EXPEDITED SITE-WIDE RI/FS TASK
BUILDING 1 EAST WING AMMONIA INVESTIGATION
SUMP AND SOIL CHARACTERIZATION

HARLEY-DAVIDSON MOTOR COMPANY OPERATIONS, INC.
YORK VEHICLE OPERATIONS
1425 EDEN ROAD
YORK, PENNSYLVANIA 17402

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BH NO. 72982-40

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PREPARED FOR:

HARLEY-DAVIDSON MOTOR COMPANY OPERATIONS, INC.
YORK VEHICLE OPERATIONS
1425 EDEN ROAD
YORK, PENNSYLVANIA 17402

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1.0 INTRODUCTION

In August 2004, Harley-Davidson Motor Company Operations, Inc. (Harley-Davidson) encountered airborne concentrations of ammonia gas within the east wing basement of Building 1 following heavy rain events (see Figure 1). Standing water was identified within the building and was subsequently sampled. Analysis indicated that the water contained ammonia at a concentration of 800 milligrams per liter (mg/L).

Historically, it is believed that ammonia has been used and stored within this area . The purpose of this investigation was to determine if ammonia exists within the subsurface soils in proximity to this area. Specifically, the existing sumps within the building were evaluated and water from within the sumps were analyzed for ammonia and related compounds. In addition, samples of soils outside the perimeter of this area were collected and analyzed for ammonia and related compounds.

Several surrounding monitoring wells were initially inspected and sampled by Buchart-Horn, Inc. (BH) in August 2004. Laboratory analysis indicated that ammonia was identified in all but one of the wells sampled. The well with the highest concentration of ammonia (MW-33) is located along the east wing of Building 1.

In December 2004, Science Applications International Corporation (SAIC) of Harrisburg, PA completed a Work Plan Scoping Document that addresses further investigation within the area. The Scoping Document recommended characterization of the sumps within Building 1, characterization of soils along the north and northeast perimeters of Building 1, and determining remedial alternatives for any ammonia contamination that may have been encountered.

2.0 FIELD INVESTIGATION

The field investigation was divided into two phases: the first phase was an evaluation of the existing sumps within the East Wing Basement of Building 1. The second phase consisted of collecting samples of subsurface soils around the perimeter of the basement.

2.1 Sump Investigation

On March 2, 2005, Buchart-Horn, Inc. (BH) personnel mobilized to the site to evaluate the conditions of the existing sumps within the basement of the East Wing of Building 1. In addition, water samples were collected from each sump and submitted to Severn-Trent Laboratories (STL) of Edison, New

Jersey, following chain-of-custody protocol. One field blank sample was also obtained for quality assurance/quality control (QA/QC) purposes.

It was determined that two sumps exist within the basement of this area (sump B-14 and sump B-16C). An evaluation of each sump appears in the following table:

TABLE 1
SUMP EVALUATION

Sump:	B-14	B-16C
Total Depth:	28.5"	48"
Width:	21.5" Diameter (round)	42" x 33"
Construction Material:	Concrete	Concrete
Depth to Water:	14" from surface	25" from surface
Volume of Water:	22.8 Gallons	138.0 Gallons
Presence of Solids?	Yes - less than 1/8 inch	Yes - less than 1/8 inch
Total Amount of Solids?	Less than 10 cubic inches	Less than 10 cubic inches
pH	8.86	9.15
PID Readings	3.1 ppm	0.0 ppm
Ammonia Concentration:	0.0 ppm	0.0 ppm
Comments:	Solid Bottom/no odors/no sludge at bottom	Solid Bottom/no odors/no sludge at bottom

ppm = parts per million

Each sample was obtained using a disposal bailer. The water samples obtained from the sumps were analyzed for Nitrate; Nitrite; Ammonia; and Total Kjeldahl Nitrogen (TKN). A photoionization detector (PID) and ammonia detector tubes were used to document the presence of ammonia.

2.2 Soil Investigation

Prior to mobilization of the drilling equipment, the boring locations were cleared of utilities by both BH and Harley-Davidson personnel. A Sample Location Plan is included as Figure 2.

