

**Photograph 3 Notes:**

Tire tracks heading from the south to north for well installation of 21B-DS-LGIA-MW13. Both teams prioritized minimizing their LOD in Tract 21C.



**Photograph 1 Notes:**

Final water sample taken at well 20B-UGIA-MW11.



**Photograph 2 Notes:**

Final water sample taken at well 20B-UGIA-MW10.

**Photograph 3 Notes:**

James Tinnell of GSI using the power auger attached to the Bobcat for drilling 2ft. bollard holes surrounding well 20B-UGIA-MW10.

**Photograph 4 Notes:**

Final water sample taken at well 20B-UGIA-MW09.



**Photograph 5 Notes:**

Final water sample taken at well 21B-DS-LGIA-MW09.

**Photograph 6 Notes:**

Final water sample taken at well 21B-DS-UGIA-MW08.



**Photograph 1 Notes:**

Final water sample taken at well 19C-LGIA-MW07.



**Photograph 2 Notes:**

Well development setup on well 21B-BB-LGIA-MW04.



**Photograph 3 Notes:**

Final water sample taken at well 21B-BB-LGIA-MW04.





**Photograph 1 Notes:**

Final water sample taken at well 21B-BB-UGIA-MW03



**Photograph 2 Notes:**

Final water sample taken at well 21B-BPA-UGIA-MW09

**Photograph 3 Notes:**

Final water sample taken at well 21B-BPA-UGIA-MW12.

**Photograph 4 Notes:**

Well development setup on well 21B-BPA-LGIA-MW10.





**Photograph 5 Notes:**

Final water sample taken at well 21B-BPA-LGIA-MW10.



**Photograph 1 Notes.**

Dark clouds on the horizon as ATI heads to site at 7:00am



**Photograph 2 Notes.**

Soil samples taken from Tract 20B-SS10





**Photograph 1 Notes:**

The gate at the intersection of Capitol and 90th seems to have become unhinged. Repairs were made late in the previous shift so this occurred between demob and mob of field staff.



**Photograph 2 Notes:**

Water from monitoring wells 21B-BPA-UGIA-MW11 (Left) and 21B-DS-LGIA-MW13 (Right) at the end of development is shown above.





**Photograph 1 Notes:**

Thick fog in the morning limited visibility on the drive to the site; Speed was decreased.



**Photograph 2 Notes:**

Receipt with tracking numbers for the five coolers shipped to the lab, today.



**Photograph 1 Notes:**

Chains of Custody are taped to the inside of the cooler lid before sealing the cooler.



**Photograph 2 Notes:**

A custody seal is signed and dated, then applied to the lid and body of the cooler.

**Photograph 1 Notes:**

Samples are situated in the cooler so that all bottles are in contact with double-bagged ice-bags.

**Photograph 2 Notes:**

Once samples are situated, a layer of ice bags is placed on top





**Photograph 1 Notes:**

Additional tape was applied over the shipping label to ensure that it stays attached to the cooler.

Monday-Friday Sample Delivery: Katahdin Analytical Services  
600 Technology Way  
Scarborough, Maine 04070  
Ph: 207-874-2400

Saturday Sample Delivery: Katahdin Analytical Services  
95 Hutchins Drive  
Portland, Maine 04102

**Please mark the package "Hold for pick up" and check the Saturday delivery box.**

**Photograph 2 Notes:**

The screenshot above stipulates the procedures for Saturday sample delivery.

**Photograph 3 Notes:**

Background Area 3 was densely covered with tall vegetation

**Photograph 4 Notes:**

Well details were engraved into aluminum tags that were secured to the well lids using heavy duty glue made for use with painted surfaces, steel, and aluminum.



**Photograph 1 Notes:**

A YSI-556 water quality meter displays the readings that are recorded during purging.



**Photograph 2 Notes:**

A Hanna Turbidity Meter is used to measure the turbidity of the water throughout purging.



