GROUNDWATER SCIENCES CORPORATION

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April 21, 2017

Ms. Sharon R. Fisher, CHMM
Environmental Manager
Harley-Davidson Motor Company Operations, Inc.
1425 Eden Road
York, PA 17402

Re: *Third Year Progress Report of the Bldg3 Footer Drain Lift Station Shutdown Monitoring*
Former York Naval Ordnance Plant (fYNOP)
1425 Eden Road, Springettsbury Township, York, Pennsylvania

Dear Ms. Fisher:

The purpose of this third year progress report is to document the 2016 results of groundwater monitoring during shutdown of the Building 3 (Bldg3) Footer Drain Lift Station. The Bldg3 Footer Drain System (System) is a groundwater collection system located beneath and adjacent to Harley-Davidson's manufacturing building (Bldg3) at the former York Naval Ordnance Plant (fYNOP), 1425 Eden Road, Springettsbury Township, York, Pennsylvania (site). Any water that accumulates in the System drains by gravity into a Lift Station and then it is pumped to the onsite groundwater treatment facility. Active pumping of the Lift Station was terminated on June 19, 2013. The 2016 water level monitoring was conducted by Groundwater Sciences Corporation (GSC) and groundwater sampling was performed by Leidos, Inc. (Leidos).

A report titled "Results of NPBA Extraction System and Bldg3 Footer Drain Monitored Shutdown Tests for Part 2 of the Supplemental Groundwater Remedial Investigation" (GSC, 2014) provided recommendations to shut down pumping at the Lift Station because groundwater levels have never risen sufficiently to negatively impact Bldg3 and because chemicals of concern (COCs) have been undetected or detected at very low concentrations in samples from the Lift Station. The report was submitted to the United States Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection (PADEP) on April 11, 2014. The EPA approved the shutdown of active pumping of the Lift Station and subsequent monitoring in an email reply to Mr. Stephen Snyder of GSC (EPA, 2014). The approved monitoring plan consisted of water level monitoring for two years, with preparation of a final report with recommendations after the second year of monitoring, provided that a heavy precipitation event occurred during the two year monitoring period. This third-year progress report provides the monitoring results for 2016.

BACKGROUND

In 2001, Harley-Davidson expanded its facility through the construction of a new production plant, designated as Bldg3. The construction included the installation of a groundwater collection system that includes a deep interceptor trench and drain (Footer Drain), a shallow interceptor trench (or Toe Drain), a

pumping station, designated as the Bldg3 Lift Station (formerly called Softail Lift Station), and a groundwater collection well (CW-19), located inside Bldg3.

All three components of the groundwater collection system were designed to lower the groundwater level beneath Bldg3, and direct flow to an underground collection tank (Lift Station) and then to the groundwater treatment facility located in Building 41A. Groundwater collection via this system was initiated in March 2002. Refer to "Results of NPBA Extraction System and Bldg3 Footer Drain Monitored Shutdown Tests for Part 2 of the Supplemental Groundwater Remedial Investigation" (GSC, 2014) for details of the trench and lift station construction. The Footer Drain was constructed to be approximately 20 feet below the finished floor grade (approximately 376 feet above mean sea level [amsl] versus 396 feet amsl, respectively), and designed to intercept the water table. The Toe Drain next to the hillside was constructed approximately 6 feet below the finished floor grade (approximately 390 feet amsl versus 396 feet amsl, respectively), and designed to capture shallow groundwater flow that seasonally discharges at the base of the slope. Well CW-19 was installed in the event that groundwater would rise to a level of the sub-floor paint sludge pit, which has a bottom elevation of approximately 363 feet amsl. Refer to "Results of NPBA Extraction System and Bldg3 Footer Drain Monitored Shutdown Tests for Part 2 of the Supplemental Groundwater Remedial Investigation" (GSC, 2014) for details of the CW-19 well construction. Installation of CW-19 was precautionary, with the depth of the well penetrating below the adjacent paint sludge pit, but above projected groundwater table elevations. Groundwater has never accumulated in well CW-19 and pumping of it has never been necessary.

Monitored shutdown testing of the System was performed as a component of the Part 2 Supplemental Investigation (Part 2 SRI) from June 19, 2013 through November 25, 2013. Section 4.3.5 of the Field Sampling Plan (FSP) for the Part 2 SRI (GSC, 2012) and Addendum #7 to the FSP (GSC, 2013) describe the rationale and plan for evaluating the deactivation of the System. The Bldg3 Lift Station, which has a bottom elevation of approximately 366 feet amsl, receives drainage from the Bldg3 Footer Drain and formerly from a Toe Drain which collected drainage from the toe of the hill located east of Bldg3, as described below and shown on Figure 1 in **Attachment A**.

