	0.39	ND	0	0	9.79	ND	0	0	13.22	ND	0	0
7/29/2021	12.91	ND	0	0	12.51	ND	0	0	16.66	ND	0	0
8/12/2021	10.49	32.60	2.26	0.1	13.91	ND	0	0	15.32	ND	0	0
8/26/2021	9.87	31.90	2.96	0.5	14.11	ND	0	0	14.92	ND	0	0
9/10/2021	10.03	31.79	3.07	0.2	14.28	ND	0	0	14.61	ND	0	0
9/22/2021	7.50	ND	0	0	13.21	ND	0	0	14.40	ND	0	0
10/8/2021	7.56	ND	0	0	12.05	ND	0	0	14.10	ND	0	0
10/20/2021	7.8	30.94	1.82	0.1	13.80	ND	0	0	14.61	ND	0	0
11/4/2021	7.63	ND	0	0								

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-68B				MW-70B				MW-74B			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013					6.57	34.09	1.61	0.3				
4/3/2013					6.79	35.26	0.44	0.3				
4/22/2013					6.06	35.12	0.58	0.3				
5/30/2013					6.19	34.67	1.03	0.3				
6/29/2013					8.01	34.92	0.78	0.3*				
7/22/2013					8.22	34.07	1.63	0.3*				
8/26/2013					8.17	35.09	0.61	0.3				
9/27/2013					8.32	35.34	0.36	0.3				
10/31/2013					8.26	35.39	0.31	0.1				
11/27/2013					8.12	35.42	0.28	0.1				
12/31/2013					7.89	35.51	0.19	0.1				
1/30/2014					7.84	35.06	0.64	0.1				
3/3/2014					7.09	35.05	0.65	0.1				
3/31/2014					6.87	35.17	0.53	0.1				
4/30/2014					6.72	35.01	0.69	0.1				
5/27/2014					6.64	34.86	0.84	0.1				
6/26/2014					6.52	34.97	0.73	0.3				
7/31/2014					6.26	34.76	0.94	0.3				
8/27/2014					6.84	34.86	0.84	0.3				
10/3/2014					6.71	34.61	1.09	0.3				
11/3/2014					6.79	34.79	0.91	0.3				
11/24/2014					6.77	34.93	0.77	0.3				
12/22/2014					6.69	34.86	0.84	0.3				
1/29/2015					6.48	34.92	0.78	0.3				
2/26/2015					6.39	34.81	0.89	0.5				
3/26/2015					6.27	34.91	0.79	0.3				
4/27/2015					6.19	34.99	0.71	0.3				
5/26/2015					6.07	35.11	0.59	0.5				
7/6/2015					5.03	35.32	0.38	0.3				
8/3/2015					5.12	35.37	0.33	TR*				
8/27/2015					6.31	35.41	0.29	TR*				
10/5/2015					5.72	35.47	0.23	0.3				
11/5/2015					5.41	35.42	0.28	0.3				
12/3/2015					5.13	35.63	0.07	0.3				
12/28/2015					5.02	35.26	0.44	0.3				
2/3/2016					4.86	35.21	0.49	0.3				
3/3/2016					4.92	35.17	0.53	0.3				
3/31/2016					4.91	35.24	0.46	0.3				
5/3/2016					5.13	35.29	0.36	0.3				
6/2/2016					5.26	35.36	0.29	0.3				
7/8/2016					5.34	35.31	0.34	0.3				
8/3/2016					5.42	35.39	0.26	0.3				
8/30/2016					5.61	35.21	0.44	0.3				
9/30/2016					5.74	35.03	0.62	0.3				
11/3/2016					5.79	35.11	0.54	0.3				
11/30/2016					6.03	35.23	0.42	0.3				
1/4/2017					6.17	35.09	0.56	0.5				
2/7/2017					6.26	35.01	0.64	0.5				
3/2/2017					6.16	35.09	0.56	0.5				
4/3/2017					6.09	35.13	0.52	0.5				
4/27/2017					6.12	35.2	0.45	0.5				
5/29/2017					6.29	35.06	0.59	0.5				
7/5/2017					6.39	35.14	0.51	0.3				
8/1/2017					6.47	35.21	0.44	0.3				
9/5/2017					6.56	35.34	0.31	0.3				
10/4/2017					6.63	35.39	0.26	0.3				
11/2/2017					6.74	35.31	0.34	0.3				
11/29/2017					6.79	35.29	0.36	0.3				
1/2/2018					6.34	35.34	0.31	0.3				
2/7/2018					6.42	35.31	0.34	0.3				
3/1/2018					6.67	35.21	0.44	0.5				
4/2/2018					6.61	35.16	0.49	0.5				
5/1/2018					7.22	35.23	0.42	1.3				
6/1/2018					7.42	35.29	0.36	1				
6/29/2018					7.58	35.21	0.44	1				
8/3/2018					7.69	35.29	0.36	0.8				
8/31/2018					7.42	35.36	0.29	0.5				
9/28/2018					7.33	35.28	0.37	0.5				
11/2/2018					7.22	35.24	0.41	0.8				
11/29/2018					7.06	35.21	0.44	0.5				