**Photograph 1 Notes:**

Groundwater Sampling Setup.

**Photograph 2 Notes:**

At the intersection of 90th and Capitol, ATI bolted the upper hinge socket to the gate to prevent dislodging.



**Photograph 1 Notes:**

The HSA rig is shown here setup on 19B-LGIA-MW02; Wells 19B-UGIA-MW01 and 19B-LGIA-MW02 are located along the northernmost corner of Tract 19B.



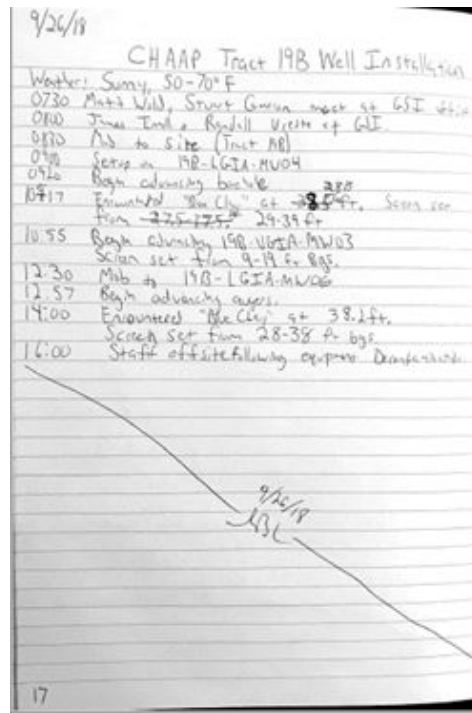
**Photograph 2 Notes:**

The 2-inch diameter PVC well casing arrives in plastic bags to prevent contamination prior to installation.



**Photograph 1 Notes:**

“Blue Clay” was encountered at 38.5 feet bgs at well 19B-LGIA-MW04. Shown is the 37-39 ft interval split spoon. Compaction of the clay is factored into depth considerations.



**Photograph 2 Notes:**

Each day a logbook, such as the one above, is maintained to report the day's activities.



**Photograph 3 Notes:**

32 inch x 32 inch square frames were made to form the concrete pads

**Photograph 4 Notes:**

An auger was mounted to the front of a Bobcat to drill the bollard holes.



**Photograph 1 Notes:**

Water from 19B-UGIA-MW01 after development



**Photograph 2 Notes:**

Water from 19B-LGIA-MW02 after development.

**Photograph 3 Notes:**

Water from 19B-UGIA-MW03 after development





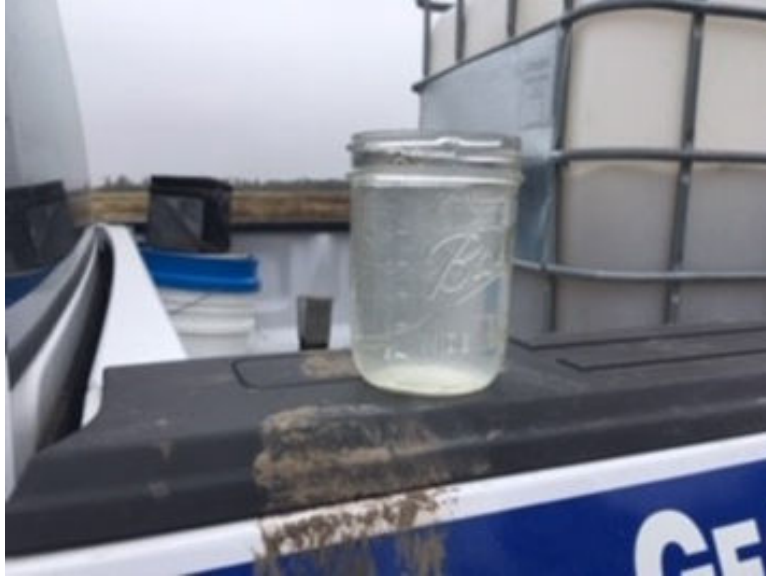
**Photograph 1 Notes:**

Water from 19B-LGIA-MW04 after development.