The results of the first two years of annual groundwater monitoring (2014 and 2015) were submitted previously to Harley-Davidson (GSC, 2015 and GSC, 2016). The Second Year Progress Report for 2015 included the following recommendations that were implemented during the 2016 monitoring period:

- Discontinue monthly manual monitoring, but continue automatic monitoring of the water level in the Lift Station using the transducer and continuous data logger currently installed, with downloads occurring on a quarterly basis.

- In the event of precipitation of approximately 2.5 inches in 24 hours outside of the growing season, then manual monitoring of water levels from the Lift Station, well CW-19, FD1 and FD3, would be performed within three days, and the data logger would be downloaded. At that time, observations would also be performed for evidence of water seepage down-gradient of the Lift Station. Automatic high water level sensors will remain functional in well CW-19. Once a precipitation event of approximately 2.5 inches in 24 hours occurs, a final report of results of the monitoring program will be prepared with recommendations of future plans for the Bldg3 Footer Drain System and Lift Station operation.

2016 MONITORING RESULTS

An InSitu LevelTroll™ water level recorder has been automatically recording water levels in the Lift Station since May 24, 2013 – three weeks prior to de-activation of the pumping of the Bldg3 Lift Station on June 19, 2013. Monthly downloads of the recorder and the collection of manual water level

measurements from the Lift Station, Footer Drain Cleanouts 1 and 3 (FD1 and FD3), and well CW-19 began in July 2014 after allowing sufficient time for review of the shutdown testing results by PADEP.

Monthly manual water level measurements collected since the start of the System shutdown test are listed on Table 1 in **Attachment B**. Monthly monitoring of the Lift Station, CW-19, FD1 and FD3 was discontinued during 2016 per the continued monitoring plan provided in the 2015 progress report. Automatic water level elevation data from the Lift Station is shown on the hydrograph in **Attachment C**. No large rain events of greater than 2.5 inches were observed during 2016, therefore additional monitoring was not completed. However, the Lift Station transducer was checked and downloaded on January 19, February 17, June 8 and August 2, 2016, and on January 4, 2017 to provide data for this report.

Daily precipitation data from an on-site Davis Instruments wireless Vantage Pro2 weather station and from another local source is also included on the hydrograph in **Attachment C**. Note that precipitation data from January 1 through April 20, 2014 was obtained from the North Hills weather station in York, Pennsylvania due to data being over-written in the on-site weather station memory during those months. In addition, precipitation data shown from August 3 through August 16, 2016 was obtained from the Hearthridge Lane weather station in York, Pennsylvania as the Harley-Davidson plant had been experiencing power outages during that time period.

The hydrograph shows that the water level in the Lift Station responds to precipitation events, but water quickly drains out from the Lift Station into the surrounding subsurface material. The largest daily precipitation event during 2016 was 1.21 inches on May 2, 2016, which resulted in the water elevation in the Lift Station rising to 372.48 feet amsl. Accumulated water quickly drained by gravity from the Lift Station as shown on the hydrograph (**Attachment C**). In 2016, the Lift Station's highest water elevation of 374.28 feet amsl was recorded by the data logger on February 3, 2016 after a rainfall event of 0.78 inches. Note that other weather stations in the vicinity of the site recorded a higher rainfall accumulation of between 0.83 inches (East York weather station), 1.15 inches (Hearthridge Lane weather station) and 1.75 inches (Brandywine weather station) on February 3, 2016 which may account for the increase in groundwater elevation shown on the Lift Station hydrograph. The Lift Station transducer was also reset on January 19, 2016 after manual measurements had shown a drift in the logger data.

The two-year planned monitoring period was to include a period of heavy precipitation outside of the growing season so that the potential effects of not pumping the Lift Station would be observed. Precipitation of approximately 2.5 inches or more in a 24-hour period would most likely be enough to adequately test the effects of a large rainfall event; however, the weather conditions prior to a precipitation of that magnitude would also need to be considered in the analysis.