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-68B				MW-70B				MW-74B			
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
1/2/2019					6.96	35.31	0.34	0.5				
2/2/2019					6.87	35.36	0.29	0.5				
2/28/2019					6.74	35.29	0.36	0.5				
4/2/2019					6.67	35.27	0.38	0.5				
4/25/2019					6.74	35.21	0.44	0.5				
5/29/2019					6.71	35.17	0.48	0.5				
6/12/2019					6.43	34.84	0.81	1				
6/30/2019					6.48	34.61	1.04	1				
7/16/2019					6.43	34.49	1.16	1.5				
8/2/2019					6.48	34.31	1.34	1.5				
8/15/2019					6.51	34.07	1.58	2				
8/28/2019					6.57	34.09	1.56	2				
9/17/2019					6.51	34.01	1.64	2				
10/2/2019					6.46	33.71	1.94	2.5				
10/16/2019					6.42	ND	0	0				
10/31/2019					6.43	ND	Trace	0				
11/15/2019					4.75	ND	0	0				
12/3/2019					5.01	ND	0	0				
12/18/2019					5.53	35	0.65	0.3				
12/30/2019					5.71	32.4	3.25	0.1				
1/7/2020	4.82	34.21	3.59	--	--	--	--	--				
1/15/2020	4.82	34.41	3.39	0.5	7.19	32.51	3.14	0.1				
1/27/2020	2.15	35.9	1.9	0.5	9.9	31.3	4.35	0.1				
2/13/2020	3.49	35.02	2.78	0.5	5.99	31.43	4.22	0.1				
2/25/2020	2.35	36.12	1.68	0.3	4.71	31.81	3.84	0.3				
3/13/2020	3.99	35.6	2.2	0.1	4.63	30.5	5.15	0.3				
3/31/2020	4.46	36.9	0.9	0.0	6.04	31.34	4.31	0.5				
4/9/2020	4.41	35.99	1.81	0.1	6.79	31.53	4.12	0.5				
4/27/2020	5.53	36.1	1.7	0.1	6.81	30.84	4.81	1.0				
5/14/2020	6.39	37.01	0.79	0	7.26	30.63	5.02	1.0				
5/28/2020	5.99	37.09	0.71	TR	7.02	30.74	4.91	1.5				
6/11/2020	6.49	36.8	1	TR	7.53	31.2	4.45	0.5				
6/25/2020	6.09	36.94	0.86	TR	7.08	32.12	3.53	0.5				
7/9/2020	5.06	37.37	0.43	0.3	5.61	32	3.65	0.5				
7/23/2020	5.31	37.47	0.33	TR	6.33	32.2	3.45	1.0				
8/6/2020	3.02	37.38	0.42	TR	6.15	33.12	2.53	1.3				
8/20/2020	5.11	37.26	0.54	TR	5.74	33.2	2.45	1.0				
9/2/2020	5.96	37.4	0.4	TR	6.74	34.39	1.26	0.1				
9/17/2020	6.6	37.32	0.48	0.1	6.92	34.99	0.66	0.1				
10/1/2020	3.81	37.39	0.41	0.1	5.52	34.88	0.77	0.3				
10/14/2020	5.11	36.81	0.99	0.3	5.63	34.49	1.16	0.3				
10/28/2020	5.26	36.52	1.28	0.3	4.8	34.71	0.94	0.3				
11/12/2020	6.13	36.82	0.98	0.3	6.38	34.21	1.44	0.5				
11/23/2020	6.54	37.2	0.6	0.3	7.51	35.19	0.46	0.3				
12/10/2020	3.24	37.08	0.72	0.0	5.82	35.10	0.55	0.1				
12/21/2020	1.22	37.01	0.79	0.1	5.55	34.48	1.17	0.1				
1/7/2021	2.48	ND	0	0	5.04	35	0.65	TR				
1/21/2021	2.99	37.37	0.43	TR	4.72	35.02	0.63	TR				
2/4/2021	3.62	37.32	0.48	TR	7.2	35.08	0.57	TR				
2/23/2021	2.51	ND	0	0	5.33	34.2	1.45	1.0				
3/11/2021	3.49	ND	0	0	5.33	34.3	1.35	0.8				
3/25/2021	3.34	ND	0	0	5.78	34.93	0.72	0.5				
4/8/2021	4.28	ND	0	0	5.88	34.83	0.82	0.5				
4/22/2021	4.96	ND	0	0	5.99	34.56	1.09	0.5				
5/4/2021	3.64	37.38	0.42	0	6.21	34.39	1.26	0.5	7.81	32.80	2.20	2.0
5/20/2021	0.99	ND	0	0	5.89	35.09	0.56	0.3	5.93	33.40	1.60	0.5
6/3/2021	2.66	ND	0	0	4.58	34.98	0.67	0.3	6.54	33.62	1.38	0.5
6/17/2021	3.51	ND	0	0	4.78	35.16	0.49	0.3	6.86	34.70	0.30	0.1
7/1/2021	1.11	37.01	0.39	0.1	4.48	34.85	0.8	TR	3.68	34.08	0.92	0.5
7/19/2021	1.06	37.21	0.19	TR	3.78	34.9	0.75	TR	5.36	34.15	0.85	0.8
7/29/2021	3.74	37.38	0.02	TR	5.74	35.2	0.45	TR	6.31	33.60	1.40	1.0
8/12/2021	5.21	ND	0	0	5.71	35.12	0.53	TR	7.51	33.34	1.66	1.0
8/26/2021	5.80	ND	0	TR	5.88	35.16	0.49	TR	7.34	33.22	1.78	1.0
9/10/2021	5.08	ND	0	0	6.41	35.18	0.47	0.1	7.81	34.40	0.60	0.2
9/22/2021	4.65	ND	0	0	6.46	ND	0	0	11.35	34.41	0.59	0
10/8/2021	3.14	ND	0	0	5.12	ND	0	0	6.94	33.58	1.42	0
10/20/2021	5.01	ND	0	0	6.84	35.27	0.38	0	11.84	34.81	0.19	0
11/4/2021	3.38	ND	0	0	5.10	ND	0	0	7.24	33.83	1.17	0.3
11/18/2021	4.38	ND	0	0	5.34	ND	0	0	7.41	ND	0	0
12/3/2021	4.38	ND	0	0	5.58	ND	0	0	7.90	ND	0	0
12/16												