**Photograph 2 Notes:**

Water from 19B-UGIA-MW05 after development.

**Photograph 3 Notes:**

Water from 19B-LGIA-MW06 after development.

**APPENDIX B**

**FIELD NOTES**



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**DAILY QUALITY CONTROL REPORT - 001**

	S	M	T	W	Th	F	S
Weather		S					
Temp		50					
Wind		5					
Humidity		L					

Date - 3/12/2018

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001.

Equipment Onsite:
GPS Trimbles Trucks

Work Performed: (onsite – 0800; offsite – 1715)

Organized field office  
 APP meeting – H&S Meeting  
 Get keys for WWTP from Gary Carson  
 Stake out points at 20B, 21C, 21B, BKRD 2, and BKRD 3  
 Supervise 4 yd<sup>3</sup> and 20 yd<sup>3</sup>, trash and soil IDW, containers drop-off by Mid-Nebraska Disposal  
 Prepare for next day.





**DAILY QUALITY CONTROL REPORT - 002**

	S	M	T	W	Th	F	S
Weather			S				
Temp			50				
Wind			10				
Humidity			L				

Date - 3/13/2018

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001

Equipment Onsite:

GPS Trimbles  
 Trucks

Work Performed: (onsite – 0800; offsite – 1600)

Organized field office

H&S Meeting  
 Meet Jesse Jacobs for Utility Locate (onsite from 830-1230)  
 Stake out remaining points BKRD 3  
 Supervise Connex box delivery by MRL Crane & Equipment  
 Prepare for next day.

**DAILY QUALITY CONTROL REPORT - 003**

	S	M	T	W	Th	F	S
Weather				S			
Temp				55			
Wind				10			
Humidity				M			

Date - 3/14/2018

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001

Equipment Onsite:
HSA Rig – Mobile HDX61 DPT Rig – 660 Geoprobe Gradiometer / downhole UXO avoidance anomaly equipment PID MiniRae GPS Trimbles Trucks
Work Performed: (onsite – 0730; offsite – 1715)
H&S Meeting – including drill rig safety and UXO avoidance anomaly Mobilize to site Set up decon pit at staging area Collect surface samples from BKR2-2 locations – analyze for VOCs, Metals, PAHs, Hex Chrome, and Explosives Collect soil boring samples from BKR2-2 locations– analyze for VOCs, Metals, PAHs, Hex Chrome, and Explosives Shipped samples collected from BKR2-2 Drill MW 20B-LGIA-MW06 at Tract 20B Dump IDW solids into roll off container – then cover and label container Demobilize from site.

PROJECT: Corn Husker Army Ammunition Plant  
CONTRACT NUMBER: AT3001.

Date - 3/14/2018

Quality Control Activities (including field calibrations):
Calibrated PID Miniraes Collected QC samples from BKRD-2 (including TB/EB/FD/MS/MSD)
Health and Safety Level Activities / Field Staff on Site:
Staff – Alex Hedgepath and Kevin Wierengo (HGL); Stuart Cameron, Brant Hylinski, and Eugene Chagolla (ATI); James Tinnell, Matt Wold, Roy Hopkins, and Derrik Perry (GSI)
Problems Encountered/Corrective Action Taken/Comments:
During core drilling at Tract 21C using the DPT rig. Field crew was unable to penetrate past the water table at approximately 16' bgs. Despite using the dual-core methods, the heaving sands that were encountered seeped into the outer rod when the samples were extracted. It was tried multiple times with different techniques with no further success. Having a complete lithology of the area will be critical in taking the LGIA DPT GW samples for the preliminary investigation. Two options to acquire the necessary lithology of the area will be to use a CME/HSA drill rig as is being done at site 20B for the MW installation or using a discreet sampler on the DPT rig and interval sampling. Options will be discussed by project managers on 3/15/18.
Special Notes
Well pads are specified to be 2'x2'x4" in the FSP; James Tinnell (lead driller) notified HGL/ATI that the Nebraska requirement was 1' outside the well casing and 8" in depth, increasing the size of the pad to approximately 32"x32"x8". Field crew will use the Nebraska standard until otherwise directed.
Signature: Alex Hedgepath Title: Associate Geologist

PROJECT: Corn Husker Army Ammunition Plant  
CONTRACT NUMBER: AT3001.