A precipitation event of 2.5 inches or more did not occur during the monitoring period in 2014, 2015 or 2016. A precipitation event of 6.4 inches was recorded on October 9 through 11, 2013, while manual monitoring and inspection for seepage was not occurring; however, the automatic recorder was installed and was operating on these dates. This recorded data can be used to predict the effects of future heavy precipitation events. The highest groundwater level recorded in the Lift Station to date occurred during that rainfall at 375.06 feet amsl on October 11, 2013. This groundwater elevation is about 20 feet lower than the top of the Lift Station and about 18 feet lower than the ground surface at the Lift Station. The hydrograph (**Attachment C**) shows a rapid decline in the water elevation in the Lift Station after this precipitation event.

Another rainfall event of 3.69 inches occurred in a single day during the shutdown testing period on July 22, 2013, and resulted in a water elevation in the Lift Station of up to 373.32 feet amsl which also declined rapidly due to gravity drainage from the Lift Station sump.

It is likely that any drainage out of the Lift Station would dissipate in the subsurface before it would intersect with the ground surface and result in surface seepage. A ground surface elevation of 375 feet amsl (equal to the water elevation in the Lift Station on October 11, 2013) is located approximately 500 feet west of the Lift Station, at one of Harley-Davidson's water retention ponds. Subsurface drainage from the Lift Station is likely to dissipate in that 500-foot distance without surfacing.

A groundwater sample from the Lift Station was collected on October 6, 2016 and submitted to TestAmerica Pittsburgh Laboratory for analysis of volatile organic compounds (VOCs). Laboratory results are summarized on Table 2 in **Attachment D**, which includes all historical analytical data for the Lift Station. All COCs were below the laboratory detection limits in the annual sample collected in October.

In summary, groundwater elevation data from 2016 indicates that there were no adverse effects to Bldg3 from shutdown of the Lift Station for the System. Additionally, the laboratory analytical results from October 6, 2016 indicate that dissolved COCs in the water samples from the Lift Station did not exceed PADEP medium specific standards for residential used aquifers (RUA MSCs) with total dissolved solids $\leq$ 2,500 milligrams per liter (mg/l).

CONCLUSIONS AND RECOMMENDATOINS

The System was designed and installed when the building was constructed to eliminate the potential for the water table to rise upward due to infiltration of precipitation to elevations that could impact Bldg3 and the surrounding area. In July 2013, pumping at the Lift Station was discontinued and a post-shutdown monitoring plan was implemented to determine if active operation of the system was necessary. The plan consisted of water level monitoring and groundwater sampling for two years, with submittal of a final report with recommendations after the second year of monitoring, provided that a heavy precipitation event occurred during the two year monitoring period.

More than 3.5 years of monitoring were completed following the deactivation of the Lift Station pump. The monitoring results indicate that there were no adverse effects to Bldg3 from the shutdown of the Lift Station based on the following conditions:

- Precipitation events did not raise the groundwater levels high enough to negatively impact Bldg3. Examples include:
    - The water level in the Lift Station responds upward to precipitation events; however, the water level declines rapidly as water dissipates out of the Lift Station into the surrounding subsurface materials due to gravity drainage.
    - It is likely that any drainage out of the Lift Station would dissipate in the subsurface before it would intersect with the ground surface and result in surface seepage. This is supported by field observations that indicate no water seepage down-gradient of the Lift Station and west of Bldg3 due to drainage from the Lift Station.
    - Groundwater has never accumulated in collection well CW-19 (adjacent to the paint sludge pit in Bldg3) nor has the automatic water level sensors in the well ever indicated elevated groundwater.
    - FD1 (adjacent to the east side of Bldg3) and FD3 (inside Bldg3), have either been dry or had groundwater below the elevation of concern.

- COCs have been undetected or detected at very low concentrations below the PADEP RUA MSCs in multiple groundwater samples collected from the Lift Station.

Although a heavy precipitation event meeting the proposed criteria of approximately 2.5 inches or more in a 24-hour period during the shutdown monitoring did not occur, significant precipitation events were recorded that did not result in any adverse effects to Bldg3. For example, although manual monitoring and inspection for seepage were not completed, significant precipitation events occurred in July and October 2013 (3.7 inches and 6.4 inches, respectively), March 2014 (2.0 inches) and in March and June 2015 (1.5 inches and 2.2 inches, respectively), which did not raise the groundwater elevation in the Lift Station high enough to negatively impact Bldg3.