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-75B				MW-78A				Approx DNAPL Recovered (gal)
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	
2/14/2013	10.01	34.1	3.1	0.3	NM	NM	NM	0	9.8
4/3/2013	13.71	36.47	0.73	0.3	NM	NM	NM	0	5.2
4/22/2013	9.72	36.72	0.48	0.3	NM	NM	NM	0	2.9
5/30/2013	9.61	35.09	2.11	0.8	NM	NM	NM	0	7.7
6/29/2013	10.61	35.61	1.59	0.8	NM	NM	NM	0	7.2
7/22/2013	9.74	35.71	1.49	0.8	NM	NM	NM	0	6.7
8/26/2013	10.76	35.93	1.27	0.8	NM	NM	NM	0	6.5
9/27/2013	10.52	36.39	0.81	0.5	NM	NM	NM	0	5.8
10/31/2013	10.31	36.47	0.73	1	NM	NM	NM	0	5.1
11/27/2013	10.39	36.51	0.69	1	NM	NM	NM	0	4.7
12/31/2013	10.13	36.72	0.48	1	NM	NM	NM	0	4.7
1/30/2014	12.62	36.49	0.71	0.8	NM	NM	NM	0	4.7
3/3/2014	12.12	36.35	0.85	0.8	NM	NM	NM	0	4.9
3/31/2014	12.01	36.27	0.93	0.8	NM	NM	NM	0	5.0
4/30/2014	11.84	36.02	1.18	0.8	NM	NM	NM	0	5.1
5/27/2014	11.71	35.79	1.41	0.8	NM	NM	NM	0	4.9
6/26/2014	11.58	35.91	1.29	0.5	NM	NM	NM	0	5.0
7/31/2014	11.32	35.82	1.38	0.5	NM	NM	NM	0	4.8
8/27/2014	11.19	36.09	1.11	0.5	NM	NM	NM	0	4.3
10/3/2014	11.09	36.01	1.19	0.5	NM	NM	NM	0	4.8
11/3/2014	11.16	36.19	1.01	0.8	9.31	19.12	6.23	2	7.3
11/24/2014	11.21	36.27	0.93	0.5	9.39	19.62	5.73	2	8.0
12/22/2014	11.26	36.19	1.01	0.5	9.34	19.86	5.49	2	8.3
1/29/2015	11.06	36.34	0.86	0.5	9.14	21.29	4.06	2	7.8
2/26/2015	11.09	36.34	0.86	0.5	9.17	19.97	5.38	2.5	10.0
3/26/2015	10.93	36.42	0.78	0.5	9.12	20.31	5.04	0.8	7.3
4/27/2015	10.78	36.52	0.68	0.5	9.17	20.46	4.89	2	10.5
5/26/2015	10.61	36.72	0.48	0.8	9.09	20.59	4.76	2.5	12.3
7/6/2015	8.52	36.91	0.29	0.8	7.01	21.16	4.19	2	10.5
8/3/2015	8.66	36.96	0.24	0.8	7.12	21.39	3.96	2.5	10.8
8/27/2015	9.31	36.91	0.29	0.8	7.96	21.51	3.84	2	8.3
10/5/2015	8.62	37.02	0.18	0.5	7.23	21.67	3.68	2	8.0
11/5/2015	8.34	36.93	0.27	0.5	7.02	21.56	3.79	2	8.0
12/3/2015	8.12	36.81	0.39	0.5	6.83	21.67	3.68	2	8.0
12/28/2015	8.01	36.72	0.48	0.5	6.71	21.52	3.83	2.3	9.0
2/3/2016	7.82	36.19	1.01	0.3	6.52	21.67	3.68	2	9.0
3/3/2016	7.74	36.27	0.93	0.5	6.46	21.72	3.63	2	9.3
3/31/2016	7.67	36.39	0.81	0.5	6.49	21.86	3.49	2	9.3
5/3/2016	7.79	36.47	0.68	0.5	6.57	21.94	3.41	2	7.8
6/2/2016	7.71	36.42	0.73	0.5	6.65	21.91	3.44	2	8.3
7/8/2016	7.8	36.53	0.62	0.5	6.71	21.97	3.38	2	8.0
8/3/2016	7.89	36.59	0.56	0.5	6.82	22.04	3.31	2	8.0
8/30/2016	7.96	36.64	0.51	0.5	6.94	22.21	3.14	2	8.3
9/30/2016	7.91	36.51	0.64	0.5	7.04	22.39	2.96	2	8.5
11/3/2016	7.86	36.36	0.79	0.5	7.11	22.49	2.86	2	8.5
11/30/2016	7.97	36.47	0.68	0.8	7.29	22.67	2.68	2	8.8
1/4/2017	8.04	36.36	0.79	0.8	7.42	22.74	2.61	2	8.8
2/7/2017	8.12	36.21	0.94	0.8	7.48	22.93	2.42	2.5	9.0
3/2/2017	8.01	36.26	0.89	0.8	7.36	23.26	2.09	2	8.5
4/3/2017	7.93	36.43	0.72	0.8	7.29	23.34	2.01	2	7.5
4/27/2017	7.86	36.52	0.63	0.8	7.36	23.42	1.93	2	8.0
5/29/2017	7.94	36.41	0.74	0.8	7.51	23.51	1.84	2	7.8
7/5/2017	8.04	36.36	0.79	0.8	7.79	23.59	1.76	2	7.3
8/1/2017	8.16	36.31	0.84	0.8	7.89	23.51	1.84	2	8.0
9/5/2017	8.22	36.47	0.68	0.8	7.81	23.48	1.87	2	8.3
10/4/2017	8.29	36.56	0.59	0.8	7.89	23.51	1.84	2	7.8
11/2/2017	8.37	36.51	0.64	1	7.97	23.59	1.76	2	8.5
11/29/2017	8.33	36.59	0.56	1	8.02	23.67	1.68	2	8.0
1/2/2018	8.07	36.72	0.43	1	8.17	23.82	1.53	2	8.3
2/7/2018	8.17	36.91	0.24	1	8.29	23.97	1.38	2	8.3
3/1/2018	8.31	36.94	0.21	1	8.47	23.91	1.44	2	7.5
4/2/2018	8.26	36.89	0.26	0.8	8.39	23.97	1.38	2.3	7.8
5/1/2018	8.92	36.96	0.19	0.8	9.02	24.06	1.29	2	9.0
6/1/2018	9.34	36.91	0.24	0.8	9.21	24.13	1.22	2	9.8
6/29/2018	9.67	36.82	0.33	0.8	9.39	24.21	1.14	2.3	10.5
8/3/2018	9.84	36.87	0.28	0.8	9.47	24.31	1.04	2	10.0
8/31/2018	9.71	36.91	0.24	0.8	9.32	24.47	0.88	2	8.3
9/28/2018	9.62	36.84	0.31	0.8	9.22	24.39	0.96	2	8.3
11/2/2018	9.57	36.88	0.27	0.8	9.09	24.27	1.08	2	8.5
11/29/2018	9.41	36.92	0.23	1	8.96	24.22	1.13	2	7.5

