

# Atlantic Richfield Company

**Paul G. Johnson**  
Operations Project Manager

Remediation Management  
150 W Warrenville Road  
MC 200 1E  
Naperville, IL 60563  
Phone: (630) 420-5992  
Mobile: (630) 731-4463  
Fax: (630) 420-3738  
E-Mail: paul.johnson4@bp.com

December 6, 2019

Jessica LaClair  
Project Manager  
New York State Department of Environmental Conservation  
Division of Environmental Remediation  
625 Broadway, 12th Floor  
Albany, New York 12233-7016

**RE: Monthly Progress Report, November 2019**  
**Former Anaconda Plant (a.k.a. Harbor at Hastings Site) Site No. 3-60-022**  
**Hastings-On-Hudson, New York**

Dear Ms. LaClair:

Enclosed is the November 2019 Monthly Progress Report for the Former Anaconda Plant (a.k.a. Harbor at Hastings Site), New York State Department of Environmental Conservation (NYSDEC) Site No. 3-60-022, Hastings-on-Hudson, New York. This progress report has been prepared in accordance with Section XI of the AMENDED ORDER ON CONSENT and ADMINISTRATIVE SETTLEMENT between Atlantic Richfield Company and NYSDEC, dated November 6, 2013. The time period covered is November 1, 2019 through November 30, 2019.

If you have any questions or comments on this submittal, please feel free to contact me at 630-731-4463.

Sincerely,



Paul G. Johnson  
Operations Project Manager

Enclosure

cc: Maureen Schuck, New York State Department of Health  
Francis Frobels, Hastings-On-Hudson  
Mark Chertok, Hastings-On-Hudson  
Karl Coplan, Pace/Riverkeeper  
Martha Gopal, Sovereign Consulting Inc.  
File

ecc: Jacquelyn Nealon, New York State Department of Health  
Kevin Farrar, New York State Department of Environmental Conservation  
Benjamin Conlon, Esq. New York State Department of Environmental Conservation,  
Office of General Counsel  
Jim Lucari, BP  
Michael Daneker, Arnold & Porter

**FORMER ANACONDA WIRE AND CABLE PLANT SITE  
(a.k.a. HARBOR AT HASTINGS SITE) OU1  
NYSDEC SITE 360022  
MONTHLY PROGRESS REPORT 174**

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**PREPARED BY:** Atlantic Richfield Company  
Paul Johnson

**REPORTING PERIOD:** November 1, 2019 through November 30, 2019

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**1. PROGRESS MADE THIS REPORTING PERIOD:**

- DNAPL gauging and recovery was performed on November 4<sup>th</sup>, 2019. HARW-5 was gauged and pumped as required by the August 2011 Design Basis Memorandum.

**2. UNANTICIPATED PROBLEM AREAS AND RECOMMENDED SOLUTIONS**

- None this reporting period.

**3. PROBLEMS RESOLVED**

- None this reporting period.

**4. DELIVERABLES SUBMITTED / RECEIVED**

- November 7, 2019, Atlantic Richfield to NYSDEC: *Hastings October 2019 Monthly Progress Report*.
- November 27, 2019, Atlantic Richfield to USEPA: *Toxic Substances Control Act Risk-Based Disposal Application (TSCA RBDA)*.

**5. UPCOMING EVENTS / ACTIVITIES PLANNED**

- The next three DNAPL gauging and recovery events are tentatively scheduled to occur the weeks of January 6<sup>th</sup>, February 3<sup>rd</sup>, and March 2<sup>nd</sup>, 2020.
- Continue the Water Tower LNAPL IRM activities, as allowable, in accordance with the IRM Work Plan (Fluor Daniel GTI, December 1997), Fluor Daniel GTI correspondence to the NYSDEC dated May 18, 1998 and Atlantic Richfield correspondence with the NYSDEC on September 2, 2010. The upcoming LNAPL IRM events are tentatively scheduled to occur the week of January 6<sup>th</sup>, 2020, and the week of April 6<sup>th</sup>, 2020 in accordance with the schedule modification request, from monthly to

quarterly, sent by Atlantic Richfield to NYSDEC on June 4, 2012, and the approval letter received from NYSDEC dated April 2, 2013.

**6. KEY STAFFING**

- Sovereign Consulting Inc.
- Parsons Environment and Infrastructure Group, Inc. (OM&M)
- Parsons Environment and Infrastructure Group, Inc. (Security)

**7. PERCENTAGE COMPLETE**

- DNAPL gauging and recovery – ongoing
- LNAPL IRM – ongoing

**8. DATA**

- Final data not generated during this reporting period.

**9. CITIZEN PARTICIPATION ACTIVITIES**

- None this reporting period.