Throughout the more than 3.5 years of post-shutdown monitoring, all indications are that the System eliminates the potential for the water table to rise upward due to precipitation to elevations that could impact Bldg3. Therefore, it is recommended that the System remain deactivated, the automatic water level sensors remain functional in CW-19, further water level monitoring and groundwater sampling be discontinued. This report fulfills the requirement for the submittal of a final report.

GSC appreciates the opportunity to assist Harley-Davidson and the fYNOP team with the Bldg3 Footer Drain Lift Station System Shutdown Monitoring. Please do not hesitate to contact me at 717-901-8187 if you have questions.

Respectfully Submitted,
GROUNDWATER SCIENCES CORPORATION

Stephen M. Snyder, P.G.
Senior Associate & Hydrogeologist

Attachments:
A: Figure 1 – Building 3 Footer Drain System Shut Down Monitoring Locations
B: Table 1 – Monitoring Data
C: Building 3 Footer Drain Lift Station Hydrograph
D: Table 2 – Laboratory Analytical Results

cc: Ralph Golia, AMO Environmental Decisions, Inc.
Hamid Rafiee, U.S. Army Corps of Engineers (USACE), Baltimore District
Griff Miller, EPA
Kathy Horvath, PADEP
Pam Trowbridge, PADEP

REFERENCES

EPA, 2014. Email from Mr. Griff Miller of EPA to Mr. Stephen Snyder of GSC. April 17.

GSC, 2012. Field Sampling Plan For Part 2 of the Supplemental Groundwater Remedial Investigation at the former York Naval Ordnance Plant in York, Pennsylvania, April.

GSC, 2013. Addendum #7, to Field Sampling Plan For Part 2 of the Supplemental Groundwater Remedial Investigation Former York Naval Ordnance Plant, March 20.

GSC, 2014. Results of NPBA Extraction System and Bldg3 Footer Drain Monitored Shutdown Tests for Part 2 of the Supplemental Groundwater Remedial Investigation Former York Naval Ordnance Plant, April.

GSC, 2015. First Year Progress Report of the Building 3 Footer Drain System Shutdown Monitoring, Former York Naval Ordnance Plant (fYNOP), 1425 Eden Road, Springettsbury Township, York, Pennsylvania, Project 10012.23. April 27.

GSC, 2016. Second Year Progress Report of the Building 3 Footer Drain System Shutdown Monitoring, Former York Naval Ordnance Plant (fYNOP), 1425 Eden Road, Springettsbury Township, York, Pennsylvania, Project 10012.23. April 27.

ATTACHMENT A

Figure 1 – Building 3 Footer Drain System Shut Down Monitoring Locations


Force Main
to GWTP
Building 3
Lift Station
FD1
MW-111
Toe
Drain
CW-19
Building 3
MW-128
Footer
Drain
FD3
MW-112
Figure 1
LEGEND
Automatic Transducer and Manual Gauging
Manual Gauging
Monitoring Well Not Used for Shut Down Monitoring
Treatment System Piping (Approximate Location)
N
W
E
S
Scale (feet)
0 37.5 75 150
Aerial Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; aerial dated 2015.
Former York Naval Ordnance Plant
1425 Eden Road, York, PA 17402
Building 3 Footer Drain System
Shut Down Monitoring Locations
DRAWN BY: AM/JB
CHECKED AND APPROVED BY: CDO
DATE: 4/17/2017
Q:\10000\10012\Projects\2016 BLDG 3\R1\Fig1_FooterDrainShutdn_20170417.mxd
GROUNDWATER SCIENCES CORPORATION

ATTACHMENT B

Table 1 – Monitoring Data

Table 1
Monitoring Data
Building 3 Footer Drain System Lift Station Shutdown
Former York Naval Ordnance Plant - York, PA

		6/6/13			6/11/13			6/12/13			6/17/13			6/27/13			7/5/13		
		Bldg3 Footer Drain Shutdown Test Pre-Shutdown			Bldg3 Footer Drain Shutdown Test Pre-Shutdown			Bldg3 Footer Drain Shutdown Test Pre-Shutdown			Bldg3 Footer Drain Shutdown Test Pre-Shutdown			Bldg3 Footer Drain Shutdown Test			Bldg3 Footer Drain Shutdown Test		
Location	Location Type	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev
CW-19	Collection Well	384.94	D	D	384.94	D	D	384.94	NM	NM	384.94	D	D	384.94	NM	NM	384.94	NM	NM
Lift Station	Lift Station	396.53	27.62	368.91	396.53	28.68	367.85	396.53	NM	NM	396.53	28.15	368.38	396.53	25.63	370.90	396.53	24.70	371.83
BLDG3 FD-1	Building 3 Footer Drain	392.20	D	D	392.20	D	D	392.20	NM	NM	392.20	D	D	392.20	NM	D	392.20	D	D
BLDG3 FD-3	Building 3 Footer Drain	396*	D	D	396*	NM	NM	396*	NM	NM	396*	D	D	396*	NM	D	396*	D	D