On March 16, 2005, BH personnel mobilized to the site to obtain soil samples from the perimeter of the East Wing of Building 1. Soil samples were obtained by use of a Geoprobe®truck-mounted rig. Geoprobe services were provided by Eichelbergers, Inc., Mechanicsburg, PA. A continuous soil core was collected at each boring location and advanced to a maximum depth of 16 feet below ground surface (bgs), or refusal, whichever was first encountered.

A total of seven (7) soil borings were advanced along the north and northeastern perimeter of the East Wing of Building 1. Three (3) soil samples were obtained from each boring: one from the 0-2' interval; one from the 5-6' interval; and the third from the bottom two feet of the boring. No groundwater was encountered in any of the borings. Soil boring logs appear in Appendix A. No unusual odors or staining were encountered. PID readings from each boring location indicated no readings above background levels. The decontamination protocol presented in the QAPP was followed throughout the soil investigation. In addition, a clean pair of disposable gloves were worn each time a different location was sampled.

One duplicate sample was also obtained for QA/QC purposes. Soil samples from the borings were submitted to STL for laboratory analysis following chain-of-custody protocol. The borings were backfilled with native material. In addition, each sampling location was field located using a global positioning system (GPS) unit and tape measure.

The soil samples were analyzed for pH, Ammonia, Nitrate, Nitrite, and TKN. Because no unusual odors or staining were observed, additional analysis for volatile organic compounds (VOC's) and Priority Pollutant Metals (PP Metals) were not requested.

Chain-of-Custody documentation for the samples and the laboratory report are included in Appendix B. Site photographs are included in Appendix C.

3.0 ANALYTICAL RESULTS

3.1 Analytical Results - Sump Investigation

Analytical results for the sump water are summarized in the following table. None of the parameters exceeded the most stringent Pennsylvania Statewide Health Standard.

Parameter	B-14	B-16C	Field Blank	Statewide Health Standard
Nitrate	5.8	0.43	ND	- -
Nitrite	ND	ND	ND	- -
Ammonia	0.3	ND	ND	30
TKN	ND	ND	ND	- -

All results are expressed in mg/L.

- - = A Statewide Health Standard does not exist for this parameter.

Laboratory results indicated minor concentrations of nitrate in both of the sumps. In addition, a minor amount of ammonia was detected in sump B-14. This water is not potable in nature and does not directly contact Harley-Davidson personnel. Therefore, these minor concentrations are not considered a health risk or concern.

3.2 Analytical Results - Soil Investigation

Analytical results for the soil samples are summarized in Table 2. Minor amounts of ammonia and nitrate were detected in the soils however, none of the parameters exceeded the most stringent Pennsylvania Statewide Health Standard. Therefore, these minor concentrations are not considered a health risk or concern.

3.3 Non-Conformance Summary

As part of each laboratory report, a non-conformance summary is included to show any condition that existed with each analytical event that may affect laboratory results. No non-conformance issues existed for the samples submitted for the water samples obtained from the sumps; however, several non-conformance issues existed for the soil samples as follows:

Sample Receipt: The cooler temperature at receipt was at 11° Celsius. This was due to the fact that the ice used to cool the samples melted prior to receipt at the laboratory. The acceptable range for temperature is 0-6° Celsius. STL was contacted regarding the temperature non-conformance issue. STL stated that the temperature at sample receipt would have little to no affect on the analyses that were requested, as the samples are brought to room temperature for analysis. Upon a review of the methods used to analyze the soil samples, only the method for pH refers to sample temperature. This method states that the temperature of the sample should be brought to 25○ Celsius and recorded along with the pH reading.