TABLE 1
SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

DNAPL Recovery Date	MW-75B				MW-78A				Approx DNAPL Recovered (gal)
	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	
1/2/2019	9.28	36.96	0.19	1	8.78	24.39	0.96	2	7.8
2/2/2019	9.22	36.91	0.24	1	8.71	24.47	0.88	2	8.0
2/28/2019	9.16	36.93	0.22	1	8.67	24.42	0.93	2	8.8
4/2/2019	9.06	36.91	0.24	1	8.58	24.43	0.92	2	8.8
4/25/2019	9.02	36.72	0.43	1	8.49	24.31	1.04	2	9.3
5/29/2019	9.07	36.67	0.48	1	8.42	24.26	1.09	2	9.3
6/12/2019	8.92	ND	Trace	0	8.67	23.96	1.39	2	9.0
6/30/2019	8.66	ND	Trace	0	9.36	23.77	1.58	2	9.8
7/16/2019	8.62	ND	Trace	0	9.29	23.62	1.73	2	10.5
8/2/2019	8.67	ND	Trace	0	9.34	23.57	1.78	2	8.0
8/15/2019	8.69	ND	ND	0	9.42	23.06	2.29	2	12.0
8/28/2019	8.72	ND	Trace	0	9.51	23.01	2.34	2	12.0
9/17/2019	8.61	ND	Trace	0	9.39	22.76	2.59	2	13.0
10/2/2019	8.53	ND	Trace	0	9.27	22.58	2.77	2	10.5
10/16/2019	NM	NM	NM	0	10.16	21.63	3.72	2	8.0
10/31/2019	NM	NM	NM	0	10.41	21.79	3.56	2.5	8.5
11/15/2019	7.91	ND	0	0	8.01	21.62	3.73	1.5	5.0
12/3/2019	8.24	ND	0	0	8.41	22.12	3.23	2	6.5
12/18/2019	4.99	ND	0	0	8.38	ND	0	0	2.1
12/30/2019	7.79	35.3	1.85	0	9.16	19.93	5.42	1.5	3.3
1/7/2020	--	--	--	--	--	--	--	--	--
1/15/2020	6.47	36.4	0.75	0	8.79	24.9	0.45	0.1	4.1
1/27/2020	5.92	34.6	2.55	0.1	7.06	24.06	1.29	0	3.8
2/13/2020	7.88	35.08	2.07	0.1	8.01	24.08	1.27	0	3.3
2/25/2020	5.82	ND	0	0	7.84	21.86	3.49	0.3	2.6
3/13/2020	8.24	34.9	2.25	0.1	NM	NM	NM	0	2.3
3/31/2020	4.79	ND	0	0	7.82	23.1	2.25	0.1	5.9
4/9/2020	8.52	ND	0	0	7.52	22.5	2.85	0.1	7.3
4/27/2020	9.07	ND	0	0	8.33	23.2	2.15	0.5	7.7
5/14/2020	7.74	37.1	0.05	0	8.05	23.22	2.13	0.5	8.3
5/28/2020	5.06	ND	0	0	7.59	23.69	1.66	0.5	8.6
6/11/2020	5.79	37	0.15	TR	7.39	24.96	0.39	0.1	5.6
6/25/2020	4.87	ND	0	0	6.28	19.9	5.45	1.5	6.5
7/9/2020	8.91	ND	0	0	8.41	19.7	5.65	2.5	7.3
7/23/2020	8.71	ND	0	0	7.85	20.91	4.44	1.0	8.8
8/6/2020	6.74	ND	0	0	7.81	22.05	3.3	1.0	6.3
8/20/2020	6.01	ND	0	0	7.21	21.88	3.47	0.5	3.9
9/2/2020	8.61	ND	0	0	6.98	22.6	2.75	1.0	4.4
9/17/2020	8.52	ND	0	0	8.05	22.21	3.14	0.5	3.1
10/1/2020	7.33	37.1	Trace	0	8.01	24.1	1.25	1.0	3.9
10/14/2020	8.26	37.2	Trace	TR	8.11	24.9	0.45	0.5	8.3
10/28/2020	8.11	ND	0	0	7.99	25.08	0.27	0.3	6.3
11/12/2020	8.41	36.78	0.37	0.3	8.42	25.0	0.35	0.1	5.6
11/23/2020	8.62	36.04	1.11	0.3	9.19	25.08	0.27	0.3	3.3
12/10/2020	7.94	36.54	0.61	0.1	8.79	25.12	0.23	TR	4.8
12/21/2020	6.15	36.84	0.31	0.1	6.43	25.21	0.14	TR	3.9
1/7/2021	6.81	37.01	0.14	0.1	7.31	ND	0	0	4.1
1/21/2021	7.85	35.5	1.65	2.0	7.71	ND	0	0	7.8
2/4/2021	8.19	35.2	1.95	2.0	7.63	ND	0	0	7.8
2/23/2021	7.64	34.59	2.56	1.0	7.52	ND	0	0	6.5
3/11/2021	7.82	35.1	2.05	1.0	7.42	ND	0	0	6.5
3/25/2021	7.91	36.81	0.34	0.3	7.28	ND	0	0	5.3
4/8/2021	7.08	36.53	0.62	0	7.41	ND	0	0	5.0
4/22/2021	8.59	36.8	0.35	0.3	7.02	ND	0	0	4.4
5/4/2021	7.83	ND	0	0	7.22	ND	0	0	6.8
5/20/2021	8.06	37.1	0.05	0.3	8.04	ND	0	0	5.5
6/3/2021	3.71	37.02	0.13	0.1	7.49	ND	0	0	4.9
6/17/2021	5.21	ND	0	0	6.81	ND	0	0	3.9
7/1/2021	7.33	ND	0	0	NM	NM	NM	0	4.4
7/19/2021	5.16	ND	0	0	NM	NM	NM	0	4.0
7/29/2021	7.48	ND	0	0	7.18	ND	0	0	3.9
8/12/2021	7.58	ND	0	0	6.84	ND	0	0	4.4
8/26/2021	8.19	37.01	0.14	TR	6.92	ND	0	0	5.0
9/10/2021	8.63	ND	0	0	6.58	ND	0	0	2.6
9/22/2021	8.09	ND	0	0	NM	NM	NM	0	1.3
10/8/2021	8.03	ND	0	0	7.14	ND	0	0	1.0
10/20/2021	8.21	ND	0	0	NM	NM	NM	0	1.3
11/4/2021	7.70	ND	0	0	7.01	ND	0	0	2.0
11/18/2021	7.70	ND	0	0	7.11	ND	0	0	0.3
12/3/2021	7.94	ND	0	0	7.46	ND	0	0	1.3
12/16/2021	8.12	ND	0	0	7.80	ND	0	0	1.3
12/30/2021	NM	NM	NM	0	8.09	ND	Trace	0	1.5
Total DNAPL Pumped (gal)	60.9				151.3				944.7

Notes:

* - indicates DNAPL and groundwater mixture
 --- - No DNAPL pumped
 DTW - Depth to water (feet Below Top of Casing (BTOC))
 DTD - Depth to DNAPL (feet BTOC)
 MW-78A not measured 7/1/21, 7/19/21, 9/22/21, 10/20/21; well inaccessible due to container operations
 MW-75B not measured 12/30/21; well inaccessible due to container operations
 ND - Not detected
 NM - Not measured
 PoP - Product on probe, not measureable
 TR- Trace amount of DNAPL Extracted