		7/12/13			7/16/13			7/25/13			7/31/13			8/8/13			8/28/13		
		Bldg3 Footer Drain Shutdown Test			Bldg3 Footer Drain Shutdown Test			Bldg3 Footer Drain Shutdown Test			Bldg3 Footer Drain Shutdown Test			Bldg3 Footer Drain Shutdown Test			August 2013 Site Wide Water Levels		
Location	Location Type	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev
CW-19	Collection Well	384.94	D	D	384.94	D	D	384.94	NM	NM	384.94	NM	NM	384.94	D	D	384.94	D	D
Lift Station	Lift Station	396.53	24.45	372.08	396.53	24.35	372.18	396.53	24.30	372.23	396.53	24.43	372.10	396.53	24.23	372.30	396.53	25.53	371.00
BLDG3 FD-1	Building 3 Footer Drain	392.20	D	D	392.20	20.61	371.59	392.20	20.59	371.61	392.20	20.58	371.62	392.20	20.56	371.64	392.20	NM	NM
BLDG3 FD-3	Building 3 Footer Drain	396*	D	D	396*	NM	NM	396*	NM	NM	396*	NM	NM	396*	NM	NM	396*	NM	NM

		7/17/14			8/21/14			9/11/14			10/28/14			11/24/14			12/15/14		
		Bldg3 Monthly Monitoring			Bldg3 Monthly Monitoring			Bldg3 Monthly Monitoring			Bldg3 Monthly Monitoring			Bldg3 Monthly Monitoring			Bldg3 Monthly Monitoring		
Location	Location Type	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev
CW-19	Collection Well	384.94	D	D	384.94	D	D	384.94	D	D	384.94	D	D	384.94	D	D	384.94	D	D
Lift Station	Lift Station	396.53	24.88	371.65	396.53	24.75	371.78	396.53	26.10	370.43	396.53	24.83	371.70	396.53	24.24	372.29	396.53	24.30	372.23
BLDG3 FD-1	Building 3 Footer Drain	392.20	D	D	392.20	19.65	372.55	392.20	D	D	392.20	D	D	392.20	20.85	371.35	392.20	D	D
BLDG3 FD-3	Building 3 Footer Drain	396*	NM	NM	396*	D	D	396*	D	D	396*	D	D	396*	D	D	396*	D	D

		1/15/15			2/25/15			3/24/15			4/23/15			5/21/15			6/4/15		
		Bldg3 Monthly			Bldg3 Monthly			Bldg3 Monthly			Bldg3 Monthly			Bldg3 Monthly			Bldg3 Monthly		
Location	Location Type	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev
CW-19	Collection Well	384.94	D	D	384.94	D	D	384.94	NM	NM	384.94	NM	NM	384.94	D	D	384.94	D	D
Lift Station	Lift Station	396.53	24.55	371.98	396.53	24.75	371.78	396.53	23.96	372.57	396.53	24.27	372.26	396.53	24.10	372.43	396.53	24.19	372.34
BLDG3 FD-1	Building 3 Footer Drain	392.20	D	D	392.20	D	D	392.20	D	D	392.20	D	D	392.20	D	D	392.20	D	D
BLDG3 FD-3	Building 3 Footer Drain	396*	D	D	396*	D	D	396*	D	D	396*	D	D	396*	D	D	396*	D	D

		7/15/15			8/14/15			9/15/15			10/15/15			11/25/15			12/15/15		
		Bldg3 Monthly			Bldg3 Monthly			Bldg3 Monthly			Bldg3 Monthly			Bldg3 Monthly			Bldg3 Monthly		
Location	Location Type	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev
CW-19	Collection Well	384.94	D	D	384.94	D	D	384.94	NM	NM	384.94	NM	NM	384.94	D	D	384.94	D	D
Lift Station	Lift Station	396.53	24.21	372.32	396.53	24.38	372.15	396.53	24.15	372.38	396.53	24.58	371.95	396.53	25.21	371.32	396.53	25.07	371.46
BLDG3 FD-1	Building 3 Footer Drain	392.20	20.55	371.65	392.20	D	D	392.20	D	D	392.20	D	D	392.20	D	D	392.20	D	D
BLDG3 FD-3	Building 3 Footer Drain	396*	D	D	396*	D	D	396*	D	D	396*	NM	NM	396*	D	D	396*	NM	NM