Date - 3/12/2018

Quality Control Activities (including field calibrations):
Set up bottle kits and checked cooler shipment Set remaining stakes at BKR3
Health and Safety Level Activities / Field Staff on Site:
Staff – Alex Hedgepath and Kevin Wierengo (HGL); Brant Hylinski (ATI)
Problems Encountered/Corrective Action Taken/Comments:
BKR3 had three locations that may need to be moved. It appears that due to construction in the area, an access road was made on the west edge of BKR3. Sample locations for MW06/09/ and 17 are located on/near the access road. The points are recommended to be shifted approximately 25-35 ft. east to avoid potential traffic. BKR3 is not scheduled to be used for sampling/MW installation until Shift 2 of work happening in late March/early April.  All tracts were cleared by the utility locate. No points/locations needed to be moved. An abandoned electrical line was found on the east edge of BKR1 running NNW/SSE starting on the east side of the intersection south of BKR1 and ending east of the NE corner of BKR1. The line should not interfere with any work conducted.
Special Notes
N/A
Signature: Alex Hedgepath Title: Associate Geologist



**DAILY QUALITY CONTROL REPORT - 004**

	S	M	T	W	Th	F	S
Weather					S		
Temp					60		
Wind					20G		
Humidity					L		

Date - 3/15/2018

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001

Equipment Onsite:

HSA Rig – Mobile HDX61  
 DPT Rig – 660 Geoprobe - Left site at 1300 and was exchanged for the 21C boring with CME-45  
 Gradiometer / downhole UXO avoidance anomaly equipment  
 PID MiniRae  
 GPS Trimbles  
 Trucks

Work Performed: (onsite – 0730; offsite – 1830)

H&S Meeting – including drill rig safety and driving on dirt roads  
 Mobilize to site  
 Collect surface samples from 20B locations – analyze for Metals, PAHs, Hex Chrome, and Explosives  
 Collect soil boring samples from 20B locations– analyze for Metals, PAHs, Hex Chrome, and Explosives  
 Shipped samples collected from 20B  
 Drill MWs 20B-UGIA-MW05 & 20B-LGIA-MW08  
 Complete construction of 20B-LGIA-MW05  
 Log first of three exploratory borings at 21C – near DPT points 01/02  
 Demobilize from site.



**DAILY QUALITY CONTROL REPORT - 005**

	S	M	T	W	Th	F	S
Weather						Cloudy	
Temp						35	
Wind						25G	
Humidity						Rain	

Date - 3/16/2018

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001

Equipment Onsite:
HSA Rig1 – Mobile HDX61 HSA Rig2 – CME-45 Gradiometer / downhole UXO avoidance anomaly equipment PID MiniRae GPS Trimbles Trucks
Work Performed: (onsite – 0730; offsite – 1630)
H&S Meeting – including drill rig safety and weather Lightning delay from 800-930 Mobilize to site Drill MWs 20B-UGIA-MW07 Complete construction of 20B-LGIA-MW08 and 20B-UGIA-MW07 Log second and final exploratory borings at 21C – near DPT points 13/14 and 17/18. Demobilize from site.

PROJECT: Corn Husker Army Ammunition Plant  
CONTRACT NUMBER: AT3001.