## **LIST OF ACRONYMS**

<i>Acronym</i>	<i>Description</i>
NYSDEC	New York State Department of Environmental Conservation
LNAPL	Light Non-Aqueous Phase Liquid
DNAPL	Dense Non-Aqueous Phase Liquid
OU	Operable Unit
IRM	Interim Remedial Measure
O&M	Operations and Maintenance

## **LIST OF REFERENCES**

**FLUOR Daniel GTI, 1997. *Draft Interim Remedial Measure Work Plan – Separate Phase Liquid Recovery*. December.**

**TABLE I**  
**NOVEMBER DNAPL PUMPING SUMMARY (WEEK OF 11/4/2019)**  
**ATLANTIC RICHFIELD**  
**1 RIVER STREET**  
**HASTINGS-ON-HUDSON, NEW YORK**

Well ID	Date Gauged/ Pumped	Installation Angle (deg)	Pre-Pumping Uncorrected Apparent Height (inches)	Pre-Pumping Corrected Apparent Height (inches)	Post-Pumping Uncorrected Apparent Height (inches)	Post-Pumping Corrected Apparent Height (inches)	Total Fluids Removed (gallons) <sup>4</sup>	Total DNAPL Removed (gallons) <sup>6</sup>	Post-Purging Distance of DNAPL Surface Below MS/Fill Interface (ft) <sup>5</sup>
HARW-1	11/4/2019 <sup>1</sup>	0	0	0	NA**	NA**	NA**	NA**	NA**
HARW-2	11/4/2019 <sup>2</sup>	0	2.0	2.0			NA**	NA**	4.5
	NA** <sup>3</sup>				NA**	NA**			
HARW-3	11/4/2019 <sup>2</sup>	16.5	6.0	5.8			NA**	NA**	3.8
	NA** <sup>3</sup>				NA**	NA**			
HARW-4	11/4/2019 <sup>2</sup>	24.5	19.0	17.3			NA**	NA**	2.7
	NA** <sup>3</sup>				NA**	NA**			
HARW-5	11/4/2019 <sup>2</sup>	23.5	34.0	31.2			42.0	7.0	4.2
	11/4/2019 <sup>3</sup>				2.0	1.8			
HARW-6	11/4/2019 <sup>2</sup>	14.0	8.0	7.8			NA**	NA**	3.9
	NA** <sup>3</sup>				NA**	NA**			
HARW-7	11/4/2019 <sup>2</sup>	0	18.0	18.0			NA**	NA**	3.2
	NA** <sup>3</sup>				NA**	NA**			
HARW-8	11/4/2019 <sup>2</sup>	0	18.0	18.0			NA**	NA**	3.2
	NA** <sup>3</sup>				NA**	NA**			
HAOW-12A	11/4/2019 <sup>2</sup>	0	14.0	14.0			NA**	NA**	4.0
	NA** <sup>3</sup>				NA**	NA**			

**Total Gallons of DNAPL Removed: 7.0**

Notes:

<sup>1</sup>DNAPL not present, pumping not completed in this well

<sup>2</sup>Pre-pumping gauge date

<sup>3</sup>Post-pumping gauge date.

<sup>4</sup>Total gallons of fluid (DNAPL and groundwater) removed from well based on measurement in container.

<sup>5</sup>Represents the distance of the post-purging DNAPL material interface from the top of the MS/Fill interface.

<sup>6</sup>Unless otherwise noted, this column refers to the total volume of DNAPL removed based calculation of volume based on well diameter and height of DNAPL in the well.

\*DNAPL is present but is under 6-inches and discontinuous.

\*\*Volume in the well is less than threshold required to perform DNAPL pumping procedures.

Apparent Height: refers to the distance between the DNAPL surface and the bottom of the well sump which includes all fluids (groundwater and DNAPL) in the matrix.