FIGURES

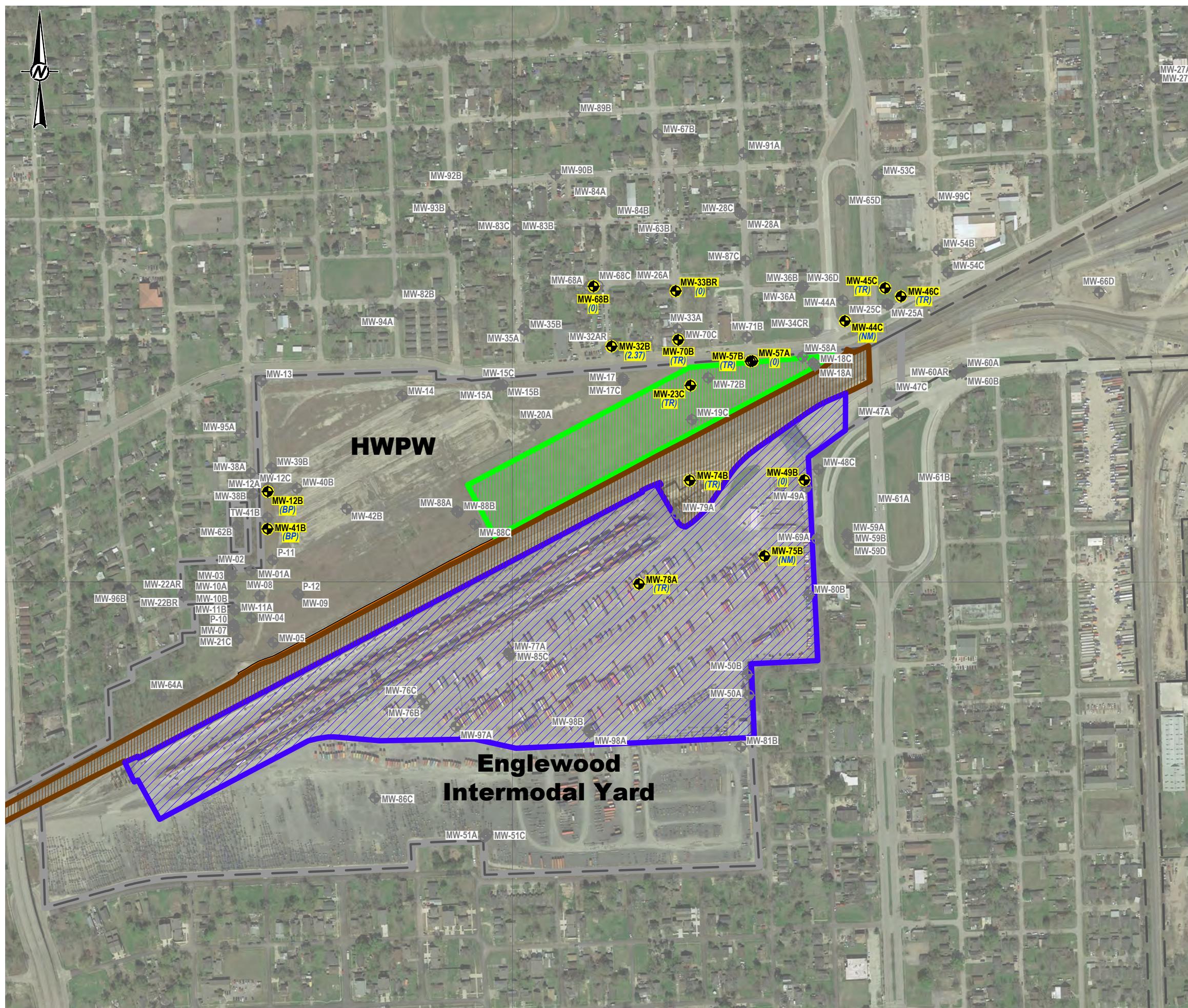


Figure 2
DNAPL Recovery Activities February 2013 - December 2021
UPRR Houston Wood Preserving Works

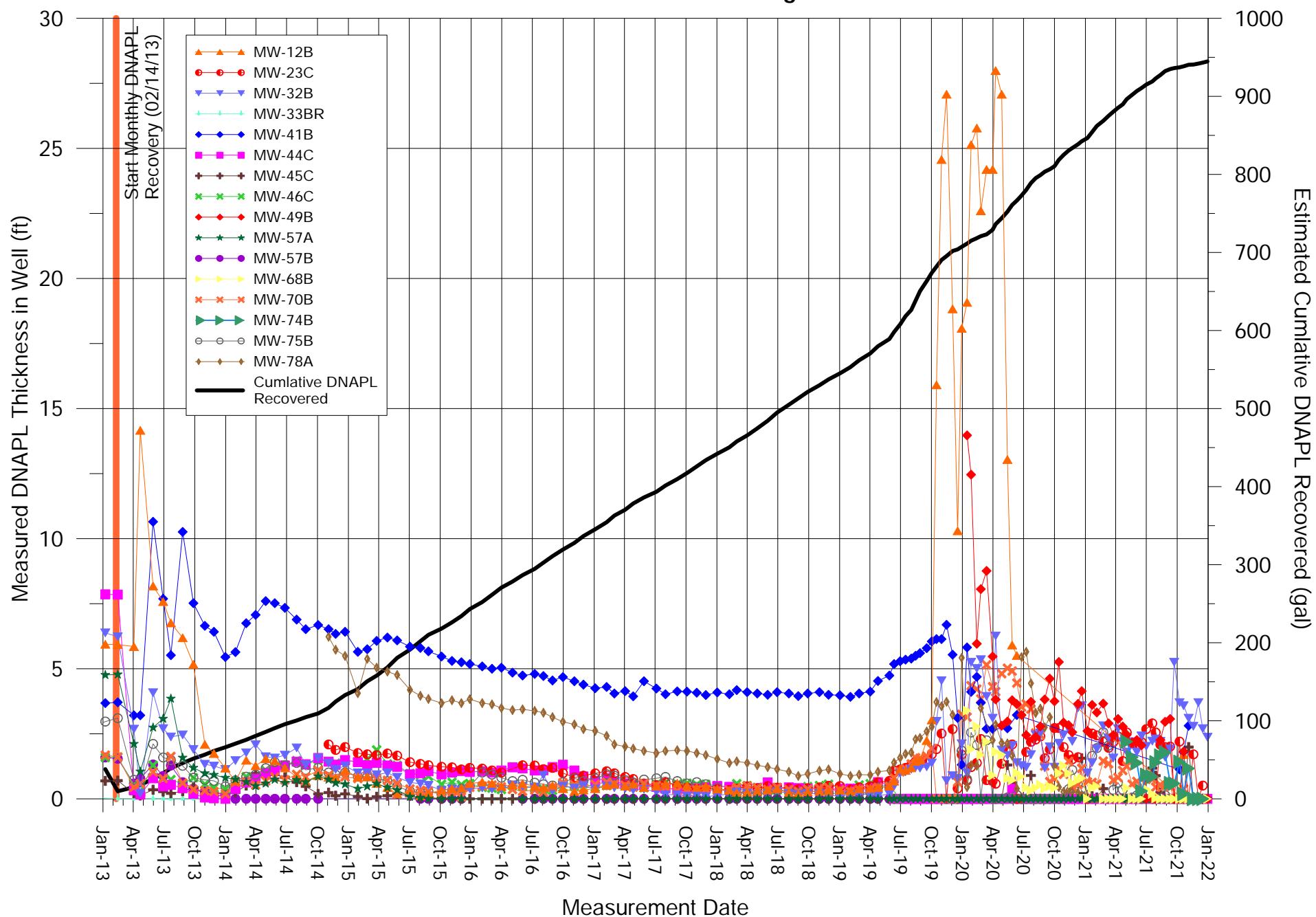


Figure 3
A-TZ Wells - DNAPL Recovery Activities July 2018 - December 2021
UPRR Houston Wood Preserving Works