Wet Chemistry/Microbiology: QA Batch 0320 - The Percent Recovery of TKN was outside QC Limits. In addition, QA Batch 0321 - Percent Recovery of TKN was outside QC Limits. These are Laboratory non-conformance issues that have been corrected as part of STL's QA/QC program and do not affect the outcome of the laboratory report.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The purpose of the investigation was to evaluate subsurface conditions at the site for the presence of ammonia and other nitrogen-containing parameters. This investigation was performed in accordance with the Work Plan Scoping Document prepared by SAIC in December 2004. Water from the two sumps (B-14 and B-16C) were collected for laboratory analysis. Samples were analyzed for Nitrate, Nitrite, Ammonia, and TKN. None of the samples exceeded applicable Statewide Health Standards.

Seven soil probes (AMM-1 through AMM-7) were advanced along the north and northeastern perimeter of the East Wing of Building 1. Samples were analyzed for pH, Ammonia, Nitrate, Nitrite, and TKN. None of the samples exceeded applicable Statewide Health Standards. In addition, none of the samples appeared elevated as compared to other samples.

The investigation documented in the report surrounded the area of concern. As the samples did not show significant contamination, it appears that the ammonia contamination is a small scale, localized problem. The storage tank previously used to store ammonia has reportedly been removed; therefore, there should no longer be an active source of ammonia in the area. Based upon the historical information available for review and the results of this investigation, it appears likely that the contamination exists as a localized problem beneath Building 1's concrete floor slab.

4.2 Recommendations

Based upon the results of this investigation, it has been determined that a Remedial Alternatives Study is not necessary at this time. BH does however recommend that a "Phase II" soil sampling investigation should be conducted below the concrete slab in the basement of Building 1 to further delineate ammonia contamination. The investigation would be focused in the eastern end of Building 1, in the area of the previous water infiltration. BH proposes that approximately ten borings, advanced to a depth of approximately 2-3 below the slab surface, should be sufficient to adequately evaluate the subfloor soil conditions in the basement of Building 1. If groundwater is encountered in any of the borings, samples of the water would also be submitted for laboratory analysis. A "Phase II" Soil Investigation work plan showing the proposed boring locations, will be prepared by BH.