NA: Not Applicable

	Date	Depth to Product (ft)	Product Apparent Height - Pre-pumping (ft)	Product Apparent Height - Post-pumping (ft)	Approximate Volume of Product Recovered (gallons) <sup>2</sup>	Days Elapsed Between Measurement Readings	Measurement Tool Used	Recovery Procedure Used
MW-12	Cumulative 10/9/2006 - 7/29/2010	-	-	-	5.0	-	-	-
	TOTAL VOLUME RECOVERED TO DATE FROM MW-12 (GALLONS)				5.0			
HAOW-12A	Cumulative 3/2/2009 - 12/10/2016	-	-	-	49.7	-	DMT <sup>4</sup>	-
	1/16/2017	42.0	1.6	-	-	37	DMT <sup>4</sup>	-
	2/20/2017	DNAPL gauging or pumping not completed due to adverse weather conditions				-	-	-
	3/6/2017	42.3	1.3	-	-	49	DMT <sup>4</sup>	-
	4/3/2017	42.2	1.4	-	-	28	DMT <sup>4</sup>	-
	5/1/2017	42.1	1.5	-	-	28	DMT <sup>4</sup>	-
	6/5/2017	42.3	1.3	-	-	35	DMT <sup>4</sup>	-
	7/10/2017	42.3	1.3	-	-	35	DMT <sup>4</sup>	-
	8/7/2017	42.3	1.3	-	-	28	DMT <sup>4</sup>	-
	9/11/2017	42.5	1.1	-	-	35	DMT <sup>4</sup>	-
	10/9/2017	42.3	1.3	-	-	28	DMT <sup>4</sup>	-
	11/6/2017	42.3	1.3	-	-	28	DMT <sup>4</sup>	-
	12/4/2017	DNAPL pumping not required to be completed (10 event requirement met)				-	-	-
	1/8/2018	DNAPL gauging or pumping not completed due to adverse weather conditions				-	-	-
	2/5/2018	42.2	1.4	-	-	91	DMT <sup>4</sup>	-
	3/5/2018	42.3	1.3	-	-	28	DMT <sup>4</sup>	-
	4/2/2018	42.0	1.6	-	-	28	DMT <sup>4</sup>	-
	5/7/2018	41.9	1.7	-	-	35	DMT <sup>4</sup>	-
	6/5/2018	42.5	1.1	-	-	29	DMT <sup>4</sup>	-
	7/9/2018	42.2	1.4	-	-	34	DMT <sup>4</sup>	-
	8/6/2018	42.3	1.3	-	-	28	DMT <sup>4</sup>	-
	9/10/2018	42.3	1.3	-	-	35	DMT <sup>4</sup>	-
	10/1/2018	41.9	1.7	-	-	21	DMT <sup>4</sup>	-
	11/5/2018	42.9	0.8	-	-	35	DMT <sup>4</sup>	-
	12/10/2018	42.2	1.4	-	-	35	DMT <sup>4</sup>	-
	1/14/2019	42.9	0.7	-	-	35	DMT <sup>4</sup>	-
	2/4/2019	42.3	1.3	-	-	21	DMT <sup>4</sup>	-
	3/11/2019	42.4	1.2	-	-	35	DMT <sup>4</sup>	-
	4/1/2019	42.6	1.0	-	-	21	DMT <sup>4</sup>	-
	5/6/2019	42.5	1.1	-	-	35	DMT <sup>4</sup>	-
	6/3/2019	42.4	1.2	-	-	28	DMT <sup>4</sup>	-
	8/5/2019	42.5	1.1	-	-	63	DMT <sup>4</sup>	-
	9/9/2019	42.4	1.2	-	-	35	DMT <sup>4</sup>	-
	10/7/2019	42.6	1.0	-	-	28	DMT <sup>4</sup>	-
	11/4/2019	42.4	1.2	-	-	28	DMT <sup>4</sup>	-
	TOTAL VOLUME RECOVERED TO DATE FROM HAOW-12A (GALLONS)				49.7			
HARW-1	Cumulative 9/29/2010 - 12/10/2016	-	-	-	0.0	-	-	-
	1/16/2017	No product detected	0.0	-	-	37	DMT <sup>4</sup>	-
	2/20/2017	DNAPL gauging or pumping not completed due to adverse weather conditions				-	-	-
	3/6/2017	No product detected	0.0	-	-	49	DMT <sup>4</sup>	-
	4/3/2017	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	5/1/2017	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	6/5/2017	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	7/10/2017	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	8/7/2017	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	9/11/2017	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	10/9/2017	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	11/6/2017	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	12/4/2017	DNAPL pumping not required to be completed (10 event requirement met)				-	-	-
	1/8/2018	DNAPL gauging or pumping not completed due to adverse weather conditions				-	-	-
	2/5/2018	No product detected	0.0	-	-	91	DMT <sup>4</sup>	-
	3/5/2018	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	4/2/2018	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	5/7/2018	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	6/5/2018	No product detected	0.0	-	-	29	DMT <sup>4</sup>	-
	7/9/2018	No product detected	0.0	-	-	34	DMT <sup>4</sup>	-
	8/6/2018	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	9/10/2018	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	10/1/2018	No product detected	0.0	-	-	21	DMT <sup>4</sup>	-
	11/5/2018	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	12/10/2018	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	1/14/2019	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	2/4/2019	No product detected	0.0	-	-	21	DMT <sup>4</sup>	-
	3/11/2019	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	4/1/2019	No product detected	0.0	-	-	21	DMT <sup>4</sup>	-
	5/6/2019	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	6/3/2019	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	8/5/2019	No product detected	0.0	-	-	63	DMT <sup>4</sup>	-
	9/9/2019	No product detected	0.0	-	-	35	DMT <sup>4</sup>	-
	10/7/2019	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	11/4/2019	No product detected	0.0	-	-	28	DMT <sup>4</sup>	-
	TOTAL VOLUME RECOVERED TO DATE FROM HARW-1 (GALLONS)				0.0			