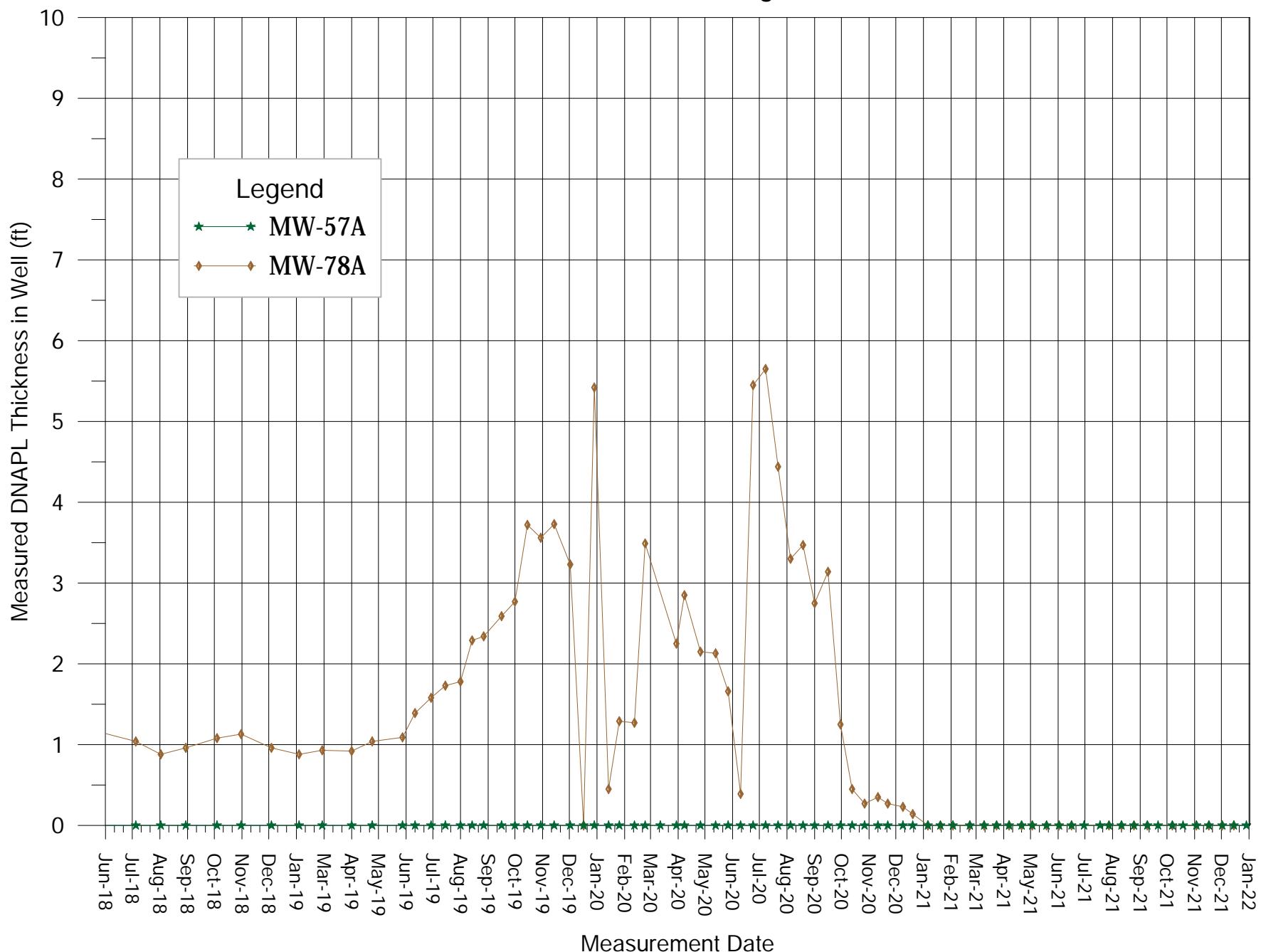
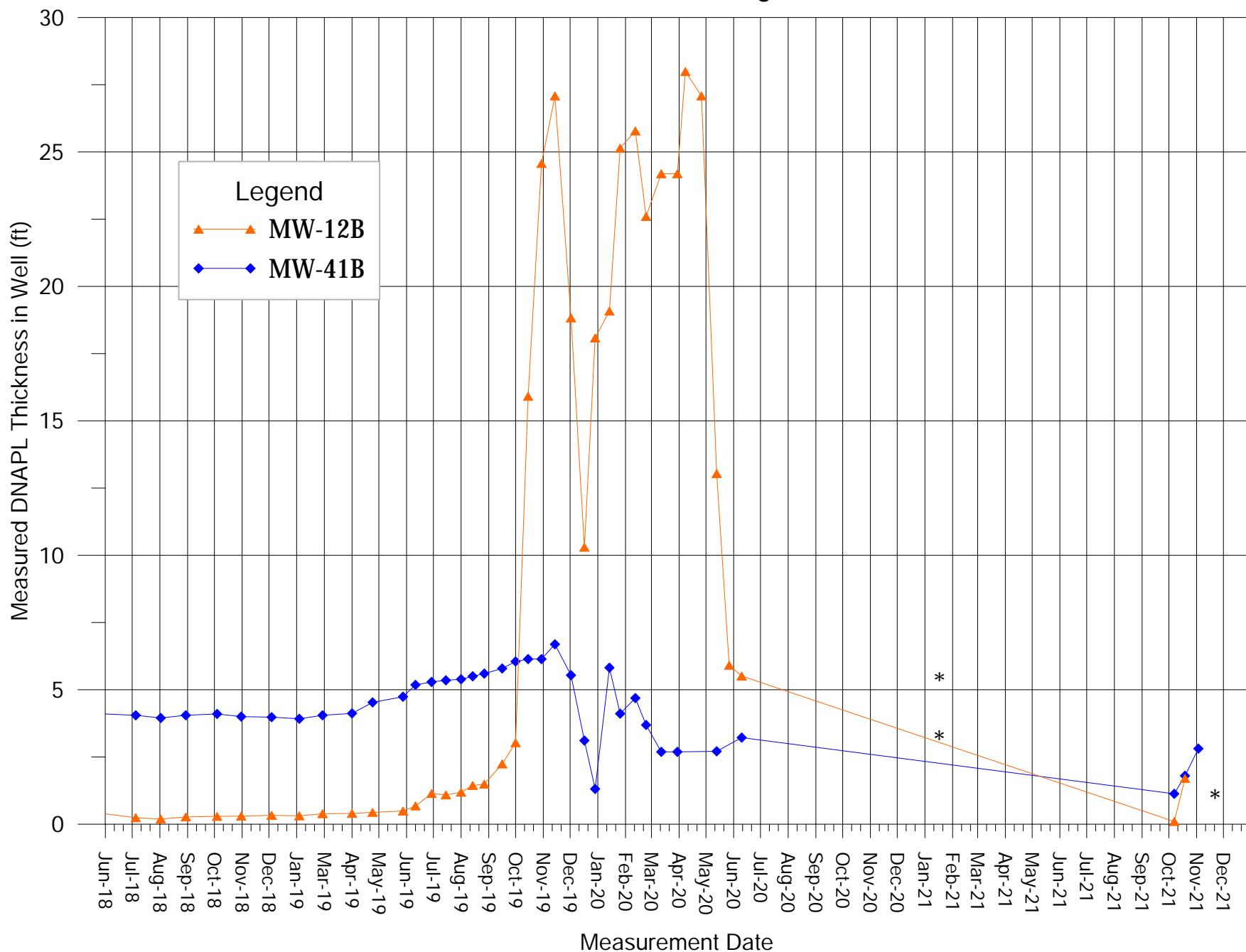


Figure 4
B-TZ Wells (West Side) - In-Well DNAPL Thickness July 2018 - December 2021
UPRR Houston Wood Preserving Works



*DNAPL below top of in-well pumps from 3rd Q 2020 to 3rd Q 2021; not measurable

Pumps removed on 10/08/2021 to measure pump length. Pumps are 1.55 ft in length. DNAPL below top of pumps November and December 2021; not measurable.