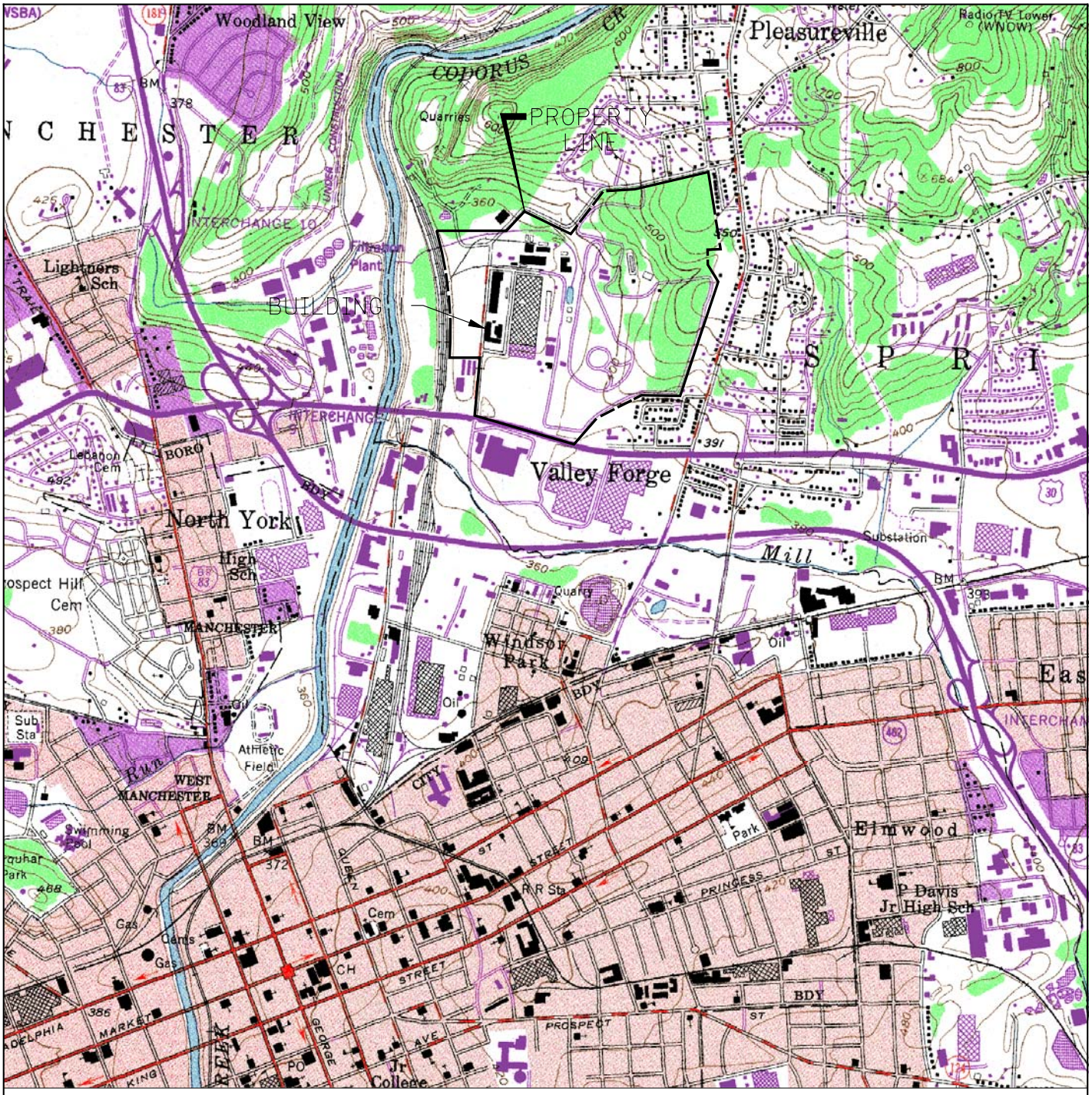
TABLE 2
ANALYTICAL RESULTS – SOIL INVESTIGATION
EXPEDITED SITE-WIDE RI/FS TASK

BUILDING 1 EAST WING AMMONIA INVESTIGATION
SUMP AND SOIL CHARACTERIZATION
HARLEY-DAVIDSON MOTOR COMPANY OPERATIONS, INC.

Sample #	AMM 1-1	AMM 1-2	AMM 1-3	AMM 2-1	AMM 2-2	AMM 2-3	AMM 3-1	AMM 3-2	AMM 3-3	AMM 4-1	AMM 4-2	AMM 4-3	AMM 5-1	AMM 5-2	AMM 5-3	AMM 6-1	AMM 6-2	AMM 6-3	AMM 7-1	AMM 7-2	AMM 7-3	Duplicate (AMM 2-2)	Statewide Health Standard
Sample Interval (BGS)	1-2’	5-6’	10-11’	1-2’	5-6’	10-11’	1.5-2.5’	5-6’	10-11’	0.6-1.6’	5-6’	10-11’	0.5-1.5’	5-6’	10-11’	1-2’	5-6’	10-11’	1-2’	5-6’	10-11’	5-6’	
pH	9.16	7.38	7.14	7.29	5.62	6.92	7.29	7.41	7.11	7.81	6.41	6.29	9.37	6.92	7.2	7.61	7.17	7.19	7.52	7.22	5.20	5.25	- -
Ammonia	ND	8.6	ND	14.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3000
Nitrate	ND	ND	2.9	7.7	ND	ND	4.2	ND	3.2	3.1	ND	2.6	3.8	3.8	4.4	4.8	ND	ND	5.8	3.7	ND	ND	- -
Nitrite	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	- -
TKN	137	124	281	54.3	102	120	161	124	161	75.0	125	80.9	57.3	30.3	126	91.6	94.6	106	90.5	51.0	85.7	77.1	- -

BGS= Below Ground Surface
All results are expressed in mg/kg.
ND= Not Detected
- - = A Statewide Health Standard does not exist for this parameter.