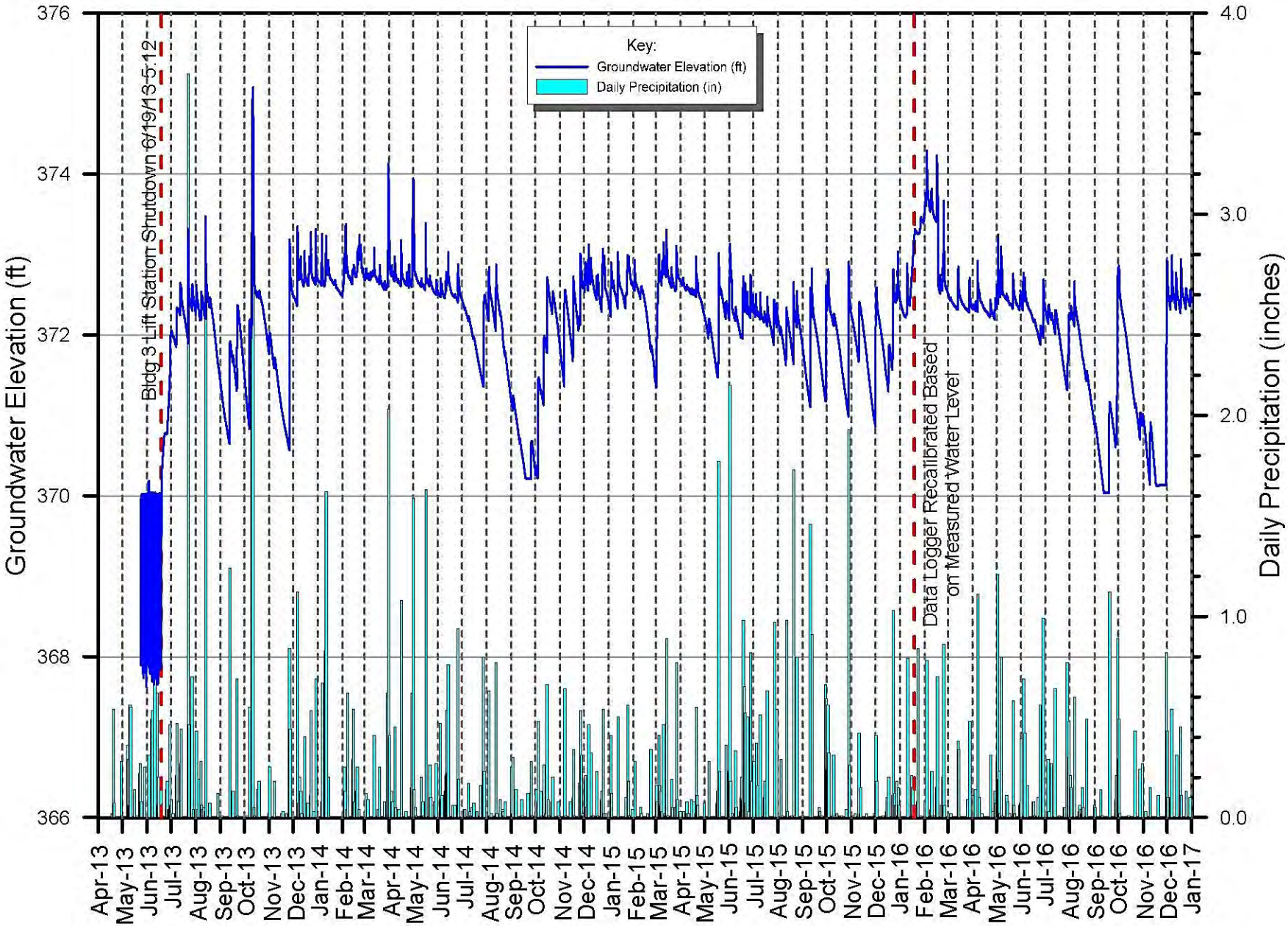
		7/15/15			12/15/15			1/19/16			2/17/16			6/8/16			8/2/16		
		Bldg3 Monthly			Bldg3 Monitoring			Bldg3 Monitoring			Bldg3 Monitoring			Bldg3 Monitoring			Bldg3 Monitoring		
Location	Location Type	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev
CW-19	Collection Well	384.94	D	D	384.94	D	D	384.94	D	D	384.94	D	D	384.94	D	D	384.94	D	D
Lift Station	Lift Station	396.53	24.21	372.32	396.53	25.07	371.46	396.53	23.24	373.29	396.53	23.77	372.76	396.53	24.20	372.33	396.53	24.19	372.34
BLDG3 FD-1	Building 3 Footer Drain	392.20	20.55	371.65	392.20	D	D	392.20	D	D	392.20	19.62	372.58	392.20	D	D	392.20	D	D
BLDG3 FD-3	Building 3 Footer Drain	396*	D	D	396*	D	D	396*	D	D	396*	D	D	396*	D	D	396*	D	D