Date - 3/16/2018

Quality Control Activities (including field calibrations):
Calibrated PID Miniraes
Health and Safety Level Activities / Field Staff on Site:
Staff – Alex Hedgepath and Kevin Wierengo (HGL); Stuart Cameron, Brant Hylinski, and Eugene Chagolla (ATI); James Tinnell, Matt Wold, Roy Hopkins, and Derrick Perry (GSI).  H&S Meeting – drilling safety and lightning in the area. Field work was stopped from 800-930 due to lightning in the area.
Problems Encountered/Corrective Action Taken/Comments:
The HSA rig which was being used for MW installations at 20B became “stuck” while trying to pull away from a newly installed monitoring well. Due to the UXO Avoidance Anomaly, the rig was not allowed to spin its’ tires or dig into the soft surface. The rig was left in place until the ground becomes more dry to allow the rig to drive out.
Special Notes
After reviewing the exploratory borings at Tract 21C, the field team will DPT GW at 14.5-18’ for the UGIA and 34.5-38’ for the LGIA. These intervals were consistent at each exploratory boring to conservatively acquire the GW samples from the desired portions of the GIA.
Signature: Alex Hedgepath Title: Associate Geologist



**DAILY QUALITY CONTROL REPORT - 006**

	S	M	T	W	Th	F	S	Date - 3/17/2018
Weather							Cloudy	
Temp							35	
Wind							5	
Humidity							Low	

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001

Equipment Onsite:
HSA rig – HDX61 Geoprobe rig – 6600 Geoprobe Gradiometer / downhole UXO avoidance anomaly equipment PID MiniRae YSI 556 GPS Trimbles Trucks
Work Performed: (onsite – 0730; offsite – 1630)
H&S Meeting – including drill rig safety and weather Mobilize to site Hand auger 3 MW locations at BKRD-3, to a depth of 4’, which were not associated with SS/SB samples for UXO AA. Collect DPT GW samples from 18’ and 38’ intervals at 4 DPT locations (1/2, 3/4, 5/6, and 7/8). Dump IDW from DPT GW at WWTP. Demobilize from site.

PROJECT: Corn Husker Army Ammunition Plant  
CONTRACT NUMBER: AT3001.

Date - 3/16/2018

Quality Control Activities (including field calibrations):
Calibrated PID Miniraes
Health and Safety Level Activities / Field Staff on Site:
Staff – Alex Hedgepath and Kevin Wierengo (HGL); Stuart Cameron, Brant Hylinski, and Eugene Chagolla (ATI); James Tinnell, Matt Wold, Roy Hopkins, and Derrick Perry (GSI).  H&S Meeting – drilling safety and UXO avoidance.
Problems Encountered/Corrective Action Taken/Comments:
The HSA rig which was stuck at 20B was cleared driven to a dry area, but unable to be removed from site due to mud in the exit way. A Tract HSA was called in to be used to try and allow access to areas with soft soil. ATI after GSI left site, cleared remaining MW locations for munitions and HA points. The tract rig will arrive on site on 3/18/18.
Special Notes
GSI at 21C became stuck in the mud at the edge of the farmed field. The truck was able to be pulled out, but the field became rutted. HGL/GSI will check on the area later in the week to decide if it needs to be graded over using a Bobcat.
Signature: Alex Hedgepath Title: Associate Geologist

**DAILY QUALITY CONTROL REPORT - 007**

	S	M	T	W	Th	F	S
Weather	Cloudy						
Temp	40						
Wind	5						
Humidity	Low						

Date - 3/18/2018

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001

Equipment Onsite:
HSA rig – All Terrain CME55 Geoprobe rig – 6600 Geoprobe Gradiometer / downhole UXO avoidance anomaly equipment PID MiniRae YSI 556 / Hanna Turbidity meter GPS Trimbles Trucks
Work Performed: (onsite – 0930; offsite – 1830)
H&S Meeting – including drill rig safety and weather Mobilize to site Install Monitoring well MW01 and MW02 at Tract 20B Collect DPT GW samples from 18’ and 38’ intervals at 6 DPT locations (9/10, 11/12, 13/14, 15/16, 17/18/ and 19/20). Dump IDW from DPT GW at WWTP. Demobilize from site.