FIGURES



SCALE 1:24000

0 1/2 1 MILE

MN
GN
11°
196 MILS
1°05′
19 MILS

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

PENNSYLVANIA

QUADRANGLE LOCATION

YORK QUADRANGLE
PENNSYLVANIA--YORK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

ENGR./ARCH.	BUCHART HORN, INC. Consulting Engineers and Planners	HARLEY-DAVIDSON MOTOR COMPANY OPERATIONS, INC. YORK, PA.	DRAWING NO.
DESIGN BY			SHEET NO.
DRAWN BY			
CHECK BY			PROJECT NO. 72982-47
DATE			

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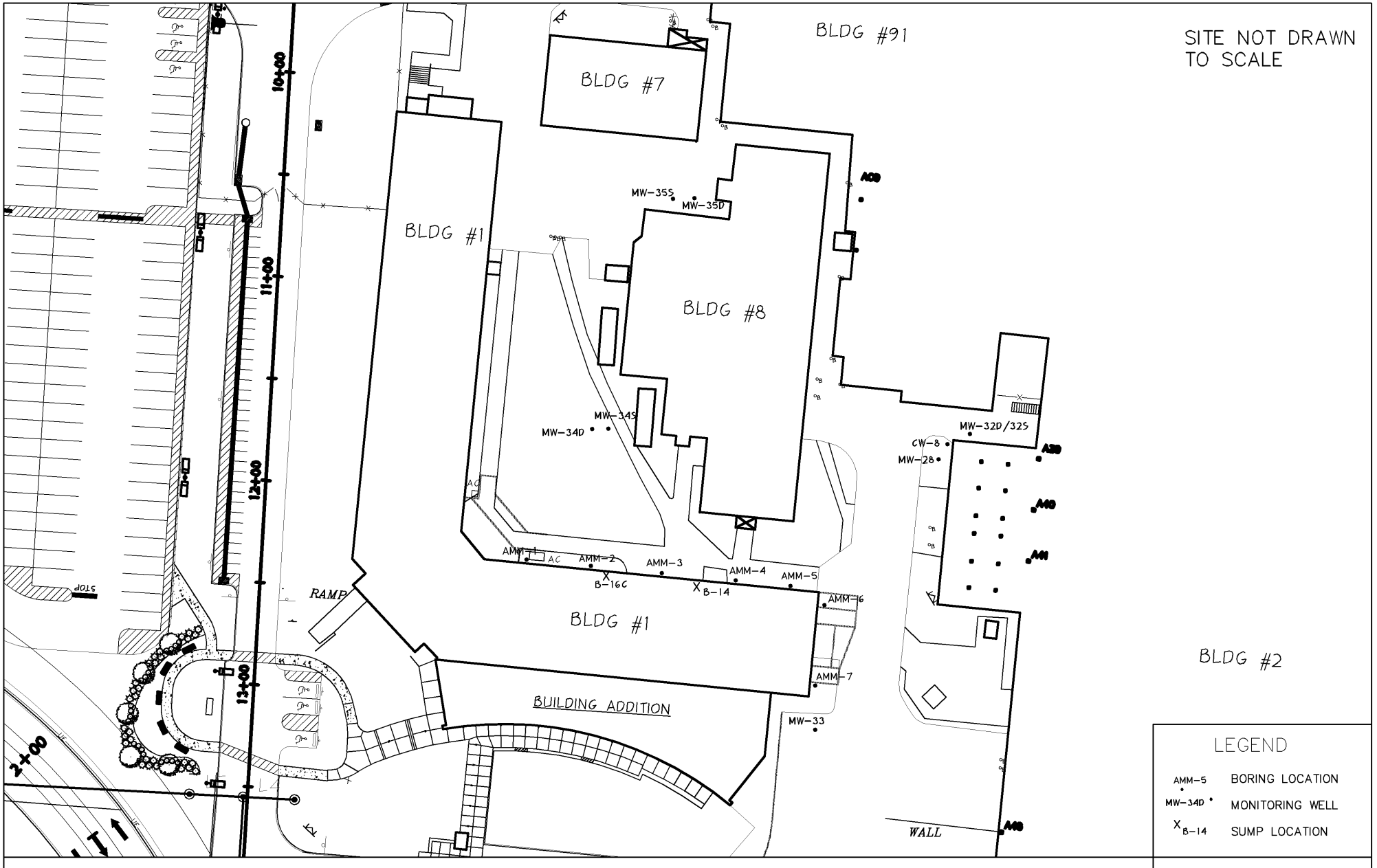