MPE - Measuring Point Reference Elevation (feet above mean sea level)
DTW - Depth to Water (feet)
WL Elev - Water Level Elevation (feet above mean sea level)
NM - Not Measured/Location Not Accessible
D - Dry
* - Approximate Unsurveyed Elevation

ATTACHMENT C

Building 3 Footer Drain Lift Station Hydrograph

Building 3 Footer Drain Lift Station



ATTACHMENT D

Table 2 – Laboratory Analytical Results

Table 2
Groundwater Data Summary - Lift Station
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (ug/L)	PA MSC UA NR (ug/L)	Federal MCL (ug/L)	EPA RSL (ug/L)	Lift Station 12/10/2004	Lift Station 6/13/2005	Lift Station 12/9/2005	Lift Station 6/20/2006	Lift Station 6/19/2007	Lift Station 12/12/2007	Lift Station 10/23/2014	Lift Station 10/2/2015	Lift Station Deep Foundation 5/20/2008	Lift Station Deep Foundation 5/20/2008	Lift Station Deep Foundation 12/16/2009	Lift Station Deep Foundation 6/28/2011	Lift Station Deep Foundation 12/10/2012	Lift Station Deep Foundation 5/24/2013
TOTAL VOC																		
Total VOC					4.5	3.2	0.32	0	381.5	0	0	0	5.62	5.62	0.47	1.95	0.5	0.84
Volatile Organic Compound																		
1,1,1,2-Tetrachloroethane	70	70		0.57							1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	200	200	8000	1 J	0.8 J	1 U	5 U	5 U	5 U	1.0 U	1.0 U	0.71 J	0.71 J	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1 U	1 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	5	5	0.28	3 U	3 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	0.17 J	0.17 J	1 U	1 U	1 U	0.21 J
1,1-Dichloroethane	31	160		2.8	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	7	7	280	2 U	2 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	0.56 J	0.56 J	1 U	1 U	1 U	1 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075							1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5	5	5	0.17	2 U	2 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5	5	0.44	1 U	1 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane	6.4	32		0.46	1000 U	1000 U	200 U	1000 U	380 J	1000 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
2-Butanone	4000	4000		5600	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	10 U	10 U	10 U	5 U	5 U	5 U
2-Chloroethyl Vinyl Ether					5 U	5 U	2 U	10 U	10 U	10 U								
2-Hexanone	63	260		38							5.0 U	5 UJ	10 U	10 U	10 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	3300	9300		6300							5.0 U	5.0 U	10 U	10 U	10 U	5 U	5 U	5 U
Acetone	38000	110000		14000							5.0 U	5.0 U	2.7 J	2.7 J	10 U	5 U	5 U	5 U
Acrolein	0.042	0.18		0.042	100 U	100 U	20 U	100 U	100 U	100 U								
Acrylonitrile	0.72	3.7		0.052	50 U	50 U	20 U	100 U	100 U	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Benzene	5	5	5	0.46	1 U	1 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	90	90		83							1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	80	80		0.13	1 U	1 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	80	80		3.3	4 U	4 U	1 U	5 U	5 U	5 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	10	10		7.5	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	1500	6200		810							1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	5	5	5	0.46	2 U	2 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	100	100	78	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	80	80		0.87	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	250	1200		21000	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	80	80		0.22	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	30	30		190	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	70	70	36	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	0.84 J	1 U	1 U
cis-1,3-Dichloropropene	7.3	34		0.47	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	700	700	1.5	4 U	4 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	20	20		14							1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5	5		11	3 U	3 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	100	100	100	1200							1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	5	5	11	1.1	1 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	0.28 J	0.28 J	1 U	0.22 J	1 U	1 U
Toluene	1000	1000	1000	1100	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	100	100	360	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	7.3	34		0.47	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	5	5	0.49	2.4	2.4	0.32 J	5 U	1.5 J	5 U	1.0 U	1.0 U	1.2	1.2	0.47 J	0.89 J	0.5 J	0.63 J
Vinyl Chloride	2	2	2	0.019	5 U	5 U	1 U	5 U	5 U	5 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (Total)	10000	10000	10000	190							3.0 U	3.0 U	3 U	3 U	3 U	3 U	3 U	3 U