	Date	Depth to Product (ft)	Product Apparent Height - Pre-pumping (ft)	Product Apparent Height - Post-pumping (ft)	Approximate Volume of Product Recovered (gallons) <sup>3</sup>	Days Elapsed Between Measurement Readings	Measurement Tool Used	Recovery Procedure Used
HARW-2	Cumulative 9/29/2010 - 12/10/2016	-	-	-	711.4	-	-	-
	1/18/2017	36.0	4.0	0.7	8.7	37	DMT <sup>4</sup>	double diaphragm pump
	2/20/2017	-	-	-	-	-	-	-
	DNAPL gauging or pumping not completed due to adverse weather conditions							
	3/6/2017	36.3	3.7	0.2	9.1	47	DMT <sup>4</sup>	double diaphragm pump
	4/3/2017	38.0	2.0	0.04	5.1	28	DMT <sup>4</sup>	double diaphragm pump
	5/1/2017	38.4	1.6	-	-	28	DMT <sup>4</sup>	-
	6/5/2017	36.0	4.0	0.17	10.0	35	DMT <sup>4</sup>	double diaphragm pump
	7/10/2017	38.2	1.8	-	-	35	DMT <sup>4</sup>	-
	8/8/2017	35.3	4.7	0	12.2	29	DMT <sup>4</sup>	double diaphragm pump
	9/11/2017	39.5	0.5	-	-	34	DMT <sup>4</sup>	-
	10/9/2017	36.9	3.1	0.2	7.6	28	DMT <sup>4</sup>	double diaphragm pump
	11/6/2017	39.0	1.0	-	-	28	DMT <sup>4</sup>	-
	12/4/2017	-	-	-	-	-	-	-
	DNAPL pumping not required to be completed (10 event requirement met)							
	1/8/2018	-	-	-	-	-	-	-
	DNAPL gauging or pumping not completed due to adverse weather conditions							
	2/5/2018	34.3	5.7	0.08	14.6	91	DMT <sup>4</sup>	double diaphragm pump
	3/5/2018	38.8	1.3	-	-	28	DMT <sup>4</sup>	-
	4/3/2018	36.9	3.1	0	8.1	29	DMT <sup>4</sup>	double diaphragm pump
	5/7/2018	38.2	1.8	-	-	34	DMT <sup>4</sup>	-
	6/5/2018	36.6	3.4	0.17	8.5	29	DMT <sup>4</sup>	double diaphragm pump
	7/9/2018	38.5	1.5	-	-	34	DMT <sup>4</sup>	-
	8/6/2018	37.5	2.5	0.3	5.7	28	DMT <sup>4</sup>	double diaphragm pump
	9/10/2018	38.4	1.6	-	-	35	DMT <sup>4</sup>	-
	10/1/2018	37.5	2.5	0.08	6.3	21	DMT <sup>4</sup>	double diaphragm pump
	11/5/2018	40.0	0.0	-	-	35	DMT <sup>4</sup>	-
	12/10/2018	38.0	2.0	0.08	5	35	DMT <sup>4</sup>	double diaphragm pump
	1/14/2019	38.8	1.3	-	-	35	DMT <sup>4</sup>	-
	2/4/2019	38.0	2.0	0.08	5	21	DMT <sup>4</sup>	double diaphragm pump
	3/11/2019	38.8	1.2	-	-	35	DMT <sup>4</sup>	-
	4/1/2019	38.5	1.5	-	-	21	DMT <sup>4</sup>	-
	5/6/2019	36.8	3.2	0.25	7.6	35	DMT <sup>4</sup>	double diaphragm pump
	6/3/2019	38.8	1.3	-	-	28	DMT <sup>4</sup>	-
	8/5/2019	36.8	3.2	0.25	7.6	63	DMT <sup>4</sup>	double diaphragm pump
	9/9/2019	38.5	1.5	-	-	35	DMT <sup>4</sup>	-
	10/7/2019	37.8	2.3	0.08	5.7	28	DMT <sup>4</sup>	double diaphragm pump
	11/4/2019	39.8	0.2	-	-	28	DMT <sup>4</sup>	-
	TOTAL VOLUME RECOVERED TO DATE FROM HARW-2 (GALLONS)				838.2			
HARW-3	Cumulative 10/14/2010 - 12/10/2016	-	-	-	25.3	-	-	-
	1/16/2017	37.4	1.6	-	-	37	DMT <sup>4</sup>	-
	2/20/2017	-	-	-	-	-	-	-
	DNAPL gauging or pumping not completed due to adverse weather conditions							
	3/6/2017	37.9	1.1	-	-	49	DMT <sup>4</sup>	-
	4/3/2017	37.6	1.4	-	-	28	DMT <sup>4</sup>	-
	5/1/2017	37.7	1.3	-	-	28	DMT <sup>4</sup>	-
	6/5/2017	37.7	1.3	-	-	35	DMT <sup>4</sup>	-
	7/10/2017	37.3	1.7	-	-	35	DMT <sup>4</sup>	-
	8/7/2017	37.6	1.4	-	-	28	DMT <sup>4</sup>	-
	9/11/2017	37.2	1.8	-	-	35	DMT <sup>4</sup>	-
	10/9/2017	37.6	1.4	-	-	28	DMT <sup>4</sup>	-
	11/6/2017	37.7	1.3	-	-	28	DMT <sup>4</sup>	-
	12/4/2017	-	-	-	-	-	-	-
	DNAPL pumping not required to be completed (10 event requirement met)							
	1/8/2018	-	-	-	-	-	-	-
	DNAPL gauging or pumping not completed due to adverse weather conditions							
	2/5/2018	37.5	1.5	-	-	91	DMT <sup>4</sup>	-
	3/5/2018	37.2	1.8	-	-	28	DMT <sup>4</sup>	-
	4/2/2018	37.5	1.5	0.3	3.3	28	DMT <sup>4</sup>	double diaphragm pump
	5/7/2018	38.6	0.4	-	-	35	DMT <sup>4</sup>	-
	6/5/2018	38.7	0.3	-	-	29	DMT <sup>4</sup>	-
	7/9/2018	38.7	0.3	-	-	34	DMT <sup>4</sup>	-
	8/6/2018	38.6	0.4	-	-	28	DMT <sup>4</sup>	-
	9/10/2018	38.6	0.4	-	-	35	DMT <sup>4</sup>	-
	10/1/2018	38.6	0.4	-	-	21	DMT <sup>4</sup>	-
	11/5/2018	38.8	0.2	-	-	35	DMT <sup>4</sup>	-
	12/10/2018	38.8	0.3	-	-	35	DMT <sup>4</sup>	-
	1/14/2019	38.7	0.3	-	-	35	DMT <sup>4</sup>	-
	2/4/2019	38.7	0.3	-	-	21	DMT <sup>4</sup>	-
	3/11/2019	38.6	0.4	-	-	35	DMT <sup>4</sup>	-
	4/1/2019	38.8	0.3	-	-	21	DMT <sup>4</sup>	-
	5/6/2019	38.8	0.3	-	-	35	DMT <sup>4</sup>	-
	6/3/2019	38.6	0.4	-	-	28	DMT <sup>4</sup>	-
	8/5/2019	38.5	0.5	-	-	63	DMT <sup>4</sup>	-
	9/9/2019	38.3	0.7	-	-	35	DMT <sup>4</sup>	-
	10/7/2019	38.5	0.5	-	-	28	DMT <sup>4</sup>	-
	11/4/2019	38.5	0.5	-	-	28	DMT <sup>4</sup>	-
	TOTAL VOLUME RECOVERED TO DATE FROM HARW-3 (GALLONS)				28.6			