FIGURE 2
SAMPLE LOCATION PLAN
BUILDING 1 – EAST WING AMMONIA INVESTIGATION
HARLEY–DAVIDSON MOTOR COMPANY OPERATIONS, INC
1425 EDEN ROAD
YORK, PENNSYLVANIA

BUCHART HORN, INC.

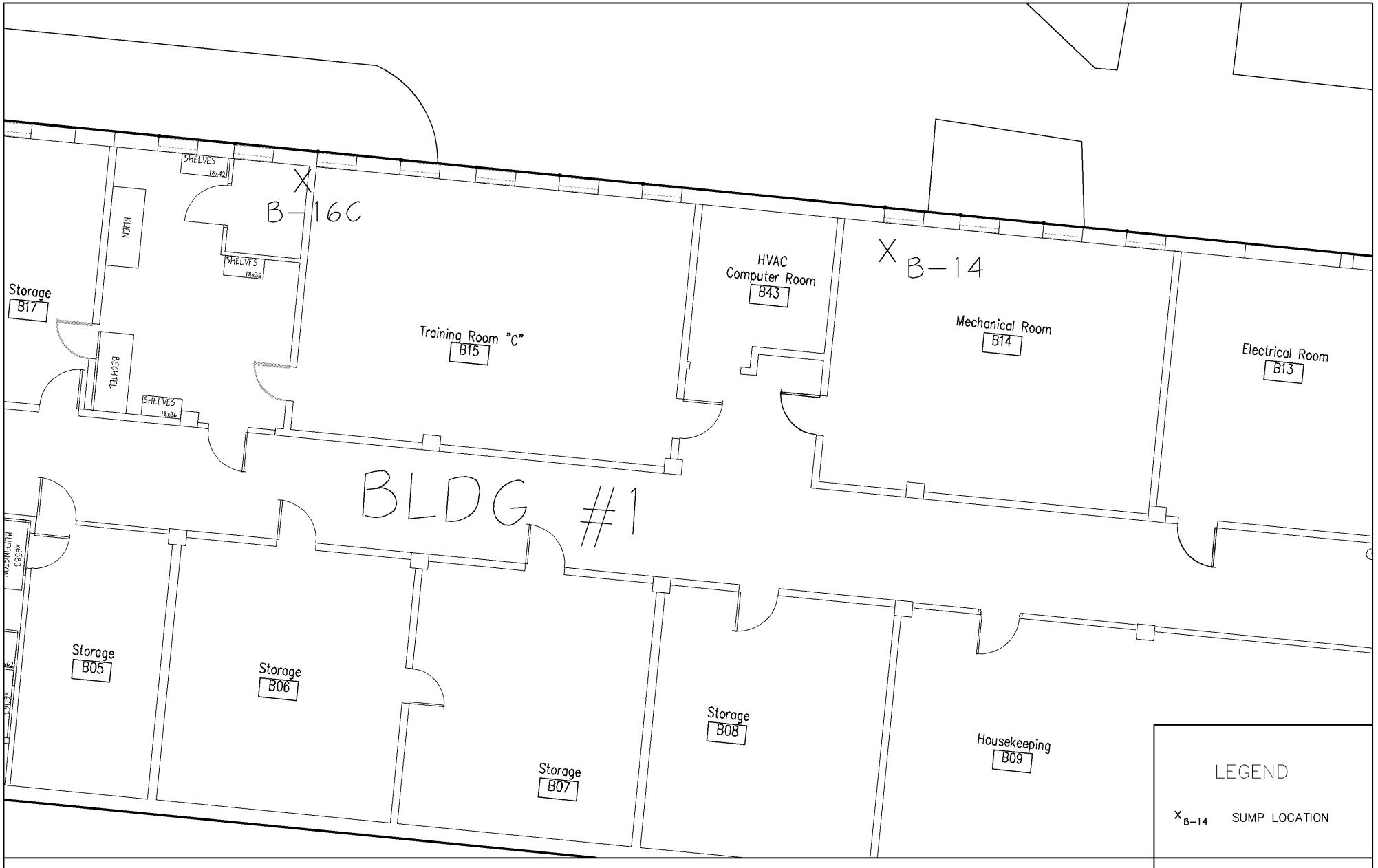

FIGURE 3
SUMP SAMPLING LOCATION PLAN
BUILDING 1 – EAST WING AMMONIA INVESTIGATION
HARLEY–DAVIDSON MOTOR COMPANY OPERATIONS, INC
1425 EDEN ROAD
YORK, PENNSYLVANIA

SCALE
1":10'

BUCHART HORN, INC.

APPENDICES

Appendix A
Boring Logs

APPENDIX A

SOIL BORING LOGS
EXPEDITED SITE-WIDE RI/FS TASK
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DEPTH (feet)	AMM-1	AMM-2	AMM-3	AMM-4	AMM-5	AMM-6	AMM-7
0.0	0-3" Topsoil	0-4.6' Orange/Brown Clay, moist	0-3" Brown Clay, moist	0-2" Concrete	0-2" Concrete	0-6" Decorative Rock	0-4" Mulch
	3"-3.2' Orange/Brown Clay, moist		3"-1.1' Subbase (Rock)	2"-8" Subbase (Rock)	2"-8" Subbase (Rock)	6"-8.6' Orange/Brown Clay, moist	4"-7.5' Orange/Brown Clay, moist
				8"-13.7' Orange/Brown Clay, moist	8"-1.4' Dark Brown Clay, moist		
2.0			1.1-9.8' Dark Brown Clay, moist		1.4-1.6' Light Gray Sandstone, fg		
					1.6-12.2' Orange/Brown Clay, moist		
	3.2-4.3' Brown Clay, moist						
4.0							
	4.3-11.6' Orange/Brown Clay, moist	4.6-7.1' Light Tan Clay, moist					