Figure 5
B-CZ/B-TZ Wells (North (On-Site and Off-Site)) - In-Well DNAPL Thickness July 2018 - December 2021
UPRR Houston Wood Preserving Works

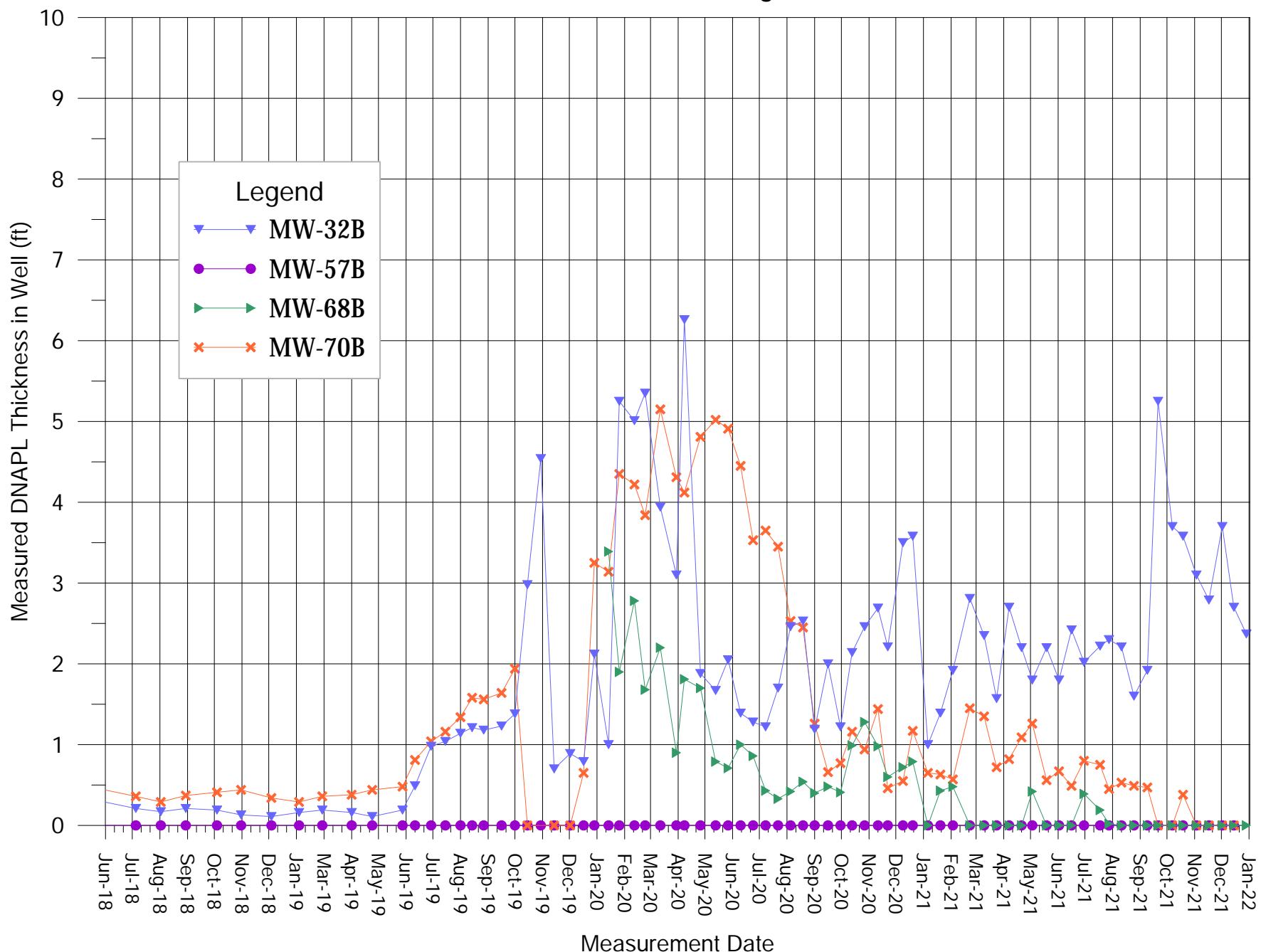


Figure 6
B-CZ/B-TZ Wells (Englewood Intermodal Yard) - In-Well DNAPL Thickness July 2018 - December 2021
UPRR Houston Wood Preserving Works