	Date	Depth to Product (ft)	Product Apparent Height - Pre-pumping (ft)	Product Apparent Height - Post-pumping (ft)	Approximate Volume of Product Recovered (gallons) <sup>2</sup>	Days Elapsed Between Measurement Readings	Measurement Tool Used	Recovery Procedure Used
HARW-4	Cumulative 10/14/2010 - 12/10/2016	-	-	-	202.3	-	-	-
	1/16/2017	39.3	1.7	-	-	37	DMT <sup>4</sup>	-
	2/20/2017		DNAPL gauging or pumping not completed due to adverse weather conditions				DMT <sup>4</sup>	-
	3/6/2017	39.5	1.5	-	-	49	DMT <sup>4</sup>	-
	4/4/2017	38.5	2.5	0.2	6.1	29	DMT <sup>4</sup>	double diaphragm pump
	5/1/2017	40.3	0.8	--	--	27	DMT <sup>4</sup>	-
	6/5/2017	40.3	0.8	--	--	35	DMT <sup>4</sup>	-
	7/10/2017	39.9	1.1	--	--	35	DMT <sup>4</sup>	-
	8/7/2017	39.9	1.1	--	--	28	DMT <sup>4</sup>	-
	9/11/2017	39.6	1.4	--	--	35	DMT <sup>4</sup>	-
	10/9/2017	39.8	1.2	--	--	28	DMT <sup>4</sup>	-
	11/6/2017	39.4	1.6	--	--	28	DMT <sup>4</sup>	-
	12/4/2017		DNAPL pumping not required to be completed (10 event requirement met)				-	-
	1/8/2018		DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	2/5/2018	39.3	1.7	--	--	91	DMT <sup>4</sup>	-
	3/5/2018	39.9	1.1	--	--	28	DMT <sup>4</sup>	-
	4/2/2018	39.3	1.7	--	--	28	DMT <sup>4</sup>	-
	5/8/2018	38.8	2.2	0.1	5.4	36	DMT <sup>4</sup>	double diaphragm pump
	6/5/2018	40.8	0.2	--	--	28	DMT <sup>4</sup>	-
	7/9/2018	40.8	0.2	--	--	34	DMT <sup>4</sup>	-
	8/6/2018	40.8	0.3	--	--	28	DMT <sup>4</sup>	-
	9/10/2018	40.8	0.2	--	--	35	DMT <sup>4</sup>	-
	10/1/2018	40.5	0.5	--	--	21	DMT <sup>4</sup>	-
	11/5/2018	40.5	0.5	--	--	35	DMT <sup>4</sup>	-
	12/10/2018	40.4	0.6	--	--	35	DMT <sup>4</sup>	-
	1/14/2019	40.4	0.6	--	--	35	DMT <sup>4</sup>	-
	2/4/2019	40.4	0.6	--	--	21	DMT <sup>4</sup>	-
	3/11/2019	40.3	0.8	--	--	35	DMT <sup>4</sup>	-
	4/1/2019	39.8	1.2	--	--	21	DMT <sup>4</sup>	-
	5/6/2019	40.0	1.0	--	--	35	DMT <sup>4</sup>	-
	6/3/2019	40.0	1.0	--	--	28	DMT <sup>4</sup>	-
	8/5/2019	39.8	1.2	--	--	63	DMT <sup>4</sup>	-
	9/9/2019	39.8	1.3	--	--	35	DMT <sup>4</sup>	-
	10/7/2019	39.6	1.4	--	--	28	DMT <sup>4</sup>	-
	11/4/2019	39.4	1.6	--	--	28	DMT <sup>4</sup>	-
	TOTAL VOLUME RECOVERED TO DATE FROM HARW-4 (GALLONS)				213.8			
HARW-5	Cumulative 7/18/2011 - 12/10/2016	-	-	-	800.2	-	-	-
	1/17/2017	35.2	5.1	0.2	14.1	37	DMT <sup>4</sup>	double diaphragm pump
	2/20/2017		DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	3/6/2017	37.2	3.1	0.1	8.7	48	DMT <sup>4</sup>	double diaphragm pump
	4/4/2017	35.3	5.0	0.0	12.9	29	DMT <sup>4</sup>	double diaphragm pump
	5/2/2017	34.3	6.0	0.0	15.7	28	DMT <sup>4</sup>	double diaphragm pump
	6/5/2017	35.3	5.0	0.1	12.8	34	DMT <sup>4</sup>	double diaphragm pump
	7/11/2017	35.0	5.3	0.1	13.7	36	DMT <sup>4</sup>	double diaphragm pump
	8/7/2017	35.3	5.0	0.1	12.8	27	DMT <sup>4</sup>	double diaphragm pump
	9/11/2017	34.6	5.7	0.3	14.1	35	DMT <sup>4</sup>	double diaphragm pump
	10/9/2017	35.6	4.7	0.0	12.2	28	DMT <sup>4</sup>	double diaphragm pump
	11/6/2017	36.0	4.3	0.0	11.3	28	DMT <sup>4</sup>	double diaphragm pump
	12/4/2017		DNAPL pumping not required to be completed (10 event requirement met)				-	-
	1/8/2018		DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	2/6/2018 <sup>1</sup>	34.8	5.5	4.0	3.9	92	DMT <sup>4</sup>	double diaphragm pump
	3/6/2018	35.3	5.0	0.1	12.8	28	DMT <sup>4</sup>	double diaphragm pump
	4/3/2018	36.3	4.0	0.3	9.8	28	DMT <sup>4</sup>	double diaphragm pump
	5/8/2018	35.1	5.2	0.1	13.3	35	DMT <sup>4</sup>	double diaphragm pump
	6/5/2018	36.4	3.9	0.2	9.8	28	DMT <sup>4</sup>	double diaphragm pump
	7/9/2018	35.8	4.5	0.1	11.5	34	DMT <sup>4</sup>	double diaphragm pump
	8/7/2018	36.6	3.8	0.0	9.7	29	DMT <sup>4</sup>	double diaphragm pump
	9/10/2018	35.7	4.6	0.1	11.7	34	DMT <sup>4</sup>	double diaphragm pump
	10/2/2018	38.3	2.0	0.1	5.0	22	DMT <sup>4</sup>	double diaphragm pump
	11/5/2018	36.3	4.0	0.1	10.2	34	DMT <sup>4</sup>	double diaphragm pump
	12/11/2018	36.3	4.0	0.1	10.2	36	DMT <sup>4</sup>	double diaphragm pump
	1/14/2019	36.6	3.7	0.1	9.4	34	DMT <sup>4</sup>	double diaphragm pump
	2/4/2019	38.1	2.2	0.1	5.4	21	DMT <sup>4</sup>	double diaphragm pump
	3/11/2019	36.6	3.7	0.1	9.4	35	DMT <sup>4</sup>	double diaphragm pump
	4/2/2019	38.3	2.0	0.1	5.0	22	DMT <sup>4</sup>	double diaphragm pump
	5/7/2019	36.7	3.6	0.1	9.1	35	DMT <sup>4</sup>	double diaphragm pump
	6/4/2019	37.3	3.0	0.1	7.6	28	DMT <sup>4</sup>	double diaphragm pump
	8/6/2019	35.1	5.3	0.1	13.5	63	DMT <sup>4</sup>	double diaphragm pump
	9/10/2019	36.6	3.7	0.0	9.6	35	DMT <sup>4</sup>	double diaphragm pump
	10/7/2019	37.5	2.8	0.1	7.2	27	DMT <sup>4</sup>	double diaphragm pump
	11/4/2019	37.5	2.8	0.2	7.0	28	DMT <sup>4</sup>	double diaphragm pump
	TOTAL VOLUME RECOVERED TO DATE FROM HARW-5 (GALLONS)				1119.6			