6.0							
		7.1-12.7' Orange/Brown Clay, moist					7.5-7.6' Wood Fragments
							7.6-16.0' Orange/Brown Clay, moist
8.0						8.6-9.0' Large Rock Fragments	
						9.0-11.7' Orange/Brown Clay, moist	
			9.8-11.6' Brown Clay, moist				
10.0							
	11.6-13.2' Brown Clay, moist		11.6-15.1' Orange/Brown Clay, moist			11.7' Refusal - Gray Sandstone	
12.0					12.2' Refusal - Gray Sandstone		
		12.7-15.3' Brown Clay, moist, w. Quartzite fragments					
	13.1-15.5' Brown/Gray Clay, moist and tacky			13.7' Refusal - Gray Sandstone			
14.0							
			15.1-16.0' Weathered Gray Sandstone				
	15.5' Refusal - Gray Sandstone	15.3' Refusal - Gray Sandstone					
16.0			16.0' Boring Ended				16.0' Boring Ended

Appendix B
Site Photographs

PHOTO 1 – VIEW OF SUMP B-14 LOOKING NORTH, LOCATED WITHIN THE BASEMENT OF BUILDING 1, EAST WING.

PHOTO 2 – VIEW OF SUMP B-16C LOOKING EAST, LOCATED WITHIN THE BASEMENT OF BUILDING 1, EAST WING. THE WATER ENTERING THE PIT IS CONDENSATE FROM SUMP B-14.

PHOTO 3 – BORING AMM-1 THROUGH AMM-5 LOCATED IN AREA BETWEEN SIDEWALK AND NORTH WALL OF BUILDING 1, EAST WING.

PHOTO 4 – BORING LOCATION AMM-6, LOCATED ALONG THE EASTERN WALL OF BUILDING 1, EAST WING. NO PHOTO AVAILABLE FOR AMM-7.