PROJECT: Corn Husker Army Ammunition Plant  
CONTRACT NUMBER: AT3001.

Date - 3/18/2018

Quality Control Activities (including field calibrations):
Calibrated PID Miniraes, YSI 556, and Hanna Turbidity meter
Health and Safety Level Activities / Field Staff on Site:
Staff – Alex Hedgepath and Kevin Wierengo (HGL); Stuart Cameron, Brant Hylinski, and Eugene Chagolla (ATI); James Tinnell, Matt Wold, Ross Schumacher, and Derrick Perry (GSI).  H&S Meeting – drilling safety and UXO avoidance.
Problems Encountered/Corrective Action Taken/Comments:
The HSA rig was able to be removed from Tract 20b with the All Terrain CME-55 which GSI mobilized to site. The CME-55 and field crew at Tract 20b did not encounter any further issues with navigating the area.
Special Notes
All DPT GW samples have been collected from Tract 21B and will be shipped via FedEx on 3/19/18 to Katahdin Analytical Laboratories.
Signature: Alex Hedgepath Title: Associate Geologist





Photo 1-Clay similar in color to the “Blue Clay” typically encountered at the base of the LGIA was encountered at 20B-MW02 from 8.5 to 9 ft bgs.



Photo 2-This track-mounted auger rig replaced the truck-mounted rig to better navigate the muddy terrain. This rig operated without issue in the poor site conditions.

**DAILY QUALITY CONTROL REPORT - 009**

	S	M	T	W	Th	F	S
Weather		Cloudy					
Temp		35					
Wind		10					
Humidity		Rain					

Date - 3/19/2018

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001

Equipment Onsite:
HSA rig – All Terrain CME55 Gradiometer / downhole UXO avoidance anomaly equipment PID MiniRae Hand auger GPS Trimbles Trucks
Work Performed: (onsite – 1000; offsite – 1730)
H&S Meeting – including drill rig safety and weather Mobilize to site Ship DPT GW samples from 21C to Katahdin Analytical Laboratory. Install Monitoring well MW03 and MW04 at Tract 20B Collect SS/SB samples from all 7 locations at BKRD-3. Hand Auger and perform UXO Anomaly Avoidance at all bollard and MW locations at BKRD-3. Demobilize from site.



**DAILY QUALITY CONTROL REPORT – 009**

	S	M	T	W	Th	F	S
Weather			Cloudy				
Temp			40				
Wind			5				
Humidity			L				

Date - 3/20/2018

USACE PROJECT MANAGER: Doug Simpleman  
 PROJECT: Corn Husker Army Ammunition Plant  
 CONTRACT NUMBER: AT3001

**Equipment Onsite:**

Trucks  
 Bobcat  
 Cement Truck (onsite 1145-1300)

**Work Performed: (onsite – 0900; offsite – 1350)**

H&S Meeting – including drill rig safety and weather  
 Mobilize to site  
 Ship SS/SB samples from BKRD-3 to Katahdin Analytical Laboratory.  
 Complete surface construction on MWs 1-8 at Tract 20B  
 Demobilize from site.

PROJECT: Corn Husker Army Ammunition Plant  
CONTRACT NUMBER: AT3001.

Date - 3/20/2018

Quality Control Activities (including field calibrations):

Health and Safety Level Activities / Field Staff on Site:

Staff – Alex Hedgepath (HGL); Stuart Cameron and Brant Hylinski (ATI); James Tinnell, Matt Wold, Roy Hopkins, and Derrick Perry (GSI), and Gerhold Concrete (between 1145 and 1300).

H&S Meeting – drilling safety and UXO avoidance/rig safety.

Problems Encountered/Corrective Action Taken/Comments:

Special Notes

Monitoring well pads and bollards will need to partially cure before well development is began on 3/21/18.

Signature: Alex Hedgepath

Title: Associate Geologist