	Date	Depth to Product (ft)	Product Apparent Height - Pre-pumping (ft)	Product Apparent Height - Post-pumping (ft)	Approximate Volume of Product Recovered (gallons) <sup>3</sup>	Days Elapsed Between Measurement Readings	Measurement Tool Used	Recovery Procedure Used
HARW-6	Cumulative 7/19/2011 - 12/10/2016	-	-	-	0.0	-	-	-
	1/16/2017	40.0	0.8	-	-	37	DMT <sup>4</sup>	-
	2/20/2017	-	DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	3/6/2017	40.0	0.8	-	-	49	DMT <sup>4</sup>	-
	4/3/2017	40.1	0.8	-	-	28	DMT <sup>4</sup>	-
	5/1/2017	40.1	0.7	-	-	28	DMT <sup>4</sup>	-
	6/5/2017	40.3	0.5	-	-	35	DMT <sup>4</sup>	-
	7/10/2017	40.2	0.6	-	-	35	DMT <sup>4</sup>	-
	8/7/2017	40.3	0.5	-	-	28	DMT <sup>4</sup>	-
	9/11/2017	40.0	0.8	-	-	35	DMT <sup>4</sup>	-
	10/9/2017	39.9	0.9	-	-	28	DMT <sup>4</sup>	-
	11/6/2017	39.8	1.0	-	-	28	DMT <sup>4</sup>	-
	12/4/2017	-	DNAPL pumping not required to be completed (10 event requirement met)				-	-
	1/8/2018	-	DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	2/5/2018	40.0	0.8	-	-	91	DMT <sup>4</sup>	-
	3/5/2018	40.7	0.1	-	-	28	DMT <sup>4</sup>	-
	4/2/2018	40.1	0.8	-	-	28	DMT <sup>4</sup>	-
	5/7/2018	40.1	0.7	-	-	35	DMT <sup>4</sup>	-
	6/5/2018	40.1	0.8	-	-	29	DMT <sup>4</sup>	-
	7/9/2018	40.1	0.7	-	-	34	DMT <sup>4</sup>	-
	8/6/2018	39.9	0.9	-	-	28	DMT <sup>4</sup>	-
	9/10/2018	40.1	0.8	-	-	35	DMT <sup>4</sup>	-
	10/1/2018	40.1	0.8	-	-	21	DMT <sup>4</sup>	-
	11/5/2018	40.7	0.1	-	-	35	DMT <sup>4</sup>	-
	12/10/2018	40.1	0.7	-	-	35	DMT <sup>4</sup>	-
	1/14/2019	40.1	0.7	-	-	35	DMT <sup>4</sup>	-
	2/4/2019	40.1	0.7	-	-	21	DMT <sup>4</sup>	-
	3/11/2019	40.4	0.4	-	-	35	DMT <sup>4</sup>	-
	4/1/2019	40.3	0.5	-	-	21	DMT <sup>4</sup>	-
	5/6/2019	40.3	0.5	-	-	35	DMT <sup>4</sup>	-
	6/3/2019	40.3	0.5	-	-	28	DMT <sup>4</sup>	-
	8/5/2019	40.3	0.5	-	-	63	DMT <sup>4</sup>	-
	9/9/2019	40.0	0.8	-	-	35	DMT <sup>4</sup>	-
	10/7/2019	40.2	0.6	-	-	28	DMT <sup>4</sup>	-
	11/4/2019	40.1	0.7	-	-	28	DMT <sup>4</sup>	-
	TOTAL VOLUME RECOVERED TO DATE FROM HARW-6 (GALLONS)				0.0			
HARW-7	Cumulative 7/18/2011 - 12/10/2016	-	-	-	482.1	-	-	-
	1/17/2017	37.3	4.8	0.1	12.2	37	DMT <sup>4</sup>	double diaphragm pump
	2/20/2017	-	DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	3/6/2017	41.0	1.0	-	-	48	DMT <sup>4</sup>	-
	4/3/2017	40.5	1.5	-	-	28	DMT <sup>4</sup>	-
	5/1/2017	38.0	4.0	0.2	10.0	28	DMT <sup>4</sup>	double diaphragm pump
	6/5/2017	40.5	1.5	-	-	35	DMT <sup>4</sup>	-
	7/10/2017	40.0	2.0	0.2	4.8	35	DMT <sup>4</sup>	double diaphragm pump
	8/7/2017	41.5	0.5	-	-	28	DMT <sup>4</sup>	-
	9/11/2017	40.3	1.8	-	-	35	DMT <sup>4</sup>	-
	10/9/2017	40.3	1.8	-	-	28	DMT <sup>4</sup>	-
	11/6/2017	37.7	4.3	0.0	11.3	28	DMT <sup>4</sup>	double diaphragm pump
	12/4/2017	-	DNAPL pumping not required to be completed (10 event requirement met)				-	-
	1/8/2018	-	DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	2/5/2018 <sup>1</sup>	39.3	2.7	-	-	91	DMT <sup>4</sup>	-
	3/6/2018	38.5	3.5	0.3	8.3	29	DMT <sup>4</sup>	double diaphragm pump
	4/2/2018	41.0	1.0	-	-	27	DMT <sup>4</sup>	-
	5/8/2018	40.0	2.0	0.1	5.0	36	DMT <sup>4</sup>	double diaphragm pump
	6/5/2018	41.9	0.1	-	-	28	DMT <sup>4</sup>	-
	7/9/2018	41.1	0.9	-	-	34	DMT <sup>4</sup>	-
	8/7/2018	39.4	2.6	0.1	6.5	29	DMT <sup>4</sup>	double diaphragm pump
	9/10/2018	41.0	1.0	-	-	34	DMT <sup>4</sup>	-
	10/2/2018	40.0	2.0	0.1	5.0	22	DMT <sup>4</sup>	double diaphragm pump
	11/5/2018	40.8	1.2	-	-	34	DMT <sup>4</sup>	-
	12/11/2018	40.0	2.0	0.1	5.0	36	DMT <sup>4</sup>	double diaphragm pump
	1/14/2019	41.1	0.9	-	-	34	DMT <sup>4</sup>	-
	2/4/2019	40.8	1.2	-	-	21	DMT <sup>4</sup>	-
	3/11/2019	40.3	1.7	-	-	35	DMT <sup>4</sup>	-
	4/1/2019	39.5	2.5	0.1	6.3	21	DMT <sup>4</sup>	double diaphragm pump
	5/6/2019	41.1	0.9	-	-	35	DMT <sup>4</sup>	-
	6/3/2019	41.3	0.8	-	-	28	DMT <sup>4</sup>	-
	8/5/2019	40.3	1.7	-	-	63	DMT <sup>4</sup>	-
	9/10/2019	40.0	2.0	0.3	4.6	36	DMT <sup>4</sup>	double diaphragm pump
	10/7/2019	40.9	1.1	-	-	27	DMT <sup>4</sup>	-
	11/4/2019	40.5	1.5	-	-	28	DMT <sup>4</sup>	-
	TOTAL VOLUME RECOVERED TO DATE FROM HARW-7 (GALLONS)				561.1			