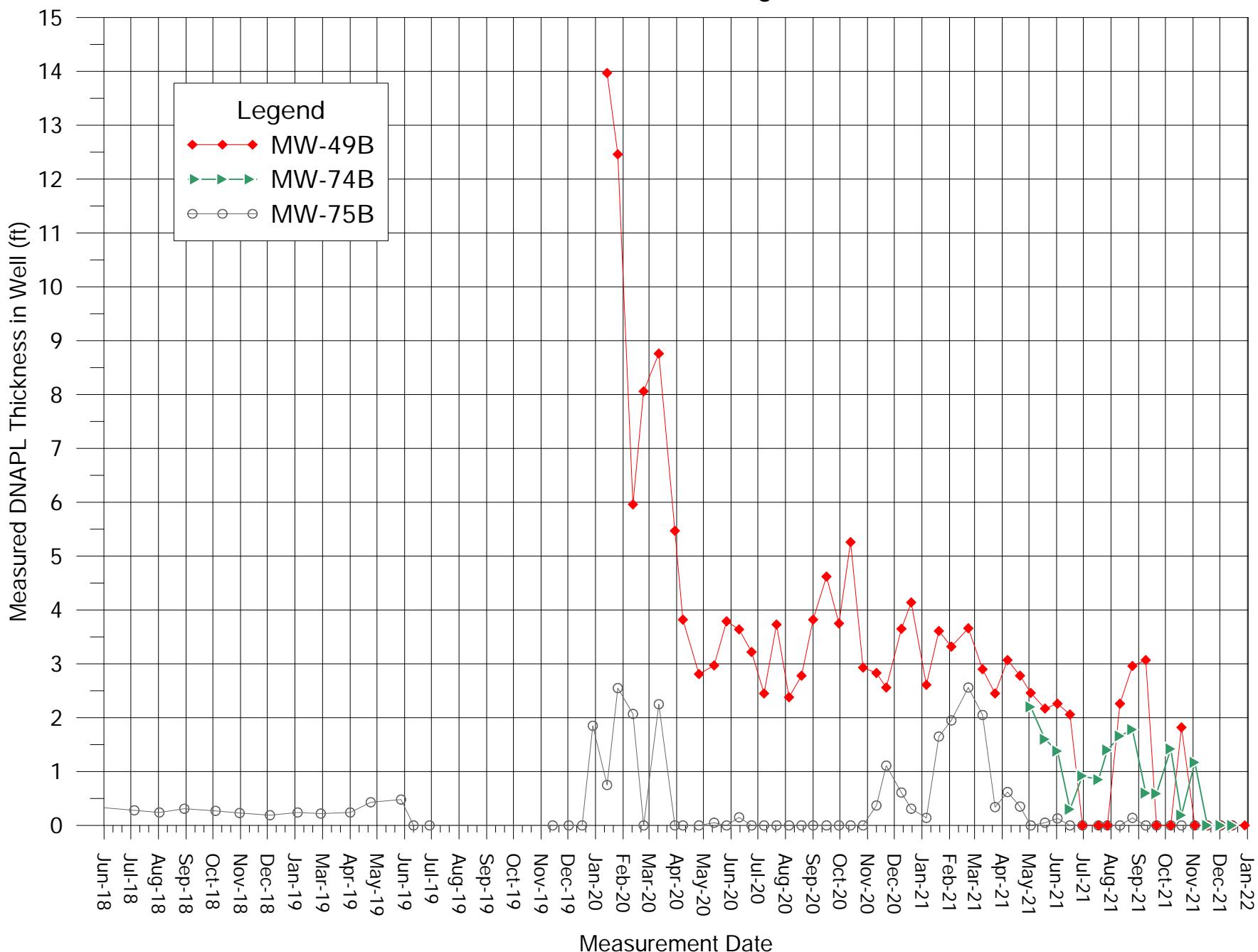
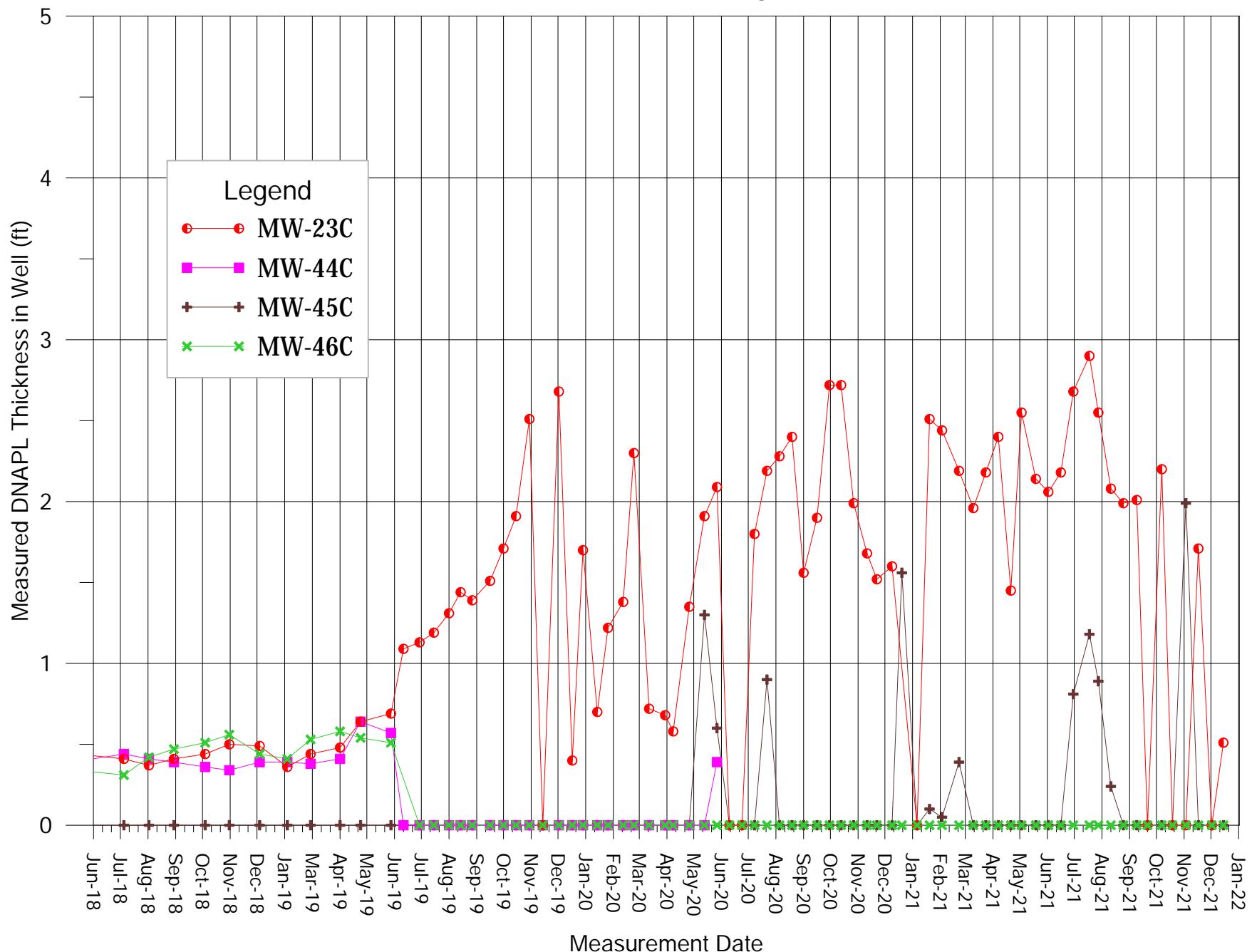


Figure 7
C-TZ Wells - In-Well DNAPL Thickness July 2018 - December 2021
UPRR Houston Wood Preserving Works



ATTACHMENT 1

Recovered DNAPL Waste Manifest

GENERATOR	1. Generator ID Number TXD 000 820 266	2. Page 1 of 1	3. Emergency Response Phone (800) 839-3975	4. Manifest Tracking Number 016144666 FLE	
	5. Generator's Name and Mailing Address UNION PACIFIC RAILROAD C/O GHD SERVICES, INC 6520 CORPORATE DR. INDIANAPOLIS, IN 46278		Generator's Site Address (if different than mailing address) 4910 LIBERTY RD HOUSTON, TX 77026		
	Generator's Phone: (414) 267-4164				
	6. Transporter 1 Company Name EQ Industrial Services		U.S. EPA ID Number MIK435G4274Z		
	7. Transporter 2 Company Name		U.S. EPA ID Number		
	8. Designated Facility Name and Site Address US ECOLOGY TEXAS 3277 COUNTY ROAD 69 ROBSTOWN, TX 78380		U.S. EPA ID Number TXD 069 452 340		
	Facility's Phone: (361) 387-3518				
	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) X 1. RQ, NA3082, Hazardous Waste, Liquid, N.O.S. (Creosote, Benzene), 9, PGIII, (F034)	10. Containers No. Type	11. Total Quantity	12. Unit Wt./Vol.
			1 DM	55	G F034 D018 0918 219H
		2.			
	3.				
	4.				
14. Special Handling Instructions and Additional Information 1. 090117968-0 / Recovered Creosote WVS#: 005490 Job#: HU4-10B-1750					
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.					
Generator's/Offeror's Printed/Typed Name x Tyler Parker		Signature	Month Day Year 11 02 2021		
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Transporter signature (for exports only): _____ Date leaving U.S.: _____					
17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name Tamisha Thomas Signature 11 3 21 Month Day Year Transporter 2 Printed/Typed Name Signature _____ Month Day Year					
18. Discrepancy 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
Manifest Reference Number:					
18b. Alternate Facility (or Generator) U.S. EPA ID Number					
Facility's Phone:					
18c. Signature of Alternate Facility (or Generator) Month Day Year					
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) 1. H132 H2 H141 2. 3. 4.					
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a Printed/Typed Name Amar Zamanya Signature 11 22 21 Month Day Year					