Lift Station refers to a composite water sample collected from the Bldg3 Lift Station.
Lift Station Deep Foundation refers to a sample collected from the deep footer drain system beneath Bldg3.
Lift Station Toe of Slope refers to a sample collected of the drainage from the hillside toe drain.

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination.
Inorganics; estimated. E = Inorganics: matrix interference. ^c = CCV Recovery is outside acceptance limits.

Table 2
Groundwater Data Summary - Lift Station
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (ug/L)	PA MSC UA NR (ug/L)	Federal MCL (ug/L)	EPA RSL (ug/L)	Lift Station Deep Foundation 9/16/2013	Lift Station Deep Foundation 10/6/2016	Lift Station Toe of Slope 5/20/2008	Lift Station Toe of Slope 12/16/2009	Lift Station Toe of Slope 6/28/2011	Lift Station Toe of Slope 1/3/2013
TOTAL VOC										
Total VOC					0.48	0	9.15	0.53	8.39	4.46
Volatile Organic Compound										
1,1,1,2-Tetrachloroethane	70	70		0.57	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	200	200	8000	1 U	1 U	0.77 J	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	5	5	0.28	1 U	1 U	0.22 J	1 U	1 U	1 U
1,1-Dichloroethane	31	160		2.8	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	7	7	280	1 U	1 U	0.56 J	1 U	1 U	1 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5	5	5	0.17	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5	5	0.44	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane	6.4	32		0.46	200 U	200 U	200 U	200 U	200 U	200 U
2-Butanone	4000	4000		5600	5 U	5 U ^c	10 U	10 U	5 U	5 U
2-Chloroethyl Vinyl Ether										
2-Hexanone	63	260		38	5 U	5 U	10 U	10 U	5 U	5 U
4-Methyl-2-Pentanone	3300	9300		6300	5 U	5 U	10 U	10 U	5 U	5 U
Acetone	38000	110000		14000	5 U	5 U ^c	10 U	10 U	6.8	4.2 J
Acrolein	0.042	0.18		0.042						
Acrylonitrile	0.72	3.7		0.052	20 U	20 U ^c	20 U	20 U	20 U	20 U
Benzene	5	5	5	0.46	1 U	1 U	0.81 J	1 U	1 U	1 U
Bromochloromethane	90	90		83	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	80	80		0.13	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	80	80		3.3	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	10	10		7.5	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	1500	6200		810	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	5	5	5	0.46	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	100	100	78	1 U	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	80	80		0.87	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	250	1200		21000	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	80	80		0.22	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	30	30		190	1 U	1 U ^c	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	70	70	36	1 U	1 U	0.92 J	1 U	1 U	1 U
cis-1,3-Dichloropropene	7.3	34		0.47	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	700	700	1.5	1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	20	20		14	1 U	1 U	0.4 J	1 U	1 U	1 U
Methylene chloride	5	5		11	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	100	100	100	1200	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	5	5	11	1 U	1 U	2.1	1 U	0.18 J	1 U
Toluene	1000	1000	1000	1100	1 U	1 U	1 U	1 U	0.21 J	1 U
trans-1,2-Dichloroethene	100	100	100	360	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	7.3	34		0.47	1 U	1 U ^c	1 U	1 U	1 U	1 U
Trichloroethene	5	5	5	0.49	0.48 J	1 U	3.1	0.53 J	1.2	0.26 J
Vinyl Chloride	2	2	2	0.019	1 U	1 U ^c	1 U	1 U	1 U	1 U
Xylenes (Total)	10000	10000	10000	190	3 U	2 U	0.27 J	3 U	3 U	3 U

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