	Date	Depth to Product (ft)	Product Apparent Height - Pre-pumping (ft)	Product Apparent Height - Post-pumping (ft)	Approximate Volume of Product Recovered (gallons) <sup>3</sup>	Days Elapsed Between Measurement Readings	Measurement Tool Used	Recovery Procedure Used
HARW-8	Cumulative 7/19/2011 - 12/10/2016	-	-	-	18.0	-	-	-
	1/18/2017	40.8	2.2	0.2	5.2	37	DMT <sup>4</sup>	-
	2/20/2017		DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	3/6/2017	41.7	1.3	-	-	47	DMT <sup>4</sup>	-
	4/3/2017	42.5	0.5	-	-	28	DMT <sup>4</sup>	-
	5/1/2017	42.3	0.7	-	-	28	DMT <sup>4</sup>	-
	6/5/2017	42.3	0.7	-	-	35	DMT <sup>4</sup>	-
	7/10/2017	42.3	0.7	-	-	35	DMT <sup>4</sup>	-
	8/7/2017	42.1	0.9	-	-	28	DMT <sup>4</sup>	-
	9/11/2017	41.7	1.3	-	-	35	DMT <sup>4</sup>	-
	10/9/2017	42.2	0.8	-	-	28	DMT <sup>4</sup>	-
	11/6/2017	41.8	1.2	-	-	28	DMT <sup>4</sup>	-
	12/4/2017		DNAPL pumping not required to be completed (10 event requirement met)				-	-
	1/8/2018		DNAPL gauging or pumping not completed due to adverse weather conditions				-	-
	2/5/2018	41.7	1.3	-	-	91	DMT <sup>4</sup>	-
	3/5/2018	41.3	1.7	-	-	28	DMT <sup>4</sup>	-
	4/2/2018	41.1	1.9	-	-	28	DMT <sup>4</sup>	-
	5/8/2018	41.0	2.0	0.6	3.7	36	DMT <sup>4</sup>	double diaphragm pump
	6/5/2018	42.5	0.5	-	-	28	DMT <sup>4</sup>	-
	7/9/2018	42.5	0.5	-	-	34	DMT <sup>4</sup>	-
	8/6/2018	42.3	0.7	-	-	28	DMT <sup>4</sup>	-
	9/10/2018	42.1	0.9	-	-	35	DMT <sup>4</sup>	-
	10/1/2018	42.0	1.0	-	-	21	DMT <sup>4</sup>	-
	11/5/2018	42.1	0.9	-	-	35	DMT <sup>4</sup>	-
	12/10/2018	41.7	1.3	-	-	35	DMT <sup>4</sup>	-
	1/14/2019	41.5	1.5	-	-	35	DMT <sup>4</sup>	-
	2/4/2019	41.5	1.5	-	-	21	DMT <sup>4</sup>	-
	3/11/2019	41.3	1.7	-	-	35	DMT <sup>4</sup>	-
	4/2/2019	41.0	2.0	0.3	4.6	22	DMT <sup>4</sup>	double diaphragm pump
	5/6/2019	42.3	0.7	-	-	34	DMT <sup>4</sup>	-
	6/3/2019	42.2	0.8	-	-	28	DMT <sup>4</sup>	-
	8/5/2019	41.8	1.3	-	-	63	DMT <sup>4</sup>	-
	9/9/2019	41.9	1.1	-	-	35	DMT <sup>4</sup>	-
	10/7/2019	41.6	1.4	-	-	28	DMT <sup>4</sup>	-
	11/4/2019	41.5	1.5	-	-	28	DMT <sup>4</sup>	-
	TOTAL VOLUME RECOVERED TO DATE FROM HARW-8 (GALLONS)				31.5			

TOTAL VOLUME RECOVERED TO DATE FROM ALL WELLS (GALLONS)

2847.5

**Notes:**

MW-12

Depth to Top of Screen: 33 ft  
Depth to Bottom: 36 ft

HAOW-12A

Depth to Top of Screen: 28.6 ft  
Depth to Bottom: 43.6 ft

HARW-1

Depth to Top of Screen: 24 ft  
Depth to Bottom: 42 ft

HARW-2

Depth to Top of Screen: 26 ft  
Depth to Bottom: 40 ft

HARW-3

Angle from Vertical: 16.5°  
Vertical Depth to Top of Screen: 25.4 ft  
Vertical Depth to Bottom: 39 ft

HARW-4

Angle from Vertical: 24.5°  
Vertical Depth to Top of Screen: 28.7 ft  
Vertical Depth to Bottom: 41 ft

HARW-5

Angle from Vertical: 23.5°  
Vertical Depth to Top of Screen: 27 ft  
Vertical Depth to Bottom: 40.3 ft

HARW-6

Angle from Vertical: 14°  
Vertical Depth to Top of Screen: 26.7 ft  
Vertical Depth to Bottom: 40.8 ft

HARW-7

Depth to Top of Screen: 27.5 ft  
Depth to Bottom: 42 ft

HARW-8

Depth to Top of Screen: 28.5 ft  
Depth to Bottom: 43 ft

For historical reference to past DNAPL measurement events prior to January 2017, please refer to the January 2018 monthly report submitted to NYSDEC on 5 February 2018.

DMT = DNAPL Measurement Tool, consisting of a copper tubing handle, a spacer section to prevent the probe from contacting the sides of the well riser, and an all-thread rod probe to extend into the DNAPL.

<sup>1</sup> Reserved

<sup>2</sup> Reserved

<sup>3</sup> Volume of product recovered by downwell pump is estimated by approximating the volume discharged to the drum and additional product in tubing and on pump.

Volume of product recovered by bailer is estimated using the bailer volume and number of times bailed.

Volume of product recovered by double diaphragm and positive displacement piston pumps are estimated by approximating the volume discharged to the drum or by using the pre- and post-pumping apparent height of product and the well dimensions (8" diameter well).

<sup>4</sup> All depth and thickness values for HARW-3, HARW-4 HARW-5 and HARW-6 are provided as vertical equivalents of the field measurements based on the angle of the installed well.